

**LOAN METHODOLOGY, GENDER, ENVIRONMENT AND THE
FORMATION OF CAPITAL BY MEXICAN MICROFINANCE
INSTITUTIONS**

by

Denis John Griffin

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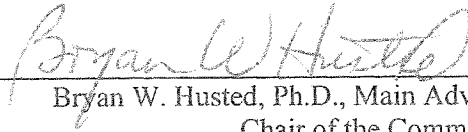
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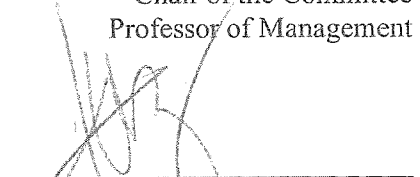
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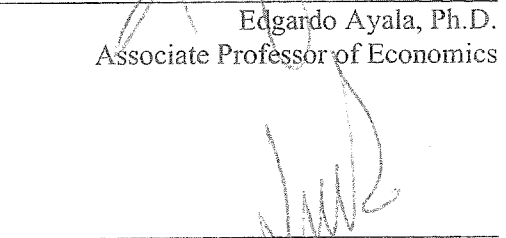
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DEDICATION

This dissertation is dedicated to:

my spiritual guide, Swami Chidvilasanda

my mother, Helga Griffin

my father, James Griffin (1929-2010)

my wife, Catalina Lira Meza

my son, Uriel Griffin Lira

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My doctoral studies involved a lengthy journey through different locations in North America. So many people have helped me during this time that it is not possible to acknowledge all of them individually.

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I was originally drawn towards microfinance in the early 1990s thanks to Joe Remenyi's (1991) book "Where Credit is Due" and Deakin University's development studies program, which was available internationally through distance education.

I am indebted to my wife, Catalina, who took me and collected me from the bus station so many times at all hours, supported me and expressed interest in my progress. She was a substantial support as I confronted diverse obstacles in order to complete this dissertation. I also wish I had had more time for my son Uriel, who was always extremely understanding and patient in resolving many of my digital problems. He is a wonderful person much loved by all his family in Australia and Mexico. My parents, Helga Griffin and Emeritus Professor Jim Griffin, both authors and lecturers in Australia, stimulated my academic interests

from an early age. My association with my brothers and sisters (Justin, Gerald, Anthea, Cathie and Gabrielle) has also enriched my life.

My time spent working voluntarily in India and Australia with the Siddha Yoga Foundation between 1985 and 1991 provided me with a strong work ethic; taught me about discipline, perseverance and multi-cultural collaboration; revealed the predicament of extreme poverty in Bombay's slums and amongst the rural poor in Maharashtra; introduced me to a rural development program that was to become the official Prasad Project; and enabled me to interchange experiences and knowledge in challenging environments, such as the maximum security section of what was Pentridge Prison in Melbourne. The Siddha Yoga Foundation has inspired me for life. Its important cultural and development contributions have since been justly recognised by the United Nations.

For two and a half years I travelled seven hours by bus across northern Mexican deserts to Monterrey in order to attend weekly classes while I worked as a lecturer in the Tecnológico de Monterrey, Campus Zacatecas. This entailed either renting a room in Monterrey or sleeping on the bus. Persistent travel by bus involved many incidents, such as breaking down in the desert; not waking up at my destination; the bus not stopping at my destination; walking back towards the bus station along the highway in the dark; and/or ending up in another city. Thank you Alejandro Ibarra Yúnez, the head of the doctoral program when I started, and David Noel Ramírez Padilla, the then Rector of the northern zone of the Tecnológico de Monterrey. Thanks to them I was able to obtain backing from my campus to continue in the doctoral program of the EGADE Business School and it

was possible to spend a year as a visiting student in Montreal, Canada. The next Director of the doctoral program, Anabella Dávila, also proved to be a constant reinforcement and a valued friend. I am also appreciative to two lecturers and friends from Campus Zacatecas, Eduardo Lopez de Lara and Raúl Quiroga, who assisted me when I had numerous queries concerning mathematics. Thanks to the staff of Campus Zacatecas and the staff and fellow doctoral students of the EGADE Business School.

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Returning to Zacatecas and Monterrey I was able to form my dissertation committee and meet Edgardo Ayala Gaytán of Monterrey Campus, who instructed me on structural equation modeling, and Jorge M. Rocha of the EGADE Business School, who proposed delving deeper into social networks and reviewing the various anthropological perspectives of culture.

Then in 2010 I moved to the Centre of Interdisciplinary Research and Integrated Regional Development (CIIDIR) of the National Polytechnic Institute (IPN), 1,000 kilometres to the south in the state of Oaxaca. I would like to thank all the staff of the CIIDIR who aided and supported me, especially Amado Poblano Vásquez, Mara Rosas Baños, Elvira Duran Medina, Pedro Benito Bautista, Nelly Arellanes, and Griselle Velasco Rodríguez. Amado invited me into his home without even knowing me and became a steadfast confidant. I am appreciative to the many friends I have made in the state of Oaxaca and in the northern sierra of the state of Puebla, including the Siddha Yoga community in Oaxaca and the historic hamlet of Lachatao in the Pueblos Mancomunados (Commonwealth of Villages).

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Hemispheric Trade of the Texas A&M International University; the Latin American Council of Business Schools (CLADEA); the Academy of Management; oikos; and the United Nations Development Program (UNDP). I am beholden to the UNDP for the Growing Inclusive Markets (GIM) Travel Grant to attend the oikos UNDP Young Scholars Development Academy in Costa Rica.

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ABSTRACT OF DISSERTATION

EGADE BUSINESS SCHOOL, MONTERREY
INSTITUTO TECNOLÓGICO Y DE ESTUDIOS DE ESTUDIOS
SUPERIORES DE MONTERREY

Degree: Doctor of Philosophy Program: Doctoral Program in Administration

Name of Candidate: Denis John Griffin

Main Advisor: Bryan Husted

**LOAN METHODOLOGY, GENDER, ENVIRONMENT AND THE
FORMATION OF CAPITAL BY MEXICAN MICROFINANCE
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Although evidence from literature in social psychology, sociology, the economics of gender, and business administration generally states that men are more successful than women as business owners and employees, the development literature suggests that women may be more successful than men in microfinance programs. This may be due to higher levels of peer-group pressure, community pressure, group participation and solidarity in microfinance groups with a greater proportion of females. Group loans may also have more success in rural areas where society is more closely knit. In order to test these assumptions a survey was

conducted in two microfinance institutions operating in central Mexico consisting of 109 individual loans, 182 small groups and 110 large groups. The survey was analysed with t-tests, ANOVAs and structural equation modeling. Surprisingly, no significant difference was found between the financial capital creation of males and females with individual loans, nor between groups with a greater proportion of females and groups with a greater proportion of males. This suggests that the gender gap in this context does not appear to be as wide as the literature would indicate. Males appear to enjoy few advantages in this context. Groups with a greater proportion of females appear to impose more sanctions from within the group, although there are not significantly more community sanctions imposed on these groups nor do these groups place more emphasis on group and community relations. Rural groups, however, did create significantly more financial capital than urban groups. An important by-product of this study was the finding that sanctions do not improve repayment rates but in fact have a negative affect on repayments rates, whereas, social relations within the group and the community have a significant positive affect on repayment rates. Furthermore, the sample of small groups found that high repayment rates significantly raise the creation of financial capital by microfinance clients.

La literatura de psicología social, sociología, economía de género, y administración de empresas generalmente afirma que los hombres tienen más éxito como dueños y empleados que las mujeres. No obstante, aportes empíricos sobre el desarrollo sugiere que las mujeres podrían tener más éxito en los programas de microfinanzas debido a la presión que en ellas se ejerce por el grupo y por la comunidad. Prácticamente se espera de ellas mayor participación en el grupo y un incremento en el nivel de solidaridad cuando hay una mayor proporción de mujeres en el grupo. También se supone que los préstamos a grupos podrían tener más éxito en zonas rurales donde la sociedad es más solidaria. Para probar estas proposiciones se aplicó una encuesta en dos microfinancieras ubicadas en cuatro estados del centro de la República Mexicana. La encuesta se aplicó a los usuarios de 109 préstamos individuales, 182 grupos pequeños y 110 grupos grandes; y fue analizada con pruebas de *t*, ANOVAs y modelos de ecuaciones estructurales. Para nuestra sorpresa, no existieron diferencias significativas en la creación de capital financiero entre hombres y mujeres con préstamos individuales, ni entre grupos con una proporción mayor de mujeres y de hombres. Estos resultados sugieren que el vacío entre los géneros en este contexto no es tan amplio como la literatura indica y los hombres disfrutan pocas ventajas en este contexto. Los grupos con una mayor proporción de mujeres imponen más sanciones al grupo, pero no hay significativamente más sanciones de la comunidad a estos grupos. Además en los grupos con una proporción mayor de mujeres tampoco existe un énfasis en las relaciones en el grupo y con la comunidad. Sin embargo, los grupos rurales crearon más capital financiera que los

grupos urbanos. De este estudio se deriva un resultado importante, que las sanciones no mejoran las tasas de pago y su efecto es contraproducente porque las bajan, mientras que las relaciones solidarias en el grupo y con la comunidad sí suben significativamente las tasas de pago. En el caso de la muestra de grupos pequeños se encontró que las altas tasas de pago suben significativamente la creación de capital financiera por parte de los microempresarios.

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CHAPTER 1: INTRODUCTION

1.1 Research Questions

The informal sector is crucial to the survival of the poor in urban and rural areas of the developing world (Safilios-Rothschild, 1984). Research in Latin America has revealed that while men tend to move into the formal sector, the majority of women tend to be concentrated in the informal sector and thus remain marginalised with low incomes and intermittent work (Charlton, 1984; Haig-Muir, 1996; Young, 1997). Despite its impact on developing economies, the informal sector has been regarded as insignificant and has not only been largely ignored by government policymakers, but also by researchers in the field of business administration (Khavul, Bruton, & Wood, 2009; Webb, Tihanyi, Ireland, & Sirmon, 2009; Young, 1997). However, arguably, it is in the informal sector that development projects have had their greatest successes, particularly small-scale credit and micro-enterprise projects that provide loans or technical services to the poor (Buvinic & Yudelman, 1989; Carloni 1987; Lewis, 1988; Walker, 1986). The success of credit programs in reaching a large number of women and improving their incomes has been emphasised by numerous organisations, including the United Nations, the World Bank, and the Nobel Committee (Buvinic & Lycette, 1988; Fisher, 1994; Hermes & Lensink, 2007; Young, 1997).

During an interview in my exploratory study (Griffin, 2008) a spokesman from a Mexican government program that provides credit to micro-entrepreneurs in a lightly populated primarily rural state declared that “women are more dedicated to the development of their project and they assimilate better the technical knowledge that is offered by the institution.” The general opinion of the informants interviewed was that female micro-entrepreneurs have certain abilities and attitudes that give them an advantage over male micro-entrepreneurs due to different factors. It was claimed that women are more efficient at organising and participating as a group, more punctual in repaying their debts, and more likely to develop a stable business. My exploratory study also suggested that large groups appear to function better in rural environments where communities are socially more cohesive, whereas smaller groups or individual loans may be more appropriate for urban areas.

There is a general lack of credit at the bottom of the pyramid in emerging economies so this valuable resource should be employed as efficiently as possible to promote micro-business and small business growth. For example, in rural areas funds may be more effectively targeted at large groups of women in excess of 15 members, whereas it may be preferable to lend to small groups of men that have between 4 and 6 members. Mixed groups may be less successful and represent a waste of resources in all environments. In urban areas, the ideal lending methodology may be small groups of women and individual loans to men. Failing to conduct research on the most effective loan methodology taking into account

gender and environment may restrain business growth and the circulation of capital in a community.

This research project sets out to investigate the influence of microfinance loans on male and female clients in different environments in Mexico and the creation of capital by these clients. It compares male clients with female clients and rural environments with urban environments. It also includes group loans and individual loans, and compares combinations of gender, environments and loan methodologies.

Although literature and theories in social psychology (Brehm, Kassin, & Fein, 1999; Myers, 1996; Worchel, Cooper, Goethals, & Olson, 2002), sociology (Bird, Sapp, & Lee, 2001; Farley, 2003; Schaefer, 2004; Vander Zanden, 1990), the economics of gender (Jacobsen, 1998; Sánchez & Pagán, 2001) and business administration (Brush, Carter, Gatewood, Greene & Hart, 2006; Ely & Padavic, 2007) explain why men generally create more capital than women as business owners and employees, development literature based on empirical studies (Armendáriz de Aghion & Morduch, 2004, 2005; Carloni, 1987; Griffin, 1996; Hashemi, Schuler & Riley, 1996; Khandker, 1998; Morduch, 1999; Nafziger, 1997) suggests that poor women¹ may create more capital than poor men in microfinance programs. Related to the phenomenon of gender and success in microfinance, a debate is currently taking place in microfinance literature between proponents of group loans (Khandker, 1998; McKernan, 2002; Navajas,

¹ Remenyi (1991) provides a definition of poverty: “At its most general, to be economically poor in the Third World means that one belongs to a household which has access to income that is well below the national average, whether one is landless or not. In this study the income standard below which one is regarded as poor is defined as, ‘persons coming from households with a total household annual cash income less than one half the national average’” (Remenyi, 1991, p. 3).

Schreiner, Meyer, Gonzalez-Vega & Rodriguez-Meza, 2000; Remenyi, 1991) and proponents of individual loans (Armendáriz de Aghion & Morduch, 2000, 2004, 2005; Morduch 1999). The Grameen Bank, a pioneer microfinance institution (MFI) and leader in innovations, is reported to be moving away from the provision of group loans (Armendáriz de Aghion & Morduch, 2005; Dowla & Barua, 2006). One argument in favour of group loans states that women benefit more from these loans than individual loans (Velasco & Marconi, 2004). Female success in microfinance programs may be related to group forces, such as peer group pressure, and group participation (Bhatt & Tang, 2001; Dowla & Barua, 2006; Khandker, 1998; McKernan, 2002; Prahalad, 2005b; Remenyi, 1991). The qualitative pilot study (Griffin, 2008) I conducted on microfinance programs in Mexico suggests that the benefits that women derive from microfinance programs may be influenced by peer-group pressure, community pressure, mutual insurance (help), solidarity, intra-group learning, and participation in joint-decision making. Furthermore, environmental and cultural forces may influence the success of female clients in capital creation. An explanation of gender, group loans, environment, and capital creation in this context may be pertinent to other businesses not served by MFIs that operate at the bottom of the pyramid in emerging economies (Hammond & Prahalad, 2004; Hart, 2005; London & Hart, 2004; Peredo & Chrisman, 2006; Prahalad, 2005a; Seelos & Mair, 2007; Sen, 2000).

This study is organised around the following research questions:

1. Do women who receive group loans from MFIs create more capital² than men who receive group loans from MFIs?
2. Do men who receive individual loans from MFIs create more capital than women who receive individual loans from MFIs?
3. Do group loans from MFIs in rural settings create more capital than group loans from MFIs in urban settings?

The dependent variable of this study (capital) is divided into economic, social and human capital. The independent variable is loan methodology (group loans or individual loans), which is moderated by environment (rural or urban), and the gender of clients (male or female). Capital creation and the other variables in this dissertation were measured by a survey collected from the female and male clients of two Mexican MFIs that operate with both group loans and individual loans. The survey was carried out in the states of México, Hidalgo, Veracruz, and in the Federal District. Samples collected in the state of México and the Federal District included microfinance clients in densely populated Mexico City. Within the two samples there were clients residing in cities and towns of varying sizes. As structural equation modeling was used as the statistical tool for testing data, a minimum of 200 questionnaires were required in each of the two MFIs.

² The measurement of capital is discussed in sections 2.2 and 4.2. Economic capital, social capital and human capital are measured by questionnaires. Microfinance clients were asked questions related to economic capital (sales, profit, savings, business infrastructure, and employment) formation over the previous year. Social capital (6 dimensions) and human capital (knowledge, business skills, and new business awareness) items were also included in the survey.

1.2 Relevance, Contribution and Future Research

Although the questions surrounding loan methodology, gender, environment, and capital creation in the microfinance sector have not been adequately answered by research carried out in business administration and other disciplines, these topics continue to challenge accepted wisdom on gender and business success.

Loan Methodology

Among recent studies conducted to investigate the benefits of group loans, McKernan (2002) measures the total and non-credit effects on self-employment profits of microfinance clients in Bangladesh. She provides evidence for the success of group loans, but does not compare these with individual loans, nor does she measure the composition of non-credit effects, such as group cohesion, information sharing and peer-group pressure. Gomez and Santor (2003) find empirical evidence that borrower default rates are lower with group lending than with individual lending. Furthermore, they point out that group loans benefit from both selection into the program and from incentives within the group, although these two channels are “inferred rather than measured” (2003, p. 18). According to the experiment of Abbink, Irlenbusch and Renner (2006), group lending outperforms individual lending with social ties making no significant difference. Giné and Karlan (2006) find that the new individual liability “centers” do not

have lower repayment rates than group liability “centers” and that individual liability “centers” have higher growth in size due to new clients.

A review of the above studies (Abbink et al., 2006; Giné and Karlan, 2006; Gomez and Santor, 2003; McKernan, 2002), which attempt a comparison of group loans with individual loans, indicates that there is a gap in the literature. There has recently been considerable criticism of group loans (Armendáriz de Aghion & Morduch, 2000, 2004, 2005; Morduch 1999) that may be unjustified and lacking in empirical evidence. Giné and Karlan, for example, claim (2006, p. 3) that “despite being a question of first-order importance, empirical literature on group versus individual liability lending has not provided policymakers and institutions the clean evidence needed to determine the relative merits of the two methodologies.”

There are limitations associated with the above four studies that need to be overcome. Firstly, these studies make no comparison of loan methodologies taking into account gender. Secondly, the above studies do not provide comprehensive explanations of the group and social forces that aid in capital creation nor do they attempt to measure these forces³. Explanations and empirical measurement should take into account mutual insurance (help), solidarity, intra-group learning, joint-decision making, peer-group pressure (joint liability), and community pressure. Thirdly, there are limitations associated with the settings of three of these studies. For example, two of these studies were carried out in

³ Ahlin and Townsend (2007) have attempted to measure joint liability, social ties, group cooperation, and social sanctions in Thailand, but there appear to be some limitations with their study. See section 2.6 for a brief explanation of these limitations and section 4.2 for some examples of their items.

industrialised economies. Abbink, Irlenbusch and Renner (2006) conducted their experiment on German students, whereas Gomez and Santor's (2003) secondary and survey data was collected in two regions of Canada. The German study has no statistics dealing with individual loans as such (like McKernan's 2002 study); investigates self-selected groups formed before the experiment; lacks authentic monitoring between clients, references to "microfinance", experimental businesses, and actual loans; and stops in the tenth round, a future event that clients already know when they begin the experiment (Armendáriz de Aghion and Morduch, 2005). A rigorous study comparing both loan methodologies needs to be conducted with microfinance clients in a developing country, but without the methodological problems of Giné and Karlan's (2006) study in the Philippines in which individual lenders had previously been group lenders, thereby arguably already developing their human and social capital, and still benefitted from group lending logistics, such as a common site and schedule for meetings and repayments. These are vital components of the group lending methodology.

This study does not attempt a direct comparison of loan methodologies, but includes samples of both loan methodologies and examines group and community forces that raise repayment rates and capital formation; examines the influence of gender on both loan methodologies and of environment on group loans; and is based in a developing country. It also controls for whether microfinance clients previously had access to different loan methodologies.

Gender

Other studies investigate gender in the context of microfinance although they tend to focus on group loans. Pitt and Khandker (1998) find that female clients in Bangladesh have a larger positive impact on household consumption expenditure, family welfare, and the labour supply of both sexes than male clients. A later study (Pitt, Khandker, & Cartwright, 2006) finds that women's participation in microfinance programs in Bangladesh has a positive effect on their empowerment, whereas male participation has a negative effect on female empowerment in their households. Kevane and Wydick's (2001) results taken from a Guatemalan MFI find that young women during child bearing and child raising years generate less employment than males, but that older women generate more employment.

Business related economic capital, especially profit and physical capital, needs to be measured for both genders, as does social capital and human capital. For example, Pitt and Khandker (1998) do not measure social and human capital (except children's schooling) and provide a limited measurement of economic capital (labour and women's nonland assets). Male nonland assets are not measured in order to compare this outcome variable with female nonland assets. Pitt, Khandker & Cartwright (2006) do include items to measure some forms of social capital (mobility and networks) and human capital (an awareness of law and politics), although they do not compare the relative growth of thematic groups for both males and females. Kevane and Wydick (2001) examine labour generation and sales, but not profit, physical capital, social capital or human

capital. Gomez and Santor (2003) compare repayment rates, but do not compare profits, other measures of economic capital, nor gender.

This study offers to make a contribution by building up a more complete theoretical model to explain why traditional concepts about gender may need to be revised in the context of microfinance and the base of the pyramid. Although business administration literature generally emphasises the advantages of males in the creation of capital as business owners or employees, there is a lack of literature and theory concerning the specific advantages of women either in microfinance programs or at the base of the socio-economic pyramid in general. A recent search that I conducted for A-level journals in administration revealed no publications dedicated specifically to the MFI phenomenon before about 2009, although a few authors have briefly mentioned MFIs as an example of social capital, collaboration within an indigenous community, or local knowledge (e.g. London & Hart, 2004; Peredo & Chrisman, 2006; see also Bruton, 2010). A greater recognition of the potential of poor women to create capital may lead to more support for and research on women at the base of the pyramid. For the benefit of practitioners, this study sets out to test the conditions under which female and male clients create more capital and aims to address the gap in the microfinance literature that so far has not examined thoroughly the influence of gender on peer-group pressure, community pressure, and group participation.

Environment

There also seems to be a lack of research about the influence of environment on loan methodology. Although environmental forces are related to the debate on joint liability, there appears to be no literature to explain why large groups of 10 or more clients may be preferred in rural environments in Mexico and why individual loans are preferred by many MFIs in large cities (Griffin, 2008). A debate is now underway amongst MFI directors and employees in Mexico concerning the appropriate loan methodology for urban environments (Griffin, 2008). The link between the cultural dimension of collectivism and preferred loan methodology has not been sufficiently emphasised in the literature (Griffin, 2009). Environment may actually play a large role in the capital creation of clients and MFIs depending on the loan methodology adopted. Explanations of the most suitable methodology for a given environment need to be grounded in theory.

1.3 Contents

The following chapter provides definitions for economic, human and social capital; reviews the literature concerned with loan methodology, gender, and environment; and discusses my contribution in greater detail. A discussion of theory in Chapter 3 leads to an explanation of my conceptual model and of my hypotheses. Chapter 4 provides a description and an explanation of the research

methodology I have adopted for this dissertation. Here I discuss the choice of a survey; the operationalisation of the variables in my conceptual model; my plan for data collection and analysis; the potential limitations of my research method; how I intend to overcome these limitations; and details regarding my two pilot studies. In Chapter 5 I describe my individual loans sample, the statistical tests of this sample, and the results related to the first hypothesis. In Chapter 6 I present the same process for the first group loans sample and answer the next four hypotheses. The same statistical tests are performed in Chapter 7 and their results presented for the second group loans sample. Finally I conclude this study in Chapter 8 by providing a discussion of my contribution and the implications for theory and research; the implications for practice; the limitations of this study; and a final conclusion.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Chapter 1 reviews the microfinance literature related to gender, loan methodology and environment in order to clarify the contribution that this study sets out to make. In this chapter I firstly provide definitions for microfinance institutions (MFIs) and for capital, which is divided up into economic capital, human capital and social capital. This is necessary because one of the main purposes in this study is to measure capital creation by different microfinance loan methodologies, genders and environments.

The second section is dedicated to a discussion of gender, repayment rates and capital creation by MFIs. I summarise the traditional theories on gender and business success, contrast these theories with empirical findings in development studies and economic development literature, and present both sides of the debate on whether loans to females may actually boost or hinder economic development.

I expand this discussion on gender by including loan methodology in the third section. In this section I firstly discuss and differentiate individual loans and group loans. Then I refer to possible success factors of group loans that may benefit borrowers: intra-group learning, solidarity, peer-group pressure, community pressure, and MFI pressure.

The fourth section then looks at the relationship that rural or urban environments may have on the loan methodology chosen by the MFI. The size of a group may also have an influence on capital creation depending on the environment. Finally, based on this literature review, I outline my contribution to the topics of gender, loan methodology and environment in the existing microfinance literature.

2.2 Defining Microfinance Institutions and Capital

A microfinance⁴ institution (MFIs) can be defined as “a bank, a cooperative, a credit union, an NGO or some other form of non-bank financial intermediary⁵, (which) seek(s) to provide clients from poor households with a range of money management and banking services⁶” (Remenyi, 1999b, p. 8).

⁴ “Also called microcredit or microbanking. A means of extending credit, usually in the form of small loans with no collateral, to non-traditional borrowers such as the poor in rural or undeveloped areas” (microcredit, 2008).

“Microfinance is no different (from banking services, especially credit and savings) except that its market consists of poor households and very small enterprises (microenterprises), in the rural and informal sectors of developing countries. The formal banking system that serves this intermediation role for larger enterprises and wealthier clients in the modern sector of poor economies has thus far found it almost impossible to service this market, essentially because poor people lack collateral against which to borrow, and the financial ‘products’ poor people need involve very high transactions costs and risks that are difficult to manage using the ‘technology’ of modern banking” (Remenyi, 1999b, p. 8).

⁵ “The world of MFIs is diverse – they exist in various legal forms, including nongovernmental organizations (NGOs), credit unions, nonbank financial intermediaries, and commercial banks” (Pralhad, 2005b, p. 293).

⁶ “These services can be grouped into five basic ‘product’ types: credit...; deposit services...; insurance products...; financial advisory services...; and advocacy services...” (Remenyi, 1999b, pp. 8-9).

MFIs often provide small loans of around US\$50 to US\$1,000 to poor clients, especially women, usually in rural and informal sectors of developing countries, so that they can start or expand small businesses. The study of microfinance includes “elements of the principles of free-enterprise banking and finance, a neoclassical presentation of the economics of poverty and contemporary thinking on grass-roots based community development” (Remenyi, 1999a, p. 2).

Capital is “a stock of resources that may be employed in the production of goods and services” (capital, 2007). Most economic text books refer to capital as physical capital or capital goods, but here I will use a broader definition: “Capital may be so broadly defined as to include all possible material, nonmaterial and human inputs into a productive system” (capital, 2007). Capital consists of economic capital, human capital and social capital. Economic capital includes physical capital (capital goods or real capital), such as land, buildings, machinery, equipment, and inventories of raw materials and goods; non-physical capital (money or financial capital); and the price of labour (capital, 2007).

Human capital will be defined as “the stock of technical knowledge and skill embodied in a nation’s work force” (Samuelson & Nordhaus, 2001, p. 766; see Lin, 2001). Although human capital is thought to result from “investments in formal education and on-the-job training” (Samuelson & Nordhaus, 2001, p. 766), in this dissertation I will argue that the formation of client groups promotes the formation of human capital because clients learn from each other when they

“The primary focus of MFIs had been access to credit, a very capital-intensive process. The other plank of banking, namely savings, has been primarily ignored by MFIs (Prahalad, 2005b, p. 292).

communicate, give advice and participate in joint-decision making (Griffin, 2008).

Social capital is “the goodwill available to individuals or groups. Its source lies in the structure and content of the actor’s social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor” (Adler, & Kwon, 2002, p. 23). Social capital refers to connections within and between social networks that promote productive activities. “The term (social capital) captures the idea that social bonds and social norms are an important basis for sustainable livelihoods” (Pretty & Ward, 2001, p. 210; see Pretty, 2003). The Integrated Questionnaire for the Measurement of Social Capital (SC-IQ) designed by the World Bank divides social capital into six dimensions: groups and networks; trust and solidarity; collective action and cooperation; information and communication; social cohesion and inclusion; and empowerment and political action (Grootaert, Narayan, Nyhan Jones, & Woolcock, 2004, p. vii).

2.3 Gender and Capital Creation

Traditional Theories of Gender

The social psychology, sociology, economics of gender, and business administration literatures generally agree that men are more successful than women as business owners or business employees (Brehm et al., 1999; Brush et

al., 2006; Loscocco, Robinson, Hall, & Allen, 1991; Myers, 1996; Sánchez & Pagán, 2001; Vander Zanden, 1990), although some studies challenge this prevalent finding (Kalleberg & Leicht, 1991). Bird, Sapp and Lee (2001) list four theories that explain this belief. Firstly, the theory of human capital argues that women business owners are more inclined than men to invest their time into managing both family relationships and businesses or occupational obligations, whereas men invest more time into their businesses (Jacobsen, 1998; Kalleberg & Leicht, 1991; Loscocco et al., 1991). Consequently, women develop less skills and experience that are conducive to small business success (Bird et al., 2001). Women are also influenced by gender biases and socialisation practices that deprive women of the human capital, such as education and experience, needed for better-paid positions.

Secondly, social network theory claims that the social networks of women emphasize interpersonal relationships over instrumental relationships and, therefore, women come into contact with fewer business-related resources (Bird et al., 2001; Moore, 1990; Worchel et al., 2002). Due to gender socialisation and gender differences in structural locations, female networks tend to be more kinship-oriented, more uniform, and smaller than male networks (Brush, 1992). The upward mobility of women in organisations is impeded by the “glass ceiling”. Females also work in a more restricted range of occupations than males. Women employees in the developing world have tended to be concentrated in unskilled jobs in textile, electronic and food-processing plants or in stereotyped

employment roles in the service sector (Haig-Muir, 1996; Lewis, 1988; Newland; 1979).

Thirdly, the organisational ecology view states that women-owned businesses fall disproportionately into smaller, less-well established businesses in more crowded industries and, consequently, are less likely to survive than male-owned businesses (Kalleberg & Leicht, 1991; Loscocco et al., 1991; Tigges & Green, 1994; Williamson, 1995). Better-established businesses are more likely to have greater access to scarce resources.

Finally, feminist views encompass two explanations for the sex gap in small business success. The first category of explanation states that gender socialisation influences women's life experiences so that female business owners have different management styles and goals than men (Farley, 2003; Fischer, Reuber & Dyke, 1993; Schaefer, 2004; Weiten & Lloyd, 1997). Feminist theorists also point to systematic biases that obstruct female-owned businesses from being as successful as male-owned businesses (Ely & Padavic, 2007; Fischer et al., 1993; Hatch, 1997; Karsten, 1994). According to feminist views, the sex gap will disappear when socialisation practices are changed or uprooted.

Gender and Microfinance

In contrast to the above theories there are many examples from development studies literature that suggest that female micro-entrepreneurs supported by microfinance programs in developing countries may be more

successful than male micro-entrepreneurs (Morduch, 1999; Nafziger, 1997). Although there are exceptions, empirical studies on microfinance would appear to contradict the universal conclusion of the above theories, which claim male business owners are generally more successful than female (Bird et al., 2001). One of the first microfinance programs, the Grameen Bank (GB), which started up in Bangladesh around the mid-1970s, was serving more than a million clients by the 1990s and had repayment rates of more than 90 percent (Nafziger, 1997). In 1985, 34.9 percent of GB clients were men, but by 1994 this had declined to less than 6 percent (Islam, 2007). Male borrowers of the GB are said to have struggled (Morduch, 1999). The GB has found that not only do female clients have a greater social impact than male clients, but also that having a customer base dominated by women may reduce financial risk (Armendáriz de Aghion & Morduch, 2005; Yunus, 2003).

Women have had particularly low rates of loan default, which are said to be less than one-third those of men in Bangladesh (Khandker, 1998). Female microfinance clients are associated almost worldwide with higher repayment rates than men with Indonesia curiously said to be a departure from the norm (Khan, 1999; Remenyi, 2000; Rosintan, Panjaitan-Drioadisuryo & Cloud, 1999). Velasco and Marconi suggest that women have higher repayment rates because they are “more risk-adverse, or have fewer possibilities of obtaining credit outside microfinance, or take more seriously the consequences for their children of their failing to repay, or a combination of the above” (2004, p. 525).

Women, however, have had higher dropout rates in the Grameen Bank (Khandker, Khalily & Khan, 1995). Overall, the dropout rate of female clients grew at an average of 17 percent annually between 1985 and 1994 compared to 13 percent for male clients. Khandker, Khalily and Khan explain that members may dropout for various reasons but that “if benefits from participation are great enough, members may graduate (and stop borrowing from the Grameen Bank)” (1995, p. 75).

Khandker and colleagues state that repayment rates “suggest that women’s groups are more viable than men’s groups” (1995, p. 76). Each year between 1985 and 1994 there were always more male irregular (between 4.28 and 15.33 percent) and struggling (1.36-5.61) borrowers than female irregular and struggling borrowers (1.27-3.88 and 0.50-1.43 respectively) (see Table 2.1 below). “Irregular borrowers” are clients who do not make weekly payments on time; “struggling borrowers” are those who cannot pay due to circumstances that they have no control over; whereas “defaulters” cannot pay their overall loans within the specified time. Women also defaulted on their loans consistently less than men. Between 1985 and 1994, female 25-week defaulters ranged between 0.19 percent and 3.33 percent, whereas male 25-week defaulters ranged between 0.81 percent and 5.99 percent. Between 1990 and 1994, female 38-week defaulters ranged between 0.25 percent and 1.56 percent, while male 38-week defaulters ranged between 0.91 percent and 5.50 percent. The authors comment that “although men on average default more than women, the overall proportion of borrowers who default is very small” (1995, p. 76). Armendáriz de Aghion and Morduch (2005)

mention three other studies in which female clients are said to have superior repayment rates to male clients. They also refer to Grameen replications in southern Mexico and data from Latin American MFIs that report similar findings.

Table 2.1

Gender of Irregular Borrowers, Struggling Borrowers, and Defaulters in the Grameen Bank, Bangladesh, 1985-1994. Percentage of Total Male and Female Borrowers in the Same Year.

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Female Irregular Borrowers	1.27	2.02	1.70	1.87	2.73	2.80	3.88	2.75	2.09	3.71
Male Irregular Borrowers	4.28	7.52	9.30	10.00	12.4	11.96	15.33	11.91	9.83	9.74
Female Struggling Borrowers	0.50	0.64	0.60	0.61	0.99	1.08	1.33	1.27	0.91	1.43
Male Struggling Borrowers	1.36	3.02	3.28	3.46	4.25	4.29	5.61	5.48	4.31	3.66
Female 25-week Defaulters	1.28	0.66	3.33	1.76	1.50	1.18	1.23	0.33	0.19	0.72
Male 25-week Defaulters	3.61	2.67	5.88	5.99	4.56	3.68	3.07	1.21	0.81	1.38
Female 38-week Defaulters	0.00	0.00	0.00	0.00	0.00	1.51	1.56	0.51	0.25	0.83
Male 38-week Defaulters	0.00	0.00	0.00	0.00	0.00	5.50	3.80	1.64	0.91	1.76

Source: Khandker, Khalily, and Khan (1995).

Another study (Hashemi et al., 1996) using case study and survey data reports that the Grameen Bank and BRAC (Bangladesh Rural Advancement Committee) have contributed to the social dimensions of women's empowerment

in Bangladesh. Women have been empowered due to “a strong, central focus on credit” and the “skilful use of rules and rituals to make the loan program function” (Hashemi et al., 1996, p. 635). Khandker (1998) also claims that women have especially benefited from MFIs. Of the three MFIs studied by this author in Bangladesh, when the clients were female the impact on household consumption was twice as large as that of men. This was accompanied by an increase in the net wealth and status of the women involved in the study as well as an improvement in the lives of their children. A more recent Khandker (2005) study also claims that female borrowers have especially benefited from the poverty reduction efforts of MFIs. Islam (2007) presents the results of a field survey of 75 female borrowers in Bangladesh in which GB members are compared to non-members in project villages and to non-members in control villages. GB members have higher expenditure than the other two groups in education for children, family nutrition and health services. Other papers emphasize the success and social impact of MFIs targeting women (Rosintan et al., 1999; Velasco & Marconi, 2004). Kabeer claims “the entire family is much more likely to benefit personally and socially, when loans are directed to women rather than men” (2001, p. 83).

Some studies have attempted a comparison of male and female clients who receive group loans. Pitt and Khandker (1998, p. 986) comment that up till their paper “there (was) little evidence on whether production credit provided women (had) an effect on household outcomes different from that of production credit provided men.” They look at the impact of gender on men’s and women’s labour supply, girls’ and boys’ schooling, household per capita total expenditure, and

women's nonland assets in three group-based MFIs (Grameen Bank, BRAC and the Bangladesh Rural Development Board's (BRDB) Rural Development RD-12 program) operating in rural Bangladesh. Their definition of nonland assets is not given, although one would presume that the villagers had few assets.

Pitt and Khandker's (1998) paper is based on a quasi-experimental household survey carried out in 87 villages in 29 randomly drawn thanas (sub-districts) during 1991-92. 15 villages had no credit program, whereas all-females groups operated in 62 villages and all-male groups in 50. 1,798 households were sampled divided up into 905 credit program participants in target households, 633 target households not involved in credit programs, and 260 households that didn't qualify to join a program.

Joint hypothesis tests in their study reveal that credit provided to women has a significant effect on all of the six above outcome variables at the .05 level of significance (from $\chi^2 = 8.39$ to $\chi^2 = 53.11$), whereas credit provided to men only has a significant effect on boys schooling ($\chi^2 = 9.49$). Annual household consumption expenditure increases 18 taka for every 100 taka of credit that women borrow compared to an 11-taka increase with loans to men. 100 taka of credit from BRAC, BRDB and GB also increases the worth of the female clients' nonland assets by 15, 29, and 27 taka respectively. Group-based credits appear to increase the productivity of female market time rather than the supply of market time, whereas credit to both genders reduces the labour time of adult male family members. Pitt and Khandker (1998, p. 984) conclude that "these labour supply results suggest that one other reason the effect of program credit on total

household expenditure on goods is higher for women than for men is the increased consumption of leisure associated with male borrowing.”

A later study (Pitt et al., 2006) utilizes the 1998 study’s survey collected in 1991-92 and includes a 1998-99 survey. Survey questions are designed to measure the empowerment of female clients, which is not the same as capital creation, but of interest are the thematic groups of mobility and networks (social capital) and activism, which includes an awareness of law and politics (human capital). They find that women’s participation has a positive effect on their empowerment and that male participation has a negative effect on female empowerment in the households of these male clients.

An Economic Trade-off?

Despite the attention that female clients have received in regard to repayment rates and their impact on the family, it has been suggested that targeting women may involve a trade-off of long-term economic development for short-term welfare benefits (McKee, 1989). Kevane and Wydick report that “there is a heated debate in the literature over whether this trade-off exists” (2001, p. 1226). They present two studies that claim that male entrepreneurs may more aggressively expand their businesses when they gain access to credit. Downing (1990) finds that male clients have a tendency to invest in businesses that offer higher profits, whereas female clients tend to diversify over various businesses that provide a more secure subsistence level of income. A study of loan use in

RD-12, the Bangladesh MFI mentioned previously, reports that the rates of return for male entrepreneurial activity averages 211 percent, while the rates of return for females averages 145 percent (Matienzo, 1993). Goetz and Sen Gupta also add that “low income women borrowers in Bangladesh invest cautiously in low-risk, familiar, low productivity enterprises” (1996, p. 57).

Haase (2007) presents results from his dissertation (Haase, 2006) on microfinance borrowers in a short article and reveals that men earn 32 percent more than women. He finds that these differences are not due to differing levels of human capital, but “because they (women) are constrained to less lucrative sectors of the economy and must balance their work schedule with household duties” (Haase, 2007, p. 4). A lot of the theory that Haase relies on appears to be very similar to organisational ecology, but he defines it as “gender segregation” (2007, p. 7). One major limitation with this short article is a lack of detail regarding his findings.

Haase employed three methods. Firstly, his survey, which was carried out in May and June 2002, included seven of the ten biggest MFIs in Nicaragua. 80 clients from each MFI were selected with a stratified random sample. All agricultural borrowers (157) were excluded, leaving 403 people. Of these, 284 (70.5 percent) were women and 119 were men. Secondly, 65 people (32 men and 33 women) from the above MFIs originally surveyed participated in 14 interviews composed of seven men’s groups and seven women’s groups between December 2004 and January 2005. Thirdly, Haase interviewed administrators and staff in the seven MFIs.

Haase justifies his decision to exclude agricultural borrowers by arguing that “the sample did not beget enough women in agriculture to make a reliable comparison to men” (2007, p. 4), but considering that agricultural work is generally associated with low income, this may have altered his results considerably in favour of males. Also he examines six other forms of activity and compares males with females, but if males are evenly distributed in every activity they still only represent a small sample of about 20 in each. Only about 9 or 10 males (8 percent) ran small shops selling a wide variety of items (pulperias), whereas 24 percent of women also managed these small businesses. Pulperias are the least profitable economic activity. Also, it is not clear whether all the clients surveyed had businesses as males tended to dominate activities, such as transportation and skilled labour, in which they may have been employees. Only one percent of women (less than 3) were involved in each of these activities, but Haase did not exclude these activities. Transportation is the most profitable activity with manufacturing close behind. Only 6 percent of women (about 18) were also involved in manufacturing. It stands to reason that all economic activities should have been retained in the survey including agricultural work and this may have reduced the advantage that males enjoyed.

Haase (in Table 2, p. 7) presents information about monthly income according to years of work experience. However, this is only monthly net income for a primary activity. It seems that women often juggle more business activities, even if seemingly insignificant, and if more than one business had been included this may have reduced the discrepancy in income comparisons. Even so there is

no significant difference between males (\$263) and females (\$255) with between one to three years work experience.

Haase (2007) could also have examined income growth with work experience and not just net income considering that males usually enjoy an initial advantage. It's obvious that males will usually perform better in absolute income almost everywhere. There are five time periods in Table 2 (in Haase, 2007, p. 7): less than 1 year; 1-3; 4-6; 7-10; and more than 10. Oddly enough women's income rises by 11.4 percent, drops by 22.4; rises again by 22.7; and drops by 4.1. Male income appears to follow a more logical cycle, although there is no data for the period of less than one year so a comparison cannot be made based on the relative growth of initial income. Male income rises by 4.2 percent (from between 1-3 and 4-6 years), rises again by 14.6, and finally drops by 12.1. Therefore females actually perform better in relative income growth in two of the three measures. Even though there is no initial measurement of male income for less than one year of experience, there is no vast difference in income growth between the genders. Between one and three years and more than ten years experience, males increased their income from \$263 to \$276. That is by \$13 or a modest 4.9 percent. Female income fell from \$255 to \$233 by \$22 (8.6 percent). However, this would appear to be total work experience and not work experience after access to microcredit.

Other authors would agree with Haase's conclusion. Whether microfinance actually empowers women is hotly debated with critics such as Rankin (2002) arguing that microfinance reinforces rather than transforms the

gender gap of labour and power. Women are said to stick with traditional household profit making activities that will not aid them in developing their limited stocks of social capital (Goetz & Sen Gupta, 1996). Household specialisation may make women more dependent on male household members in order for women to acquire access to goods and services found in the outside environment (Armendáriz de Aghion & Morduch, 2005). Goetz and Sen Gupta (1996) also provide evidence that it is husbands who control microfinance credit and the benefits of its investments. In contrast to the above perspective, however, Clark (1991) insists that females with access to credit provided by MFIs will perform just as well as male clients if not better.

A study by Kevane and Wydick (2001) was carried out in FUNDAP, a Guatemalan ACCION-affiliated MFI, on groups of three to six clients composed of 76 all-male groups; 14 all-female groups; and 47 mixed groups. The 1994 survey results consisted of 260 FUNDAP borrowers and 82 entrepreneurs who possessed similar characteristics but were located just outside of the program's range. Although there were 94 female entrepreneurs and 264 male entrepreneurs in the original survey, the sample includes very few all-female groups and contains an average of almost 2 clients per group so there may be some repetition of group tendencies. Also there is no clear separation in the results for all-male groups, all-female groups, mixed groups, male control participants and female control participants. I assume that the "women only" column in Table 4 (in Kevane and Wydick, 2001, p. 1232) does not include the approximately 20 women in the control group, but it probably includes women in mixed groups.

Based on the details given about Kevane and Wydick's (2001) sample, we can make some assumptions about how the sample was divided up between the different group categories. If an average of two women were surveyed from all-female groups (28 in total), then 46 women (62.2 percent) came from mixed groups (about one per group). If an average of two males came from all-male groups (152), then 50 (24.8 percent) came from mixed groups. Mixed groups have the worst performance in terms of moral hazard and mutual insurance. If more than two females came from each all-female group, so that fewer females are sampled from mixed groups, then each all-female group receives more representation in the survey than other groups. The unit of analysis should have been the group and, therefore, only one client should have been sampled in each group, although results for males and females in mixed groups may have been different. Also, mixed groups may be significantly different from all-female groups so including a lot of females from mixed groups would not have resolved the problem of having too few all-female groups and in fact this would stunt the results of females. Taking this into account, results for females were quite encouraging.

Females (4.38 years of formal education) in Kevane and Wydick's (2001) study tend to be better educated than males (3.63), more heavily located in urban areas (0.60 versus 0.22; 1=in urban area; 0=in rural area), and more likely to be engaged in retail activities (0.51 versus 0.80; 1=productor (small-scale producer "e.g. handicrafts, candles"); 0=comerciante (retail trader)). Males tended to have about 44.9 percent greater initial loans (about US\$205.82 at the time) and 39.5

percent greater current loans (US\$378.55). Female entrepreneurs had fewer employees before credit (0.69) than male entrepreneurs (1.06). Percentage changes in employment after receiving credit are roughly the same between genders (about 70 percent). Although initial levels of sales between males and females were similar (women being slightly lower) the percentage change in sales is smaller for women (60 percent compared to 75 percent).

The descriptive statistics reveal that all-female groups display lower instances of loan misuse (the mitigation of moral hazard) and a greater reliability in repayment, whereas all-male groups practice greater intra-group insurance or mutual help. Mixed groups perform the worst in all three areas. Logit estimations reveal the following aspects about group behaviour that are significant at the 95% level of confidence: moral hazard decreases when clients feel they have a moral obligation to repay a group loan, but increases when members feel that it is difficult to apply sanctions; mutual insurance increases when members are males, when they engage in the same business, and when members are older; and mutual insurance decreases when members were acquainted more before the foundation of their group and when their businesses were farther away in distance.

Based on tobit estimates of determinants of change in the number of employees after holding all variables constant at the sample means, except for age and credit program participation, the authors also find that young women during child bearing and child raising years (from 20 to 30 years old) generate less employment than males, but that older women (from 34 to 62 years old) generate more employment. In fact, female clients between the ages of 34 and 50 generate

more employment than male clients of any age. However, because males are more likely to be small-scale producers, the actual employment generated by enterprises in the credit program may be skewed towards male enterprises.

The authors (2001, p. 1228) calculate that female-owned businesses are “likely to be smaller” due to a “higher marginal value of home time” and this is reflected in the mean for employees before access to credit. Micro-entrepreneurs that do not belong to credit programs generate consistently less employment than both male and female clients with female non-clients consistently generating less employment than male non-clients. Tobit estimates of determinants of change in the number of employees are significant for age and males (99 percent level of confidence); male and female productores (99 and 95 percent respectively); and males in the credit program (95 percent).

Kevane and Wydick find that “female entrepreneurs overall show little statistically significant difference from their male counterparts in their ability to generate increases in sales” (2001, p. 1227). OLS estimates of determinants of log change in sales reveal that time in the program is significant for women and participation in the program is significant for women and men (all at the 95 percent level of confidence). There is less growth in sales (for the whole sample and for women) and employment (for women) in urban areas, although this is only significant at the 90 percent level of confidence. As there are more women in urban areas in the sample this affects negatively the performance of women.

Another study conducted in western Guatemala by Wydick (2002, p. 489) finds that the long-term growth of hired labour for female clients of FUNDAP is,

“surprisingly”, slightly higher than that of male clients. “Gender differences were also significant among credit program participants, with female entrepreneurs displaying (much) lower rates of program drop-out, higher rates of employment generation, and greater enterprise stability” (Wydick, 2002, p. 490). Females also returned to the non-entrepreneurial labour market much less than men and resorted much less to foreign emigration. Males, however, were more inclined to redirect profits into enterprise investments, while females used profits to improve household consumption.

Wydick’s (2002) paper takes into account a later survey in 1999 to record changes in economic and welfare variables to the enterprises and households of 239 participants since the 1994 survey. 43 borrowers were surveyed inside the city of Quezaltenango, which had a population of 96,000, while 106 came from the surrounding area. Another 4 borrowers came from the town of Totonicapán (9,000 people) and 90 came from the surrounding rural area. A control group was included consisting of 140 new borrowers to minimize self-selection bias. Clients in the control group were asked questions about their enterprise at the time of the survey, one month before joining the credit program and five years before joining, so some of this recall data may have been inaccurate.

It should be noted that only 43 borrowers in the main sample came from urban areas, however, Quezaltenango would not qualify as a large metropolitan area, so it is doubtful that the culture of Quezaltenango was much different from those of the nearby towns or villages. On the other hand, Wydick classified 63 borrowers in his sample as urban borrowers, probably including borrowers from

towns like Totonicapán. Only 58 borrowers (24.3 percent) had remained in the program. Retention rates in the program were significantly higher for urban borrowers than for rural borrowers (37.3 to 20 percent; p-value = 0.01) and also higher for women than for men (29.6 to 22.2 percent), but not statistically significant (p-value = 0.24).

Female enterprises continued to grow very slowly in hired labour over the study period by 1.6 percent, whereas the growth of male enterprises dropped by 24.5 percent. Females borrowers generally performed better than males in almost all categories in generating hired labour, especially in rural areas (0.0 to -28.0 percent), in manufacturing activities (50.0 to -17.5) and for those 35 years old or more (53.3 to -17.9). Female borrowers also generated more hired labour in urban areas (7.1 to 0.0 percent), although this probably wasn't significant. Males performed better in the control group (4.9% growth) compared to females (no change).

Taking into account initial statistics for both genders before joining the MFI, the subsequent performance of female clients was encouraging in a comparative sense. Before joining the credit program, between 6 months and 6 years before the 1994 survey, females had an average of 0.72 full-time employees and males had 1.01. From the period before the 1994 survey, females doubled the employees in their enterprises to 1.44, whereas males increased employment by 83.2 percent to 1.85. Then between the 1994 and 1999 surveys females increased employment slightly by 1.6 percent to an average of 1.28, whereas employment in male enterprises dropped by 24.5 percent to an average of 1.33 workers. From the

initial access to credit before the 1994 survey, females had increased their number of employees by 0.56 (77.7 percent) in 1999, whereas males had increased theirs by 32 (31.7 percent). Therefore the relative growth of hired labour for female entrepreneurs was far greater overall. This data in Wydick (2002, p. 497) appears to include all of the 239 borrowers, including those who dropped out and is consistent with the findings of Kevane and Wydick (2001) regarding employment generation.

Male borrowers (88.6 percent) were generally able to expand their sales revenue at a greater annual rate from 1994 to 1999 than female borrowers (70.4 percent), except in the production of corte (traditional Guatemalan cloth) (72.3 to 102.9 percent). Urban (117.1 percent) and rural (80.7) males both increased their sales revenue more than urban (70.8) and rural (70.0) females. Females (57.3 percent) in the control group, however, performed better in sales than males (41.3) in the control group.

Wydick (2002) also questioned the literature (Clark, 1991; Downing, 1990; Pitt & Khandker, 1998) that explores whether female entrepreneurs are more focused on securing subsistence consumption for their household, as opposed to the riskier investment projects of males. Wydick (2002, p. 503) concludes that “gender differences became clear in the responses to ranking the three priorities” (reinvesting in the business; purchasing food and clothing for family members; and saving to purchase land) in relation to the use of business profits. The accumulation of agricultural land is the most common form of household saving in this area. An inspection of the results reveals very little

difference between the propensity to reinvest in a borrower's business with males (1.73) seeing this as a slightly higher priority than females (1.82; 1 = most important; 3 = least important). Females saw the purchase of food and clothing as a far greater priority (1.57 to 2.03) while males placed more importance on purchasing land (2.19 to 2.59). However, a comparison of 49 male and 11 female borrowers in the Totonicapán region revealed that the female borrowers had experienced a greater percentage increase in their land holdings (28.6 to 19.9 percent), even though males owned more land.

Table 6 (in Wydick, 2002, p. 504) reveals some support for the hypothesis that males are more likely to reinvest in a business enterprise because there was a significant difference (p -value = 0.00) in borrowers' opinions about the impact of the credit program with 64.1 percent of males claiming they had bought new equipment compared to 39.2 percent of females. Wydick adds that "this difference may be partly explained by the greater presence of female entrepreneurs in retail rather than manufacturing enterprises" (2002, p. 504). Also, there appeared to be no significant difference between males (65.8 percent) and females (60.8) affirming that the credit program had helped them to extend their business. Males agreed at a higher rate than females that the credit program had helped them to hire new employees (35.9 percent of males compared to 29.4 percent of females; p -value = 0.34), to make structural improvements to their home (77.8 to 68.6; p -value = 0.16), to purchase new home appliances, "such as a refrigerator, mixer, or oven" (47.0 to 45.1), and to support their children in progressing further in school (65.0 to 64.7), but none of these results appear to be significant (Wydick, 2002,

pp. 504-507). In contrast, females affirmed more often than males that access to the credit program gave their business stability and less profit volatility throughout the year (58.8 percent of females compared to 56.4 percent of males), sales growth (72.5 to 70.9), more savings (54.9 to 47.9; p-value = 0.34), and a greater quantity of food and clothing for their children (78.4 to 75.9; p-value = 0.68). However, none of these results appear to indicate a significant difference either.

