

Financial capability in
MEXICO:
results from a
national survey on
financial behaviors,
attitudes, and knowledge

Financial capability in Mexico:
results from a national
survey on financial behaviors,
attitudes, and knowledge

REKHA REDDY
MIRIAM BRUHN
CONGYAN TAN



THE WORLD BANK
Washington, D.C.

© 2013 International Bank for Reconstruction and Development / The World Bank

1818 H Street, NW
Washington, DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org

The findings, interpretations, and conclusions expressed here do not necessarily reflect the views of the Executive Directors of The World Bank or the governments they represent. The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Rights and Permissions

The material in this publication is copyrighted. Copying and/or transmitting portions or all of this work without permission may be a violation of applicable law. The International Bank for Reconstruction and Development / The World Bank encourages dissemination of its work and will normally grant permission to reproduce portions of the work promptly.

For permission to photocopy or reprint any part of this work, please send a request with complete information to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, USA, telephone 978-750-8400, fax 978-750-4470, <http://www.copyright.com/>.

All other queries on rights and licenses, including subsidiary rights, should be addressed to the Office of the Publisher, The World Bank, 1818 H Street NW, Washington, DC 20433, USA, fax 202-522-2422, e-mail pubrights@worldbank.org.

Cover images: World Bank; picture of students © Esther Vargas/October 2012
Cover design/layout: Nita Congress

Contents

Acknowledgments — vii

Abbreviations — ix

Executive summary — xi

1 Introduction — 1

1.1 Context — 1

1.2 Why this report? — 2

1.3 What is financial capability? — 5

2 Daily money management and financial planning — 7

2.1 characteristics of financial decision makers — 7

2.2 Budgeting and monitoring expenses — 9

2.3 Making ends meet: balancing income and expenses — 10

2.4 Planning for major expenses: expected and unexpected — 12

2.5 Plans for children's future and old age — 12

2.6 Attitudes — 15

3 Decisions about financial services and financial knowledge — 17

3.1 Usage of financial services — 17

3.2 Making decisions about financial products — 22

3.3 Financial knowledge — 23

4 Comparing financial capability — 27

4.1 Components of financial capability — 27

4.2 Profiles of financial capability in Mexico — 29

4.3 Regional variation of financial capability — 32

4.4 Financial capability of youth — 33

5 International comparisons — 39

6 Linkages between financial capability and financial inclusion — 45

6.1 Financial knowledge and capability — 45

6.2 Financial knowledge, financial capability, and use of credit and savings — 46

6.3 Financial knowledge, financial capability, access to finance, and formal product usage — 49

7 Conclusions and recommendations — 53

Appendixes

- A Construction of financial capability scores — 63
- B Segmenting the population using cluster analysis — 69
- C Youth financial capability — 71
- D Methodology to analyze linkages between financial capability and financial inclusion — 75
- E Literature review: financial knowledge, capability, and behavior — 85

References — 89

Boxes

- 1.1 Financial capabilities and knowledge survey data featured in this report — 3
- 3.1 Comparing different data sources on financial inclusion in Mexico — 18

Figures

- 1.1 Coverage of the Mexico Financial Capability Survey — 4
- 2.1 Contributions to the household budget and participation in financial decision making, by age and gender — 8
- 2.2 Making and adhering to plans about budgeting — 9
- 2.3 Planning behavior by gender, location, and income — 10
- 2.4 Precision of money management — 10
- 2.5 Shortfalls in money for necessities — 11
- 2.6 Coping strategies to cover shortfalls — 12
- 2.7 Ability to cover major unexpected expenses, by income group — 13
- 2.8 Strategies employed to cover old age expenses — 14
- 2.9 Coverage of old age expenses, by gender and employment (<60 years of age) — 14
- 2.10 Attitude toward the future — 15
- 2.11 Financial planning horizons — 16
- 2.12 Achievement orientation — 16
- 3.1 Percentage of the Mexican population using types of financial products currently or in the past — 19
- 3.2 Distribution of responses to financial literacy questions — 24
- 3.3 Distribution of correct financial knowledge responses — 25
- 3.4 Distribution of sources of money management information — 26
- 4.1 Mexico's mean scores for components of financial capability — 29
- 4.2 Cluster size by educational attainment and financial inclusion — 31
- 4.3 Sociodemographic characteristics of each cluster — 32
- 4.4 Financial capability behavioral and knowledge scores mapped by region — 34
- 4.5 Financial knowledge by age group — 35
- 4.6 Percentage agreeing with each statement by age group — 36
- 4.7 Mean score on behavioral components of financial capability — 37
- 5.1 Cross-country comparison of components of financial capability — 40

- 6.1 Correlations between financial knowledge and capability benchmarked by standard deviation — 47
- 6.2 Use of financial products by individuals with low or high financial capability — 49
- 6.3 Distribution of bank branches and correspondents across municipalities — 50
- B.1 Scores on financial capability components by cluster — 70
- C.1 Educational attainment by age — 72
- C.2 Employment of youth (aged 18–24) — 72
- C.3 Mean score on a composite index of attitudes by age group — 74

Tables

- E.1 Recommendations to support improved money management and financial planning and reduce vulnerability in Mexico — xvii
- 2.1 Financial decision-making roles — 8
- 3.1 Reasons for saving by respondents who save (%) — 20
- 3.2 Use of social programs and financial products/services by survey respondents (%) — 21
- 3.3 Perception of borrowing capacity by respondents who borrow (%) — 22
- 3.4 Respondent diligence in making financial service decisions, by credit or savings vehicle (%) — 23
- 4.1 Components of financial capability — 28
- 4.2 Financial capability clusters in the population — 30
- 4.3 Average financial capability behavioral and knowledge scores by region — 33
- 5.1 Summary statistics of key sociodemographic variables — 41
- 5.2 International comparison of percentages of correct responses to knowledge questions — 42
- 6.1 Partial correlations between financial knowledge, financial capability components, and use of financial services — 48
- A.1 Sample statistics for key sociodemographic variables — 67
- D.1 Relationship between financial knowledge and financial capability — 76
- D.2 Financial knowledge and use of financial products — 79
- D.3 Financial capability and use of financial products — 80
- D.4 Partial correlations between financial access points and use of financial products, by financial capability and financial knowledge levels — 82
- D.5 Mexican financial literacy survey variable definitions: financial knowledge and financial capability — 83
- D.6 Mexican financial literacy survey variable definitions: financial product usage — 83
- D.7 Mexican financial literacy survey variable definitions: individual control variables — 84
- D.8 Mexican financial literacy survey municipal-level variable definitions and sources — 84

Acknowledgments

This report was prepared by a World Bank team led by Rekha Reddy, with contributions from Miriam Bruhn and Congyan Tan. Pallavi Nuka provided an analysis of financial capability of the youth population. Valeria Perotti provided research to support the international comparison of Mexican financial capability data. Sarah Antos and Katie McWilliams provided geographic information system mapping expertise, and Nita Congress provided editorial and design support.

This project was strengthened throughout its design and implementation by a partnership with project counterparts from the Mexican National Banking and Securities Commission (CNBV) and the National Commission for the Protection and Defense of Users of Financial Services (CONDUSEF): Luis Treviño Garza (CNBV), Arturo Luna Canales, Sara Gutierrez, and Jesus David Chavez Ugalde (CONDUSEF) provided invaluable insights and support. In addition, the team would like to thank Ana Luisa Saavedra and Javier Suarez Luengas (Ministry of Finance and Public Credit) for their guidance throughout this project. Finally, the team would also like to acknowledge the inspiration provided by the late Raul Hernandez-Coss (CNBV), who championed this project from its inception.

The team is indebted to numerous colleagues for providing comments, inputs, and suggestions on the execution of this project and on draft reports, including Lily Chu, Eva Gutierrez, and P. S. Srinivas. The team is also grateful to peer reviewers Annamaria Lusardi, Samuel Maimbo, and James Seward for their valuable comments on this document and the design of this project.

We are especially grateful to the Russia Financial Literacy and Education Trust Fund and the World Bank Latin America and the Caribbean region for providing financial support making the collection of the data and their analysis possible. We particularly appreciate the strategic guidance provided by Richard Hinz, Program Manager of the Trust Fund and Kinnon Scott, Task Leader of the global financial capabilities pilot. Finally, the insights from the international academic team that was involved in the design of this survey instrument, namely Gerritt Antonides, Sharon Collard, Elaine Kempson, Olga Kuzina, and Christian Poppe, were invaluable.

Much of this report is based on new data from a survey in Mexico executed by the firm Ipsos Bimsa. We would particularly like to thank Maria Jose Gentili, Patricia Lopez, and Edgar Monsalvo for their support and insights throughout both the research process. Finally, the team wishes to express its gratitude to the 2,022 Mexican survey respondents who gave of their time to provide us with the insights utilized in this report.

Abbreviations

BANSEFI	Bank of National Savings and Financial Services (Banco del Ahorro Nacional y Servicios Financieros, S.N.C.)
CNBV	National Banking and Securities Commission (Comisión Nacional Bancaria y de Valores)
CONDUSEF	National Commission for the Protection of Users of Financial Services (Comisión Nacional para la Protección y Defensa de los Usuarios de Servicios Financieros)
ENIF	National Survey on Financial Inclusion (Encuesta Nacional de Inclusión Financiera)
IMSS	Mexican Social Security Institute (Instituto Mexicano del Seguro Social)
INEGI	National Statistics Institute for Mexico (Instituto Nacional de Estadística y Geografía)
INFE	International Network on Financial Education
ISSSTE	Institute for Social Security and Services for State Workers (Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado)
NGO	nongovernmental organization
OECD	Organisation for Economic Co-operation and Development
SOFIPO	popular financial society (sociedad financiera popular)

Executive summary

Findings from the Mexican Financial Capability Survey, the country's first nationally representative survey on financial behaviors, attitudes, and knowledge, suggest five areas of opportunity to support the Mexican population in sound financial decision making.

- Daily money management and planning are imprecise. Just 41 percent of those surveyed reported budgeting regularly and 20 percent were monitoring expenses rigorously.
- Many are vulnerable to shocks. Only 34 percent believe they could cover a major unanticipated expense and 70 percent reported having had regular or occasional difficulties in covering basic expenses, such as food and housing.
- Even anticipated life events are difficult to cover. Just 28 percent of those under the age of 60 have plans to cover retirement expenses fully in old age, and just over a third of those over age 60 have sufficient provisions for old age expenses.
- Despite a sharp increase in the availability of financial products and services in recent years, financial inclusion remains a challenge. Almost half (49 percent) do not report any current use of financial services (formal or informal), and there is a high level of usage of sources of informal credit and saving. Even channels designed to increase financial access, such as bank correspondents, are primarily beneficial to those with greater financial knowledge (financial literacy) and capability.
- Most users of financial products reported making careful financial decisions. However, formal financial knowledge was mixed: most understood the concepts of interest paid on a loan and the time value of money, yet only 37 percent could calculate a simple interest rate.

This report details how findings vary among different segments and provides recommendations to equip the Mexican population to meet these challenges.

CONTEXT

Over the past decade Mexican consumers have witnessed a dramatic increase in the availability and diversity of consumer financial products. As financial products become more broadly available, financial capability—the ability of consumers to make sound financial decisions and use financial products effectively and responsibly—is of crucial importance in accelerating financial inclusion.

Promoting responsible financial inclusion and financial education is a high priority for the Mexican government. Given this priority, the Government of Mexico, in partnership with the World Bank, commissioned this national financial capability study in order to

- develop an empirical understanding of the financial behavior, attitudes, and knowledge of the Mexican population;
- support the design of public policies to enhance both the knowledge about and quality of financial services;
- highlight vulnerabilities and gaps in particular segments of the population with the goal of improving and focusing public policies and interventions where they are most needed; and
- provide a basis for international comparison, because similar surveys have been completed in six other countries.

This study contributes to and complements existing stores of consumer financial data.

The World Bank worked with counterparts at the Mexican National Banking and Securities Commission (CNBV) and the National Commission for the Protection and Defense of Users of Financial Services (CONDUSEF) to develop and execute this survey of a nationally representative sample of 2,022 Mexicans aged 18 and over. The survey instrument collected data on daily money management practices, financial planning, financial product information and choice, financial knowledge and attitudes, and sociodemographic characteristics.

This report describes a baseline measure of the financial capability of the Mexican adult population. Chapter 1 describes the Mexican context and the rationale for the financial capability study. Chapter 2 describes key findings related to daily money management and financial planning behaviors and attitudes. Chapter 3 examines decisions related to the use of financial products and level of financial knowledge. Chapter 4 summarizes key behaviors and attitudes into financial capability scores, facilitating the creation of profiles and comparisons among different segments of the population. Chapter 5 presents international comparisons. Chapter 6 examines the

relationship between financial capability, financial knowledge, and financial inclusion. Chapter 7 provides policy recommendations related to the key challenges to financial capability identified in the report.

DAILY MONEY MANAGEMENT

Over 90 percent of Mexican adults are responsible for some aspect of household financial management, from paying bills, to deciding how money will be spent, to financial planning. Of those surveyed who make household financial decisions, 46 percent are men and 54 percent are women. Women play a key role in household finances even though almost half of women in the sample reported that they do not contribute to the household budget. The 9 percent of adults who reported no participation in household financial decision making were primarily the young and the elderly.

For the majority of Mexicans, budgeting income and monitoring spending are imprecise and irregular processes. Although close to 70 percent of Mexicans report that they budget how income will be spent, only 41 percent do so regularly, and just one-third consistently adhere to a budget. The majority of Mexicans, over 80 percent, did not know exactly how much they had spent in the last week, and only about one-fifth knew precisely how much they had available for current spending. Higher-income households and urban dwellers are more likely to closely monitor expenses and develop exact plans for household finances.

MAKING ENDS MEET AND PLANNING AHEAD

More than 70 percent of the population has experienced financial strain, as indicated by regular or occasional shortfalls in income to cover basic expenses such as food and housing. Lower-income individuals, the elderly, and those with informal sector employment or only primary education are particularly susceptible to financial strain. The most common coping strategy is informal borrowing.

The majority of Mexicans have no provisions to cover major expenses, either planned (school fees, weddings) or unplanned (job loss, accident). Of those respondents who anticipated an upcoming major expense, only 45 percent believed they could fund it, and only 34 percent of respondents believed they could fund a major unplanned expense. Slightly less than one-third of those with dependent children in their household did not report any plans to support their future, with low-income families more predominantly represented.

Planning for old age and retirement is infrequent, with less than a third of the population under the age of 60 reporting any plans in place to cover old-age expense. Of those over age 60, nearly two-thirds report insufficient or no provisions for living costs, with many reliant on support from working-age family and friends.

Nearly two-thirds of the Mexicans surveyed expressed a greater orientation toward the present than the future. Sixteen percent of survey respondents did not report any financial plans, 27 percent reported their planning time frame to be one week or shorter, and 27 percent reported a planning time frame between one week and one month. At the same time, two-thirds of the survey respondents reported a strong achievement orientation, meaning they felt they worked hard to be their best and improve their future, suggesting a need to harness these aspirations to concrete financial planning actions.

MAKING DECISIONS ABOUT FINANCIAL SERVICES

Mexicans utilize a range of formal and informal instruments for savings and credit. Nearly half of those surveyed (49 percent) reported that they do not currently use any financial services, formal or informal, for saving and credit purposes, and 42 percent reported that they have not used any financial services in the past five years. Among the 51 percent who are currently using financial services, the most prevalent formal financial products were savings vehicles such as accounts at financial institutions and credit cards. For informal sources of credit and savings, *tandas* (the Mexican term for informal rotating savings and credit associations, or ROSCAs) and loans from family or friends were commonly mentioned.

The majority of those currently using financial services reported making very careful decisions about this usage—even as they chose high-cost informal services such as credit from pawn shops. When considering financial product options, 62 percent of respondents reported detailed knowledge of terms and conditions. Those respondents who own formal financial products, have formal sector jobs, or are in higher-income groups are more likely to have researched financial product decisions.

FINANCIAL KNOWLEDGE

The level of formal financial knowledge among those surveyed showed opportunities for improvement, particularly for interest rate calculations. Most Mexicans do not understand how interest is compounded and calculated, and are not familiar with the concept of portfolio diversification. However, the majority of survey respondents correctly answered questions related to basic numeracy and the definition of inflation, and were familiar with the concept of interest paid on a loan. The level of financial knowledge is positively correlated with education and income. Deficiencies in financial knowledge suggest challenges in choosing financial products. Half of the surveyed population stated they were never taught how to manage their money—for those who did receive guidance, the primary source was a parent.

COMPARING FINANCIAL CAPABILITY

Analysis of survey data yields seven behavioral and three attitudinal components of overall financial capability (budgeting, living within means, monitoring expenses, using information, not overspending, covering unexpected expenses, saving, attitude toward the future, not being impulsive, and achievement orientation). Financial knowledge is positively associated with increased financial capability for 7 out of the 10 components, and after controlling for sociodemographic factors, is highly correlated with the not overspending capability, followed by achievement orientation, saving, and living within means.

Five distinct clusters in the sampled population were identified using individual scores on the components of financial capability. These clusters are: unsophisticated money managers (22 percent), short-term money managers (33 percent), young impulsive spenders (12 percent), affluent but disorganized (9 percent), and careful money managers and planners (25 percent). The first two categories, comprising 55 percent of the population altogether, are made up of predominantly low-income and informal sector workers. The unsophisticated money managers do live within their means, but show limited planning, budgeting, and monitoring of finances, and make little use of savings and credit products. The short-term money managers, on the other hand, are strong at day-to-day financial management, and half of these are using financial services. However, most lack the skills and income to save adequately and make provisions for the future.

INTERNATIONAL PERSPECTIVES

Compared to survey respondents from other countries (Armenia, Colombia, Lebanon, Nigeria, Turkey, and Uruguay), Mexicans report a relatively shorter time horizon for financial planning and are less likely to plan how they would spend their money. They do, however, report being more inclined to save. Mexico's budgeting score, measuring the extent to which people plan use of income, was lower than six of the seven countries for which data were collected, the exception being Lebanon. Mexicans also expressed more of a short-term focus as measured by scores on questions of time preference. However, for the saving score, which reports perception of ability to save, Mexico was among the highest of the seven countries.

