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Financial inclusion, vulnerability, and mental models: From physical access to effective use of financial services in a low income area of Mexico City

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FINANCIAL INCLUSION, VULNERABILITY AND MENTAL MODELS: FROM PHYSICAL ACCESS TO EFFECTIVE USE OF FINANCIAL SERVICES IN A LOW-INCOME AREA OF MEXICO CITY

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Max Niño-Zarazua and James Copestake

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Abstract

Quantitative analysis indicates that variation in use of regulated and unregulated financial services in a low-income area of Mexico City can only partially be attributed to differences in socio-economic variables including gender, employment, education and housing status. Qualitative evidence suggests cognitive resources (including financial knowledge, attitudes and values) and socialised experiential learning are also important to financial inclusion and its relationship to vulnerability. Better understanding of these links requires more research into actual and potential users' diverse and malleable mental models.

Key Words: financial inclusion; vulnerability; mental models; Mexico.

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1 Introduction

This paper addresses the issue of how to improve access to regulated financial services, hereafter referred to as financial inclusion. More widespread use of regulated financial services can enhance domestic resource mobilisation and improve allocative efficiency in the use of capital (World Bank 2007). However, the focus here is on financial inclusion as an instrument for poverty reduction. This section considers why financial inclusion is of particular policy interest both internationally and in Mexico. It then briefly reviews alternative theoretical approaches to analysing financial inclusion and resulting welfare outcomes, particularly for relatively poor and vulnerable people.

Section two presents a case study from a low income area of Mexico City. This illustrates how choice of relevant theory for thinking about financial inclusion can be informed by empirical research. We first use quantitative data to analyse the extent to which use of financial services varies with education, employment, asset ownership and other indicators likely to affect person-specific transaction costs. We then draw on complementary qualitative data to analyse other influences on access to and use of financial services. Section three concludes that effective use of financial services is not only determined by individuals' economic characteristics and exogenous transaction costs, but also by more complex cognitive and social processes. This highlights the dangers of relying too heavily on a narrowly economic framework for analysis of financial exclusion. More specifically, we argue for more research into how the diverse and changing mental models of poor people influence their use and non-use of financial services.

1.1 Policy context

A number of recent publications reflect a growing enthusiasm among international development agencies for 'mainstreaming' financial inclusion in low income countries as a strategy for poverty reduction (Copestake 2007). For example, the Consultative Group to Assist the Poor (CGAP) - the leading provider of policy guidelines for public investment in microfinance - has described itself as 'an organization that works to ensure poor people have access to financial services that can improve their lives' (Helms 2006: p.7). Of course, policy interest in promoting greater financial inclusion as a means to reduce poverty has a long history. Sensitive to the widespread failure of such initiatives in the past, the new financial inclusion agenda places more emphasis on market competition as the leading mechanism for pushing back the access frontier in a financially sustainable way. At the same time, it acknowledges the persistence of market imperfections (including costly and unequal access to information) and the adverse effect of these on poor people both directly, as potential users of financial services, and indirectly, via their effect on economic growth and job creation (World Bank 2007). These market characteristics in turn underpin a case for 'smart subsidies' (de Aghion and Morduch 2005).

Mexico's experience illustrates how the renewed focus on financial inclusion can also be seen as a consequence of wider policy debates. Through much of the 1980s, particularly following nationalisation of most commercial banks in 1982, Mexico was a clear example of a country experiencing financial repression (Gruben and McComb 1996; Mansell-Carstens 1995; Niño-Zarazua 2006). But financial liberalisation as the decade progressed prompted an 'overloaning wave', leading to the dramatic financial crisis of 1994 (Weller 2001). This in turn prompted highly restrictive fiscal and monetary policies, along with the sale of much of the banking system to

foreign investors, and resulted in a sharp fall in access to financial services not only for relatively poor people but for many middle class Mexicans also (Bonturi 2002; Weller 2001). With the banking system having been purged of direct state controls over interest rates and credit allocation, legislation during the following decade aimed to strengthen prudential regulation and corporate governance. Having restored a degree of macroeconomic stability and created a policy environment more conducive to private investment and innovation it also became increasingly pertinent to ask how quickly access to financial services would return to and exceed levels previously achieved.

1.2 Theoretical issues

The comparative ease with which outreach or physical use of finance services can be measured is important to the attractiveness of financial inclusion as a policy goal, both at agency-specific and sector level. In contrast, the impact of services on the actual wellbeing of clients is often seen as important but too difficult and costly to measure in practice. Emphasising the improvement in access (hence client choice) is in this regard comparable to the much wider emphasis in economics on 'decision utility' as a proxy for 'experienced utility' (Dolan and Kahneman 2008). Financial inclusion, from this point of view, is about enhancing poor people's freedoms by offering services that are useful for managing their lives and livelihoods, and that richer people already take for granted. This then raises the question whether there is a case for complimentary investment in financial education and other interventions on the demand side to enhance the capacity of poor people to make the most of opportunities being created from the supply side.

Reliance on decision utility as an indicator of experienced utility or wellbeing rests on the assumption that individuals are well enough informed about their choices to avoid making mistakes, such as being lured into contracts that ultimately do them more harm than good. The tough line here is that people do learn eventually (if sometimes painfully) how to make the most of new opportunities: this being another infant industry argument, except this time with poor people providing the subsidy. Meanwhile too radical a departure from the legal principle of *caveat emptor* opens up potentially large moral hazard problems. The implications for public policy are thereby greatly simplified: the goal is to make more financial services available to more people at a lower cost, giving them a wider set of choices. It is then up to individuals whether they choose to use them.