Wydick concludes that “in general, gender differences do not appear to be hugely significant among the sample of borrowers, and may frequently be attributed to patterns in the female life-cycle” (2002, p. 507). Female borrowers may not only dedicate a larger share of their income to household consumption, but also have more of an impact on employment generation. This leads Wydick to the following conclusions:

It would imply that female entrepreneurs are either: 1) more efficient managers of enterprises, able to generate higher profits per unit of borrowed capital than male entrepreneurs; 2) employers of more labour-intensive production technologies; 3) more disposed toward sacrificing their own consumption needs for those of the household; or 4) some combination of these (2002, p. 508).

Other studies support Clark’s (1991) argument that female clients perform comparatively well. In a credit project, organized by the United States Agency for

International Development (USAID) in the Dominican Republic, the loan performance of women, who represent 43 percent of the impoverished street vendors and 17 percent of the somewhat better-off micro-entrepreneurs, is as good or better than that of men (Carloni, 1987). Female micro-entrepreneurs also create more jobs (1.5 new positions) than male micro-entrepreneurs (1.3). As we have seen above, Pitt and Khandker's (1998) results also agree with Carloni's (1987). They find that female clients in Bangladesh increase to a greater extent the labour supply of both sexes. Pitt and Khandker suggest that group-based credit improves household consumption in Bangladesh "presumably by increasing the productivity of women's market time rather than by increasing the supply of that time" (1998, p. 984). Armendáriz de Aghion and Morduch (2005), unlike Goetz and Sen Gupta (1996), view the cautious investment behaviour of women as a key success factor that may give them an advantage over male clients. It could be argued that if the sales, profits, and employment generation of female clients is not significantly different to that of male clients, and that if females invest more income into satisfying the basic needs of the family, including the human capital of children, then females with microenterprises in developing countries may actually contribute more to the economic growth of a community.

2.4 Gender and Loan Methodology

In this section I will look at the impact that gender and loan methodology have on capital creation. I begin by briefly looking at individual loans and the circumstances under which they may have more of an impact than group loans. As we have seen, development literature indicates that group loans to poor clients have advantages over individual loans and that women may particularly benefit from a group loan methodology. The sub-section on intra-group learning proceeds to explain how information sharing in groups will create more human capital than individual loans will. The sub-section on group cohesion and trust explains how social capital may not be important before a group is created, but that the group cohesion and trust generated after the formation of the group will contribute to the growth of a client's social capital in the larger community. Finally, I will examine how peer-group pressure and community pressure may increase the level of capital creation in a group and how female clients may be more susceptible to these social forces and to the pressure exerted by MFI staff.

Individual Loans

MFIs that employ individual loans serve fewer women (46 percent), than group lenders with solidarity groups of 3 to 9 borrowers (73 percent), and village banks with groups of more than 10 clients (89 percent) (Armendáriz de Aghion and Morduch, 2005). Individual loans tend to serve better off clients and charge

lower interest rates and fees, due to lower costs relative to loan size, than MFIs that loan to groups (Armendáriz de Aghion and Morduch, 2005). Individual loans are said to be possibly better suited to areas that are relatively industrialised, with sparse or heterogeneous populations, and characterized by social divisions (Armendáriz de Aghion and Morduch, 2000, 2005). By the turn of the twenty first century, the Grameen Bank and BancoSol were said to be changing to individual loans for their wealthier and better-established clients. Some clients may also prefer the greater independence that individual contracts offer. Overall, Armendáriz de Aghion and Morduch (2005) argue that there may be more efficient contracts than the group contract. However, there appear to be no empirical studies that evaluate these supposedly more efficient contracts.

Group Loans

There is now a considerable amount of literature that questions the wisdom behind group loans. Disincentives and corruption may be fostered if group methodology, which relies on peer-group pressure, is adopted by MFIs instead of the incentives and penalties that are a part of individual loans (Mayoux, 2001). Mayoux's (2001) research in Cameroon reveals that women refuse to repay their loans when they know that others who had repaid were denied loans due to defaulting group members or Federation members. Better-off clients with larger loans, who are probably less motivated by the prospect of further loans, are often responsible for repayment problems. Loans in Cameroon are often distributed

unequally with more powerful community members receiving larger loans. Group lending may only be attractive with smaller loans as costs due to defaulting will grow as the size of loans increase (Armendáriz de Aghion & Morduch, 2005). Furthermore, clients with high business growth or larger businesses may feel restrained by group contracts (Armendáriz de Aghion & Morduch, 2000; Giné & Karlan, 2006). Participating in group meetings and monitoring other clients also can have high economic costs in terms of the time that a client would otherwise prefer to invest in business, family or recreational activities (Armendáriz de Aghion & Morduch, 2000, 2005). Not only may monitoring be imperfect, but punishments for defaulting may also be too harsh and, accordingly, staff may act with greater flexibility than they are supposed to on paper.

Various studies have attempted to compare the benefits of group loans with those of individual loans. McKernan (2002) uses the primary data from the 1991-92 survey above (in Pitt and Khandker, 1998) on household participants and non-participants in three MFIs in Bangladesh to measure the total and non-credit effects on self-employment profits. She provides evidence for the success of group loans, but does not compare these with individual loans nor does she compare male and female clients. Although McKernan does not measure the composition of non-credit effects, she attributes an important proportion of the success of group-lending programs to “group cohesion, joint liability, incentives to share information in the group, and social development programs that serve to differentiate group-lending programs from banks or individual-lending institutions” (2002, p. 109).

Gomez and Santor (2003) set out to test the difference between group and individual lending in a Canadian MFI in two regions. They find empirical evidence that borrower default rates are lower with group lending. Furthermore, they point out that group loans benefit from both selection into the program and from incentives within the group, although these two channels are “inferred rather than measured” (2003, p. 18). One possible limitation of Gomez and Santor’s study is the difference between the ethnic composition of group clients and individual clients with 10.4 percent more clients of African origin participating in individual loans and 17.4 percent more immigrants, probably from more traditional societies, involved in group loans.

Abbink, Irlenbusch and Renner (2006) set out to test the success of group size and social ties in a laboratory setting using German students as subjects. According to the experiment, group lending outperforms individual lending with social ties making no significant difference. Although the authors test groups of two, four and eight experimental clients, there are no statistics dealing with individual loans as such. Self-selected groups were formed before the experiments and monitoring between clients would have been superior in an authentic microfinance environment. Related to authenticity, before or during the experiment no mention was ever made of “microfinance”, no experimental businesses were formed or run and no loans were given. Armendáriz de Aghion and Morduch (2005) have other reservations about the design of this experiment. In particular, participants know the experiment will stop in the tenth round.

Giné and Karlan (2006) conducted a field experiment for one year's duration with a bank in the Philippines to test whether group liability increases a client's profitability and improves access to financial markets. Half of the "centers" of group liability, which were composed of around 20 female clients, were transformed into individual liability "centers". The authors find that the new individual liability "centers" do not have lower repayment rates and that these "centers" have higher growth in size due to new clients. It would seem, however, that many individual clients had already experienced the benefits of group loans as far as the creation of human and social capital were concerned. Also, the individual liability "centers" still benefitted from group lending logistics, such as a common site and schedule for meetings and repayments. These are vital components of the group lending methodology.

The Grameen Bank and other MFIs successfully deal with the problems of returns to scale, adverse selection, moral hazard and monitoring by focusing on group liability and cooperation (Giné & Karlan, 2006; Morduch, 2000; Remenyi, 1999b; Simanowitz & Walter, 2002). There are various aspects that motivate clients with group contracts: they enjoy the meetings themselves, sharing ideas, learning and the social aspects of group meetings (Armendáriz de Aghion and Morduch, 2005). Pitt and Khandker argue that "group members can monitor each other with relative ease as well as train and assist low-productivity members" (1998, p. 962). Navajas, Schreiner, Meyer, Gonzalez-Vega and Rodriguez-Meza (2000) find that group lenders have more depth of outreach (i.e. provide more

loans to the poorest) than individual lenders because they substitute joint liability for physical collateral.

In addition to the pressure of meeting the basic needs of the family, it could be that group forces are influencing women to behave with more social responsibility and, as a consequence, they misuse funds less. Group support may motivate women more than men. Women working as employees in BRAC demonstrate high levels of group support. “They cooperate by getting loans from each other, in household work, and even in sharing mental pressure” (Khan, 1999, p. 434). Pitt and Khandker state that in Bangladesh “it is easier for a woman to interact with the organiser (if the organiser is a man) when in the company of a larger group of women” (1998, p. 962). Groups also provide women with opportunities for social learning, gender solidarity and ‘group reproduction’ when they develop into a pressure group to pursue a political objective (Velasco & Marconi, 2004). Group lending to women in Bolivia stimulates collective public action and these externalities are achieved when intra-group equality is high and the group has a collective experience of adversity. The microfinance programs that offer a range of services, such as training, health services and legal advice, create intense loyalty from women. During the mid 1980s economic crisis in Bolivia, while the bulk of the microfinance loan volume declined during the recession, the volume of the all-female integrated microfinance institutions continued to rise (Velasco & Marconi, 2004).

Intra-Group Learning

McKernan (2002) describes how group-based MFIs in Bangladesh motivate the members of groups to assist each other. In all three programs included in the survey McKernan analyses, group borrowers are motivated to look for their fellow members for advice or assistance instead of turning to MFI staff. She refers to a model provided by Varian (1990) that explains how two-period incentive schemes could influence profits through incentives for the sharing of information between high-productivity clients and low-productivity clients. The number of high productivity clients would then increase. The sharing of information and learning can directly affect profits by providing extra inputs towards the production of the microenterprise or indirectly by increasing the productivity of other inputs. McKernan summarizes the empirical implications of the theory she has presented:

If microcredit programs increase access to physical and human capital, they will enable households to undertake or expand self-employment enterprises. If these programs are bundling social development and training with credit and if they induce members to share information as in Varian's incentive scheme, we should see an increase in profits above and beyond the effect of capital on profits (pp. 97-98).

Access to financial capital is not an advantage of group loans and neither is access to social development programs and training, although these programs

seem to be more prevalent among group borrowers. Incentive schemes (peer monitoring, joint liability, and the loss of access to future credit) and the sharing of information (see Ghosh, 2004) increase both human capital and economic capital. Barboza and Barreto (2006, p. 316), for example, found that “learning by association through peer monitoring”, increased repayment rates in AlSol, a MFI that specializes in female group loans in Chiapas, Mexico, whereas monitoring amongst peers did not.

Group Cohesion and Trust

The utilization of social capital in the formation of groups has been seen as a beneficial aspect of group loans, however, social capital is not inherently beneficial (Mayoux, 2001). There is a down side to social capital often not found in the microfinance literature, such as the exclusion of new clients who have underdeveloped social networks; the negative aspects of community pressure, which can inflict severe social sanctions and stifle individual creativity and growth; the potential for collusion against the MFI; and the possibility that communities, ethnic groups and castes high in social capital may be distrustful of and conflictive with others that are different (Armendáriz de Aghion & Morduch, 2000, 2005; Fernando, 1997; Mayoux, 2001; Rankin, 2002). Close monitoring between group members can also lead to pettiness, rivalry, hostility and the disintegration of group solidarity (Fernando, 1997).

A debate has arisen in the microfinance literature about the influence of social capital on groups (Abbink et al., 2006; Armendáriz de Aghion & Morduch, 2005). Social capital has been thought to be highly related to social sanctions in microfinance, however, strangers have been found to have similar repayment rates to friends. Studies that find that social capital is not a significant influence on repayment rates would appear to question the role of joint liability and social sanctions. Repayment rates in groups and micro-business growth may be influenced by the level of trust of group members and/or the proximity of members' abodes. The close proximity of members' homes may improve monitoring and/or the level of social cohesion in groups (Armendáriz de Aghion & Morduch, 2005). According to Karlan, his Trust Game experiment "demonstrates that trustworthiness is an important component in determining the success of group lending programs" and "if harnessed and/or identified, lenders can help solve failures observed in the financial markets of the poor" (2005, p. 1698).

Family members or friends may represent an unnecessarily high level of social capital, but social cohesion may still be a vital influence, which emphasizes the key role of the environment in influencing group success. An environment with a high level of social cohesion may promote higher peer-group and community pressure. Laffont and Rey (2003) argue that both close social ties and information sharing give group contracts an advantage over individual contracts, although this may increase the likelihood of collusion against the MFI. But even

in the case of collusion, these authors still argue that group lending is superior to other alternative loan methodologies.

Peer-Group Pressure

Peer-group pressure has been known to be very effective in formal businesses in the developed world. Barley emphasizes the importance of peer-group pressure in his review of another paper on self-managing teams:

He (Barker, 1993) discovered that teams replaced supervisory control with peer control and that peer control was subtler, more effective, and potentially more coercive than supervisory control, because workers now policed each other in the service of their organization's goals and objectives. As any high school student can tell you, peer pressure is always harder to resist than the pressure of authority (2006, p. 18).

Some of the benefits of peer groups in a Grameen Bank replication in Chicago were said to be the filtering out of business projects that lacked potential and the inclusion of local know-how, informal assistance, encouragement and emotional support (McKernan, 2002). The influence of joint liability has been debated in the literature with some scholars arguing that self-selection into loan methodologies exerts a greater influence than joint liability. A laboratory experiment performed by Abbink, Irlenbusch and Renner (2006), however, revealed insignificant

differences between self-selected groups and groups that did not select their loan type.

Female microfinance clients may be influenced to a greater extent by peer-group pressure than male clients. This would seem to be a crucial factor contributing to the success of female groups that is largely overlooked in the literature, although mentioned as an advantage of lending to women by Armendáriz de Aghion and Morduch (2000, 2005). These authors report that women in microfinance programs have been known to be more sensitive to disparaging remarks from group members and staff. Men, on the other hand, tend to reject and resist criticism to a greater extent. Women also have a greater tendency to stay in or around the home and are, therefore, easier to locate, monitor and pressure, and they may find it easier to maintain membership in groups and programs over the long term. Therefore, according to Armendáriz de Aghion and Morduch, “because women are less mobile and more fearful about social sanctions, they tend to be more risk averse than men and more conservative in their investment projects” (2005, p. 189). Social network theory, in which the female tendency to favour inter-personal relationships over instrumental, may explain why peer group pressure and group participation may have had a large impact on the female clients of microfinance institutions.

Community Pressure

In addition to peer-group pressure, the community will also pressure a defaulter to repay their loans. Community pressure is expected to be significant in group-based loans because other members of the group may exert pressure on the defaulter by appealing to family, friends and other members of the community. The higher social cohesion is in a community and the more collectivistic the local culture is, the more likely an individual will be to respect social and economic commitments (Besley & Coate, 1995; Khavul et al., 2009). For example, in the Palar Valley of Tamil Nadu, India, when member tanners of common effluent treatment plants (CETPs) are late in their payments, the manager of the CETP will not only approach the individual member, but will appeal to the member's close relatives (Kennedy, 1999). The small towns of the Palar Valley have a high level of social cohesion due to a shared identity and overlapping kinship, personal and religious ties.

Social control through the potential threat of reprisals from within the community is an effective tool for ensuring cooperation, especially when an individual's status and reputation are at stake. In an effort to prevent the culturally legitimate appropriation of female clients' funds, Grameen Bank staff communicate to husbands through their wives that if the wife fails to repay her loans, the husbands will face the embarrassing situation of having their names mentioned in public and may be confronted by bank staff and members (Hashemi et al., 1996). MFI staff have been known to consult the friends of a potential borrower, her neighbours, extension workers and/or other key community

members; visit the borrowers' homes and businesses; and ask for character references from community figures before approving a loan (Armendáriz de Aghion & Morduch, 2000, 2005). Public repayments at group meetings are ideal for exerting social pressure on lenders. A borrower's reputation in the community will most probably be a crucial factor in obtaining future access to credit.

MFI Pressure

MFI staff may not only pressure the defaulter's loan group, but also the larger population of clients in an area, and this also creates greater community pressure. MFI staff have been known to threaten to withdraw all loans in an area, which means that joint liability can be practiced between groups (Armendáriz de Aghion & Morduch, 2005). Those clients who are ready or almost ready for another loan are the ones most susceptible to this form of pressure. Armendáriz de Aghion and Morduch also suggest that it is women who "are often more easily swayed by peer pressure and the interventions of loan officers" (2005, p. 183).

2.5 Loan Methodology, Environment and Group Size

Loan Methodology and Environment

Related to the debate on joint liability, there doesn't appear to be sufficient literature that explains why large groups may be preferred by MFIs operating in rural environments and why individual loans may be preferred by MFIs operating in large cities. This could be explained by cross-cultural management theories of cultural dimensions that can be applied to national environments. In particular the cultural dimension of collectivism and individualism may explain why large groups may function better in rural environments where communities are still more cohesive (Hofstede, 1997). Some microfinance papers indicate that rural clients live in more closely-knit communities where people tend to have more information about their neighbours in contrast to urban dwellers, although they do not mention the cultural dimension of collectivism (Abbink et al., 2006, p. 616; Armendáriz de Aghion & Morduch, 2005, pp. 93-94, 109). Other authors state that people in rural areas tend to be more collectivistic than urban dwellers (Erez & Somech, 1996; Hofstede, 1997, pp. 65, 74).

If people are more collectivistic in rural areas, higher levels of peer-group and community pressure should also exist in these areas. Gomez and Santor (2003) find that borrowers in certain neighbourhoods in Canada outperform others and they discover a negative coefficient in urban areas in contrast to suburban areas. This may be due to less group or community pressure in urban areas. They,

however, don't discuss rural areas and their study was not carried out in a developing country. In Mexico, the social pressure on clients to repay should be higher due to higher levels of collectivism, although legal pressure is expected to be much lower.

The creation of capital by group borrowers and individual borrowers in different environments has hardly been compared even though repayments rates appear to be lower in urban areas. Bank Rakyat Indonesia (BRI), a financially sustainable institution that provides individual loans to the non-poor has lower repayment rates in its urban programs than in its rural ones (Morduch, 1999).

Surveys on group loans carried out in Guatemala reveal mixed results for capital creation in rural and urban environments. In Kevane and Wydick's (2001) study there is less growth in sales in urban areas, although this is only significant at the 90 percent level of confidence for the whole sample and for women. Employment growth is generally less in urban areas and this is significant at the 90 percent level of confidence for women. The authors conclude that "there is some evidence that rural borrowers generate employment and sales at a greater rate than urban borrowers" (Kevane & Wydick, 2001, p. 1234).

Wydick (2002) includes a more recent survey in western Guatemala in his paper. For those who stayed in the program, urban borrowers (55 percent growth) performed far better than rural borrowers (0.0) in generating hired labour, and had better employment generation performance among those no longer in the program even though hired labour dropped for both urban and rural groups no longer in the program (-12.9 to -33.8). Wydick suggests that this advantage is due to higher

education levels amongst urban borrowers. However, fear of government permits, regulations, taxes and red tape may have also limited employment in micro-enterprises in order to avoid government attention. Urban borrowers generally performed better in sales except amongst current borrowers and in the control group. There was no notable difference in urban and rural sales amongst current borrowers (96.0 to 97.9 percent), but rural borrowers (66.9) in the control group greatly outperformed urban borrowers (32.1) in the control group.

Studies of group loans in Costa Rica and Bangladesh have reported that default rates are higher in wealthier towns where clients had more options, including alternative credit sources (Armendáriz de Aghion and Morduch, 2005), but another Bangladesh study on the Grameen Bank differs in that villages with better infrastructure (such as rural electrification, road length, educational infrastructure and commercial bank density) had higher repayment rates but also higher dropout rates (Khandker et al., 1995). Khandker and colleagues are not sure whether the dropout rate is influenced by increased opportunities for alternative employment, whether the credit needs of clients are later met by commercial banks or other lenders or whether clients graduate from the program. Referring to the study in Costa Rica, Morduch argues that that finding “lends support to the theory of dynamic incentives: where borrowers have better alternatives, they are likely to value the program less, and this drives up default rates” (1999, p. 1587). Due to the greater mobility of cities and greater availability of credit, defaulters may venture across town and borrow from another branch or another program. Wydick (2001, p. 408) finds in his 1994 survey of 137 groups

that “especially in rural areas, group pressure was also found to have a significant effect on deterring risky borrower behaviour, but the origin of this pressure stemmed from the need to remain in the group to maintain access to credit, rather than the threat of social sanctions from other borrowers.”

Although clients in urban areas may be more unreliable in their payments due to more alternative sources of credit, the Mexican MFI practice of focusing on village banking groups of between 10 and 50 clients in rural areas, solidarity groups of between 3 and 9 clients in small and large cities, and individual loans in urban areas may also be gaining in popularity in other regions (Griffin, 2008). In Mexico, Compartamos provides “Female Credit” to groups of 12 to 50 women in rural or semi-urban areas, “Solidarity Credit” to groups of 3 to 8 clients in urban environments, and “Individual Credit” to better off clients in rural and urban areas (Compartamos Banco, n.d.; EGADE, 2004). The Sarhad Rural Support Programme (n.d.) in Pakistan provides microfinance to groups of between 3 to 5 members in urban areas and between 15 to 20 members in rural areas. Khandker (1998) also recommended increasing the size of groups in Bangladesh, where MFIs primarily operate in rural areas, from 5 or 6 to 10.

According to Armendáriz de Aghion and Morduch, urban MFIs in Latin America and the transition economies of Eastern Europe have “eschewed group loans from the start” (2005, p. 120). Abbink, Irlenbusch and Renner suggest that it may be more difficult to create self-selected groups in urban areas of transition economies than in “closer-knit rural communities” (2006, p. 616). One noted MFI that mostly operated in urban areas with a group-lending contract was Banco-Sol

in Bolivia. This MFI is financially sustainable but targets mostly the non-poor (Morduch, 1999). Banco-Sol has moved a significant portion of its loan portfolio out of “solidarity group” contracts, which are still used for less-established clients, and into individual contracts for established clients (Armendáriz de Aghion and Morduch, 2005).

Group Size and Environment

There is also a need for research on the effectiveness of group size in rural and urban environments. Large groups of 10 or more clients (the village banking approach) will probably be more effective than small groups of between 3 to 9 clients (Grameen-type groups or solidarity groups) in rural areas where community is more cohesive. The effectiveness of large groups is probably due to higher levels of peer-group and community pressure in rural areas, and the higher levels of social capital and human capital within larger groups. On the other hand, the creation of large groups in rural areas may be more practical from the point of view of the MFI’s own performance. In rural areas, capital creation per capita may begin to decline with groups of more than 50 people and this may be true in urban environments with groups of more than 10 people due to lower levels of collectivism. Also, large groups may be rare in many urban environments, because from the viewpoint of the MFI, it may be impractical to form such groups.

Abbink, Irlenbusch and Renner (2006) address the question of group size in their experiment with German students. They state that “in practice, it is unclear how far group size affects repayment rates”, even though the Grameen Bank lends to smaller groups to keep “free riding and in-group coordination problems under control” (p. 615). Abbink and colleagues conclude:

Our results show that the performance of the experimental microcredit groups is surprisingly robust with respect to group size. Though the larger groups indeed manifest a higher tendency toward shirking, their superior dispersion of risk makes them perform at least as well as smaller groups in our parameter constellation (2006, p. 624).

Group size in this experiment ranges from 2 members to 8, so there is no measure of really large groups of 15 to 50 clients, which is about the range of large groups in Mexico. Without referring to the environment, Armendáriz de Aghion and Morduch suggest that “larger groups may be better able to deal with risks and less vulnerable to collusion” (2005, p. 101).

2.6 Contribution and Future Research

Loan Methodology

There is a gap in the literature focusing on loan methodology that I intend to partly cover. Three of the studies (Abbink et al., 2006; Giné and Karlan, 2006; Gomez and Santor, 2003) that I review above perform a comparison of individual and group loans with differing results, but the setting in each study has limitations. A rigorous study comparing both loan methodologies needs to be conducted with microfinance clients in a developing country, without the methodological problems of Giné and Karlan's (2006) study undertaken in the Philippines in which individual lenders were previously group lenders and still benefitted from group meetings. Armendáriz de Aghion and Morduch (2005, p. 101) comment that "empirical researchers have tried to shine a bit of light on questions around the roles of groups, but getting clean results has not been easy. In the perfect world, empirical researchers would be able to directly compare situations under group-lending contracts with comparable situations under traditional banking contracts." There are questions about whether self-selection or other program aspects (e.g. "management style, training policies, and loan officer behaviour") are influencing results (Armendáriz de Aghion and Morduch, 2005, p. 102). "The best evidence would come from well-designed deliberate experiments in which loan contracts are varied but everything else is kept the same. This can be achieved in a lab setting (see e.g. Abbink, Irlenbusch, and

Renner 2002⁷), but has not yet been done in the field” (Armendáriz de Aghion and Morduch, 2005, p. 102). Bruton, Khavul and Chavez (2011, p. 37), commenting from a business administration perspective, also stress the need for a comparison of the effect of loan methodologies on business performance, whereas Khavul (2010, p. 68) adds that “relatively little is known...about individuals who take microloans but do not rely on the support of a group.”

The studies (Abbink et al., 2006; Giné and Karlan, 2006; Gomez and Santor, 2003; McKernan, 2002) that aim to make a comparison of loan methodologies make no attempt to measure the group forces that may influence capital creation. A comprehensive explanation of group forces based on empirical evidence is lacking in the literature. Ahlin and Townsend (2007) have attempted to measure joint liability, social ties, cooperation, and social sanctions in Thailand, however, there appears to be limitations with some of their items, especially the proxy for joint liability, which is the percent of landless members in the group. Landless members in their sample do not have collateral and will have to pay for other defaulting members. This could be a proxy but it is also a proxy for wealth (or lack of wealth). The models Ahlin and Townsend consider fix group size at two and they do not discuss gender or take into account individual loans. Explanations behind capital creation in microfinance should consider mutual insurance, solidarity, intra-group learning, joint-decision making, peer-group pressure, and community pressure.

⁷ Abbink et al.'s 2002 working paper is now the 2006 paper that I have summarised.

Gender

I propose to fill in another gap in the literature on microfinance caused by the absence of a comparison of loan methodologies that takes into account gender. There is also a need to build up a more complete theoretical model to explain why traditional concepts about gender may need to be revised in the context of microfinance and the bottom of the pyramid. My dissertation aims to address the absence of empirical evidence and theory targeting the influence of gender on peer-group pressure, community pressure, and group participation. The theory of gender stratification (Blumberg, 1991)⁸ is usually not emphasised in the microfinance literature. For example, Armendáriz de Aghion and Morduch's (2005) comprehensive literature review briefly mention Blumberg's findings from a 1989 study as evidence of the advantage of serving women clients, but not as an explanation for high female repayment rates or female capital creation. For the benefit of practitioners, this study sets out to test the conditions under which female and male clients create more capital.

My dissertation offers to provide a more complete measurement of capital creation as the studies (e.g. Gomez and Santor, 2003; Kevane and Wydick, 2001; Pitt and Khandker, 1998; Pitt et al., 2006; Wydick, 2002)⁹ consulted for the above literature review have many measurement gaps. Business related economic capital, especially profit and physical capital, needs to be measured, as does social capital and human capital. Social and human capital should lead to the long-term

⁸ See section 3.3 for a summary of the theory of gender stratification.

⁹ See section 1.2 for a brief summary of measurement gaps in these studies related to capital creation.

creation of economic capital (Grootaert et al., 2004). This research also sets out to address the Mexican context in relation to the performance of MFI clients and to carry out an economic and social impact study of business owners.

Environment

I also aim to attend to the lack of research regarding the influence of environment on loan methodology. Although environmental forces are related to the debate on joint liability, there appears to be very little literature to explain why large groups of 10 or more clients may be preferred in rural environments and why individual loans are preferred by many MFIs in large cities. Environment may actually play a large role in capital creation depending on the loan methodology adopted. The possible link between collectivism and preferred loan methodology has not been emphasized and examined sufficiently in the literature.

Armendáriz de Aghion and Morduch (2005, pp. 93-94) suggest that further research should be carried out on environmental factors:

The village banks of Ayachucho represent a different context, one more typical of urban areas such as Mexico City and Bogotá, where populations are highly mobile and often have little information about each other. Can group lending still help to overcome adverse selection? Can group lending carry benefits even if the “getting to know each other” process is slow or imperfect?

Adverse selection is probably more easily overcome in rural environments where people are better informed about their neighbours and the families that live in the nearby vicinity. In urban areas less is probably known about the people that live in one's neighbourhood due to population density, population mobility and the more individualistic tendencies of urban dwellers.

Armendáriz de Aghion and Morduch (2005, p. 109) ask two further questions emphasizing the relationship between social sanctions and environment: "Will the threat of social sanctions be credible in small village communities among very close friends and relatives? Or, at the other extreme, can social sanctions have teeth in urban environments where borrowers come and go and remain fairly anonymous to one another?" Some studies¹⁰ find that having close friends or stronger social ties in a group actually worsens repayment rates, although other studies challenge this. There is definitely an area of opportunity for research that examines and explains the relationship between social sanctions and the environment.

¹⁰ See Armendáriz de Aghion & Morduch (2005, pp. 103-104).

CHAPTER 3: THEORY AND HYPOTHESES

3.1 Introduction

In this chapter I will present theory that aids in the explanation of my conceptual model and hypotheses. In the first section I will discuss the concept of culture and the controversy surrounding psychology-based theory that explains national and cultural differences. I will also examine three critiques of Hofstede's (1980; 2001) cultural dimensions. In the second section I discuss the cultural dimensions of collectivism/individualism and masculinity/femininity. The third section presents and explains my conceptual model, while the fourth section expounds each hypothesis.

3.2 Culture

Culture and Anthropology

What is culture? Kuper states that "in its most general sense, culture is simply a way of talking about collective identities. Status is also in play, however" (2001, p. 3). He emphasises that culture only provides a "partial explanation" for human behavior and that "political and economic forces, social

institutions, and biological processes” need to be included in a more complete explanation (Kuper, 1999, p. xi). Without under-estimating the power of culture, definitely other influences must be taken into account. However, it could be argued that political forces, economic forces and social institutions are also influenced by culture, which is in turn affected by the physical environment.

A multitude of definitions for culture exist. Geertz disapprovingly lists 11 distinct definitions for culture provided by Clyde Kluckhohn, one of which is “learned behaviour” (Geertz, 1973, pp. 4-5). This is what I consider to be the best definition of culture, although not the only one. A definition that shares this perspective is the following: (culture) “is the integrated sum total of learned conduct traits that are manifested and shared by the members of a society”¹¹ (Hoebel, 1975, p. 231). I basically agree with social psychologists that state that culture is largely acquired when we are children and that the older people get the less likely it is that they will change their deeply embedded belief systems. The ability to adjust or change one’s values indeed depends on the culture one has acquired. A culture that emphasizes greater tolerance of diversity should be a culture in which older members are more able to adjust their values. Hofstede states that values

are acquired in one’s early youth, mainly in the family and in the neighbourhood, and later at school. By the time a child is 10 years old, most of its basic values have been programmed into its mind...For

¹¹ Translated from Spanish.

occupational values the place of socialization is the school or university, and the time is in between childhood and adulthood (Hofstede in McSweeney, 2002a, p. 98).

Hofstede's view about the acquisition of culture would appear to agree with Shweder's cultural psychology perspective.

It is our view that children's emerging moral understandings are the product of continuous participation in social practices (the mundane rituals of everyday life), and those socially produced and reproduced understandings are the grounding for later attempts, reflectively or self-consciously, to reconstruct their own moral code (Shweder in Markus & Kitayama, 1992, p. 361).

Beliefs that societies come to share through socialisation are said to be social representations or cultural frames.

Social representations...are culturally conditioned ways of making sense of the everyday world and establishing the nature of social reality. They provide a shared framework allowing people to function in their social world and establishing a social code so that members of a given group can communicate with one another. Behavior and social representations are

dynamically interdependent and subject to change over time (Markus & Kitayama, 1992, p. 362).

Various interpretivist, positivist and postmodern schools of thought in anthropological circles have espoused differing scholarly concepts of culture since at least the 1800s (Kuper, 2001). At the beginning of the twentieth century, American anthropology developed from a debate between the school of Franz Boas, which saw culture as something that humans learned from a particular social environment, and the evolutionist school of thought (Kuper, 2001). During the 1930s positivists adopted both qualitative and quantitative methods in an attempt to untangle the causal relationships that explain cultural differences. At this time the debate over the correct method for conducting research on the topic of culture began to heat up. Paul Radin, for example, criticised renowned contemporary scholars for “abandoning the humanistic, historical study of culture and for trying to make ethnology a comparative, untimely quantitative science” (Bernard, 1995, p. 15). Positivists had begun to explore psychological mechanisms in order to explain collective behavior.

After the Second World War the social sciences began to enjoy a period of prosperity in the United States with cultural anthropology dominating the study of culture (Kuper, 2001). Talcott Parsons had introduced the concept of culture as a collective consciousness into traditional empiricist American sociology and was a large influence on leading anthropologists of the 1960s and 1970s, including Clifford Geertz, David Schneider and Marshal Sahlins (Kuper, 2001). According

to Parsons, collective symbols influenced the individual consciousness but did not dominate it. However, a new breed of anthropologist became increasingly convinced that society not only fashioned a world of symbols, but that it also dwelt within this native world of ideas. Even though psychological perspectives contributed to scientific understanding about collective perceptions and social identity, by the 1970s the interpretivist school (Geertz, 1973) was gaining ascendancy, soon to be followed by a wave of deconstruction led by post modernists (Kuper, 2001). The emphasis on psychological mechanisms and sociological analysis was deemed to be unsuccessful by the now dominant schools of anthropology, which transferred their intellectual preferences away from the social sciences towards the humanities (Kuper, 2001).

Geertz, for example, espoused a semiotic concept of culture that was based on symbols and signs to be interpreted through semantics, syntactics and pragmatics. “Believing, with Max Weber, that man is an animal suspended in webs of significance he himself has spun, I take culture to be those webs, and the analysis of it to be therefore not an experimental science in search of law but an interpretive one in search of meaning” (Geertz, 1973, p. 5). Geertz was very critical of positivism and attempts at operationalisation. “Operationalism as a methodological dogma never made much sense so far as the social sciences are concerned, and except for a few rather too well-swept corners – Skinnerian behaviourism, intelligence testing, and so on – it is largely dead now” (Geertz, 1973, p. 5). Such a comment today in the administrative sciences, however, would have little credibility with the vast majority of scholars. Although Geertz’s

argument in favor of an interpretive methodology is both eloquent and valid, his statement above reveals his intolerance of scientific perspectives that differ from his own.

He hastily discards two philosophical extremes, one of which claims culture is a “self-contained “super-organic” reality with forces and purposes of its own” (idealist) and the other that describes culture as a “brute pattern of behavioural events we observe” (behaviourist) (Geertz, 1973, p. 11). Overall, Geertz is most disdainful of Ward Goodenough’s (2003) cognitive anthropology, which sees culture as consisting of psychological structures which guide the behavior of individuals. Goodenough’s faction of cognitive science arose from developments in linguistics and focused on discourse theory and pragmatics (Harris, 1979; Kuper, 2001). Geertz reasons that analyzing culture through formal methods that resemble mathematics and logic is as “destructive” as the “behaviourist and idealist fallacies” that Goodenough had attempted to improve on (Geertz, 1973, p. 12). “Cultural analysis is (or should be) guessing at meanings, assessing the guesses, and drawing explanatory conclusions from the better guesses, not discovering the Continent of Meaning and mapping out its bodiless landscape” (Geertz, 1973, p. 20). Geertz alludes to an Indian story to argue that there is no end to potential explanations. “Cultural analysis is intrinsically incomplete. And, worse than that, the more deeply it goes the less complete it is” (Geertz, 1973, p. 29). He concludes his argument for an interpretive theory of culture by stating that “the essential vocation of interpretive anthropology is not to answer our deepest questions, but to make available to us answers that others, guarding sheep in other

valleys, have given, and thus to include them in the consultable record of what man has said” (Geertz, 1973, p. 30). To be able to consult records that include differing interpretations of events is indeed a valuable contribution to humanities and the social sciences, but should social scientists desist in their attempt to answer some of the deeper questions?

In the discipline of anthropology, due to the criticism of seminal authors such as Geertz, positivism has lost much of its earlier credibility. However, Geertz’s students in turn questioned his interpretive stance. They began to doubt whether it was really possible for an outsider to build up an understanding of a culture (Kuper, 2001). Postmodernists began to advocate that an anthropologist’s view of a culture is actually based on a contrived text that does not present a clear message and does not actually resemble reality.

It is amusing to contrast anthropology with the conservative discipline of administration in which symbolists and post modernists struggle for recognition. Overall, intolerance is prevalent throughout scientific philosophy in both disciplines. Adherence to a different methodological perspective at times is akin to biased football barracking. Some academics in administration, for example, insist that only a positivist study is “rigorous” and there are journals that will mainly publish only quantitative research. Mintzberg’s (1998) story of the elephant in his introduction to “Strategy Safari” is a parable, which I heard frequently in India, concerning different religious schools of thought¹². A blind man touches an elephant’s trunk and pronounces “this is what an elephant is: long

¹² See Muktananda (1977, pp. 227-228) for an earlier version of the elephant story.

and hollow.” Another blind man insists that the elephant’s stomach really represents the elephant and so on.

Unlike the administrative sciences in the 1990s, in anthropology there was a general agreement in the 1970s that psychological mechanisms could not be depended upon to provide an explanation of national or cultural differences. Even so, there were some influential anthropologists that still saw psychological anthropology (as opposed to Goodenough’s cognitive anthropology) as a valid area for research. Marvin Harris (1979, p. 259), for example, stated that

One popular set of psychologistic theories of sociocultural causality sets out from the assumption that each society has a national character, a modal personality, or some other definite range of personality types. Provided that proper empirical procedures are employed to measure and define a group’s personality complex, I find nothing objectionable in such an assumption.

Harris agrees that personalities vary across cultures and that there must be some match between emic and mental culture and the kind of personality a group possesses. Where Harris disagrees with psychological anthropology is when this branch of anthropology fails to recognise that national personality types are the result of infrastructural conditions, which is espoused by Harris’ school of cultural materialism, or when psychological anthropology goes further to make the claim that etic infrastructure results from personality types. Harris (1979) also criticises

this branch for abandoning causal theories concerning the formation of culture because of the difficulty of tracing psychological configurations back in history and, therefore, in accepting that national or group personality types are impossible to predict.

In addition to debates amongst different philosophical perspectives, the topic of culture is also immersed in a discussion concerning the relative merits of anthropology, economics and sociology in providing adequate explanations of human behavior. Granovetter (1985, 1992), for example, criticises both the culturalist position for its over-socialisation of human behaviour and the functionalist position, represented by the new institutional economics, for its static, atomized perspective which innocently assumes that natural selection is constantly weeding out weak actors and organisations. Granovetter (1992) points out that institutions would not evolve over time if the culture they were located in remained stable. Furthermore, the casual relationship between culture and human behaviour is generally inferred, but is not actually demonstrated to exist. He argues that actions are often embedded in a complex network of human relations. An emphasis on culture, however, does not necessarily have to be over-socialised and can also take into account social networks.

Criticisms of Hofstede's Cultural Dimensions

Paradoxically, it is against this background that Hofstede's (1980, 2001) quantifiable cultural dimensions began to be debated in organisational behaviour

in the 1980s and became part of mainstream theory in this field of inquiry by the 1990s. His dimensions are based on psychological processes that are the result of “socialisation” or “enculturation”. Criticism of Hofstede’s cultural dimensions comes from scholars who reject the validity of psychometric-based survey questions and indexes that supposedly define and distinguish the “personalities” of different nationalities. Many would argue that the “personalities” of nationalities or ethnic groups are impossible to quantify and compare as such and that such comparisons would need to be done qualitatively. Others would say that the culture or essence or spirit of an ethnic group cannot be captured, categorised and compared with numbers (or even words), and that such a comparison is bound to be interpreted by ethnocentric discourse. In many ways, this controversy is related to much earlier debates between humanists and positivists, who were themselves challenged by post modernists in the later part of the twentieth century.

Potential criticisms by Bernard. Criticisms of Hofstede’s preoccupation with structured interviews, indexes, factors and cross cultural survey replications could conceivably come from other positivist researchers who argue that not all quantifiable data has causal relationships. Bernard, a cultural anthropologist and self-claimed positivist, for example, asserts that “searching the Bible for statistical evidence to support the subjugation of women doesn’t turn the enterprise into science...And for those whose work is in the positivist tradition, it is important to

remember that numbers do not automatically make any inquiry scientific” (1995, p. 16). In regard to indexes, Bernard maintains that

We pretend that (1) (a student’s) knowledge (of a discipline) (Bernard’s example) is a unidimensional variable; (2) a fair set of questions is chosen to represent knowledge of some subject; and therefore, (3) a cumulative index is a fair test of knowledge of that subject. We know that the system is imperfect, but we pretend in order to get on with life (2000, p. 289).

Bernard (1995, p. 305) also claims that “most anthropologists won’t develop major scales for others to use. What they will do (and should do), is test the unidimensionality of the measures in their own field data...” However, “if scales do exist, the instruments are not transportable to another culture” (1995, p. 497) and “are not perfectly transportable across time” either (2000, p. 312). This contrasts with surveys that Hofstede includes at the end of his books that are “recommended for future cross-cultural survey studies” (1980, p. 419) and for “replicating the IBM-style cross-national survey” (2001, pp. 491).

Bernard might also question Hofstede’s use of factor analysis to identify his “supervariables” (factors) or dimensions. For Bernard (2000, p. 636), an acceptable cut off point for variables that load onto a factor is 0.60, with some researchers using 0.50. However, Hofstede (2001, pp. 214, 255-257, 281) has accepted the following work goals as important variables for his cultural dimension factors: freedom (a loading of 0.49), challenge (0.46), and

advancement (-.56). Some variables have high loadings on one factor analysis performed by Hofstede and have much lower loadings on another. There appears to be no loading data for other important variables.

Criticisms by McSweeney. A recent and well-known criticism of Hofstede comes from McSweeney (2002a, 2002b). McSweeney (2002a, p. 95) finds fault with Hofstede's "Assumption 1" that organisational culture, occupational culture and national culture are "three non-interacting and durable cultures." There are problems with Hofstede's concepts of 'practice' and 'perceptions of practice', and he does not link his ideas with recent research in the social sciences. Hofstede is also said to ignore research that questions the analysis of cultural levels. The idea that national and occupational cultures are permanent and fixed consequences of childhood and adolescent socialisation is also debatable. Socialisation within the workplace has also been neglected by this emphasis on pre-work socialisation. The content of schooling can differ extensively within a nation as it can within an occupation. National cultures can also influence occupational and organisational cultures. Hofstede (2002, p. 1356) agrees that national units are problematic but "they are usually the only kinds of units available for comparison and better than nothing."

Hofstede's second assumption that national culture is found in the micro-local is attacked by McSweeney (2002a). There were large differences between the responses of the surveys applied in each country. However, although data may be representative of a limited segment of a national population, certain cultures do

appear to group together in the results, such as Anglo English-speaking nations or Latin American Spanish-speaking countries. There would seem to be a certain amount of face validity in these cultural groupings. Hofstede (2002, p. 1356) argues that “the country scores obtained correlated highly with all kinds of other data, including results obtained from representative samples of entire national populations.” His dimensions have been supported by many validations and replications.

As with all surveys, there are some problems related to Hofstede’s “Assumption 3” that “national culture creates questionnaire response differences”, such as some of the questionnaires being completed within groups, and respondents being aware of potential changes that could take place in IBM because of the survey (McSweeney, 2002a, p. 102). Hofstede (2002, p. 1356) recognises that surveys “should not be the only way...of measuring cultural differences”.

Other researchers have found other dimensions and dynamic connections between values (“Assumption 4”). People may exercise contradictory values depending on different contexts. Triandis and Gelfand (1998), for example, argue that collectivism and individualism are not opposites but can co-exist. When Hofstede added a fifth dimension, based on a Chinese Values Survey, he did not drop the dimension of Uncertainty Avoidance, even though it was not found in this survey (McSweeney, 2002a). Furthermore, meaning differs throughout cultures so the wording or translation of some questions may have elicited different responses. However, the IMEDE sample, which followed the HERMES

sample by several years, revealed similar results that according to Hofstede (2002, p. 1357) “ruled out the hypothesis that the differences found among countries could be due to the translation of the questionnaire.”

The assumption (“Assumption 5”) that a cultural dimension is the same in any situation within a country is also criticised by McSweeney (2002a). High power distance within a firm does not necessarily indicate that there will be high power distance within the family. Once again McSweeney quotes Triandis to support his argument. However, although Triandis differs in his conception of the relationship between individualism and collectivism, nevertheless, he agrees that they are valid cultural dimensions that can be measured. Also, Triandis was initially enthusiastic of Hofstede’s 1980 seminal work (Hofstede, 2002), and has praised it various times since (Ailon, 2008). McSweeney also quotes another noted cross-cultural researcher, Schwartz, who has been critical of Hofstede, but who, like “market researchers, sociologists and political scientists throughout the world”...“draw(s) conclusions from central tendencies calculated from individual survey answers” (Hofstede, 2002, p. 1360).

One of Hofstede’s weaknesses, which McSweeney is eager to accentuate, is his tendency to jump to “scientific” conclusions with his validity stories (McSweeney, 2002a; 2002b, pp. 1366-1370). His stories, although stimulating for contemplation, lead him to many implausible generalisations. McSweeney (2002a, p. 110), however, also cites at least one study that appears to arrive at dubious conclusions in order to support his critique.

McSweeney (2002a, p. 109) carries on the debate about the influence of culture when he asks “Why should the idea of national-cultural causation be privileged over administrative, coercive, or other means of social action?” Hofstede (2002a, p. 1359) replies that “in many practical cases it (culture) is redundant, and economic, political or institutional factors provide better explanations. But sometimes they don’t, and then we need the construct of culture.” Hofstede also argues that the relationship between national culture and national institutions can be circular. Validations can also indicate causes, effects, or links to hidden elements. Other forces can also influence culture. For example, past Soviet governments have influenced present-day Russian society to be more egalitarian in their attitudes towards gender. 75 years of Soviet rule may have been sufficient time for a significant shift in gender values. These values were revealed in the GLOBE study (House, Hanges, Javidan, Dorfman, & Gupta, 2004).

McSweeney may be over-stating Hofstede’s conception of the rigidity of cultures. However, Hofstede (2002, p. 1360) confirms that “values (as we measured them) are hardly changeable (they change but not according to anybody’s intentions), whereas practices can be modified – given sufficient management attention.” Utilising the disintegration of Yugoslavia as an example, McSweeney ridicules Hofstede’s conception of national cultures, but to be fair Hofstede also accepts the existence of sub-cultures. Yet even so, the cultures of Serbia, Croatia, Kosovo and Bosnia definitely would have more in common with

each other than they would with the cultures of China, Vietnam and North Korea, even though all these areas had communist governments in the 1980s.

Criticisms by Ailon. Another recent critique of Hofstede's (1980) seminal work comes from Galit Ailon (2008), who employs an analytical strategy to mirror the book against the value dimensions it offered to the administrative sciences. She questions the role of these dimensions in presenting a "universal typology that captures cross-cultural differences" and describes them "as a very distinct construction that reifies a scheme of global hierarchy" (Ailon, 2008, p. 887). Hofstede's dimensions are said to reinforce ethnocentric bias by supporting a framework in which cultures of Western origin dominate.

Western production of scientific knowledge about "others" does not involve neutral comparisons but is always, to some extent, an act of power involving a contest over worth...The paper's argument is that if we truly want to promote these values (tolerance, dialogue and diversity), we must become reflexive of how the things we say about "others" are often bound up with what we want to see in ourselves (Ailon, 2009, pp. 572-573).

Cultural bias can be detected by the way in which Hofstede's own Dutch culture is supposedly manipulated by his survey questions into possessing superior values in the first four cultural dimensions that were revealed in Hofstede's (1980) original work. Hofstede (2009) replies that Ailon is committing ecological fallacy

by attempting to apply national differences at the levels of personality psychology and the individual (the author).

Beginning with the cultural dimension of power distance, it is assumed that Hofstede favors Western countries that have low levels of power distance (PD). Ailon adds that France and Belgium are exceptions to this trend of “all Western countries”, including Holland, that have “relatively small PD culture” (2008, p. 890), but fails to note that Dutch culture is closer to the centre of the power distance index and surpassed by many other Western cultures (Hofstede, 1992, p. 107). Other Western European countries relatively high in power distance that she ignores are Italy, Spain and Portugal.

Ailon (2008, p. 890) argues that the emphasis on the “boss/subordinate relationship” steers clear of the “more unattractive forms of Western inequality”, such as “racial and colonial inequalities”. Hofstede (2009) insists that his definition of PD does not include racial separation. Ailon also assumes that racial and colonial inequalities are cultural tendencies that distinguish Western cultures. However, many members of ethnic groups throughout the globe, such as the Armenians, Kurds, Tutsis, Hutus, Tibetans, Koreans, Mayans¹³, and many subordinated Hindu castes may not agree with Ailon’s conclusions regarding racism and imperialism. For example, the diverse regions of the Indian subcontinent had experienced successive invasions for thousands of years before the arrival of the Portuguese, French and English. Newly independent India and

¹³ Modern-day Mexican culture is a mixture of European and indigenous cultures, although Mexicans are highly critical of Spanish colonialism in their government education system and generally praise pre-hispanic civilisations. However, indigenous groups in southern Mexico have unsuccessfully rebelled against the central government.

Indonesia were both accused of imperialism for their sudden annexation of neighboring territories. Frequent human rights abuses accompanied and followed the invasion of East Timor, whereas Indonesia also annexed Dutch New Guinea (Irian Jaya), a huge territory populated by tribal groups vastly different from the ruling Javanese. Those who have lived extensively in foreign countries may also affirm that racial and ethnic biases seem to be prevalent in almost all cultures. Take the case of Ailon's Israel, where violence arising from ethnic tensions has continued unabated for decades.

Ailon (2008, p. 890) attacks the power distance dimension by indicating that apartheid South Africa had a "moderately small PD score". However, South Africa, although not scoring highly on the power distance index, was actually located on the right side of the line that separates small (left) from large (right) power distance (Hofstede, 1992, p. 107). South Africa's relatively moderate power distance may have been influenced by whether South Africans of English or Afrikaner origin predominantly answered the questionnaire, the former being generally opposed to apartheid. Yes, Hofstede could have explored the sub-dimensions of racial prejudice or colonialism in the work place, but then again he could have also explored many other work-related dilemmas. Other cross-cultural researchers could also have made contributions here, but Ailon provides no empirical findings from other studies concerning racial inequality or "colonialism" in the workplace to justify that Western cultures would score relatively highly in these sub-dimensions in comparison to other cultures.

Ailon's critique of Hofstede's second dimension, uncertainty avoidance (UA) follows a similar argument: "His (Hofstede's) country, the Netherlands, again like many Western countries – especially Anglo and Nordic – and a few non-Western (Asian) ones, is ranked as having a low UA culture" (2008, p. 893). Ailon uses this dimension to attack Hofstede's positivist scientific method, which she deduces, by means of her mirroring strategy, actually represents an example of high uncertainty avoidance. Hofstede (2009) counters that there is no evidence to support the assumption that societies with a high level of uncertainty avoidance utilise the scientific method more frequently. A closer review of a Hofstede uncertainty avoidance scale, however, reveals that the Netherlands is just above the line that separates low (above) uncertainty avoidance from high (below) uncertainty avoidance (Hofstede, 1992, p. 107). Five Asian countries are lower in uncertainty avoidance than the Netherlands and almost all the other countries (10) in the Nordic and Anglo groups that Ailon refers to. In fact, Singapore has by far the lowest uncertainty avoidance of all the 40 countries included in the ranking. However another nine western European countries (Finland, Switzerland, Germany, Austria, Italy, Spain, Portugal, Belgium and France) are all ranked as being below the uncertainty avoidance dividing line and, therefore, are relatively high in uncertainty avoidance and similar to other Asian and Latin American countries in this cultural dimension.

The individualism (IDV) index corresponds more closely with Ailon's thesis. Only one Western European nation, Portugal, is high in collectivism and there appears to be a fairly obvious division between collectivistic Asian and

Latin American countries and individualistic European ones (Hofstede, 1992, p. 895). According to her, this “illustrates the way that IDV, like the other dimensions, implicitly endorses managerial and Western agendas, both clearly embedded in capitalist values and ideals, and legitimizes the power of these hegemonic social groups within the cross-cultural organizational universe” (2008, p. 895). Reflecting on Hofstede’s (2009, p. 570) “metaphor of culture as collective programming of the mind” Ailon concludes that Hofstede is in fact a collectivist. However, although high levels of PD, UA and masculinity could be interpreted to contain undesirable social values, it is more debatable as to whether individualism or collectivism is more desirable with both extremes embodying appealing values. Other cross-cultural researchers actually divide them into two separate dimensions asserting that all cultures have varying levels of both (Triandis & Gelfand, 1998).

Ailon notes that the fourth dimension, masculinity (MAS), is the only one that “distinguishes Anglo (masculine) from Nordic (feminine) cultures” (2008, p. 895). In fact, a large number of Western nations (12) are classified as being relatively high in masculinity, whereas some Asian (5) and Latin American (2) nations are relatively low. Among the nine nations scoring lowest in masculinity are Chile, Thailand and what was then Yugoslavia (Hofstede, 1992, p. 109). This is a sensitive topic about which Hofstede makes many “essentialist statements” that Ailon claims “legitimate sexual inequality” (2008, p. 896). Hofstede is also accused of being very assertive and that this contrasts glaringly with his supposedly feminine Dutch culture. Hofstede (2009) retorts that Ailon is once again confusing culture with personality and questions whether his works are

more assertive than that of other social scientists. Although some of Hofstede's statements may be interpreted as being sexist, it is difficult to accept that he is legitimating sexual inequality and relegating women to domestic household roles when feminine cultures, which include the Dutch in his index, are societies in which "both men and women are supposed to be modest, tender, and concerned with quality of life" (Hofstede, 1997, pp. 82-83). Feminism, as he argues, does not necessarily have to endorse the masculine values in his cultural dimensions so that the ideal woman should be as aggressive and competitive as the men in masculine cultures. He sees this as an American or Anglo interpretation of what feminism should be. In fact, his explanation of the socialisation process within cultures is similar to, and perhaps is taken from, the socialisation theory found in feminist views of workplace differences.