LINKAGES BETWEEN FINANCIAL CAPABILITY AND FINANCIAL INCLUSION

Both financial knowledge and financial capability are positively associated with a use of formal financial products such as bank accounts and credit cards. Use of formal financial products (bank accounts, credit cards, personal loans, mortgage, and insurance) is more common among men, urban residents, high-income earners, and formal sector employees. Informal sources of savings and credit (*tandas*, pawn shop loans, loans from family or friends) are largely utilized on an

ad hoc basis by lower-income segments of the population to save for emergencies and cover fluctuations in income, as well as to pay for food and other necessities. Results suggest that banking correspondents increase access to formal financial products primarily for individuals with high financial capability or high financial knowledge (as measured by a battery of financial literacy questions).

CONCLUSIONS AND POLICY RECOMMENDATIONS

Promoting financial capability and financial knowledge can accelerate financial inclusion and support responsible use of financial products by consumers at all income levels. The findings presented in this report show how financial capability and financial inclusion varies significantly with factors such as educational attainment, income, employment, and geographic location. Additionally, the analysis highlights the strengths (disposition to save) and weaknesses (planning behaviors) of overall financial capability for most Mexicans.

Increasing the overall financial capability of Mexicans will require a multi-pronged, multistakeholder strategy involving improved design of financial management tools and financial products, targeted financial education to enhance capability, and supportive regulation ensuring adequate consumer protection. Government agencies at national and local levels, banks and other financial institutions, education institutions, the media, and nongovernmental organizations can all play a role in improving financial capability. Diverse strategies—such as the development of user-friendly financial planning and monitoring tools, strengthening the infrastructure for expansion of appropriately designed financial products, supporting regulation ensuring adequate consumer protection, and implementing well-designed financial education interventions—all have the potential to enhance financial capability in Mexico. Table E.1 summarizes the report’s policy recommendations with respect to each of the challenges noted above.

TABLE E.1 RECOMMENDATIONS TO SUPPORT IMPROVED MONEY MANAGEMENT AND FINANCIAL PLANNING AND REDUCE VULNERABILITY IN MEXICO

MAIN CHALLENGE	POLICY GOAL	POLICY INSTRUMENT OR PROGRAM (AND SUGGESTED TIME FRAME)
Daily money management and planning ahead		
Limited budgeting and monitoring of expenses: just 41% budget regularly and 20% monitor expenses rigorously	Build consciousness of budgeting and monitoring behaviors by using technology to facilitate expense tracking and budgeting	<ul style="list-style-type: none"> Support the development of mobile phone- and Internet-based personal finance tools (such as Juntos Finanzas and the CON-DUSEF tool for family budgeting) and their distribution through financial and educational institutions (short term) Encourage financial institutions and other stakeholders to use text messages and/or social media to relay notices and information related to personal finance, such as managing account balances, loan repayment, etc. (short term)
Vulnerability to shocks: 34% believed they could cover a major unanticipated expense and 70% reported regular or occasional difficulties covering basic expenses	<ul style="list-style-type: none"> Encourage people to save for unanticipated major expenses Create mechanisms to encourage recipients of social assistance to save 	<ul style="list-style-type: none"> Encourage private, and require state-owned, financial institutions to pilot product design features supporting savings mobilization (medium term) Adjust contract between relevant government entities to enable recipients of social assistance to save a portion of their social benefits in their associated account and emphasize savings mobilization in financial literacy training to social benefit recipients (medium term)
Limited funds for retirement and other predictable life events: 28% of those under the age of 60 has plans to cover their expenses fully in old age	Encourage a culture of saving for retirement and other predictable life-cycle events	<ul style="list-style-type: none"> Support campaigns to raise awareness of the need to increase voluntary saving for retirement through entertainment and media channels (medium term) Public and private institutions providing financial education should develop programs centering around a specific teachable moment, such as retirement or a milestone life event such as the commencement of higher education or birth of a child (medium term)
Decisions about financial products and formal financial knowledge		
Persistent financial inclusion gaps: 49% do not currently use any financial product, formal or informal, for saving and credit purposes	Continue to develop financial infrastructure to expand the provision of regulated financial products	<ul style="list-style-type: none"> Expand the range of deposit services by supporting regulations that would allow financial cooperatives and regulated deposit-taking microfinance institutions to operate bank correspondents in rural and marginalized locations (short term) Widen the scope of transactions executed through banking agents by building the business case for low-risk deposit accounts and additional services such as microinsurance (medium term) Build a stronger mobile payments network by enhancing regulation to support interoperability among different mobile network operators and supporting potentially transformational business models (such as mobile point-of-sale schemes) (medium term) Scale up promising programs that support rural adoption of mobile payments, such as the Telecom pilot in Oaxaca (short term) State development banks could pilot a program to support linkages from informal to formal sources of savings and credit, such as <i>tandas</i> to banks (medium term) Mexican authorities could issue more specific rules to promote the marketing of basic bank accounts (medium term)

(continued)

TABLE E.1 RECOMMENDATIONS TO SUPPORT IMPROVED MONEY MANAGEMENT AND FINANCIAL PLANNING AND REDUCE VULNERABILITY IN MEXICO *(continued)*

MAIN CHALLENGE	POLICY GOAL	POLICY INSTRUMENT OR PROGRAM (AND SUGGESTED TIME FRAME)
<p>Limited level of formal financial knowledge hinders decision making on financial products: just 37% could calculate a simple interest rate</p>	<p>Support well-timed, targeted financial education interventions that equip all segments of the population to responsibly use formal financial services</p>	<ul style="list-style-type: none"> ▪ Mexican authorities could establish a policy framework for financial education that considers the inventory of existing programs and incorporates the mixed evidence on the impact of financial education (short term) ▪ Mexican authorities could consider incorporating financial education modules in public school curricula and experiential education, involving household members in assignments to optimize spillovers (medium term) ▪ Continue to collect and analyze data to strengthen the empirical basis for policies related to financial capability, e.g., through the National Survey on Financial Inclusion (medium term)
<p>Formal financial products, even bank correspondents, are primarily used by individuals with high financial capability or high financial knowledge</p>	<p>Support consumer protection interventions that help mitigate effects of limited formal financial knowledge</p>	<ul style="list-style-type: none"> ▪ Mexican authorities and other stakeholders could consider scaling up mass media interventions (e.g., <i>telenovelas</i>, radio) to disseminate key messages related to financial capability (short term) ▪ Mexican authorities could require regulated financial institutions to incorporate research on good practices for disclosure and pricing regimes for financial consumers; these measures could promote the use of formal financial products among less knowledgeable segments of the population (medium term) ▪ Develop market conduct regulations governing banking transactions occurring outside the traditional banking infrastructure (medium term)

Introduction

1.1 CONTEXT

In the last decade, the financial landscape in Mexico has been altered by a sharp increase in the availability of consumer financial products and services. To broaden outreach and stimulate competition, Mexican banking authorities have supported legal changes to permit specialized banks. This has facilitated the creation of banks backed by retailers such as Banco Azteca and Banco Walmart, which have a strong physical presence throughout the country. Legislation to provide an enabling framework for third parties, such as neighborhood stores or pharmacies, to deliver banking services (*corresponsales*, or correspondents) and to establish bank accounts managed via mobile phones was passed in 2009 and 2010, respectively; together, this legislation increases the accessibility and convenience of financial services beyond medium-size urban centers. As of October 2012, 60 percent of Mexico's 2,456 municipalities were served by a bank branch or bank correspondent, up from 36 percent in June 2009 (CNBV 2009). Credit card use has also expanded significantly. Consequently, Mexican consumers are confronted with an array of financial decisions involving credit, savings, investments, and insurance more complex than in previous decades.

As access to finance expands, the ability to make sound financial decisions and use financial products responsibly has become more crucial. Good financial decision-making skills help consumers achieve higher levels of individual and family welfare—particularly in households that are vulnerable to economic shocks, such as loss of income. When resources become strained, the effects of suboptimal financial decisions can be more severe. In the aftermath of the global financial crisis, financial literacy and consumer protection issues have gained new prominence both in Mexico and worldwide.

Promoting responsible financial inclusion and education has been a high priority of the Mexican government. In fact, in 2006, financial education for the Mexican population was specifically named a priority of the government. In 2008, a unit dedicated to supporting financial inclusion was set up in the Mexican National Banking and

Securities Commission (CNBV). In 2009 and 2010, modifications of the Law for Transparency and Regulation of Financial Services expanded the regulatory and supervisory capacity of the National Commission for the Protection and Defense of Users of Financial Services (CONDUSEF) with the aim of helping eliminate predatory lending practices.

Two coordination bodies were established by the government in 2011 to enhance financial education and financial inclusion in Mexico. The Committee on Financial Education (CEF), chaired by the Ministry of Finance, was created as a coordinating and consulting board for the public sector and other stakeholders involved in financial education development (including CONDUSEF, state-owned banks, and public finance institutions). The committee is charged with designing and implement the National Strategy on Financial Education. It is chaired by the Ministry of Finance and Public Credit. The National Council for Financial Inclusion (CONAIF) was created as a board for consultation, advice, and coordination between domestic financial regulatory bodies and to oversee the National Policy on Financial Inclusion.

Internationally, Mexico has taken a leadership role in promoting financial inclusion. It was a founding member of the Alliance for Financial Inclusion, and the CNBV president sits on that organization's board. Financial inclusion was also a key priority established by Mexico in its capacity as chair of the G20 in 2012. In this context, Mexico has worked with the Global Partnership for Financial Inclusion and the International Network for Financial Education (INFE). The priority attached to these issues by the country led to the commissioning of the present financial capability study by the World Bank—the first of its kind in Mexico. Accelerating responsible financial inclusion of the poor is an important part of the World Bank's goal of promoting shared prosperity in Mexico.

An increasing number of institutions are promoting financial education programs among different audiences. A 2009 mapping of financial education initiatives (Heimann and Sainz 2009) found 53 national programs targeting diverse segments including students, teachers, housewives, businesspeople, and migrant workers. These initiatives were being provided by a variety of financial institutions, public organizations, and nongovernmental organizations (NGOs), but in many cases without a clear market diagnostic.

1.2 WHY THIS REPORT?

The CNBV and CONDUSEF requested support from the World Bank to develop and execute a nationally representative survey on financial capability. The survey instrument used was developed and implemented with the support of the Russia Trust Fund for Financial Literacy and Education as part of a global program (box 1.1). An

BOX 1.1 FINANCIAL CAPABILITIES AND KNOWLEDGE SURVEY DATA FEATURED IN THIS REPORT

The Mexican Financial Capability Survey implemented by CONDUSEF, the CNBV, and the World Bank collected a range of information on financial behavior and financial knowledge. The data collected include sociodemographic characteristics, daily money management practices, planning for future events, use of and decisions related to financial products/services, and financial knowledge. The survey used both objective and attitudinal questions.

The 2012 Mexican survey covered a nationally representative sample of 2,022 adults. Adults over age 18 who reported making financial decisions for their household and/or themselves were eligible for the survey. Respondents were randomly chosen from each eligible and selected household through the use of a Kish grid. Individuals selected for the survey were interviewed face to face in their homes by staff of the survey firm Ipsos Bimsa during July and August 2012. Sampling weights were constructed and applied in the analysis in this report.

A multistage probabilistic survey design was applied, which means that each eligible individual had an equal chance of being selected. The National Federal Election Register was utilized as a sampling frame. The sample population was stratified by urban and rural areas (with rural defined as municipalities with fewer than 15,000 inhabitants); *localidades*, small census enumeration units, were used as the primary sampling units. The distribution of the sample in both rural and urban areas was made according to the proportion of the weight of the *localidades* relative to the total population, with adjustments to provide greater representation to urban areas, which contain a greater proportion of the population. The estimated margin of error for the sample is ± 3 percent for a level of confidence of 95 percent.

Comparable data are available for a range of low- and middle-income countries. The survey questions were developed by the Russia Trust Fund for Financial Literacy and Education, which facilitated the collection of similar data using comparable methodologies in six other countries: Armenia, Colombia, Lebanon, Nigeria, Turkey, and Uruguay. The Mexican questionnaire was customized to include additional survey questions on financial knowledge from the Organisation for Economic Co-operation and Development/International Network on Financial Education (OECD/INFE) study, as well as questions on preferences and the use of government programs that were not part of the common core on financial capability.

This 2012 survey collected data from adults from all regions of Mexico with a range of sociodemographic characteristics. Of those surveyed, slightly more than half (53 percent) were female. The full age distribution of the adult population over age 18 was covered. The summary statistics for selected sociodemographic factors are presented in table A.1 in appendix A.

initial phase of qualitative research was conducted in the six geographic regions of Mexico in various urban and rural settings. The Mexican research included 13 focus groups in October 2010 and 50 in-depth interviews conducted from April to June 2011. This Mexican qualitative research, and the research conducted in a range of low- and middle-income countries worldwide, was used to develop a comprehensive questionnaire on financial capabilities, which was piloted in the state of Puebla in November 2011 and administered to 2,022 Mexican adults nationwide in June and July 2012 (figure 1.1). Although Mexico has a wealth of available financial inclusion data, this report presents the first nationally representative study to detail the financial behavior, attitudes, and knowledge that comprise financial capability. Comple-

FIGURE 1.1 COVERAGE OF THE MEXICO FINANCIAL CAPABILITY SURVEY



Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: Surveyed states are in orange; non-surveyed states are in gray.

mentary national studies include the 2008 Survey on Financial Culture conducted by Banamex and the National Autonomous University of Mexico (Banamex-UNAM 2008); the 2011 National Firms’ Finance and Competitiveness Survey (ENAFIN) conducted by Banxico, the Inter-American Development Bank, and the CNBV; and the 2012 National Survey on Financial Inclusion (ENIF) conducted by CNBV and the National Statistics Institute for Mexico (INEGI). In addition, the Financial Diaries project, which provides a qualitative record of the financial lives of poor people, began in 2012. Global annually updated data sets, such as the World Bank’s Findex, the International Monetary Fund’s Financial Access database, and the World Bank’s Enterprise Survey data, provide complementary information on financial inclusion.

This report has four objectives:

- To provide empirical evidence to understand the financial behavior, attitudes, and knowledge of the Mexican population

- To support the design of public policies to enhance both the knowledge about and the quality of financial services
- To highlight vulnerabilities and gaps in particular segments of the population with the goal of improving and focusing public policies and interventions where they are most needed
- To provide a basis for international comparison.

1.3 WHAT IS FINANCIAL CAPABILITY?

The term “financial capability” refers to a broader concept than financial literacy alone. Although the specific definition varies from study to study, financial literacy is often equated with the knowledge and skills to make key financial decisions. Studies tend to measure financial literacy based on questions that test knowledge of financial concepts—such as the time value of money (inflation), interest rates, compounding, and risk diversification—that are needed to make key financial choices (Huston 2010; Lusardi and Mitchell 2011; Xu and Zia 2012).

Financial capability encompasses an individual’s behavior and attitudes related to his or her finances. Approaches differ, but financial capability recognizes that knowledge alone is necessary but not sufficient to make sound financial decisions and to access and use financial products/services responsibly. The analysis of financial capability that was pioneered in the United Kingdom centered on four areas: managing money, planning ahead, choosing products, and staying informed (Atkinson et al. 2006). A U.S. study (Lusardi 2011) measured Americans’ financial capability in four areas: making ends meet, planning ahead, managing financial products, and financial literacy and decision making. This report describes Mexico’s financial capability related to daily money management, planning ahead, and choosing financial products/services; it also explores levels of financial knowledge and the complex relationship between financial capability, knowledge, and inclusion.

Elements of financial capability—particularly financial knowledge—have been linked to a range of behavioral outcomes. Much literature to date has analyzed behaviors related to financial knowledge. Studies on the United States (Lusardi and Mitchell 2009), Italy (Fornero and Monticone 2011), and Japan (Sekita 2011) find that those who are less financially literate are less likely to plan for retirement. Those with more limited financial knowledge are also less likely to choose mutual funds with lower fees (Hastings and Tejada-Ashton 2008). There are also linkages between financial literacy and debt outcomes. Lusardi and Tufano (2009) find that individuals with lower levels of debt literacy tend to transact in a high-cost manner, incurring a higher debt burden and borrowing at a greater cost. The less knowledgeable also

report excessive debt loads or that they are unable to judge their debt position. Although there is less evidence to date, attitudes and preferences are also considered to be important elements of financial capability. Mandell and Klein (2007) find evidence supporting motivation as a factor in increasing the financial literacy of respondents.

The findings in this report will facilitate discussion about how best to increase financial capability and boost the ability of people to manage their finances in Mexico. Educational interventions (through schools, financial institutions, and the mass media) are the most commonly mentioned strategies, but financial capability facilitates a more comprehensive approach that considers behaviors and attitudes to help people make better choices in the context of the services and products available to them.

This report describes a baseline measure of the financial capability of the Mexican adult population and highlights key results from the first national survey of 2,022 Mexicans aged 18 and over. Chapter 2 describes key findings related to daily money management and financial planning behaviors and attitudes. Chapter 3 examines decisions related to the use of financial products and level of financial knowledge. Chapter 4 summarizes key behaviors and attitudes into financial capability scores, facilitating the creation of profiles and comparisons among different segments of the population. Chapter 5 presents international comparisons. Chapter 6 examines the relationship between financial capability, financial knowledge, and financial inclusion. Chapter 7 provides policy recommendations related to the key challenges to financial capability identified in the report.