This approach to thinking about financial inclusion closely reflects a neoclassical view of economic behaviour as a rational process of individual utility maximization, with welfare outcomes determined primarily by individual resource endowments and opportunities. This can in turned be referred to as a *mental model*, or a value-laden internal representation of a complex environment (North 1990). The idea of mental models in institutional economics is linked to the concept of bounded rationality: we are all forced to rely on them when confronted with a complex problem that we lack time, information or capacity to analyse exhaustively. North suggests that mental models don't only exist in the heads of individuals. Rather, they are forged in a social context; indeed *shared* mental models underpin all the institutions (rules and norms) through which we collaborate (Denzau and North 1994). For all its potential simplicity and potency, the mental model offered by neoclassical theory is not the only one available for analysing the determinants of financial exclusion, and its underlying ontology departs sharply

from those underpinning other disciplines. For example, anthropologists also emphasise the symbolic aspects of financial services within a particular cultural context, and sociologists have examined how borrowing is also influenced by group norms and the need to reproduce critical social relationships. But it is in psychology that empirical research into the diverse mental models we bring to specific problems is most firmly established (e.g. Breakwell 2007).

At this more theoretical level, we are interested in whether the obstacles to effective use of financial services by poor people can be explored adequately if we rely mainly on the *homo economicus* mental model that underpins neoclassical theory. Doing so has the merits of parsimony, and also facilitates quantitative analysis and aggregation. But if the result is an analysis that fails to accommodate all the factors that are most important in explaining use of financial services, then the theory itself becomes an obstacle to understanding financial exclusion and building systems that are better adapted to the needs of poor clients. This question cannot logically be addressed within the confines of neoclassical theory itself, though neither is its usefulness invalidated simply by the *possibility* that aspects of human nature it ignores might also be important. Rather, a wider conceptual framework is required within which the explanatory power of different theoretical frameworks (as mental models) can be compared empirically, the outcome being determined by which can be shown to have more explanatory power.

The conceptual starting point for the case study presented in the next section defines poverty in terms of vulnerability to shocks arising from an inadequate portfolio of material, human, social and cultural resources (Chambers 1989; McGregor 2007; Moser 1998). Individuals' ability to utilise these resources depends in part on how different resources can be combined and substituted for each other over time, and it is in this respect that financial services play an important part in the causal link from individual resource profiles to vulnerability (Chen and Dunn 1996; Rutherford 2000; Sebstad and Cohen 2000). Thus, two causal mechanisms linking resource profiles to vulnerability and welfare outcomes are distinguished (see Figure 1): direct (from A to C), and via access to and use of financial services (from A to B to C). Quantitative and qualitative analysis is used to investigate the link between A and B, and qualitative analysis to gain insight into the links to C.

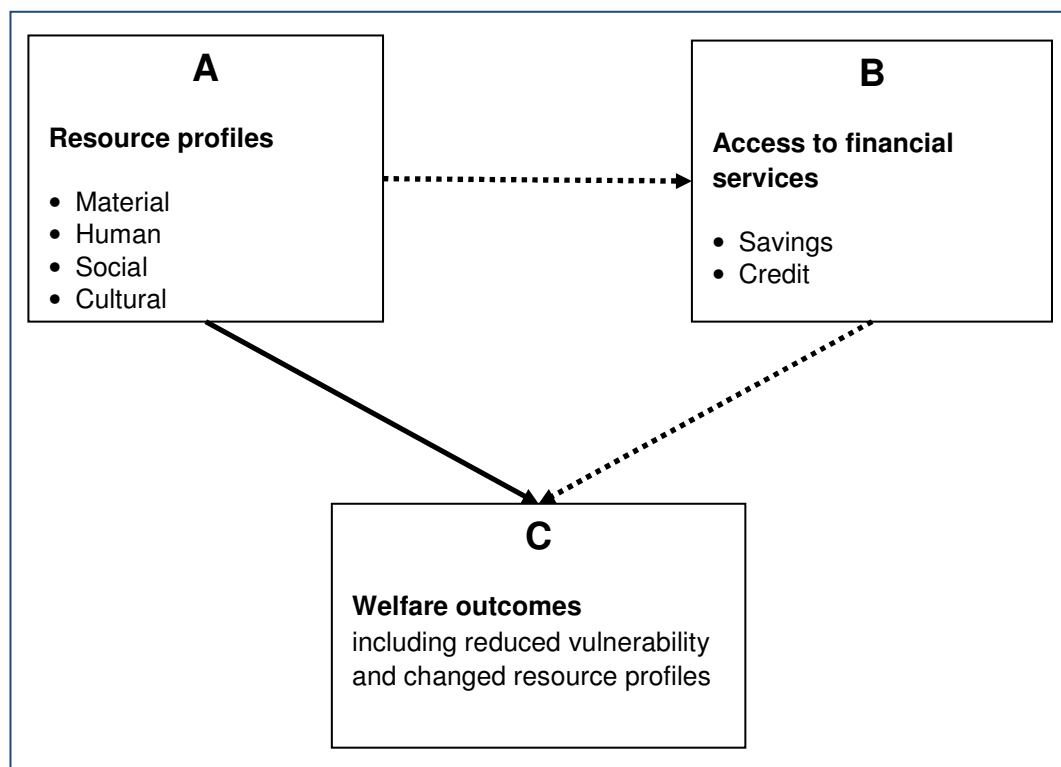


Figure 1: Causal links between resource profiles, financial services, and vulnerability

2 Mexico case study

This section presents findings from primary research into access to and use of financial services in a low income area of Mexico City called the *Valle de Chalco* (hereafter Chalco Valley) conducted in 2003. First, it describes the context of the research and the methodology employed. It then reports on quantitative analysis of socio-economic variations in use of financial services, and then qualitative data on variation in use of financial services as well as respondents' own description of resulting welfare outcomes.

2.1 Methodology

The research methodology for analysing a local 'financial landscape' (Bouman and Hospes 1994) was adapted from that used by Johnson (2003; 2004) in the contrasting setting of rural Kenya. It comprised key informant-based research into the supply side of the financial system followed by sample survey-based collection of data from the demand side. The locality selected for fieldwork was the municipality of Chalco Valley, which lies on the South Eastern edge of Mexico city and comprises more than 300,000 inhabitants, most of whom had moved there from other parts of the city, as well as outside, during the last twenty years.¹

¹ The Valley was selected for the research for two main reasons. First, the incidence of poverty was substantial but not total: more than half the economically active population earning less than double the minimum wage of US\$3.4 per day (INEGI, 2002). Second, there was a sufficient size and density of population to support a wide range of regulated and unregulated financial institutions. For a full discussion of the methodology of the study see Nino-Zarazua (2006).