Ailon also comments on a fifth dimension that Hofstede added later. Long term orientation (LTO) distinguishes cultures concerned with future oriented virtue from those in which virtue is oriented in the past or present. This Confucian concern for virtue contrasts with the Western search for the truth that is covered by the UA dimension. Here Hofstede clearly distances himself from Western values by praising the long term orientation and arising prosperity of East Asian cultures. However, Ailon compares this dimension unfavorably with UA to which LTO is apparently subordinated. How LTO "does not challenge but in fact reaffirms Western cultural hegemony and position in the global hierarchy" (Ailon, 2008, p. 897), however, is not lucid. LTO is somehow subordinated to UA because Eastern cultures "acknowledged the intrinsic and universal value (for

“human progress”) of the Western search for “truth”” (2008, p. 898). When Ailon’s mirror is applied, non-Western countries are always patronised by Hofstede. He in turn asks “I don’t know which global hierarchy Ailon means – one where China (high LTO) or where the United States (low LTO) comes on top?” (2009, p. 571).

To conclude, if Hofstede did actually intend to enact a global hierarchy in which Western cultures led by Nordic and Anglo cultures represent a shining example to the rest of the world, his attempt has clearly failed. The only cultural dimension that obviously divides Western cultures from the rest is IDV, Portugal being the one exception here (Hofstede, 1992, p. 108). There are many Western countries that are closer to large PD, strong UA (Finland and Israel¹⁴), or high MAS (Great Britain, Ireland, USA, Canada, New Zealand and Australia) or that have two (Germany, Switzerland, Austria, Spain, Portugal, France and South Africa) or three (Italy and Belgium) combinations of these values (Hofstede, 1992, pp. 107-109). On the other hand many Asian, Latin American or Eastern European¹⁵ countries are closer to weak UA (Hong Kong, India, and the Philippines) or low MAS (Iran, Thailand, Taiwan, Turkey, Brazil, Peru, Chile and Yugoslavia) or both (Singapore) (Hofstede, 1992, p. 109). Western countries also do not fare so well on the LTO dimension. If there are indeed value judgments associated with Hofstede’s cultural dimensions, Nordic culture probably does perform better than Anglo culture and all others. On the other hand, the Netherlands is almost borderline in UA and PD (Hofstede, 1992, p. 107) and,

¹⁴ Depending on whether Israel is viewed as being a “Western” country or not.

¹⁵ Yugoslavia and Greece are the only East European countries found in Hofstede’s (1992) country scales.

therefore, according to Ailon's scheme of global hierarchy, the Dutch have considerable room for improvement in three out of five cultural dimensions.

Mirroring could in turn be used to examine closely Ailon's eloquent critique of Hofstede. Although she "reconsider(s) concepts and convictions that predominate cross-cultural research" and encourages the adoption of "norms of reflexivity", in the final analysis, her mirror distorts Hofstede's findings and interprets them in a way that serves her own "normative viewpoint and political subtext" (Ailon, 2008, p. 885) within the postmodern tradition. Ailon (2009, p. 572) points out that "this interpretation (Hofstede's) was culturally bound and issued from a specific standpoint and place in the world", but the same could be said for all works by social scientists, including those of Ailon's postmodern tradition. Postmodernism itself is deeply rooted in Western culture and may not have much credence in other societies, such as the conservative organisational cultures of many developing nations and especially within the culture of privately owned organisations in these societies. Ailon (2009, pp. 572-573) insists that her "paper explicitly seeks to promote"... "tolerance, dialogue and diversity", yet she accuses Hofstede of endorsing racial bigotry, inequality, chauvinism and a general scheme of global hierarchy.

3.3 Theory

Collectivism/Individualism

Collectivistic cultures embrace a sociocentric vision of the individual's relationship to society that lends itself to an organic metaphor (Shweder & Bourne, 1982). In India, for example, a person in society is not an autonomous individual but is regulated by firm rules of interdependence that are particularistic and based on specific contexts. Many sociocentric cultures, such as the Oriyas of India, however, have a conception of the autonomous individual, although others, like the Zapotecs of Oaxaca, Mexico, do not. In contrast, in the West the individual is perceived to be a specific incarnation of abstract humanity. The concrete social thought of Bali, New Guinea, and India has been contrasted with the Western mode in which the individual's social role is abstracted and inviolable (Shweder & Bourne, 1982). The moral responsibilities of this abstracted individual are differentiated from his/her duties and social responsibilities. These two conceptions of an individual's relationship to society were to gain greater acceptance in the social scientific community under the terminology of "collectivism" ("sociocentric organic") and "individualism" ("egocentric contractual") (Erez & Earley, 1993; Shweder & Bourne, 1982).

Hofstede (1980) was very influential in exploring national influences on organisational culture by presenting four cultural dimensions, one of which was collectivism and individualism. According to his dimensions, Mexican

organisational culture was very similar to that of other collectivistic Latin American cultures, whereas American and Canadian cultures were similar to that of other individualistic English speaking cultures (Hofstede, 1997, 2001; Kim, Triandis, Kagitcibasi, Choi, & Yoon, 1994). Hofstede defined collectivism as pertaining to “societies in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people’s lifetime continue to protect them in exchange for unquestioning loyalty” (Hofstede in Gelfand, Bhawuk, Nishii, & Bechtold, 2004, pp. 440-441; see Hofstede, 2009, p. 570). He described individualism as pertaining to “societies in which the ties between individuals are loose; everyone is expected to look after himself or herself and his or her immediate family” (Hofstede in Gelfand et al., 2004, p. 440; see Hofstede, 2009, p. 570). Hofstede indicated that collectivistic cultures viewed individualism as undesirable and alienating (Hatch & Cunliffe, 2006; Hofstede, 2001). He also suggested that relationships prevail over tasks in organisations that are operating in collectivistic cultures, whereas the opposite takes place in individualistic organisations.

Hofstede (1980) and the Globe study (House et al., 2004) have measured the cultural dimension of collectivism/individualism in many different countries. Hofstede’s Country Individualism Index Values (IDV) were based on the factor scores of the first factor found in a 14-work goals, 40-country matrix (1980, p. 222). Work scores were computed for a stratified sample of 7 occupations at 2 points in time. He measured actual values and values predicted on the basis of a multiple regression on wealth, latitude and organisation size. Hofstede’s findings

suggest that Mexican culture is similar to Chinese culture because both are high in collectivism, whereas Canadians are similar to Americans because both are high in individualism. However, it may be that Hofstede's cultural dimension for collectivism and individualism was too broad, and he wasn't taking into account the differences in the way that the people of a culture may act with their in-group as opposed to the way that they may act when working inside an organisation. Mexican society, for example, is very family-oriented, but may not be very collectivistic when it comes to working within organisations, whereas the Chinese seem to be collectivistic in both situations.

The more recent GLOBE study of cultural dimensions in 62 societies analysed four different characteristics of individualism and collectivism (House et al., 2004). Firstly a distinction was made between institutional collectivism and in-group collectivism. Secondly, the GLOBE study analysed not only practices, that is the way people believe that people from their culture really act, but also values, the way people believe that people from their culture should act. Therefore, depending on the context, a culture may be more or less collectivistic. Scores for Mexican nationals portray them as being highly collectivistic in relation to in-groups and out-groups, but no more collectivistic than many Western societies when it comes to working inside organisations.

Of particular importance to my study is the presence of sub-cultures within the borders of a nation. Although the cultural dimension of collectivism is not mentioned, some microfinance authors (Abbink et al., 2006, p. 616; Armendáriz de Aghion & Morduch, 2005, pp. 93-94, 109) indicate that rural clients live in

more closely-knit communities where people tend to have more information about their neighbours in contrast to urban dwellers. Cross-cultural management authors (Erez & Somech, 1996; Hofstede, 1997, pp. 65, 74) also suggest that rural areas tend to be more collectivistic than urban areas. The cultural dimension of collectivism appears to explain why large groups may function better in rural environments where communities are still more closely knit. Hofstede states that “identity (in a collectivistic society) is based in the social network to which one belongs” and the “economy (is) based on collective interests” (1997, pp. 67, 73). It would seem logical that group loans would be better adapted to communities that are more collectivistic.

Masculinity/Femininity

Masculinity is a second cultural dimension that is highly relevant to my study. Hofstede (1980) did not intend this dimension to measure the level of gender equality in a society, such as the Globe study’s (House et al. 2004) later dimension of gender egalitarianism, but this dimension encompasses attitudes to what gender roles are supposed to be in a society as opposed to how occupations are actually divided up amongst males and females.

Based on all the information about the distinctions between societies related to this dimension, it can be defined as follows: *masculinity* pertains to societies in which social gender roles are clearly distinct (i.e., men are

supposed to be assertive, tough, and focused on material success whereas women are supposed to be more modest, tender, and concerned with the quality of life); *femininity* pertains to societies in which social gender roles overlap (i.e., both men and women are supposed to be modest, tender, and concerned with the quality of life) (Hofstede, 1997, pp. 82-83; see also Hofstede, 2009, p. 570).

House and colleagues criticised this dimension and divided it up into four cultural dimensions: “Ultimately, we argue that masculinity/femininity...confounds assertiveness, gender egalitarianism, humane orientation, and achievement orientation, thereby yielding findings that are difficult to interpret” (House et al., 2004, p. 344). However, by dividing the dimension of masculinity up, it could be argued that the social scientist loses sight of the overall attitudes that distinguish high masculine cultures from low masculine cultures and therefore, masculinity is no longer a topic of importance.

Hofstede’s original IBM survey found that men and women consistently answered differently when the questionnaire was concerned with work goals. Of particular interest were the questions about “hav(ing) a good working relationship with your direct superior” and “work(ing) with people who cooperate well with one another” which represent the feminine pole (Hofstede, 1997, p. 82). Women attached the most significance to these two questions indicating that relationships and cooperation are highly important to them. Hofstede (1997, p. 82) concludes from these results that “the importance of relations with the manager and with

colleagues corresponds to the feminine, caring, and social-environment oriented role.”

Arguably, gender attitudes have a large role to play in the success of group loans in Mexico, a country that ranks high on Hofstede’s (1997) masculinity index. Mexico has the sixth highest ranking in the masculinity index (MAS) values for 50 countries and 3 regions (Hofstede, 1997, p. 84). This ranking indicates that in Mexico there is a significant gap in the way females and males are expected to behave. Hofstede (1997, p. 85) expounds:

Individual women can learn to function in a masculine way and individual men in a feminine way. Where men are together a masculine culture is likely to dominate; where women are together, a feminine culture. Calling these differences ‘cultures’ stresses their profound and emotional nature...The males in virtually every society dominate in politics, in the community, and at the workplace; so the subcultures of politics, community affairs, and work are relatively masculine...The differences among countries...have mainly resulted from different gender roles and socialisation processes in the family and at school...

According to Hofstede’s theory, differences in the behaviour of all-female groups and all-males groups are the result of socialisation processes, which in turn are determined by culture. When masculinity is compared to the cultural dimension of power distance, Mexico is placed in a quadrant that “stands for a norm of a

dominant tough, father and a submissive mother who, although fairly tough, is at the same time the refuge for consolation and tender feelings (Hofstede, 1997, pp. 87-88). All-female groups will probably behave with feminine values that stress cooperation, consensus and relationships, whereas all-male groups should be more competitive, assertive, ambitious, and focused on equity (individual performance) (Hofstede, 1997, pp. 93-97). Feminine cultures socialise children towards mutual solidarity, caring for others, modesty, equality, compromise, negotiation, environmental protection, and obtaining quality in one's work life (Hofstede, 1997, pp. 91, 93, 96-97, 103).

It should be stressed that feminine cultures will be low in masculinity with no significant differences in workplace values between males or females, whereas masculine cultures will be high in masculinity with a significant difference between males and females. Here I will give a few examples to underline this point. A recent paper on full time American managers and professionals by Powell and Greenhaus (2010, p. 515), for example, agrees that there is a significant difference in the beliefs of males and females about the degree to which they possess feminine characteristics, such as those that are "interpersonally oriented" or "communal". Hofstede (1992, p. 105) affirms that "the more a society moves to the masculine side, the wider the gap between its "men's" and "women's" values." In *Cultures Consequence's* (1980, pp. 261-262) Hofstede originally insisted that "countries with higher MAS values also show greater differences in values between men and women in the same jobs." This is visually produced in Exhibit 6.5 (p. 288) of *Culture's Consequences*, which

displays a graph with the masculinity index by gender on the vertical axis and the country masculinity index on the horizontal axis. The lines represented masculinity and femininity are joined at the bottom left hand side of the graph. The lines then separate as they rise towards the right hand side. At the far right hand side the lines are at their most separated point with males being distinctly higher in masculinity, illustrating that males in the most masculine societies are significantly more masculine in their values than females in these societies.

Feminine cultures in northwestern Europe began to evolve from trading and seafaring societies that depended on good interpersonal relationships between communities. When the Vikings left their native shores on their many voyages between AD 800 and 1,000, their women had to organize the economic life of their communities (Hofstede, 1997). Women also formed business teams during the time of the Hanseatic League (1200-1500), an autonomous association of trading settlements of northwestern Europe. Because the Hansa women had a relative degree of freedom, this led to an increase in their independence and business skills (Hofstede, 1997).

Hofstede uses various examples of feminine cultures and masculine cultures to stress differences in behavioural norms. He suggests that “in feminine cultures a humanised job should give more opportunities for mutual help and social contacts” (Hofstede, 1997, p. 94). Swedish workers (in a feminine culture) in Saab and Volvo in the 1970s were found to prefer autonomous work groups that relied on interdependence, whereas Detroit automobile workers (from a masculine culture) who visited the plant to inspect these experiments later said they preferred

their US work system which stressed independence (Hofstede, 1997). Hofstede (1997, p. 95) also emphasises the difference in meetings between the Dutch (a feminine culture) and Americans: “In the Dutch situation, meetings were places where problems were discussed and common solutions were sought; they served for making decisions. In the US situation...meetings were opportunities for participants to assert themselves: to show how good they were. Decisions were made by individuals elsewhere.”

Armendáriz de Aghion and Morduch (2005) provide an informative discussion of the advantages that women may have as borrowers in microfinance. Women are said to be more susceptible to the verbal hostility and pressure of group members and MFI staff. It is also easier for group and staff members to monitor and pressure women because women are generally less mobile than men. Due to this lack of mobility, their fear of social sanctions, and, perhaps, higher risk aversion, women will tend to be more cautious in their investment strategies.¹⁶ Women are probably more sensitive to criticism and social pressure because they place more importance on harmonious relationships. Female workers have often been preferred to men in the “offshore plants” of multinational corporations and in the electronics industry because they are not only cheaper to hire, but are said to be more obedient and disciplined, and have greater manual dexterity and patience than men (Charlton, 1984). Also, their goals of maintaining a secure environment for their family may make women less likely to take risks that may upset the family economy. These goals that emphasise family welfare

¹⁶ Risk taking behaviour may also be related to testosterone levels, with young men more susceptible to risk taking. See Saad (2006) for an evolutionary psychology explanation of gender and consumption behaviour.

more can be described as long-term goals that value business stability, compared to the short-term risky profit seeking behavior of males. Related to long-term goals, Hofstede describes feminine cultures as being more concerned with environmental and community welfare. Abbink, Irlenbusch and Renner, for example, mention an experiment carried out in Zimbabwe using a public good game that found that women “tend to contribute more to the public good than men” (2006, p. 617).

When masculinity is compared to femininity, it is constantly emphasised that feminine cultures focus on nurturing and caring behaviours as opposed to achievement (Hofstede, 1997). Development literature often states that because women are more likely than men to put the interests of their family first, they are more likely to re-invest credit into their business if they think that the business will benefit their children and family in the long run (Haig-Muir, 1996). Women seem to invest more in household consumption and in human capital development, such as health care and the education of children (Khan, 1999; Pitt et al., 2006; Rosintan et al., 1999). Men, on the other hand, are more likely to spend credit on entertainment or luxury items, such as cigarettes and radios, that do not appear to aid the economic welfare of their families (Jacobsen, 1998). In poorer levels of society men appear to be generally less responsible than women in spending money and tend to be more self-centered than women in their purchases. Muhammad Yunus, founder of the Grameen Bank, has observed that “when women borrow, the beneficiaries are the children and the household. In the case of a man, too often the beneficiaries are himself and his friends” (Nebel &

Wright, 2000, pp. 177-178). On the other hand, the degree and results of such supposedly unnecessary expenditures should be investigated thoroughly as it is possible that a poor male may be attempting to build up his community status and social capital in this manner and that such a strategy might possibly benefit the welfare of his family in the long run.

Blumberg (1989a, 1991, 2005) points out that a change in the balance of economic power can affect family well being and points to a number of studies that state that women hold back less income for personal use and spend more on family welfare and children's nutrition (Bolender, n.d.). In one study carried out in 20 villages in South India, although women earned 55 percent of male income, the proportion of male contributions (70% and 74% in two states) to female (90% and 98%) was always much lower (Blumberg, 1991, pp. 102-104). In one village in which men and women had roughly equal incomes, women still dedicated a higher proportion to family needs. In the cases in which women devoted less than 100 percent to the family, income was spent on work-related transport and lunch costs, whereas men held back a portion for leisure and "status production" activities. This study also found that when women earn less, men actually contributed a lower proportion of their earnings to family needs. A Mexico City based study of 140 women, who were doing garment/textile piecework in their homes, found that men also held back more income (Blumberg 1991, p. 103). However, when, according to the culture, women have no structural obligations to contribute to family needs, their spending patterns may not be more altruistic, except in times of crisis. Women also spend a greater proportion of their income

on investments in extended kin exchange/sharing networks that provide an insurance/risk spreading function of reciprocity in times of need.

Numerous studies support the argument that women who retain control of income and expenditure invest proportionally more income on family education, nutrition, health care and children's clothing, whereas men spend more on unnecessary consumer goods, luxury items and entertainment (Armendáriz de Aghion & Morduch, 2005; Blumberg, 1989b; Buvinic & Lycette, 1988; Buvinic & Yudelman, 1989; Haig-Muir, 1996; Jacobson, 1993; Safilios-Rothschild, 1984). When basic food items and cash were directed to women in rural Mexico by the PROGRESA (Oportunidades) program, school enrolments, spending on food, and productive working days due to improved health increased, whereas poverty decreased by 10 percent (Armendáriz de Aghion & Morduch, 2005). Another study in Mexico revealed that women contributed 100 percent of their income to the family budget even though they earned far less, whilst their husbands contributed 75 percent of theirs (Jacobson, 1993, p. 64).

Those women who struggle to fulfill the basic needs of their families should be more motivated to survive and succeed in their businesses than women whose combined family household income easily satisfies basic needs. If poor females are more motivated to satisfy the basic needs of their families than poor males, then they may be more determined to maintain a reliable source of access to credit that may increase loan repayments, business survival, the re-investment of profits, and business growth. Taking into account that a much larger proportion of the population live in poverty in third world countries, the greater consumption

responsibility of poor females explains why the gender gap in relation to micro-business capital creation may be narrower in a larger proportion of the population in these countries. This gap in capital creation may be bridged with group loans.

3.4 Conceptual Model

I explain capital formation by microfinance institutions with the following conceptual model in Figure 3.1. The independent variable, the loan methodology of clients, can be divided up into group loans and individual loans. Effective participation in groups, peer-group pressure experienced by clients and community pressure experienced by clients will be absent or minimal with individual loans. On the other hand, effective participation in groups, peer-group pressure experienced by clients and community pressure experienced by clients will be prevalent with group loans and should lead to greater capital creation. The community pressure experienced by clients will increase with group loans because there will be people in the community who may pressure potential defaulters if defaulting on a loan contributes to the economic burden of members of the defaulter's MFI group who are family, business partners or friends.

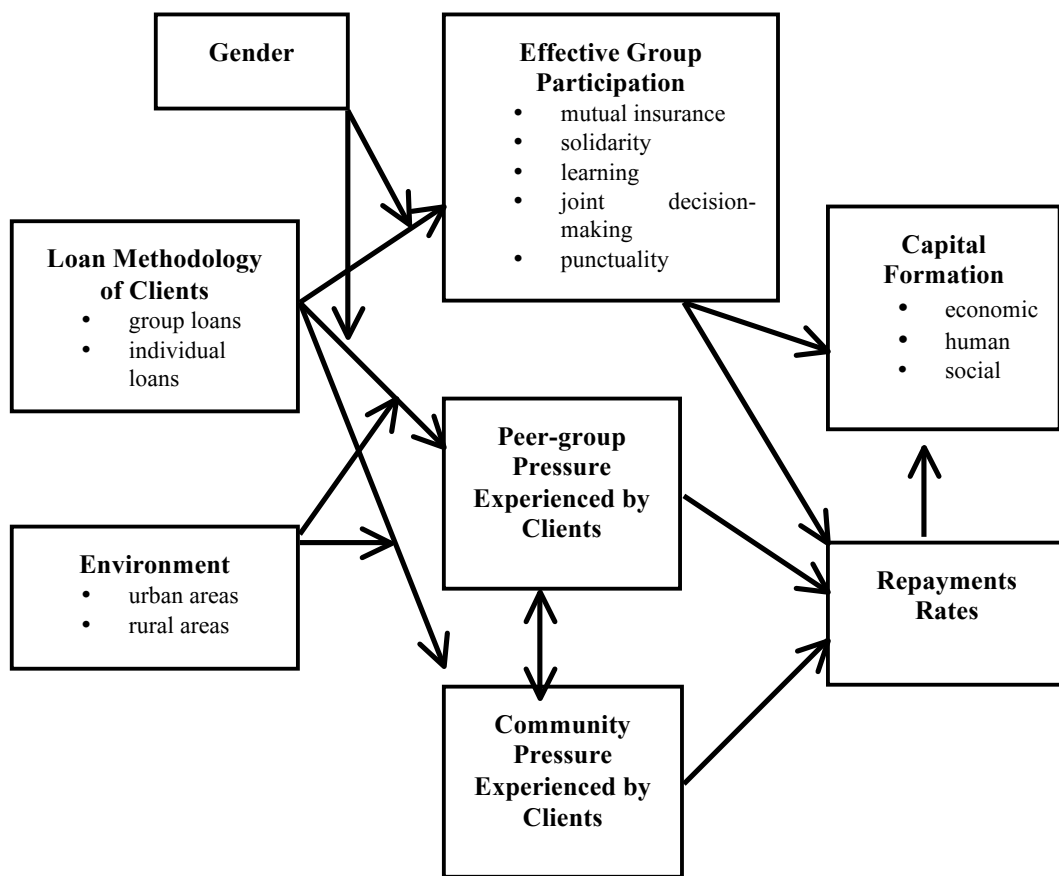


Figure 3.1. Conceptual model

Gender is expected to moderate the relationship between loan methodology and effective participation in groups, because all-female groups are expected to participate together more effectively than mixed groups or all-male groups. Gender should also moderate the influence of loan methodology on the peer-group pressure experienced by clients, because peer-group pressure is expected to be greater within all-female groups than within mixed groups and all-

male groups. More effective group participation amongst clients will be characterised by greater mutual insurance, solidarity, learning, and joint-decision making amongst clients. Learning refers to knowledge or skills acquired from interactions with other clients. Groups with higher levels of mutual aid and solidarity should increase the overall social capital of clients. Group loans combine instrumental and interpersonal relationships, which should lead to increased social capital, particularly amongst women due to their more effective group participation. Studies have shown that increased social capital leads to increased borrowing, human capital and economic capital and that the returns of social capital are highest for the poorest levels of society (Grootaert et al., 2004, pp. 15-16; Salinas Occelli, 2005, p. 124). Learning in groups and joint-decision making in groups also contributes to more human capital. Higher levels of human capital also lead to more economic capital.

In addition, improved group participation and cooperation overall will lead to higher repayment rates and hence to more capital accumulation. In a group in which relations are considered more important, group members should be more punctual about repaying their loans in order not to upset the solidarity that has been generated in the group. If one of the members is tardy or defaults, her relationship with other group members will be negatively affected. Healthy repayment rates represent future access to credit. Credit enables clients to invest in their businesses in the form of physical capital, merchandise, services and/or employees. If clients are thoughtful and responsible with their investments this should raise the economic capital that is generated.

Women dedicate a higher percentage of their income towards fulfilling their families' basic needs (Blumberg, 1991) and are expected to be more motivated to spend their income on investments that provide a stable source of income and that favor satisfying these needs over the long-term. Female clients realise that loans from a MFI might be one of their few sources of credit or their only source; that credit enables them to invest more into their micro-business; and that the family income will in turn expand, which enables greater spending on family necessities. This increased spending may continue as long as the client has access to credit or until their business becomes more sustainable. The higher desire to fulfill the basic needs of the family over the long-term will serve as an added motivation to female clients to ensure access to credit. Therefore, women will be more motivated to continue in MFI programs and will register higher repayment rates than men. For example, a client list I obtained from a centre of a MFI in Monterrey revealed that female clients with individual loans had higher repayment rates than males with individual loans¹⁷. Repayment rates will also be higher for clients in all-female groups due to the higher levels of peer-group and community pressure they experience, which pressures them to repay more punctually.

Environment is expected to moderate the relationship between loan methodology and peer-group pressure experienced by clients, and between loan methodology and community pressure experienced by clients, because the peer-

¹⁷ 49.1% of 110 female clients that had received individual loans in the last one and a half years were up-to-date with their payments compared to 45.3% of 53 male clients with individual loans. However, the list doesn't differentiate between new clients and continuing clients so there is a chance that more female clients are new clients. On the other hand, repayment rates in many studies are shown to be higher for female clients (see Chapter 2).

group pressure and community pressure experienced by clients are expected to be higher in rural areas. Higher peer-group pressure should also increase community pressure because when group members are more anxious about potential defaulters and pressure them more, others members of the wider community, such as relatives and business associates, will also be more concerned, which should in turn lead to more pressure on group members from the outside community, thus also increasing peer-group pressure amongst MFI clients. Increased peer-group pressure and community pressure on clients should increase client repayment rates, which in turn leads to increased survival in the MFI program, increased access to loans, and increased capital creation, in this case economic capital.

3.5 Hypotheses

Individual Loans and Capital Creation

MFIs that employ individual loans serve less women (46 percent), than MFIs that lend to solidarity groups of 3 to 9 borrowers (73 percent), and village banks with groups of more than 10 clients (89 percent) (Armendáriz de Aghion & Morduch, 2005). Examples of the superior repayment rates of female clients come from programs that practice group loans.

The traditional theories of gender, such as human capital and social network theories, explain why male small-business owners will generally create

more capital than female business owners (Bird et al., 2001). The theory of human capital argues that women business owners are more inclined to invest their time into managing both family relationships and businesses, whereas men invest more time into their businesses (Jacobsen, 1998; Kalleberg & Leicht, 1991; Loscocco et al., 1991). Therefore, women have less human capital that is conducive to small business success.

The business-related social capital of males who have individual loans may increase more than that of females with individual loans in accordance with social network theory. Social network theory claims that the social networks of women emphasise interpersonal relationships over instrumental relationships and, therefore, women are exposed to fewer business-relevant sources (Brush, 1992; Moore, 1990; Worchel et al., 2002). Other traditional theories, organisational ecology and feminist views¹⁸, also explain why male small-business owners will generally create more capital than female business owners.

Although poor women may be more motivated to fulfill the basic needs of their families, according to the empirical evidence provided by Blumberg (1991), and, therefore, may persevere in microfinance programs longer and re-invest their income into their small businesses, the traditional theories mentioned above will probably explain better gender and capital creation with individual loans.

Furthermore, a masculine culture focusing on achievement, assertiveness, and a preference for independence, as opposed to an emphasis on relationships and

¹⁸ See section 2.3 for a brief summary of these theories of gender.

interdependence, would appear to be better suited to individual loans (Hofstede, 1997).

The four traditional theories of gender explain why males will generate more economic capital, including financial capital, physical capital, and employment. For example, the organisational ecology view expounds how male small-business owners will occupy larger and more prosperous businesses in less crowded industries. These small businesses will generate more income for the owners, contribute to more infrastructure, and create more employment. In addition, the theory of human capital explains why men will produce more human capital that is conducive to small business success, and the theory of social networks explains why males forge more business-related social capital.

***Hypothesis 1:** Male clients will create more capital (economic, human and social)¹⁹ with individual loans²⁰ than female clients with individual loans.*

Group Participation

The cultural dimension of masculinity provides a good explanation of why all-female groups in Mexico, a country with a high ranking in the masculinity index (MAS), will behave differently than all-male groups or mixed groups

¹⁹ For a definition of capital and the three forms of capital (economic, human, and social) that I refer to, see section 2.2.

²⁰ Individual loans: loans provided by MFIs to clients that do not involve any joint liability with other clients of the same MFI if the client is behind in the repayment schedule or defaults on the loan repayment. This loan methodology does not involve weekly or monthly meetings with members of the same group.

(Hofstede, 1997). Whereas females in Mexico will possess more masculine values, due to the high level of masculinity in Mexico, there will also exist a wider gap between the values of males and females regarding this cultural dimension. A review of Hofstede (1997) reveals that the feminine pole emphasizes “cooperation” (p. 82), “mutual help” (p. 94), “aid” (p. 97), “caring for others” (p. 96), “concern (for) relationships” (p. 96), “sympathy for the weak” (p. 96), “solidarity” (pp. 91, 93, 96, 97), “equality” (pp. 93, 96), “consensus” (pp. 94, 96), “common solutions” (p. 95), “compromise” (pp. 96, 103), and “negotiation” (pp. 96, 103). Mutual insurance (help), solidarity, and joint-decision making would clearly appear to be values that feminine cultures espouse. In addition, if all-female groups cooperate more, are more concerned with their group relationships, and help each other out more, it seems logical that clients in all-female groups will learn more from each other than clients in all-male groups or mixed groups. Also, a greater concern for fellow members should contribute to higher attendance and punctuality in all-female groups.

Group forces may motivate female clients more than male clients and influence women to behave with more social responsibility and, as a consequence, misuse funds less. According to my exploratory study (Griffin, 2008), women in Mexico appear to collaborate more effectively in microfinance groups than men and may provide more support and feedback to their co-members. Therefore, groups of poor women may be more efficient at transferring knowledge amongst themselves than groups of poor men. For example, a government program in a

predominantly rural state of Mexico claimed that women “assimilate better the technical knowledge that is offered by the institution” (Griffin, 2008, p. 14).

Those studies that report encouraging results for female clients were carried out in MFIs that operate with group loans (e.g. Hashemi et al., 1996; Kevane & Wydick, 2001; Pitt & Khandker, 1998; Pitt et al., 2006). Women working as employees in BRAC, a large MFI operating in Bangladesh, demonstrate high levels of group support (Khan, 1999). Groups also provide women with opportunities for social learning, gender solidarity and ‘group reproduction’ (Griffin, 2008; Velasco, & Marconi, 2004). Group lending to women in Bolivia stimulates collective public action and these externalities are achieved when intra-group equality is high and the group has a collective experience of adversity. During the mid 1980s economic crisis in Bolivia, while the bulk of the microfinance loan volume declined during the recession, the volume of the all-female integrated MFIs continued to rise (Velasco & Marconi, 2004).

Hypothesis 2: *The greater the proportion of female members in a group²¹, the higher the levels of mutual insurance, solidarity, learning, and joint decision-making experienced by group members.*

²¹ Group loans: loans to more than one client that involve joint liability for loan repayment between members and some level of expected group participation between members, such as a minimum of one group meeting a month and assigned tasks (president (leader), treasurer, secretary etc.) within the group.

Peer-Group and Community Pressure

The discussion of group participation above suggests that all-female groups or groups with more females will demonstrate greater concern for their fellow group members (Hofstede, 1997). A greater concern for relationships in these groups will contribute to higher levels of peer-group and community pressure. Social network theory, which argues that females tend to favor inter-personal relationships over instrumental, has similarities with Hofstede's cultural dimension of masculinity/femininity, in that it argues that women are more concerned with non-aggrandising relationships. This theory indicates why group loans have had a large impact on the female clients of microfinance institutions, because women in microfinance groups are able to engage in both inter-personal and instrumental relationships.

Peer-group pressure would seem to be a crucial factor contributing to the success of female groups that is largely overlooked in the microfinance literature. A few authors (Armendáriz de Aghion & Morduch, 2000, 2005; Rahman, 1999) and my exploratory study (Griffin, 2008) suggest that women may be more influenced by peer-group pressure than men. Armendáriz de Aghion and Morduch (2005) report that women in microfinance programs are said to be more susceptible to the verbal hostility and pressure of group members and MFI staff, whereas men have a greater tendency to resist and reject criticism. Women also have a greater tendency to stay in or around the home and are, therefore, easier to locate, monitor and pressure, and they may find it easier to maintain membership in groups and programs over the long term. Therefore, according to Armendáriz

de Aghion and Morduch, “because women are less mobile and more fearful about social sanctions, they tend to be more risk averse than men and more conservative in their investment projects” (2005, p. 189).

Because women are more susceptible or sensitive to disparaging remarks and less mobile than men, community pressure is also expected to be significant in group-based loans because other members of the group may exert pressure on the defaulter by appealing to family, friends and other members of the community (Besley & Coate, 1995; Griffin, 2008). Social control through the potential threat of reprisals from within the community is an effective tool for ensuring cooperation, especially when an individual’s status and reputation are at stake.

***Hypothesis 3:** The greater the proportion of female members in a group, the higher the levels of peer-group and community pressure experienced by group members.*

Group Loans and Capital Creation

Some studies (Haase, 2006; Matienzo, 1993) claim that men are able to increase their incomes more than women in microfinance. Other researchers (Carloni, 1987; Clark, 1991; Kevane & Wydick, 2001; Wydick, 2002) state that female clients do as well or better than male clients in performance, sales and employment generation.

Taking into account the discussion to support Hypothesis 2, I argue that all-female groups or groups with a greater proportion of female members will be able to increase social and human capital to a greater extent than mixed groups with fewer female members due to higher levels of mutual insurance, solidarity, learning, and joint decision-making. Group participation will be more effective in all-female groups due to the feminine culture that will be more prevalent in these groups (Hofstede, 1997). According to my exploratory study (Griffin, 2008), poor female microfinance clients collaborate more effectively in groups, support each other more, form stronger social ties, and are more affected by peer-group pressure. It is expected that women will be able to increase their social capital more than men during the initial period of access to microcredit. As women are more concerned with relationships, female clients should be able to develop more social capital from microfinance group relationships than male clients.

The discussion in Hypothesis 2 also indicates that intra-group learning will be greater in all-female groups or groups with a greater proportion of females due to the prevalence of feminine values that emphasise cooperation, mutual assistance and concern for others. Intra-group learning should aid female clients to learn more about their business and increase their overall business-related human capital. Furthermore, higher levels of social capital will also lead to a greater accumulation of human capital (Grootaert et al., 2004).

Higher levels of peer-group and community pressure in all-female groups (see Hypothesis 3) will also influence female clients to repay their loans more frequently. Higher levels of human capital, social capital, peer-group pressure,

and community pressure will in turn lead to the growth of economic capital (Grootaert et al., 2004). Group loans and the more responsible investment habits of poor females will help to offset the advantages that males are said to enjoy according to the traditional theories of gender and business success mentioned in Hypothesis 1.

Hypothesis 4: The proportion of females in a group will have no significant effect on the generation of capital.

Group Loans and Environment

There does not appear to be sufficient literature that explains why MFIs may prefer to operate with large groups in rural environments and individual loans in cities. This could be explained by cross-cultural management theories. In particular, the cultural dimension of collectivism may explain why large groups may function better in rural environments where communities are still more closely knit (Hofstede, 1997). Some microfinance papers indicate that rural clients live in more closely-knit communities where people tend to have more information about their neighbours in contrast to urban dwellers, although the cultural dimension of collectivism is not mentioned in these papers (Abbink et al., 2006, p. 616; Armendáriz de Aghion & Morduch, 2005, pp. 93-94, 109). Other authors state that rural areas tend to be more collectivistic than urban areas (Erez

& Somech, 1996; Hofstede, 1997, pp. 65, 74). Besley and Coate (1995, pp. 13-14) had pointed out that

social collateral in the form of sanctions available to community members to discipline poor behavior is a resource that can usefully be harnessed by group lending.....(and that) this may explain why group lending is often advocated for rural lending in developing countries, where social connectedness among communities is typically high.

My exploratory study (Griffin, 2008) indicates that peer-group and community pressure is stronger in rural areas, where traditions and social ties are more binding, than in urban areas. Therefore, it will be more stressful for clients to default on their loans or exit from the program in rural areas. Because communities in rural areas are more closely knit, group members will probably communicate more together and be able to interchange ideas and knowledge to a greater extent contributing to the creation of human capital.

In Mexico there is a tendency for MFIs to operate with groups of between 10 and 50 clients in rural areas, and with groups of between 3 and 9 clients or individual loans in urban areas (Griffin, 2008). According to Armendáriz de Aghion and Morduch (2005, p. 120), urban MFIs in Latin America and the transition economies of Eastern Europe have “eschewed group loans from the start.” Gomez and Santor (2003) found that borrowers in certain neighbourhoods in Canada outperformed others and they discovered a negative coefficient in urban

areas in contrast to suburban areas. This may be due to less group or community pressure in urban areas. Abbink and colleagues (2006, p. 616) suggest that it may be more difficult to create self-selected groups in urban areas of transition economies than in “closer-knit rural communities.”

Hofstede states that “identity (in a collectivistic society) is based in the social network to which one belongs” and the “economy (is) based on collective interests” (1997, pp. 67, 73). It would seem logical that group loans would be better adapted to communities that are more collectivistic. I propose that higher social cohesiveness in rural areas will generate higher levels of social capital, social pressure, and effective participation within groups. This will lead to the creation of more human capital and, consequently, economic capital.

Hypothesis 5: The smaller the population of a city/town in which clients reside, the greater the capital creation of clients with group loans.

CHAPTER 4: METHODOLOGY

4.1 Introduction and Research Design

This chapter will provide a description and explanation of the research methodology I have adopted for my dissertation. In the first section I will briefly explain why I chose a survey, specifically a self-administered survey, instead of other research methods. In the next section I will begin by describing how other studies have operationalised the variables in my conceptual model, how they have influenced the final choice of items for my survey, and why I chose the items in Appendix A. I will first discuss the dependent variable, then the independent variable, moderating variables, mediating variables, and control variables. The items in Appendix A appear in the same order as they are discussed in the measurement section. Then in Section 3 I include my two pilot studies to test these items and reduce them. Section 4 will be dedicated to a discussion of data collection, which will include the population, sampling design, possible sampling problems, the application of the survey, and data entry. The last section will deal with the analysis of data utilising structural equation modeling, and will include a discussion of both the potential limitations of my research method and how I intend to overcome these limitations.

After investigating the different possible contributions that I could make with a study on microfinance, I decided that it would be best to focus on the

questions surrounding gender and loan methodology, and environment and loan methodology. The best methodology for answering my research questions is a self-administered survey (Babbie, 1998; Fowler, 2002). A survey was selected after originally considering a multi-method design consisting of a case study to generate new theory, and an interview-based questionnaire (Glesne, 1992; Lincoln & Guba, 1985; Miles & Huberman, 1994; Patton, 2002; Yin, 2003). Chen (1997, p. iv) suggests that both quantitative and qualitative research can provide revealing data about microenterprises: “Whereas a quantitative survey can measure broad patterns and correlates of change, case studies can illuminate the impact process; test counter-factual or rival explanations; and investigate complex or unexplained phenomena.” An exploratory study employing a case study could reveal new theory, but I already had some research questions that could make a significant contribution to the literature and that could be answered with a quantitative study (Yin, 2003).

A quantitative survey is more appropriate for my more immediate research objectives. Studies on gender and loan methodology have not conducted a thorough measurement of different forms of capital (economic, human and social) nor of the influence of different forms of social pressure and group forces on the three forms of capital. There is also a lack of literature concerning environmental forces, although Wydick (1996, 2002) does include rural and urban clients in his survey. The conceptual model that I developed during my literature review and pilot study can be tested using structural equation modeling because this statistical tool is appropriate for testing all of the variables in a model, not just the

relationships between the independent and dependent variables. The kind of research questions that I am asking need to be carried out in a microfinance setting in a developing country and, therefore, an experiment (Babbie, 1998; Campbell & Stanley, 1963) would not be a valid substitute for an authentic environment. Abbink, Irlenbusch and Renner (2006) conducted an experiment on social ties and group size, but there are many limitations with their experiment on German students, including students knowing when the experiment would end.

4.2 Measurement

In this section I will explain how I operationalise the constructs in my conceptual model. First of all I will discuss the operationalisation of the dependent variable, capital. Then I will discuss the independent variable (loan methodology), moderating variables (gender and environment), mediating variables (peer-group pressure, community pressure, group participation, and loan repayment), and the various control variables. The initial survey questions are found in Appendix A, although the survey was later modified by pilot studies that tested the reliability and validity of items. Some questions mentioned in this section were omitted from the survey as the questionnaire had a limited length and the omitted questions were later deemed less necessary for the success of the survey.

Dependent Variable

Capital consists of economic capital, human capital and social capital²².

Economic capital. Economic capital includes physical capital (capital goods or real capital), such as land and equipment, non-physical capital (money or financial capital), and labour (capital, n.d.). It is doubtful that subjects will remember or be aware of exact monetary quantities related to the different forms of economic capital and if they do they may be reluctant to divulge such information. In any case, exact quantities of income are not necessary as my objective is to measure the relative growth of clients' economic capital and, therefore, statements using a Likert scale will be employed. I have one Likert scale item measuring physical capital, three items measuring different forms of financial capital (profit, sales, and savings), and one for labour. I have limited my measurement of economic capital to the business(es) of the microfinance borrowers as the measurement of the economic capital of the household takes into account contributions of different family members and not just the microfinance client. My objective is to measure the growth of the client's capital that can contribute to future business growth and not to measure the capital of the client's entire family.

Of the studies that have attempted a measure of physical capital, Pitt and Khandker (1998) included women's non-land assets; McKernan (2002) transport assets, agricultural assets, tools, processing equipment, and inventory for non-

²² For definitions of capital see section 2.2.

farm enterprises; Wydick (1996, 2002) new equipment for enterprises; Gomez and Santor (2003) household assets; and Pitt, Khandker and Cartwright (2006) household land assets. Just what items Pitt and Khandker (1998) used to measure non-land assets in their survey is not clear. All of these studies involve ratio measures, except for Wydick's that appears to utilise a nominal measure (yes/no). Purchase of equipment in Wydick's (2002, p. 504) 1999 Guatemalan survey was significantly higher for men, although this could be explained because females tended to be involved in retail enterprises as opposed to manufacturing. I will employ an item that incorporates a broader measure of physical capital than new equipment and which uses an ordinal scale.

I have included three items for financial capital. Business sales have been measured by Sadoulet (1999); Kevane & Wydick (2001); Wydick (2002); and Gomez and Santor (2003). Wydick (2002) uses a nominal measure for business growth, whereas the other three studies employ ratio measures. I will utilise an ordinal measure of business growth as a nominal measure with structural equation modeling would require a much bigger sample.

Profit is a crucial indicator of economic capital and overall business success and requires more calculation than sales. Therefore, sales serves as a check for profit as the two indicators are normally highly correlated. McKernan (2002) measured self-employment profits; and Gomez and Santor (2003) business profit. McKernan's (2002, p. 103) definition of profit is "total household gross revenue from self-employment, plus the value of household consumption from production less monthly operating expenses (primarily raw materials and hired

labour). Both studies utilised ratio measures. I will employ an ordinal scale here as I am interested in comparing the growth of business profit over time not in actual quantities.

A third item for financial capital is savings. Studies that take into account savings are Wydick's (1996, 2002) and Haase's (2006). One of the problems with measuring savings is that, depending on the family, it may be difficult to separate the savings of a micro-entrepreneur and those of other members of the family. In the case of married women, the husband may control the savings account of the family and make a dominant contribution. The question I use to measure savings was adapted from a question in Wydick's (1996, pp. 17-18) survey: "19b. How have the loans from FUNDAP benefited your family? (circle those that apply)." One of the options is "increased savings". I use an ordinal measure of savings.

Labour has been measured by Wydick (1996); Pitt and Khandker (1998); Kevane and Wydick (2001); Wydick (2002); and Haase (2006). Wydick's (1996, p. 16) survey includes two questions: "2a. Before receiving loans from FUNDAP how many employees did you have? 2b. How many employees do you have currently?" These are the same two questions that are found in Kevane and Wydick (2001), whereas Wydick (2002) has included a nominal measure (yes/no) from a more recent survey. Wydick (1996, p. 17) also asked in his dissertation survey whether the micro-entrepreneur's business had benefitted from its relationship with the MFI because it "added new employees". Pitt and Khandker (1998) measured market labour supply by gender including self-employment according to the number of hours worked per month of employees/owners

between the ages of 16 and 59. Haase's (2006) questions on labour were similar to Wydick's (1996). I will use an ordinal measure for labour generation.

Human capital. I intended to measure human capital with three items. The standard item for measuring human capital refers to the formal education of the client, that is, the highest grade completed by the client and/or by the client's family (e.g. McKernan, 2002, p. 111). This does not, however, include the growth of knowledge, skills or awareness that the client may have gained by participating in a business or by socialising with other micro-entrepreneurs. Some studies have included items for knowledge, skills or awareness development. Pitt, Khandker & Cartwright (2006) include the thematic group of activism, which is a dimension of social capital (the dimension of empowerment and political action), but includes an awareness of law and politics. Sadoulet (1999, p. 126) includes items for the number of years of business experience and the age of the business at the beginning of the group. Gomez and Santor (2003) provide information on the percentage of clients with skills training in business activity and self-employment training.

My items for human capital were adopted from the "Guide for Assessing the Impact of Microenterprise Services at the Individual Level" (Chen, 1997). Chen of the Harvard Institute of International Development includes cognitive change as a major part of her consolidated framework that she developed for the Assessing Impact of Microenterprises (AIMS) Project undertaken for the U.S. Agency for International Development's (USAID's) Microenterprise Initiative.

The AIMS Project had developed a comprehensive research plan and engaged in longitudinal impact assessments of three MFIs operating in Peru, Zimbabwe, and India. Chen's paper also builds on previous impact studies of MFIs that targeted female clients in Bangladesh and India and developed conceptual frameworks. Before Chen's working paper, AIMS had "carried out eight technical and literature review desk studies and three field studies. These studies have helped to clarify analytical and measurement issues related to the study of the impacts of microenterprise services at the client, enterprise and household levels" (Chen, 1997, p. 2). The cognitive pathway comes from the second of "four broad pathways through which individuals experience change" (Chen, 1997, p. iv). This pathway measures cognitive change and whether "participation in microenterprise services leads to"... "increased knowledge", "improved skills", and "increased awareness of (the) wider environment" (Chen, 1997, p. 7). I have included three Likert scale questions for measuring human capital in the survey, one for each dimension of cognitive change.

My first question concerning human capital measures knowledge in the form of literacy and numeracy (Chen, 1997, p. 17). Chen recommends "ask(ing) respondents whether they a) can read a newspaper and b) maintain accounts for their business" (1997, p. 22). My second question measures an increase in skills (Chen, 1997, p. 17). Chen recommends "ask(ing) respondents whether they have received any skills, management, or entrepreneurship training" (1997, p. 23). This research is not interested in whether clients have received training, but whether clients have improved their business skills due to the positive effects of group

loans and increased social capital. My third question measures an increase in the awareness of the wider environment (Chen, 1997, p. 17). Chen recommends “ask(ing) respondents whether they have engaged in new or non-traditional types of work since joining the program” (1997, p. 22). Chen recommends a case study approach for these questions, but, as with the questions for economic capital, I will utilise an ordinal measure and a survey.

Social capital. I intended to measure social capital with six items. Of those studies I have consulted on microfinance, Kevane and Wydick (2001, p. 1230) measure social capital or group homogeneity by asking respondents the number of “years members were acquainted before group foundation” and whether the “group share social activities”. They use a ratio measure for the first question and a nominal measure for the second. Gomez and Santor (2003, p. 5) use a telephone survey that measures “normally hard-to-observe characteristics, such as the nature and abundance of social ties.” They ask three questions about social capital within the group, and a related question about group solidarity. These three questions ask about the proportion of the group that knew each other before the formation of the group in the Canadian MFI; the amount of trust that exists within the group; and whether the client is a member of a team, club, association, or organisation (Gomez & Santor, 2003, pp. 7-8, 28). They use ratio, ordinal and nominal measures respectively for these questions. Pitt, Khandker and Cartwright (2006) attempted some measurement of social capital when they included the two thematic groups of mobility and networks; and activism in their survey. They ask

questions with a nominal measure (yes/no) about borrowing emergency funds from other unrelated people (not moneylenders); having voted in the last election; voting independently; protesting against domestic abuse and corruption; and sharing feelings with people outside the family (Pitt et al., 2006, pp. 821-822). There is one question about the degree of mobility that employs an ordinal measure (Pitt et al., 2006, p. 823). Unlike the first two studies above, my objective is not to measure social capital within the group, but to measure the overall growth of a client's social capital within the local community and beyond.

The Integrated Questionnaire for the Measurement of Social Capital (SC-IQ) is designed by the World Bank to “generate quantitative data on various dimensions of social capital as part of a larger household survey” (Grootaert et al., 2004: vii). The six dimensions are: groups and networks; trust and solidarity; collective action and cooperation; information and communication; social cohesion and inclusion; and empowerment and political action. The survey tool, which focuses on measurement at the micro-level, the level of individuals and households, was piloted in Albania and Nigeria and benefitted from “extensive input and critique” from a team of external experts. “Each question included in this document is drawn from prior survey work on social capital (where it has demonstrated its reliability, validity, and usefulness)” (Grootaert et al., 2004, p. 1). The SC-IQ incorporates lessons learned in five studies undertaken in various countries of Africa, Asia and Latin America. I have included one question in my survey for each of the six dimensions of social capital.

The first question was modified from a question designed for the groups and networks dimension of social capital.

This is the category most associated with social capital. The questions here consider the nature and extent of a household member's participation in various types of social organizations and informal networks, and the range of contributions that one gives and receives from them. This dimension also considers the diversity of a given group's membership, how its leadership is selected, and how one's involvement has changed over time (Grootaert et al., 2004, p. 5).

I have chosen the following questions from the SC-IQ based on what I believe to be the potentially most relevant ones for measuring the social capital of microfinance clients in Mexico. The question I modified from this category came from the Appendix of core questions: "About how many close friends do you have these days. These are people you feel at ease with, can talk to about private matters, or call on for help" (Grootaert et al., 2004, p. 46). Pitt, Khandker and Cartwright (2006, p. 821) included similar questions in their survey.

The second dimension is trust and solidarity. "This category seeks to procure data on trust towards neighbours, key service providers, and strangers, and how these perceptions have changed over time" (Grootaert et al., 2004, p. 5). The question I chose to modify for this dimension was: "Do you think that over the last five years*, the level of trust in this village/neighbourhood has gotten

better, worse, or stayed about the same? [*enumerator²³: time period can be clarified by situating it before, after major event] 1. Gotten better; 2. Gotten worse; 3. Stayed about the same” (Grootaert et al., 2004, p. 33).

The third dimension is collective action and cooperation. “This category explores whether and how household members have worked with others in their community on joint projects and/or in response to a crisis. It also considers the consequences of violating community expectations regarding participation” (Grootaert et al., 2004, p. 5). I modified a core question for this dimension: “In the past 12 months, did you or any one in your household participate in any communal activities, in which people came together to do some work for the benefit of the community? Yes; No” (Grootaert et al., 2004, p. 47).

The fourth dimension is information and communication. “This category of questions explores the ways and means by which poor households receive information regarding market conditions and public services, and the extent of their access to communications infrastructure” (Grootaert et al., 2004, p. 5). I modified a core question for this dimension: “15. In the past month, how many times have you made or received a phone call?” (Grootaert et al., 2004, p. 47).

The fifth dimension is social cohesion and inclusion: “Questions in this category seek to identify the extent and nature of these differences (that can lead to conflict), the mechanisms by which they are managed, and which groups are excluded from key public services. Questions pertaining to everyday forms of social interaction are also considered” (Grootaert et al., 2004, p. 5). I chose to

²³ The enumerator appears to be the person responsible for adapting, organising and recording the survey. Enumerate = to tally, list, itemise etc.

modify a core question concerned with everyday social interaction: “How many times in the past month have you got together with people to have food or drinks, either in their home or in a public place?” (Grootaert et al., 2004, p. 48).

The sixth and final dimension is empowerment and political action. “The questions in this section explore household members’ sense of happiness, personal efficacy, and capacity to influence both local events and broader political outcomes” (Grootaert et al., 2004, p. 5). I chose to modify a core question for this dimension: “In the past 12 months, how often have people in your village/neighbourhood got together to jointly petition government officials or political leaders for something benefiting the community? 1. Never; 2. Once; 3. A few times (< 5); 4. Many times (> 5)” (Grootaert et al., 2004, p. 49).

All of the questions in this section of the survey to measure economic, human, and social capital utilise a seven-point Likert scale: 7. I strongly agree; 6. I moderately agree; 5. I mildly agree; 4. I neither agree nor disagree; 3. I mildly disagree; 2. I moderately disagree; 1. I strongly disagree.²⁴

²⁴ In regard to this kind of Likert scale question, De Vellis (2003, p. 79) comments: “Common choices for a midpoint include “neither agree nor disagree” and “agree and disagree equally.” There is legitimate room for discussion concerning the equivalence of these two midpoints. The first implies apathetic disinterest, while the latter suggests strong but equal attraction to both agreement and disagreement. It may very well be that most respondents do not focus very much attention on subtleties of language but merely regard any reasonable response option in the center of the range as a midpoint irrespective of its precise wording.”