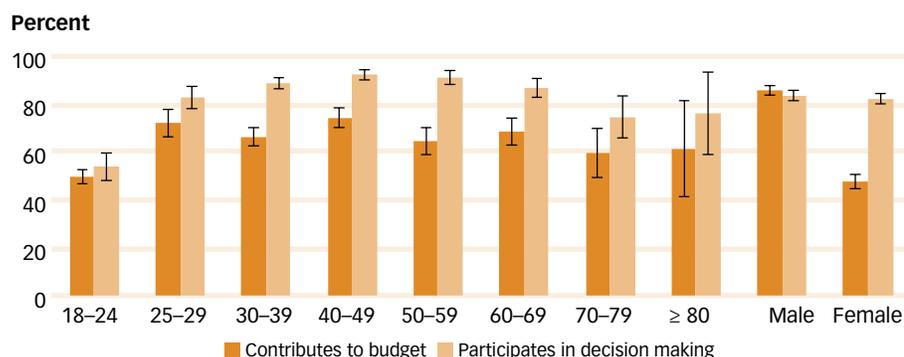
Daily money management and financial planning

This chapter explores the behaviors and attitudes related to participation in financial decision making, budgeting and monitoring the use of money, balancing income and expenses to make ends meet, saving, and long-term financial planning. The survey results show that 91 percent of Mexican adults actively participate in household expenditure decisions. The majority of household financial managers are women (54 percent), even though women contribute to household incomes less than do men. For the majority of households, daily money management and planning processes are imprecise. Less than half (41 percent) of all households consistently budget, and just 20 percent monitor expenses rigorously. Many Mexican households are financially strained, with 70 percent reporting regular or occasional shortages of funds to cover basic expenses such as food and housing. Most Mexicans have made no provisions to cover major expenses, either planned (such as school fees or weddings) or unplanned (such as job loss or an accident). Nearly two-thirds of those surveyed cite an orientation toward the present rather than the future. Planning for old age is infrequent, with less than a third of the population under the age of 60 reporting any plans in place to cover old age expenses.

2.1 CHARACTERISTICS OF FINANCIAL DECISION MAKERS

Of the adults surveyed, 91 percent actively participated in a range of household expenditure decisions, while 6 percent were responsible only for their personal expenses. The remaining 3 percent were excluded from the survey, because they reported not making financial decisions for themselves or the household; this resulted in a total sample of 2,022. Common household expenditure decisions included planning how money was spent, paying household bills (e.g., rent), and/or making financial decisions for the household.

Females play a key role in household financial matters even when they are not the heads of household. Nearly half of the women in the sample reported that they did not contribute financially to the household, as opposed to just 12 percent of men (figure 2.1). However, a higher percentage of women surveyed participated in household financial

FIGURE 2.1 CONTRIBUTIONS TO THE HOUSEHOLD BUDGET AND PARTICIPATION IN FINANCIAL DECISION MAKING, BY AGE AND GENDER


Source: World Bank and Government of Mexico Financial Capability Survey data.

decisions than men (table 2.1). And a majority of women responded that they ensured that all regular household expenses are paid. Slightly more than half the women making financial decisions identified themselves as partners or wives, while 27 percent were heads of household; the remainder were other types of family relations.

The few adults who did not report making any financial decisions for the household were primarily the young (age 18–24) and the old (age 60 and above). As shown in table 2.1, young adults had the highest share (17 percent) of those who reported responsibility only for personal expenses. Those who reported not making any finan-

TABLE 2.1 FINANCIAL DECISION-MAKING ROLES

CHARACTERISTIC	% MAKING HOUSEHOLD FINANCIAL DECISIONS	% MAKING PERSONAL FINANCIAL DECISIONS	% NOT MAKING ANY FINANCIAL DECISIONS
Male	88	6	6
Female	94	5	1
Age			
18–24	82	17	1
25–46	94	4	2
47–59	91	2	7
≥ 60	90	3	6
Highest education level			
Primary or below	94	3	3
Secondary	90	6	3
Tertiary	83	11	6

Source: World Bank and Government of Mexico Financial Capability Survey data.

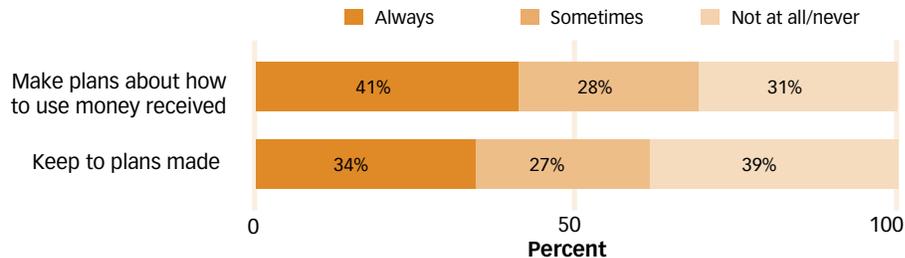
Note: $n = 2,090$.

cial decisions—particularly among the young and the old—tended to be economically dependent on the household head and reported that they did not contribute to the household budget.

2.2 BUDGETING AND MONITORING EXPENSES

Although about 70 percent of adults said they made plans about how to use the money they received, adherence to these plans was more limited. Adults who planned were split between those who always planned and those who only sometimes planned (figure 2.2). While 61 percent of those surveyed reported keeping to their expenditure plans (approximately one-third all the time, and more than one-quarter some of the time); 9 percent did not keep to their plans at all, and 31 percent did not have any plan at all. Just 21 percent of those surveyed characterized their plans as exact as opposed to rough (figure 2.3). Being a woman, an urban dweller, or having a higher income was associated with a greater likelihood of making exact plans. The 31 percent of the surveyed population that reported not planning at all were characterized by lower education levels, informal employment, and living in a rural area.

FIGURE 2.2 MAKING AND ADHERING TO PLANS ABOUT BUDGETING

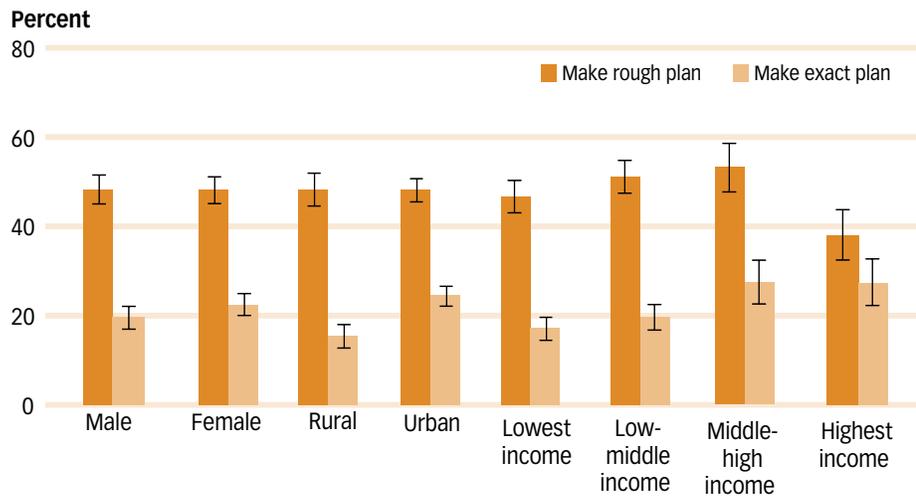


Source: World Bank and Government of Mexico Financial Capability Survey data.

Less than a quarter of survey respondents knew exactly how much they had spent in the last week, suggesting a low level of precision in daily money management. Although 63 percent of those surveyed said they knew how much their household had available for daily expenses, most characterized this knowledge as rough rather than exact (figure 2.4). And while 52 percent knew how much they had spent personally in the last week, just 18 percent knew exactly how much they had spent personally in the last week.¹ Being a formal sector employee or a higher-income individual

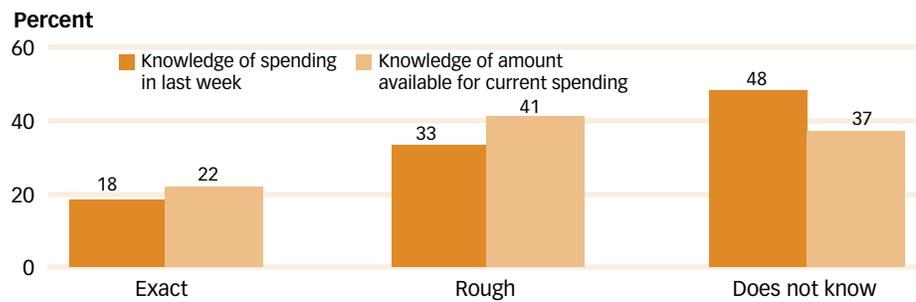
¹ These results are similar to findings from the first survey on financial culture (Banamex-UNAM 2008), in which 18 percent of those surveyed reported having some register of their income, expenses, and debts.

FIGURE 2.3 PLANNING BEHAVIOR BY GENDER, LOCATION, AND INCOME



Source: World Bank and Government of Mexico Financial Capability Survey data.

FIGURE 2.4 PRECISION OF MONEY MANAGEMENT



Source: World Bank and Government of Mexico Financial Capability Survey data.

is correlated with increased likelihood of monitoring spending. In terms of attitudes, perceiving oneself as disciplined in money matters was correlated with a higher degree of precision in managing money.

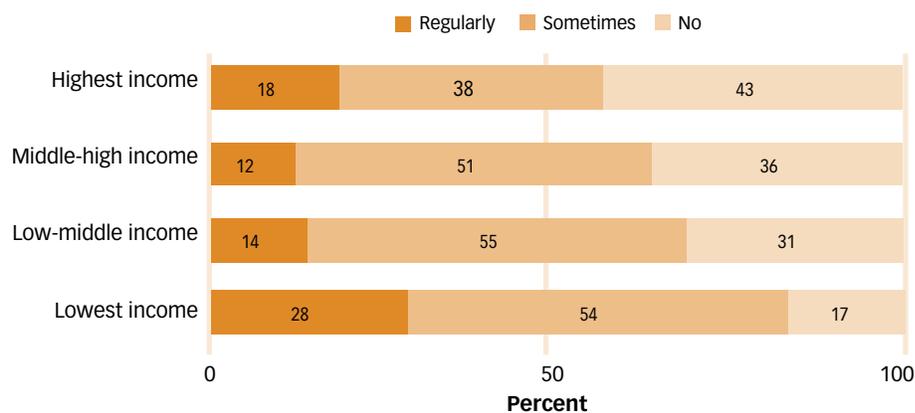
2.3 MAKING ENDS MEET: BALANCING INCOME AND EXPENSES

More than 70 percent of the surveyed population experienced regular or occasional financial strain, such as being short of money to cover basic necessities. Only 29 percent of those surveyed reported having money left over after paying for basic expenses such as food and other necessities. Twenty percent of the surveyed sample reported being regularly short of money to cover basic expenses, and 51 percent

reported occasional shortfalls. For those with funds remaining after paying their basic expenses, saving to provide a cushion against unexpected shocks was by far the most common use.

Low-income individuals, the elderly, informal sector employees, and those whose schooling ended with primary education or less were particularly vulnerable to financial strain. Low-income levels and seasonal income fluctuations were two of the most commonly cited reasons for shortfalls in the ability to meet basic expenses. Not surprisingly, income levels were highly correlated with limitations in being able to make ends meet (figure 2.5). Having no knowledge or limited knowledge of how much money was spent in the last week was correlated with being short of money to cover basic necessities.

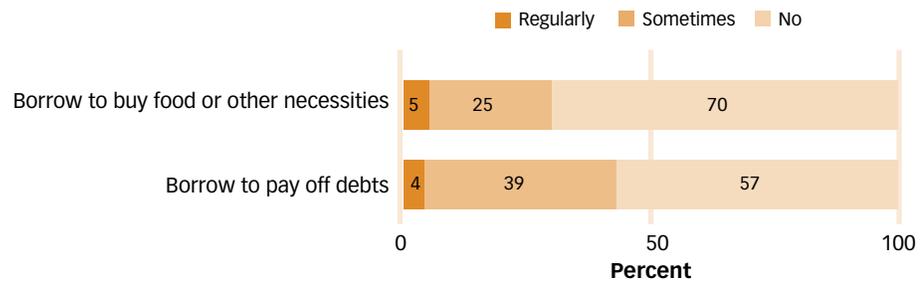
FIGURE 2.5 SHORTFALLS IN MONEY FOR NECESSITIES



Source: World Bank and Government of Mexico Financial Capability Survey data.

Informal borrowing was a common coping strategy to ease financial strain. Nearly half of those who ran short of money cited borrowing from family or friends as their most common solution, and 29 percent of respondents reported being in debt to a friend or family member. Thirty percent of those surveyed reported regularly or occasionally borrowing money to buy food or other necessities, and 43 percent reported borrowing to pay off debts (figure 2.6). Having less than a high school education and a lower income was associated with a greater likelihood of borrowing to cover debts, with all other variables held constant. Use of financial services is discussed in more detail in chapters 3 and 6.

FIGURE 2.6 COPING STRATEGIES TO COVER SHORTFALLS



Source: World Bank and Government of Mexico Financial Capability Survey data.

2.4 PLANNING FOR MAJOR EXPENSES: EXPECTED AND UNEXPECTED

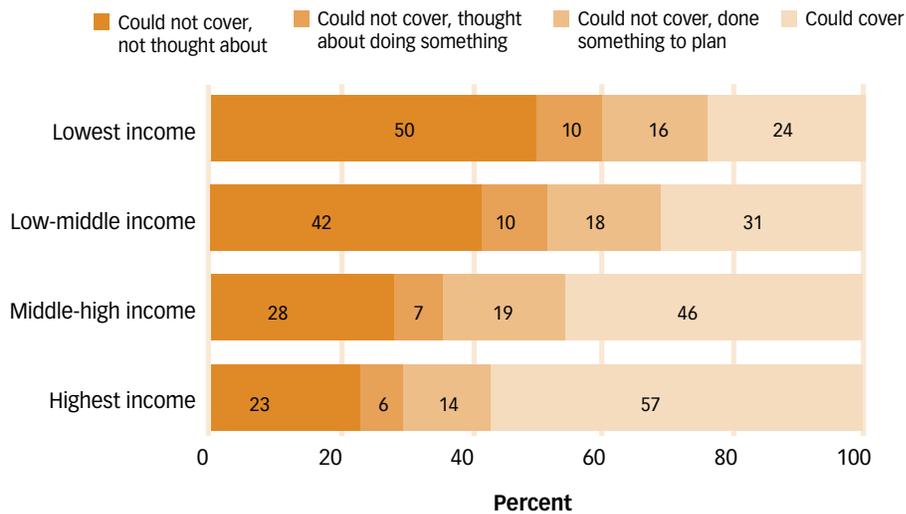
Less than half (45 percent) of those who had a major upcoming expense planned believed they could cover it. Twenty-one percent of those surveyed projected a major upcoming expense in the next year equivalent to one month's income, such as a wedding or other occasion, or school fees. Of those who felt they could not cover the planned expense, less than half had made some plans toward being able to meet the obligation.

Overall, just one-third of respondents believed they could cover a major unplanned expense, compared to about one-quarter of low-income individuals. Only 34 percent of those surveyed had done anything to prepare for an unplanned expense equivalent to one month's income. Perceived ability to cope with a major unexpected expense increases greatly with income, as shown in figure 2.7. Those employed in the formal sector also professed a greater ability to cope with unexpected shocks than those in the informal sector. This vulnerability to shocks is a source of stress. Eighty-two percent of those surveyed were worried about this situation, including some of those who felt they had the means to cover this unexpected expense.

2.5 PLANS FOR CHILDREN'S FUTURE AND OLD AGE

Nearly half of those with one or more dependent children had made some plans to provide for their education. Among the sample, 55 percent had dependent children in their household, and the number of children in the household was not correlated with these plans. Plans to save for children's inheritance were less common, with only 16 percent of respondents with dependent children citing such plans. Slightly less than one-third of those with dependent children in their household did not report any plans to support their future; this proportion was larger among low-income families.

FIGURE 2.7 ABILITY TO COVER MAJOR UNEXPECTED EXPENSES, BY INCOME GROUP

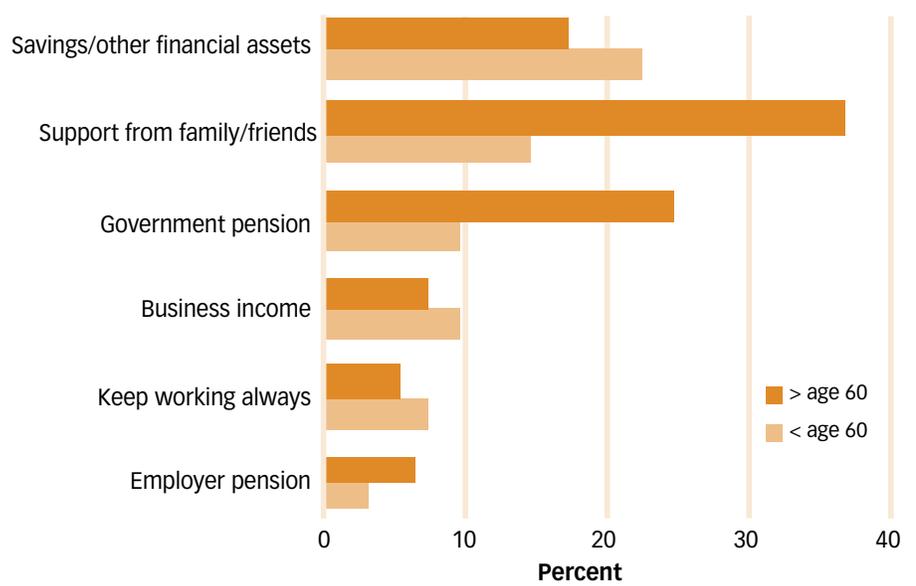


Source: World Bank and Government of Mexico Financial Capability Survey data.