Table 1: Composition of respondents by survey

Characteristics of respondents	Survey 1	Survey 2
Composition of respondents per household		
Household head only (HHH)	10	15
HHH and partner	12	0
HHH and family member	3	0
Partner only	18	38
Family member only	4	4
Total number of households	47	57
Number of respondents according to household role		
Household head	25	15
Partner	30	38
Another member	7	4
Gender		
Men	26	14
Women	36	43
Marital status		
Single	6	6
Married/cohabiting	53	48
Divorced or widowed	3	3
Age		
Under 25	8	5
26 to 35	23	21
36 to 45	15	16
Over 45	16	15
Housing ownership		
Owned	42	31
Rented or borrowed	20	26
Level of educational attainment		
None or unfinished primary school	9	12
Finished primary school but not secondary	24	18
Finished secondary school or high school	17	18
Technical or higher degree	12	9
Labour market participation		
Formal job	19	17
Only non-formal jobs	31	31
No participation in labour markets	13	9
Economic sector participation		
Industrial	7	6
Services or commerce	47	45
None	13	9
Total number of respondents	62	57

Research into the supply side of the financial system entailed constructing an inventory of all financial service providers in the Valley, mostly through key informant interviews with

representatives of different providers. This included three private banks, one state-owned bank, three pawnshops, seven retail providers of consumer finance, and five microfinance institutions (MFIs). No registered bank had been operating in Chalco Valley for more than ten years. Widespread non-formal financial intermediaries included rotating savings and credit associations (RoSCAs or *tandas*), accumulating savings and credit associations (ASCAs or *cajas*), moneylenders (*agiotistas*) and a few money guards. Saving at home (in cash and in kind) and interest-free loans from relatives, friends and neighbours were also important.

Demand-side research was conducted through two surveys: Survey 1 comprised 62 randomly selected individuals in two neighbourhoods, and Survey 2 comprised 57 clients of the two largest MFIs. The two neighbourhoods were selected through a process of stratified random sampling based on quality of infrastructure. Survey 1 was drawn from lists of members of a random sample of 97 households selected from street maps of the two selected neighbourhoods. A preliminary visit was used for household enumeration, and to collect enough data to permit a rough ranking of their vulnerability based on employment status, housing quality and other criteria. Two individuals per household were then selected for more in-depth interviews from ten high, ten middle and ten low vulnerability households in each neighbourhood. This resulted in a target sample size of 120 out of which 62 interviews were actually completed. Non-response arose both from frequent absence from the home and also a high level of generalised suspicion (see below). Respondents for Survey 2 were selected randomly from lists of clients of the two main MFIs. This not only increased the overall sample size but also the coverage of people making some use of regulated financial services.

Characteristics of the respondents are shown in Table 1. More partners (57%) were interviewed than household heads (33.7%). This was because the majority of household heads (mostly men) were working outside the area. This combined with the policy of the MFIs to target women explain why only a minority of respondents were men. The vast majority of respondents (85%) were married or cohabitating and aged 40 years or less (60.5%). Most respondents owned their own houses (68% for Survey 1 and 54% for Survey 2). In both surveys, the majority of respondents (55.4%) held post-primary education. Just over half of the combined sample worked in the non-formal labour market, with the balance having formal employment (29.4%) or no job at all (18.5%). Participation in economic sectors was mainly concentrated in commerce (45.4%) and other services (32%).

2.2 Use of financial services

Starting with savings, Survey 1 revealed that respondents used more non-formal than formal services (see Table 2). The most important facilities were *Tandas* (used by 59.7%), saving at home in cash (54.8%) and saving at home in kind (38.7%), and *Cajas* (22.6%). Money guards were the least widely used non-formal saving device (4.8%). Turning to formal savings services, 32.2 percent reported to have used a savings account with a private bank in the previous year. MFIs figured as the second most used formal saving service (27.4%). The use of savings services from retail outlets and the state-owned bank was limited to only two out of 62 respondents.

Table 2: Use of saving services

	Survey 1 (n=62)	Survey 2 (n=57)	Total (%)
Formal			
Private banks	20	17	31.1
State-owned banks	1	8	7.6
MFIs	17	57	62.1
Retail outlets	2	0	1.6
Non-formal			
<i>Tandas</i> (RoSCAs)	37	46	69.8
<i>Cajas</i> (ASCAs)	14	11	21.0
Savings with money guards	3	3	5.0
Savings in the home	34	27	51.3
Savings in kind	24	14	31.9

With respect to borrowing, Table 3 indicates that retail outlets were the most widely used source of formal credit (42%) by Respondents of Survey 1 in the previous year. MFIs were the second most important source (22.6%). In contrast, out of 62 respondents, only two had borrowed from private banks and one from pawnshops. The use of wage advances was also limited to only 6.4 percent of respondents. The largest informal source of credit comprised interest-free loans from relatives, neighbours and friends (42%), followed by moneylenders (14.5%). Respondents did not use *tandas* (6.4%) and *cajas* (12.9%) for borrowing purposes as much as they did for saving purposes. In contrast, respondents generally used MFIs for both savings and borrowing purposes whereas banks were hardly used for credit services.