Independent Variable

According to my conceptual model, loan methodology is the independent variable and is a dichotomous variable divided up into group loans and individual loans. Clients will be targeted according to their loan methodologies. There are four questions about loan methodology, beginning with the type of loan (individual or group). The other questions ask whether the client's loan type has changed, when it changed, and what type of loan the client had previously. Thus, these questions check to see if the duration of a certain loan contract exerts an influence on the dependent variable and whether the client has previously been influenced by a different loan contract. This information is similar to Wydick's (1996, p. 16); Kevane and Wydick's (2001, p. 1230); and Ahlin and Townsend's (2007, p. F31) question about the number of years the group has existed.

Moderating Variables

Moderating variables in this study are gender and environment. There are three questions concerned with gender, which is a dichotomous variable. There is a question about gender, the client's name also provides me with information about the client's gender, and there is a question about the gender of members of group loans. This third question also asks about the number of members in a group, so it is also a question about group size. Wydick (1996, p. 16); Kevane and Wydick (2001, p. 1230); and Ahlin and Townsend (2007, p. F31) also ask a

question about group size. Wydick (1996, p. 16) asks whether the group includes only men, only women, or is mixed.

There are three questions related to environment. One question asks if the client lives in the country, a town, a small city, or a large city. The client's address provides further information about the location of the client's home. This was checked with information provided by INEGI (National Institute of Statistics and Geography) concerning the population of towns and cities in Mexico. In case the client's business is located in a different environment, I also ask about the location of a client's business. Wydick (1996, p. 16) asks about the location of the client's enterprise and whether it is rural or urban.

Mediating Variables

Variables that will mediate the influence of the independent variable on the dependent variable are peer-group pressure, community pressure, group participation, and repayment rates.

Peer-group pressure. I have five items for measuring peer-group pressure. Wydick (1996) included three questions in his dissertation's survey that were concerned with the degree of peer-group pressure and he also performed a factor analysis that revealed three distinct factors: social homogeneity (factor 1); group solidarity and friendship (factor 2); and business monitoring (factor 3).

Borrowing groups who ranked highly in terms of factor 1 were rural groups (rotated factor pattern = -0.818; urban dummy variable equal to 1 if urban group), of the same sex (0.540) and ethnicity (principally indigenous Quiché peoples) (0.765), had similar businesses (0.498), similar-sized businesses (0.270), had known each other a long time (0.342), yet stated that they were hesitant to pressure each other to repay loans (-0.330) as they found pressuring their peers difficult (0.345). . . . Groups who ranked highest with factor 2 were groups who stated that they had been friends prior to forming the group (0.548), shared many social activities together (0.458), found it easy to admonish their fellow group members to repay loans (0.486), stated that important motives to repay loans were to “stay on good terms with my fellow group members” (0.644) and that “as a group we must stay united (0.498).” Highly correlated with this factor (factor 3) were members having similar types of businesses (0.382) located in close proximity (-0.399). Groups ranking highly with respect to factor 3 also stated they had keen awareness of other members’ weekly sales (0.558), and found no difficulty in admonishing others to repay (-0.371) (Wydick, 1996, p. 149).

Other items correlated with factor 3 not mentioned by Wydick, but found in Table 2 (1996, p. 148), are group members belonging to the same sex (0.302) and having a business of roughly the same size (0.654). In factors 1 (0.242) and 3

(0.251), there was some correlation with friendship and some correlation to group members knowing each other before the group in factor 2 (0.243).

My first four items for peer-group pressure were modified from the following questions from Wydick's (1996, p. 17) survey. Two of the questions are ordinal measures and two are nominal.

- "15a. If a member of your group were to use a loan dishonestly and refuse to repay, how much pressure would other members of the group exert on this member to encourage him to repay? 4. much; 3. moderate; 2 little; 1 none."
- "15b. Would pressuring a member to repay a loan be easy or difficult for the members of your group? 3 difficult; 2 moderately difficult; 1 easy."
- "16. Has your group ever expelled a member for failing to repay a loan? yes; no."
- "17. What do you think is the main incentive for borrowers in lending groups like yours with FUNDAP to repay their loans? (check all the reasons that are mentioned)." One of the possible reasons is "b) stay on good terms w/ other members."

The last question is not focused on group pressure related to repayment, but on group pressure related to cooperating and participating in the group. It comes from a similar ordinal question found in the World Bank's social capital integrated questionnaire (SC-IQ) (Grootaert et al., 2004, p. 34): "3.4 How likely is it that people who do not participate in community activities will be criticized or

sanctioned? 1 very likely; 2 somewhat likely; 3 neither likely nor unlikely; 4 somewhat unlikely; 5 very unlikely”.

All of the questions about peer-group pressure utilise a seven-point Likert scale: 7. Extremely likely; 6. Quite likely; 5. Slightly likely; 4. Neither likely nor unlikely; 3. Slightly unlikely; 2. Quite unlikely; 1. Extremely unlikely.

Community pressure. I have five items to measure community pressure. The first two questions about community pressure are modified from the first and fourth questions for peer-group pressure above and come from Wydick’s (1996, p. 17) survey. The third question is similar to the fifth question for peer-group pressure above and like this question comes from the SC-IQ (Grootaert et al., 2004, p. 34). The last two questions were derived from Ahlin and Townsend (2007), who include the variable “sanctions” in their household-level survey. This variable, measures the “percent of village loans where default is punishable by informal sanctions” (Ahlin & Townsend, 2007, p. F31). “Sanctions” would appear to measure community sanctions or community pressure. Ahlin and Townsend (2007, p. F34) explain that “unofficial penalties are reflected in a village-wide denial of credit to, or loss of reputation of, a borrower who defaults on a loan. This captures very directly the form of unofficial penalties – widespread exclusion from future credit transactions.”

All of the questions about community pressure utilise the same seven-point Likert scale as the questions about peer-group pressure.

Group participation. I have included 5 items to measure the effectiveness of group participation. My qualitative pilot study (Griffin, 2008) and a review of other relevant studies (Ahlin & Townsend, 2007; Gomez and Santor, 2003; Sadoulet, 1999; Wydick, 1996) suggested that group participation has the following dimensions: help (or mutual insurance); solidarity; learning; joint decision-making; and attendance and punctuality. The dimension of help encompasses sharing and cooperation, whereas learning includes communication and advice. I have created one item for each of the following dimensions of effective group participation:

Help (mutual insurance), sharing and cooperation. Ahlin and Townsend (2007, p. F31) included four items for cooperation: a “measure of sharing among closely related group members”; a “measure of sharing among unrelated group members”; the “percent in tambon (sub-county) naming this village best in the tambon for “cooperation among villagers””; and the “number of decisions made collectively”. The first two questions concerned with sharing refer to the “sharing of free labor or coordination to procure inputs” and the last question refers to “joint decision-making within the group regarding production” (Ahlin & Townsend, 2007, p. F34). The sharing questions form indices of five yes/no questions about whether “helping with money, helping with free labour, coordinating to transport crops, coordinating to purchase inputs, and coordinating to sell crops has occurred in the past year” (Ahlin & Townsend, 2007, p. F48). We

can see that Ahlin and Townsend regard helping, sharing, and joint decision-making as dimensions of cooperation in microfinance groups.

Sadoulet's (1999, pp. 100, 126) survey included questions with ratio measures of mutual-insurance behaviour that asked about the number of times a client needed help in the past year and the number of times a client provided help in the last year.

Wydick (1996, p. 17) included two ordinal questions about mutual insurance in his survey. The second question is the one I based my survey question for measuring help or mutual insurance on: "13b. In the history of your group how frequently have there been instances when a member could not repay a loan because of bad luck, illness etc. and other members have helped repay his loan? 4 frequently; 3 occasionally; 2 rarely; 1 never" (Wydick, 1996, p. 17).

Solidarity. A united group should participate more effectively. Solidarity is positively correlated with open communication and peer-group pressure in Wydick's (1996) factor analysis. The item I chose to measure group solidarity is modified from a nominal measure in Wydick (1996, p. 17) survey: "17. What do you think is the main incentive for borrowers in lending groups like yours with FUNDAP to repay their loans? (check all the reasons that are mentioned)." One of the possible reasons is "d) as a group, we must stick together." This question is similar to an ordinal question about motivations for repayment in the survey of Gomez and Santor (2003, p. 28), in which 81.5 percent of group clients claimed

that not wanting to let the group down was “extremely important”, 13.7 percent “important”, 3.6 “somewhat important”, and 1.2 “not important”.

Learning. If capital creation is greater in group loans than individual loans this may be caused by the learning that takes place in groups. Being influenced by a higher level of communication and advice in group loans may influence greater learning that should also contribute to more effective group participation. To measure learning, seeing as this construct was not found in other microfinance surveys, I developed the following item: “How likely do you think it is that members of your group often learn from other group members?” The new items I have developed for group participation will be tested for reliability and validity.

Joint decision-making. Ahlin and Townsend (2007) regard joint decision-making as a dimension of microfinance group cooperation: Their questions for joint decision-making counts “the number of the following three decisions on which some or all group members, as opposed to the individual farmer, have the final say: which crops to grow, pesticide and fertilizer usage, and production techniques” (Ahlin & Townsend, 2007, p. F48). Microfinance literature indicates that joint decision-making may contribute to effective groups (Remenyi, 1991). To measure joint decision-making, I developed the following item: “How likely is it that all of the members of your group will have the final say when your group needs to make a decision?”

Attendance and punctuality. For a group to operate effectively, discipline in regularly attending group meetings and punctuality should contribute to group effectiveness. This should be true in the context of Mexican culture where punctuality can be regarded as a special ability. To measure attendance and punctuality, seeing as this construct was not found in other microfinance surveys, I developed the following item: “How likely is it that all your group members will be punctual in attending your group meetings?”

All of the questions about group participation utilise the same seven-point Likert scale as the questions about peer-group pressure. Questions about group participation, peer-group pressure and community pressure were not present in the surveys answered by clients with individual contracts.

Repayment rates. I have included a question about repayment rates that is directed at microfinance staff. Repayment rates may reflect peer-group and community pressure and lead to the formation of more economic capital. Repayment rates may also be correlated with higher levels of group participation. This question is based on one of two questions included in Wydick’s (1996, p.18) survey: “A. Since its beginning, how consistent has this group been with repaying its loans according to credit records?” Gomez and Santor (2003) and Giné and Karlan (2006) are other authors that have measured repayment rates.

The one question about repayment rates utilises the same seven-point Likert scale that is utilised for the items measuring the dependent variable.

Control Variables

The different control variables are age; education; marital status; children; business type; business ownership; duration in the program; loan size and duration; screening; and monitoring.

Age. There is one question using a ratio measure about age. Age is a common control variable. For example, older people may have more business experience and there may be more middle-aged males than females in the sample. Kevane and Wydick (2001) found that young male microfinance clients (between the ages of 20 and 30) generated more employment than young females, but that women from 34 years of age to 64 generated more employment than mature males.

Education. There are three questions about education. Clients with more education should be able to create more economic capital as they already have a head start in human capital. The first question is a ratio measure of years of formal education and the other two are nominal measures that ask whether clients can read and write. I include these two questions because those who are literate might have no formal education but they have an advantage over other clients who not only have no formal education but are also illiterate.

Marital status. There is one question using an ordinal measure of marital status. It was based on a similar question found in the survey titled “Evaluación del

Impacto Social y Económico del PRONAFIM” (p. 3) found in the study by the Centro de Investigación y Docencia Económicas (CIDE) (2006). Women with husbands or partners living with them may receive more financial support for their business.

Children. There are two questions about children using ratio measures. Kevane and Wydick (2001, p. 1225) suggested that younger women generated less employment because they had to take care of younger children: “Increases in value of home time during childbearing years for women may substantially account for gender differences in response to credit access.” The first question asks about the number of children a client may have because women with more children should have less time for their micro-business. The second question asks about the age of children as younger children will also require more attention from female clients. Having a larger number of children may also divert more income away from micro-business investment.

Business type. Regional differences in business types could affect capital creation. For example, a typical business in one area may be more profitable than a typical one in another and they may differ considerably in kinds of services or products. Business types may also differ according to gender, giving one gender an advantage. Wydick’s (1996, p. 16) survey asks about the type of business a client has. Sadoulet’s (1999, p. 126) survey asks various questions about business characteristics and also whether the micro-entrepreneur has more than one

business. I adopt a question utilizing a nominal measure from the PRONAFIM survey (CIDE, 2006, p. 9). I ask about “business(es)” in case the microfinance client manages more than one business.

Business ownership. A client may manage a business but not own it. Ownership may influence the performance of the micro-business as more than one owner may invest in a business. On the other hand the client may be less motivated if she owns a small percentage of the business. This question also checks if the client actually owns the micro-business(es) referred to in the previous question. The question uses an ordinal measure that includes part ownership.

Time in the program. I have one question using a ratio measure for the length of time a client has been in the program. Some studies indicate that micro-businesses grow quicker in the first years and that growth levels off later (e.g. Wydick, 2002, referring to employment creation).

Loan size and duration. Wydick (1996, p. 16) and Sadoulet (1999, p. 126) ask a question about loan size. Wydick (1996, p. 16) also asks about the duration of the client’s loan. If loan sizes are different for different methodologies, this may affect micro-business performance as clients with access to larger loans may have more business options and opportunities. Also, loan size may be a proxy for the socio-economic level of the client or the income of the client. The duration of a loan is also important because a client may take out a loan, for example, of \$500

and another of \$1,000, but if the first loan covers a period of 6 months for repayment, and the second a year, then they are really about the same quantity each month when it comes to repayment depending on the interest rate. I have included a question about loan size and another about loan duration, both of which represent ratio measures.

Screening. The following two questions about screening and monitoring are designed to take into account two alternative explanations for the success of group loans. The screening explanation states that group loans are more successful because the initial group members are able to reject those members who represent a high risk. This proposition takes into account that initial members know something about each other and about potential members before they decide to form a group.

Sadoulet's (1999, p. 100) study incorporates how well clients knew other group members, although his actual survey is not included in his dissertation. In Ahlin and Townsend's (2007, p. F49) study, screening is proxied by two dummy variables: "KNOW_TYPE equals one if the group leader answered that members know the quality of each other's work. SCREEN equals one if the group leader answered that there are borrowers who would like to join their group but cannot" (because they are screened out of the group). The questions for KNOW_TYPE and for SCREEN are: "Do group members know the quality of each other's work?"; and "Do some want to join this group but cannot?" (Ahlin & Townsend, 2007, p. F31). Some of Ahlin and Townsend's (2007) proxies and variables are

curious and appear to refer to other variables. For example, the first question above that these authors use seems to be a question for the variable “monitoring”.

As the most crucial period for screening is the time surrounding the initial formation of the group, I have based my ratio measure question on the following one by Wydick (1996, p. 17): “9a. How long did most of the members of your group know each other before establishing your group? _____ months/years (circle).”

The one question about screening utilises the same seven-point Likert scale used for the items for the dependent variable.

Monitoring. Monitoring between clients is shown to stimulate mutual insurance (in urban groups of vendors) (Wydick, 1996, p. 9), which is an item I have included for the variable of group participation. Sadoulet’s (1999, p. 100) dissertation incorporates monitoring by asking whether clients can observe other members activities. Ahlin and Townsend (2007, p. F48) measure the cost of monitoring with two items: “IN_VILLAGE gives the percentage of the group living in the same village. RELATEDNESS gives the percentage of group members who have a close relative in the group.” However, both items could also be proxies for social capital. Furthermore, the first question could be a proxy for screening.

The question I used was based on one from Wydick’s (1996, p. 17) survey: “11. If I asked you how much each member in your group sells each day, would you be able to tell me? yes; no; uncertain.”

The one question about monitoring utilises the same seven-point Likert scale used for the items for the dependent variable.

Cultural dimensions. As the theory I incorporate states that women in Mexico have more feminine values and rural dwellers are more collectivistic, I have included three questions for the cultural dimension of masculinity/femininity, three questions for collectivism, and three for individualism. High femininity represents low masculinity and vice versa. Although Hofstede (1980, 2001) includes individualism and collectivism in one dimension, other authors (Li & Aksoy, 2007; Triandis and Gelfand, 1998) point out, based on exploratory and confirmatory factor analyses, that there are two distinct cultural dimensions.

The questions I adopted for the dimension of masculinity/femininity were obtained from Hofstede (1980, 2001). The question on cooperation had the equal highest loading (.69) on factor 2 (social/ego) of a factor analysis of a 14-goal, 40-country matrix, while the question on earnings had the lowest loading (-.70) (Hofstede, 2001, pp. 255). These questions measure femininity and masculinity respectively (Hofstede, 2001, p. 281). A factor analysis of a 22-goal, 19-country matrix, revealed that the earnings question (.68) had the second highest loading on factor 1 (ego/social), whereas friendly atmosphere (-.79) had the lowest loading and cooperation (-.66) had the fourth lowest loading (Hofstede, 2001, p. 257). A third factor analysis involved a matrix of 22-goals and 15 mainly European countries (Hofstede, 1980, p. 242). The questions on cooperation (.86) and friendly atmosphere (.84) had the second and third highest loadings respectively

on factor 2 (social/ego), while earnings (-.50, second loading) had the fifth lowest loading. Two of the three items I incorporate for masculinity/femininity were found in the “Values Survey Module” (Hofstede, 1980, p. 419) that are “recommended for future cross-cultural survey studies”, while all the three items are found in the “Hermes” Attitude Survey Questionnaire” (Hofstede, 1980, pp. 404, 409).

The questions I adopted for the dimensions of collectivism and individualism were adopted from Triandis and Gelfand (1998). I have incorporated three items for collectivism and three items for individualism. Based on their confirmatory factor analyses, Li and Aksoy (2007) find that collectivism and individualism are different constructs with multiple dimensions. The collectivism items I adopt concerning family integrity (about parents and children sticking together; and taking care of the family), had factor loadings of 0.61 and 0.60 with Triandis and Gelfand’s exploratory factor analysis, loadings of 0.77 and 0.87 in Li and Aksoy’s first confirmatory factor analysis, and 0.78 and 0.69 in a second confirmatory factor analysis with a new sample (Li & Aksoy, 2007, pp. 317, 320, 322). The collectivism item I adopted for interdependence with sociability (about cooperation) had factor loadings of 0.49, 0.63 and 0.54 respectively. The two individualism items for competition (about winning; and competition as the law of nature) had factor loadings of 0.56 and 0.53; 0.64 and 0.58; 0.72 and 0.57 respectively. Finally the individualism item for self-reliance (about depending on oneself) had loadings of 0.68, 0.76 and 0.76 respectively.

I chose all of the items I adopted for cultural dimensions based on the above factor analyses and their appropriateness for the microfinance client context in central Mexico. The three items from Hofstede (1980) were modified slightly. In my survey, the nine questions utilise the same seven-point Likert scale used for the items for the dependent variable.

4.3 Pilot Studies

The purpose of this section is to present the two pilot studies that were used to test the survey items, especially the items used for the dependent variables, the mediating variables and to test the femininity/masculinity and collectivism/individualism cultural dimensions used in the theory. These pilot tests helped in eliminating items that were found to be lacking in validity or reliability. A qualitative pilot study consisting of four in-depth interviews had been carried out in August and September, 2007, but will not be described here (see Griffin, 2008). This qualitative study (Miles & Huberman, 1994) and a literature review helped to determine the constructs and the overall model to be tested. Then, between the 5th and the 10th of October, 2009, 21 surveys were gathered from ADMIC clients in Villa de Garcia, Nuevo Leon, just outside the city of Monterrey in a semi-arid zone of northern Mexico. 17 completed questionnaires were obtained from clients with individual loans and the remaining 4 had group loans. Due to a lack of answers for the group items, which measured

group pressure, community pressure and group participation, a second pilot study was carried out with Apros clients in Milpa Alta, a semi-rural area of México D.F. (the Federal District), in central Mexico, on the 11th of February, 2010. Here 15 questionnaires were collected from clients that had group loans. The following two sections describe the validity and reliability analysis that corresponded to the two pilot studies of the survey. The factor analysis extraction method used was principal components analysis including a varimax rotation method with Kaiser normalisation. Cronbach's coefficient alpha was used to test reliability (DeVellis, 2003).

First Pilot Study: ADMIC, Villa de Garcia

Capital. Items for economic capital loaded on two factors: sales and profits on one factor with high loadings (.96 and .93 respectively) and high reliability (alpha = .92); and physical capital, savings and labour with good loadings (.83, .75, and .65), but with a Cronbach's alpha of .62. DeVellis (2003, pp. 95-96) believes that an alpha of "between .60 and .65 (is) "undesirable" and between .65 and .70, minimally acceptable". I decided to keep all economic capital items as they reveal interesting data for a general impact study and for comparing and contrasting the results from previous studies.

The three items for human capital loaded on one factor with loadings above .70 and an acceptable alpha of .68. Removing the "reading, writing and

math” item raised the alpha slightly. Removing one of the other two items lowered the alpha. In order to shorten the questionnaire I removed the “reading, writing and math” item.

The social capital items loaded on two factors, both with very good reliability (above .80) and all with loadings above .72. When the “work for the community” and “demands on the government” items were removed, the other items loaded on one factor in the rotated component matrix with a Cronbach’s alpha of .83. In order to shorten the questionnaire I removed these two items as it appears that they are less relevant to micro-businesses than the other forms of social capital.

Culture. The items for cultural dimensions had validity and reliability problems. For the femininity/masculinity items this could be because I did not exactly duplicate Hofstede’s (1980) scale for these items. For the femininity/masculinity construct there were three items, one of which measured masculinity (wages or high earnings) and was reverse scored. They loaded on two factors that indicated a division between femininity and masculinity. The two femininity items had loadings above .53, but a low alpha (.50). I eliminated the “wages” item.

The six items for collectivism and individualism were adopted from Triandis and Gelfand (1998). I had not been able to locate their exact survey, but one paper (Singelis, Triandis, Bhawuk & Gelfand, 1995) provided a summary of this scale. They used a 9-point scale beginning with “always” or “definitely yes” (9) and ending with “never” or “definitely no” (1) (Singelis et al., 1995, p. 250).

The “family lives together” item had a very low loading (.20) and contributed to a low alpha (.24) for the collectivism items. The other two items had high loadings above .81. Removing the “family lives together” item raised the alpha to .48. I decided to remove this item.

The Cronbach’s alpha for the three items for individualism was very low (.10). The winning and independence items loaded above .72. The “competition” item had a negative loading and removing this item raised the alpha to .47, so I decided to remove it.

Second Pilot Study: Apros, Milpa Alta

Capital. The scale for economic capital items was changed from “I totally agree” (“estoy totalmente de acuerdo”) – “I totally disagree” (“estoy totalmente en desacuerdo”) to “yes, a lot more” (“sí, mucho más”) – “no, it has decreased a lot” (“no, ha(n) disminuido mucho”), however, the reliability for these items dropped. Sales and profits loaded on one factor with good loadings (.85 and .92 respectively) and a good alpha (.87). Physical capital and savings also had good loadings (.86 and .81), but an unacceptable alpha (-.58). Labour had a negative loading (-.56) with the sales and profits factor and a low loading (.10) on the other factor. Because reliability had dropped with this scale, I decided to use the original scale for the main survey.

The two remaining human capital items loaded on one component with loadings of .75, however, with a low alpha of only .20. Culture items had been put in front of the human capital items for this pilot study and this may have confused respondents. Therefore, I decided to return the capital items to their original scale and put them in their original order (economic capital, human capital, social capital) in order to increase reliability.

The scale for social capital items was changed in the same way as described above for economic capital items in this pilot study, however, the reliability for these items had also dropped to .47 and one item (“new close friends”) loaded on another factor. Therefore, I decided to use the original scale for the main survey.

Culture. I used Hofstede’s (1980) exact scale and written introduction for the femininity items. Both items had a high loading (.89 each) and a respectable Cronbach’s alpha (.70).

In an attempt to increase the reliability of the two items for collectivism, a statement just before these questions reminded respondents to be honest in answering the questionnaire and this statement reminded respondents that the questionnaire was confidential. I also mixed the collectivism and the individualism items. The two collectivism items had a high loading (.83 each), but a low Cronbach’s alpha (.28).

I attempted to increase the reliability of the two items for individualism in the same way that I did for the two remaining collectivism items. Both items had a good loading (.77 each), but a low Cronbach alpha (.21).

Peer-group pressure. Two items (“group expulsion” and “group sanctions”) had high loadings (.96 and .89 respectively) on a first factor (sanctions). Two other items (“peer-group pressure” and “group relations”) had good loadings (.74 and .81) on a second factor (relationships). The first factor had a good Cronbach’s alpha (.86), whereas the alpha for the second factor was a bit low (.57). The first item (“dishonest use of loan”) had a negative loading on both factors (-.30 and -.60 respectively). I decided to remove this first item.

Community Pressure. All the five items for community pressure loaded on one factor with reasonably high loadings above .74 and a high Cronbach’s alpha (.89). In order to shorten the questionnaire, I removed the first item (“dishonest use of loan”)²⁵ and the fourth item (“future access to community loans”). Removing these two items reduced the Cronbach’s alpha the least to .87.

Group participation. The group participation items loaded on two factors. “Solidarity” (.95), “decision-making” (.58) and “punctuality” (.80) loaded on the first factor. “Learning” (.96) and “decision-making” (.68) loaded on the second. Thus, the “decision-making” item loaded on both factors. The “help” item was the

²⁵ This item here is related to community pressure not peer-group pressure like the other “dishonest use of loan” item above. Both these items, however, were eliminated from the final questionnaire.

only item that didn't have an adequate loading on at least one factor, although it came close to an acceptable loading on both factors (.48 and .43 respectively). Both factors had reasonable reliability (.80 and .73 respectively). Because these items could potentially reveal interesting data about group processes, I decided to retain all of these items.

Conclusions

Various items were removed during the two pilot studies because they lacked reliability or validity or in order to shorten the questionnaire. To make the questionnaire shorter I removed one item for human capital and two for social capital. I also experimented with the scale for the economic capital items and social capital items, but decided to return these items to their original scale and original order. I then extended the original scale to nine options by including "I very much agree" ("estoy muy de acuerdo") and "I very much disagree" ("estoy muy en desacuerdo") as there appeared to be a wide gap between "I totally agree" and "I somewhat agree" and their negative equivalents.

In regard to items for cultural dimensions, I removed those items that did not load with the others. Adopting Hofstede's (1980) exact scale and his written introduction to the femininity items worked well. As the Cronbach's alpha was low for the collectivism and individualism items adopted from Triandis and Gelfand (1998), I decided to change the scale to resemble their original scale as closely as possible (e.g. always; frequently etc.).

In general the items for peer-group pressure, community pressure and group participation functioned well in the pilot study. The peer-group pressure items formed two factors (group sanctions and relationships). One item that did not load positively was removed from the peer-group pressure items. All the community pressure items loaded together with high loadings, however, I decided to remove two items to shorten the questionnaire. Finally, I decided to retain all the group participation items, even though one did not load adequately on any factor, as I believed these items would provide interesting insights into group processes.

4.4 Data Collection

Population

The population is composed of men and women who are engaged in micro-enterprises and have access to credit in micro-credit programs. Because MFIs operate in different environments and have differences in their loan methodologies, two MFIs were needed to answer the five hypotheses of Chapter 3. Firstly, CAME (Crédito y Ahorro a tu Medida) has large groups of between 10 and 48 clients consisting of mainly mixed groups in which females generally outnumbered males; insists on obligatory savings (the village bank method); operates in rural environments and also in the largest cities; and provides

individual loans in Mexico City only. CAME is the second largest MFI group lender in Mexico with more than 250,000 group clients (CAME, n.d.)²⁶. Secondly, APROS (Ambito Productivo)²⁷ has small groups of between 5 and 12 clients (solidarity groups) consisting of all-female groups and mixed groups of different gender proportions; operates mainly in environments that range from small towns to small cities; but provides very few individual loans (Apros, n.d.; Conde Bonfil, 2009).

As mentioned in the previous section (“4.3 Pilot Studies”), three pilot studies were conducted. Firstly, I performed a qualitative pilot study in August and September 2007 consisting of interviews with the Chief Operations Officer and the ex-manager of two private MFIs, the sub-Director of a government program, and a student researcher (Griffin, 2008; Miles & Huberman, 1994)²⁸. The interviews were conducted in Zacatecas, Mexico City and Monterrey. Secondly, I tested my survey from the 5th to the 10th of October, 2009, with 21 ADMIC (Asesoría a Microempresas) clients, most of whom had individual loans in Villa de Garcia, Nuevo Leon, in northern Mexico (ADMIC, n.d.). Thirdly, a second testing of my survey took place on the 11th of February, 2010, with 15 Apros group clients in the vicinity of the semi-rural town of Milpa Alta, which is also the capital of one of the municipalities of México D.F. (Federal District). Mexico City is located in México D.F. and the state of México.

²⁶ On June 30, 2011, CAME had 259,334 clients (“socios”) divided into 16,969 groups in 138 branches (CAME, n.d.). At the time of the survey in 2010, CAME had roughly 1,000 individual loans.

²⁷ For a description of Apros in Spanish see Conde Bonfil (2009, pp. 73-79).

²⁸ This pilot study has been included in conference proceedings and will not be presented here.

A sample of around 200 is often recommended for publishing with structural equation modeling, so more than 200 questionnaires were collected in both Apros and CAME (Iacobucci, 2010; Nachtigall, Kroehne, Funke, & Steyer, 2003). An attempt was made to divide clients evenly up by gender composition of groups (for group loans) or gender (for individual loans), environment and loan methodology. Table 4.1 represents my original survey sample intentions. However, all-male groups seem to be very rare in Mexico and it was not possible to find a Mexican MFI with sufficient all-male groups that was willing to participate in the survey.

Table 4.1

Stratified Sample

Strata	No. of clients (minimum)
Large city, males, individual loans	20
Large city, females, individual loans	20
Large city, all-male groups	20
Large city, all-female groups	20
Large city, mixed groups	20
Rural area, males, individual loans	20
Rural area, females, individual loans	20
Rural area, all-male groups	20
Rural area, all-female groups	20
Rural area, mixed groups	20
Total (minimum)	200

The samples for groups were also intended to be divided into around 50 percent cities (urban areas) and 50 percent towns (rural areas). Some microfinance papers indicate that rural clients live in more closely-knit communities where

people tend to have more information about their neighbours in contrast to urban dwellers, although the cultural dimension of collectivism is not mentioned in these papers (Abbink et al., 2006, p. 616; Armendáriz de Aghion & Morduch, 2005, pp. 93-94, 109). Other authors state that rural areas tend to be more collectivistic than urban areas (Erez & Somech, 1996; Hofstede, 1997, pp. 65, 74). The above literature suggests that clients living in densely populated urban centres, such as Mexico City, will tend to be more individualistic and/or have less knowledge about the activities of people in the local community than clients living in rural areas.

This study includes two MFIs both of which operate with two loan methodologies. An attempt was made to collect the above sample in Table 4.1 in only one MFI, but this was not possible. Even with two MFIs there were still some gaps in the above sample requirements in Table 4.1. There were only a few all-male groups in Apro^s²⁹ and none in CAME. CAME had few groups in which there were more males than females, so groups in Apro^s with 40 percent or more males were especially targeted in order to collect about 50 of these groups. CAME also had very few all-female groups. Furthermore, Apro^s did not have enough individual loans and CAME only had urban ones, so only a few males and females with rural individual loans were collected from Apro^s. Therefore, it was not possible to answer a potential sixth hypothesis about differences between urban individual loans and rural individual loans, although there were three

²⁹ Only one questionnaire was collected from a client in an all-male group who had been with Apro^s for at least one year.

samples with a minimum of 109 cases each to answer the five hypotheses in Chapter 3.

Firstly, a CAME sample of group loans consisting of mixed groups that generally had more women was collected in Valle de Chalco (55 groups), an outer suburb of Mexico City, and in Ozumba (55 groups), a large agricultural town some 30 kilometres from the outskirts of Mexico City between the 15th and the 25th of June, 2010 (see Table 4.2). Both locations are in the state of México. The 110 group clients all belonged to 110 different groups, the group being the unit of analysis for both MFIs. CAME individual loan questionnaires, divided up into 54 questionnaires collected from male clients and 55 from females, were collected in Ciudad Nezahualcóyotl in Mexico City in the state of México from the 14th of June to the 14th of July, 2010. Of the 220 questionnaires collected in CAME³⁰, all clients had been receiving loans for at least one year from CAME. The time clients had received loans from the MFI was important to the survey as questions asked about the last year of capital creation.

Table 4.2

CAME Sample

Strata	No. of clients (cases)
Large city, males, individual loans	54
Large city, females, individual loans	55
Large city, all-female groups	3
Large city, mixed groups	52
Rural area, all-female groups	2
Rural area, mixed groups	53
Total	219

³⁰ One male individual loans questionnaire was eliminated from the CAME sample.

The Apros sample was collected in two phases between the 24th of May and the 11th of June, 2010; and the 15th of July and the 26th of August, 2010, in all of the eight Apros centres in the states of Hidalgo, Veracruz and the Federal District. As there were too few individual loans, more than 200 questionnaires were collected from group clients. A sample of all-female groups, mixed groups with more than 60 percent women and mixed groups of 60 percent or fewer women was collected. There were originally 186 group questionnaires pertaining to clients who had been with Apros for at least a year but 4 of these were eliminated as they were missing too much data (see Table 4.3). In addition another 57 questionnaires were collected by Apros staff from group clients who had been with Apros for less than one year and there were 37 individual loan questionnaires filled out, but many of these clients were new. The sample I used in Apros to answer hypotheses 2 to 5 was that of group loans in which the clients had been associating with Apros for at least one year (Table 4.3). Very few groups were located in large cities in the Apros sample as most clients in the Federal District were located in the vicinity of Milpa Alta, a large agricultural town only about 10 kilometres from the outskirts of Mexico City.

Table 4.3

Apros Sample of Group Loan Clients with at least One Year with the MFI

Strata	No. of clients (minimum)
Urban, groups of 0% to 60% females	25
Urban, groups of 63% to 92% females	30
Urban, all-female groups	40
Rural, groups of 0% to 60% females	22
Rural, groups of 63% to 92% females	16
Rural, all-female groups	49
Total	182

Sampling Design

The 109 individual loans in CAME were all located in Mexico City. A list of 372 individual loan clients was provided by CAME that had names, addresses and telephone numbers. This list included new clients that could have obtained their first loan from CAME within the past year and it also included defaulters. No information about clients was included that could have served to sort clients with at least one year with CAME from new clients; and punctual clients from defaulters. My objective was to collect 55 male clients and 55 female clients, both with at least one year of association with CAME.

The group loan centres in CAME that I was interested in each had over 200 groups. Seeing as most groups had far more females than males and, therefore, groups differed very little according to gender, my objective was to collect an equal number of survey questionnaires from a rural centre (55 questionnaires) and an equal number from an urban centre (55). In each group

sample, centre managers were asked to provide information about the percentage of groups that were not punctual with payments or had defaulted over the last year, and the same percentage of irregular groups or actual defaulters was included among the questionnaires collected.

As I obtained a list from AproS of all their groups that had at least one year of association with AproS, it was possible to utilise a stratified sample design and select participants from each strata (as in Table 4.1 with some exceptions) (Babbie, 2004; Fowler, 2002). This list included various details about all the group members' gender, their address, their AproS centre and the group's name. As there was a lack of groups with more males than females, the group category with less than 61 percent females had to be carefully chosen. An effort was made to divide the sample up between the three group categories mentioned above while also dividing the sample up between urban areas and rural areas. Large cities were specially selected as there was a lack of group loans in large cities. To verify the population of a town or city, the 2005 INEGI (National Institute of Statistics and Geography) census statistics were referred to (INEGI, 2005)³¹. A list of defaulting groups was also obtained from AproS and a proportion of defaulting groups was included in the sample.

³¹ The 2010 census was being carried out by INEGI when my survey had been collected and data was still not available for 2010, so 2005 data was used to verify the environment in which the clients lived e.g. small town, large town, small city etc.

Possible Sampling Problems

This sample doesn't claim to be representative of Mexican culture. The Apros sample is only representative of Apros clients, whereas the CAME sample is representative of CAME individual loan clients in the Ciudad Nezahualcóyotl centre and CAME group loan clients in the centres of Ozumba and Tezozomoc (Valle de Chalco). Ciudad Nezahualcóyotl and Valle de Chalco are recognised as being poor suburbs of Mexico City, although Ciudad Nezahualcóyotl, being closer to the inner city, has evolved economically over the last two decades from one of the more infamous areas of Mexico City. Valle de Chalco is a more recently populated urban area on the outskirts of Mexico City. Many clients in the rural town of Ozumba grow and sell agricultural products. Ozumba's close proximity to Mexico City, by far the largest city in Mexico and one of the largest in the world, must have influenced to some extent the local economy and culture. Many residents in Ozumba and the surrounding area had lived and worked in Mexico City, the capital of modern, colonial and Aztec-dominated Mexico.

The Apros centre of Milpa Alta is similar to the CAME centre of Ozumba, both being agricultural towns close to Mexico City in the fertile densely populated volcanic belt. Milpa Alta specialises in the harvesting of edible cactus (nopal). A few questionnaires were collected from an Apros centre in Mexico City, but most were collected in the states of Hidalgo and Vera Cruz to the north-east and east of Mexico City. One Apros centre in Hidalgo was located in the mountainous Huasteca region in the Sierra Madre Oriental; another four centres were located

between the lower slopes of the Sierra Madre Oriental and the coast; and one centre had clients in coastal towns and cities of the Gulf of Mexico.

The CAME and Apros samples were composed of micro- and small business entrepreneurs that lived below or above the poverty line. CAME clients belonged to the congested, polluted environment of Mexico's traditional capital or lived in a densely populated rural area close by. The Apros sample was mainly composed of rural or small city dwellers to the east or north-east of Mexico City. The people of Mexico City tend to vote for left of centre political parties in comparison to northern Mexicans who tend to support the free-enterprise Catholic-oriented PAN (National Action Party). The culture of northern Mexico differs in that it is generally more prosperous economically and has more of an American and European influence. The elites of northern cities generally relate their family heritage to the Spanish whereas central Mexican dwellers are generally more egalitarian and nationalistic. The indigenous influence has been strong in central Mexico, but this has merged into a modern mestizo culture that is highlighted by a busy economic and social lifestyle in Mexico City. In southern states the indigenous culture, which emphasises a more relaxed lifestyle based on community, cordial relationships, and alliances, is still an important contemporary influence. However, each state in Mexico has a tendency to differ somewhat in gastronomy, traditional dance, traditional attire, other cultural traits, and economic characteristics.

Therefore, the main differences between the clients in my sample and those in other parts of Mexico would be cultural. Per capita income also tends to

decrease from the north to the south of Mexico. Furthermore, there may also be regional differences in business types. For instance, in the Huasteca region some Apros clients sold exclusively enormous two-meter long tamales³², known as zacahuil, particular only to that area.

Other factors were controlled for between the different strata that were sampled, such as the age and the education level of clients. Other sampling problems that have already been mentioned were a lack of all-male groups; and a lack of rural individual loans for both sexes. A comparison of rural individual loans with a large enough sample of urban individual loans was also not possible.

Method, Administering the Survey, Data Entry and Codification

Administering the survey differed according to the characteristics of the MFI. For the CAME survey, two people collected the entire sample in three centres. A paid assistant with previous experience collected all the individual loans in Ciudad Nezahualcóyotl, while I collected all group loans in Tezozomoc and Ozumba. In the Ciudad Nezahualcóyotl centre, clients with individual loan rarely go to the centre except when they are applying for a new loan. Therefore, the only way to collect this part of the sample was to ring the clients, find out how long they had been clients, ask permission to apply the questionnaire, and visit their businesses or homes. Clients with individual loans in the CAME sample generally preferred to fill out the questionnaire themselves.

³² Tamales are pre-hispanic dishes or snacks, a kind of traditional Mexican fast food, composed of a base of starchy corn dough with a variety of fillings steamed in a leaf wrapper of corn or banana.

In the Tezozomoc centre in Valle de Chalco, groups had weekly meetings in the centre. Therefore, the survey collector would enter the meeting and ask a group member to answer the survey. Clients generally preferred to have the survey read in this situation.

Finally, the groups in the Ozumba centre did not have meetings in the centre, but in their homes. The most efficient way to collect the survey here was to wait next to the cashier at the centre and ask clients to cooperate with the survey when they were waiting in line to make their weekly payments. Usually a security guard, who the clients knew, asked the clients to cooperate with the survey. Clients in this situation also preferred to have the survey read to them. It should also be taken into account that there were illiterate clients who needed to have the survey read or older clients who expected to be helped with the survey.

Regarding the Apros survey, it was not practical to collect the survey questionnaires in the centres because the Apros representatives were repaid part of the loans during the group meetings in the clients' homes. Due to the smaller population of groups in the eight Apros centres; the large distances between the centres; and the difficulty involved in locating clients, it was decided that Apros staff would collect the questionnaires. Each centre had particular staff members who were responsible for certain groups. In general, about two thirds of the questionnaires were read to the clients and another third were self-administered.³³

My questionnaire was short enough and sufficiently user friendly so that literate clients had no problem filling it out themselves with a minimum amount

³³ Testing the dependent variables of the Apros survey with t-tests and regression revealed no significant differences in the way that the survey was administered.

of error. The time taken to fill out a questionnaire and the level of difficulty that clients experienced had been tested during the pilot studies.

After the interviews I entered data directly into data files so that it was ready for immediate analysis. There are two codes for gender and loan methodology and up to six for environment. There is also a ratio question asking about the gender of group members that divides group loans up according to the gender of members. Mediating and dependent variables were coded with Likert scales that varied between scales with five categories to scales with nine categories.

4.5 Testing

Data Analysis

My first hypothesis will be corroborated if my results register a significantly greater average increase in the capital of males with individual loans compared to the capital of females with individual loans. The fourth and fifth hypotheses measure capital creation with group loans comparing different group categories. The second hypothesis measures differences in group participation and the third measures differences in peer-group and community pressure. All of these differences in averages and variances were tested with *t*-tests and ANOVAs. Factors for capital were also tested for latent mean differences by means of

structural equation modeling (Schumacker & Lomax, 2004). It was necessary to check to see whether control variables, such as education or age, affected the dependent variable or other factors. Pearson's product-moment correlation (r) is one way to measure association between variables (Babbie, 2004). The influence of control variables was also tested with structural equation modeling. Reliability was assessed with Cronbach's alpha; and validity with factor analysis and confirmatory factor analysis (Hair & Anderson, 2010; Hair, Anderson, Tatham, & Black, 1995).

I decided to use structural equation modeling (SEM) because it allows a researcher to quantify and test scientific theories while taking into account measurement error (Maruyama 1998; Natchtigall et al., 2003; Raykov & Marcoulides, 2006; Schumacker & Lomax, 2004; Singleton, Straits, and Miller Straits 1993). Schreiber, Nora, Stage, Barlow and King (2006, p. 325) "like to think of SEM as CFA (confirmatory factor analysis) and multiple regression because SEM is more of a confirmatory technique, but it also can be used for exploratory purposes." Structural equation models are composed of theoretical constructs or latent variables that are not directly measurable. For example, group cooperation or peer-group pressure is a latent variable that cannot be directly measured and can only be done so by composing items, indicators or observed variables believed to represent the construct.

A major advantage of SEM is that measurement error is accounted for by including an error term for each item so that the reliability and validity of observed variables can be tested (Hair & Anderson, 2010; Raykov &

Marcoulides, 2006; Schumacker & Lomax, 2004). Potential measurement error in independent variables is overlooked in traditional regression analysis. The models in SEM are based on covariance or correlation matrices so that all the relationships between items can be considered in formulating the model with the best fit. Complex theoretical models can be developed and tested with SEM as the researcher can include direct and indirect effects, that is, the influence of direct relationships between dependent and independent variables or those that pass through mediating variables. Basic statistical methods only test a limited amount of variables. SEM has matured since the 1960s with increasingly user-friendly software programs that enable researchers to assess more advanced questions related to models, such as group differences or multiple levels of analysis (e.g. client, group, and microfinance institution) (Schumacker & Lomax, 2004). Structural equation models were tested for groups with more than one year in the Apros sample; for all group loans in the CAME sample; and for all individual loans in the CAME sample.

All models were run using the EQS 6.1 program (Byrne, 2006). I chose to use the EQS software program for a variety of reasons including its user-friendly nature (Nachtigall et al., 2003). Byrne (2006), who authors guides for the most popular programs, hints that EQS 6.1 represents the vanguard of state-of-the-art SEM software packages. EQS is versatile as models can be conceived manually by altering the code of the input file; interactively, by using the BUILD-EQS option; or graphically by employing the DIAGRAMMER option. The Santorra-Bentler scaled chi-square, a recent addition to EQS, is used to compensate for the

effect of nonnormality and provides robust statistics to complement maximum likelihood estimation. EQS also includes a Lagrange Multiplier Test that frees parameters that will improve model fit and a Wald Test that restricts problematic free parameters. EQS can compute descriptive statistics; perform the statistical analysis of data, such as factor analysis, *t*-tests or analysis of variance; edit data; manage missing values; identify outliers; examine linearity; and investigate for nonnormality.

There is “some” agreement amongst researchers that the SEM fit indices that need to be reported are: chi square (χ^2); the comparative fit index (CFI); and the standardized root mean square residual (SRMR) (Iacobucci, 2010, p. 90). Other authors include the root mean square error of approximation (RMSEA) amongst these essential indices (Byrne, 2006, pp. 99-100). The χ^2 is the only inferential statistic that can test the significance of the data-based model compared to a theoretical model, but it is sensitive to sample size (Iacobucci, 2010). CFI is a goodness-of-fit index that compares the fit of a chosen model to a simpler one in which no paths are estimated. The SRMR is a badness-of-fit index that examines residuals that indicate differences between model predictions and data. The RMSEA examines the error of approximation in a population and investigates whether the model would fit a hypothesized population covariance matrix (Byrne, 2006). This fit index is sensitive to a model’s complexity.

Iacobucci (2010, p. 90) states that “ideally, for a model that fits the data, the χ^2 would not be significant ($p > 0.05$), the SRMR would be close to 0.09 (or lower), and the CFI would be close to 0.95 (or higher).” Byrne (2006, p. 100)

believes that RMSEA “values as high as .08 represent reasonable errors of approximation in the population” and that less than .05 for the SRMR and RMSEA indicate a well-fitting model. She adds that “these criteria are based solely on subjective judgment and therefore cannot be regarded as infallible or correct” (Byrne, 2006, p. 100). Regarding the CFI, Byrne (2006, p. 97) suggests that “although a value of $> .90$ was originally considered representative of a well-fitting model, a revised cutoff value close to 0.95 has been advised” (see also Algesheimer, Dholakia, & Herrmann, 2005, p. 26; Schreiber et al., 2006, p. 330).

I evaluated the internal consistency of constructs in my model by measuring and analysing means, standard deviations, composite reliability and average variance extracted (Hair & Anderson, 2010; Hair et al., 1995). The discriminant validity of my model was tested with confirmatory factor analysis. The hypothesized model was compared with a rival model by considering overall fit, the model’s statistically significant parameters, the theoretical interpretation of paths, and the explained variance of the endogenous (dependent) constructs.

Multiple sample analyses were also conducted to test the hypotheses concerned with the roles of moderating variables. Tests of factorial invariance were performed on causal structures representing different samples (Byrne, 2006). A structured means analysis was also performed with EQS to test for latent mean differences between categories, such as the gender composition of groups, and town or city size. Tests of moderation were also conducted on separate categories to determine if the path coefficients differed between categories.

Limitations

Experts on the phenomenon of microfinance (e.g. Armendáriz de Aghion & Morduch, 2005) may question the reliability of this research due to the many Likert scale questions in the survey that attempt to measure variables such as capital. If the growth of economic capital (e.g. sales, profits and savings) is based on the word of mouth of clients with no access to exact figures, then there is reason to doubt the reliability of information. Besides the rigor of applying confirmatory factor analysis to operationalise the same items in the different samples and an examination of the construct validity of the factors in the various samples, a comparison of my results between the different samples aided in answering questions surrounding the reliability and validity of my study.

Non-response bias. Although non-response bias was not expected to be a big factor in this research, Fowler (2002) lists ways to counter this that proved to be useful when I approached clients. For example he suggests that researchers should “effectively and accurately present the purposes of the project” and “make sure respondents know their help is important and how it will be useful (Fowler, 2002, p. 46). The introduction to the questionnaire emphasised that it would be “strictly confidential”; stated that the survey was for educational purposes; and provided the name and logo of the educational institution where I was doing my thesis. This private institution is well known and has a lot of credibility in México. The survey

collectors encouraged staff to answer the questionnaire and I personally observed that clients were generally willing to answer. Sometimes clients were in a hurry in the Ozumba centre, as they had come to deposit the weekly payments of their group, so they did not have time to answer, but this appeared to be the only reason for not participating in the survey. Fowler (2002, p. 47) also recommends asking clients to fill out questionnaires again if they refuse the first time, however, in the collection of group loans that I participated in this wasn't necessary (see also Armstrong & Overton, 1977). To determine if there was a systematic bias between those who participated in the survey and those who did not I asked questions about the non-participating subject to program staff or other participants to find out if there was any major difference between respondents and non-respondents. However, there was no noticeable difference and even groups with poor payment records were willing to answer the questionnaire.

Very little resistance towards the survey was experienced. Only one man in an unreliable group in Ozumba refused to answer the questionnaire and here the situation was a bit tense. The group meeting was in front of a house. However, a woman in the group invited me inside her home and was very cooperative in answering the questionnaire. Another tardy group in the Ozumba area made fun of the CAME representative and criticised him in my presence, but they were also very cooperative in filling out the questionnaire. Another tense situation occurred when a woman waiting in line in Ozumba accused me of being an imposter. I was able to show her documents that indicated that I was at the time working for the Instituto Politécnico Nacional (IPN), but in any case I had already obtained a

completed questionnaire from another member of her group. Many defaulters in Ciudad Nezahualcóyotl also answered the questionnaire even though the survey collector was not accompanied by a CAME representative. There were some isolated instances of open resistance to the survey, but this did not appear to affect other clients.

Social desirability bias. Social desirability bias can present serious problems to the reliability of the survey if microfinance clients answer to intentionally make their individual performance and that of their groups be better than it really is (Abrahamson, 1983; Babbie, 2004). They may, for instance, exaggerate the effectiveness of participation by group members. Apros staff members could have also encouraged clients to answer in a fashion that made the microfinance institution look very successful and that would be good for Apros' public relations. However, the Apros sample appeared to have better reliability and validity than the CAME samples, which were collected by an experienced assistant and myself.

I decided to encourage self-administered questionnaires in order to reduce social desirability bias. Respondents often answer “through a filter of what will make them look good. This is especially true if they’re interviewed face-to-face” (Babbie, 2004, p. 250). Fowler (2002, p. 64) comments that “data clearly indicate that sensitive information is more frequently, and almost certainly more accurately, reported in self-administered modes than when interviewers ask the questions.” Having a survey that respondents are expected to fill out should have

removed some social desirability bias, although the survey collector had to help illiterate clients to fill out the questionnaire or those that preferred to have the questionnaire read to them. As with the above suggestions for non-response bias, explaining the purposes of the study and emphasizing that it was important that respondents answer honestly should have helped to lower social desirability bias.

Fowler (2002, p. 99) adds that the researcher should “minimize a sense of judgment” and “maximize the importance of accuracy”. Survey collectors were advised to only help clients in answering the survey, apart from reading the survey, if the clients didn’t understand a question and asked for help. Even then survey collectors were asked not to make any value judgments.

Emphasising confidentiality in the questionnaire’s introduction should have built up more trust with respondents (Fowler, 2002, p. 100). Another way in which I removed social desirability bias was by asking MFI staff about the clients’ repayment histories and not asking the clients themselves directly (see Appendix A, Question 4.D.1). Furthermore, no questions concerning exact sums of money were asked of clients in the Apros sample. There were only ordinal questions in the questionnaire related to income generation. As staff were originally not supposed to provide any information for the CAME sample, we had to ask CAME clients about their loan size. But, clients didn’t seem to regard this as very sensitive information seeing as survey collectors had access to CAME staff and thus, respondents must have reasoned that we could have double-checked these figures for loan size. Later CAME provided me with information

about client repayment rates. Other questions directed at CAME clients related to income were also ordinal and, therefore, not sensitive.

Context effects. I reduced the problem of artificial response consistencies due to ‘context effects’, such as common-method variance, by using multiple-item constructs in the data analysis (Harrison, McLaughlin, & Coalter, 1996; Robins, Tallman, & Fladmoe-Lindquist, 2002). Another way that I reduced context effects was by structuring the survey instrument with non-contiguous scales (Blalock, 1982; Chang, van Witteloostuijn, & Eden, 2010). For example, the wording of the scales for the dependent variable is different than the scales for the mediating variables, whereas the independent variable consists of nominal measures (see Appendix A). Although the two constructs for group and community forces (sanctions and relations) shared a common scale, these constructs differed in their relationship with repayments, a mediating factor, and financial capital, the dependent factor. Furthermore, my independent and dependent variables do not have similar content. I avoided including “auxiliary” theories (which connect measures to constructs) that are related to primary theories of relationships between constructs (Blalock, 1982). I have also not employed narrowly defined and novel items for dependent measures as I have based my items on those used in other surveys focusing on the performance of microfinance clients or which are recommended by USAID and the World Bank and were developed from various research projects carried out in developing countries (Harrison et al., 1996). I also tested my items in case they were unusual, ambiguous or vague with two pilot

samples. My dependent variable (capital) was divided up into three main categories, each of which is once again measured by various items. Finally, the repayments rate factor, which mediates the other constructs, was derived from staff answers, whereas the other factors were based on client answers (Chang et al., 2010).