Less than a third of the population under the age of 60 made plans to cover their expenses fully in old age. The most common strategies envisioned by this age group to cover these expenses were to accumulate savings or other financial assets, or seek financial support from the family; just 13 percent reported contributing to a pension (either voluntary or compulsory) through an employer or the government (figure 2.8). A minority of respondents under the age of 60 (28 percent) believed that these strategies would fully cover their expenses in old age, and another 21 percent cited partial coverage; the majority (51 percent) reported having no strategies for coverage at all. A lack of strategies was highly correlated with lower income. And a higher percentage of those who were employed informally had no provisions for old age, as they did not benefit from government- or employer-provided support (figure 2.9). A higher percentage of women than men had no provisions for old age, possibly reflecting their more limited participation in the formal labor force (roughly a 5 percent gap, according to ILO 2011 data). The vast majority of those surveyed (87 percent) cited the ability to fund old age expenses as a source of concern. In a global overview, Lusardi and Mitchell (2011) find that retirement planning is a good proxy for retirement wealth, because those who have calculated how much they need to save reach retirement age with three times the wealth of those who did no such calculations.

Nearly two-thirds of those over age 60 reported having insufficient or no provisions for old age expenses. Seeking support from family and friends was the most commonly cited strategy, used by one-third of the over 60 population; govern-

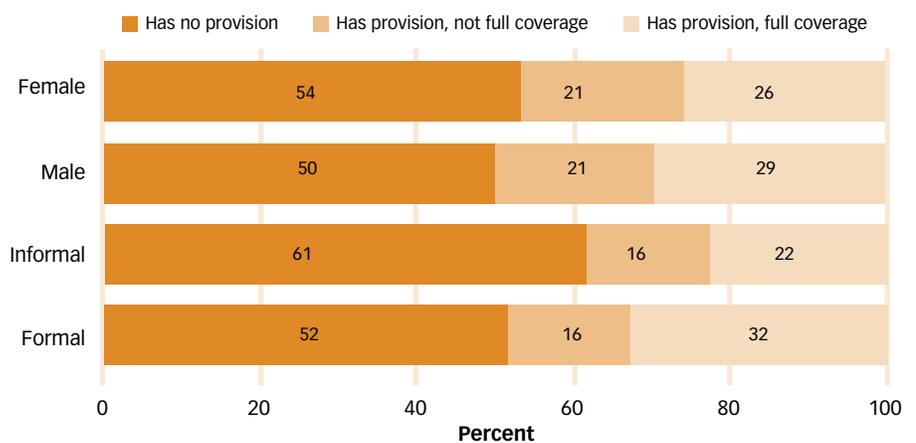
FIGURE 2.8 STRATEGIES EMPLOYED TO COVER OLD AGE EXPENSES



Source: World Bank and Government of Mexico Financial Capability Survey data.

ment pensions played a role for almost a quarter of respondents in this age group, followed by savings and other assets for more than 15 percent (figure 2.8). Other surveys (e.g., CNBV/INEGI 2012) have indicated that, although by law all formal sector workers must have a pension or a savings for retirement account, a portion of the population did not know that they had individual savings for retirement accounts.

FIGURE 2.9 COVERAGE OF OLD AGE EXPENSES, BY GENDER AND EMPLOYMENT (<60 YEARS OF AGE)

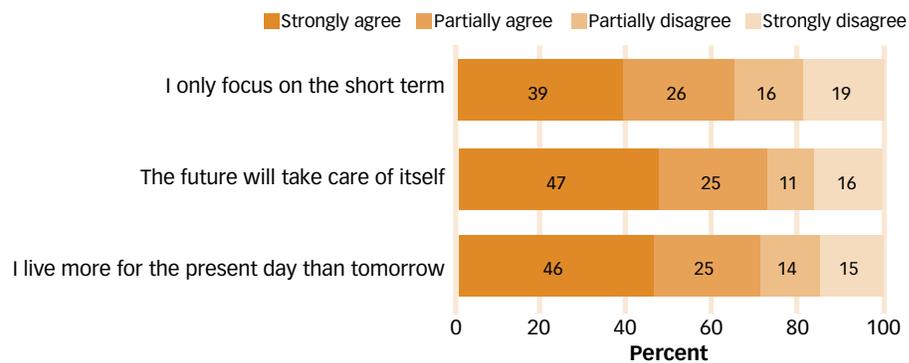


Source: World Bank and Government of Mexico Financial Capability Survey data.

2.6 ATTITUDES

Nearly two-thirds of the population indicated an orientation toward the present rather than the future with regard to saving and planning. Impatience has been shown to play a role in financial behavior, especially on behavior related to savings and pensions (Hastings and Mitchell 2010). More than two-thirds of the surveyed population agreed with statements expressing a focus on the present day (figure 2.10). Lower levels of education and income are correlated with this stated orientation to the present, while being middle-aged (as opposed to young or old) is correlated with greater orientation toward the future (see chapter 4). This orientation toward the present was also correlated with statements in which the respondents identified themselves as impulsive.

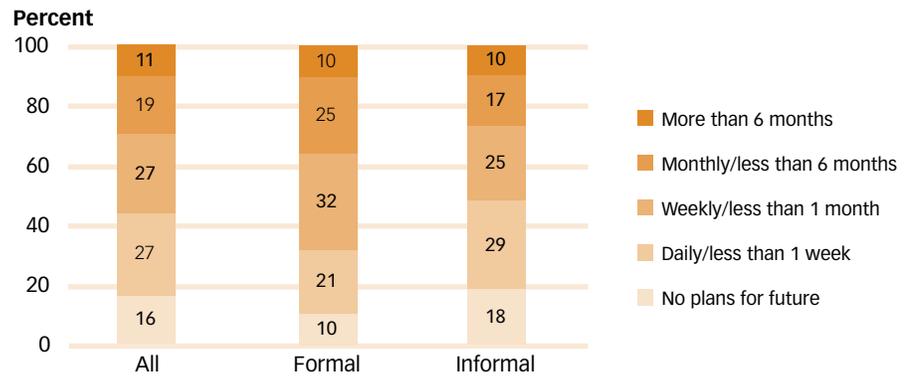
FIGURE 2.10 ATTITUDE TOWARD THE FUTURE



Source: World Bank and Government of Mexico Financial Capability Survey data.

More than half of those surveyed cited a financial planning time frame of less than a month. Equal percentages—27 percent of respondents—reported their financial planning time horizon as either less than a week, or as between one week and one month; 16 percent reported no financial plans for the future at all (figure 2.11). Those who were employed in the formal sector reported longer time horizons, as did those in higher-income groups. Stable incomes can facilitate access to products and services—which in turn can facilitate planning, such as automatic deductions for savings or pension accounts.

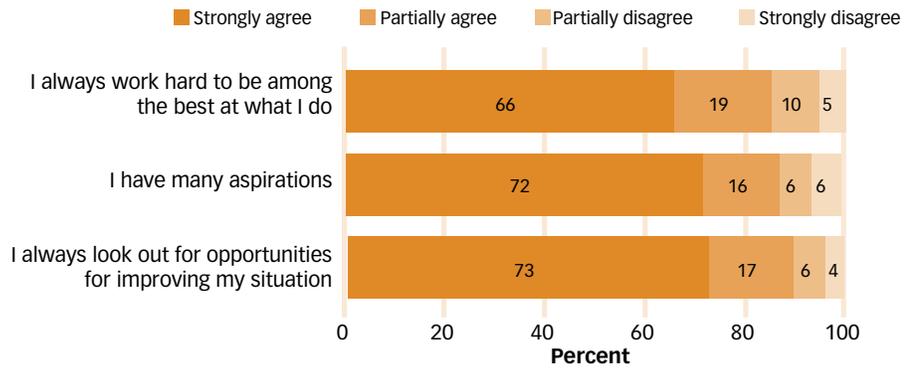
FIGURE 2.11 FINANCIAL PLANNING HORIZONS



Source: World Bank and Government of Mexico Financial Capability Survey data.

Over two-thirds of the survey respondents reported a strong achievement orientation. Most of the Mexicans surveyed strongly agreed with questions affirming that they work hard to be the best, have many aspirations, and look for opportunities to improve their situation (figure 2.12). Higher income is correlated with a greater propensity to agree with these three statements, after controlling for various socio-economic and location-related factors.

FIGURE 2.12 ACHIEVEMENT ORIENTATION



Source: World Bank and Government of Mexico Financial Capability Survey data.

Decisions about financial services and financial knowledge

How people choose financial products that are appropriate for their needs and how they make choices between similar financial offerings is an important part of financial capability. Formal knowledge of key financial concepts and the ability to apply numeracy skills in financial situations are also important in the responsible use of financial services. This chapter provides a brief overview of the usage of financial products in Mexico and explores how decisions about financial products are made and the levels of knowledge that are utilized in decision making.

Data show that 49 percent of the survey population does not currently use any financial service, whether formal or informal.¹ Among those who do, informal loans from family or friends and accounts at financial institutions are the most commonly used financial service. Informal sources of credit and savings—including *tandas* (informal rotating savings and credit associations), pawn shops, and loans from family or friends—are largely used on an ad hoc basis by lower-income segments of the population to save for emergencies and cover fluctuations in income, as well as to pay for food and other necessities. More than 60 percent of those using financial services reported verifying terms and conditions and comparing various products before making financial decisions. However, just 37 percent of the survey population was able to do a simple interest rate calculation necessary to compare financial services. Note that, as discussed in box 3.1, financial surveys undertaken in Mexico use differing definitions of financial services.

3.1 USAGE OF FINANCIAL SERVICES

Among the range of credit and savings services utilized by the Mexican population, informal loans and accounts at financial institutions were the most prevalent (figure 3.1). Less than a quarter (22 percent) of those surveyed reported currently receiving credit informally from family or friends. Accounts at financial institutions

¹ The Financial Capability Survey defines financial services as including both formal financial products (e.g., accounts at financial institutions, credit cards) and informal sources of credit and savings (e.g., loans from family or friends, pawn shops, and *tandas*).

BOX 3.1 COMPARING DIFFERENT DATA SOURCES ON FINANCIAL INCLUSION IN MEXICO

Mexico has a wealth of data on financial inclusion from surveys with different scopes, indicator definitions, and coverage. This box compares the financial capability data used in this report to two additional data sets that provide complementary information on the development of financial inclusion in Mexico: (1) Mexico's ENIF, which extensively covers the usage of financial products and barriers to such usage, the intended use of remittances, access to financial channels, and elements of financial capability, financial education, and consumer protection; and (2) the Global Financial Inclusion database (Global Findex), a survey conducted in 148 countries around the world, including Mexico, that measures how adults save, borrow, make payments, and manage risk.

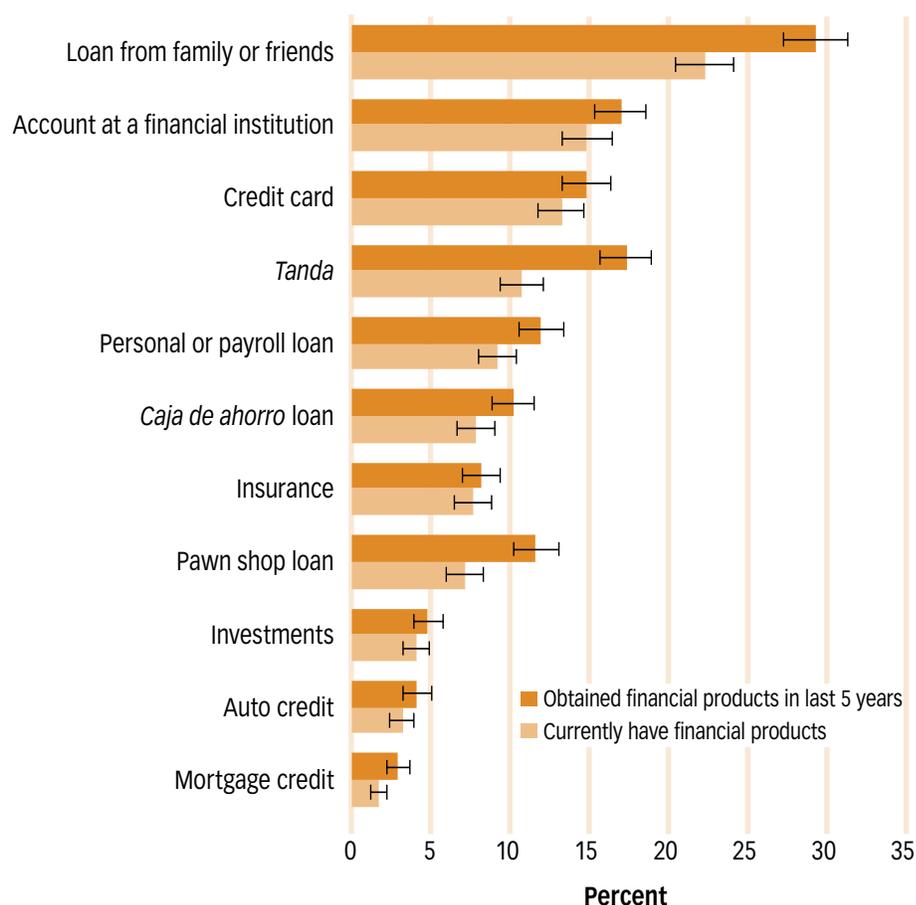
The three surveys cover some similar indicators, providing an opportunity to compare data gathered using different methodologies and question formulations. As shown in the table below, data on some indicators are of similar magnitudes, such as insurance usage from the Financial Capability Survey and Findex, credit card usage across the three surveys, and loan usage (in the aggregate) for Findex and ENIF. Data for other indicators, such as use of formal savings accounts, differ by more than 10 percent.

Differences in the wording of survey questions, methodologies, targeted populations, and definitions of financial products are a likely source of disparity across financial inclusion indicators. For example, respondents to the Financial Capability Survey were not explicitly asked about use of accounts to receive payroll as they were in ENIF, so fewer respondents in the former may have considered these in their response. As another example, ENIF defines financial services in accordance with Mexican law; as such, ENIF does not regard *tandas* and pawn shops as financial services, unlike Findex and the Financial Capability Survey. Despite these differences, triangulating the three data sets enables policy makers to gain a more nuanced understanding of, and wealth of information on, financial inclusion.

ITEM	FINANCIAL CAPABILITY SURVEY (2012)	FINDEX (2011)	ENIF (2012)
Indicators	<ul style="list-style-type: none"> ▪ Insurance: 7.6% ▪ Account at a formal financial institution (e.g., a bank): 14.7% ▪ Credit card: 13% ▪ Personal/payroll loan: 9.1% ▪ Auto credit: 3.2% ▪ Mortgage credit: 1.7% 	<ul style="list-style-type: none"> ▪ Personally paid for health insurance: 8.5% ▪ Account at a formal financial institution: 27.4% ▪ Credit card: 13% ▪ Loan from a financial institution in the past year: 7.6% 	<ul style="list-style-type: none"> ▪ Users of private insurance: 22% ▪ Adults with at least one formal savings product: 36% ▪ Bank credit card: 9% ▪ Personal loan: 3.5% ▪ Payroll loan: 2.6% ▪ Car loan: 1% ▪ Mortgage loan: 2%
Managing entity	World Bank, CNBV, CONDUSEF	World Bank	CNBV, INEGI
Number of respondents	2,022	1,000	6,113
Age	18+	15+	18–70
Number of states covered	23 + Distrito Federal	28 + Distrito Federal	31 + Distrito Federal
Sample	Financial decision makers	Individuals	Individuals

Note: Percentages refer to the total number of respondents for each survey.

FIGURE 3.1 PERCENTAGE OF THE MEXICAN POPULATION USING TYPES OF FINANCIAL PRODUCTS CURRENTLY OR IN THE PAST



Source: World Bank and Government of Mexico Financial Capability Survey data.

or participation in *tandas* were the primary savings products used by the Mexican population. Fifteen percent of the respondents currently had an account at a financial institution, and 11 percent of the respondents participated in *tandas*.

Nearly half of those surveyed (49 percent) did not report any current financial product usage. Only around 10 percent of the population cited currently using credit cards (13 percent), personal or payroll loans (9 percent), insurance products (8 percent), or loans from *cajas de ahorro* (savings entities) or pawn shops (8 and 7 percent, respectively); even smaller percentages (2–4 percent) used mortgage or car loans or financial investments.

Because people use financial services as needed, it is to be expected that reported current use would be less than usage over a five-year span. But the use of certain financial sources—particularly informal services such as loans through family or

friends, *tandas*, and pawn shops—is even more sporadic. Sixty-two percent of those who had used *tandas* and 63 percent of those who had used pawn shops in the past five years reported currently using these services. In contrast, the ratios of current to past use are higher for formal financial products such as bank accounts (88 percent) and credit cards (77 percent).

Use of formal financial products (bank accounts, credit cards, personal loans, mortgage, and insurance) was more prevalent among men, urban residents, high-income earners, and formal sector employees. Women, rural residents, and low-income earners more commonly used loans from *cajas de ahorro* and informal sources of credit and savings such as *tandas* and loans from family or friends. A higher percentage of men than women used all financial services except *tandas*. The highest-income group (with monthly income greater than Mex\$5,000) used significantly more formal financial products (particularly credit cards) than the other income groups, while groups with lower income were more likely to borrow from family or friends. Respondents who reported no usage of any financial products tended to be low income and employed in the informal sector. Informal sector workers were more frequent users of informal services such as *tandas* and pawn shops, and were more likely to borrow from family or friends.

Unforeseen shocks were the most commonly cited motivation for saving, irrespective of the type of savings mechanism. At least half of the savers with bank accounts, *tanda* participants, and those who saved without the assistance of a financial intermediary reported saving for unforeseen events (table 3.1). Less commonly cited motivations for saving were to cover fluctuations in income, food and other neces-

TABLE 3.1 REASONS FOR SAVING BY RESPONDENTS WHO SAVE (%)

REASON	RESPONDENTS USING/PARTICIPATING IN		
	BANK	TANDA	NO FINANCIAL INTERMEDIARY
Unforeseen events, emergencies, medical fees	64.2	49.0	54.3
Covering fluctuations in income	15.8	21.7	22.8
Food and other necessary items	13.5	17.9	19.0
A known major expenditure	8.7	12.5	10.0
A planned future purchase	9.5	5.0	3.0
No specific purpose in mind	12.3	6.4	5.0
Investment in business or assets	6.2	6.2	5.1

Source: World Bank and Government of Mexico Financial Capability Survey data.

sities, and known or planned major expenditure. These motivations were cited by higher percentages of savers participating in *tandas* and those saving without financial intermediaries than those using bank accounts.