Table 3: Use of credit services

	Survey 1 (n=62)	Survey 2 (n=57)	Total sample (%)
Formal			
Private banks	2	2	3.4
MFIs	14	53*	56.3
Retail outlets	26	22	40.3
Pawnshops	1	0	0.84
Wage advances	4	3	5.9
Non-formal			
<i>Tandas</i> (RoSCAs)	4	6	8.4
<i>Cajas</i> (ASCAs)	8	5	10.9
Moneylenders	9	15	20.2
Interest-free loans	26	27	44.5

* Two respondents were at the initial stage of the loan cycle and the other two were only savers in their respective MFO

2.3 Socio-economic correlates with use of financial services

To investigate how individuals' resource profiles affected their access to and use of particular financial services data from the two surveys (covering 119 people and 104 households) was pooled and subjected to logistic regression. Dummy variables for use of individual savings and credit services, as well as indicators of multiple use, were regressed in turn against a series of socio-economic variables used as proxy indicators for their resources. Results are reproduced in the appendix and summarised in Table 4. Gender significantly increases the probability of using particular financial services. Women are more likely to save and borrow from group based financial services. In contrast, men tend to use more individualistic devices to save and borrow, such as keeping money in the house and taking interest-free loans from relatives, friends and neighbours. Participation in labour markets is also significantly linked with the use of particular financial services. Working in either formal or non-formal jobs is significantly associated with using both savings and credit services from MFIs, though not with the use of credit from retail outlets. In addition, formal employment increases significantly the probability of saving with *tandas*; but not with *cajas*.

Table 4: Significant socio-economic influences on financial access

If the individual is/has	s/he is more likely to use:	s/he is less likely to use:	Than
Woman	Savings and credit from CAME Credit from Avance Savings facilities from <i>tandas</i>		A man
Man	Home to save money Interest-free loans Credit from non-formal devices		A woman
Single, divorced or widowed	Savings and credit from <i>cajas</i> Savings in the home		Being married or cohabitating
Married or cohabitating	Savings in kind		Being single, divorced or widowed
25 and less	Credit from Avance	Credit from retail outlets	Being between 35 and 45 years old
Over 45	Credit from CAME	Credit from non-formal devices	Being between 35 and 45 years old
Primary education & less	Savings from <i>cajas</i>		Having technical education and less
Secondary education & less	Savings from <i>cajas</i>		Having technical education and less
Higher education	Savings from <i>cajas</i>		Having technical education and less
Formal job	Savings and credit from CAME Savings and credit from Avance Savings facilities from <i>tandas</i>		A jobless individual
Non-formal job	Savings and credit from CAME		A jobless individual
Owned house	Moneylenders	Savings from CAME Interest-free loans	An individual with a borrowed house
Rented house	Savings facilities from <i>tandas</i> Moneylenders		An individual with a borrowed house

Housing ownership is also a significant factor in use of financial services. People with their own house are significantly more likely to borrow from moneylenders, and significantly less likely to borrow from relatives, friends and neighbours. Those formally renting, rather than informally borrowing a house are more likely to save with *tandas* and to borrow from moneylenders. House ownership was also associated with decreased likelihood of saving with the largest MFI in the Valley (CAME), but was not a significant determinant of using credit from MFIs or retail outlets. Educational attainment did not influence the use of financial services as much as expected. Only in the case of *cajas*, were people with more education significantly more likely to save with these group-based devices compared to people with technical education. While marital status influences use of savings devices, age is associated more with credit use. For example, being single, divorced or widowed (rather than married) increases significantly the likelihood of saving in *cajas* and in the home, whereas being married boosts the probability of saving in kind. Young people (25 years old and less) are more likely to use credit from the second largest MFI in the Valley (Avance), but less likely to use credit services from retail outlets. By contrast, people over 45 years of age are more likely to borrow from CAME and less likely to borrow from non-formal providers.

2.4 Qualitative evidence on use of financial services

Overall, the previous section confirmed that socio-economic characteristics do have a significant influence over use of different financial services, and in ways that can be explained by their influence on the relative cost of these services. However, the evidence also suggests that other factors are at play. These were explored by qualitative analysis into: (a) *why* and *how* individuals used and did not use particular financial services, (b) *what* effects they had on their vulnerability and resource profiles, (c) what other personal and structural factors influenced access to and use of particular financial services. Transcripts of open-ended interviews with respondents from both surveys were first pooled and then sorted by theme. In addition, the narrative data was labelled according to whether respondents from Survey 1 belonged to high (HV), medium (MV) or low (LV) potential vulnerability groups, and higher (HS) or lower savings (LS) groups in the case of Survey 2. Niño-Zarazua (2006) provides a detailed textual analysis, whereas here we present only summary findings.

Savings were reported to be critically important both to financing large expenditures and smoothing consumption. The limited use of banks was attributed partly to poor branch coverage and high transaction costs, but these factors were compounded by ignorance and suspicion arising lack of direct experience with them. A second consideration raised by respondents was security, with several respondents having opened a bank account mainly to protect their money from house burglary. For other MV and LV respondents security also entailed keeping their money out of reach of other family members.

Banks are secure because no one else can withdraw my money when I'm away. It's not easy to duplicate my signature.

A third influence on the use of bank savings accounts was planning – in anticipation of major seasonal and education expenses, for example. In addition, the discipline of holding savings more securely helped HV respondents to cope with emergencies, sicknesses, housing repairs and

loss of earnings. A disposition to plan and to save was referred to by some respondents as having a “savings habit”. The following quotation illustrates this particular mental model.

I'm from a very poor community and I know that to progress a family must save. I've seen families where the husbands spend money on alcohol while their families are starving, without education and then their children become drug addicts and criminals. So I don't let my husband spend money on useless things. It's important to give the example to our children, to create good savings habits.

The risks entailed in saving in the house and the added difficulty of developing a savings discipline encouraged saving in-kind and, to some extent, use of money guards.²

I sometimes give money to my brother to keep it for me, when I receive my tanda I give 1000 or 2000 pesos to my brother and I leave it with him. When I have an economic pressure my husband tells me to get some money from my brother to solve the problem.

Savings in-kind was an effective risk management strategy that allowed MV and LV respondents to diversify assets and investments whilst it enabled them to build *responsive* mechanisms to solve shortfalls in income. In addition, the purchase of physical assets with a higher level of liquidity (e.g. animals) enabled MV and HS respondents to build an important source to smooth income and, sometimes, to obtain profits. However, a major problem with savings in kind was the difficulty of cashing assets in the face of sudden events or emergencies.