Self-selection bias. Self-selection bias was countered in the Apros sample and in the CAME individual loans sample by selecting groups from an initial list that included defaulting clients (Babbie, 2004; Berk, 1983). As no list of defaulting clients was initially provided in the CAME samples of Ozumba and Tezozomoc, the centre manager was asked how many groups had defaulted in the last year. The number of defaulting groups was compared to the total population of groups during the last year to arrive at a percentage of defaulting groups. In both MFIs, a realistic proportion of tardy and defaulting groups was collected in each centre. For the CAME group sample in Ozumba it was necessary to include groups that were late in their payments and defaulting groups. A percentage of these groups were visited during their house meetings, whereas other questionnaires were obtained when a member of these groups went to the centre to pay. In the Tezozomoc centre, groups with payment problems were especially selected and their meeting was visited in order to obtain a completed questionnaire. During the collection of the survey in Tezozomoc, other groups included in the survey were also discovered to have repayment problems or be in the process of defaulting. All CAME centres later provided me with a list of tardy and defaulting clients so that

I could check how many I had included in my sample. If I had not accounted for delayed and defaulting borrowers my parameters would have been biased and, moreover, there may not have been enough variance in my independent variables.

CHAPTER 5: RESULTS FOR CAME INDIVIDUAL LOANS

5.1 Introduction

The object of this chapter is to test Hypothesis 1, which states that male-owned businesses with individual loans will generate more capital than female-owned businesses with individual loans. The first section looks at descriptive statistics and additional tables. The second section analyses the measurement model for this sample with confirmatory factor analysis and determines construct validity. The next two sections deal with *t*-tests and ANOVAs of the dependent variables. In the fifth section a causal model for individual loans with goodness-of-fit was found. This was necessary in order to determine appropriate sample size with the critical N (Hox, 1995; Schumacker & Lomax, 2004). In the sixth section I look at latent mean differences to test whether males and females have significant differences in regards to financial capital creation. Finally, taking into account the results of the statistical tests in this chapter, I make a conclusion concerning Hypothesis 1.

5.2 Descriptive Statistics

*Sampling Procedure*³⁴

This part of the CAME sample was collected in an area of Mexico City known as Ciudad Nezahualcóyotl in the state of México. The individual loans in CAME were collected from a list of 372 individual loans, a proportion of which were clients that had been associating with CAME for less than a year. As only clients with at least a year with CAME were selected for the survey, a preliminary telephone call was made to potential clients soliciting the client's time of association with CAME and asking for permission to collect a questionnaire from the client. Clients were then visited in their businesses or homes. 55 questionnaires were collected from female clients and 55 from male clients. Generally, this part of the survey was self-administered by the clients, but 5 males requested that the questionnaire be read to them compared to 4 females. There were no sex differences regarding the application of the survey ($\chi^2 = .14$; $df = 1$, n.s.). This individual loans survey in Spanish and its translation back into English can be found in Appendices B and C.

³⁴ A description of sampling procedure is given in section 4.4.

Missing Data

One male client had not filled out his questionnaire carefully, so this case was eliminated, leaving this part of the sample with 54 males and 55 females. There was some data missing, although far less than 5 percent for each question. The maximum number of cases that were missing data for any one item was three (2.75 percent). The average for male clients or female clients was used to replace missing data.

Descriptive Statistics

Below are tables with means, standard deviations (s.d.) (Table 5.1) and correlations (Appendix D) for CAME individual loans. Items that did not have construct validity (tested later on in this chapter) are not included in the table. The repayments scale was designed from data provided by CAME about four months after the survey collection had finished and includes potential defaulters at the time of the survey. Potential defaulters were those that were apparently not late in their payments at the time of the survey, but who were late in their payments by less than 120 days when the list of late payments was received.

Table 5.1 gives us some information about means for this sample. The average age was around 45 years, most clients were married (61.5 percent), and clients had around 3 children each. For those that had children their youngest child was about 14 years old on average. The average client had not finished secondary school, but had a bit more than 8 years of formal education. 43.1

percent had only six years of primary school or less; 24.8 percent had between 7 and 9 years of schooling (secondary); 22.9 percent had between 10 and 12 years (preparatory); and 9.2 percent had more than a preparatory education. The average business was fairly old, an average of 13 years, most owned all of their business(es) (77.1 percent), and the average client had been associating with CAME for about 4 and a half years. The age of a business had a negative significant correlation with sales ($r = -.20, p < .05$), but the time of association with CAME had a positive significant correlation with savings ($r = .21, p < .05$). The average loan was around US\$150 a month. A minority of clients (21.1 percent) had other individual loans in other organisations.

Table 5.1

Descriptive Statistics, CAME Individual Loans

Variables	Mean	s.d.	Mean Females	Mean Males
1. Sex	1.50	.50		
2. Repayments	5.67	1.75	5.66	5.69
3. Sales	5.18	1.36	5.09	5.28
4. Profits	4.90	1.50	4.73	5.07
5. Savings	4.80	1.73	4.56	5.06
6. Age (years)	44.55	10.22	43.76	45.35
7. Number of children	2.89	1.95	3.00	2.78
8. Youngest child (years)	14.26	9.78	14.38	14.13
9. Age of business (years)	13.07	9.95	12.25	13.91
10. Loan amount per month (Mexican pesos)	\$1,895	\$1,966	\$1,790	\$2,002
11. Time in CAME (years)	4.41	3.23	4.19	4.64
12. Buisness ownership	4.64	.70	4.58	4.70
13. Marital status	1.39	.49	1.42	1.35
14. Other loans	1.21	.41	1.13	1.30
15. Education (years)	8.17	3.45	8.14	8.21

n = 109

Coding for variables was as follows: sex: 1 = "male", 2 = "female"; repayments: 1 = 1,156-1,500 days late, 2 = 811-1,155 days late, 3 = 466-810 days late, 4 = 121-465 days late, 5 = 61-120 days late, 6 = 1-60 days late, 7 = 0 days late; variables 3 to 5 (sales, profits, savings): 1 = "I totally disagree", 9 = "I totally agree"; business ownership: 1 = zero %, 2 = less than 50%, 3 = 50%, 4 = more than 50%, 5 = 100%; marital status: 1 = married, 2 = not married; other loans: 1 = "no", 2 = "yes, an individual loan".

Males only enjoyed one significant difference compared to females: they had more loans in other organisations ($\chi^2 = 4.68$, $df = 1$, $p < .05$), but this apparent advantage had little correlation with financial capital creation. The other control variables were not significantly different taking into account gender. Males were older ($t = .81$, $df = 107$, n.s.); had older businesses ($t = .87$, $df = 107$, n.s.); had associated with CAME for longer ($t = .72$, $df = 107$, n.s.); owned more of their businesses ($t = .91$, $df = 104$, n.s.); and had larger loans per month ($t = .56$, $df = 107$, n.s.). Generally, descriptive statistics revealed that male clients did not enjoy significant advantages over female clients as few control variables had a large impact on capital creation. Education was significant in the generation of economic capital, but males did not have more than a month of formal education in comparison to females ($t = .10$, $df = 107$, n.s.).

Marital status does not appear to have a significant impact on capital creation. More males said they were married ($\chi^2 = .51$, $df = 1$, n.s.) and single, whereas more females said they were widows (see Table 5.2).

Table 5.2***Marital Status and Gender, CAME Individual Loans***

Marital Status	N males	Percentage males	N females	Percentage females
1 = married	35	64.8	32	58.2
2 = divorced	1	1.9	2	3.6
3 = separated	2	3.7	3	5.5
4 = single	5	9.3	1	1.8
5 = widow(er)	2	3.7	9	16.4
6 = living with partner	9	16.7	8	14.5
Total	54	100	55	100

A look at the type of business that clients had reveals some advantages that males may have (see Table 5.3). The male sample is comprised of 56 businesses because two males had more than one business. These businesses may exist in the form of a shop or space in a building, a street or market stall (at times mobile), a cart pushed around streets or door-to-door sales. The businesses with individual loans, however, are probably more established in a fixed place than the businesses that have group loans. Females were involved in more than twice as many sales activities and grocery stores (or stalls selling groceries). Male-owned businesses were more common in the form of transport, workshops, production activities and services. These male dominated activities probably generated more income. The few workshops that females ran were dedicated to clothes making and female run service outlets for beauty care, both traditional female activities. However, it should be noted that loan size would seem to be a proxy for income and that loan size did not have a significant correlation with the generation of financial capital and in fact the correlation was negative for two financial capital items.

Table 5.3

Business Type and Gender, CAME Individual Loans

Business Type	N males	Percentage males	N females	Percentage females
Retail and sales	13	23.2	26	47.3
Prepared food	9	16.1	13	23.6
Workshop	10	17.9	3	5.5
Groceries	3	5.4	6	10.9
Unprepared food items	5	8.9	4	7.3
Service	5	8.9	2	3.6
Transport	6	10.7	0	0
Production	4	7.1	1	1.8
Rent	1	1.8	0	0
Total	56	100	55	100

Some control variables were not included in the table of descriptive statistics because they had very little influence on the variables being tested. Only two males and two females stated they had changed their loan methodology. Only one male said they had received business education, health education or some other form of education during the last year, whereas one female said she had received a form of business education, but no females said they had received health education or some other form of education.

5.3 Measurement Model and Construct Validity

I conducted a confirmatory factor analysis to assess the structure of the observed measures for economic capital, human capital and social capital. The extraction method I chose was Equal Prior Instant Communalities (EPIC), which can be found in EQS. Byrne (2006, pp. 383-384) comments that

EQS provides two extraction methods that are fast and reliable: Principal Components Analysis and Equal Prior Instant Communalities (EPIC). Bentler and Wu (2002) posited that these methods typically yield a very good approximation of the more complex methods available in such statistical packages as SPSS for Windows. They further noted that if the variables are used subsequently to model latent variables, EPIC is the preferred choice.

Bentler and Wu (2002) also discuss three different rotation methods and manifest a preference for direct oblimin over varimax because the varimax rotation method compels factors to be uncorrelated. Factors that are utilised in models most often permit at least some correlation. Therefore, I adopted an Adjusted Principal Components Analysis (EPIC) for my factor analysis solution and an oblimin rotation method.

An initial adjusted principal components factor analysis revealed that capital items loaded on four factors with labour (employment) loading by itself

(Table 5.4). There appears to be logic in the labour item loading separately as from my own experience in interviewing microfinance clients, the vast majority of micro-businesses in central Mexico only depend on one employee, the owner, and perhaps some family members who would relieve the owner when necessary. The labour item was eliminated and the measurement model tested with EQS and robust statistics (Byrne, 2006).

The first model revealed good fit (see Table 5.5), but some items had low standardised loadings (physical capital on two factors, business knowledge and calls). Therefore, physical capital was included only with the human capital factor and the calls item was eliminated. This improved goodness of fit for the second measurement model, but there were problems with the construct validity of the human capital factor (Hair & Anderson, 2010). The average variance extracted (AVE) for the human capital factor was too low (34.13%), and construct reliability was not quite acceptable (0.60). Finally, the measurement model was reduced to three financial capital items (sales, profits and savings) and three social capital items (friends, trust and meetings). The goodness of fit for this third model was excellent and both factors had construct validity. A review of the statistics for construct validity revealed that content validity was good (see Tables 5.6A and 5.6B). There was also discriminant validity as squared inter-construct correlations were much lower than the AVEs (Hair & Anderson, 2010). However, as the social capital construct did not have good construct validity in the CAME and Apro group loans samples, it was decided to eliminate this construct in order to have agreement with the operationalisation of all items in the different samples.

Table 5.4***Factor Analysis of Capital Items, CAME individual loans***

Capital Items	1	2	3	4	Communalities
Physical capital	0.341	-0.165	0.401	0.014	0.304
Sales	0.777	-0.098	0.018	0.004	0.613
Profits	0.833	0.052	-0.035	-0.003	0.698
Savings	0.723	0.136	-0.016	0.063	0.546
Employment	0.070	0.717	0.052	0.020	0.523
Business skills	0.234	-0.154	0.537	0.011	0.366
Business knowledge	-0.124	0.146	0.702	0.028	0.530
Friends	0.018	-0.012	0.172	0.693	0.510
Community trust	-0.007	-0.161	-0.015	0.765	0.612
Telephone calls	-0.012	0.048	-0.079	0.608	0.379
Meetings	0.047	0.146	-0.001	0.632	0.423
Variance explained by each factor	2.994	0.593	0.719	1.393	5.698 (total variance)

Extraction method: Adjusted principal components analysis (EPIC). Rotation method: direct oblimin solution. Rotation converged in 7 iterations.

Table 5.5***Confirmatory Factor Analysis of Capital Items, CAME Individual Loans³⁵***

Measurement Models	S-B χ^2	df	Probab- -ility	CFI	RMSEA	SRMR
Model 1: According to factor analysis above without labour item.	40.00	31	.13	.96	.052	.057
Model 2: same as Model 1 but physical capital included only in human capital factor and the calls item deleted.	29.81	24	.19	.97	.047	.062
Model 3: <i>Final model</i> : same as Model 2, but without physical capital, skills and knowledge items.	7.66	8	.47	1.00	.000	.048

Robust statistics were used except for SRMR (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

³⁵ See section 4.5 for a brief discussion of structural equation modeling (SEM) fit indices with their acronyms.

Table 5.6A

Construct Validity, CAME Individual Loans

Factors	Standardised loadings below .5	Average variance extracted (AVE)	Construct reliability	Cronbach's alpha
Financial capital	no	69.32	0.87	.84
Social capital	no	55.30	0.78	.77

Table 5.6B

Construct Validity. CAME Individual Loans

Inter-construct correlation	Squared inter-construct correlation	Standardised residuals	Normed χ^2	Cross loadings
.277	.08	all below 2.5	1.52 (very good)	no

5.4 Independent Samples T-tests

Independent samples *t*-tests were employed to check for differences between males and females (Table 5.7) taking into account that the social capital items had been removed from the measurement model according to the reason given in the above section. There were no significant differences between males and females in financial capital creation. As males had significantly more loans in other organisations than females, *t*-tests were performed to check whether access to other loans significantly improved financial capital creation, but there were no

significant results. In fact those clients who did not have other loans reported better performance (a higher average score) for profits.

Table 5.7

Independent Samples T-Tests, CAME Individual Loans

Variable	Females	Males	<i>t</i>
Repayments	5.66	5.69	.09
Sales	5.09	5.28	.72
Profits	4.73	5.07	1.21
Savings	4.56	5.06	1.53

n = 55 female clients and 54 male clients

* $p < .05$

** $p < .01$

*** $p < .001$

All two-tailed tests.

5.5 One-way Analysis of Variance

A one-way analysis of variance was also performed (Table 5.8). The Levene statistic, however, did not reject the null hypothesis that gender variances are equal, although the Levene statistic was close to significant for profits and savings. The statistic that tests the homogeneity of variances revealed that gender variances were significantly different for profits ($p = .04$) and savings ($p = .00$). Table 5.8 reveals that standard deviations differ greatly between the sexes in regards to financial capital creation.

Table 5.8

Means, Standard Deviations and Analyses of Variance, CAME Individual

Loans

Variable	Females Mean	Females s.d.	Males Mean	Males s.d.	F
Repayments	5.66	1.82	5.69	1.70	0.01
Sales	5.09	1.60	5.28	1.07	0.51
Profits	4.73	1.74	5.07	1.21	1.46
Savings	4.56	2.08	5.06	1.25	2.31

n = 55 female clients and 54 male clients

* p < .05

** p < .01

*** p < .001

5.6 Causal Models

In this section a causal model for individual loans with goodness-of-fit was found. The following two chapters include causal models for group loans to demonstrate that the independent factors have construct validity and goodness-of-fit. Although the independent variable for this sample (repayments) is not directly related to Hypothesis 1, I considered that it would be useful to include an individual loans model in order to be able to compare this model with the group loans models and to demonstrate that individual loans do have a structural equation model. Also, in order to determine an appropriate sample size with the critical N (Hoelter index), a formula that incorporates statistics for the whole

model is utilised (Hox, 1995; Schumacker & Lomax, 2004). The critical N cannot be calculated for one factor taking into account that there is only one dependent factor.

Therefore, the measurement model that had construct validity was then tested as a causal structure adding repayment rates as the independent variable (Model 1 in Table 5.9). Two models were compared. Firstly, there was an initial model with repayment rates as the independent factor and financial capital and social capital as the dependent factors. The dependent factors were financial capital (sales, profits and savings) and social capital (friends, trust and meetings). None of the two paths between the independent variable and the two dependent variables had a significant z statistic. When the different control variables were placed in the model, none had a significant relationship with the dependent variables nor did they affect the path from the original dependent variable (repayments) to the two dependent variables. The robust statistics for this model were good, although the normal SRMR was high.

Secondly, in order to have agreement with the measurement model of the two other other samples that follow in the next two chapters, the above model was transformed by eliminating the social capital factor (Model 2 in Table 5.9 and Figure 5.1). A final comparison with the alternative model yielded $\Delta S-B \chi^2 = 13.96$ ($\Delta df = 11$; $p > 0.2$) (Byrne, 2006)³⁶. Therefore, the two models were not significantly different in fit.

³⁶ See Byrne (2006, pp. 218-219) for the formula for comparing model fit.

Table 5.9

Causal Structure, CAME Individual Loans

Measurement Models	S-B χ^2	df	probability	CFI	RMSEA	SRMR
Model 1: <i>Alternative Model:</i> Repayments as the independent variable; financial capital and social capital as the dependent variables.	16.88	13	.21	.976	.053	.123
Model 2: <i>Final Model:</i> Repayments as the independent variable and financial capital as the dependent variable.	3.31	2	.19	.984	.078	.028

Robust statistics were used except for SRMR (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

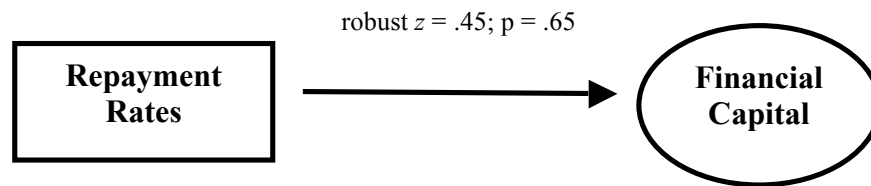


Figure 5.1. Final structural equation model, CAME individual loans

In order to determine an appropriate sample size the critical N was calculated. The critical N with normal maximum likelihood statistics was 299 and with robust statistics it was 187, just below the recommended cut off value. Values of 200 or more are recommended for an acceptable fit (Hox, 1995)

5.7 Latent Mean Differences

In this section I look at latent mean differences to test whether males and females have significant differences in regards to financial capital creation. The test of latent mean differences differs from *t*-tests and ANOVAs because it compares a complete construct composed of different items, whereas the latter tests compare individual items.

Testing for latent mean differences of a measurement model involves five steps (Byrne, 2006). The first three steps are the same as the first three steps in the test of factorial invariance. However, with the CAME individual loans sample it was not possible to perform the first two steps as there was only one dependent factor (financial capital) and to test a measurement instrument with confirmatory factor analysis it is necessary to have at least two factors. Therefore, testing for latent differences began with the third step, which compares factor loadings between the two groups (females and males) (see Table 5.10). There was a covariance between sales and savings for the male category. The univariate increment for the profit constraint was not tested due to numerical problems so it was assumed to be significant for the next step. The savings constraint was not significant.

The fourth step involved the testing for invariance of intercepts. All previous equality constraints were retained except those found to be noninvariant (profits). The variance for the constant V999 was fixed to 1.0. No significant constraints were found.

The fifth step involved testing for invariance of latent factor means. The previous covariance for the male group was observed. The averages for the two groups were not significantly different (robust z statistic for financial capital = -1.30; $p = .19$). The negative z statistic denoted that female individual loans create less financial capital on average.

Table 5.10

Latent Mean Differences of the Measurement Model, CAME Individual Loans

Samples, Models and Tests	S-B χ^2 probability	CFI	RMSEA
Testing for measurement invariance of factor loadings: covariance between sales and savings for male sample only; 109 cases.	.44	1.000	.000
Testing for invariance of intercepts: covariance between sales and savings for male sample only; 109 cases.	.63	.989 ^a	.000 ^o
Testing for invariance of latent factor means: covariance between sales and savings for male sample only; 109 cases.	.69	.999	.034

Robust statistics were used (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

^a = CFI calculated with maximum likelihood (ML) estimation but not with robust statistics.

^o = robust fit indices based on covariance matrix and means.

5.8 Conclusions

In contrast to traditional theories male entrepreneurs did not appear to enjoy significant advantages in comparison to female entrepreneurs except that they had access to more loans, had larger loans and tended to be more diversified in the type of business they operated. However, having another individual loan

had low correlations with sales ($r = .03$, n.s.), profits ($r = -.01$, n.s.) and savings ($r = .08$, n.s.) (see Appendix D) and no significant difference was found in the creation of sales ($t = .31$, $df = 107$, n.s.), profits ($t = -.11$, $df = 107$, n.s.) and savings ($t = .72$, $df = 30$, n.s.) by clients who had more than one loan when t -tests were performed. The amount of the loan per month also had a negative correlation with sales ($r = -.11$, n.s.) and profits ($r = -.04$, n.s.) and a non-significant correlation for savings ($r = .08$, n.s.). T -tests furthermore revealed no significant difference in the generation of sales ($t = -.63$, $df = 79$, n.s.), profits ($t = .39$, $df = 79$, n.s.) and savings ($t = 1.88$, $df = 79$, n.s.) between clients that had the largest loans per month (between \$1,667 and \$15,000 Mexican pesos) and those that had the smallest (\$250 - \$833). Loan amount would appear to be a proxy for income.

T -tests and ANOVAs found no significant differences between the financial capital generation of male clients and female clients. A test of latent mean differences indicated that females created less capital on average although this was also not significant. Based on the present sample for individual loans it cannot be said that male entrepreneurs create significantly more financial capital than female entrepreneurs.

CHAPTER 6: RESULTS FOR CAME GROUP LOANS

6.1 Introduction

The object of this chapter is to test Hypotheses 2, 3, 4 and 5 with the CAME sample for group loans. Hypothesis 2 examines whether groups with a greater proportion of females have higher levels of group participation. Hypothesis 3 deals with peer-group and community pressure, and suggests groups with a greater proportion of females will experience more pressure. Hypothesis 4 states that groups with a greater proportion of females will be able to generate as much capital as groups that have a smaller proportion of females. Finally, Hypothesis 5 indicates that groups in towns/cities with smaller populations will generate more capital.

The first section looks at descriptive statistics and includes additional tables. The second section analyses the measurement model for this sample with confirmatory factor analysis and determines construct validity. The third and fourth sections provide the results of *t*-tests and ANOVAs. The fifth section searches for a causal model with satisfactory goodness-of-fit, while the sixth section looks at latent mean differences. The causal model is necessary in order to demonstrate that the items and constructs tested for Hypotheses 2 and 3 have goodness-of-fit in a model and in order to estimate the critical N to determine appropriate sample size. A causal model is also useful to test the control variables.

The test of latent mean differences compares the same dependent factor between different categories. Finally, taking into account the results of the statistical tests in this chapter, I come to a conclusion concerning the above four hypotheses.

6.2 Descriptive Statistics

*Sampling Procedure*³⁷

This part of the CAME sample was collected in two areas, both of which are in the state of México. The CAME group loans questionnaire in Spanish can be found in Appendix E and its translation into English in Appendix F. A sample of 55 rural clients in different groups was collected in Ozumba, an agricultural town with a population of 15,717 people about 30 kilometres from Mexico City (INEGI, 2005)³⁸. A second sample of 55 clients in different groups was collected in Valle de Chalco (Valley of Chalco), a poor suburb that forms part of Mexico City. Villa de Chalco (the Village of Chalco) separates Valle de Chalco from the countryside. The total municipality of Chalco has a population of 257,403 people whereas the rural municipality of Ozumba has 24,055.

The survey was collected in Ozumba by waiting for clients to arrive to receive their first loans or pay off part of their group's loan with the CAME cashier. A security guard asked clients if they would be willing to answer the

³⁷ A discussion of sampling procedure is also found in section 4.4.

³⁸ INEGI population figures are from the 2005 census as the 2010 census was being undertaken when data was being recorded.

questionnaire. Almost all the questionnaires were read to the clients. The manager of the Ozumba centre was asked about the proportion of defaulting clients and he later gave me a list with all the defaulting clients or clients who were late in their payments over the last year. Overall, there were very few defaulting clients but initially five groups with irregular payments were visited, mostly during their meetings in a member's home, and a questionnaire was collected from one of the members of each group. Also during the course of the collection of the survey, I also managed to obtain questionnaires from other groups that were on the irregular/defaulting client list.

Group meetings for the Tezozomoc centre in the Valle de Chalco were held in the centre so the survey was collected during the group meetings on the CAME premises. Almost all questionnaires were read to the clients. The manager of this centre was also asked about the proportion of defaulting and irregular clients and I was told that they represented a very small minority of groups. Three irregular groups were targeted, but during the process of collecting the survey I also came across other groups that were potential defaulters or were in the process of defaulting. Later the manager sent me a list of the clients included in the survey with a completed scale from 1 to 7 concerning the punctuality of payments for each client and a nominal answer (yes/no) concerning whether or not each group was behind in their payments.

In both CAME centres only clients with at least one year of association with CAME were included in the survey. Clients were asked this question when being asked for permission to be included in the survey.

Generally the clients were read the questionnaire, but four people decided to fill out the questionnaire on their own. Of the clients who self-administered the questionnaire, three were females and one was male ($\chi^2 = .07$, $df = 1$, n.s.); three belonged to groups of more than 80 percent female composition, whereas one belonged to a group of between 33 percent and 80 percent female composition ($\chi^2 = 1.12$, $df = 1$, n.s.); and three clients came from the rural sample (Ozumba) and one came from the urban sample (Valle de Chalco) ($\chi^2 = 1.04$, $df = 1$, n.s.).

Missing Data

None of the questionnaires were eliminated so there were 55 cases for each centre and each environment (urban and rural). The cases represented different compositions of mixed groups with a minority of all-female groups. There were only two all-female groups in Ozumba and three in Tezozomoc. Very little data was missing. Most items had no missing data and only a few items had missing data for one case. The items for “business skills” and “loan amount” had data missing for two cases (1.82 percent of all cases). Missing data for loan amount was replaced according to the average of the gender in each branch. The missing data for the three capital items and one group forces item was replaced according to the average for the client’s gender, group category and centre. For example, an item with one case of missing data could be replaced according to the average for urban (Tezozomoc) women in groups composed of between 81 to 100 percent females.

Descriptive Statistics

Below are tables with means, standard deviations (Tables 6.1 and 6.2) and correlations (Appendix G) for CAME group loans. Items that did not have construct validity (tested later on in this chapter) are not included in these tables. The repayments scale (see coding for Table 6.1) was designed from data provided by CAME managers. The Ozumba centre provided a list of groups that were late in their payments including the number of days behind. The Tezozomoc centre provided a list of clients with a punctuality scale and a nominal answer (yes/no) according to whether clients were behind in payments.

Table 6.1 gives us some information about the averages of the sample that can be compared with the CAME individual loans sample in the previous chapter. One would expect clients with group loans to have less income. Clients in this group loans sample were a bit younger (about 41 and a half years old), the majority were also married (55.5 percent) and they also had about three children each. The average client with group loans had slightly less formal education (almost 8 years). The average business was about 9 years old³⁹, about 4 years younger than the businesses of individual loans. Most clients with group loans reported owning all of their business (88.2 percent), and they had been associating with CAME slightly longer (nearly 5 years). The average loan per month (about US\$125) was only less than the average individual loan by about US\$25. That is,

³⁹ The age of the business was recorded as the age of the client's oldest business if the client answered that he/she had more than one business.

the average individual loan was only about 20 percent more. Fewer group loan clients (13.6 percent of the sample) reported that they had loans with other institutions.

The descriptive statistics suggest that males in this sample did not enjoy obvious advantages compared to females (Table 6.1). There were 22 males in the sample and 88 females. Males had less education ($t = -.75$, $df = 108$, n.s.); fewer loans with other organisations ($\chi^2 = .48$, $df = 1$, n.s.); less inter-cycle loans (an additional short-term loan) in CAME ($\chi^2 = 1.36$, $df = 1$, n.s.); less businesses ($t = -1.16$, $df = 108$, n.s.); reported owning less of their business ($t = -1.33$, $df = 26$, n.s.); and had smaller loans per month (by about US\$20) ($t = -.57$, $df = 108$, n.s.). Males had also received less training or education over the last year related to business, health or other forms ($t = -.91$, $df = 108$, n.s.). They did, however, have significantly more business experience judging by the age of their oldest business ($t = 2.30$, $df = 108$, $p < .05$).

Table 6.1***Descriptive Statistics, CAME Group Loans***

Variables	Mean	s.d.	Mean Females n =88	Mean Males n = 22
1. Sex	1.80	.402		
2. Females in group (%)	78.63	13.29	81.43	67.41
3. Females in group (categories)	1.49	.502	1.59	1.09
4. Environment	1.50	.502	1.51	1.45
5. Repayments	5.92	1.69	5.88	6.09
6. Sales	4.67	1.96	4.64	4.82
7. Profits	4.98	1.83	4.90	5.32
8. Savings	5.98	1.87	5.89	6.36
9. Group sanctions	4.62	1.63	4.50	5.09
10. Community sanctions	3.99	1.94	3.91	4.32
11. Community reputation	5.05	1.67	5.06	5.00
12. Group relations	5.82	1.27	5.90	5.50
13. Community relations	4.87	1.56	4.84	5.00
14. Solidarity	4.99	1.59	4.91	5.32
15. Age (years)	41.54	11.76	40.72	44.82
16. Education (years)	7.99	3.38	8.11	7.5
17. Marital Status	1.45	.50	1.45	1.41
18. Number of children	2.93	1.72	3.05	2.45
19. Age of youngest child (code)	2.12	1.01	2.02	2.50
20. Age of oldest business (years)	8.90	8.38	7.87	13.5
21. Number of businesses	1.37	.662	1.41	1.23
22. Business ownership	4.76	.676	4.82	4.55
23. Loan Type	1.28	.452	1.31	1.18
24. Loan amount per month (Mexican pesos)	\$1,569.63	\$1,821.00	\$1,618.91	\$1,372.48
25. Time in CAME (years)	4.85	3.93	5.23	3.36
26. Other loans	1.14	.345	1.15	1.09
27. Group size	23.22	9.03	23.45	22.27
28. Access to training	1.45	.737	1.48	1.32
29. Screening	6.43	2.69	6.71	5.32
30. Monitoring	1.30	1.15	1.38	1.00

n = 110.

Coding for variables was as follows: sex: 1 = "male", 2 = "female"; females in group: 1 = 33%-80%, 2 = 81%-100%; environment: 1 = rural; 2 = urban; repayments: 1 = defaulter or very late with payment, 7 = very punctual with payment; variables 6 to 8 (sales, profits, savings): 1 = "I totally disagree", 9 = "I totally agree"; variables 9 to 14 (group sanctions, community sanctions,

community reputation, group relations, community relations, solidarity): 1 = “not at all probable”, 7 = “totally probable”; marital status: 1 = married, 2 = not married; age of youngest child: 1 = 0.25-8 years old, 2 = 9-16 years old, 3 = 17-48 years old, 4 = no children; business ownership: 1 = zero %, 2 = less than 50%, 3 = 50%, 4 = more than 50%, 5 = 100%; loan type: 1 = group loan, 2 = group loan and inter-cycle loan; other loans: 1 = “no”, 2 = “yes”; access to training: 1 = no training; 2 = 1 form of training (business, health or other), 3 = 2 forms of training; 4 = all (3) forms of training; control variables 29 to 30 (screening and monitoring): 1 = “I totally disagree”, 9 = “I totally agree”.

Pearson correlations were all significant for gender (see Appendix G).

Females had younger children⁴⁰ ($r = -.19, p < .05$); younger businesses ($r = -.27, p < .01$); more time in CAME ($r = .19, p < .05$); and they also practiced more screening ($r = .21, p < .05$). The age of children did not appear to exert any influence on capital, whereas business age and time with CAME had a negative correlation with financial capital items. There was a significant correlation between the time of association with CAME and sales ($r = -.22, p < .05$); and savings ($r = -.27, p < .01$). Screening had a positive correlation with savings ($r = .24, p < .05$). Therefore, younger businesses and greater screening may have aided female entrepreneurs, whereas less time in CAME may have aided males.

Table 6.2 presents the descriptive statistics for group composition and environment. Groups with a higher proportion of females had larger loans ($t = -1.19, df = 97, n.s.$); more businesses ($t = -.54, df = 108, n.s.$); more inter-cycle loans ($\chi^2 = 2.57, df = 1, n.s.$); had associated with CAME for longer ($t = -1.00, df = 108, n.s.$); had received more training over the last year ($t = -.76, df = 108, n.s.$); knew their members better when the group was formed ($t = -.77, df = 108, n.s.$); and also monitored their members more ($t = -1.80, df = 84, n.s.$). Groups with a

⁴⁰ The average age of the youngest child for females who had children was 12.62 years, whereas the youngest child for males that had children was 17.04 years, a difference of 4.43 years.

lower proportion of females, however, had more education ($t = .89, df = 108, n.s.$); fewer children ($t = -.88, df = 108, n.s.$); more business experience ($t = .67, df = 108, n.s.$); and more loans outside of CAME ($\chi^2 = 1.73, df = 1, n.s.$).

Pearson correlations also revealed that groups with a higher proportion of females (more than 80 percent) had more inter-cycle loans ($r = .19, p < .05$) and had more members ($r = .24, p < .05$) (see Appendix G). However, inter-cycle loans and group size had negative non-significant relationships with financial capital items. As we can see, none of the above differences for group composition were significant except for the Pearson correlations and only monitoring was close to significant. Monitoring did have significant positive correlations with financial capital items and this may have aided groups with a higher proportion of females.

Table 6.2***Descriptive Statistics for Gender Composition of Groups and for Environment,******CAME Group Loans***

Variables	Mean Groups 33-80% Female n=56	Mean Groups 81-100% Female n=54	Mean Rural Groups n=55	Mean Urban Groups n=55
1. Sex	1.64	1.96	1.78	1.82
2. Females in group (%)	68.66	88.96	77.29	79.96
3. Females in group (categories)			1.45	1.53
4. Environment	1.46	1.54		
5. Repayments	5.68	6.17	6.27	5.56
6. Sales	4.71	4.63	5.27	4.07
7. Profits	5.20	4.76	5.58	4.38
8. Savings	5.95	6.02	6.64	5.33
9. Group sanctions	4.46	4.78	4.93	4.31
10. Community sanctions	3.88	4.11	4.55	3.44
11. Community reputation	4.86	5.24	5.26	4.84
12. Group relations	5.70	5.94	5.87	5.76
13. Community relations	4.64	5.11	5.09	4.66
14. Solidarity	5.00	4.98	5.27	4.71
15. Age (years)	41.50	41.57	39.05	44.02
16. Education (years)	8.27	7.69	8.42	7.56
17. Marital Status	1.43	1.46	1.49	1.40
18. Number of children	2.79	3.07	2.76	3.09
19. Age of youngest child (code)	2.21	2.02	2.05	2.18
20. Age of oldest business (years)	9.52	8.45	7.05	10.94
21. Number of businesses	1.34	1.41	1.29	1.45
22. Buiness ownership	4.75	4.78	4.73	4.80
23. Loan Type	1.21	1.35	1.18	1.38
24. Loan amount per month (Mexican pesos)	\$1,366.67	\$1,780.09	\$1,300.00	\$1,839.25
25. Time in CAME (years)	4.49	5.24	3.08	6.63
26. Other loans	1.18	1.09	1.09	1.18
27. Group size	22.27	24.20	22.38	24.05
28. Access to training	1.39	1.50	1.29	1.60
29. Screening	6.23	6.63	7.51	5.35
30. Monitoring	1.11	1.50	1.49	1.11

n = 110

For coding of variables see Table 6.1.

In regards to environment, rural clients were younger ($t = -2.25$, $df = 108$, $p < .05$); had more education ($t = 1.35$, $df = 108$, n.s.); had fewer children ($t = -1.00$, $df = 108$, n.s.); and reported more screening ($t = 4.60$, $df = 101$, $p < .001$) and monitoring ($t = 1.76$, $df = 71$, n.s.) (see Table 6.2). Urban clients, however, had various potential advantages. They had more business experience ($t = -2.49$, $df = 96$, $p < .05$); more businesses ($t = -1.30$, $df = 101$, n.s.); considerably bigger loans ($t = -1.56$, $df = 76$, n.s.); more inter-cycle loans ($\chi^2 = 5.44$, $df = 1$, $p < .05$); more loans outside of CAME ($\chi^2 = 1.93$, $df = 1$, n.s.); had associated with CAME twice as long ($t = -5.31$, $df = 69$, $p < .001$); and had received more training over the previous year ($t = -2.2$, $df = 89$, $p < .05$). Thus, there were more significant differences between rural and urban clients in relation to control variables than there were for gender or group composition. Age had a significant negative correlation with savings ($r = -.19$, $p < .05$); screening had a significant positive correlation with savings ($r = .24$, $p < .05$); and monitoring had significant positive correlations with all the three financial capital items (see Appendix G). These variables may have aided rural clients. On the other hand, business experience and inter-cycle loans had a non-significant negative correlation with financial capital items; access to training had non-significant positive correlations; whereas time in CAME had significant negative correlations with sales ($r = -.22$, $p < .05$) and savings ($r = -.27$, $p < .01$). Therefore, there were no noticeable advantages that urban clients may have enjoyed whereas rural clients may have benefited from

being younger and newer in CAME, and from employing more screening and monitoring.

Looking at Pearson correlations with the items for the independent variables in the structural equation model, screening had a positive relationship with community sanctions ($r = .25, p < .01$) and business ownership had a negative relationship ($r = -.19, p < .05$) (see Appendix G). Education actually had a negative relationship with solidarity ($r = -.19, p < .05$).

Only one control variable was not included in the correlations table (Appendix G). For the question concerning whether clients had changed from individual loans to group loans, only one male in Ozumba answered in the affirmative and two females in Tezozomoc. The individual loans sample also had a small affirmative response for this item.

Marital status did not have any significant correlations (Appendix G). Statistics were similar to the CAME individual loans sample in regard to marriage except that fewer females reported being married in Ozumba, the rural centre (see Table 6.3). There was no significant difference between rural and urban environments for the marital status of clients of both genders ($\chi^2 = .92, df = 1, n.s.$) and for the marital status of females only ($\chi^2 = 1.11, df = 1, n.s.$).

Table 6.3***Marital Status and Gender, CAME Group Loans***

Marital Status	n males Oz.	% males Oz.	n females Oz.	% females Oz.	n males Tez.	% males Tez.	n females Tez.	% females Tez.
1 = married	7	58.3	21	48.8	6	60.0	27	60.0
2 = divorced	0	0.0	2	4.7	0	0.0	0	0.0
3 = separated	0	0.0	3	7.0	0	0.0	2	4.4
4 = single	3	25.0	4	9.3	1	10.0	3	6.7
5 = widow(er)	0	0.0	2	4.7	0	0.0	4	8.9
6 = living with partner	2	16.7	11	25.6	3	30.0	9	20.0
Total	12	100	43	100	10	100	45	100

Oz. = Ozumba centre (rural)

Tez. = Tezozomoc centre (urban)

Females tend to be concentrated in retail and sales activities, although this was considerably less for rural group loans than for urban group loans (see Table 6.4) or urban individual loans (last chapter). The sale of unprepared food items and of animals was a more common business activity in agricultural Ozumba⁴¹. Businesses that sold prepared food were also more common in the Ozumba sample, particularly among males. Males also tended to be involved in more workshop style businesses in rural areas and in grocery stores (or stalls) and transport in urban areas, although the male sample was small. Businesses may exist in the form of a shop or space in a building, a street or market stall (at times mobile and following the migration of street markets during the week), a cart pushed around streets, catalogue sales, or door-to-door sales. Table 6.4 displays more than 110 businesses as quite a few males and females had more than one business.

⁴¹ Unprepared food items include the sale of food crops.

Table 6.4***Business Type and Gender, CAME Group Loans***

Business Type	n males Oz.	% males Oz.	n females Oz.	% females Oz.	n males Tez.	% males Tez.	n females Tez.	% females Tez.
Retail and sales	1	6.3	21	38.2	2	18.2	43	62.3
Prepared food	5	31.3	12	21.8	1	9.1	9	13.0
Unprepared food	3	18.8	13	23.6	1	9.1	4	5.8
Workshop	4	25	2	3.6	1	9.1	3	4.4
Groceries	1	6.3	3	5.5	3	27.3	2	2.9
Service	0	0	2	3.6	0	0	1	1.5
Transport	0	0	0	0	2	18.2	3	4.4
Production	0	0	1	1.8	0	0	2	2.9
Rent	0	0	0	0	1	9.1	1	1.5
Animal sales	2	12.5	1	1.8	0	0	1	1.5
Total	16	100	55	100	11	100	69	100

Oz. = Ozumba centre (rural)

Tez. = Tezozomoc centre (urban)

Table 6.5 displays the number of businesses that clients had in each centre. There tend to be more clients in Tezozomoc that had two businesses ($t = -1.30$, $df = 101$, n.s.), although the number of businesses did not have a significant correlation with financial capital items. The number of businesses was highly significant in relation to loan amount (a proxy for income) ($r = .32$, $p < .01$) and time with CAME ($r = .33$, $p < .01$), and significant with business age ($r = .20$, $p < .05$) (see Appendix G). This suggests that association with CAME and business experience may help clients to diversify their business activities and form more capital over the long-term.

Table 6.5***Number of Businesses, CAME Group Loans***

Number of Businesses	Ozumba (rural)	% Ozumba	Tezozomoc (urban)	% Tezozomoc
Clients with 1 business	42	76.4	35	63.6
Clients with 2 businesses	10	18.2	17	30.9
Clients with 3 businesses	3	5.5	2	3.6
Clients with 4 businesses	0	0	0	0
Clients with 5 businesses	0	0	1	1.8
Total	55	100	55	100
Total businesses	71		80	

Table 6.6 presents descriptive statistics indicating the number of clients that had an additional inter-cycle loan with CAME. The inter-cycle loan is a short-term loan to take advantage of an opportunity or to cover an emergency. The sum varies between \$200 to \$2,000 Mexican pesos or between US\$16 to US\$160. Inter-cycle loans had negative correlations with economic capital items, but these correlations were not significant.

Table 6.6***Loan Type with CAME***

Loan Type	n males Oz.	% males Oz.	n females Oz.	% females Oz.	n males Tez.	% males Tez.	n females Tez.	% females Tez.
Group loan	11	91.7	34	79.1	7	70.0	26	57.8
Group loan and inter- cycle loan	1	8.3	9	20.9	3	30.0	19	42.2
Total	12	100	43	100	10	100	45	100

Oz. = Ozumba centre (rural)

Tez. = Tezozomoc centre (urban)

Urban clients had greater access to loans in other institutions ($\chi^2 = 1.93$, $df = 1$, n.s.), although this difference was not significant (see Table 6.7). 9 percent of Ozumba clients had loans with other institutions compared to 18 percent of Tezozomoc clients. Loans in other institutions did not have significant correlations with economic capital creation (Appendix G).

Table 6.7

Loans with Other Institutions, CAME Group Loans

Other Type of Loan	Ozumba male	Ozumba female	Tezozomoc male	Tezozomoc female
Other individual loan	0	3	1	5
Other group loan	0	1	0	2
Another type of loan	0	0	0	0
Individual loan and group loan	0	0	1	1
Individual loan, group loan and other type of loan	0	1	0	0
Total	0	5	2	8

Finally, Table 6.8 indicates the percentage of males and females that received some form of training or education during the previous 12 months prior to the survey. Males had less access to educational services than females ($t = -.91$, $df = 108$, n.s.) with urban females reporting the most interaction with educational services, especially in health-related training. Overall, urban females reported twice as much contact with educational services than urban males, although less than 50 percent of urban females had contact with an educational service. Overall, urban clients had received more training over the previous year than rural clients

($t = -2.2, df = 89, p < .05$), but training had no significant correlations with financial capital items.

Table 6.8

Training or Education during the Previous Year, CAME Group Loans

Training or Education Type	n males Oz.	% males Oz.	n females Oz.	% females Oz.	n males Tez.	% males Tez.	n females Tez.	% females Tez.
Business	1	8.3	6	14.0	1	10.0	9	20.0
Health	1	8.3	7	16.3	2	20.0	13	28.9
Other	0	0	1	2.3	2	20.0	6	13.3
Total	2		14		5		28	
None	11	91.7	30	69.8	8	80.0	26	57.8

Oz. = Ozumba centre (rural)

Tez. = Tezozomoc centre (urban)

Note: each client could have received more than one type of training or education during the last year.

6.3 Measurement Model and Construct Validity

Capital Items

I conducted a confirmatory factor analysis to assess the structure of the observed measures for economic capital, human capital and social capital (see Table 6.9). An adjusted principal components analysis (EPIC) with an oblimin rotation⁴² revealed that capital items loaded on four factors. This measurement model was tested with EQS and robust statistics (Byrne, 2006).

⁴² For a brief discussion of my choice of a factor analysis solution and a rotation method see section 5.3.

Table 6.9***Factor Analysis of Capital Items, CAME Group Loans***

Capital Items	1	2	3	4	Communalities
Physical capital	0.416	0.031	-0.154	0.408	0.365
Sales	0.807	0.014	-0.017	-0.018	0.653
Profits	0.798	0.008	0.048	0.017	0.640
Savings	0.311	0.339	0.173	-0.006	0.241
Friends	-0.032	0.576	0.073	0.230	0.391
Community trust	0.270	0.472	0.132	-0.068	0.317
Employment	0.204	-0.386	0.372	0.215	0.375
Calls	0.205	0.098	0.561	-0.073	0.372
Meetings	-0.153	0.051	0.688	0.045	0.502
Business skills	0.107	0.240	0.207	0.501	0.363
Business knowledge	-0.065	-0.005	0.009	0.703	0.498
Variance explained by each factor	3.044	0.591	0.802	0.746	5.182 (total variance)

Extraction method: Adjusted principal components analysis (EPIC). Rotation method: direct oblimin. Rotation converged in 16 iterations.

The first confirmatory factor analysis measurement model that included the four factors had very good fit (see Table 6.10), but there were a number of problems including non-significant variances and covariances. Physical capital had a cross loading and both standardised loadings in EQS (the first model in Table 6.10 not the factor analysis in Table 6.9) were considerably under .5⁴³. Other items also had low standardised loadings in the first EQS model in Table 6.10: employment (.344); knowledge (.449); and friends (.499). The average variance extracted (AVE) was also under 50 percent for three factors: factor 2 (32 percent), factor 3 (32 percent), and factor 4 (42 percent). This is an example of how a model can have supposedly good fit but poor construct validity. Therefore,

⁴³ See Hair and Anderson (2010) for a discussion of construct validity and how to calculate it.

in an attempt to improve construct validity, I decided to load physical capital on factor 4 (human capital) only.

Table 6.10

Confirmatory Factor Analysis of Capital Items, CAME Group Loans⁴⁴

Measurement Models	S-B χ^2	df	probability	CFI	RMSEA	SRMR
Model 1: According to factors in the factor analysis above (Table 6.9).	34.26	37	.60	1.000	.000	.057
Model 2: same as Model 1 but physical capital included only in human capital factor.	39.47	38	.40	.993	.019	.067
Model 3: only 2 factors: financial capital (profits, sales and savings) and social capital (friends, trust and meetings).	13.18	8	.11	.965	.077	.073

Robust statistics were used except for SRMR (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

The fit for the second model was still very good (see Table 6.10), but there were still problems with construct validity. The human capital factor was not reliable enough with the physical capital item (Cronbach alpha < .65). The average variance extracted (AVE) for human capital with three items or less was low, so I decided to delete the human capital factor. I continued to delete items with low loadings and factors with low AVEs. Deleting savings enabled social capital to load on one factor but this had no construct validity (low loadings and low AVEs).

I then tried the same measurement model as the CAME individual loans final measurement model (see Model 3 in Table 6.10). I loaded sales, profits and

⁴⁴ For a discussion of SEM indices and abbreviations see section 4.5.

savings on a financial capital factor, and I loaded friends, trust and meetings on a social capital factor. The chi-square and CFI for this model were still satisfactory, although RMSEA and SRMR⁴⁵ had deteriorated. Also the construct validity for the social capital factor was poor, possibly because there was a cross loading with savings. Therefore, the only factor that had good construct validity was the financial capital factor. A review of the statistics for construct validity revealed that convergent validity of the financial capital factor was good even though the standardised loading for the savings item was quite low (see Table 6.11) (Hair & Anderson, 2010).

Table 6.11

Construct Validity of Financial Capital, CAME Group Loans

Factor	Standardised loadings below .5	Average variance extracted (AVE)	Construct reliability	Cronbach's alpha
financial capital	savings (.394)	64.37	0.83	.78

Group and Community Items

I conducted a second confirmatory factor analysis to assess the structure of the observed measures for the group and community items (see Table 6.12). An adjusted principal components analysis (EPIC) with a direct oblimin rotation revealed that these items loaded on four factors. This measurement model was tested with EQS and robust statistics (Byrne, 2006).

⁴⁵ See section 4.5 for abbreviations and a brief discussion of these SEM indices.

Table 6.12***Factor Analysis of Group and Community Items, CAME Group Loans***

Group and Community Items	1	2	3	4	Communities
Group relations	0.613	-0.069	0.086	-0.045	0.390
Community relations	0.679	0.100	-0.039	0.024	0.472
Solidarity	0.478	0.038	0.001	-0.421	0.407
Group pressure	0.267	0.337	0.300	0.144	0.296
Group expulsion	0.111	0.534	0.012	0.055	0.301
Group sanctions	0.038	0.671	-0.065	0.009	0.456
Community sanctions	-0.038	0.724	-0.090	-0.130	0.551
Community reputation	-0.089	0.618	0.076	0.044	0.397
Decision-making	-0.134	0.009	0.613	-0.265	0.464
Punctuality	0.162	-0.052	0.635	0.082	0.438
Help	0.066	-0.010	0.103	-0.651	0.439
Learning	0.296	0.145	0.221	-0.170	0.186
Variance explained by each factor	2.967	1.378	0.504	0.450	5.300 (total variance)

Extraction method: Adjusted principal components analysis (EPIC). Direct oblimin. Rotation converged in 24 iterations.

The goodness of fit for the first model (see Table 6.13) was not acceptable so I decided to eliminate factors 3 and 4 (in Table 6.12 above) that only had two items each. I was left with two factors: sanctions and relations. I also decided to include the learning item with the relations factor.

Table 6.13

Confirmatory Factor Analysis of Group and Community Items, CAME Group

Loans

Measurement Models	S-B χ^2	df	probab- ility	CFI	RMSEA	SRMR
Model 1: According to factor analysis above with 4 factors (Table 6.12).	53.76	37	.03	.929	.064	.082
Model 2: 2 factors: sanctions (5 items) and relations (4 items).	34.72	26	.12	.952	.055	.069
Model 3: same as Model 2 above but the group pressure item deleted for the sanctions factor.	21.13	19	.33	.986	.032	.054
Model 4: <i>final model</i> : sanctions (3 items) and relations (3 items).	2.41	8	.97	1.000	.000	.024

Robust statistics were used except for SRMR (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

The second model had good fit (see Table 6.13), however, there were problems with construct validity. The AVEs for both factors was under 50 percent (sanctions = 36.92 percent; relations = 38.45 percent). As group pressure had a cross loading on both factors, I next decided to eliminate this item.

The goodness-of-fit for the third model (see Table 6.13) had further improved but construct validity was still a problem. The AVE for sanctions had risen to 40.98 percent, but was still low.

Finally I eliminated the lowest items for both factors so that the sanctions factor had three items (group sanctions, community sanctions and community reputation) and so did the relations factor (group relations, community relations and solidarity). This final model had excellent goodness of fit (see Table 6.13), although there were still some limitations with construct validity. AVEs had

improved but were still below 50 percent (see Table 6.14A). Hair and Anderson (2010, p. 687) state that “an AVE of .5 or higher is a good rule of thumb suggesting adequate convergence. An AVE of less than .5 indicates that, on average, more error remains in the items than variance explained by the latent factor structure imposed on the measure.” In relation to construct reliability, Hair and Anderson (2010, p. 687) indicate that “.7 or higher suggests good reliability. Reliability between .6 and .7 may be acceptable, provided that other indicators of a model’s construct validity are good.” However, DeVellis (2003, p. 95) regards “between .65 and .70” as “minimally acceptable” for the coefficient alpha of reliability. Discriminant validity was, however, good as the squared inter-construct correlation (Table 6.14B) was much lower than the AVEs. These factors are mediating variables, not part of the first-order measuring factors, however, they do have some construct validity problems.

Table 6.14A

Construct Validity of Sanctions and Relations, CAME Group Loans

Factors	Standardised loadings below .5	Average variance extracted (AVE)	Construct reliability	Cronbach’s alpha
Sanctions	yes (reputation = .491)	47.10 percent	0.72	.70
Relations	no	43.97 percent	0.69	.68

Table 6.14B

Construct Validity of Sanctions and Relations, CAME Group Loans

Inter-construct correlation	Squared inter-construct correlation	Standardised residuals	Normed χ^2	Cross loadings
.355	.126	all below 2.5	0.3081 (very good)	no

6.4 Independent Samples T-tests

The following *t*-tests and ANOVAs were conducted on items that had construct validity in the above confirmatory factor analysis and goodness-of-fit in the final structural equation model to be found in the following “Causal Model” section. In addition, these items agreed with the items found in the final models for the other two samples (Chapter 5 and Chapter 7).