Those who received social security through government or formal sector employment used savings products far more than those who received some form of government social assistance (table 3.2). Just over half of those receiving funds from the Mexican Social Security Institute (IMSS, the social security program for private sector employees and their families) and 81 percent of those receiving funds from the Institute for Social Security and Services for State Workers (ISSSTE, the social security program that covers federal government workers and their families) saved in banks. In contrast, less than 20 percent of those receiving social assistance benefits or those affiliated with Seguro Popular (a Ministry of Health program providing health services to people working in the informal economy) had a savings account at a formal financial institution; even their use of informal savings products such as *tandas* is lower than for IMSS or ISSSTE recipients. Conversely, IMSS and ISSSTE recipients used formal sector credit products at much higher rates than did social assistance and Seguro Popular program participants.

TABLE 3.2 USE OF SOCIAL PROGRAMS AND FINANCIAL PRODUCTS/SERVICES BY SURVEY RESPONDENTS (%)

SOCIAL PROGRAM	% OF SURVEY RESPONDENTS	SAVINGS PRODUCT/SERVICE			LOAN PRODUCT/SERVICE			
		FINANCIAL INSTITUTION	TANDA	NONE	PERSONAL/PAYROLL LOAN	FROM CAJA DE AHORRO	FROM FAMILY/FRIENDS	NONE
Social assistance	19	18	38	49	7	10	29	85
Seguro Popular	25	16	36	51	6	11	25	85
IMSS	7	51	51	35	24	8	11	74
ISSSTE	19	81	38	40	15	7	17	81

Source: World Bank and Government of Mexico Financial Capability Survey data.

Users of formal savings services were less likely to report being short of money. A quarter of the users of banks reported ever having run short of money for food and other necessities, in contrast with 55 percent of participants in *tandas* and 30 percent of people without financial intermediaries of any sort. Of those who ran short of money, 80 percent were not associated with any financial intermediary. By way of explanation, those who used formal savings services had higher income levels, which contributed to their relative financial stability.

Although more than 60 percent of borrowers felt they could take on higher levels of debt, those with nonbank credit were more likely to believe they had borrowed excessively. More than 60 percent of borrowers receiving personal or payroll loans, *caja de ahorro* loans, or loans from family or friends felt they could afford to borrow more (table 3.3). Higher fractions of borrowers from *cajas de ahorro* and from family or friends than from banks felt they had reached their borrowing limit (30 percent and 28 percent, respectively). More of these nonbank borrowers felt they had borrowed more than they could afford (9 percent and 10 percent, respectively) than those who borrowed through payroll and personal loans from banks. Female debtors were slightly more likely than males to report that they borrowed more than they could afford, while debtors in higher-income groups and rural dwellers were most likely to feel they could borrow more.

TABLE 3.3 PERCEPTION OF BORROWING CAPACITY BY RESPONDENTS WHO BORROW (%)

PERCEPTION	RESPONDENTS BORROWING FROM			ALL RESPONDENTS
	PERSONAL OR PAYROLL LOAN (FROM BANK)	CAJA DE AHORRO	FAMILY OR FRIENDS	
Could afford to borrow more	68.1	60.6	62.2	63.1
Have borrowed to the limit and could not afford to borrow more	28.5	30.1	27.8	26.1
Have borrowed more than can afford	3.4	9.3	10.0	9.2

Source: World Bank and Government of Mexico Financial Capability Survey data.

3.2 MAKING DECISIONS ABOUT FINANCIAL PRODUCTS

Most of those using financial services reported making careful decisions about them. The survey results show that more than half the respondents using financial products searched for information and considered many alternatives when making their decisions about financial products. Moreover, when considering financial product options, 62 percent of the respondents reported detailed knowledge of the terms and conditions (table 3.4). These results must be viewed with some skepticism, however, given similarly diligent reports of verifying terms and conditions provided by those using *tandas*, which do not have terms and conditions that lend themselves to comparison; and those using pawn shops, which are infamous for steep interest rates. One-third of respondents reported making little effort in obtaining and product-related information. This raises concerns as to how to best match financial products with consumer needs, given the increasing sophistication of such products.

TABLE 3.4 RESPONDENT DILIGENCE IN MAKING FINANCIAL SERVICE DECISIONS, BY CREDIT OR SAVINGS VEHICLE (%)

ACTION TAKEN IN MAKING DECISION	ALL FINANCIAL SERVICES	ACCOUNT AT A FINANCIAL INSTITUTION	PERSONAL/PAYROLL LOAN FROM FORMAL FINANCIAL INSTITUTION	PARTICIPANT IN TANDA	USE OF PAWN SHOP
Look for information from distinct sources	57	71	66	53	52
Consider various alternatives before deciding	62	76	71	60	60
Look to find the most appropriate product for needs	68	76	74	68	68
Verify terms and conditions before contracting	68	81	76	72	64
Verify terms and conditions in detail	62	66	51	61	60

Source: World Bank and Government of Mexico Financial Capability Survey data.

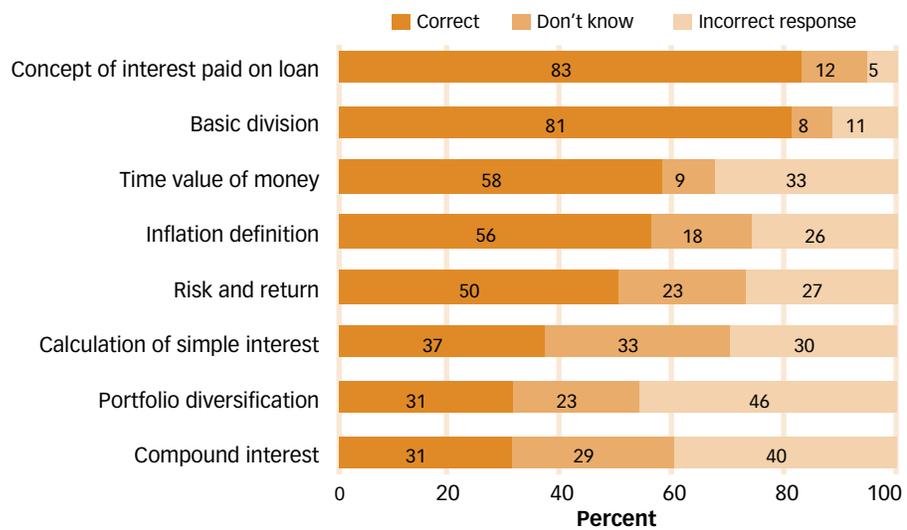
People with formal financial products, with formal sector jobs, and in high-income groups reported more analysis related to making financial product decisions. Half of those surveyed stated that they always sought advice before making a major financial decision. As shown in table 3.4, a larger percentage of people with an account at a financial institution looked for information, considered alternatives, searched for the best product, and verified terms and conditions than did people participating in *tandas*. In addition, 15 percent more formal sector workers than informal workers sought information before making financial product decisions, and 25 percent more of people from the top income group sought information than those from the bottom income group. Gender did not appear to be a factor influencing the rigor with which individuals made financial decisions.

3.3 FINANCIAL KNOWLEDGE

Financial knowledge, or financial literacy, refers to the understanding of financial concepts that complements financial capability (Lusardi and Mitchell 2011). Individuals make sound decisions regarding saving, borrowing, and investment. Financial knowledge is analyzed separately from the other components of financial capability in order to maintain the cross-country comparability of results, since not all countries in the financial capability project used the same set of questions to measure financial knowledge. In Mexico, the survey used eight questions related to financial knowledge, ranging from relatively basic numeracy questions involving division to more complex questions about portfolio diversification.

The majority of survey respondents correctly answered questions related to basic numeracy, the definition of inflation, and the concept of interest paid on a loan. Figure 3.2 illustrates the distribution of responses to questions that measured levels of financial knowledge. Over 80 percent of respondents correctly answered a question testing basic numeracy (division) and a question testing their understanding of the concept of interest paid on a loan. Almost 60 percent understood the concept of the time value of money (i.e., inflation—that an amount of money today does not have the same buying power as the same amount in the future).

FIGURE 3.2 DISTRIBUTION OF RESPONSES TO FINANCIAL LITERACY QUESTIONS



Source: World Bank and Government of Mexico Financial Capability Survey data.

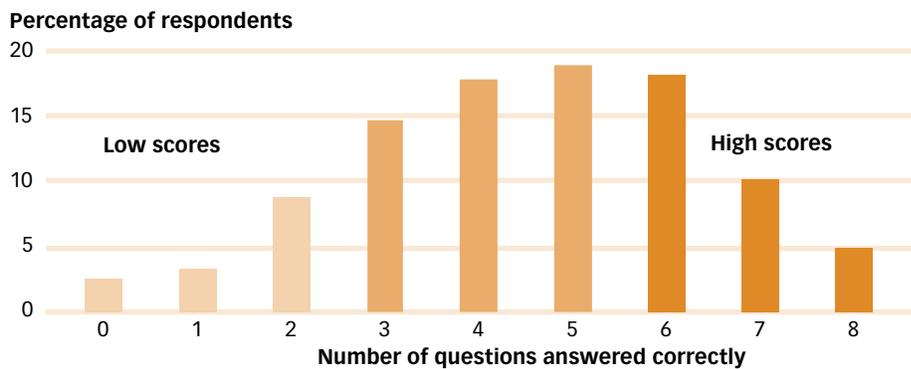
However, most Mexicans surveyed could not perform interest rate calculations, nor were they familiar with the concept of portfolio diversification. Most of those surveyed showed a marked inability to do basic interest calculations: only 37 percent could calculate simple interest, and just 31 percent understood the concept of compound interest.² This finding corresponds fairly well to survey respondents' own self-assessments: just 14 percent of those surveyed characterized themselves as very capable of calculating interest rates. The inability to do the interest rate calcula-

² In a cross-country study, Atkinson and Messy (2012) recorded a response to a multiple-choice compound interest question as correct only if the respondent also correctly answered an open-ended simple interest rate calculation. If the latter practice were used, 14 percent of the Mexicans surveyed would be considered as having answered the compound interest question correctly.

tion suggests that most people found it more difficult to calculate a percentage than to do division. This lack of understanding calls into doubt the ability of many Mexicans to make comprehensive decisions about financial products.

Most of the Mexicans surveyed could answer a least half of the financial literacy questions correctly. As shown in figure 3.3, 30 percent of those surveyed answered three questions or fewer correctly. Note, however, that calculating a financial knowledge score using a simple sum of correct answers assumes that all the questions asked are equivalent, when some might be considered more important or complex than others. Urban dwellers and those with higher levels of education (high school graduates) and income (more than Mex\$3,000 monthly) were more likely to answer most questions correctly.

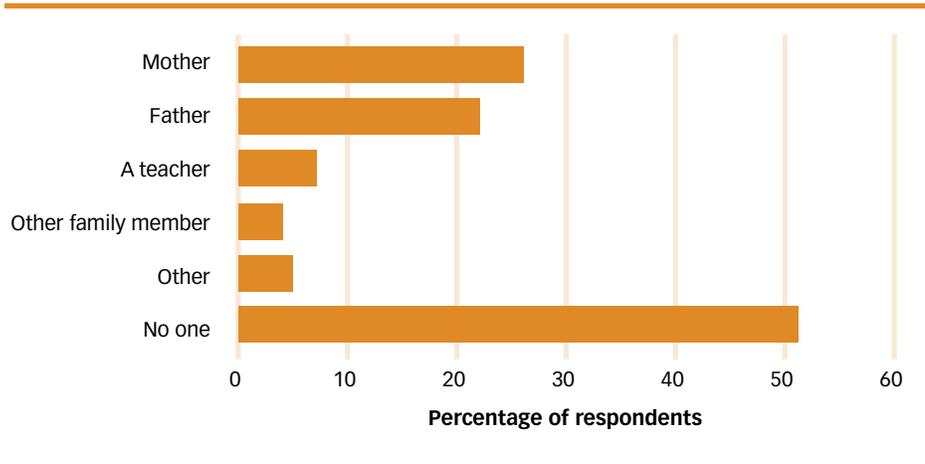
FIGURE 3.3 DISTRIBUTION OF CORRECT FINANCIAL KNOWLEDGE RESPONSES



Source: World Bank and Government of Mexico Financial Capability Survey data.

Half of the surveyed population said that they had never been taught how to manage their money. Financial education is not taught systematically in most Mexican schools, and parents were the most common source of information cited by those who had received some sort of guidance on managing their money (figure 3.4).

FIGURE 3.4 DISTRIBUTION OF SOURCES OF MONEY MANAGEMENT INFORMATION



Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: Results do not total 100, because respondents could choose multiple responses.

Although these results were similar irrespective of head of household status, they were correlated with both age and education: the older the person, the less frequency with which they reported being taught money management. The higher their education level, the more frequently respondents reported having been taught money management. Men were more likely to report having been taught money management by their fathers, while women were fairly evenly split between the two parents.

Comparing financial capability

This chapter examines the seven behavioral and three attitudinal components of financial capability, facilitating identification of strengths and weaknesses among different segments of the Mexican population. Mexico's strongest components are achievement orientation and living within means. Education, income, and participation in household money management are all positively associated with most components of financial capability. These 10 components are used to profile five distinct clusters of financial capability that occur within the Mexican population with the goal of highlighting the diversity of challenges for specific clusters. The largest cluster, comprising a third of the surveyed population, is particularly strong at aspects of day-to-day money management and budgeting, but is weak in saving and making provisions for unexpected expenses and long-term goals. Further analysis of the variation in financial capability by region shows that residents of the Northeast and Northwest generally had relatively higher financial capability. Comparison of youth to adults shows that while youth are better educated with greater formal financial knowledge, they also cited some difficulty in controlling overspending relative to the rest of the population.

4.1 COMPONENTS OF FINANCIAL CAPABILITY

Financial capability is a multidimensional concept for which 10 distinct components have been identified. These 10 components, which span a range of behaviors and attitudes related to daily money management, planning ahead, and choosing financial products, are drawn from a report of the Russia Trust Fund for Financial Education and Literacy summarizing results from seven countries that participated in the Trust Fund's financial capability measurement project (Kempson, Perotti, and Scott 2013). These components were determined using principal component analysis¹ and represent a

¹ Principal component analysis is a data reduction method that uses the correlation structure of variables in the data set to find the smallest possible number of linear combinations of these variables that best synthesize the information contained in the data (see appendix A). Once a combination of variables is identified as explaining or "loading on" the same underlying component, a single component score can be calculated based on a weighted average of the variables

means of consistently measuring the dimension of financial capability across all seven countries in the project. Not all of the countries participating in the project chose to collect information on financial knowledge, so that concept is discussed separately. The 10 components of financial capability are detailed in table 4.1.

TABLE 4.1 COMPONENTS OF FINANCIAL CAPABILITY

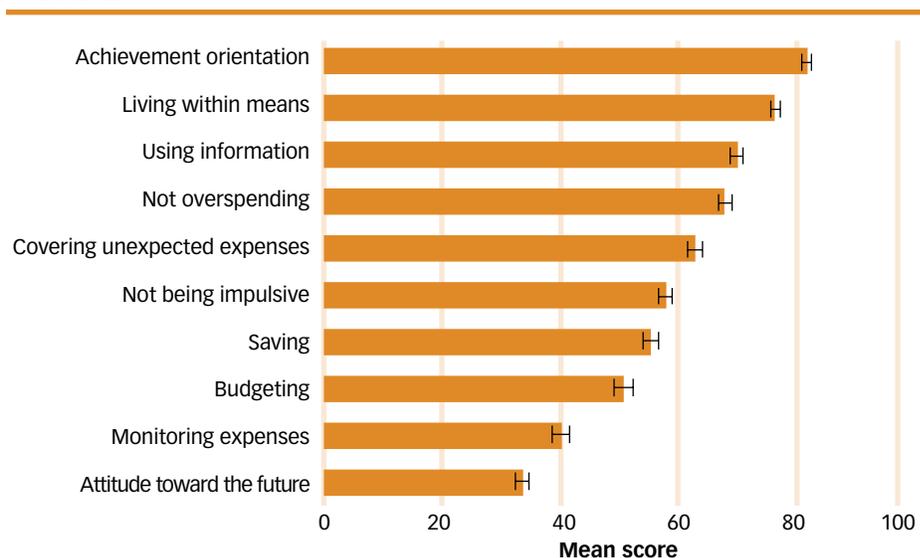
COMPONENT	DESCRIPTION
Behavioral components	
Budgeting	Whether people planned how to spend their money, how frequently they budgeted and how exactly, and how frequently they adhered to their plans
Living within means	Whether people run short of money because of overspending, how frequently they borrow, and if they had borrowed at affordable levels
Monitoring expenses	How precisely respondents knew how much money they spent and how much they had available to spend
Using information	Combination of getting information and advice before making important financial decisions, learning from other people's mistakes in financial matters, and being disciplined
Not overspending	How frequently people bought things they could not afford or bought unnecessary things before they bought essential items
Covering unexpected expenses	Whether people are capable of, or expressed concern about, covering unexpected expenses
Saving	How regularly people tried to save for the future, to save regularly even if just a little, and to have provisions for emergencies and unexpected expenses
Attitudinal components	
Attitude toward the future	Orientation toward the future rather than the present
Not being impulsive	Acting without thinking things through, self-identifying as impulsive, speaking without thinking
Achievement orientation	Always looking for opportunities, having aspirations, working hard to be the best

A mean score is calculated for each component on a scale from 0 (least capable) to 100 (most capable). Mexico's highest financial capability component scores were for achievement orientation and living within means (figure 4.1). Lower scores were attained for activities related to budgeting, monitoring expenses, and attitude toward the future.

Education, income, and participation in household expenditure decisions are all associated with higher financial capability for most component scores. The regression

in the combination. The weights are the coefficients obtained through the principal component analysis. The goal is to aggregate variables that measure different nuances of the same component in order to obtain a single measure for that component to facilitate analysis and international comparisons.