Well some times we invest our money in some things, for instance, if there is an opportunity to buy a cheap car, I do it! Then I use it and when I have the chance to sell it for a better price or I need money I just sell it and get the money I need.

Turning to individual credit services, qualitative data confirmed that borrowing from banks was restricted by lack of physical collateral and property titles, complicated procedures, irregular income and lack of any credit history. This helps to explain the growth of retail outlets and consumer credit shops in the Chalco Valley. More flexible requirements and repayment policies allowed MV and HV respondents to use consumer credit even in the face of life cycle related falls in income. In addition, consumer credit enabled a few MV respondents to smooth income in the household without eroding cash reserves for emergencies.

I prefer to buy things by credit. Imagine, I go to the shop to buy a device in cash, so I use my savings for that; then all of a sudden I've got an emergency and I don't have a penny! That's why I always prefer to prevent my problems. I always need to have some savings; you know I need to keep money. If I have two or three thousand pesos to buy a device and I also know that getting it by credit it costs me like five thousand pesos, I prefer to get it by credit because I know I can afford instalments of a hundred pesos every week. In this way I maintain my money to cope with any emergency or any other thing we need in my house.

² While four respondents (from MV, LS and HS groups) saved with these providers to diversify their savings opportunities, two respondents (from HV and LS groups) used them due to the limitations and risks of saving in other places.

However, the ready accessibility and flexibility of consumer credit also resulted in some respondents obtaining consumer debt from several sources at the same time, causing them high levels of stress and undermining their capacity to save.

Wage advances were an important option for the few MV and LV respondents with formal employment, offering larger sums at lower interest rates compared to most other sources. In contrast, pawnshops were available to anyone who possessed assets of worth, but for those with irregular incomes their use was more risky and expensive than informal borrowing from friends, neighbours or relatives. However, while an important reciprocal coping strategy, exposed borrowers to conflict and abuse. The same applied to loans from moneylenders, which were often also linked to personal relationships. For those LV respondents able to borrow at lower interest rates and sometimes without collateral they were a useful option for coping with accidents, legal conflicts, death and debts. But HV respondents were much more fearful of the consequences of exposure to further debt.

You always pay more than what you borrow; there is no reason to borrow from them. Supposedly you aim to get out from your problem; however, you get into a worse one.

The various drawbacks with individual saving and borrowing described above provide a ready explanation for the widespread use of *tandas* and *cajas* in the locality, and the rapid expansion of group lending methods sponsored by MFIs. These offered access to convenient ways of saving, and a cheaper and flexible source of credit that was highly valued. While the credit enabled LV individuals to support income-generating activities, the same facilities allowed MV and HV individuals to invest in human and material resources in their households.

I use tandas when a date is coming up such as the Wise Men's Day you know! For the toys of my children, or some expenses in my children's school when they finish or they start school term like uniforms, shoes, notebooks and so on. So I plan ahead these expenses I join a tanda and in this way it's less hard for me.

Savings were compulsory to join MFIs, and this fostered a savings habit amongst members that in turn had an important effect on their money management and financial planning. The informal (or internal account) provision of savings and credit facilities among group members offered opportunities for learning about finance, including financial arbitrage. This could in turn foster changes in motivation, attitude and use of other financial services also. However, while participation in MFI sponsored groups enabled some to expand their social relations and gain new resources, for others lack of knowledge and partial understanding of group responsibility resulted in loss of productive assets and increased vulnerability.

I have many friends that owed a lot of money, I can't understand what they did with that money since they live with their mother in law and don't pay rent. Then I see them borrowing money from everyone in the group, 10 or even 15 thousand pesos! [...] and then they can't repay neither their loans with CAME nor the money their borrowed from our mates, eventually they end up owing 30 or 40 thousand pesos. I told them one day that they don't know how to administer their money nor their debt capacity. Two years ago I had a problem with one of them because I got her an

internal loan and she didn't pay me back. Then I had to repay the loan and the defaulting fees that eventually was something like 12 thousands pesos. As far as I'm concerned, I'll never help her again or join a group with her.

The importance of social relations was also evident in the way people used *tandas* and *cajas* to diversify their resources and cope with shocks and hazards. In both cases participation depended on personal reputation and trust. Those with strong social networks (mostly in the MV and LV categories) could use them for generating a lump sum for specific purposes, including house improvements, Christmas shopping, payments for public services, debt repayment or purchase of consumer durables. However, acrimony over turns, the risk of members running away and other aspects of their operation could also be stressful.

To sum up, the use of diverse financial services was perceived by most respondents to be critical to the protection and promotion of their livelihoods. They acknowledged that transactions costs and other economic factors were important. But it was the interplay between material factors and socio-cultural and cognitive resources (including habits, discipline, attitudes) that emerged as the key to understanding how neighbours whose apparently similar resource profiles and access to financial services made such varied use of them.

2.5 Multiple use and dynamic processes

As an additional piece of analysis Survey 1 respondents were classified according to the number of savings and credit services used in the previous year.³ Here we focus on the contrast between the 21 minimal users and the 24 diversified users of financial services, as shown in the last two rows of Table 5. The term minimal user refers to a respondent who used one or less savings and/or one or less credit service. Textual analysis suggests that insufficient and insecure income was a critical constraint on their use of financial services. However, economic barriers to access financial services were exacerbated by weak social relations, ties and trust in the community. As individuals strengthened their social resources, they became more able to access financial information and understand the usefulness of a wider range of financial services. Weak social relations and trust with the community contributed to a distrustful attitude towards financial services. This was then reinforced by lack of first hand experience of them, and hence lack of information and knowledge. These factors often reinforced each other creating a vicious cycle of self-exclusion and a strongly negative mental model of finance, as illustrated by the following quotation.

I don't know any financial service. In fact, I don't even know my neighbours! I don't join tandas because I don't trust them, I don't know them I told you and regarding cajas, I don't like them because I don't know the way they work. If I knew them I would possibly like them. If I had money to save I would hide it somewhere or God knows how I'd save it.