Gender

Independent samples *t*-tests were employed to check for differences between males and females (see Table 6.15). There were no significant differences between males and females for the items in the final model.

Table 6.15

Independent Samples T-tests for Gender, CAME Group Loans

Variable	Females	Males	<i>t</i>
Repayments	5.88	6.09	.54
Sales	4.64	4.82	.39
Profits	4.90	5.32	.97
Savings	5.89	6.36	1.07
Group relations	5.90	5.50	-1.32
Community relations	4.84	5.00	.43
Solidarity	4.91	5.31	1.08
Group sanctions	4.50	5.09	1.54
Community sanctions	3.91	4.32	.89
Community reputation	5.06	5.00	-.14

* $p < .05$

** $p < .01$

*** $p < .001$

All two-tailed tests.

Group Composition

Independent samples t-tests were employed to check for differences between groups with between 33 percent and 80 percent of members who were female and groups with more than 80 percent of members who were female (see Table 6.16). There were no significant differences.

Table 6.16***Independent Samples T-Tests for Group Composition, CAME Group Loans***

Variable	33%-80% females	81%-100% females	<i>t</i>
Repayments	5.68	6.17	-1.53
Sales	4.71	4.63	.23
Profits	5.20	4.76	1.26
Savings	5.95	6.02	-.20
Group relations	5.70	5.94	-1.02
Community relations	4.64	5.11	-1.58
Solidarity	5.00	4.98	.06
Group sanctions	4.46	4.78	-1.02
Community sanctions	3.89	4.11	-.64
Community reputation	4.86	5.24	-1.21

* $p < .05$ ** $p < .01$ *** $p < .001$

All two-tailed tests.

Environment

Independent samples t-tests were employed to check for differences between rural groups and urban groups (see Table 6.17). There were various significant results in favour of rural groups. Firstly, rural groups had significantly higher repayment rates ($t = 2.24$; $p < .05$). This result, however, should be treated with caution as the method for rating repayments differed between the two centres. Rural clients also had very significantly higher scores for all forms of financial capital. Furthermore, rural clients scored significantly higher for two sanctions items. Rural groups also had non-significant higher averages for group and community relations, with solidarity being close to significant ($t = 1.88$, n.s.).

Table 6.17

Independent Samples T-Tests for Environment, CAME Group Loans

Variable	Rural Groups	Urban Groups	<i>t</i>
Repayments	6.27	5.56	2.24*
Sales	5.27	4.07	3.36***
Profits	5.58	4.38	3.63***
Savings	6.64	5.33	3.91***
Group relations	5.87	5.76	.45
Community relations	5.09	4.66	1.47
Solidarity	5.27	4.71	1.88
Group sanctions	4.93	4.31	2.02*
Community sanctions	4.55	3.44	3.12**
Community reputation	5.26	4.84	1.32

* $p < .05$

** $p < .01$

*** $p < .001$

All two-tailed tests.

6.5 One-way Analysis of Variance

Gender

There were no significant F statistics when females and males were tested with ANOVA.

Group Composition

There were no significant F statistics when groups with fewer females (33-80 percent) were compared with groups with more females (81-100 percent).

Environment

As in the case of the independent samples *t*-tests, the three items for financial capital had *p* values equal to or less than .001 and were highly significant. The repayment item was significant ($F = 5.04$; $p < .05$) and two items for sanctions were significant. The community sanctions item was highly significant ($F = 9.74$; $p < .01$) and group sanctions item was significant ($F = 4.09$; $p < .05$). Of all these significant items, none had a significant Levene statistic, the test of the homogeneity of variances.

6.6 Causal Models

A causal model was necessary in order to check whether independent constructs had goodness-of-fit in a model; to check for appropriate sample size with the critical N as this cannot be done with a single dependent factor; and to test control variables with the model to see whether they have a significant relationship with the dependent variable.

The final model was composed of the final constructs derived from the confirmatory factor analysis and construct validity tests. The repayments factor was also added as a mediating variable. Sanctions (group sanctions, community sanctions and community reputation) and relations (group relations, community relations and solidarity) were the independent variables and financial capital (sales, profits and savings) was the dependent variable. The fit for this model (Model 1) was very good (see Table 6.18).

The group and community relations factor had a significant path with repayments (robust $z = 1.99$; $p < .05$) (see Figure 6.1). The other two paths, however, were not significant. Note how the sanctions construct lowers repayment rates (robust $z = -.38$; n.s.). Repayments had a non-significant relationship with financial capital (robust $z = .43$, n.s.).

I then compared this model with another that included social capital as a dependent variable. However, this model had problems of linear dependency. Another model that included both social capital and human capital as dependent variables also had problems of linear dependency. Then I removed the repayments factor and included social capital with paths from both independent variables to both dependent variables. This model (Model 2) had very good fit, although Model 1 had better overall indicators of fit (see Table 6.18).

When the different control variables were placed in the final model, none had a significant relationship with the dependent variable (financial capital) nor did they affect the other paths in the model.

Table 6.18

Causal Structure, CAME Group Loans

Measurement Models	S-B χ^2	df	Probability	CFI	RMSEA	SRMR
Model 1: <i>Final Model</i> : financial capital as the dependent variable; repayments as the mediating variable; and sanctions and relations as the independent variables.	21.50	31	.90	1.000	.000	.052
Model 2: Removed the repayments factor from Model 1 and added social capital as a dependent variable.	50.40	49	.42	.995	.016	.090

Robust statistics were used except for SRMR (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

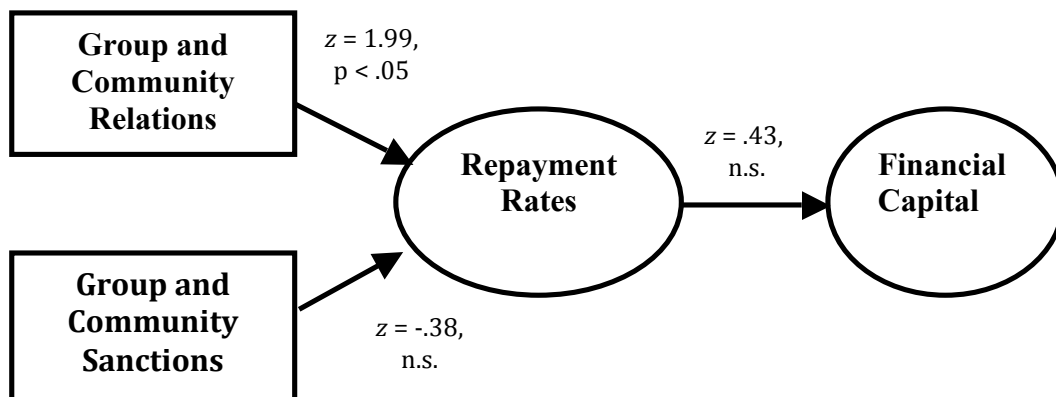


Figure 6.1. Final structural equation model, CAME group loans (robust z statistics)

In order to determine an appropriate sample size the critical N was calculated. The critical N with normal maximum likelihood statistics was 194 and

with robust statistics it was 228. Values of 200 or more are recommended for an acceptable fit (Hox, 1995)

6.7 Latent Mean Differences

The test of latent mean differences was now undertaken to examine whether the dependent variable had significant differences between categories for gender, the gender composition of groups, and environment.

Gender

Testing for latent mean differences of a measurement model involves five steps. The first three steps are the same as the first three steps in the test of factorial invariance. However, with the CAME group sample it was not possible to perform the first two steps as there was only one dependent factor (financial capital) and to test a measurement instrument with confirmatory factor analysis it is necessary to have at least two factors. However, a measurement model and a causal model with construct validity and acceptable goodness-of-fit had already been obtained. Therefore, testing for latent differences began with the third step, which compares factor loadings between the two groups (females and males) (see Table 6.19). There were no significant constraints.

The fourth step involves the test of the invariance of intercepts. All previous equality constraints are retained except those found to be non-invariant (none in this case). The variance for the constant V999 is fixed to 1.0. No significant constraints were found.

The fifth step involved testing for invariance of latent factor means. The averages for the two groups were not significantly different (z statistic for financial capital = $-.834$, n.s.). The negative non-significant z statistic denoted that female group loans create less money capital on average.

Table 6.19

Latent Mean Differences of the Measurement Model for Gender, CAME Group Loans

Samples, Models and Tests	S-B χ^2 probability	CFI	RMSEA
Testing for measurement invariance of factor loadings: covariances for female sample only; 110 cases.	.74	1.000	.000
Testing for invariance of intercepts: covariances for female sample only; 110 cases.	.67	1.000	.000
Testing for invariance of latent factor means: covariances for female sample only; 110 cases.	.67	1.000	.000

Robust statistics were used (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

Group Composition

As with the comparison of gender above, testing for latent differences began with a comparison of factor loadings between the two groups: groups with

between 33 percent to 80 percent female members; and groups with more than 80 percent female members (see Table 6.20). There were no significant constraints. In the testing for invariance of intercepts, the constraint of the intercept for profits and the constant V999 had a significant univariate increment ($p = .02$). The last step involved testing for invariance of latent factor means. The averages for the two groups were not significantly different (z statistic for financial capital = -1.25, n.s.). The negative non-significant z statistic denoted that groups with more females (more than 80 percent) create less money capital on average.

Table 6.20

Latent Mean Differences of the Measurement Model for Group Composition, CAME Group Loans

Samples, Models and Tests	S-B χ^2 probability	CFI	RMSEA
Testing for measurement invariance of factor loadings: covariances for groups with more females only; 110 cases.	.24	.993	.089
Testing for invariance of intercepts: covariances for groups with more females only; 110 cases.	.11	.988	.121
Testing for invariance of latent factor means: covariances for groups with more females only; 110 cases.	.09	.987	.128

Robust statistics were used (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

Environment

As with the comparisons for gender and group composition above, testing for latent differences began with a comparison of factor loadings between the two

groups: urban groups and rural groups (see Table 6.21). The univariate increment for the profit constraint was significant ($p = .02$). In the testing for the invariance of intercepts, the constraint of the intercept for sales and the constant V999 ($p = .002$) and for savings and the constant V999 ($p = .02$) both had significant univariate increments. The last step involved testing for invariance of latent factor means. The averages for the two groups were very significantly different (z statistic for financial capital = -3.59; $p < .001$). The negative z statistic denoted that urban groups created significantly less money capital on average than rural groups.

Table 6.21

Latent Mean Differences of the Measurement Model for Environment, CAME

Group Loans

Samples, Models and Tests	S-B χ^2 probability	CFI	RMSEA
Testing for measurement invariance of factor loadings: covariances for groups with more females only; 110 cases.	.09	.970	.161
Testing for invariance of intercepts: covariances for groups with more females only; 110 cases.	.00074	.982	.228
Testing for invariance of latent factor means: covariances for groups with more females only; 110 cases.	.05	.974	.193

Robust statistics were used (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

6.8 Conclusions

This chapter covers the results for the CAME group loans sample, one of the two group loans samples that test Hypotheses 2 to 5. A limitation of this CAME sample was that there was very little difference in the gender composition of groups. Few groups had more than 40 percent male members and there were very few all-female groups. Never the less, there are some interesting results.

Hypothesis 2 states that groups with a greater proportion of female members will experience higher levels of group participation. Group participation is highly related to social relations. Solidarity, originally an item intended for group participation, loads with group and community relations. There is also a tendency in this sample and the next for group participation items to load with group and community relations items. Groups with a greater proportion of females in fact generally placed more importance on group and community relations, but neither the *t*-tests nor the ANOVAs were significant. Also the *t* score for solidarity was almost exactly the same for both groups. A test of invariance for the casual model indicated that the model for male clients was significantly different than the model for female clients. However, a test of invariance of the causal model for groups with more males (20 percent or more male members) was not significantly different than the model for groups with fewer males (less than 20 percent). There is no evidence that group participation or social relations differ according to the gender composition of the group and, therefore, there is no support for Hypothesis 2.

Hypothesis 3 states that groups with a greater proportion of females will experience more peer-group and community pressure. The factor analysis in both group samples indicated that group and community sanctions were distinct from group and community relations and that items for group participation were related to items for group and community relations. Items for sanctions represent the best measures of group and community pressure. Groups with a greater proportion of females did have a greater likelihood of imposing sanctions, but the *t*-tests and ANOVAs were not significant. Therefore, there is no support for Hypothesis 3 that states that groups with a greater proportion of females will experience more sanctions.

Hypotheses 4 states that capital creation will not differ between groups with a greater proportion of females and groups with a smaller proportion of females, even though traditional wisdom and theory indicates that males will create more capital. There was virtually no difference between the two groups in the creation of sales and savings, although groups with a higher proportion of males performed better for profits. However, none of the *t*-tests and ANOVAs for financial capital creation were significant. Also, although the test of latent mean differences revealed that males with group loans will create more capital than females with group loans, and that groups with more males (at least 20 percent male members) will create more capital than groups with less males (less than 20 percent male members), the *z* statistics for both comparisons of latent means were not significant. There was no significant evidence that capital creation is

determined by the gender composition of a group. This result supports Hypothesis 4.

Finally, Hypothesis 5 states that clients with group loans in smaller populations will create more capital than clients with group loans in larger populations. Clients in a large agricultural town (or very small city) were compared with clients in a poor area of Mexico City, one of the world's biggest cities. In agreement with this hypothesis all items for financial capital creation were highly significant in favour of rural clients with both *t*-tests and ANOVAs. The test of latent mean differences indicated that there was a significant difference in the averages for financial capital creation between the two environments. Rural groups do create significantly more financial capital than urban groups. This finding supports Hypothesis 5.

In summary, no significant differences were found for group composition, indicating that the proportion of males and females in a group in this sample did not affect relations, sanctions or financial capital creation. However, rural groups did outperform urban groups in regard to the formation of financial capital.

CHAPTER 7: RESULTS FOR APROS GROUP LOANS

7.1 Introduction

The object of this chapter is to test Hypotheses 2, 3, 4 and 5 with the Apro sample for group loans. Hypothesis 2 examines whether groups with a greater proportion of females have higher levels of group participation, such as solidarity. Hypothesis 3 deals with peer-group and community pressure, and suggests groups with a greater proportion of females will experience more pressure. Hypothesis 4 states that groups with a greater proportion of females will be able to generate as much capital as groups that have a smaller proportion of females. Finally, Hypothesis 5 indicates that groups that live in smaller towns or cities will generate more capital than those that live in urban areas with larger populations.

The first section looks at descriptive statistics and additional tables that describe control variables. The second section analyses the measurement model for this sample with confirmatory factor analysis and determines construct validity. The third and fourth sections examine the items that have construct validity with *t*-tests and ANOVAs. The fifth section searches for a causal model with goodness-of-fit. A causal model is included in order to examine appropriate sample size for the test of latent mean differences; to check that independent factors and their items have goodness-of-fit in a rigorous model; and to be able to test the influence of control variables on the dependent variable. The next section

deals with a test of latent mean differences in order to compare the dependent construct utilising categories that represent gender, the gender composition of groups, and population size. Finally, taking into account the results of the statistical tests in this chapter, I come to a conclusion concerning the above four hypotheses.

7.2 Descriptive Statistics

*Sampling Procedure*⁴⁶

The Apros group loans sample was collected from all the eight Apros centres located in two states and the Federal District extending from Mexico City towards the northeast and the east to the sea, the Gulf of Mexico. Each centre serves a considerable area. There are two in the Federal District, two in the state of Hidalgo, and four in the state of Veracruz. Only the Cuajimalpa centre was located in a large city, but only three groups that had at least one year of association with Apros were operating from this centre at this time. Other clients located in Mexico City were contacted by means of the Milpa Alta centre, a rural centre very close to Mexico City. However, seven centres were located in cities of less than 100,000 people. Six of these had populations smaller than 40,000. Also, many of the clients included in the survey and their groups lived outside of cities.

⁴⁶A discussion of sampling procedure is also found in section 4.4.

The original goal of this sample was to collect about 220 questionnaires from clients in groups that had been associating with AproS for at least one year. As there was a minority of groups with 50 percent or more male members, groups composed of at least 40 percent male members were selected from a list. The sample was selected according to a third of groups composed of at least 40 percent male members; a third of mixed groups with less than 40 percent male members; and a third composed of all-female groups. Also, the sample was divided up into half of clients located in urban populations of more than 15,000 people and a half of clients from rural populations of less than 15,000 people. If possible, I chose clients in the largest cities and the smallest towns, but generally there were very few clients from cities of more than 40,000 people.

Clients in AproS met in the home of a member and made a weekly payment to the AproS promoter (staff member responsible for coordinating groups) during the meeting. Due to distances between centres and the sparse distribution of clients, it was decided that AproS staff would collect the questionnaires from the clients selected considering that staff members normally visited each group once a week. Each centre usually had various staff members who visited group meetings. A total of 243 questionnaires were collected from 243 different groups⁴⁷. The AproS group loans questionnaire for clients can be found in Appendix H and its English translation in Appendix I. Of these, 57 questionnaires were answered by clients who had been associating with CAME for less than one year. Another four were removed because the client had not

⁴⁷ If more than one questionnaire came from the same group, the questionnaire of only one group member was retained for the survey sample.

answered the questions concerned with group processes, such as group participation. This left me with 182 questionnaires.

A list of defaulting groups was also obtained from Apros and these groups were included amongst the 182 questionnaires above. If it was not possible to obtain a questionnaire from the groups in the defaulting list, another defaulting group or group with payment problems was selected by Apros staff and a questionnaire obtained. Surveys were also collected from other clients that were not selected as defaulters but who were not punctual with repayments according to staff answers. The staff answered separate questions about the client including one concerning the punctuality of the clients' payments, which was used for the mediating variable (repayments). The Apros staff questionnaire can be found in Appendix J and its English translation in Appendix K.

Generally the survey was read, but 43 clients (23.6 percent) self-administered the questionnaire. The method of collecting the survey had significant correlations with age ($r = -.30; p < .01$); number of children ($r = -.24; p < .01$); group size ($r = -.18; p < .05$); and training ($r = .23; p < .01$). These correlations indicate that the minority who opted for a self-administered questionnaire were significantly younger, had fewer children, belonged to smaller groups and had received more training or education over the last year. These clients had over a year of formal education more than those who were read the questionnaire, although the t -test ($t = -1.86, df = 180, p = .06$) and the Pearson's correlation ($r = .138, p = .06$) were not quite significant. Chi-square tests were performed looking at the application of the survey and categories for gender ($\chi^2 =$

.12, $df = 1$, n.s.), group composition ($\chi^2 = 3.05$, $df = 2$, n.s.), and environment ($\chi^2 = 3.05$, $df = 2$, n.s.). No significant differences were found when comparing the way the survey was applied with the different categories.

Missing Data

Generally very little data was missing. For example, no more than three cases (1.7 percent) were missing data for dependent variable items, no more than one case for relations items, and no more than two cases for sanctions items. Missing data was replaced according to the average for the client's centre, gender, the client's group composition (3 categories) and the environment of the client (rural or urban). For example, missing data for a case could be replaced according to the average of that item for clients in all-female groups in the Tantoyuca centre that lived in populations of less than 15,000 people (a rural environment). Missing data for control variables were replaced according to the average for the client's centre, gender and environment.

Descriptive Statistics

Below are tables with means, standard deviations (Tables 7.1 and 7.2) and correlations (Appendix L) for Apros group loans. Items that did not have construct validity (tested later on in this chapter) are not included in the table. The repayments question was answered by Apros staff.

Table 7.1 provides information about the averages of the sample.

Compared to the previous group loans sample, Apro's group clients had a similar age (42.4 years), marital status (56.6 percent married), number of children (2.7), business age (9.3 years)⁴⁸, and business ownership status (87.9 percent own 100% of their business), but Apro's clients had a bit more than half a year extra of formal education (8.6 years) and more Apro's clients had loans in other institutions (20.9 percent). Apro's group clients had been associating with the institution two years less (2.6 years). Loans to Apro's group clients covered a 6-month period and were a bit less per month (about US\$110 a month in total or about 13.6 percent less).

Males were about 5 years older than females ($t = 2.07, df = 180, p < .05$) and their businesses were more than 4 years older ($t = 1.85, df = 26, n.s.$) (Table 7.1). Age ($r = -.15, p < .05$) and business age ($r = -.19, p < .05$) had significant negative correlations with gender (Appendix L). Age had a negative correlation with financial capital correlation, being significant in the case of sales ($r = -.15, p < .05$) and almost significant in the case of profits and savings (both $r = -.13, n.s.$). Therefore, males in this sample did not appear to possess any significant advantages and their average age was a possible disadvantage.

⁴⁸ The age of the business was recorded as the age of the client's oldest business if the client answered that he/she had more than one business.

Table 7.1***Descriptive Statistics, Apros Group Loans***

Variables	Mean n=182	s.d.	Mean Females n=158	Mean Males n=24
1. Sex	1.87	.34		
2. Females in group (%)	81.27	21.84	84.89	57.50
3. Females in group (categories)	2.23	.835	2.36	1.38
4. Environment	1.53	.501	1.53	1.50
5. Population	1,333,652	4,973,057	1,407,573	847,006
6. Repayments (staff answer)	6.18	1.62	6.12	6.54
7. Sales	6.99	1.89	6.96	7.13
8. Profits	7.01	1.99	6.99	7.08
9. Savings	7.39	1.80	7.35	7.63
10. Group sanctions	5.05	1.66	5.07	4.92
11. Community sanctions	4.96	1.66	4.96	4.96
12. Community reputation	5.24	1.54	5.16	5.71
13. Group relations	5.41	1.67	5.35	5.75
14. Community relations	5.17	1.54	5.10	5.63
15. Solidarity	4.95	1.79	4.87	5.46
16. Age (years)	42.36	10.49	41.56	46.33
17. Education (years)	8.60	3.49	8.62	8.50
18. Marital Status	1.43	.497	1.42	1.54
19. Number of children	2.70	1.73	2.70	2.71
20. Age of youngest child (code)	2.14	.97	2.09	2.42
21. Age of oldest business (years)	9.26	7.88	8.69	13.00
22. Number of businesses	1.23	.59	1.22	1.29
23. Business ownership	4.76	.70	4.78	4.63
24. Loan amount (total in Mexican pesos)	\$8,027	\$4,558	\$7,885	\$8,958
25. Time in Apros (years)	2.63	1.37	2.62	2.66
26. Other loans	1.21	.408	1.22	1.17
27. Group size	6.65	1.78	6.72	6.21
28. Training/Education	1.24	.44	1.24	1.21
29. Meetings	1.25	.79	1.26	1.21
30. Survey application	1.24	.43	1.24	1.21
31. Screening	8.15	1.37	8.14	8.21
32. Monitoring	4.83	2.42	4.74	5.42

Coding for variables was as follows: sex: 1 = "male", 2 = "female"; females in group (categories): 1 = 0%-60%, 2= 61%-99%, 3= 100%; environment: 1= rural< 15,000 people; 2= urban> 15,000 people; repayments: 1 = "I totally disagree (that the client is punctual)", 7 = "I totally agree"; variables 7 to 9 (sales, profits, and savings): 1 = "I totally disagree", 9 = "I totally agree"; variables 10 to 15 (group sanctions, community sanctions, community reputation, group relations, community relations, and solidarity): 1 = "not at all probable", 7 = "totally probable"; marital status: 1 = married, 2 = not married; age of youngest child: 1= 0.3-8 years old, 2 = 9-17 years old, 3 = 18-40 years old, 4 = no children; business ownership: 1 = zero %, 2 = less than 50%, 3 = 50%, 4 = more than 50%, 5 = 100%; other loans: 1 = "no", 2 = "yes"; training/education: 1= no training; 2 = 1 form of training (business, health or other), 3 = 2 forms of training; 4 = all (3) forms of

training; meetings: 1 = once a week; 2 = once a fortnight; 3 = once a month; 4 = less than once a month; 5 = never; survey application: 1 = read to client; 2 = self-administered; control variables 31 and 32 (screening and monitoring): 1 = "I totally disagree", 9 = "I totally agree".

Table 7.2 presents the descriptive statistics for the gender composition of groups and environment⁴⁹. The clients in mixed groups with more than 60 percent female members had larger loans than all-female groups ($t = 3.06, df = 133, p < .01$) and groups with 60 percent or less females ($t = -2.10, df = 91, p < .05$). Clients in groups with 60 percent or less females owned older businesses ($t = 2.04, df = 63, p < .05$) than all-female groups. Business age was negatively correlated with the percentage of women in a group ($r = -.16, p < .05$) and the categories of group composition ($r = -.18, p < .05$) meaning the older the business, the greater the percentage of males in the group (Appendix L). Business age did not have any significant correlations with financial capital items, but the size of the loan did. Sales ($r = .18, p < .05$), profits ($r = .22, p < .01$) and savings ($r = .22, p < .01$) were all significantly correlated with loan size indicating that mixed groups with more than 60 percent female members had an advantage over the other two gender composition categories for groups.

Groups in the largest populations had received less training over the last year ($t = 1.93, df = 104, n.s.$) and had screened their members less ($t = 1.92, df = 114, n.s.$) than groups in small and medium-sized towns (Table 7.2). Groups in the

⁴⁹ The average for the population of the location of the client does not represent the median as 12 clients (6.6 percent) were located in Mexico City, which has a population of around 20 million or more, whereas the next biggest city had a population of just under 40,000 people. 31 clients were located in small cities of between 35,000 and 40,000, the next biggest urban zones after Mexico City in this sample.

largest populations were also less frequent with their meetings ($t = -1.96$, $df = 54$, n.s.) than groups in large towns and very small cities. All these differences were almost significant. Groups in the smallest populations had significantly smaller loans than groups in medium-sized populations ($t = -2.30$, $df = 131$, $p < .05$.) and almost significantly smaller loans than groups in the largest populations ($t = -1.89$, $df = 114$, n.s.). Screening and training are highly related to financial capital creation, whereas training is significantly related to profits ($r = .17$, $p < .05$) and almost significantly related to sales ($r = .14$, n.s.) (Appendix L). A Pearson correlation also indicated that clients who had received some form of training or education in the last year were more common in rural areas ($r = -.19$, $p < .01$). A lack of training may have hindered the performance of groups in the largest populations, whereas small loans appear to have been a disadvantage for groups in the smallest populations as loan size is significantly correlated with all financial capital items. Loan amounts were significantly bigger in urban areas ($r = .18$, $p < .05$). Group size was also larger in the smallest populations ($r = -.15$, $p < .05$) and was negatively correlated with sales ($r = -.17$, $p < .05$), profits ($r = -.14$, n.s.) and savings ($r = -.25$, $p < .01$) indicating another disadvantage for the smallest populations.

Table 7.2***Descriptive Statistics for Gender Composition of Groups and for Environment,******Apros Group Loans***

Variables	Mean 0-60% Females n=47	Mean 61-99% Females n=46	Mean 100% Females n=89	Mean 1- 10,000 People n=73	Mean 10,000- 30,000 People n=66	Mean over 30,000 people n=43
1. Sex	1.68	1.80	2.00	1.85	1.85	1.93
2. Females in group (%)	50.28	76.72	100.00	83.67	77.47	83.05
3. Females in group (categories)				2.34	2.09	2.26
4. Environment	1.53	1.65	1.46	1.00	1.80	2.00
5. Population	2140039	1757179	688905	3062	20527	5608054
6. Repayments	6.21	6.28	6.10	6.25	6.55	5.49
7. Sales	7.34	6.94	6.82	7.35	6.85	6.58
8. Profits	7.38	7.04	6.79	7.25	6.94	6.70
9. Savings	7.72	7.48	7.16	7.60	7.45	6.93
10. Group sanctions	4.64	5.07	5.27	4.96	5.21	4.98
11. Community sanctions	4.96	4.76	5.07	4.73	5.32	4.81
12. Community reputation	5.11	5.17	5.34	5.29	5.40	4.89
13. Group relations	5.53	5.28	5.40	5.37	5.88	4.74
14. Community relations	5.47	5.04	5.07	5.21	5.52	4.56
15. Solidarity	5.30	4.52	4.99	4.93	5.49	4.16
16. Age (years)	44.23	40.78	41.84	41.59	41.83	43.77
17. Education (years)	8.38	9.26	8.38	8.29	8.64	9.07
18. Marital Status	1.38	1.54	1.40	1.40	1.50	1.40
19. Number of children	2.66	2.46	2.84	2.79	2.55	2.77
20. Age of youngest child (code)	2.15	2.24	2.08	2.16	2.11	2.14
21. Age of oldest business (years)	11.47	9.41	8.00	8.29	10.94	8.32
22. Number of businesses	1.19	1.30	1.21	1.12	1.29	1.33
23. Business ownership	4.85	4.59	4.80	4.82	4.67	4.79
24. Loan amount (Mexican pesos)	\$7,702	\$9,761	\$7,302	\$7,019	\$8,758	\$8,616
25. Time in Apros (years)	2.75	2.83	2.45	2.56	2.91	2.31
26. Other loans	1.28	1.20	1.18	1.21	1.27	1.12
27. Group size	6.32	6.74	6.79	6.62	6.68	6.67
28. Training/Education	1.26	1.17	1.26	1.32	1.20	1.16
29. Meetings	1.15	1.17	1.35	1.26	1.11	1.47
30. Survey application	1.19	1.17	1.29	1.26	1.17	1.30
31. Screening	8.02	8.13	8.22	8.27	8.24	7.79
32. Monitoring	5.30	4.80	4.59	4.84	5.09	4.40

For coding of variables see Table 7.1.

Two control variables were not included in the correlations table (Appendix L). Unlike the previous group loans sample in the previous chapter, almost no client in this Apros group loans sample said they were receiving other loans in Apros. One client said her group loan was accompanied by a personal loan for building and one said she had a preferential loan that had access to lower interest rates. Only six clients said they had had an individual loan previously and had changed to group loans, but even though few changed their loans, this would not appear to affect capital creation or group processes, although it might if clients changed from group loans to individual loans taking into account that social capital and human capital generation may increase more in groups.

Marital status was significantly related to profits ($r = .17, p < .05$) and almost significantly related to sales ($r = .14, n.s.$) with clients that were not married creating more capital (Appendix L). There were no significant differences between the categories for gender ($\chi^2 = 1.30, df = 1, n.s.$), the gender composition of groups ($\chi^2 = 3.06, df = 2, n.s.$) and environment ($\chi^2 = 1.83, df = 2, n.s.$) when comparing categories for marital status (see Table 7.3). Environment is divided up into small and medium-sized towns of up to 10,000 people; large towns or very small cities of between 10,000 and 30,000 people; and cities with more than 30,000 people. Correlations also revealed no significant correlations between marital status and the following variables: gender, the gender composition of groups and environment (Appendix L).

Table 7.3***Marital Status, Gender and Environment, Apros Group Loans***

Marital Status	n males 1-10,000	n females 1-10,000	n males 10,000-30,000	n females 10,000-30,000	n males >30,000	n females >30,000
1 = married	6 (54.6)	38 (61.3)	3 (30.0)	30 (53.6)	2 (66.7)	24 (60.0)
2 = divorced	0 (0)	0 (0)	0 (0)	2 (3.6)	0 (0)	0 (0)
3 = separated	0 (0)	5 (8.1)	1 (10.0)	2 (3.6)	0 (0)	2 (5.0)
4 = single	3 (27.3)	6 (9.7)	1 (10.0)	10 (17.9)	0 (0)	4 (10.0)
5 = widow(er)	0 (0)	2 (3.2)	0 (0)	2 (3.6)	0 (0)	1 (2.5)
6 = living with partner	2 (18.2)	11 (17.7)	5 (50.0)	10 (17.9)	1 (33.3)	9 (22.5)
Total	11	62	10	56	3	40

Percentages in parentheses.

Retail businesses and sales were the most popular business activity, although this activity was more prolific in larger populations in agreement with the previous group loans sample (see Table 7.4). The sale of prepared food was actually the most popular business activity for women in small towns and the sale of unprepared food, such as crops, was also an important female activity there. The sale of prepared and unprepared food was also a more common business activity in rural areas in the previous sample. Although the male sample was small, the most popular male activity in towns and very small cities was the sale of unprepared food. Production, such as the fabrication of handicrafts, was also more prevalent in small towns. Overall, female businesses were more diversified in small towns. There were no transport businesses in the Apros sample, a business usually dominated by males. Businesses may exist in the form of a shop or space in a building, a street or market stall (at times mobile and following the migration of street markets during the week), a cart pushed around streets,

catalogue sales, or door-to-door sales. Table 7.4 displays more than 182 businesses as quite a few males and females had more than one business.

Table 7.4

Business Type, Gender and Environment, Apros Group Loans

Business Type	n males 1-10,000	n females 1-10,000	n males 10,000- 30,000	n females 10,000- 30,000	n males >30,000	n females >30,000
Retail and sales	1 (8.3)	20 (28.2)	1 (8.3)	35 (49.3)	3 (42.9)	29 (56.9)
Prepared food	0 (0)	21 (29.6)	2 (16.7)	15 (21.1)	0 (0)	12 (23.5)
Unprepared food	3 (25.0)	11 (15.5)	3 (25.0)	7 (9.9)	1 (14.3)	2 (3.9)
Groceries	3 (25.0)	8 (11.3)	2 (16.7)	7 (9.9)	1 (14.3)	4 (7.8)
Workshop	2 (16.7)	3 (4.2)	2 (16.7)	1 (1.4)	1 (14.3)	2 (3.9)
Service	1 (8.3)	2 (2.8)	0 (0)	2 (2.8)	1 (14.3)	2 (3.9)
Production	1 (8.3)	5 (7.0)	0 (0)	1 (1.4)	0 (0)	0 (0)
Animals*	1 (8.3)	1 (1.4)	2 (16.7)	2 (2.8)	0 (0)	0 (0)
Rent	0 (0)	0 (0)	0 (0)	1 (1.4)	0 (0)	0 (0)
Transport	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	12	71	12	71	7	51

Percentages in parentheses.

*Purchase, sales, raising and/or slaughter of animals.

Table 7.5 displays the number of businesses that clients had in each environment. T-tests revealed no significant differences for the number of businesses between categories for gender composition and for environment. Appendix L shows no significant correlations between group composition and the number of businesses, and between environment and the number of businesses. The number of businesses was also not significantly correlated with the creation of financial capital.

Table 7.5***Number of Businesses and Environment, Apros Group Loans***

Number of Businesses	1-10,000	10,000-30,000	> 30,000
Clients with 1 business	64 (87.7)	54 (81.8)	34 (79.1)
Clients with 2 businesses	8 (11.0)	8 (12.1)	5 (11.6)
Clients with 3 businesses	1 (1.4)	2 (3.0)	3 (7.0)
Clients with 4 businesses	0 (0)	2 (3.0)	1 (2.3)
Total	73	66	43
Total businesses	83	84	57

Percentages in parentheses.

There were no significant differences for access to loans with other institutions when taking into account categories for the gender composition of groups ($\chi^2 = 1.81$, $df = 2$, n.s.) and for environment ($\chi^2 = 3.87$, $df = 2$, n.s.). Surprisingly, clients in larger urban centres had fewer loans with other institutions on average, although the economic literature suggests that there would be more opportunities and credit available in larger cities (see Table 7.6).

Table 7.6***Loans with Other Institutions, Apros Group Loans***

Other Type of Loan	1-10,000	10,000-30,000	> 30,000	Total
None	58 (79.5)	48 (72.7)	38 (88.4)	144 (79.1)
Individual loan	2 (2.7)	2 (3.0)	0 (0)	4 (2.2)
Group loan	10 (13.7)	13 (19.7)	5 (11.6)	28 (15.4)
Personal loan*	2 (2.7)	2 (3.0)	0 (0)	4 (2.2)
Other type of loan	1 (1.4)	1 (1.5)	0 (0)	2 (1.1)
Total	73	66	43	182

Percentages in parentheses.

*Personal loans are loans that are not for businesses, but could be used to improve housing infrastructure or some other personal non-business related activity.

Table 7.7 indicates the number and percentage of clients that received some form of training or education during the previous 12 months prior to the survey. There were no significant differences for access to training when taking into account categories for the gender composition of groups and for environment, although the smallest populations had almost received significantly more training ($t = 1.93, df = 104, p = .06$) than the biggest populations as has been stated above. Unlike the previous group loans sample, clients that lived in the smallest populations had received the most forms of training or education during the previous year.

Table 7.7

Training or Education during the Previous Year, Apros Group Loans

Type of Training or Education	1-10,000	10,000-30,000	> 30,000	Total
Business	12 (16.4)	7 (10.6)	0 (0)	19 (10.4)
Health	6 (8.2)	3 (4.6)	6 (14.0)	15 (8.2)
Other	5 (6.8)	3 (4.6)	1 (2.3)	9 (5.0)
Total	23 (31.5)	13 (19.7)	7 (16.3)	43 (23.6)
None	50 (68.5)	54 (81.8)	36 (83.7)	140 (76.9)

Percentages in parentheses.

Groups that met less frequently than once a week experienced difficulties in financial capital creation and in social relations. Groups in the largest populations had almost significantly fewer meetings than groups in medium-sized

populations ($t = -1.96$, $df = 54$, $p = .06$) (Table 7.8). Frequent meetings were highly correlated with all items for financial capital generation; all items for social relations in the group and the community; and repayments (Appendix L). Most probably, the frequency of meetings could be used as a proxy for potential defaulters.

Table 7.8

Frequency of Meetings, Apros Group Loans

Frequency of Meetings	1-10,000	10,000-30,000	> 30,000	Total
Once a week	60 (82.2)	62 (93.9)	34 (79.1)	156 (85.7)
Once a fortnight	11(15.1)	3 (4.6)	5 (11.6)	19 (10.4)
Once a month	0 (0)	0 (0)	0 (0)	0 (0)
Less than once a month	0 (0)	0 (0)	1 (2.3)	1 (0.6)
Never	2 (2.7)	1 (1.5)	3 (7.0)	6 (3.3)
Total	73	66	43	182

Percentages in parentheses.

7.3 Measurement Model and Construct Validity

Capital Items

I conducted a confirmatory factor analysis to assess the structure of the observed measures for economic capital, human capital and social capital (see Table 7.9). An adjusted principal components factor analysis (EPIC) with a direct

oblimin rotation method⁵⁰ revealed that capital items loaded on three factors. This measurement model was tested with EQS and robust statistics (Byrne, 2006).

Table 7.9

Factor Analysis of Capital Items, Apros Group Loans

Capital Items	1	2	3	Communalities
Sales	0.770	0.003	0.274	0.667
Profits	0.758	0.044	0.276	0.653
Savings	0.837	-0.045	0.122	0.718
Business skills	0.888	-0.070	0.005	0.793
Business knowledge	0.426	0.254	-0.346	0.365
Friends	0.773	0.008	-0.136	0.617
Community trust	0.758	0.026	-0.163	0.602
Telephone calls	0.534	0.274	-0.233	0.414
Employment	-0.095	0.728	0.013	0.539
Meetings	0.240	0.444	0.120	0.269
Physical capital	0.148	0.269	0.433	0.281
Variance explained by each factor	5.095	0.581	0.572	6.249 (total variance)

Extraction method: Adjusted principal components analysis (EPIC). Rotation method: direct oblimin. Rotation converged in 32 iterations.

The first model was based on the loadings in bold in the factor analysis above (Table 7.9) but it had poor fit (Table 7.10) so the one item factor consisting of physical capital was eliminated. The second model still had poor fit. The employment item had the lowest standardised loading so it was decided to eliminate the second factor also, which left just one factor with eight items.

⁵⁰ See the same section in Chapter 5 for a brief discussion of why I chose this factor analysis solution and rotation method.

Table 7.10***Confirmatory Factor Analysis of Capital Items, Apros Group Loans⁵¹***

Measurement Models	S-B χ^2	df	probability	CFI	RMSEA	SRMR
Model 1: According to factor analysis above (Table 7.9).	149.99	55	.00	.815	.121	.065
Model 2: Only first two factors from Table 7.9. Physical capital eliminated.	143.27	34	.00	.801	.133	.070

Robust statistics were used except for SRMR (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

As I now had loadings on only one factor I decided to retain the items for financial capital (sales, profits and savings). These items agreed with the items for the dependent variable in the previous group loans sample and had a very good AVE (79 percent). A review of the statistics for construct validity revealed that convergent validity was good for this factor (see Table 7.11) (Hair & Anderson, 2010).

Table 7.11: Construct Validity of Capital Items, Apros Group Loans

Factor	Standardised loadings below .5	Average variance extracted (AVE)	Construct reliability	Cronbach's alpha
financial capital	no	79 percent	0.92	.91

⁵¹ See section 4.5 for a discussion of SEM and fit indices, including abbreviations for fit indices.

Group and Community Items

I conducted a second confirmatory factor analysis to assess the structure of the observed measures for the group and community factors (see Table 7.12). An adjusted principal components factor analysis (EPIC) with a direct oblimin rotation method revealed that these items loaded on two factors: social relations and sanctions. This measurement model was tested with EQS and robust statistics (Byrne, 2006).

Table 7.12

Factor Analysis of Group and Community Items, Apros Group Loans

Group Forces Items	1	2	Communalities
Group relations	0.645	0.081	0.422
Community relations	0.629	0.219	0.443
Help	0.639	0.177	0.439
Solidarity	0.766	0.008	0.587
Learning	0.754	-0.021	0.569
Decision-making	0.796	-0.119	0.648
Punctuality	0.692	-0.125	0.494
Group pressure	0.366	0.401	0.295
Group expulsion	0.015	0.747	0.558
Group sanctions	-0.074	0.808	0.658
Community sanctions	-0.003	0.808	0.653
Community reputation	0.045	0.712	0.509
Variance explained by each factor	4.785	1.681	6.466 (total variance)

Extraction method: Adjusted principal components analysis (EPIC). Rotation method: oblimin direct. Rotation converged in 5 iterations.

For the first model I respected the factor analysis above in Table 7.12 except that peer-group pressure was removed because it had a cross loading and a covariance was added between learning and decision-making in agreement with

the Lagrange Multiplier test. The fit for this first model was good (see Table 7.13) and so was construct validity (see Table 7.14A and Table 7.14B).

Table 7.13

Confirmatory Factor Analysis of Group and Community Items, Apros Group

Loans

Measurement Models	S-B χ^2	df	probability	CFI	RMSEA	SRMR
Model 1: According to factor analysis above (Table 7.12). Peer-group pressure item eliminated. Covariance for learning and decision-making.	54.72	42	.09	.979	.041	.056
Model 2: Sanctions (group sanctions, community sanctions and community reputation) and social relations (group relations, community relations and solidarity).	3.69	8	.88	1.000	.000	.025

Robust statistics were used except for SRMR (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

Table 7.14A

Construct Validity of Group and Community Items, Apros Group Loans

Factors	Standardised loadings below .5	Average variance extracted (AVE)	Construct reliability	Cronbach's alpha
Sanctions	no	61.23 percent	0.86	.86
Relations	no	50.11 percent	0.88	.88

Table 7.14B

Construct Validity of Group and Community Items, Apros Group Loans

Inter-construct correlation	Squared inter-construct correlation	Standardised residuals	Normed χ^2	Cross loadings
.438	.192	all below 2.5	1.55 (very good)	no

Although the above model (Model 1 in Table 7.13) had good fit and good construct validity, it was necessary to have agreement between the operationalisation of the two group loans samples. Therefore, for my second model I tried the same items and factors for group and community items as in the previous chapter: social relations (group relations, community relations and solidarity) and sanctions (group sanctions, community sanctions and community reputation). The second model had excellent goodness-of-fit (see Table 7.13) and had improved considerably from Model 1. Construct validity was also good (see Table 7.15A and Table 7.15B) so I decided to continue with the items and factors in Model 2.

Table 7.15A

Construct Validity of Group and Community Items, Apros Group Loans

Factors	Standardised loadings below .5	Average variance extracted (AVE)	Construct reliability	Cronbach's alpha
Sanctions	no	64.30 percent	0.84	.84
Relations	no	55.83 percent	0.79	.78

Table 7.15B

Construct Validity of Group and Community Items, Apros Group Loans

Inter-construct correlation	Squared inter-construct correlation	Standardised residuals	Normed χ^2	Cross loadings
.487	.237	all below 2.5	0.46 (very good)	no

7.4 Independent Samples T-Tests

Gender

Independent samples *t*-tests were employed to check for differences between males and females (see Table 7.16). As in the previous group loans sample, there were no significant differences for the items in the final model. Males had higher averages for all items except for group sanctions and community sanctions.

Table 7.16

Independent Samples T-Tests for Gender, Apros Group Loans

Variable	Females	Males	<i>t</i>
Repayments	6.12	6.54	1.19
Sales	6.96	7.13	.39
Profits	6.99	7.08	.21
Savings	7.35	7.63	.69
Group relations	5.35	5.75	1.09
Community relations	5.10	5.63	1.58
Solidarity	4.87	5.46	1.50
Group sanctions	5.07	4.92	-.43
Community sanctions	4.96	4.96	-.01
Community reputation	5.16	5.71	1.62

* $p < .05$

** $p < .01$

*** $p < .001$

All two-tailed tests.

Group Composition

There were only two significant *t*-tests when the three types of groups based on the proportion of females were compared (see Table 7.17). Groups with a greater proportion of males were significantly higher in solidarity ($t = 2.11$; $p < .05$) than mixed groups with a greater proportion of females. Groups with a greater proportion of males scored higher for social relations items and mixed groups with more females scored the lowest. All-female groups were significantly higher ($t = -2.08$; $p < .05$) in group sanctions than groups with a greater proportion of males. All-female groups scored the highest for the other two items for sanctions also. Financial capital items were almost significantly different between groups with a greater proportion of males and all-female groups. Financial capital creation rose according to the percentage of males in a group, although Pearson correlations were not quite significant (see Appendix L). Repayments were similar for the three categories.

Table 7.17

Independent Samples T-Tests for Gender Composition of Group, Apros Group

Loans

Variable	Category 1: 0%-60% females	Category 2: 63%-92% females	Category 3: all-female groups	<i>t</i> for categories 1 and 2	<i>t</i> for categories 2 and 3	<i>t</i> for categories 1 and 3
Repayments	6.21	6.28	6.10	-.22	.62	.37
Sales	7.34	6.94	6.82	1.27	.30	1.72
Profits	7.38	7.04	6.79	1.02	.73	1.80
Savings	7.72	7.48	7.16	.90	1.02	1.89
Group relations	5.53	5.28	5.40	.70	-.40	.43
Community relations	5.47	5.04	5.07	1.29	-.09	1.45
Solidarity	5.30	4.52	4.99	2.11*	-1.45	.96
Group sanctions	4.64	5.07	5.27	-1.19	-.71	-2.08*
Community sanctions	4.96	4.76	5.07	.54	-1.05	-.37
Community reputation	5.11	5.17	5.34	-.20	-.60	-.82

* $p < .05$

** $p < .01$

*** $p < .001$

All two-tailed tests.

Environment

In the previous group loans sample, rural clients scored significantly higher than urban clients with all items for financial capital, repayments, and two items for sanctions.

In this Apros group loans sample, groups from the smallest rural populations (1-10,000) were significantly higher in repayment rates ($t = 2.01$; $p < .05$) and sales ($t = 2.22$, $p < .05$) than the largest urban populations ($> 30,000$)

(Table 7.18). Savings were almost significantly different ($t = 1.94, p = .06$) between these two opposite environments. Community relations ($t = 2.21; p < .05$) and solidarity ($t = 2.22; p < .05$) were also significantly more important in the smallest populations when compared to the largest populations in the sample. The third item for social relations (group relations) was close to significant ($t = 1.79, p = .08$).

Whereas groups in small and medium-sized towns created more financial capital, groups in large towns and very small cities (10,000-30,000 people) scored higher than the other two categories in repayments, social relations, and sanctions. Social relations items scored very significantly higher in large towns and very small cities than in small to large cities for all three items: group relations ($t = 3.24; p < .01$); community relations ($t = 2.93; p < .01$); solidarity ($t = 3.60; p < .001$). Repayment rates ($t = 2.88; p < .01$) were also significantly higher between these two population categories.

Groups in large towns and very small cities were also significantly higher in group relations ($t = -2.02; p < .05$) and community sanctions ($t = -2.11; p < .05$) than groups in small and medium-sized towns.

Table 7.18***Independent Samples T-Tests for Environment, Apros Group Loans***

Variable	Category 1: 1-10,000	Category 2: 10,000- 30,000	Category 3: > 30,000	<i>t</i> for categories 1 and 2	<i>t</i> for categories 2 and 3	<i>t</i> for categories 1 and 3
Repayments	6.25	6.55	5.49	-1.34	2.88**	2.01*
Sales	7.35	6.85	6.58	1.60	.71	2.12*
Profits	7.25	6.94	6.70	.93	.63	1.40
Savings	7.60	7.45	6.93	.50	1.47	1.94
Group relations	5.37	5.88	4.74	-2.02*	3.24**	1.79
Community relations	5.21	5.52	4.56	-1.24	2.93**	2.21*
Solidarity	4.93	5.49	4.16	-1.96	3.60***	2.22*
Group sanctions	4.96	5.21	4.98	-.85	.73	-.06
Community sanctions	4.73	5.32	4.81	-2.11*	1.57	-.28
Community reputation	5.29	5.40	4.89	-.43	1.60	1.44

* p< .05

** p< .01

*** p< .001

All two-tailed tests.

7.5 One-way Analysis of Variance***Gender***

There were no significant F statistics when females and males were tested with ANOVA.

Group Composition

There were no significant F statistics for group categories or significant post hoc tests when the three categories were compared.

Environment

There were significant F statistics for repayments ($F = 6.01; p < .01$) and the three social relations items: group relations ($F = 6.44; p < .01$), community relations ($F = 5.31; p < .01$), and solidarity ($F = 7.65; p < .01$). A Games Howell post hoc test revealed the following significant differences between groups: large towns and very small cities had significantly higher repayments ($p = .02$); group relations ($p = .01$); community relations ($p = .01$); and solidarity ($p = .00$) than larger cities.

7.6 Causal Models

A causal model was obtained in order to test for appropriate sample size for the test of latent mean differences, to check for the goodness-of-fit of the relations and sanctions independent factors, and to test the influence of control variables on the dependent variable.

The final constructs derived from the confirmatory factor analyses and tests of construct validity were then included in a causal model. The repayments

factor was also added as a mediating variable. Sanctions (group sanctions, community sanctions and community reputation) and relations (group relations, community relations and solidarity) were the independent variables and financial capital (sales, profits and savings) was the dependent variable. The fit for this model (Model 1) was very good (see Table 7.19). The Wald test did not recommend the dropping of any parameters; the freeing of parameters recommended by the Lagrange Multiplier test represented only a small improvement in chi-square; and all standardised loadings were high, which points to good construct validity.

All the paths were significant with robust z statistics (see Figure 7.1). Social relations in the group and the community had a highly significant positive relationship with repayments ($z = 4.43, p < .001$). Group and community sanctions had a significant negative relationship with repayments ($z = -2.42, p < .05$). Repayments had a highly significant positive relationship with financial capital formation ($z = 4.53, p < .001$).

I then compared this model with another that included social capital as a dependent variable. That is, there was a path from repayments to social capital (friends, trust and meetings). However, the chi-square of this model was below .05 implying that this model was not significantly related to the theoretical model. All the paths in this model were similar to those in the final model and in addition there was a highly significant positive path between repayments and social capital (robust $z = 5.34, p < .001$).

Table 7.19

Causal Structure, Apros Group Loans

Measurement Models	S-B χ^2	df	probability	CFI	RMSEA	SRMR
Model 1 (<i>Final Model</i>): Financial capital as the dependent variable; repayments as the mediating variable; and sanctions and relations as the independent variables.	33.10	31	.37	.996	.019	.053
Model 2: Same as Model 1, but added social capital as a dependent variable.	93.88	60	.00	.950	.056	.063

Robust statistics were used except for SRMR (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

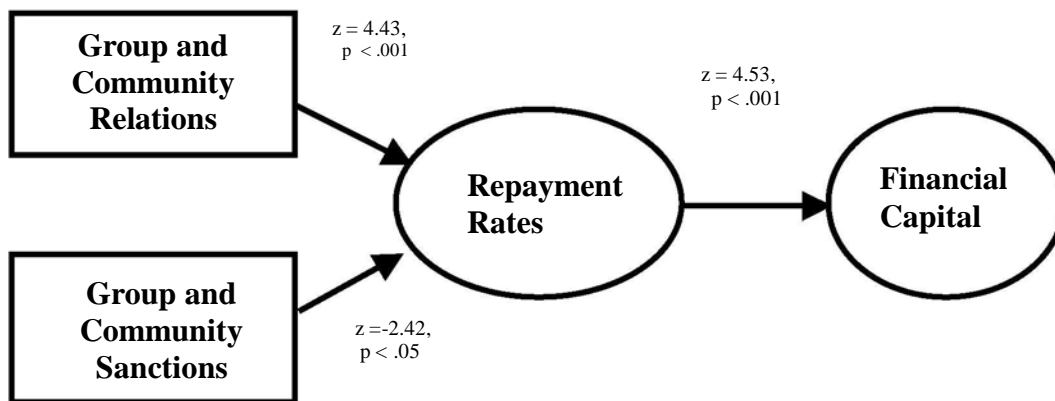


Figure 7.1. Final structural equation model, Apros group loans (robust z statistics)

Different control variables were tried in the final model. None of the control variables changed the significant positive path between repayments and financial capital.

In order to determine an appropriate sample size the critical N was calculated. The critical N with normal maximum likelihood statistics was 215 and with robust statistics it was 245. Values of 200 or more are recommended for an acceptable fit (Hox, 1995)

7.7 Latent Mean Differences

The test of latent mean differences was now employed with the dependent variable (financial capital) to ascertain whether there were significant differences in the averages of the latent variable between categories for gender, the gender composition of groups, and population size.