FIGURE 4.1 MEXICO'S MEAN SCORES FOR COMPONENTS OF FINANCIAL CAPABILITY



Source: World Bank and Government of Mexico Financial Capability Survey data.

analysis shown in table D.1 in appendix D highlights how financial capability varies by gender, age, education, employment, income, and location.

On average, women scored significantly higher than men on budgeting and saving. Those individuals who had completed tertiary education scored higher than those with only secondary education on budgeting, attitude toward the future, and not being impulsive—although they showed more of an inclination to spend unnecessarily. Higher-income groups tended to score better on nearly all components of financial capability compared to lower-income groups. Participating in household expenditure decisions (as opposed to being responsible for only personal expenses) is strongly associated with higher scores for budgeting, monitoring expenses, using information, covering unexpected expenses, and saving behavior.

4.2 PROFILES OF FINANCIAL CAPABILITY IN MEXICO

Five distinct clusters of financial capability were identified within the Mexican population (table 4.2). These groups were identified through cluster analysis (Kempson, Perotti, and Scott 2013; see appendix B for detailed methodology) to help Mexican policy makers and other stakeholders understand the diversity of challenges facing specific groups in the population. Cluster analysis was used because it permits comparison of scores across all 10 components of financial capability. The identification of clusters has the potential to facilitate more targeted interventions to improve

TABLE 4.2 FINANCIAL CAPABILITY CLUSTERS IN THE POPULATION

CLUSTER	BEHAVIOR AND ATTITUDES	CHARACTERISTICS
1. Unsophisticated money managers (~22% of respondents)	Below-average scores on all but two components of financial capability (not overspending and living within means). Very low scores for budgeting and monitoring expenses; low levels of financial inclusion. Relatively short-term view of finances and limited concern about old age.	Eighty-three percent low income; many have variable incomes. More likely not to be formally employed. Many have low levels of education (47% with at most primary education or less). Despite an above-average number of people age 60 or over (18%), group has the lowest proportion of people describing themselves as retired (3%).
2. Short-term money managers (~33% of respondents)	Strong scores for components of daily money management (especially budgeting); poor at saving and making provisions for the future, particularly for unexpected expenses.	Eighty percent low income, more likely to be middle-aged (age 41–60) and have dependent children. Most (70%) live in urban areas. Half of them (49%) were using financial products or services.
3. Young impulsive spenders (~12% of respondents)	More impulsive and inclined to overspend; perhaps as a consequence, has lowest scores as a cluster for living within means. Best for covering unexpected expenses, strong at monitoring expenses.	Highest percentage of youth, less likely to have a dependent child, predominantly secondary education or lower. Medium-low incomes, but highest level of informal employment.
4. Affluent but disorganized (~9% of respondents)	Poor budgeters, yet manage to live within means; least impulsive and most future oriented relative to the other clusters reporting saving and making plans for unexpected expenses. Highest level of financial inclusion.	High income relative to other clusters; group with highest proportion of individuals with at least secondary education; high percentage in rural areas.
5. Careful money managers and planners (~25% of respondents)	Above-average scores for all components except monitoring expenses. Excellent scores for budgeting, living within means, and using information; most concerned about the future and old age and most achievement oriented compared to other clusters.	Steady incomes in the middle of the distribution, highest education levels, highest percentage with a partner, highest percentage with a dependent child, predominantly urban.

financial capability. Figure B.1 in appendix B presents the mean scores for each cluster across all 10 components of financial capability.

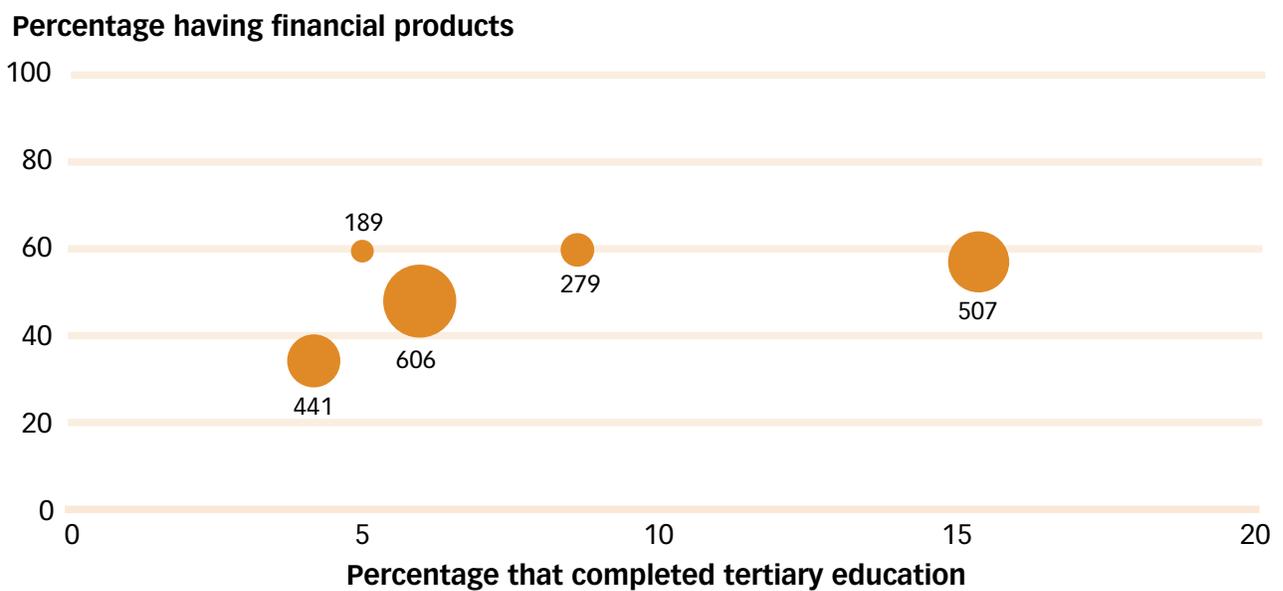
Over half the population falls into Clusters 1 and 2—unsophisticated money managers and short-term money managers. These two groups had the lowest aggregate financial capability scores. Individuals in these two clusters were, on average, less educated than those in other clusters and had the lowest levels of financial inclusion. The unsophisticated money managers, in particular, performed poorly on all but two components of financial capability (see figure B.1). This cluster contained the highest percentage of low-income individuals, many of whom live in rural areas, and it had the lowest mean score for financial knowledge. This cluster also had the lowest level of financial inclusion: only 37 percent of the individuals in the cluster had financial products.

The short-term money managers (Cluster 2) were particularly strong at aspects of day-to-day money management and budgeting, but weak in terms of saving and making provisions for the future, particularly for unexpected expenses. As a group, this cluster had the second lowest income level (80 percent of those in the cluster were in the two lowest-income quartiles), but the second highest average financial literacy score and a

majority (62 percent) that had completed secondary education. Compared to the unsophisticated money managers (Cluster 1), this cluster was more likely to have financial products and to be employed in the formal sector. Compared with the other groups, they were more likely to be middle-aged and to have dependent children.

The remaining 45 percent of the surveyed population fell into three clusters: young spenders, affluent but disorganized, and careful money managers and planners. The careful money managers and planners comprised the largest of the three groups, and displayed above-average performance on all components except for living within means. This group had the highest proportion of people living with a partner (73 percent), the highest percentage of people with stable (no seasonal variation) incomes (36 percent), and the highest percentage having completed tertiary education (16 percent) (figure 4.2). The young impulsive spenders cluster had the highest proportion in formal employment (40 percent), but low scores for living within means—and, consequently, high scores for covering unexpected expenses as a coping mechanism. The remaining group, described as affluent but disorganized, had the highest incomes compared to other groups and the highest level of financial inclusion, with 61 percent citing the use of financial products. However, with respect to budgeting and planning for old age, their scores were comparable to those of the unsophisticated money managers. Figure 4.3 shows how the clusters vary across key sociodemographic factors.

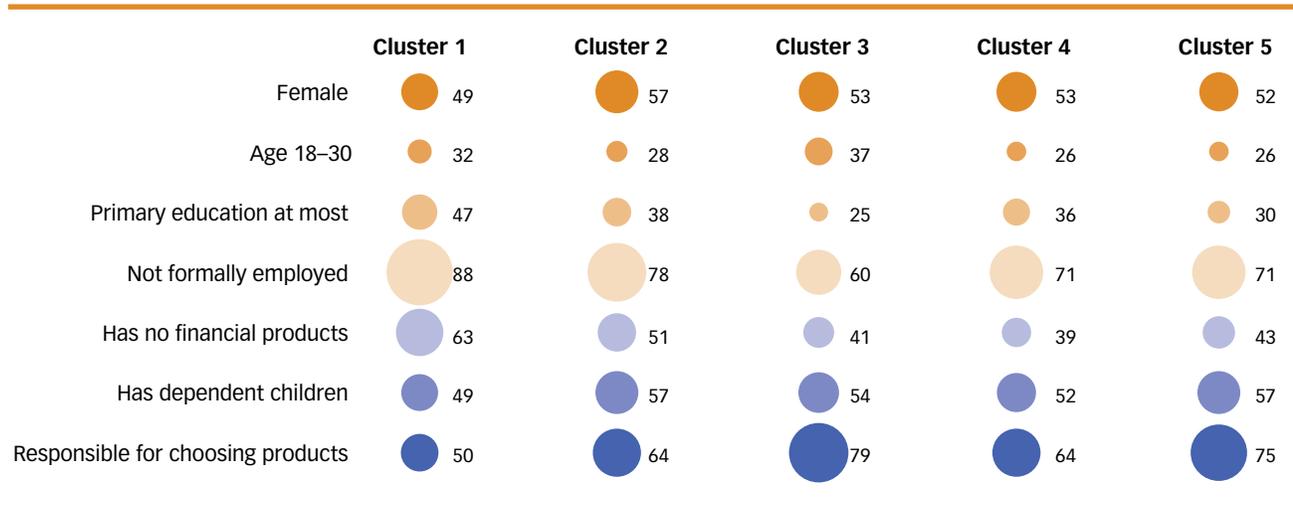
FIGURE 4.2 CLUSTER SIZE BY EDUCATIONAL ATTAINMENT AND FINANCIAL INCLUSION



Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: Width represents cluster size.

FIGURE 4.3 SOCIODEMOGRAPHIC CHARACTERISTICS OF EACH CLUSTER



Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: Width represents percentage.

4.3 REGIONAL VARIATION OF FINANCIAL CAPABILITY

Understanding regional variations in financial behavior and knowledge can enable authorities to better target interventions to improve financial capability. Levels of development across regions in Mexico vary.² Table 4.3 shows financial capability scores by region, and figure 4.4 maps these scores.

The Northeast and Northwest regions have relatively stronger scores on most financial capability components. The Northeast region has high-income states such as Nuevo Leon and states on the U.S. border such as Chihuahua. This region shows strong financial management related to living within means and covering unexpected expenses; it shows relative strength vis-à-vis the other regions, in terms of monitoring expenses, but has low scores on using information. The Northwest region has high scores for components including not overspending, saving, and obtaining information, although it has low scores related to covering unexpected expenses and financial knowledge.

The South/Southeast, Central West, and Central regions show a mixed performance on the components of financial capability. The South/Southeast region, which contains

² In this section, the geographic regions of the surveyed states were defined following definitions in the Mexican National Development Plan: Central Region: Distrito Federal, Queretaro, Morelos, State of Mexico, Hidalgo, Tlaxcala, Central West Region: Colima, Jalisco, Guanajuato, San Luis Potosi, Michoacan, Zacatecas, Northeast Region: Nuevo Leon, Tamaulipas, Chihuahua, Northwest Region: Sonora, Sinaloa, South/Southeast Region: Tabasco, Quintana Roo, Puebla, Veracruz, Guerrero, Oaxaca, Chiapas. Note that the financial capability survey did not cover all states in Mexico.

TABLE 4.3 AVERAGE FINANCIAL CAPABILITY BEHAVIORAL AND KNOWLEDGE SCORES BY REGION

	CENTRAL	CENTRAL WEST	NORTHEAST	NORTHWEST	SOUTH/SOUTHEAST
Financial capability behavioral component					
Budgeting	56	47	50	54	52
Living within means	77	78	80	78	78
Monitoring expenses	39	41	47	45	36
Using information	62	72	67	86	71
Not overspending	64	59	72	52	65
Covering unexpected expenses	69	76	65	75	70
Saving	52	51	56	79	56
Financial knowledge	4.2	4.4	4.0	3.0	4.4

Source: CNBV, INEGI, and International Financial Statistics (IFS).

Note: Financial capability scores range from 0 to 100; financial knowledge scores range from 1 to 8 correct responses. Regional averages only take into account the departments included in the survey.

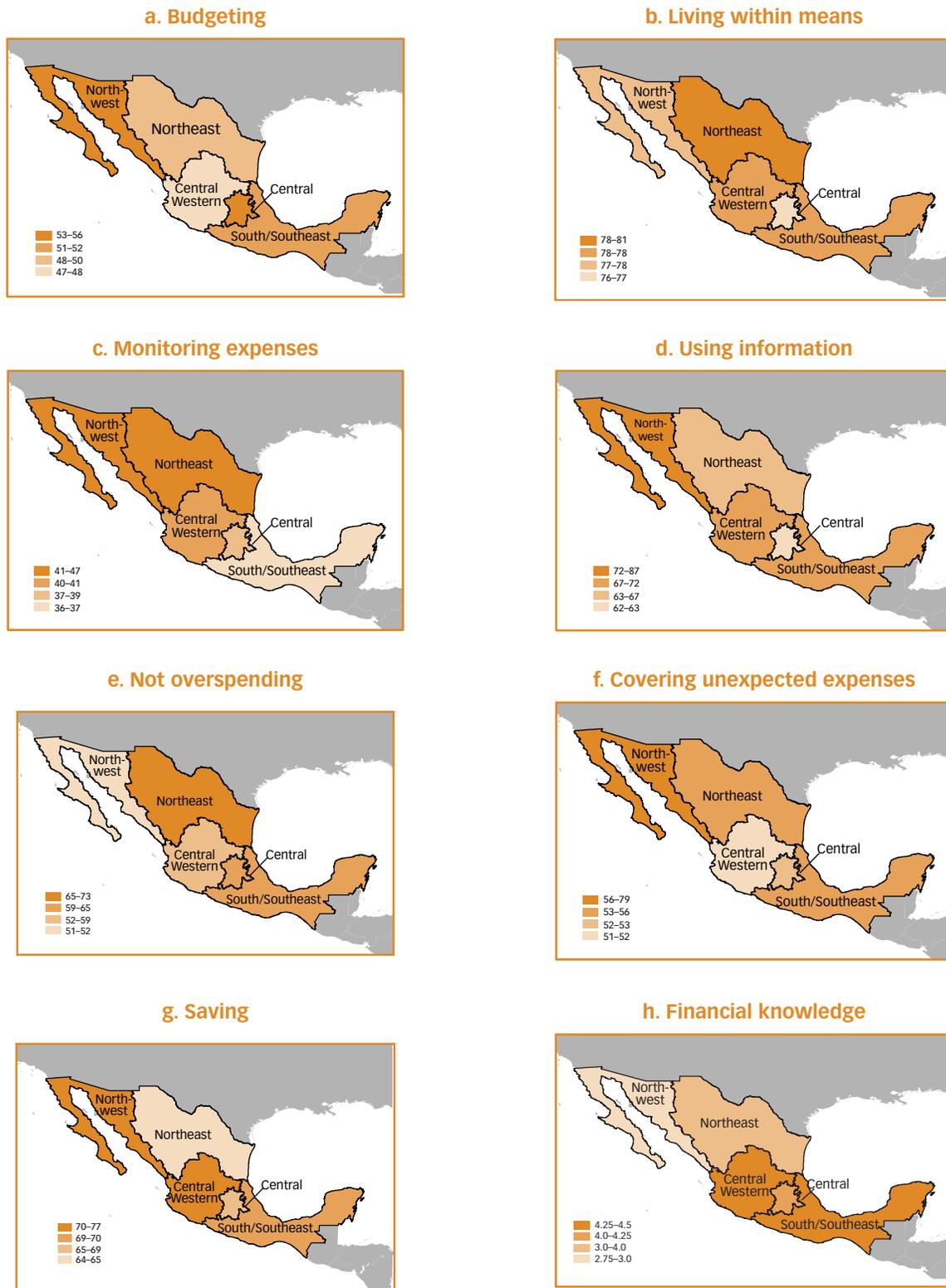
the poorer states of Chiapas and Oaxaca, has low scores for monitoring expenses. The Central West region also has relatively low scores related to budgeting and saving behavior but higher scores related to obtaining information and financial knowledge. The Central region, with its diverse levels of development (containing both the wealthy Distrito Federal and the poorer states of Hidalgo and Tlaxcala), has relatively high scores for budgeting but lower scores for living within means and not overspending.

4.4 FINANCIAL CAPABILITY OF YOUTH

This section compares the youth population with the adult population on three key aspects of financial capability—knowledge, attitudes, and behavior—with the goal of providing insights into a population commonly targeted for financial education interventions. Appendix C provides a more detailed exposition of the analysis discussed here. In this analysis, youth are defined as those between the ages of 18 and 24. The adult population is divided into two categories: those between the ages of 25 and 59—typically the age range for active labor force participation—and those age 60 and above, classified here as the elderly.

Mexican youth are, on average, more likely to be better educated than older cohorts. The large majority of youth, 84 percent, have completed secondary education, compared to only 59 percent of the age 25–59 group and 18 percent of the 60 and over age group. Only 6 percent of Mexican youth report having completed tertiary education compared to 18 percent of Mexicans aged 25–29, indicating that a significant fraction is still in tertiary education. This is confirmed by the fact that 22 percent of youth respondents in Mexico are students, compared to only 2 percent of those aged 25–29.