³ Nino-Zarazua (2006) also reports on logistical regressions used to identify socio-economic factors associated with minimal or multiple use of savings facilities and credit sources.

Table 5: Multiple use of services by vulnerability group (Survey 1)

	High	Middle	Low
Sub-sample size	18	33	11
Of which, number using:			
No saving facility	5	6	0
1 saving facility	5	12	2
>1 saving facility	8	15	9
No credit source	1	6	0
1 credit source	10	12	0
>1 credit source	7	15	11
No more than 1 saving facility and no more than 1 source of credit	9	12	0
More than 1 saving facility and more than 1 source of credit	6	9	9

Diversified users were defined as those respondents who had used more than one source of credit and more than one savings facility during the previous year. Many of these respondents described how a combination of social interaction and learning-by-doing led to the acquisition of new ideas, attitudes and practices sharply different from those of minimal users. They acquired greater financial sophistication not through formal instruction but through learning about financial services first-hand and through the experiences of close relatives and associates. Some described periods of over-indebtedness, including being forced to resort to moneylenders to meet emergencies, and having to borrowing from one source to cover repayments to another. But surviving such experiences built confidence in handling credit, and instilled a stronger habit of financial planning and saving.

It is important to emphasise that such processes of experiential learning are embedded in social relationships, such as daughters being inducted into groups by mothers. In this sense, the contrast between minimal and diversified users reflected more than a difference in knowledge or individual mental models. The contrast could best be described in many cases as a cultural difference in the sense that it encompassed differences in values, ideas, attitudes, skills, habits and routines reproduced through social interactions and *shared* mental models.⁴

3 Conclusions

The empirical evidence from Mexico City confirms that access to financial services does depend significantly on individuals' human and material resources, as measured by indicators such as educational attainment, employment and housing status. This can readily be explained by noting how these affect the cost of access to different financial services. However, qualitative evidence suggests that less easily measured socio-cultural processes are also important in explaining variation in effective use of financial services. These processes referred to as mental models provide a powerful approach to understanding financial inclusion that the bare economic

⁴ The word culture is used here in the way suggested by Rao and Walton (2004:4): "... about relationality – the relationships among individuals within groups, among groups, and between ideas and perspectives. Culture is concerned with identity, aspiration, symbolic exchange, coordination, and structures and practices that serve relational ends, such as ethnicity, ritual, heritage, norms, meanings, and beliefs."

rationality has failed to explain. More specifically, socially embedded processes enable individuals to acquire a more sophisticated financial culture, which in turn embrace an ability to plan ahead, to save for multiple purposes using multiple mechanisms, to juggle more than one debt, to build up a range of insurance and coping mechanisms against shocks and hazards, for example. Such cultural change has the potential to reduce economic vulnerability by enabling people to engage in more profitable activities, manage money better and build a stronger resource portfolio. It can also contribute to wider personal development including acquisition of self-confidence, social networks, leadership skills and entrepreneurial initiative.

These observations can be illustrated by reference back to Figure 1. The original research question was to investigate how much the causal links from individual resource profiles (A) via access to financial services (B) reduced vulnerability (C) in ways that added to other causal links between A to C. The qualitative evidence suggests this framework can usefully be augmented in at least three ways. First, *cognitive resources* (in this case a more sophisticated mental model of finance) can usefully be added to material, human, social and cultural resources already listed in Box A. Second, B can refer not just to *access* but also to *use* of financial services. Third, a reverse arrow from B to A can be added to represent the process of experiential learning whereby use of financial services adds to cognitive resources.

The main implication of these findings for policy is that financial inclusion is not just about finding ways to lower transactions costs through innovation on the supply side, but also to finance and in other ways facilitate transformations on the demand side. Financial inclusion, in short, entails not only about better *access* to services but also changing attitudes leading to more effective *use*. General education – including numeracy and literacy – is important. Being taught how to save, manage money, calculate interest rates and assess debt capacity is also useful; but such knowledge in isolation will not necessarily change attitudes, nor will it necessarily give people the confidence and support to try new services on their own. It follows that a potentially positive feature of group-based financial services is that it fosters socialised and experiential learning that effectively bundles knowledge acquisition, forging of new relationships, and changing attitudes in a potentially transformative way.

A wider theoretical lesson from the Mexican case study is that financial exclusion and inclusion needs to be understood in relation to culturally embedded and dynamic processes, including the existing of diverse and changing shared mental models of finance. Understanding of this requires looking beyond the calculus of benefits and costs of financial transactions to the individual, and weakens any theory that assumes financial exclusion can be attributed largely to individuals' economic status. In section one we acknowledged the principle of Occam's razor that theory based on simpler and more universal assumptions about human motivation is preferable if it can generate satisfactory explanations of actual behaviour. The case study leads instead to the conclusion that an adequate understanding of the causes and consequences of financial inclusion justifies more sophisticated ontological assumptions. In other words, there is a case for more research into diverse *perceptions* of resources, opportunities and constraints, as well as actual outcomes of microfinance (experiential utility) and choice (decision utility). This in turn requires more reference to the insights of psychologists, sociologists and anthropologists to complement that of management specialists and economists.