Gender

Testing for latent mean differences of a measurement model involves five steps. The first three steps are the same as the first three steps in the test of factorial invariance. However, with the Apros group sample it was not possible to perform the first two steps as there was only one dependent factor (financial capital) and to test a measurement instrument with confirmatory factor analysis it is necessary to have at least two factors even though a test of invariance of the causal model revealed good fit. Therefore, testing for latent differences began

with the third step, which compares factor loadings between the two groups (females and males) (see Table 7.20). There were no significant constraints.

The fourth step involves the test of the invariance of intercepts. All previous equality constraints are retained except those found to be noninvariant (none in this case). The variance for the constant V999 is fixed to 1.0. No significant constraints were found.

The fifth step involved testing for the invariance of latent factor means. The averages for the two groups were not significantly different (z statistic for financial capital = $-.33$, n.s.). The negative z statistic denoted that female group loans create less financial capital on average. This result agreed with the previous group loans sample. In both samples the male group had few cases.

Table 7.20

Latent Mean Differences of the Measurement Model for Gender, Apros Group Loans

Samples, Models and Tests	S-B χ^2 probability	CFI	RMSEA
Testing for measurement invariance of factor loadings: covariances for female sample only; 110 cases.	.47	1.000	.000
Testing for invariance of intercepts: covariances for female sample only; 110 cases.	.75	1.000	.000
Testing for invariance of latent factor means: covariances for female sample only; 110 cases.	.64	1.000	.000

Robust statistics were used (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

Group Composition

As with the comparison for gender above, testing for latent mean differences began with a comparison of factor loadings between the three groups: all-female groups; mixed groups with more than 60 percent female members; and groups with less than 61 percent female members (see Table 7.21). There was one significant constraint for the profit item ($p = .03$) in the case of all-female groups and groups with a greater proportion of males. In testing for the invariance of intercepts there were no significant constraints. All previous constraints had been retained except the above significant constraint. The last step involved testing for invariance of latent factor means. The averages for the groups were not significantly different (z statistic for financial capital = -1.47, n.s.). The negative z statistic denoted that groups with more females create less financial capital on average. A test of the invariance of latent factor means was done for only two groups and revealed that the average of all-female groups was not significantly different from groups with a greater proportion of males ($z = -1.84$; n.s.) and from mixed groups with more females ($z = -.55$; n.s.), although the first means comparison is almost significant ($p = .07$).

Table 7.21

***Latent Mean Differences of the Measurement Model for Group Composition,
Apros Group Loans***

Samples, Models and Tests	S-B χ^2 probability	CFI	RMSEA
Testing for measurement invariance of factor loadings: groups with 100% females (89 cases); 92-63% females (46 cases); and 60-0% females (47 cases).	.12	.982	.117
Testing for invariance of intercepts: groups with 100% females (89 cases); 92-63% females (46 cases); and 60-0% females (47 cases).	.31	.984	.146
Testing for invariance of latent factor means: groups with 100% females (89 cases); 92-63% females (46 cases); and 60-0% females (47 cases).	.20	.975	.160

Robust statistics were used (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

Environment

Testing for latent mean differences began with a comparison of factor loadings between the three groups: clients in small and medium-sized towns (less than 10,000 people); clients in large towns and very small cities (between 10,000 and 30,000 people); and in small cities and large cities (more than 30,000 people) (Table 7.22). There were no significant constraints. In testing for the invariance of intercepts there were also no significant constraints. The last step involved the testing for invariance of latent factor means. The averages for the groups were significantly different (z statistic for financial capital = 1.98, $p < .05$). Groups in

small to large towns created significantly more financial capital on average than the other two environments with larger populations. This was only just significant. A test of the invariance of latent factor means was done for only two groups and revealed that the average for small to large towns was not significantly different from large towns to very small cities ($z = 1.43$, n.s.) and also from small to large cities ($z = 1.86$, n.s.), although the difference with larger populations is almost significant ($p = .06$).

Table 7.22

Latent Mean Differences of the Measurement Model for Environment, Apros Group Loans

Samples, Models and Tests	S-B χ^2 probability	CFI	RMSEA
Testing for measurement invariance of factor loadings: small to medium-sized towns (73 cases); large towns to very small cities (66 cases); and small to large cities (43 cases).	.86	1.000	.000
Testing for invariance of intercepts: small to medium-sized towns (73 cases); large towns to very small cities (66 cases); and small to large cities (43 cases).	.54	1.000	.000
Testing for invariance of latent factor means: small to medium-sized towns (73 cases); large towns to very small cities (66 cases); and small to large cities (43 cases).	.77	1.000	.000

Robust statistics were used (normal maximum likelihood (ML)). S-B χ^2 = Satorra-Bentler scaled chi-square.

7.8 Conclusions

This chapter covers the results for the Apros group loans sample, the second of the group loans samples that test Hypotheses 2 to 5. Hypothesis 2 states that all-female groups or groups with a greater proportion of females will experience higher levels of group participation. Group participation is highly related to social relations. Solidarity, originally an item intended for group participation, loads with group relations and community relations. All items for group participation in the larger Apros sample loaded with items for group relations and community relations suggesting that all these items belong to the same construct and will possibly load together in larger samples. Therefore, social relations would appear to encompass group participation.

The independent samples *t*-tests did not support Hypothesis 2 as groups with the the greater proportion of male members (more than 39 percent) had the highest means for social relations items and were significantly higher in solidarity ($t = 2.11, p < .05$) than mixed groups that had the greater proportion of females (more than 60 percent). ANOVAs for group composition and social relations were not significant. Although groups with a greater proportion of females had higher means for group relations and community relations in the previous group loans sample, none of the *t*-tests or ANOVAS in that sample was significant. The *t* score for solidarity was almost exactly the same for both groups. There is no evidence that groups with a greater proportion of female members place more emphasis on

group or community relations or on group participation and, therefore, there is no support for Hypothesis 2 in both group loans samples.

Hypothesis 3 states that groups with a greater proportion of females will experience more peer-group and community pressure. The factor analysis indicated that group and community sanctions were distinct from group and community relations and that items for group participation were related to items for group and community relations. Items for sanctions represent the best measures of group and community pressure. All-female groups did have a greater tendency to impose sanctions than the other two group categories, although community sanctions and community reputation did not have a significant difference between categories. However, all-female groups did have a significant tendency to impose more group sanctions ($t = -2.08, p < .05$) than mixed groups with more males. There was some agreement with the previous group loans sample in that groups with a greater proportion of females in that sample did have a greater likelihood of imposing sanctions than groups with fewer females even if the t -tests and ANOVAs were not significant. Therefore, without including sanctions originating in the community and taking into account that the previous group loans sample was smaller and composed of almost no mixed groups that had more than 50 percent male members, there is tentative support that groups with a greater proportion of females impose more group sanctions (but not community sanctions).

Hypotheses 4 states that capital creation will not differ between groups with a greater proportion of females and groups with a smaller proportion of

females, even though traditional wisdom and theory indicates that males will create more capital. In the previous sample there was virtually no difference between the two categories for the gender composition of groups in the creation of sales and savings, although groups with more males performed better with profits on average ($t = 1.26$, n.s.). However, none of the t -tests and ANOVAS for financial capital creation was significant. In the Apros sample groups with a greater proportion of males created more sales, profits and savings on average and all-female groups were the lowest for all these three financial capital items. However, the t -tests to compare these two categories were not significant, but they came very close. ANOVAs were also not significant in the Apros sample.

In the previous group loans sample the test of latent mean differences revealed that males with group loans will create more capital than females with group loans, and that groups with more males (at least 20 percent male members) will create more capital than groups with less males (less than 20 percent male members). However, the z statistics for both comparisons involving latent mean differences were not significant. The test of latent mean differences in the Apros sample agreed with the above results in the previous sample. Males created more capital than females on average and groups with a greater proportion of males created more capital than groups with a greater proportion of females, although the results were not significant. This test of latent mean differences was almost significant between groups with a greater proportion of males and all-female groups. Possibly a larger sample that included a greater proportion of groups with at least 50 percent male members would have found significant differences in

financial capital creation. However, because none of the results were significant over the two samples, for the time being I conclude that there is no significant evidence that capital creation is determined by the gender composition of a group. This result supports Hypothesis 4.

Finally, Hypothesis 5 states that clients with group loans in smaller populations will create more capital than clients with group loans in larger populations. In the previous group loans sample all items for capital creation were highly significant in favour of rural clients for both *t*-tests and ANOVASs. In the Apros sample clients in small and medium-sized towns created significantly more sales ($t = 2.22, p < .05$) than clients in small to large cities and savings were also higher ($t = 1.94, p = .06$), but not quite significant. ANOVAs with the Apros sample were not significant in relation to financial capital creation.

In the previous sample, the test of latent mean differences of the capital items for both models indicated that there was a significant difference in the averages for financial capital creation between the two environments. Rural groups created significantly more financial capital than urban groups. Also, the test of latent mean differences with the Apros sample revealed that groups in the smallest rural populations created significantly more capital than the other two groups in larger populations. Therefore, these findings support Hypothesis 5.

In conclusion, social relations and financial capital creation were not significantly different when the gender composition of a group was examined, although groups with a greater proportion of males on average tended to emphasise social relations more and created more financial capital. In contrast,

all-female groups were significantly more likely to impose group sanctions than groups with at least 40 percent male members. There were no significant differences for gender composition in relation to community sanctions. Finally, groups from rural areas also created significantly more capital than those from urban populations of more than 30,000 people.

CHAPTER 8: DISCUSSION AND CONCLUSIONS

8.1 Introduction

The first section of this final chapter discusses the contribution this study makes to the theoretical literature and proposes topics for further research. This discussion follows the themes that deal with the different hypotheses I have tested, includes a proposal for investigating individual loans in different environments, and ends by commenting on the causal models for both group loan samples. In the second section I consider the implications of my findings for practice. Finally, I will deliberate over the limitations of this study and make my closing conclusions.

8.2 Contribution and Implications for Theory and Research

Gender, Individual Loans and Capital Creation

Traditional theories concerned with gender explain why male business owners generally create more capital than female business owners (Bird et al., 2001). To test this assumption, questionnaires were collected from microfinance clients with individual loans in Mexico City. Neither the test of latent mean

differences with EQS nor *t*-tests revealed any significant difference in the creation of financial capital between males and females. In contrast to traditional theories, male-owned businesses in this sample actually possessed almost no significant advantages. They did have significantly more loans in other organisations, but access to other loans had very little correlation with the financial capital items.

A proxy for business experience or human capital would be the age of a business, but there were no significant differences between male- and female-owned businesses for business age. Sales actually had a significant negative correlation with business age, while profits had a non-significant negative correlation. Such results question the value of human capital theory (Jacobsen, 1998; Kalleberg & Leicht, 1991; Loscocco et al., 1991) in a micro-enterprise context in developing countries. It is possible that even though no significant differences were found for business age that males over the years had invested significantly more time in attending to their businesses, while females had been diverted more by family obligations, however, if this was so the accumulation of human capital on behalf of males was not evident in the results. Also, there would still be a positive correlation between business age and financial capital creation if business experience was a dominant control variable.

Social network theory states that males invest more time into instrumental relationships that contribute to capital creation, whereas females invest more time in inter-personal relationships that are not business relevant (Brush, 1992; Moore, 1990; Worchel et al., 2002). This assumption was not tested directly although four social capital items were included in the questionnaire. These social capital items

did not distinguish between instrumental relationships and inter-personal. The social capital construct, composed of three items, did have goodness-of-fit in an alternative model for individual loans, but this construct was eliminated in order to have agreement with the measurement models between the three samples collected. Males scored significantly higher for the meetings item ($t = 2.02, p < .05$), which represented social gatherings in restaurants, other people's houses or public places. The forming of new close friends, probably comprised of inter-personal relationships, but also possibly instrumental, was almost significant in favour of males ($t = 1.77, p = .08$). An initial test of latent mean differences, which included both financial capital and social capital constructs, revealed that there was no significant difference between males and females in social capital creation ($z = -1.731, p = .08$), although this test was close to being significant. However, if males did enjoy advantages in instrumental relationships, this advantage was not translated into a significant difference in financial capital creation. In order to explore further the influence of social networks on male and female-owned businesses, future research could differentiate between instrumental and inter-personal relationships in the context of microfinance and micro-entrepreneurs in developing countries to confirm whether males in this context do in fact enjoy more instrumental relationships and whether such relationships have a significant influence on economic and human capital creation.

Finally, the theory of organisational ecology states that female-owned businesses will be confined to smaller, less established businesses in more

crowded industries (Kalleberg & Leicht, 1991; Loscocco et al., 1991; Tigges & Green, 1994; Williamson, 1995). As female-owned businesses do not have as much access to scarce resources, they are not expected to survive as long as male-owned businesses. However, in this CAME sample there was no significant difference in business age between male and female-owned businesses or in loan size, which could also be a proxy for business size or for income. Furthermore, in this context, business age and loan size had mainly non-significant negative correlations with sales and profits. On the other hand, male-owned businesses were more diversified, as about 71 percent of female-owned businesses were concentrated in retail activities, informal sales and food preparation compared to only about 39 percent of male-owned businesses. A comparison of the impact on capital creation of different male- and female-owned business types in this context goes beyond the possibilities of this present study, but is a potential topic for future research. However, the greater diversification of male-owned businesses did not differentiate in a significant manner the capital creation of male-owned businesses from female-owned businesses.

Overall, there was no evidence that male micro-entrepreneurs enjoyed significant advantages over female entrepreneurs or that they created significantly more financial capital. There are various possible explanations for this result. Firstly, it is possible that significant differences might be found with a larger sample considering that males had higher averages for the three forms of financial capital. A larger sample might indicate a significant latent mean difference and reveal more significant differences between male- and female-owned businesses

that support one or more of the above theories. Besides, a larger sample, a future study could explore in depth variables related to the three traditional theories discussed above and also include items for gender bias and socialisation that relate to the feminist perspective.

Secondly, females that were able to gain access to individual loans with this MFI may not represent the typical Mexican female micro-entrepreneurs in this region due to staff screening. There may be some unusual advantages that females in this sample possessed that enabled them to diminish the gap that normally is evident between the sexes in the creation of capital. Normally there is some discrimination by financial institutions towards female entrepreneurs in developing countries (Muravyev, Talavera & Schafer, 2009; Prasad, 2009). However, there were no significant differences between the sexes for the different control variables employed apart from males having access to more loans in other institutions, a detail that potential borrowers would not have provided to CAME. Future research could attempt to explore the sensitive topic of loan screening from inside the MFI and include a control group of micro-entrepreneurs in a similar area where there are no MFIs operating. However, in this sample in which education, age, business age, and other control variables were relatively similar, male-owned businesses did not exhibit significant advantages in financial capital creation.

Therefore, the results for this sample suggest that the advantages that male business owners normally enjoy do not appear to be so pronounced in the context of individual loans provided by microfinance institutions in a large city in central

Mexico. Possibly the gap between the sexes in relation to capital creation and business success is reduced at the base of the pyramid in developing countries. I set out to question the existence of the gender gap in the context of group loans, but have also found that such a gap is also questionable in the context of the more traditional methodology of individual loans. Further research incorporating gender questions is needed to compare directly individual loans with group loans and with other micro-entrepreneurs who do not have access to loans. Overall, there is a general lack of empirical research on the individual loans of MFIs (Khavul, 2010).

Gender Composition of Groups and Relations

Theory indicates that females will favour “interpersonally oriented” or “communal” attributes (Powell & Greenhaus, 2010, p. 515) and that in masculine countries there will tend to be a larger gap between the masculine/feminine values of males and females (Hofstede, 1980, 1997). Hofstede (1997, pp. 82, 91-97, 103) argues that the feminine pole places more emphasis on values and abilities such as “cooperation”, “mutual help”, “solidarity”, “concern (for) relationships”, “solidarity”, “aid”, “caring for others”, “sympathy for the weak”, “equality”, “consensus”, “common solutions”, “compromise”, and “negotiation”. A figure reveals that Mexico is about the fifth most masculine country in Hofstede’s (1992, p. 109) list of 40 countries. This point about a difference between the values of males and females in masculine countries is important and must be stressed again.

Hofstede (1992, p. 105) states, for example, that “the more an entire society scores to the masculine (MAS) side, the wider the gap between its “men’s” and “women’s” values.” Hofstede (1980, pp. 261-262) also adds that “countries with higher MAS values also show greater differences in values between men and women in the same jobs.”⁵² If females do possess more feminine values in Mexico, females should exhibit a higher level of cooperation and solidarity in groups that should aid them in capital creation.

First of all I checked whether there was a significant difference for the two femininity items I had included. In the CAME group loans sample the two items for femininity had acceptable loadings with a factor analysis (above .63)⁵³ and an acceptable Cronbach’s alpha (.72). However, there was no significant difference between the averages for males and females. The Cronbach’s alpha for these two items in the Apros sample was too low (.55). Because there were few males in these samples, I also examined the CAME individual loans sample. Factor analysis loadings were above .62 and Cronbach’s alpha was just acceptable (.66). T-tests revealed no significant differences between males and females.

Hofstede (1980, p. 291) also points out that the division in values between the sexes is greatest when adults are youngest, around 20 years old, with males being more masculine. Masculinity then tends to decline for both sexes until about the age of 45 when masculine values between the sexes are no longer different.

Masculinity continues to drop slightly into old age but there is no longer any

⁵² For a visual example of the masculinity index for gender and countries see Hofstede (1980, p. 288).

⁵³ The factor analysis solution utilised was an adjusted principal components analysis (EPIC) with a direct oblimin rotation method.

difference between the sexes. Therefore, as age might be a factor in the non-significant results I had for the femininity values above, I decided to examine whether younger females had higher levels of femininity. There seemed to be no indications that younger females were higher in femininity. Across all three samples, correlations between age and the femininity items were almost zero; the youngest males (20-37 years old) had higher average scores for femininity than the same age group for females; and the youngest clients (20-37 years old) were not significantly different in femininity than the oldest clients (48-75 years old). There was no evidence that the Mexican males in the sample were more masculine or assertive or that females stressed interpersonal relationships and interdependence more in their values (Hofstede, 1997; Powell & Greenhaus, 2010).

These results indicated that in this segment of the population in central Mexico both males and females were high in feminine values. Hofstede (1997, p. 104) suggests that Central American countries are feminine in their values, however, he concludes that “most of Mexico would have inherited the tough Aztec culture” (p. 105). In fact the Aztecs only dominated a region in central Mexico for a relatively brief period. The South of Mexico was influenced to some extent by the militaristic Aztecs and Toltecs from central Mexico, but was and is culturally distinct. Indigenous inhabitants are more numerous in southern Mexico and they would appear to have more feminine values. Poorer areas of Mexico City have been populated by recent immigrants from rural areas, many from the South, whose families may have only recently been integrated into the national mestizo

culture over the space of a few generations. Many of the poor in Mexico may have preserved more values in common with their pre-hispanic roots and such segments of the population may differ in their values from the upper classes, the upper middle classes and the Mexican executives of Hofstede's IBM study. Further research on the dominant cultural values at the base of the pyramid in Mexico are needed in order to be able to compare this segment of the population with other social classes and other Mexican ethnic groups. As both males and females across the three samples were high in feminine values, interpersonal relationships and cooperation would have been emphasised in groups and, consequently, group and community relations would be seen as important in all groups regardless of gender composition.

Gender Composition of Groups and Sanctions

Very little research has been conducted on gender differences in relation to peer-group pressure. Some microfinance literature suggests that females are more sensitive to criticism and that females in groups will pressure each other more than males and for this reason females have higher repayment rates (Armendáriz de Aghion & Morduch, 2000, 2005; Rahman, 1999). As I have discussed in the above section, the results for the two femininity items suggest that there are no significant differences in values between males and females in this study, so any differences in the threat of sanctions between groups with a greater proportion of females cannot be related to this cultural dimension.

Over both samples clients in groups with a greater proportion of females were generally more likely to experience sanctions, although this was only significant in one instance. The group sanctions item was significantly higher for all-female groups ($t = -2.08; p < .05$) in the Apro sample when compared to groups with a greater proportion of males. Almost all the groups in the CAME sample had more than 50 percent female members so categories for gender composition were going to have more similarities. The gender composition of groups appeared to have no significant relationship with community sanctions. However, the gender composition of groups may influence sanctions that come from within the group.

Further research is needed to test whether this is so. If possible, larger samples could compare groups consisting of more than 50 percent male members with all-female groups. A questionnaire on this theme could contain items related to the level of the respondent's sensitivity towards criticism and to the probability of the respondent pressuring other group members. My questionnaire asked only about the probability of other members pressuring group members. More items could also be tested and included related to sanctions from within the group.

Gender Composition of Groups and Financial Capital Creation

According to traditional literature, male business owners have significant advantages over female business owners in capital creation. However, there is some debate in the microfinance literature as to whether males have a distinct

advantage when females have access to group loans (Clark, 1991; Haase, 2006; Kevane & Wydick, 2001; Matienzo, 1993; Wydick, 2002). I predict in my discussion for the fourth hypothesis that higher levels of participation in groups with a greater proportion of females and greater female sensitivity to group and community pressure evens the playing field in regards to capital creation. Such tendencies could be explained by higher feminine values in the case of Mexican females, which manifests in a greater concern for inter-personal relationships (Hofstede, 1997; Powell & Greenhaus, 2010). However, feminine values were not found to differ between the Mexican males and females in this sample, nor do the results for the social relations construct suggest that groups with a greater proportion of females place more emphasis on harmonious group and community relations.

Results for financial capital creation indicate that there are no significant differences according to the gender composition of a group. However, as I have already mentioned, there was very little difference between the gender composition of groups in the CAME sample. Secondly, a comparison between groups with a greater proportion of males and all-female groups in the Apro sample revealed that there was almost a significant difference for all three financial capital items and that all-female groups generated less capital. The test of latent mean differences between these two extreme categories was also almost significant ($z = -1.84, p = .07$). As males in this sample were found to be similar to females in regard to feminine values, which are conducive to harmonious group processes, then they may have still enjoyed some of the advantages that are

explained by the traditional theories on gender and business success. A larger sample would most likely indicate significant differences that demonstrate the value of having males in microfinance groups. However, as is the case with individual loans, the gender gap is not as wide as would be expected, although group loans may actually accelerate the capital creation of individuals (Kevane and Wydick, 2001).

Group Loans, Environment and Financial Capital Creation

If society in rural environments is more collectivistic as some literature indicates, it would seem logical that group loans are better suited to rural environments. In collectivist cultures relationships prevail over tasks and such values would appear to be compatible with group loans (Hatch & Cunliffe, 2006; Hofstede, 2001). Some authors state that rural areas tend to be more collectivistic than urban areas (Erez & Somech, 1996; Hofstede, 1997, pp. 65, 74). My exploratory study (Griffin, 2008) indicates that peer-group and community pressure is higher in rural areas, where traditions and social ties are more binding, than in urban areas. However, my results reveal that sanctions are not beneficial for punctual repayment rates and financial capital creation. Because communities in rural areas are more socially cohesive, group members will probably communicate more together and be able to interchange ideas and knowledge to a greater extent contributing to the creation of human capital. My results reveal that intra-group learning is highly related to a concern for healthy group and

community relations, and that relations increase repayment rates and in turn financial capital.

There were, however, problems with the validity and reliability of items for collectivism and individualism. Across all three samples, the items for collectivism and individualism had generally low loadings and low reliability and, therefore, it is not possible to provide any evidence related to these cultural dimensions. Future surveys conducted in a similar context, which include various items for each of these cultural dimensions would be valuable. Such research should take into account environmental, socio-economic and ethnic differences. Also, looking at feminine values and environment, both samples revealed no significant differences when comparing urban and rural environments.

Results reveal that there is a tendency for groups in rural areas and very small cities to experience higher levels of sanctions and relations than in larger urban areas with more than 30,000 people, although the results are not always significant. Results for the CAME sample revealed that all items for sanctions and relations (including the learning item) were higher for rural groups, although learning was the only social relations item significantly higher ($t = 2.49; p < .05$).⁵⁴ Group sanctions ($t = 2.02; p < .05$) and community sanctions ($t = 3.12; p < .01$) were very significantly higher for rural groups. The Apro sample indicated that large towns and very small cities had the highest averages for sanctions and relations (including the learning item). Relations in large towns and very small cities were very significantly more important than relations in cities bigger than

⁵⁴ The learning item was removed from group models in the CAME and Apro samples as the CAME construct for group and community relations had problems with construct validity.

30,000 people. Relations in small and medium-sized towns were also significantly higher in importance than relations in the largest cities for two items and almost significant for the third. However, because sanctions were also higher in large towns and very small cities, this may have given small and medium-sized towns an advantage in financial capital creation.

It would appear that in the smallest communities there is a tendency to avoid sanctions, whereas social relations are still important. In very small cities, social relations are important, but community members are more inclined to impose sanctions. In the larger cities, it may be more difficult to impose sanctions, whereas social relations are less important. Although, sanctions lower repayments and financial capital, harmonious social relations and intra-group learning would appear to override the adverse implications of sanctions. In both group loan models the path between relations and repayments is more significant than the path between sanctions and repayments. Overall, the test of latent mean differences demonstrated that groups in the smallest populations generated significantly more financial capital in both samples.

Individual Loans and the Environment

If rural dwellers are more collectivistic and urban dwellers more individualistic as some literature suggests (Erez & Somech, 1996; Hofstede, 1997, pp. 65, 74), then individual loans should be better suited to large cities. In an individualistic culture, “identity is based in the individual” and the “economy (is)

based on individual interests” (Hofstede, 1997, pp. 67, 73). However, the items for cultural dimensions lacked validity and reliability to test whether there really are cultural differences based on population density. Also, a sample that I collected to compare rural and urban individual loans proved to be too small. Therefore, a comparison of individual loans across environments is a pertinent topic for future research.

Causal Models

The paths in my causal models were not included in my hypotheses. Causal models were obtained for each sample in order to justify the relationship of the independent variables with the mediating and dependent variables; to provide a rigorous process of operationalisation for my construct items that included agreement between the different samples; to verify appropriate fit and sample size with the critical N; and to test for the influence of control variables. However, it is fitting to comment on my models as they enhance the contribution of this study.

Microfinance literature tends to point to peer-group pressure (or joint liability), screening and monitoring as the key components of microfinance success (Bruton et al., 2011; Giné & Karlan, 2006; Gomez & Santor, 2003). According to Hermes and Lensink (2007, p. F3) “several theoretical models (e.g. Stiglitz, 1990; Varian, 1990) confirm that joint liability group lending leads to more and more effective screening, monitoring and enforcement among group

members.” They also comment on “some other models (that) specifically discuss the role of social ties within group lending in improving repayment performance of groups. The work of Besley and Coate (1995) and Wydick (2001) fall into this category of models.”

Besley and Coate (1995, pp. 13-14) present their model in the form of econometric theory, which leads them to the common assumption that “if social penalties are severe enough, group lending will result in a higher repayment rate than individual lending.” They conclude that “this may explain why group lending is often advocated for rural lending in developing countries, where social connectedness among communities is typically high.” However, they are unsure about the connection between repayment rates and welfare. Although they focus on social connectedness, this has an impact in the form of social penalties or the “wrath of other group members” (Besley and Coate, 1995, p.16).

Wydick (2001) develops a game-theoretic model developed from field research gathered in Guatemala. He emphasizes screening, monitoring, the threat of group expulsion, mutual aid and the threat of social sanctions. Although Wydick (2001, p. 13) includes “aid (by the group) of their own who appear victims of unavoidable shocks” (mutual aid) as a contributing factor towards high repayment rates, he highlights that “it is important to understand that the credible threat by the lending institution to deny credit to expelled group members and defaulting groups provides the backbone for a borrowing group’s internal discipline.” Therefore, these theoretical models that underline the workings of

social ties in groups basically argue that these ties mainly impact repayment rates in the form of sanctions.

Other authors gathered empirical data and comment on social ties in microfinance. Zeller (1998) collected data from 146 groups in Madagascar to conclude that higher repayment rates were prominent in groups with stronger ties. Wydick (1999) finds that social ties within 137 groups in Guatemala lower the peer pressure that coerces group members to repay. Karlan (2007) takes advantage of a quasi-random group formation process in Peru and finds that members with supposedly strong ties, those who live in a close proximity to each other or belong to the same culture, generate higher repayment rates and savings. Cassar, Crowley and Wydick's (2007) trust and microfinance games involve 498 group members in 36 groups in South Africa and Armenia. They find that trust between group members and group homogeneity affects group repayment rates more so than societal trust and familiarity with other members. Past experiences of mutual aid also contribute to stable repayments. On the other hand, Ahlin and Townsend's (2007, p. F43) study of 262 groups in Thailand concludes on the

sometimes negative relationship (of repayment rates) with more benign social ties such as relatedness and sharing. This is one of the most striking aspects of the results for policy implications: strong social ties – measured by sharing among non-relatives, cooperation, and clustering of relatives, and village-run savings and loan institutions (PCGs) – having seemingly *adverse* effects on repayment performance.....Social structures that enable

penalties can be helpful for repayment, while those which discourage them can lower repayment.

These authors accept that weaknesses of their study is that the groups they study have a fixed size of two, a pair of microfinance clients but not really a group, and that their models are static. Some of their proxies are also questionable.

Hermes and Lensink (2007, p. F3) point out that

In spite of the abundance of theoretical literature, there has been surprisingly little empirical evidence of whether and how microfinance actually helps to reduce existing information asymmetries. This is at least partly due to the difficulty of obtaining reliable data on the working of these programmes and the behaviour of their participants. Most of the available empirical studies address the general question of whether joint liability lending improves repayment performance of groups, using different types of proxies for screening, monitoring and enforcement behaviour taking place within groups.

Theory has generally ignored the positive aspects of group participation; and social relations and sanctions outside the group, a trend partly countered by the theory of Besley and Coate (1995) above. Believing that the positive aspects of group cooperation and also community pressure may be important, I started out with a conceptual model that separated peer-group pressure, community pressure

and group participation. However, clients do not appear to distinguish between group and community relations and between group and community sanctions. The final structural equation model in both group loans samples that connects group and community forces with financial capital creation indicates that these social relations are integral.

Some commentators (Barboza & Barreto, 2006; McKernan, 2002) have mentioned intra-group learning (learning by association or peer mentoring) as a possible factor in improving repayments and capital creation, but overall the creation of human capital in groups has generally been a theme and a key success factor neglected in the literature. Barboza and Barreto (2006, p. 330), however, also suggest that “endogenous learning” takes place “as participants with initial high probability of success share their knowledge and generate an endogenous learning process that improves the probability of repayment of the remaining group and centre members.” They estimated performance by means of repayment rates in Chiapas, Mexico, while McKernan (2002) estimated a non-credit effect on profits in Bangladesh without identifying categories for non-credit effects and their proportional input. I included peer mentoring (learning by association) as an item and measured the relationship of its construct with repayments and financial capital. The learning item was later omitted as there were problems related to construct validity in the smaller CAME group loans sample. A smaller sample can only support a more limited number of parameters between items and constructs. However, I was able to demonstrate that the learning item did have construct

validity in the larger Apros group loans sample and loaded on the factor for group and community relations.

Hermes and Lensink (2007, p. F4) also argue that

(empirical studies on joint liability lending) suffer from a number of potential weaknesses. First, in most papers the link between theory and empirics is rather implicit. Many of the variables used to measure group member behaviour in terms of screening, monitoring and enforcement are only indirectly related to the contents of these concepts from a theoretical perspective. Moreover, in several cases crude, or at least one-dimensional, measures are used to proxy for complex constructs such as social ties.

I developed the learning item as I could not find a similar item in other microfinance surveys. The same was the case for the item concerning attendance and punctuality in group meetings. Ahlin and Townsend (2007) had included decision-making items to measure three decision-making situations that Thai farmers might find themselves in, so I adapted this to a non-agricultural context for group loan decision-making. In the larger sample all of these items loaded well with group and community relations items indicating there is no conceptual division and suggesting that these items could be useful for future research on group behaviour in microfinance. From the perspective of the micro-entrepreneur, intra-group learning in microfinance and items for group participation (mutual

aid, solidarity, decision-making and punctuality) do not appear to be distinguished from general group and community relations.

Although peer-group pressure is emphasised in the literature, the assumption that peer-group pressure contributes to superior repayment rates and capital creation must be questioned by the results in this study. The two group samples agreed with a final model rigorously defined by confirmatory factor analysis, construct validity measurements and goodness-of-fit indicators. Both samples indicate that group and community sanctions lower repayment rates, although this is not significant in the smaller CAME group loans sample. Sanctions would in turn lower the creation of financial capital if it were not for the beneficial influence of group and community relations. This is because good repayment rates have a positive relationship with financial capital suggesting that having groups with good payment records, apparently the vast majority of group loans in both MFIs, may be effective in promoting economic development at the level of the entrepreneur. Bruton, Khavul and Chavez (2011, p. 37) comment that

a number of recent studies have tried to untangle the effect of group relationship on repayment rates (Ahlin & Townsend, 2007; Cassar et al., 2007; Karlan, 2007), and future research should also look beyond repayment rates in trying to understand whether the nature of the group also affects the growth and survival potential of the businesses that borrowers start.

In order to test whether high repayment rates caused financial capital creation or were the result of higher levels of financial capital formation, I tested a model that included all the same constructs from the final model but arranged financial capital as the mediating variable and repayments as the dependent variable. This model had inferior goodness-of-fit.

Further research should also develop structural equation models that incorporate constructs representing screening and monitoring. Monitoring had a significant correlation with all items for financial capital creation in both group loan samples, whereas screening was significant with all items in the Apros sample and one item in the CAME sample. However, from my own experience of collecting first hand all the group loans questionnaires for the CAME sample, clients in village bank-size groups of between 10 and 50 members reacted as if it was almost impossible to have knowledge about the business of another client in such large groups. Therefore, although significant relationships were found between monitoring and financial capital in this sample, scores for monitoring were skewed around the lowest possible score and, therefore, must be regarded with extreme caution. Monitoring might be significant, but it seems to almost rarely take place to any relevant extent. The frequency of group meetings also had a high correlation with all items and with repayments. Overall, theory suggests monitoring and screening are important factors, so their relationship with the constructs present in my model should be clarified in future research.

8.3 Implications for Practice

The results of this study indicate that the gap between males and females in this Mexican context is not as wide as some of the literature suggests and, therefore, both genders represent worthy borrowers for both individual loans and group loans. Loans to females may be a more efficient means of improving the nutrition, health and education of children, but both sexes represent attractive clients for MFIs. The view that females are universally more responsible with loans and have superior repayment rates, except curiously in the case of Indonesia, is questioned by this study (Khan, 1999; Remenyi, 2000; Rosintan et al., 1999). In both group loans samples, although results were not significant, MFI staff indicated that male clients had higher repayment rates. However, staff opinions may subconsciously favour males, so a more precise measurement of repayment rates is also required. In regards to group loans, males add to the productivity of a group and their presence would appear to benefit females. This may be more so in the case of solidarity groups of between 5 to 10 members and less so in the case of village bank groups of over 15 clients, although further research with larger samples could confirm this.

Males were a minority in both MFIs in this study representing roughly between 13 to 20 percent of all group members. Considering their relative success, one must ask why there are so few males with group loans. Are males less interested in micro-loans because they have more opportunities or are a greater proportion of males weeded out because they are initially found to be

riskier prospects by MFI staff? Such questions are worthy of further investigation. If males are actually just as reliable as females, they represent a huge potential market in countries such as Mexico.

This study suggests that MFIs should benefit by concentrating on harmonious relations within groups and with the community in general. Those aspects that relate to social pressure on individuals on behalf of the group should be discouraged if possible. Group members should also be discouraged from applying pressure on other members through their family, friends and other community members. Possibly when each new cycle begins, in the initial meeting staff could encourage harmonious relations through the promotion of incentives involving group cooperation and by sponsoring community projects that involve group members. Unconstructive criticism within the group, threats of expulsion and other potential sanctions could be discouraged through training sessions that promote solidarity.

Finally, rural groups were significantly higher in financial capital creation than urban groups suggesting that economic conditions in rural areas in Mexico may be more dynamic than popular paradigms about rural areas would have us believe. Urban environments are generally credited with offering more economic opportunities for microfinance clients (Armendáriz de Aghion & Morduch, 2005; Khandker et al., 1995; Morduch, 1999). My results contrast dramatically with those based on repayment rates in Chiapas that describe a lack of opportunities and services in rural areas, including limited access to markets (Barboza & Barreto, 2006; Barboza & Trejos, 2009). Chiapas, on the southern border, shares

Guatemala's indigenous heritage and is renowned for being Mexico's poorest state. This study in central Mexico found that rural microfinance clients not only had access to loans from various competing MFIs, but also had access to educational programs. Moreover, repayment rates were significantly higher in rural areas than in the largest populations pointing out that rural environments in this region may be more attractive from the point of view of the MFI. This may be especially true during times of economic recession. Microfinance loans may be an effective means of countering rural unemployment and a traditional lack of opportunities in rural areas that has contributed to severe population density in Mexico City and an overall exodus to larger Mexican cities and to the United States. Although the money that relatives send from the United States can be an important source of capital for state economies, academics argue that overall migration has adverse consequences for Mexico (Delgado Wise, Márquez Covarrubias & Rodríguez Ramírez, 2009).

8.4 Limitations and Conclusions

This study had various limitations. First, caution should be exercised in generalising my findings to other Mexican microfinance institutions, especially those operating in the south and north of Mexico. This study includes only one MFI with village bank-style loans, one with solidarity groups, and one with individual loans.

Second, there was such a slight difference between the proportion of males in the CAME group loans sample that such a comparison did not represent a dramatic enough difference for a comparison of the gender composition of groups. Only two groups (1.8 percent of all groups) had more than 50 percent male members. The Apros group loans sample enabled a more distinct comparison. However, even in this sample only 15 groups (8.2 percent of all groups) had a composition of more than 50 percent male members.

Third, the Apros group loans sample mainly consisted of clients living in towns and cities that had less than 40,000 people. Only 12 clients resided in cities of more than 40,000 and all were located in Mexico City, one of the world's biggest cities. Therefore, the Apros sample did not include any clients living in medium-sized cities of between say 100,000 and one million people nor did it have enough clients residing in large cities.

Fourth, the questionnaire could be criticised because the respondents were only asked about relative changes in capital and they were not asked for information about specific income quantities in Mexican pesos. This may have been possible in the case of economic capital, but would have involved numerous questions concerning their present income and their income of one year ago. Trying to obtain exact measures of income would have expanded and complicated the questionnaire considerably. Also income, particularly in rural areas, tends to vary according to the seasons. There are also concerns about whether clients would have been able to recall exact income quantities of a year ago. Even if clients could remember it is unlikely that they would have given a sincere answer

to such a sensitive question given the current situation regarding crime and extortion in Mexico. To overcome such obstacles it was decided that one question concerning the relative growth of physical capital, sales, profits, savings, and employees over the last year would be asked. Such a decision may have been justified because the financial capital factor had the highest construct validity of the capital items. The social capital items were adopted from a World Bank study that had been tested in many locations in the developing world. These items had high validity and reliability in the pilot studies, however, only the financial capital items passed all the rigorous tests of reliability, validity and goodness-of-fit.

Fifth, an item for human capital that was valid and reliable was eliminated from the questionnaire to shorten it after the pilot study leaving the human capital factor with only two items. It would have been wiser to keep this item as I later learned that construct validity appears to be higher in structural equation modeling when there are at least three items for a factor. Therefore, although my original goal was to measure the formation of social and human capital, this was not possible due to construct validity. However, the third item for human capital may not have made a difference to construct validity tests as in the case of the four social capital items. The item for employment generally loaded independently and physical capital had cross loadings. A broader measurement of capital creation could be included after a careful selection of items based on similar studies, the incorporation of at least three items per factor, and the collection of a larger sample.

Sixth, the items that were most problematic were those that represented the cultural values of collectivism and individualism. If such cultural dimensions are to be measured in a future study related to the bottom of the pyramid, I recommend the selection of a greater variety of items after the careful consideration of recent literature and surveys on collectivism and individualism. Firstly, a pilot study should be conducted to test the reliability and validity of these items.

In conclusion, this study revealed that there were no significant differences between the sexes in the creation of financial capital with individual loans or group loans. It is possible that a larger sample might reveal that males with individual loans might create significantly more financial capital than females with individual loans; and that groups with more than 50 percent male members may generate significantly more financial capital than all-female groups. However, as no significant differences were found in the economic performance of male-owned and female-owned businesses in these samples, the gender gap does not appear to be as wide as the literature indicates. Possibly, the advantages that males have enjoyed in the past are diminishing and the playing field is becoming more level or perhaps this segment of the Mexican population represents an anomaly. Eking out a living in an often harsh and unpredictable economic environment, poorer Mexican women have been known to be resilient, tenacious and independent (Barry, 1992; Riding, 1985). Male-owned businesses in this study tended to be more diversified according to business type, but apart

from this advantage, which would agree with the organizational ecology perspective, males appeared to enjoy few advantages.

Group loans do not appear to reduce the gender gap. There is no evidence that groups with a greater proportion of female members in central Mexico place more importance on interpersonal relationships and cooperation either within their groups or within the community. Also, groups with a greater proportion of female members do not encourage more community sanctions, although they appear to impose more sanctions from within the group. Finally, rural groups in central Mexico created significantly more financial capital than urban groups in both microfinance institutions. The results of this study question whether male-owned microenterprises and urban environments in this region indeed have access to significantly greater opportunities that accelerate economic capital creation. Further studies are needed to explore and confirm these findings.

This study makes a further contribution by developing a causal model that demonstrates that clients do not make a distinction between their group and their community in regards to social relations and sanctions. The vast majority of microfinance literature assumes, without empirical evidence, that repayment rates are heightened by enforcement, screening and monitoring. Some literature argues that social capital is a key factor in improving repayment rates, but often infers that this inevitably takes place through pressure in the form of sanctions. This study makes a key contribution to the empirical literature by finding that group and community sanctions in fact tend to lower repayment rates. Furthermore, this study reveals that it is harmonious social relations in the group and the community

that actually raises repayment rates. Screening may be related to group relations, but it is doubtful that monitoring takes place in large groups with 15 or more members. Screening and monitoring both appear to take place more frequently and have more of an impact on capital creation with smaller solidarity groups. The positive connection between repayment rates and financial capital creation, which is assumed in the literature but not demonstrated empirically, is also confirmed in the larger group sample in which staff members responsible for each group directly answered the repayment rate question. Therefore, harmonious social forces, such as solidarity and intra-group learning, improve the performance of microfinance clients and microfinance institutions. However, contrary to the inferences of the dominant literature in microfinance, the threat of sanctions expressed through peer-group pressure retards economic development.

Appendix A: Initial Questionnaire Items

1. Dependent Variable: Capital

Clients read the following statements and answer one of the following: 7. I strongly agree; 6. I moderately agree; 5. I mildly agree; 4. I neither agree nor disagree; 3. I mildly disagree; 2. I moderately disagree; 1. I strongly disagree.

a.) Economic capital

1. You bought new equipment, tools, transport or infrastructure for your business in the last year.
2. Your business sales have increased over the last year.
3. Your business profits have increased over the last year.
4. Your loans from _____ (microfinance institution) have helped to increase your savings.
5. You have more employees in your business now than one year ago.

b.) Human capital

1. You have improved your reading, writing or mathematical skills over the last year.
2. You have improved your business skills over the last year.
3. You have become aware of new or non-traditional types of work over the last year.

c.) Social capital.

1. You have made close friends over the last year. These are people you feel at ease with, can talk to about private matters, or call on for help.
2. The level of trust in your town/neighbourhood has gotten better over the last year.
3. Over the last year, you or any one in your household have participated more in any communal activities, in which people came together to do some work for the benefit of the community.
4. You make or receive more phone calls now than you did one year ago.
5. In the past year you have gotten together more frequently with people to have food or drinks, either in their home or in a public place.
6. In the past year you have gotten together more frequently with people in your town/neighbourhood to jointly petition government officials or political leaders for something benefiting the community.

2. Independent Variable: Loan Methodology

1. Do you presently receive group loans or individual loans?
2. Has your loan contract changed since you have been in the program?
3. If you answered yes to Question 2, when did your loan contract change?

(month and year)

4. If you answered yes to Question 2, what was your last loan contract? (large groups (12 members or more), small groups (less than 12 members) or individual loans)

3. Moderating Variables: Gender and Environment

A. Gender

1. What is your name?
2. Are you male or female?
3. If you have a group loan, how many group members are men and how many are women?

B. Environment

1. What is your address, general location and phone number?
2. Do you live in: the country; a town; a small city; a large city?
3. Is your business in: the country; a town; a small city; a large city?

4. Mediating Variables

Clients read the following statements and answer one of the following: 7. Extremely likely; 6. Quite likely; 5. Slightly likely; 4. Neither likely nor unlikely; 3. Slightly unlikely; 2. Quite unlikely; 1. Extremely unlikely.

A. Peer-Group Pressure

1. How likely do you think it is that other members of your group would exert pressure on a group member to encourage that member to repay if that member were to use a loan dishonestly and refuse to pay?
2. How likely do you think it is that pressuring a group member to repay a loan would be easy for the members of your group?
3. How likely do you think it is that your group would expel a member for failing to repay a loan?
4. How likely do you think it is that members of your group repay their loans to stay on good terms with other group members?
5. How likely do you think it is that members of your group who do not cooperate and participate with group activities will be criticised and sanctioned by other group members?

B. Community Pressure

1. How likely do you think it is that members of the community would exert pressure on a member of your group to encourage that member to repay if a member were to use a loan dishonestly and refuse to pay?
2. How likely do you think it is that members of your group repay their loans to stay on good terms with other members of the community?

3. How likely do you think it is that members of your group who do not cooperate and participate in your group activities will be criticised and sanctioned by members of the community?
4. How likely do you think it is that members of your group who do not repay their loans will not be able to obtain credit from other members of the community?
5. How likely do you think it is that members of your group who do not repay their loans will lose their reputation in the community?

C. Group Participation:

1. How likely do you think it is that if a group member could not repay a loan because of bad luck, illness etc., other members of your group would help to repay his/her loan?
2. How likely do you think it is that members of your group repay their loans because they feel they must stick together as a group?
3. How likely do you think it is that members of your group often learn from other group members?
4. How likely is it that all of the members of your group will have the final say when your group needs to make a decision?
5. How likely is it that all your group members will be punctual in attending your group meetings?

D. Repayment Rates (Question for MFI staff)

MFI staff to answer this last question with the following scale: 7. I strongly agree; 6. I moderately agree; 5. I mildly agree; 4. I neither agree nor disagree; 3. I mildly disagree; 2. I moderately disagree; 1. I strongly disagree.

1. Over the last year this client/client's group has been consistent in repaying his/her/their loans according to credit records.

5. Control Variables

A. General

1. How old are you?
2. How many years of formal education have you completed beginning with grade one elementary?
3. Can you read a newspaper?
4. Can you write a letter?
5. Are you married, divorced, separated, single, living with someone (union libre), or widowed?
6. How many children do you have?
7. How old are your children?

B. Microfinance

1. What kind of business(es) do you manage personally? That is, what products do you make or sell or what type of service do you provide?
2. How much of this/these business(es) do you own personally? 1. everything (100%); 2. more than half (more than 50%); 3. half (50%); 4. less than half (less than 50%); 5. none (0%).
3. When did you join this microfinance program (month and year)?
4. How much was your present loan when you first received it?
5. How much time do you have to pay your present loan?
6. Most of the members of your group knew each other before establishing your group (this question uses the same Likert scale as the Dependent Variable section).
7. If I asked you how much each member in your group sells each day, you would be able to tell me (this question uses the same Likert scale as the Dependent Variable section).

C. Cultural Dimensions

Clients read the following statements and answer one of the following: 7. I strongly agree; 6. I moderately agree; 5. I mildly agree; 4. I neither agree nor disagree; 3. I mildly disagree; 2. I moderately disagree; 1. I strongly disagree.

1. It is important for me to work with people who cooperate well with one another.
2. It is important for me to work in a congenial and friendly atmosphere.
3. It is important for me to have an opportunity for high earnings.
4. Parents and children must stay together as much as possible.
5. It is my duty to take care of my family even when I have to sacrifice what I want.
6. I feel good when I cooperate with others.
7. Winning is everything.
8. Competition is the law of nature.
9. I'd rather depend on myself than others.

Appendix B: CAME Individual Loans Survey in Spanish

CUESTIONARIO PARA CLIENTES CON UN PRÉSTAMO INDIVIDUAL

La siguiente encuesta será usada para una investigación en la Escuela de Graduados en Administración y Dirección de Empresas (EGADE) del Tecnológico de Monterrey. El contenido de cada encuesta individual permanecerá estrictamente confidencial. Por favor conteste las siguientes preguntas, las cuales le tomarán 10 minutos de su tiempo.

Información General

1. ¿Cuál es su nombre? _____
2. ¿Cuál es su género? (marque o circule la letra de su respuesta) a. hombre b. mujer
3. ¿Cuántos años tiene? _____
4. ¿Cuántos años de educación formal ha terminado, empezando con primero de primaria? _____
5. ¿Es usted:
a. casada (o)? b. divorciada(o)? c. separada(o)?
d. soltera(o)? e. viuda(o)? f. viviendo con su pareja en unión libre?
6. ¿Cuántos hijos tiene? _____
7. Si tiene hijos, ¿Cuántos años tiene su hijo menor? _____

Información de Su Negocio

8. ¿A qué tipo de negocio(s) se dedica? Por ejemplo, ¿Qué tipo de producto(s) hace usted o vende o qué tipo de servicio(s) facilita?
primer negocio: _____
segundo negocio: _____
tercer negocio: _____
9. ¿Cuánto tiempo tiene(n) su(s) negocio(s)?
primer negocio: _____ años _____ meses
segundo negocio: _____ años _____ meses
tercer negocio: _____ años _____ meses
10. ¿En qué cantidad de todos su(s) negocio(s) es usted la (el) dueña(o)?
a. todo (100%) b. más de la mitad (más que 50%)
c. la mitad (50%) d. menos de la mitad (menos que 50%) e. nada (0%)

Su Préstamo

11. Actualmente, ¿Qué tipo de préstamo usted tiene en CAME? (si tiene más que un préstamo por favor marque o circule las letras de su respuesta)
- a. un préstamo individual b. un préstamo de grupo c. un préstamo interciclo
12. ¿Por cuantos meses le autorizaron su préstamo individual en CAME? _____
13. ¿Hace cuantos años (o meses) se inició el crédito con CAME? Años: _____ Meses: _____
14. Actualmente ¿Usted tiene un préstamo en otras organizaciones? (si tiene más que un préstamo por favor marque o circule las letras de su respuesta)
- a. No
b. Sí, un préstamo individual (para su negocio)
c. Sí, un préstamo de grupo (para su negocio)
d. Sí, otro tipo de préstamo (describa) _____
15. ¿Ha cambiado su tipo de préstamo desde que usted empezó a recibir préstamos de CAME? Por ejemplo, ¿Ha cambiado de préstamos individuales a préstamos de grupo o de préstamos de grupo a préstamos individuales?
- a. Sí b. No
16. ¿Durante el último año, usted ha recibido los siguientes tipos de capacitación?
- | | | |
|---------------------------------|-------|-------|
| i. capacitación empresarial | a. Sí | b. No |
| ii. capacitación sobre la salud | a. Sí | b. No |
| iii. otro tipo de capacitación | a. Sí | b. No |

Seleccione (X) en el cuadro que mejor representa el grado en que usted personalmente está de acuerdo o en desacuerdo (lado derecho) con cada una de las ideas abajo presentadas.

	Estoy totalmente de acuerdo	Estoy muy de acuerdo	Estoy algo de acuerdo	Estoy poco de acuerdo	Ni estoy de acuerdo, ni estoy en desacuerdo	Estoy poco en desacuerdo	Estoy algo en desacuerdo	Estoy muy en desacuerdo	Estoy totalmente en desacuerdo
17. Durante el último año usted compró o instaló nuevo equipo, herramientas, transportación o infraestructura para su(s) negocio(s).									
18. Durante el último año las ventas de su(s) negocio(s) se han incrementado.									
19. Durante el último año las ganancias de su(s) negocio(s) se han incrementado.									
20. Los prestamos recibidos de CAME han ayudado a incrementar sus ahorros durante el último año.									
21. Tiene más empleados en su(s) negocio(s) ahora que hace un año.									
22. Usted ha mejorado sus habilidades para hacer negocios durante el último año.									
23. Usted se ha enterado sobre nuevas formas de trabajar o formas de trabajo no tradicionales durante el último año.									

24. Usted se ha hecho de amigos cercanos en el último año. Estos amigos son personas con quien usted se siente a gusto, con quien usted puede platicar sobre asuntos privados, o con quien usted puede llamar cuando necesita ayuda.									
25. El nivel de cercanía y confianza en su comunidad ha mejorado durante el último año.									
26. Ahora usted hace o recibe más llamadas telefónicas que hace un año.									
27. Durante el último año usted se ha reunido con más frecuencia de lo que lo hacía, con personas para comer o tomar bebidas en sus casas o en un lugar público.									

Seleccione (X) en el cuadro que mejor representa el grado de frecuencia (lado derecho) de cada una de las ideas abajo presentadas.

	Siempre	Casi siempre	Usualmente	Algunas veces	Casi nunca	Nunca
28. Ganar es todo.						
29. Es su deber cuidar de su familia aun cuando tenga que sacrificar lo que usted desea.						
30. Prefiere usted depender de sí mismo que de otros.						
31. Usted se siente bien cuando coopera con otros.						

Por favor piense sobre un trabajo ideal...sin pensar en su trabajo actual. Para escoger su trabajo ideal, ¿qué tan importante sería considerar las siguientes ideas? Por favor seleccione (X) en el cuadro (lado derecho) que mejor representa su respuesta.