FIGURE 4.4 FINANCIAL CAPABILITY BEHAVIORAL AND KNOWLEDGE SCORES MAPPED BY REGION

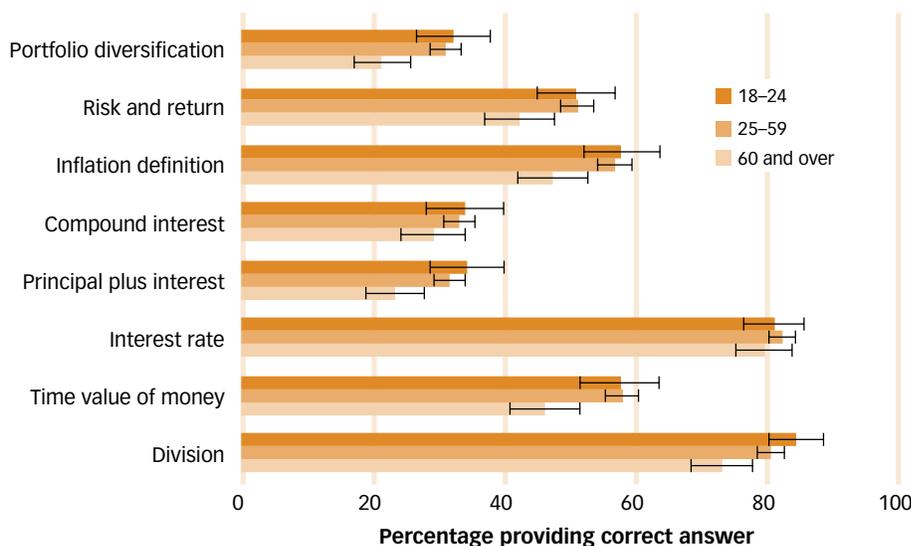


Source: World Bank and Government of Mexico Financial Capability Survey data.

Overall, Mexican youth are less likely to contribute to the household or to participate in household financial decision making than adults. The majority of youth, 59 percent, in the 18–24 age group are still living with parents, compared to only 32 percent of the slightly older 25–29 year old cohort. Among Mexican youth, 51 percent contribute to household budgets and only 55 percent participate in financial decision making. Thirty-seven percent of Mexican youth report they are “mainly” responsible for their own personal spending, compared to 66 percent of adults aged 25–59 and 63 percent of those age 60 and over. A minority of Mexican youth, 11 percent, report that they are heads of households and responsible for both personal and household expenditures.

Although Mexican youth overall have slightly higher scores than Mexican adults on most measures of financial knowledge, the difference is not statistically significant. While youth do score higher on some questions of financial knowledge compared to the 60 and over age group, their financial knowledge is largely on par with adults in the age 25–59 groups (figure 4.5). Eighty-five percent of Mexican youth are able to do simple division, compared to 81 percent of adults aged 25–59. But only 74 percent of those age 60 and over can do simple division. Younger age groups are more likely to understand how the value of money decreases due to inflation: 58 percent of both youth and adults aged 25–59 indicated that they understand the time value of money (inflation) relative to only 46 percent of those age 60 and over. Younger age groups are also more likely to be familiar with the concept of portfolio diversification

FIGURE 4.5 FINANCIAL KNOWLEDGE BY AGE GROUP



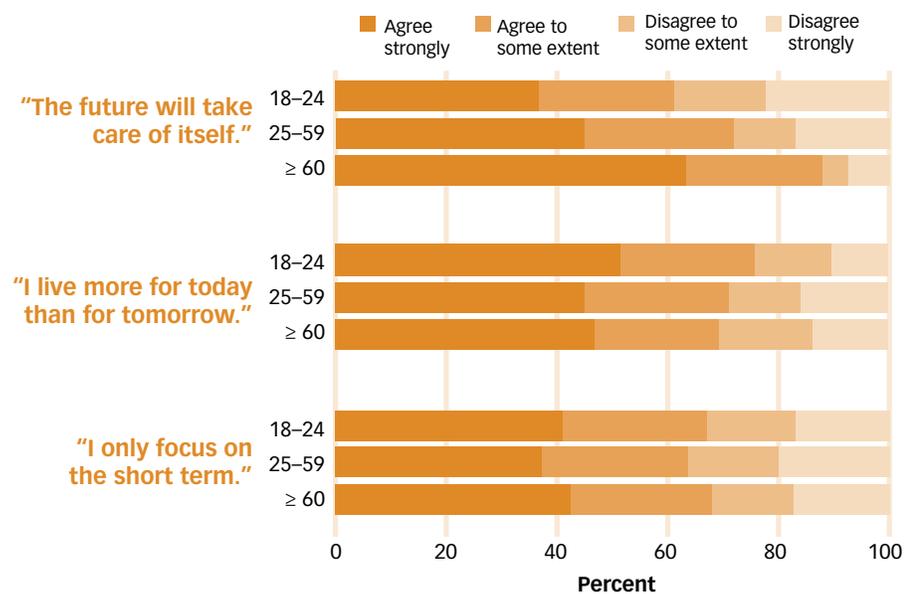
Source: World Bank and Government of Mexico Financial Capability Survey data.

compared to the 60 and over age group. This is not surprising given that the average educational level of youth is higher than in older age groups.

Responses to questions about time preferences indicate that youth are more concerned about the future than are older age groups. Attitudes form a crucial link between knowledge and behaviors. Of particular interest in looking at youth financial capability is how youth prioritize short-term versus longer-term needs, how impulsive they are, and how oriented they are toward achievement. Only 37 percent of youth strongly agree with the statement that the future will take care of itself, compared to 45 percent of adults and 63 percent of the elderly (figure 4.6). However, this concern does not appear to translate into planning for longer-term needs, as indicated by the positive response rate to questions about living for the present and having a short-term focus.

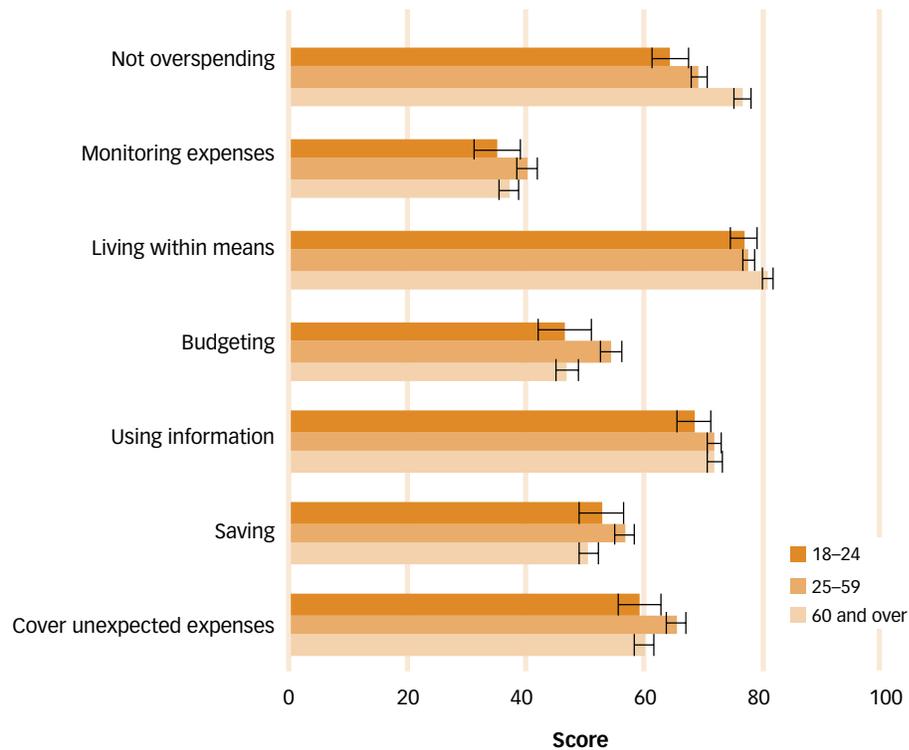
Youth tend to score lower, overall, on financial behaviors than older age groups, but the differences are not significant for all types of behaviors (figure 4.7). The key difference between youth and older age groups is on overspending. Mexican youth find it significantly more difficult to not overspend compared to older age groups. On the indicators of sound financial management—such as budgeting and being able cover unexpected expenses—youth score significantly worse than adults aged 25–59, but are on par with those age 60 and over. Two factors may contribute to the lower scores on these aspects of financial behavior. One is that youth face

FIGURE 4.6 PERCENTAGE AGREEING WITH EACH STATEMENT BY AGE GROUP



Source: World Bank and Government of Mexico Financial Capability Survey data.

FIGURE 4.7 MEAN SCORE ON BEHAVIORAL COMPONENTS OF FINANCIAL CAPABILITY



Source: World Bank and Government of Mexico Financial Capability Survey data.

greater expenses than adults as they try to establish careers and households, so their expenses exceed income. Second is that since the majority of youth live with parents, they have some buffer against the consequences of overspending and poor financial management, and are less likely to rein in spending.

Few youth (and adults) report actively monitoring spending. The mean score for youth on monitoring expenses is 35, indicating only an approximate knowledge of how much money is available and how funds are spent. For the most part, however, youth do report living within their means. The mean score for youth on living within means is 77, indicating fairly low rates of indebtedness and short-term borrowing.

The majority of youth surveyed obtained and used information in financial decision making. The mean score for using information among Mexican youth is 68, compared to 72 for adult and elderly populations. Saving behavior among youth and adults is comparable, but adults outperform youth on the ability to cover unexpected expenses. Mexican youth are significantly less likely than adults to have obtained information and chosen financial products in the past five years.

International comparisons

The financial capability survey utilized for Mexico was also applied in six other countries that were selected to receive funding to implement this first set of surveys on financial capability. Mexico was selected from a pool of applicant countries—along with Armenia, Colombia, Lebanon, Nigeria, Turkey, and Uruguay—by the Russia Trust Fund for Financial Literacy and Education to participate in the process of developing and piloting these financial capability surveys. These comparator countries were linked by an interest in piloting a new survey instrument rather than by shared or similar socioeconomic conditions. This chapter compares the financial capability of the Mexicans surveyed to those surveyed in these other countries.

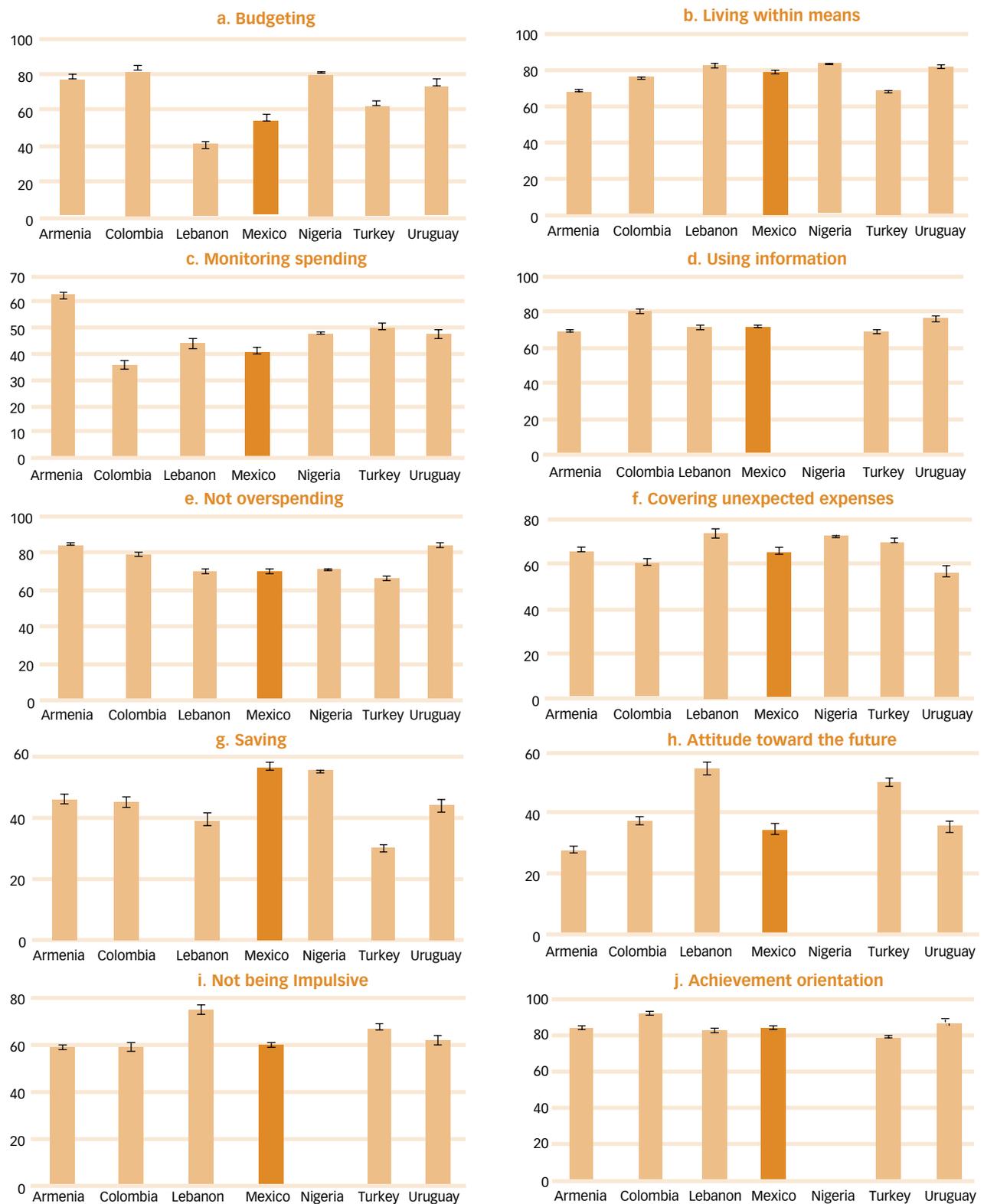
The international comparisons rely on 10 components of financial capability, rather than a single financial capability score. Analysis revealed that it was not possible to develop a single index score for financial capability by combining scores on the 10 components of financial capability.¹ Figure 5.1 compares Mexican responses with those provided in other countries (where available) on each component.

Compared to survey participants in the other six countries, the Mexican respondents indicated stronger saving behavior. They scored higher on average on a composite of questions measuring the inclination to save and to have provisions for unexpected major expenses. Mean scores for other components such as monitoring expenses, using information, and achievement orientation were similar to those found in the other countries surveyed.

However, Mexicans' budgeting activity and attitude toward the future were less pronounced than in other countries. Mexico's budgeting score—measuring the extent to which people plan how to use their money and whether they stick to their plans—was lower than for any of the other countries for which data were collected, with the exception of Lebanon. Similarly, Mexicans also expressed more of an inclination to a short-term planning horizon relative to other countries except for Armenia. Latin American comparators Colombia and Uruguay—although they scored slightly

¹ For further explanation, see footnote 1 in chapter 4.

FIGURE 5.1 CROSS-COUNTRY COMPARISON OF COMPONENTS OF FINANCIAL CAPABILITY



Source: Kempson, Perotti, and Scott 2013.

higher than Mexico in terms of attitude toward the future—were also biased toward the short term.

The countries for which financial capability data are available show diverse socioeconomic conditions—particularly related to educational attainment, structure of employment, and income flows. As shown in table 5.1, some characteristics were similar across countries, such as the higher proportion of women than men in the survey samples (53 percent in Mexico). Other characteristics, such as the share of survey respondents with completed secondary education varied widely—from 20 percent in Nigeria to 55 percent in Mexico to 69 percent in Armenia—indicating major differences in educational attainment. Both Mexico and Colombia had low

TABLE 5.1 SUMMARY STATISTICS OF KEY SOCIODEMOGRAPHIC VARIABLES

VARIABLE	ARMENIA		COLOMBIA		LEBANON		MEXICO		NIGERIA		TURKEY		URUGUAY	
	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD	MEAN	SD
Female	0.66	0.48	0.63	0.48	0.55	0.50	0.53	0.50	0.51	0.50	0.50	0.50	0.53	0.50
Age 18–30	0.26	0.44	0.27	0.45	0.30	0.46	0.29	0.46	0.26	0.44	0.36	0.48	0.29	0.45
Age 60+	0.23	0.42	0.16	0.37	0.14	0.35	0.14	0.35	0.15	0.36	0.10	0.31	0.20	0.40
Primary ed. at most	0.02	0.14	0.34	0.47	0.27	0.45	0.36	0.48	0.66	0.47	0.51	0.50	0.31	0.46
Secondary ed. at most	0.69	0.46	0.45	0.50	0.46	0.50	0.55	0.50	0.20	0.40	0.41	0.49	0.52	0.50
Tertiary education	0.29	0.46	0.21	0.41	0.27	0.44	0.09	0.28	0.13	0.34	0.08	0.27	0.18	0.38
# of hh members 18+	3.56	1.45	3.19	1.49	3.51	1.50	2.82	1.17	2.94	1.57	3.10	1.48	2.49	1.03
Has dependent children	0.50	0.50	0.61	0.49	0.46	0.50	0.55	0.50	—	—	0.52	0.50	—	—
Rural area	0.39	0.49	0.34	0.47	0.33	0.47	0.38	0.49	0.71	0.45	0.04	0.20	0.09	0.28
Has financial products	0.81	0.39	0.55	0.50	0.57	0.50	0.51	0.50	0.21	0.42	0.58	0.49	0.87	0.33
Formal employee	0.26	0.44	0.19	0.39	0.31	0.46	0.24	0.43	0.42	0.49	0.22	0.41	0.41	0.49
Informal employee	0.06	0.24	0.06	0.23	0.11	0.31	0.15	0.36	—	—	0.08	0.27	0.08	0.28
Self-employed	0.16	0.36	0.10	0.30	0.16	0.36	0.03	0.16	—	—	0.08	0.27	0.09	0.29
Unemployed	0.07	0.25	0.03	0.18	0.02	0.13	0.05	0.22	0.08	0.28	0.03	0.17	0.04	0.20
Retired	0.18	0.39	0.05	0.22	0.05	0.21	0.04	0.20	0.36	0.48	0.16	0.37	0.17	0.38
Housework	0.21	0.41	0.25	0.43	0.31	0.46	0.27	0.44	0.02	0.13	0.33	0.47	0.12	0.32
Other	0.01	0.08	0.29	0.45	0.00	0.02	0.15	0.35	0.04	0.20	0.01	0.12	0.04	0.20
Income seasonality: no income	0.03	0.18	0.07	0.26	0.05	0.22	0.10	0.30	—	—	0.15	0.36	0.24	0.43
Income seasonality: variable income	0.45	0.50	0.63	0.48	0.47	0.50	0.60	0.49	—	—	0.24	0.42	0.32	0.47
Income seasonality: stable income	0.52	0.50	0.30	0.46	0.48	0.50	0.30	0.46	—	—	0.62	0.49	0.43	0.50

Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: — = not available; SD = standard deviation.

percentages of survey respondents who considered their income to be stable (30 percent).