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Appendices

Table A 1: Regression dependent variables – financial services availability

	Code	1	0
Formal Savings			
Private banks	<i>PRIBANK-SAVING</i>	... holds or has used a banking savings account in the last 5 years	Otherwise
State-owned banks	<i>STABANK-SAVING</i>	... holds or has used a BANSEFI savings account in the last 5 years	Otherwise
CAME (MFI)	<i>CAME-SAVING</i>	... saves money with a CAME's IGG	Otherwise
Avance (MFI)	<i>AVANCE-SAVING</i>	... saves money with a Avance's group	Otherwise
Retail outlets	<i>RETAIL-SAVING</i>	... saves money with retail outlet	Otherwise
Formal saving services in general	<i>FORM-ALSD</i>	... saves money with any formal institution	Otherwise
Non-formal Savings			
<i>Tandas</i> (RoSCAs)	<i>TANDA-SAVING</i>	... saves money with <i>tandas</i>	Otherwise
<i>Cajas</i> (ASCAs)	<i>CAJA-SAVING</i>	... saves money with <i>cajas</i>	Otherwise
Money guards	<i>MONEY-GUARDSAV</i>	... saves money with money guards	Otherwise
Savings in kind	<i>KIND-SAVING</i>	... save in kind (purchases of physical assets)	Otherwise
Savings kept at home	<i>HOME-SAVING</i>	... saves money in the home	Otherwise
Non-formal savings in general	<i>INFOM-ALSD</i>	... saves money with any non-formal financial agent	Otherwise
Formal Credit			
Private banks	<i>PRIBANK-CREDIT</i>	... holds or has used a banking credit in the last 5 years	Otherwise
CAME (MFI)	<i>CAME-CREDIT</i>	... holds or has used a CAME's credit in the last 5 years	Otherwise
Avance (MFI)	<i>AVANCE-CREDIT</i>	... holds or has used a Avance's credit in the last 5 years	Otherwise
Retail outlets	<i>RETAIL-CREDIT</i>	... holds or has used a retail outlet consumer credit in the last 5 years	Otherwise
Work credit	<i>WORK-CREDIT</i>	... holds or has used a personal credit at work in the last 5 years	Otherwise
Formal credit Services in general	<i>FORMALCS</i>	... holds or has used any formal credit service in the last 5 years	Otherwise
Non-formal Credit			
<i>Tandas</i> (RoSCAs)	<i>TANDAS-CREDIT</i>	... holds or has used <i>tandas</i> as a way of loan in the last 5 years	Otherwise
<i>Cajas</i> (ASCAs)	<i>CAJAS-CREDIT</i>	... holds or has used <i>cajas</i> as a way of loan in the last 5 years	Otherwise
Moneylenders	<i>MONEY-LENDER</i>	... holds or has used money lending services in the last 5 years	Otherwise
Interest-free loans	<i>FAMILY-LOANS</i>	... has borrowed money from her/his family, friends or neighbours in the last 5 years	Otherwise
Non-formal credit devices in general	<i>INFORM-ALCD</i>	... holds or has used any non-formal credit device in the last 5 years	Otherwise

Table A 2: Regression explanatory variables – socio-economic attributes

Socio-economic attributes (explanatory variables)	Code	1	0
Gender			
Women	<i>FEMALE</i>	If woman	Otherwise
Marital Status	<i>MARITAL</i>	If married or cohabitating	If single, separated, divorced or widowed
Age			
<=40	<i>AGE1</i>	If aged 18 – 40	Otherwise
>40	<i>AGE2</i>	If aged over 40	Otherwise
<=25	<i>AGEA</i>	If aged 18 – 25	Otherwise
>25<=35	<i>AGEB</i>	If aged 26 – 35	Otherwise
>35<=45	<i>AGEC</i>	If aged 36 – 45	Otherwise
>45	<i>AGED</i>	If aged over 45	Otherwise
Education			
Primary & less	<i>PRIMEDUCATION</i>	If illiterate, and some or finished primary level	Otherwise
Secondary & less	<i>SECEUCATION</i>	If education is some or finished secondary level	Otherwise
Technical & less	<i>TECHEDUCATION</i>	If education is some or finished technical degree & high school	Otherwise
Higher & less	<i>HIGHEREDU</i>	If education is some or finished higher degree	Otherwise
Labour market participation			
Formal	<i>FORMALM</i>	... works in a formal job	Otherwise
Non-formal	<i>INFORMALM</i>	... works in a non-formal job	Otherwise
None	<i>NONELM</i>	... do not work at all	Otherwise
Housing condition			
Owned	<i>OWNHOU</i>	... owns the house where s/he lives	Otherwise
Rented commercially	<i>RENTHOU</i>	... rents the house where s/he lives	Otherwise
Borrowed from family/informal	<i>BORROWHOU</i>	... borrows the house where s/he lives	Otherwise

Table A 3: Logistic regression results – Use of formal saving services

Odds ratios (coefficient values)	Private Banks	State-owned Banks	CAME (MFI)	Avance Chalco (MFI)	Formal saving services
Female	1.047 (0.046)	2.056 (0.721)	4.342**** (1.468)	1.871 (0.626)	2.182* (0.780)
Married or cohabitating	2.318 (0.840)	0.546 (-0.603)	0.966 (-0.033)	0.661 (-0.413)	1.710 (0.536)
Age <=40	1.270 (0.239)	0.998 (-0.001)	0.633 (-0.455)	0.678 (-0.387)	2.066 (0.725)
Primary education & less	1.351 (0.300)	0.980 (-0.019)	1.158 (0.147)	1.220 (0.199)	1.463 (0.380)
Secondary education & less	2.361 (0.859)	0.909 (-0.094)	1.204 (0.186)	2.182 (0.780)	1.602 (0.471)
Higher education & less	2.622 (0.964)	---	0.670 (-0.400)	2.561 (0.940)	2.203 (0.789)
Formal labour market participation	1.334 (0.288)	2.573 (0.945)	4.987*** (1.606)	2.610* (0.959)	3.814** (1.338)
Non-formal labour market participation	1.106 (0.101)	2.006 (0.696)	3.511*** (1.255)	1.221 (-0.199)	3.914** (1.364)
Home owned	1.599 (0.469)	2.243 (0.808)	0.374** (-0.982)	0.527 (-0.639)	0.672 (-0.396)
Homer commercially rented	1.423 (0.353)	2.777 (1.021)	0.612 (-0.490)	0.701 (-0.354)	0.284** (-1.095)
Number of obs.	119	112 [#]	119	119	119
Pseudo R ²	0.0459	0.0415	0.1371	0.0577	0.0910