	Es lo más importante	Es muy importante	Es algo importante	Es poco importante	Es muy poco importante
32. Es importante para usted trabajar con las personas que cooperan bien unos con otros.					
33. Es importante para usted trabajar en un ambiente agradable y amistoso.					

34. ¿De cuánto es el préstamo individual que tiene ahora con CAME? \$ _____

Para ser llenado por la encuestadora después de la entrevista:

35. ¿El cliente llenó el cuestionario solo?

- a. Sí
- b. No, la encuestadora leyó el cuestionario al cliente

Appendix C: CAME Individual Loans Survey in English

QUESTIONNAIRE FOR CLIENTS WITH AN INDIVIDUAL LOAN

The following survey will be used for research purposes in the Graduate School of Administration and Business Management (EGADE) of the Tecnológico de Monterrey. The content of each individual questionnaire will remain strictly confidential. Please answer the following questions, which will take you about 10 minutes of your time.

General Information

1. What is your name? _____
2. What is your gender? (check or circle the letter of your answer) a. male b. female
3. How old are you? _____
4. How many years of formal education have you finished beginning with grade one in primary school? _____
5. Are you:
a. married? b. divorced? c. separated?
d. single? e. widowed? f. living with your partner without being married?
6. How many children do you have? _____
7. If you have children, how old is your youngest child? _____

Information about your Business

8. What type of business do you have? For example, what type of products do you make or sell or what type of service do you provide?
first business: _____
second business: _____
third business: _____
9. How old is (are) your business(es)?
first business: _____ years _____ months
second business: _____ years _____ months
third business: _____ years _____ months
10. How much of all your business(es) do you own?
a. everything (100%) b. more than half (more than 50%)
c. half (50%) d. less than half (less than 50%) e. nothing (0%)

Your Loan

11. What type of loan do you have at the moment with CAME? (if you have more than one loan please check or circle the letters of your answer)

- a. an individual loan b. a group loan c. an inter-cycle loan

12. For how many months was your individual loan authorised in CAME? _____

13. How many years (or months) ago did you initiate your credit with CAME?

Years: _____ Months: _____

14. At the moment do you have a loan in other organisations? (if you have more than one loan please check or circle the letters of your answer)

- a. No
b. Yes, an individual loan (for your business)
c. Yes, a group loan (for your business)
d. Yes, another type of loan (describe it) _____

15. Have you changed your type of loan since you began to receive loans from CAME? For example, have you changed from individual loans to group loans or from group loans to individual loans?

- a. Yes b. No

16. During the last year, have you received the following types of training/education?

- | | | |
|---|--------|-------|
| i. business training/education | a. Yes | b. No |
| ii. health training/education | a. Yes | b. No |
| iii. another type of training/education | a. Yes | b. No |

Select (X) the option that best represents the degree that you personally agree or disagree (right side) with each of the ideas below.

	I totally agree	I very much agree	I somewhat agree	I agree a little	I don't agree, but neither do I disagree	I disagree a little	I somewhat disagree	I very much disagree	I totally disagree
17. During the last year you bought or installed new equipment, tools, transportation or infrastructure for your business(es).									
18. During the last year the sales of your business(es) have increased.									
19. During the last year the profits of your business(es) have increased.									
20. The loans received from CAME have helped to increase your savings during the last year.									
21. You have more employees in your business(es) now than one year ago.									
22. You have improved your business skills during the last year.									
23. You have learned about new ways of working or non-traditional work techniques during the last year.									
24. You have made close friends in the last year. These friends are people with whom you feel relaxed with, with whom you can talk to about private matters or who you can call when you need help.									

25. The level of togetherness and trust in your community has improved during the last year.									
26. Now you make and receive more telephone calls than one year ago.									
27. During the last year you have got together with more frequency than what you used to with people to eat or drink in their homes or in a public place.									

Select (X) the option that best represents the degree of frequency (right side) of each one of the ideas below.

	Always	Almost always	Usually	Sometimes	Almost never	Never
28. Winning is everything						
29. It is your duty to look after your family even when you have to sacrifice what you want.						
30. You prefer to depend on yourself than others.						
31. You feel fine when you cooperate with others.						

Please think about your ideal job/work...without thinking about your present job/work. In order to choose your ideal job/work, how important are the following ideas to you? Please select (X) the option (right side) that best represents your choice.

	It is extremely important	It is very important	It is somewhat important	It is slightly important	It is very slightly important
32. It is important for you to work with other people who cooperate well with each other.					
33. It is important for you to work in a nice and friendly environment.					

34. How much is the individual loan that you have with CAME now? \$ _____

To be filled out by the survey collector after the interview:

35. Did the client fill out the questionnaire by himself/herself?
 a. Yes
 b. No, the survey collector read the questionnaire to the client.

Appendix D: Correlations for CAME Individual Loans

Table D.1

Pearson Correlations, CAME Individual Loans

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Sex	1.00														
2. Repayments	-.01	1.00													
3. Sales	-.07	.12	1.00												
4. Profits	-.12	.04	.73**	1.00											
5. Savings	-.15	.05	.53**	.70**	1.00										
6. Age	-.08	-.04	-.09	-.01	-.03	1.00									
7. Number of children	.06	.00	-.13	-.17	-.07	.48**	1.00								
8. Age of youngest child	.01	-.15	-.06	-.06	-.00	.73**	.15	1.00							
9. Business age	-.08	.01	-.20*	-.04	.04	.55**	.41**	.38**	1.00						
10. Loan amount	-.05	-.07	-.11	-.04	.08	.07	-.01	.13	.04	1.00					
11. Time in CAME	-.07	.13	.08	.10	.21*	.40**	.24*	.29**	.44**	.04	1.00				

12. Business ownership	-.09	.11	.06	.10	.14	.27**	.17	.25*	.18	-.03	.11	1.00			
13. Marital status	.07	.01	.02	.02	.00	-.03	-.18	.09	.19*	-.03	.09	.06	1.00		
14. Other loans	-.21*	.03	.03	-.01	.08	.22*	.19*	.05	.27**	-.01	.03	-.12	.01	1.00	
15. Education	-.01	.13	.32**	.30**	.17	-.35**	-.43**	-.12	-.27**	-.03	-.13	-.14	.14	.02	1.00

n = 109; * = Correlation is significant at the 0.05 level (2-tailed); ** = Correlation is significant at the 0.01 level (2-tailed).

Coding for variables was as follows: sex: 1 = "male", 2 = "female"; repayments: 1 = 1,156-1,500 days late, 2 = 811-1,155 days late, 3 = 466-810 days late, 4 = 121-465 days late, 5 = 61-120 days late, 6 = 1-60 days late, 7 = 0 days late; variables 3 to 5 (sales, profits, savings): 1 = "I totally disagree", 9 = "I totally agree"; business ownership: 1 = zero %, 2 = less than 50%, 3 = 50%, 4 = more than 50%, 5 = 100%; marital status: 1 = married, 2 = not married; other loans: 1 = "no", 2 = "yes, an individual loan".

Appendix E: CAME Group Loans Survey in Spanish

CUESTIONARIO PARA CLIENTES CON UN PRÉSTAMO DE GRUPO

La siguiente encuesta será usada para una investigación en la Escuela de Graduados en Administración y Dirección de Empresas (EGADE) del Tecnológico de Monterrey. El contenido de cada encuesta individual permanecerá estrictamente confidencial. Por favor conteste las siguientes preguntas, las cuales le tomarán 15 minutos de su tiempo.

1. ¿Cuál es su nombre? _____
2. ¿Cuál es su género? (marque o circule la letra de su respuesta) a. hombre b. mujer
3. ¿Cuántos años tiene? _____
4. ¿Cuántos años de educación formal ha terminado, empezando con primero de primaria? _____
5. ¿Es usted:
a. casada (o)? b. divorciada(o)? c. separada(o)?
d. soltera(o)? e. viuda(o)? f. viviendo con su pareja en unión libre?
6. ¿Cuántos hijos tiene? _____
7. Si tiene hijos, ¿Cuántos años tiene su hijo menor? _____
8. ¿A qué tipo de negocio(s) se dedica? Por ejemplo, ¿Qué tipo de producto(s) hace usted o vende o qué tipo de servicio(s) facilita?
primer negocio: _____
segundo negocio: _____
tercer negocio: _____
9. ¿Cuánto tiempo tiene(n) su(s) negocio(s)?
primer negocio: _____ años _____ meses
segundo negocio: _____ años _____ meses
tercer negocio: _____ años _____ meses
10. ¿En qué cantidad de todos su(s) negocio(s) es usted la (el) dueña(o)?
a. todo (100%) b. más de la mitad (más que 50%)
c. la mitad (50%) d. menos de la mitad (menos que 50%) e. nada (0%)

11. Actualmente, ¿Qué tipo de préstamo tiene en CAME? (si tiene más de un préstamo por favor marque o encierre en círculo las letras de su respuesta)
- a. un préstamo individual b. un préstamo de grupo c. un préstamo intercambio
12. ¿De cuánto es el préstamo de grupo que tiene actualmente? \$ _____
13. ¿Hace cuantos años (o meses) inició su crédito con CAME? Años: _____ Meses: _____
14. Actualmente ¿Usted tiene algún préstamo en otras organizaciones? (si tiene más de un préstamo por favor marque o encierre en círculo las letras de su respuesta)
- a. No
b. Sí, un préstamo individual (para su negocio)
c. Sí, un préstamo de grupo (para su negocio)
d. Sí, otro tipo de préstamo (describa) _____
15. Si usted tiene un préstamo de grupo en CAME, ¿cuántos miembros de su grupo (incluyéndolo a usted) son mujeres y cuantos son hombres? Mujeres: _____ Hombres: _____
16. ¿Ha cambiado su tipo de préstamo desde que usted empezó a recibir préstamos de CAME? Por ejemplo, ¿Ha cambiado de préstamos individuales a préstamos de grupo o de préstamos de grupo a préstamos individuales?
- a. Sí b. No
17. ¿Durante el último año, usted ha recibido los siguientes tipos de capacitación?
- | | | |
|---------------------------------|-------|-------|
| i. capacitación empresarial | a. Sí | b. No |
| ii. capacitación sobre la salud | a. Sí | b. No |
| iii. otro tipo de capacitación | a. Sí | b. No |

Seleccione (X) en el cuadro que mejor representa el grado en que usted personalmente está de acuerdo o en desacuerdo (lado derecho) con cada una de las ideas abajo presentadas.

	Estoy totalmente de acuerdo	Estoy muy de acuerdo	Estoy algo de acuerdo	Estoy poco de acuerdo	Ni estoy de acuerdo, ni estoy en desacuerdo	Estoy poco en desacuerdo	Estoy algo en desacuerdo	Estoy muy en desacuerdo	Estoy totalmente en desacuerdo
18. Durante el último año usted compró o instaló nuevo equipo, herramientas, transportación o infraestructura para su(s) negocio(s).									
19. Durante el último año las ventas de su(s) negocio(s) se han incrementado.									
20. Durante el último año las ganancias de su(s) negocio(s) se han incrementado.									
21. Los préstamos recibidos de CAME han ayudado a incrementar sus ahorros durante el último año.									
22. Tiene más empleados en su(s) negocio(s) ahora que hace un año.									
23. Usted ha mejorado sus habilidades para hacer negocios durante el último año.									
24. Usted se ha enterado sobre nuevas formas de trabajar o formas de trabajo no tradicionales durante el último año.									
25. Usted se ha hecho de amigos cercanos en el último año. Estos amigos son personas con quien usted se siente a gusto, con quien usted puede platicar sobre asuntos privados, o con quien usted puede llamar cuando necesita ayuda.									
26. El nivel de cercanía y confianza en su comunidad ha mejorado durante el último año.									
27. Ahora usted hace o recibe más llamadas telefónicas que hace un año.									

28. Durante el último año usted se ha reunido con más frecuencia de lo que lo hacía, con personas para comer o tomar bebidas en sus casas o en un lugar público.									
29. La mayoría de los miembros de su grupo se conocían antes de formar el grupo.									
30. Si le preguntara cuánto vende cada miembro en su grupo cada día, podría usted decírmelo.									

Por favor piense sobre un trabajo ideal...sin pensar en su trabajo actual. Para escoger su trabajo ideal, ¿qué tan importante sería considerar las siguientes ideas? Por favor seleccione (X) en el cuadro (lado derecho) que mejor representa su respuesta.

	Es lo más importante	Es muy importante	Es algo importante	Es poco importante	Es muy poco importante
31. Es importante para usted trabajar con las personas que cooperan bien unos con otros.					
32. Es importante para usted trabajar en un ambiente agradable y amistoso.					

Seleccione (X) en el cuadro que mejor representa el grado de frecuencia (lado derecho) de cada una de las ideas abajo presentadas.

	Siempre	Casi siempre	Usualmente	Algunas veces	Casi nunca	Nunca
33. Ganar es todo.						
34. Es su deber cuidar de su familia aun cuando tenga que sacrificar lo que usted desea.						
35. Prefiere usted depender de sí mismo que de otros.						
36. Usted se siente bien cuando coopera con otros.						

Por favor seleccione (X) en el cuadro que mejor representa el grado de probabilidad (lado derecho) de que se de cada una de las situaciones abajo mencionadas:

	Total- mente probable	Extremad -amente probable	Muy probable	Algo probable	Poco probable	Muy poco probable	Nada probable
37. ¿Qué tan probable es que sea fácil para los miembros de su grupo presionar a otro de los miembros a pagar su préstamo?							
38. ¿Qué tan probable piensa usted sería, que su grupo expulsara a un miembro por no pagar su préstamo?							
39. ¿Qué tan probable piensa usted puede ser, que los miembros de su grupo paguen sus préstamos para mantener buenas relaciones con los otros miembros del grupo?							
40. ¿Qué tan probable piensa usted que los miembros de su grupo que no cooperan y participan en actividades de su grupo van a ser criticados y sancionados por otros miembros de su grupo?							
41. ¿Qué tan probable piensa usted puede ser que los miembros de su grupo paguen sus préstamos para mantener las buenas relaciones con otros miembros de su comunidad?							
42. ¿Qué tan probable piensa usted podría ser, que los miembros de su grupo que no cooperan ni participan en las actividades del grupo puedan ser criticados y sancionados por los miembros de su comunidad?							
43. ¿Qué tan probable piensa usted que los miembros de su grupo que no pagan sus préstamos van a perder su reputación en la comunidad?							
44. ¿Qué tan probable piensa usted podría ser que los otros miembros de su grupo ayudaran a un miembro a pagar su préstamo, si este miembro no pudiera pagarlo por motivos de salud o mala suerte?							
45. ¿Qué tan probable piensa usted puede ser, que miembros de su grupo paguen sus préstamos porque piensan que tienen que permanecer unidos como un grupo?							

46. ¿Qué tan probable piensa usted que los miembros de su grupo muy seguido aprenden de otros miembros?							
47. ¿Qué tan probable piensa usted es, que todos los miembros de su grupo van a poder tener la última palabra cuando su grupo necesite tomar una decisión?							
48. ¿Qué tan probable piensa usted que todos los miembros de su grupo serán puntuales y formales al asistir a las juntas de su grupo?							

Appendix F: CAME Group Loans Survey in English

QUESTIONNAIRE FOR CLIENTS WITH A GROUP LOAN

The following survey will be used for research purposes in the Graduate School of Administration and Business Management (EGADE) of the Tecnológico de Monterrey. The content of each individual questionnaire will remain strictly confidential. Please answer the following questions, which will take you about 15 minutes of your time.

1. What is your name? _____
2. What is your gender? (check or circle the letter of your answer) a. male b. female
3. How old are you? _____
4. How many years of formal education have you finished beginning with grade one in primary school? _____
5. Are you:
a. married? b. divorced? c. separated?
d. single? e. widowed? f. living with your partner without being married?
6. How many children do you have? _____
7. If you have children, how old is your youngest child? _____
8. What type of business do you have? For example, what type of products do you make or sell or what type of service do you provide?
first business: _____
second business: _____
third business: _____
9. How old is (are) your business(es)?
first business: _____ years _____ months
second business: _____ years _____ months
third business: _____ years _____ months
10. How much of all your business(es) do you own?
a. everything (100%) b. more than half (more than 50%)
c. half (50%) d. less than half (less than 50%) e. nothing (0%)

11. What type of loan do you have at the moment with CAME? (if you have more than one loan please check or circle the letters of your answer)

- a. an individual loan b. a group loan c. an inter-cycle loan

12. How much is the group loan worth that you have at the moment? \$ _____

13. How many years (or months) ago did you initiate your credit with CAME?

Years: _____ Months: _____

14. At the moment do you have a loan in other organisations? (if you have more than one loan please check or circle the letters of your answer)

- a. No
b. Yes, an individual loan (for your business)
c. Yes, a group loan (for your business)
d. Yes, another type of loan (describe it) _____

15. If you have a group loan with CAME, how many members of your group (including yourself) are women and how many are men? Women _____ Men: _____

16. Have you changed your type of loan since you began to receive loans from CAME? For example, have you changed from individual loans to group loans or from group loans to individual loans?

- a. Yes b. No

17. During the last year, have you received the following types of training/education?

- | | | |
|---|--------|-------|
| i. business training/education | a. Yes | b. No |
| ii. health training/education | a. Yes | b. No |
| iii. another type of training/education | a. Yes | b. No |

Select (X) the option that best represents the degree that you personally agree or disagree (right side) with each of the ideas below.

	I totally agree	I very much agree	I somewhat agree	I agree a little	I don't agree, but neither do I disagree	I disagree a little	I somewhat disagree	I very much disagree	I totally disagree
18. During the last year you bought or installed new equipment, tools, transportation or infrastructure for your business(es).									
19. During the last year the sales of your business(es) have increased.									
20. During the last year the profits of your business(es) have increased.									
21. The loans received from CAME have helped to increase your savings during the last year.									
22. You have more employees in your business(es) now than one year ago.									
23. You have improved your business skills during the last year.									
24. You have learned about new ways of working or non-traditional work techniques during the last year.									
25. You have made close friends in the last year. These friends are people with whom you feel relaxed with, with whom you can talk to about private matters or who you can call when you need help.									
26. The level of togetherness and trust in your community has improved during the last year.									
27. Now you make and receive more telephone calls than one year ago.									
28. During the last year you have got together with more frequency than what you used to with people to eat or drink in their homes or in a public place.									

29. The majority of the members of your group knew each other before the group was formed.									
30. If I asked you how much each member of your group sells each day you would be able to tell me.									

Please think about your ideal job/work...without thinking about your present job/work. In order to choose your ideal job/work, how important are the following ideas to you? Please select (X) the option (right side) that best represents your choice.

	It is extremely important	It is very important	It is somewhat important	It is slightly important	It is very slightly important
31. It is important for you to work with other people who cooperate well with each other.					
32. It is important for you to work in a nice and friendly environment.					

Select (X) the option that best represents the degree of frequency (right side) of each one of the ideas below.

	Always	Almost always	Usually	Sometimes	Almost never	Never
33. Winning is everything						
34. It is your duty to look after your family even when you have to sacrifice what you want.						
35. You prefer to depend on yourself than others.						
36. You feel fine when you cooperate with others.						

Please select (X) the option that best represents the degree of probability (right side) that each of the situations below would take place.

	Totally likely	Extremely probable	Very probable	Somewhat probable	Unlikely	Very unlikely	Totally unlikely
37. How likely is it that it would be easy for the members of your group to pressure another member to repay their loan?							
38. How likely do you think it is that your group would expel a member for not repaying their loan?							
39. How likely do you think it is that the members of your group pay their loans in order to maintain good relations with other members of your group?							
40. How likely do you think it is that members of your group that do not cooperate or participate in the activities of your group will be criticised and sanctioned by other members of your group?							
41. How likely do you think it is that the members of your group repay their loans in order to maintain good relations with other members of your community?							
42. How likely do you think it would be that members of your group that do not cooperate or participate in the activities of your group will be criticised and sanctioned by other members of your community?							
43. How likely do you think it is that members of your group that do not repay their loans will lose their reputation in the community?							
44. How likely do you think it is that the other members of your group would help a member to pay their loan if this member could not pay because of bad health or bad luck.							
45. How likely do you think it is that the members of your group pay their loans because they feel that they have to remain united as a group?							
46. How likely do you think it is that members of your group frequently learn from other members?							

47. How likely do you think it is that all the members of your group will have a say when your group needs to make a decision?							
48. How likely do you think it is that all the members of your group will be punctual and constant in attending the meetings of your group?							

Appendix G: Correlations for CAME Group Loans

Table G.1a

Pearson Correlations, CAME Group Loans

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Sex	1.00														
2. Females in group (%)	.42**	1.00													
3. Females in group (categories)	.40**	.77**	1.00												
4. Environment	.05	.10	.07	1.00											
5. Repayments	-0.5	.18	.15	-.21*	1.00										
6. Sales	-.04	-.00	-.02	-.31**	.03	1.00									
7. Profits	-.09	-.03	-.12	-.33**	-.01	.88**	1.00								
8. Savings	-.10	-.02	.02	-.35**	.05	.35**	.39**	1.00							
9. Group sanctions	-.15	.06	.10	-.19*	-.02	-.01	-.06	.02	1.00						
10. Community sanctions	-.09	-.10	-.06	-.29**	.06	.12	.07	.20*	.58**	1.00					
11. Community reputation	.01	-.02	.12	-.13	-.02	.10	.01	.05	.34**	.41**	1.00				

12. Group relations	.13	.10	.10	-.04	-.01	.16	.06	-.02	.10	.10	.13	1.00			
13. Community relations	-.04	.12	.15	-.14	.16	.10	.02	.13	.24*	.26**	.14	.49**	1.00		
14. Solidarity	-.10	-.06	-.01	-.18	.05	.08	.04	.06	.15	.14	.10	.34**	.43**	1.00	
15. Age	-.14	-.02	.00	.21*	.05	-.15	-.10	-.19*	-.01	-.02	.02	-.05	-.04	.01	1.00
16. Education	.07	-.08	-.09	-.13	-.09	.15	.13	.28**	-.09	.01	.09	.09	.02	-.19*	-.46**
17. Marital Status	.04	.04	.04	-.09	-.04	.09	.04	.02	.05	.00	-.10	-.03	-.01	.03	-.17
18. Children	.14	.06	.08	.10	-.02	-.00	-.01	-.18	.07	-.01	-.03	-.07	-.07	.07	.62**
19. Age of youngest child	-.19	-.06	-.10	.06	.10	.00	-.00	-.05	.01	.08	.04	.02	.02	-.07	.37**
20. Business age	-.27**	-.12	-.07	.23*	-.00	-.17	-.15	-.10	.04	.05	-.02	-.12	-.10	-.08	.45**
21. Number of businesses	.11	.03	.05	.12	-.11	.06	.07	.11	.04	.15	.10	.09	-.07	.06	-.00
22. Business ownership	.16	.10	.02	.05	-.10	-.13	-.09	-.05	-.15	-.19*	.02	.06	-.00	.10	.14
23. Loan type	.11	.19*	.15	.22*	.13	-.02	-.12	-.07	.05	.05	.14	.04	.09	-.09	.14
24. Loan amount	.05	.12	.11	.15	-.04	-.04	-.11	-.16	.17	.10	.05	-.01	.08	.10	.03
25. Time in CAME	.19*	.16	.10	.46**	-.04	-.22*	-.16	-.27**	-.12	-.10	-.02	.05	-.12	.05	.40**
26. Other loans	.07	-.07	-.13	.13	-.14	.08	.06	-.01	-.17	-.14	-.08	-.01	-.07	-.10	.22*
27. Group size	.05	.24*	.11	.09	.21*	-.06	-.08	-.09	.01	.03	-.16	-.00	.09	.12	.25**

28. Training	.09	.11	.07	.21*	-.11	.08	.03	.07	-.00	-.00	-.15	.03	.09	-.06	.09
29. Screening	.21*	-.00	.07	-.40**	.04	.05	.11	.24*	.11	.25**	.13	.06	.11	.17	-.04
30. Monitoring	.13	.13	.17	-.17	-.01	.24*	.22*	.29**	.04	.02	.13	.03	.08	.07	-.17

n = 110; * = Correlation is significant at the 0.05 level (2-tailed); ** = Correlation is significant at the 0.01 level (2-tailed).

Coding for variables was as follows: sex: 1 = "male", 2 = "female"; females in group (categories): 1 = 33%-80%, 2 = 81%-100%; environment: 1 = rural; 2 = urban; repayments: 1 = defaulter or very late with payment, 7 = very punctual with payment; variables 6 to 8 (sales, profits, savings): 1 = "I totally disagree", 9 = "I totally agree"; variables 9 to 14 (group sanctions, community sanctions, community reputation, group relations, community relations, solidarity): 1 = "not at all probable", 7 = "totally probable"; marital status: 1 = married, 2 = not married; age of youngest child: 1 = 0.25-8 years old, 2 = 9-16 years old, 3 = 17-48 years old, 4 = no children; business ownership: 1 = zero %, 2 = less than 50%, 3 = 50%, 4 = more than 50%, 5 = 100%; loan type: 1 = group loan, 2 = group loan and inter-cycle loan; other loans: 1 = "no", 2 = "yes"; training: 1 = no training; 2 = 1 form of training (business, health or other), 3 = 2 forms of training; 4 = all (3) forms of training; control variables 29 to 30 (screening and monitoring): 1 = "I totally disagree", 9 = "I totally agree".

Table G.1b***Pearson Correlations, CAME Group Loans***

Variables	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
16. Education	1.00														
17. Marital status	.09	1.00													
18. Children	-.52**	-.09	1.00												
19. Age of youngest child	.05	.15	-.12	1.00											
20. Business age	-.22*	-.09	.17	.21*	1.00										
21. Number of businesses	-.01	-.06	.11	-.07	.20*	1.00									
22. Business ownership	-.17	-.07	.11	-.19	-.01	-.13	1.00								
23. Loan type	-.11	-.03	.16	.01	.13	.14	-.02	1.00							
24. Loan amount	.01	.12	.07	.06	.04	.32**	-.16	.09	1.00						
25. Time in CAME	-.26**	-.02	.24*	.21*	.27**	.33**	.04	.13	.17	1.00					
26. Other loans	-.04	-.04	.17	.24*	.09	.02	.02	.05	-.15	.10	1.00				
27. Group size	-.15	.15	.22*	.25**	.23*	.18	-.01	.07	.31**	.35**	.17	1.00			
28. Training	.18	.00	-.04	.18	.17	.05	-.10	.03	.15	.06	.05	.15	1.00		
29. Screening	.05	.04	-.05	-.07	-.10	.02	.04	-.13	-.04	.05	-.14	.01	.03	1.00	
30. Monitoring	.32**	.02	-.11	-.02	-.09	-.08	.09	-.06	.05	-.03	-.11	-.03	.09	.12	1.00

n = 110; * = Correlation is significant at the 0.05 level (2-tailed); ** = Correlation is significant at the 0.01 level (2-tailed).

Coding for variables was as follows: marital status: 1 = married, 2 = not married; age of youngest child: 1= 0.25-8 years old, 2 = 9-16 years old, 3 = 17-48 years old, 4 = no children; business ownership: 1 = zero %, 2 = less than 50%, 3 = 50%, 4 = more than 50%, 5 = 100%; loan type: 1 = group loan, 2 = group loan and inter-cycle loan; other loans: 1 = “no”, 2 = “yes”; training: 1= no training; 2 = 1 form of training (business, health or other), 3 = 2 forms of training; 4 = all (3) forms of training; control variables 29 to 30 (screening and monitoring): 1 = “I totally disagree”, 9 = “I totally agree”.

Appendix H: Apros Group Loans Survey in Spanish

CUESTIONARIO PARA CLIENTES CON UN PRÉSTAMO DE GRUPO

La siguiente encuesta será usada para una investigación en la Escuela de Graduados en Administración y Dirección de Empresas (EGADE) del Tecnológico de Monterrey. El contenido de cada encuesta individual permanecerá estrictamente confidencial. Por favor conteste las siguientes preguntas, las cuales le tomarán 15 minutos de su tiempo.

Información General

1. ¿Cuál es su nombre? _____
2. ¿Cuál es su género? (marque o circule la letra de su respuesta) a. hombre b. mujer
3. ¿Cuántos años tiene? _____
4. ¿Cuántos años de educación formal ha terminado, empezando con primero de primaria? _____
5. ¿Es usted:
a. casada (o)? b. divorciada(o)?
c. separada(o)? d. soltera(o)?
e. viuda(o)? f. viviendo con su pareja en unión libre?
6. ¿Cuántos hijos tiene? _____
7. Si tiene hijos, ¿Cuántos años tienen sus hijos?
a. primer hijo: _____ b. segundo hijo: _____
c. tercer hijo: _____ d. cuarto hijo: _____
e. otros: _____

Información de Su Negocio

8. ¿A qué tipo de negocio(s) se dedica? Por ejemplo, ¿Qué tipo de productos hace usted o vende o qué tipo de servicio(s) facilita?
primer negocio: _____
segundo negocio: _____
tercer negocio: _____
otro(s) negocio(s): _____
9. ¿Cuánto tiempo tiene(n) su(s) negocio(s)?
primer negocio: _____ años _____ meses
segundo negocio: _____ años _____ meses
tercer negocio: _____ años _____ meses
10. ¿En qué cantidad de todos su(s) negocio(s) es usted la (el) dueña(o)?
a. todo (100%)
b. más de la mitad (más que 50%)
c. la mitad (50%)
d. menos de la mitad (menos que 50%)
e. nada (0%)

Su Préstamo

11. Actualmente, ¿Qué tipo de préstamo usted tiene en APROS? (si tiene más que un préstamo por favor marque o circule las letras de su respuesta)

- a. un préstamo individual para su negocio
- b. un préstamo de grupo para su negocio
- c. un préstamo preferente para su negocio
- d. un préstamo personal para apoyo de vivienda

12. Actualmente ¿Usted tiene un préstamo en otras organizaciones? (si tiene más que un préstamo por favor marque o circule las letras de su respuesta)

- a. No
- b. Sí, un préstamo individual (para su negocio)
- c. Sí, un préstamo de grupo (para su negocio)
- d. Sí, un préstamo personal (no para su negocio)
- e. Sí, otro tipo de préstamo

(describa) _____

13. Si usted tiene un préstamo de grupo en APROS, ¿cuántos miembros de su grupo (incluyéndolo a usted) son mujeres y cuantos son hombres? Mujeres: _____ Hombres: _____

14. Si usted tiene un préstamo de grupo en APROS, ¿cuántas veces al mes se reúne su grupo?

- a. una vez a la semana
- b. una vez cada quince días
- c. una vez al mes
- d. menos de una vez al mes
- e. nunca

15. ¿Ha cambiado su tipo de préstamo desde que usted empezó a recibir préstamos de APROS? Por ejemplo, ¿Ha cambiado de préstamos individuales a préstamos de grupo o de préstamos de grupo a préstamos individuales?

- a. Sí
- b. No

16. ¿Durante el último año, usted ha recibido los siguientes tipos de capacitación?

- | | | |
|---------------------------------|-------|-------|
| i. capacitación empresarial | a. Sí | b. No |
| ii. capacitación sobre la salud | a. Sí | b. No |
| iii. otro tipo de capacitación | a. Sí | b. No |

Seleccione (X) en el cuadro que mejor representa el grado en que usted personalmente está de acuerdo o en desacuerdo (lado derecho) con cada una de las ideas abajo presentadas.

	Estoy totalmente de acuerdo	Estoy muy de acuerdo	Estoy algo de acuerdo	Estoy poco de acuerdo	Ni estoy de acuerdo, ni estoy en desacuerdo	Estoy poco en desacuerdo	Estoy algo en desacuerdo	Estoy muy en desacuerdo	Estoy totalmente en desacuerdo
17. ¿Durante el último año usted compró o instaló nuevo equipo, herramientas, transportación o infraestructura para su(s) negocio(s)?									
18. ¿Durante el último año las ventas de su(s) negocio(s) se han incrementado?									
19. ¿Durante el último año las ganancias de su(s) negocio(s) se han incrementado?									
20. ¿Los prestamos recibidos de APROS han ayudado a incrementar sus ahorros durante el último año?									
21. ¿Tiene más empleados en su(s) negocio(s) ahora que hace un año?									
22. Usted ha mejorado sus habilidades para hacer negocios durante el último año.									
23. Usted se ha enterado sobre nuevas formas de trabajar o formas de trabajo no tradicionales durante el último año.									
24. Usted se ha hecho de amigos cercanos en el último año. Estos amigos son personas con quien usted se siente a gusto, con quien usted puede platicar sobre asuntos privados, o con quien usted puede llamar cuando necesita ayuda.									
25. ¿El nivel de cercanía y confianza en su comunidad ha mejorado durante el último año?									
26. ¿Ahora usted hace o recibe más llamadas telefónicas que hace un año?									

	Estoy total-mente de acuerdo	Estoy muy de acuerdo	Estoy algo de acuerdo	Estoy poco de acuerdo	Ni estoy de acuerdo, ni estoy en des-acuerdo	Estoy poco en des-acuerdo	Estoy algo en des-acuerdo	Estoy muy en des-acuerdo	Estoy total-mente en des-acuerdo
27. ¿Durante el último año usted se ha reunido con más frecuencia de lo que lo hacía, con personas para comer o tomar bebidas en sus casas o en un lugar público?									
28. La mayoría de los miembros de su grupo se conocían antes de formar el grupo.									
29. Si le preguntara cuánto vende cada miembro en su grupo cada día, podría usted decírmelo.									

Por favor piense sobre un trabajo ideal...sin pensar en su trabajo actual. Para escoger su trabajo ideal, ¿qué tan importante sería considerar las siguientes ideas? Por favor seleccione (X) en el cuadro (lado derecho) que mejor representa su respuesta.

	Es lo más importante	Es muy importante	Es algo importante	Es poco importante	Es muy poco importante
30. ¿Es importante para usted trabajar con las personas que cooperan bien unos con otros?					
31. ¿Es importante para usted trabajar en un ambiente agradable y amistoso?					

Seleccione (X) en el cuadro que mejor representa el grado de frecuencia (lado derecho) de cada una de las ideas abajo presentadas.

	Siempre	Casi siempre	Usualmente	Algunas veces	Casi nunca	Nunca
32. Ganar es todo.						
33. Es su deber cuidar de su familia aun cuando tenga que sacrificar lo que usted desea.						
34. Prefiere usted depender de sí mismo que de otros.						
35. Usted se siente bien cuando coopera con otros.						

Por favor seleccione (X) en el cuadro que mejor representa el grado de probabilidad (lado derecho) de que se de cada una de las situaciones abajo mencionadas.

	Totalmente probable	Extremadamente probable	Muy probable	Algo probable	Poco probable	Muy poco probable	Nada probable
36. ¿Qué tan probable es que sea fácil para los miembros de su grupo presionar a otro de los miembros a pagar su préstamo?							
37. ¿Qué tan probable piensa usted sería, que su grupo expulsara a un miembro por no pagar su préstamo?							
38. ¿Qué tan probable piensa usted puede ser, que los miembros de su grupo paguen sus préstamos para mantener buenas relaciones con los otros miembros del grupo?							
39. ¿Qué tan probable piensa usted que los miembros de su grupo que no cooperan y participan en actividades de su grupo van a ser criticados y sancionados por otros miembros de su grupo?							

	Totalmente probable	Extremadamente probable	Muy probable	Algo probable	Poco probable	Muy poco probable	Nada probable
40. ¿Qué tan probable piensa usted puede ser que los miembros de su grupo paguen sus préstamos para mantener las buenas relaciones con otros miembros de su comunidad?							
41. ¿Qué tan probable piensa usted podría ser, que los miembros de su grupo que no cooperan ni participan en las actividades del grupo puedan ser criticados y sancionados por los miembros de su comunidad?							
42. ¿Qué tan probable piensa usted que los miembros de su grupo que no pagan sus préstamos van a perder su reputación en la comunidad?							
43. ¿Qué tan probable piensa usted podría ser que los otros miembros de su grupo ayudaran a un miembro a pagar su préstamo, si este miembro no pudiera pagarlo por motivos de salud o mala suerte?							
44. ¿Qué tan probable piensa usted puede ser, que miembros de su grupo paguen sus préstamos porque piensan que tienen que permanecer unidos como un grupo?							
45. ¿Qué tan probable piensa usted que los miembros de su grupo muy seguido aprenden de otros miembros?							
46. ¿Qué tan probable piensa usted es, que todos los miembros de su grupo van a poder tener la última palabra cuando su grupo necesite tomar una decisión?							
47. ¿Qué tan probable piensa usted que todos los miembros de su grupo serán puntuales y formales al asistir a las juntas de su grupo?							

Appendix I: Apros Group Loans Survey in English

QUESTIONNAIRE FOR CLIENTS WITH A GROUP LOAN

The following survey will be used for research purposes in the Graduate School of Administration and Business Management (EGADE) of the Tecnológico de Monterrey. The content of each individual questionnaire will remain strictly confidential. Please answer the following questions, which will take you about 15 minutes of your time.

General Information

1. What is your name? _____
2. What is your gender? (check or circle the letter of your answer) a. male b. female
3. How old are you? _____
4. How many years of formal education have you finished beginning with grade one in primary school? _____
5. Are you:
a. married? b. divorced? c. separated?
d. single? e. widowed? f. living with your partner without being married?
6. How many children do you have? _____
7. If you have children, how old are your children?
a. first child: _____ b. second child: _____
c. third child: _____ d. fourth child: _____
e. others: _____

Information about your Business

8. What type of business do you have? For example, what type of products do you make or sell or what type of service do you provide?
first business: _____
second business: _____
third business: _____
other business(es): _____
9. How old is (are) your business(es)?
first business: _____ years _____ months
second business: _____ years _____ months
third business: _____ years _____ months
10. How much of all your business(es) do you own?
a. everything (100%) b. more than half (more than 50%)
c. half (50%) d. less than half (less than 50%) e. nothing (0%)

Your Loan

11. What type of loan do you have at the moment with Apros? (if you have more than one loan please check or circle the letters of your answer)

- a. an individual loan for your business
- b. a group loan for your business
- c. a preferential client loan for your business
- d. a personal loan for your home

12. At the moment do you have a loan in other organisations? (if you have more than one loan please check or circle the letters of your answer)

- a. No
- b. Yes, an individual loan (for your business)
- c. Yes, a group loan (for your business)
- d. Yes, a personal loan (not for your business)
- e. Yes, another type of loan (describe it) _____

13. If you have a group loan with Apros, how many members of your group (including yourself) are women and how many are men? Women _____ Men: _____

14. If you have a group loan with Apros, how many times a month does your group meet?

- a. once a week
- b. once a fortnight
- c. once a month
- d. less than once a month
- e. never.

15. Have you changed your type of loan since you began to receive loans from Apros? For example, have you changed from individual loans to group loans or from group loans to individual loans?

- a. Yes b. No

16. During the last year, have you received the following types of training/education?

- | | | |
|---|--------|-------|
| i. business training/education | a. Yes | b. No |
| ii. health training/education | a. Yes | b. No |
| iii. another type of training/education | a. Yes | b. No |

Select (X) the option that best represents the degree that you personally agree or disagree (right side) with each of the ideas below.

	I totally agree	I very much agree	I somewhat agree	I agree a little	I don't agree, but neither do I disagree	I disagree a little	I somewhat disagree	I very much disagree	I totally disagree
17. During the last year you bought or installed new equipment, tools, transportation or infrastructure for your business(es).									
18. During the last year the sales of your business(es) have increased.									
19. During the last year the profits of your business(es) have increased.									
20. The loans received from Apros have helped to increase your savings during the last year.									
21. You have more employees in your business(es) now than one year ago.									
22. You have improved your business skills during the last year.									
23. You have learned about new ways of working or non-traditional work techniques during the last year.									
24. You have made close friends in the last year. These friends are people with whom you feel relaxed with, with whom you can talk to about private matters or who you can call when you need help.									
25. The level of togetherness and trust in your community has improved during the last year.									
26. Now you make and receive more telephone calls than one year ago.									
27. During the last year you have got together with more frequency than what you used to with people to eat or drink in their homes or in a public place.									

28. The majority of the members of your group knew each other before the group was formed.										
29. If I asked you how much each member of your group sells each day you would be able to tell me.										

Please think about your ideal job/work...without thinking about your present job/work. In order to choose your ideal job/work, how important are the following ideas to you? Please select (X) the option (right side) that best represents your choice.

	It is extremely important	It is very important	It is somewhat important	It is slightly important	It is very slightly important
30. It is important for you to work with other people who cooperate well with each other.					
31. It is important for you to work in a nice and friendly environment.					

Select (X) the option that best represents the degree of frequency (right side) of each one of the ideas below.

	Always	Almost always	Usually	Sometimes	Almost never	Never
32. Winning is everything						
33. It is your duty to look after your family even when you have to sacrifice what you want.						
34. You prefer to depend on yourself than others.						
35. You feel fine when you cooperate with others.						

Please select (X) the option that best represents the degree of probability (right side) that each of the situations below would take place.

	Totally likely	Extremely probable	Very probable	Somewhat probable	Unlikely	Very unlikely	Totally unlikely
36. How likely is it that it would be easy for the members of your group to pressure another member to repay their loan?							
37. How likely do you think it is that your group would expel a member for not repaying their loan?							
38. How likely do you think it is that the members of your group pay their loans in order to maintain good relations with other members of your group?							
39. How likely do you think it is that members of your group that do not cooperate or participate in the activities of your group will be criticised and sanctioned by other members of your group?							
40. How likely do you think it is that the members of your group repay their loans in order to maintain good relations with other members of your community?							
41. How likely do you think it would be that members of your group that do not cooperate or participate in the activities of your group will be criticised and sanctioned by other members of your community?							
42. How likely do you think it is that members of your group that do not repay their loans will lose their reputation in the community?							
43. How likely do you think it is that the other members of your group would help a member to pay their loan if this member could not pay because of bad health or bad luck.							
44. How likely do you think it is that the members of your group pay their loans because they feel that they have to remain united as a group?							
45. How likely do you think it is that members of your group frequently learn from other members?							

46. How likely do you think it is that all the members of your group will have a say when your group needs to make a decisión?							
47. How likely do you think it is that all the members of your group will be punctual and constant in attending the meetings of your group?							

10. ¿Ha cambiado su tipo de préstamo desde que el cliente empezó a recibir préstamos de APROS? Por ejemplo, ¿Ha cambiado de préstamos individuales a préstamos de grupo o de préstamos de grupo a préstamos individuales?

- a. Sí
- b. No

11. Si contestó "Sí" a la última pregunta, ¿cuándo cambió su tipo de préstamo?

Año: _____ Mes: _____

12. Si contestó "Sí" a la penúltima pregunta, ¿Qué tipo(s) de préstamo(s) tenía antes?

- a. préstamos individuales
- b. préstamos de grupo
- c. otro tipo de préstamo (describa): _____

Por favor seleccione (X) el cuadro que mejor representa el grado en que usted personalmente está de acuerdo o en desacuerdo con la siguiente oración.

	Estoy totalmente de acuerdo	Estoy algo de acuerdo	Estoy poco de acuerdo	Ni estoy de acuerdo, ni estoy en desacuerdo	Estoy poco en desacuerdo	Estoy algo en desacuerdo	Estoy totalmente en desacuerdo
13. Durante el último año éste cliente (préstamo individual) o su grupo (préstamo de grupo) ha sido puntual al pagar sus préstamos según los documentos de su historial crediticio.							

Appendix K: Apros Staff Survey in English

QUESTIONNAIRE FOR APROS STAFF

Please answer the following questions about the client mentioned below.

1. Name of the client: _____

2. Name of the client's city or town: _____

3. Did the client fill out the questionnaire by himself/herself?
 - a. Yes
 - b. No, the asesor (Apros staff member responsible for the group) read the questionnaire to the client.

4. Do you live in:
 - a. the countryside (not in a town)?
 - b. a small town (of less than 5,000 people)?
 - c. a large town (of between 5,000 and 20,000 people)?
 - d. a very small city (of between 20,000 and 40,000 people)?
 - e. a small city (of between 40,000 and 100,000 people)?
 - f. a medium-sized or large city (of more than 100,000 people)?

5. Is (are) your business(es) located in: (if you have more than one business please check or circle the letters of your answer)
 - a. the countryside (not in a town)?
 - b. a small town (of less than 5,000 people)?
 - c. a large town (of between 5,000 and 20,000 people)?
 - d. a very small city (of between 20,000 and 40,000 people)?
 - e. a small city (of between 40,000 and 100,000 people)?
 - f. a medium-sized or large city (of more than 100,000 people)?

6. When did the client begin to receive credit from Apros?
Year: _____ Month: _____

7. What type of loan does this client have with Apros? (if you have more than one loan please check or circle the letters of your answer)
 - a. an individual loan for your business
 - b. a group loan for your business
 - c. a preferential loan for your business
 - d. a personal loan for your home

8. How much is the loan that the client has now? \$ _____

9. If the client has a group loan, how many members of her/his group (including the client) are women and how many are men?

Women: _____ Men: _____

10. Has the client changed her/his type of loan since she/he began to receive loans from Aproso? For example, has she/he changed from individual loans to group loans or from group loans to individual loans?

a. Yes b. No

11. If you answered "Yes" in the last question, when did the client change her/his loan type?

Year: _____ Month: _____

12. If you answered "Yes" in the second last question, what type of loan(s) did the client have before?

a. individual loans

b. group loans

c. another type of loan (describe it) _____

Please select (X) the option that best represents the degree to which you personally agree or disagree with the following sentence.

	I totally agree	I somewhat agree	I agree only a little	I neither agree, nor do I disagree	I disagree a little	I somewhat disagree	I totally disagree
13. During the last year this client (individual loan) or her/his group (group loan) has been punctual in paying her/his/its loans according to the documents concerning her/his/its credit history.							

Appendix L: Correlations for Apros Group Loans

Table L.1a

Pearson Correlations, Apros Group Loans

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Sex	1.00															
2. Females in group (%)	.43**	1.00														
3. Females in group (categories)	.40**	.95**	1.00													
4. Environment	.02	-.07	-.08	1.00												
5. Population	.04	-.07	-.13	.25**	1.00											
6. Repayments	-.09	-.06	-.03	-.08	-.13	1.00										
7. Sales	-.03	-.10	-.11	-.10	-.02	.45**	1.00									
8. Profits	-.02	-.11	-.12	-.07	.03	.49**	.90**	1.00								
9. Savings	-.05	-.14	-.13	-.10	-.08	.42**	.73**	.71**	1.00							
10. Group sanctions	.03	.10	.15*	.08	-.12	.05	-.08	-.08	-.09	1.00						

11. Community sanctions	.00	.00	.04	.10	-.07	.06	-.11	-.06	-.08	.72**	1.00					
12. Community reputation	-.12	.00	.06	-.01	-.18*	.10	-.08	-.06	-.11	.56**	.62**	1.00				
13. Group relations	-.08	-.03	-.03	.01	-.17*	.33**	.22**	.22**	.24**	.22**	.29**	.27**	1.00			
14. Community relations	-.12	-.14	-.10	-.05	-.16*	.29**	.17*	.19*	.25**	.34**	.39**	.35**	.58**	1.00		
15. Solidarity	-.11	-.09	-.05	-.03	-.18*	.41**	.19*	.21**	.27**	.21**	.27**	.25**	.49**	.59**	1.00	
16. Age	-.15*	-.07	-.08	.11	-.05	-.15*	-.15*	-.13	-.13	.07	.11	.14	-.00	.05	-.06	1.00
17. Education	.01	-.04	-.02	.04	-.02	.06	.14	.08	.08	.04	-.13	-.07	.00	.02	.02	-.33**
18. Marital status	-.09	.04	-.00	.07	-.01	.13	.14	.17*	.07	-.12	-.11	-.04	.03	.02	-.04	-.13
19. Number of children	-.00	.02	.06	.01	-.04	-.02	-.02	-.02	.04	.10	.19*	.09	.01	.17*	.08	.41**
20. Age of youngest child	-.11	.00	-.04	-.04	-.02	-.02	-.04	-.03	-.08	.02	-.06	.11	.02	-.02	-.04	.44**
21. Business age	-.19*	-.16*	-.18*	.06	-.06	-.08	.08	.09	.00	-.01	-.03	.03	.02	.02	-.01	.35**
22. Number of businesses	-.04	.01	.00	.04	.05	.03	.10	.08	.03	.15*	.15*	.08	.14	.20**	.11	.11
23. Business ownership	.07	-.03	-.01	-.06	-.10	-.07	.04	.04	.14	.08	.00	-.02	.06	.09	.14	.09

24. Loan amount	-.08	-.07	-.07	.18*	.06	.21**	.18*	.22**	.22**	.00	.05	-.04	.13	.13	.09	-.01
25. Time in Apros	-.01	-.10	-.10	.00	-.11	.03	-.07	-.06	.08	.04	.09	.11	.19*	.11	.10	.06
26. Other loans	.04	-.08	-.09	-.00	.03	-.08	-.01	-.02	-.12	-.03	.02	.01	-.04	-.10	.03	.02
27. Group size	.10	.08	.10	.03	-.15*	-.14	-.17*	-.14	-.25**	.03	.09	.08	-.17*	-.08	-.05	.08
28. Training	.03	.04	.02	-.19**	-.09	.11	.14	.17*	.09	-.29**	-.25**	-.05	.01	-.05	-.06	-.19*
29. Frequency of meetings	.02	.10	.11	.02	-.06	-.64**	-.42**	-.47**	-.51**	.05	.01	.01	-.28**	-.22**	-.25**	.13
30. Survey application	.03	.13	.11	-.02	-.04	-.07	.07	.08	.02	.00	-.00	.05	.18*	.10	.07	-.30**
31. Screening	-.02	.05	.06	-.06	-.05	.41**	.24**	.23**	.29**	-.08	.00	.02	.25**	.17*	.31**	-.08
32. Monitoring	-.10	-.12	-.12	-.03	.11	.26**	.19*	.28**	.26**	-.07	-.07	.04	.18*	.21**	.26**	-.05

n = 182; * = Correlation is significant at the 0.05 level (2-tailed); ** = Correlation is significant at the 0.01 level (2-tailed).

Coding for variables was as follows: sex: 1 = “male”, 2 = “female”; females in group (categories): 1 = 0%-60%, 2 = 61%-99%, 3 = 100%; environment: 1 = rural (< 15,000 people); 2 = urban (> 15,000 people); repayments: 1 = “I totally disagree (that the client is punctual)”, 7 = “I totally agree”; variables 7 to 9 (sales, profits, and savings): 1 = “I totally disagree”, 9 = “I totally agree”; variables 10 to 15 (group sanctions, community sanctions, community reputation, group relations, community relations, and solidarity): 1 = “not at all probable”, 7 = “totally probable”; marital status: 1 = married, 2 = not married; age of youngest child: 1 = 0.3-8 years old, 2 = 9-17 years old, 3 = 18-40 years old, 4 = no children; business ownership: 1 = zero %, 2 = less than 50%, 3 = 50%, 4 = more than 50%, 5 = 100%; other loans: 1 = “no”, 2 = “yes”; training: 1 = no training; 2 = 1 form of training (business, health or other), 3 = 2 forms of training; 4 = all (3) forms of training; frequency of meetings: 1 = once a week; 2 = once a fortnight; 3 = once a month; 4 = less than once a month; 5 = never; survey application: 1 = read to client; 2 = self-administered; control variables 31 and 32 (screening and monitoring): 1 = “I totally disagree”, 9 = “I totally agree”.

Table L.1b***Pearson Correlations, Apros Group Loans***

Variables	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
17. Education	1.00															
18. Marital status	.03	1.00														
19. Children	-.38**	-.25**	1.00													
20. Age of youngest child	-.15*	.09	-.05	1.00												
21. Business age	-.15*	.10	.02	.23**	1.00											
22. Number of businesses	-.02	.05	.12	.09	.20**	1.00										
23. Business ownership	.06	-.17*	.09	.00	.10	-.04	1.00									
24. Loan amount	.12	-.06	-.05	-.03	.18*	.13	.01	1.00								
25. Time in Apros	-.08	-.13	.09	.02	.09	.07	.02	.07	1.00							
26. Other loans	.01	.01	.00	.03	.07	.24**	-.02	-.02	.03	1.00						
27. Group size	-.07	-.03	.11	-.02	.03	-.00	-.01	-.04	-.07	.10	1.00					

28. Training	.15*	.11	-.14	-.06	-.11	-.11	-.07	-.08	-.01	-.03	-.04	1.00				
29. Frequency of meetings	-.05	-.13	.04	.01	.00	.05	-.02	-.18*	.07	.08	.23**	-.09	1.00			
30. Survey application	.14	.11	-.24**	.04	-.07	-.07	-.05	-.04	-.01	-.13	-.18*	.23**	.05	1.00		
31. Screening	-.10	.08	-.04	.03	-.02	.05	.05	-.01	.09	-.04	-.04	.15*	-.35**	-.08	1.00	
32. Monitoring	-.04	-.02	.01	.14	-.08	-.12	-.09	.03	.07	-.13	-.15*	.29**	-.23**	.08	.16*	1.00

n = 182; * = Correlation is significant at the 0.05 level (2-tailed); ** = Correlation is significant at the 0.01 level (2-tailed).

Coding for variables was as follows: marital status: 1 = married, 2 = not married; age of youngest child: 1 = 0.3-8 years old, 2 = 9-17 years old, 3 = 18-40 years old, 4 = no children; business ownership: 1 = zero %, 2 = less than 50%, 3 = 50%, 4 = more than 50%, 5 = 100%; other loans: 1 = "no", 2 = "yes"; training: 1 = no training; 2 = 1 form of training (business, health or other), 3 = 2 forms of training; 4 = all (3) forms of training; frequency of meetings: 1 = once a week; 2 = once a fortnight; 3 = once a month; 4 = less than once a month; 5 = never; survey application: 1 = read to client; 2 = self-administered; control variables 31 and 32 (screening and monitoring): 1 = "I totally disagree", 9 = "I totally agree".

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