Notes: *, **, ***, **** stand for significance at the 0.10, 0.05, 0.01 and 0.001 level respectively. [#] The only seven individuals with higher education did not have a deposit account with BANSEFI, thus the programme predicted failure perfectly and dropped the *HIGHEREDU* variable and the respective seven observations were not used in the model

Table A 4: Logistic regression results – use of non-formal savings devices

Odds ratios (coefficient values)	Tandas (RoSCAs)	Cajas (ASCAs)	Savings in kind	Savings at home	Non-formal savings devices
Female	2.580** (0.947)	1.302 (0.264)	0.767 (-0.264)	0.410** (-0.890)	1.011 (0.011)
Married or cohabitating	0.801 (-0.221)	0.377* (-0.975)	3.574** (1.273)	0.162*** (-1.817)	0.632 (-0.457)
Age <=40	0.738 (-0.303)	1.262 (0.233)	0.556 (-0.586)	1.094 (0.090)	0.805 (-0.216)
Primary education & less	0.691 (-0.368)	3.759** (1.324)	0.676 (-0.391)	1.118 (0.112)	1.211 (0.192)
Secondary education & less	1.122 (0.115)	3.520* (1.258)	1.036 (0.035)	1.750 (0.560)	2.121 (0.752)
Higher education & less	2.589 (0.951)	21.139**** (3.051)	2.914 (1.069)	1.059 (0.057)	---
Formal labour-market participation	3.916** (1.365)	0.607 (-0.498)	1.202 (0.870)	0.641 (-0.443)	2.106 (0.745)
Non-formal labour market participation	2.264 (0.817)	0.721 (-0.325)	1.311 (0.270)	1.012 (0.012)	1.541 (0.433)
Home owned	1.057 (0.055)	2.132 (0.757)	1.143 (0.134)	0.791 (-0.233)	1.002 (0.002)
Home commercially rented	4.861* (1.581)	1.543 (0.433)	1.435 (0.361)	1.336 (0.290)	1.367 (0.312)
Number of obs.	119	119	119	119	112 [#]
Pseudo R ²	0.0982	0.0814	0.0643	0.1015	0.0237

Notes: *, **, ***, **** stand for significance at the 0.10, 0.05, 0.01 and 0.001 level respectively. [#] as above

Table A 5: Logistic regression results – use of formal credit services

Odds ratios (coefficient values)	CAME (MFI)	Avance (MFI)	Retail Outlets	Formal credit
Female	4.560*** (1.517)	4.411** (1.484)	0.992 (-0.007)	2.396* (0.873)
Married or cohabitating	1.272 (0.240)	0.673 (-0.394)	1.981 (0.684)	1.293 (0.257)
Age <=25	1.330 (0.285)	5.560* (1.715)	0.072** (-2.621)	0.386 (-0.949)
Age 26-35	1.828 (0.603)	1.163 (0.151)	0.670 (-0.399)	1.128 (0.120)
Age >45	2.628* (0.966)	0.737 (-0.303)	0.627 (-0.465)	0.806 (-0.214)
Primary education & less	1.779 (0.576)	0.910 (-0.093)	0.280 (-1.272)	0.570 (-0.560)
Secondary education & less	1.520 (0.418)	0.707 (-0.346)	0.596 (-0.515)	0.492 (-0.709)
Technical education & less	3.731 (1.316)	0.247 (-1.397)	0.635 (-0.454)	0.797 (-0.225)
Formal labour market participation	7.339*** (1.993)	7.613*** (2.029)	0.677 (-0.389)	3.821** (1.340)
Non-formal labour market participation	3.535** (1.262)	1.555 (0.441)	2.139 (0.760)	2.868* (1.053)
Home owned	0.444 (-0.810)	0.868 (-0.140)	1.062 (0.060)	0.909 (-0.095)
Home rented commercially	1.523 (0.421)	0.902 (-0.102)	0.967 (-0.032)	0.778 (-0.250)
Number of obs	119	119	119	119
Pseudo R ²	0.1591	0.1397	0.1052	0.0988

Notes: *, **, ***, **** stand for significance at the 0.10, 0.05, 0.01 and 0.001 level respectively.

Table A 6: Logistic regression results – Use of non-formal credit devices

Odds ratios (coefficient values)	Cajas (ASCAs)	Money lenders	Interest-free loans	Non-formal devices
Female	0.878 (-0.129)	1.066 (0.064)	0.432** (-0.839)	0.442* (-0.815)
Married or cohabitating	0.284* (-1.258)	1.831 (0.605)	1.602 (0.471)	1.314 (0.273)
Age <=25	1.073 (0.071)	0.478 (-0.737)	4.730* (1.554)	1.337 (0.290)
Age 26-35	1.260 (0.231)	0.681 (-0.382)	0.961 (-0.038)	0.532 (-0.630)
Age >45	0.852 (-0.159)	0.310 (-1.169)	0.571 (-0.558)	0.157**** (-1.847)
Primary education & less	0.846 (-0.166)	1.689 (0.524)	2.196 (0.786)	2.266 (0.818)
Secondary education & less	2.038 (0.712)	0.722 (-0.325)	0.405 (-0.902)	0.650 (-0.429)
Technical education & less	0.774 (-0.255)	0.634 (-0.455)	1.243 (0.217)	1.197 (0.180)
Formal labour market participation	0.722 (-0.325)	0.953 (-0.047)	3.178 (1.156)	2.663 (0.979)
Non-formal labour market participation	0.550 (-0.596)	0.728 (-0.316)	2.126 (0.754)	1.277 (0.244)
Home owned	2.102 (0.743)	7.871** (2.063)	0.424* (-0.856)	1.392 (0.331)
Home rented commercially	1.232 (0.208)	11.342*** (2.428)	2.307 (0.836)	2.839 (1.043)
Number of obs	119	119	119	119
Pseudo R ²	0.0829	0.1107	0.1520	0.1246

Notes: *, **, ***, **** stand for significance at the 0.10, 0.05, 0.01 and 0.001 level respectively.

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