Internationally comparable data are also available for a range of financial knowledge questions. Financial knowledge questions were not applied by all of the countries in the Financial Capability Survey, so Mexico's performance is compared to a sample of countries in the 2012 Organisation for Economic Co-operation and Development (OECD)/INFE pilot study, from which the financial questions reported on here were drawn. Table 5.2 shows the performance of the eight countries that participated in the OECD/INFE pilot study.

Some caution should be exercised with international comparisons of financial knowledge. The sample structure for Mexico was constructed including only those individuals who make financial decisions, which may bias results relative to the OECD/INFE countries that had nationally representative samples with no restrictions on eligibility. Furthermore, certain countries modified the battery of questions, such as Peru, which eliminated a question on interest rates.

TABLE 5.2 INTERNATIONAL COMPARISON OF PERCENTAGES OF CORRECT RESPONSES TO KNOWLEDGE QUESTIONS

QUESTION	ARMENIA	COLOMBIA	HUNGARY	IRELAND	MEXICO	PERU	SOUTH AFRICA	UNITED KINGDOM
Numeracy (division)	86	86	96	93	82	90	79	76
Time value of money	83	69	78	58	58	63	49	61
Interest paid on loan	87	87	95	88	83	—	65	90
Calculation of principal and interest	53	35	61	76	37	40	44	61
Compound interest rate (and correct calculation of principal and interest)	18	10	46	29	14	14	21	37
Risk and return	67	—	86	84	55	69	73	77
Definition of inflation	57	—	91	88	68	86	78	94
Diversification	59	—	61	47	30	51	48	55
% of high scorers (6 or more questions) correct	46	—	69	60	34	41	33	53

Source: Analysis of 2012 Colombia and Mexico Financial Capability Surveys (World Bank and Governments of Colombia and Mexico). With the exception of Colombia and Mexico, data are from the OECD/INFE survey as described in Atkinson and Messy (2012).

Note: — = not available. Atkinson and Messy (2012) recorded a response to the multiple-choice compound interest rate question (row 5 in the table) as correct only if the respondent also correctly answered the previous open-ended simple interest rate calculation (row 4). Other studies (e.g., Xu and Zia 2013) simply report the correct responses to the multiple-choice compound interest question irrespective of the answer to the simple interest rate calculation. Following the latter practice means that 31 percent of Mexicans surveyed answered the compound interest question correctly, a result highlighted in section 3.3.

With respect to financial knowledge, Mexico's level of correct responses to questions related to numeracy, the time value of money, and interest paid on a loan was in line with that of other countries surveyed. However, Mexico had a lower percentage of correct responses on questions regarding the calculation of a simple interest rate than all of the countries surveyed with the exception of Colombia. Knowledge of risk and return and awareness of the benefits of portfolio diversification were lower than in the other countries surveyed. Knowledge of compound interest was lower for Mexico than for any of the other countries surveyed except Colombia and Peru. Mexico also had a relatively small percentage of high scorers on the battery of questions: just 34 percent of survey respondents answered six or more questions correctly; this was a lower percentage than for any of the other countries surveyed except South Africa.

Linkages between financial capability and financial inclusion

In Mexico, dialogue and policies related to improving financial capability and financial knowledge often complement efforts to promote responsible financial inclusion. Understanding the linkages between these issues can facilitate better design and better targeting of policy interventions. This chapter provides strong evidence for the linkages between financial knowledge, financial capability, and financial inclusion, as measured by use of formal financial products. It suggests that expanding financial knowledge and enhancing financial capability are crucial steps toward the goal of accelerating responsible financial inclusion. Specifically, it finds that financial knowledge and financial capability are positively associated with the use of formal financial products such as bank accounts and credit cards. Findings presented here also suggest that the use of banking correspondents increases access to formal financial products primarily for individuals with high financial capability or high financial knowledge, and not for those with low financial capability or knowledge.

6.1 FINANCIAL KNOWLEDGE AND CAPABILITY

A number of studies have found links between financial knowledge and elements of financial behavior. Using data from the United States, Lusardi and Tufano (2009) find that individuals who have low measured levels of financial knowledge tend to pay minimum balances on credit cards, incur late fees on cards, and use informal sources of credit. Stango and Zinman (2009) show that people who make mistakes in interest and future value calculations tend to borrow more and save less. Lusardi and Mitchell (2009) illustrate that people with low levels of financial knowledge think less about retirement and that most of them have not planned for retirement at all. A survey of Russian households shows that financial knowledge is significantly and positively related to retirement planning involving private pension funds and schemes (Klapper and Panos 2011). In Mexico, Hastings and Tejeda-Ashton (2008) conducted a survey that reveals that less knowledgeable individuals tend to choose pension mutual funds with higher fees. The Mexican Financial Capability Survey provides an opportunity to add to this literature because of the range of data it collects on both financial knowledge and financial capability.

In Mexico, a higher financial knowledge score is associated with a higher financial capability measure for 7 out of 10 components of financial capability. The analysis examines the relationship between the financial knowledge score and each of the 10 financial capability measures (listed in table 4.1), controlling for several personal and municipality characteristics that could lead to a spurious relationship between knowledge and capability (see appendix D for more details on the methodology). Four of the behavioral components (not overspending, living within means, covering unexpected expenses, and saving) and all three attitudinal components are correlated with financial knowledge (see table D.1 in appendix D). The other three components—budgeting, monitoring expenses, and using information—show no statistically significant relationship with financial knowledge.

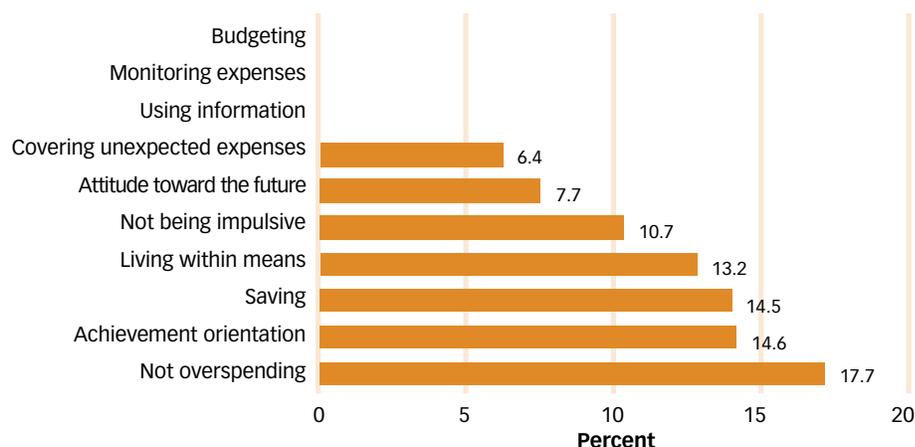
Financial knowledge showed the largest correlation with the not overspending component, followed by achievement orientation, saving, and living within means. Figure 6.1 compares the magnitudes of the correlations with financial knowledge across different components of financial capability by showing correlations benchmarked by standard deviation.¹ The correlations between financial knowledge and the not being impulsive, attitude toward the future, and covering unexpected expenses components are smaller and, as discussed above, they are zero for the other three components.

6.2 FINANCIAL KNOWLEDGE, FINANCIAL CAPABILITY, AND USE OF CREDIT AND SAVINGS

This section uses the financial knowledge and capability component measures discussed earlier in this report and examines the extent to which they predict whether an individual or household uses a range of formal and informal financial services. This analysis focuses on the six most frequently used financial services in Mexico as reported in the Financial Capability Survey: bank accounts, credit cards, bank loans, *tandas*, pawn shop credit, and loans from family or friends. The relationship between financial knowledge or financial capability and use of these products is measured through a regression analysis described in detail in appendix D. Table 6.1 displays abridged results from this analysis, showing the partial correlation between

¹ That is, it shows by how much each financial capability measure increases when the financial knowledge score increases by one standard deviation (the standard deviation of this score is 1.8), where the increase in the capability measure is scaled to represent percentage points of the standard deviation of the capability measure. This scaling is used because the same size increase (e.g., two points) could either be large or small, depending on how much variation there is in the capability measure. For example, if most people score around 50 on a given capability component, a 2-point increase would represent a larger magnitude than for a component on which most people score between 10 and 90.

FIGURE 6.1 CORRELATIONS BETWEEN FINANCIAL KNOWLEDGE AND CAPABILITY BENCHMARKED BY STANDARD DEVIATION



Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: Correlations are based on the estimates shown in appendix D. The correlations reflect how much the score for each financial capability component increases when the financial knowledge score increases by one standard deviation (the standard deviation of this score is 1.8), where the increase in the capability measure is scaled to represent percentage points of the standard deviation of the capability measure.

each financial knowledge or capability component measure and the likelihood of using each financial product. These partial correlations measure the relationship between financial knowledge or capability and financial product use after controlling for other factors that could be driving this relationship (see appendix D).

A higher financial knowledge score is positively associated with the use of bank accounts and credit cards, but shows no statistically significant relationship with use of other financial services. As shown in table 6.1, a 1-point increase in the financial knowledge score is associated with a 2.9 percentage point increase in the likelihood of having a bank account and a 1.7 percentage point increase in the likelihood of having a credit card.² The results in the table are not causal, and it is not certain whether more people with formal knowledge are more likely to seek bank accounts and credit cards, or whether people are more knowledgeable because of their exposure to these financial services. Financial knowledge shows no statistically significant relationship with usage of other financial services (bank loans, *tandas*, pawn shop loans, or loans from family or friends).

Most financial capability components show a positive and statistically significant relationship with having a bank account and a credit card. Table 6.1 displays the relationship between nine measures of financial capability and financial product

² A one-point increase in the financial knowledge score is equivalent to answering one more question correctly, since the score is based on correct responses to eight questions.

TABLE 6.1 PARTIAL CORRELATIONS BETWEEN FINANCIAL KNOWLEDGE, FINANCIAL CAPABILITY COMPONENTS, AND USE OF FINANCIAL SERVICES

	DEPENDENT VARIABLE: DUMMY VARIABLE INDICATING WHETHER THE INDIVIDUAL HAS/PARTICIPATES IN A					
	BANK ACCOUNT	CREDIT CARD	BANK LOAN	TANDA	PAWN SHOP LOAN	LOAN FROM FAMILY OR FRIENDS
Financial knowledge score	0.029***	0.017**	0.006	0.000	0.005	-0.013
Financial capability component						
Budgeting	0.000	0.000	0.006**	0.002	0.001	-0.003
Monitoring expenses	0.011***	0.010**	0.003	0.002	0.001	-0.010**
Using information	0.010**	0.011***	-0.004	-0.003	-0.006*	-0.012**
Not overspending	0.006	-0.008	-0.005	-0.011***	-0.006**	-0.015**
Covering unexpected expenses	0.013***	0.015***	0.004*	0.001	0.001	-0.006*
Saving	0.012***	0.010***	0.002	0.001	-0.005**	-0.008*
Attitude toward the future	0.013***	0.006	-0.001	-0.001	-0.001	-0.004
Not being impulsive	0.017***	0.009**	-0.002	-0.001	-0.004**	-0.001
Achievement orientation	0.014***	0.008**	0.007**	0.004	0.002	0.009
Financial capability index ^a	0.056***	0.037***	0.009	0.005	-0.014**	-0.033***

Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: See appendix D for sources of control variables and more details. Partial correlations measure the relationship between financial knowledge or capability and financial product usage after controlling for personal and municipality characteristics that could be driving the relationship. Statistical significance levels: * 10 percent, ** 5 percent, *** 1 percent.

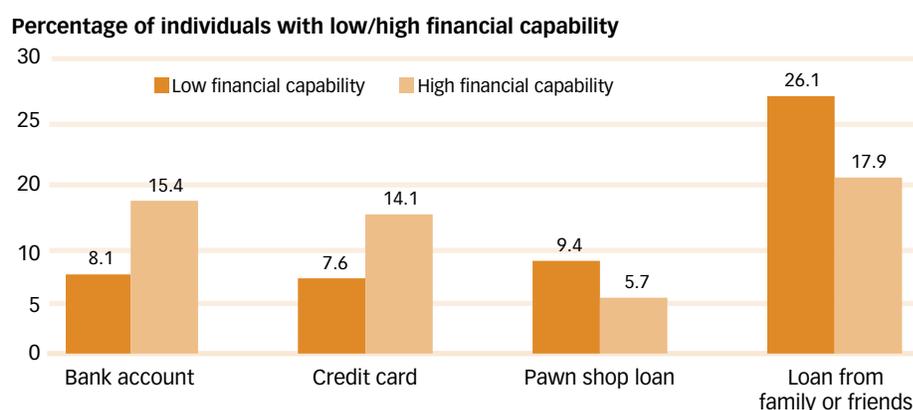
a. Average of components listed above.

usage.³ The results show that positive behaviors related to using information, not overspending, saving, and not being impulsive are associated with a lower likelihood of borrowing from a pawn shop or from family or friends.

³ The living within means measure is excluded here since it is in part based on questions that ask about use of loans and may thus be mechanically correlated with financial product usage. The other financial capability measures are not based on questions about product usage. In some developed countries, such as the United States and the United Kingdom, measures of financial capability have included product usage as a component. However, under the Russia Financial Literacy and Education Trust Fund project, it was decided to construct measures of financial capability that do not rely on the use of financial products, as in many developing countries (including Colombia and Mexico), a large portion of the population does not use any products, in part because the supply of financial services is often more limited than in developed countries. See also Kempson, Perotti, and Scott (2013). The numbers are scaled so they correspond to a 10-point increase in the capability measure. For example, a 10-point increase in monitoring expenses capability is associated with a 1.1 percentage point increase in the likelihood of having a bank account.

Higher financial capability is related to a higher probability of using formal financial products. The last row of table 6.1 summarizes the results by showing the relationship between product usage and a financial capability index that is the average of the nine components listed. The results of this index indicate that, overall, higher financial capability is related to a higher probability of using formal financial products (bank accounts and credit cards) and a lower probability of using informal credit (from pawn shops or family or friends). Figure 6.2 illustrates these results by showing the percentages of individuals with low or high financial capability who have a bank account, credit card, pawn shop loan, or loan from family or friends. Individuals classified as low (high) financial capability are those who have a financial capability index below (above) the median. Individuals with high financial capability are twice as likely to have a bank account or credit card as individuals with low financial capability. They are also about 30–40 percent less likely to have a pawn shop loan or a loan from family or friends.

FIGURE 6.2 USE OF FINANCIAL PRODUCTS BY INDIVIDUALS WITH LOW OR HIGH FINANCIAL CAPABILITY



Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: Low (high) financial capability is defined as having a financial capability index below (above) the median. The index is an average of the nine financial capability components listed in table 6.1. The differences shown in this figure control for personal and municipality characteristics (see appendix D).

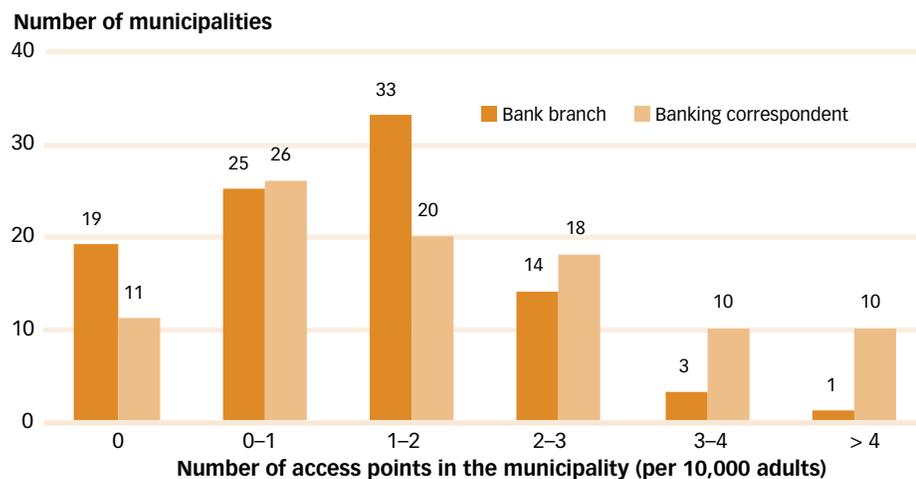
6.3 FINANCIAL KNOWLEDGE, FINANCIAL CAPABILITY, ACCESS TO FINANCE, AND FORMAL PRODUCT USAGE

This section analyzes the financial capability data with municipality-level financial infrastructure data to see if increased access to financial services through banking correspondents is associated with greater use of financial products and how this correlates with financial capability. As discussed in chapter 3, only 15 percent of

those surveyed reported having a formal account at a financial institution, 14 percent a credit card, and 9 percent a bank loan. A first step for bringing more individuals into the formal banking system is to provide access points for financial institutions. Figure 6.3 uses data from the Consejo Nacional de Inclusión Financiera (2011) to illustrate the distribution of bank branches across the 95 municipalities covered in the Mexican Financial Capability Survey. As shown, 19 municipalities have no bank branch at all; most others have between one and three branches per 10,000 adults. The average number of bank branches per 10,000 adults in the sample is 1.2.

The data set from the Consejo Nacional de Inclusión Financiera also includes information on the number of banking correspondents in each municipality. Starting in 2009, banks signed correspondence agreements with retail stores and other institutions, such as convenience store chains like OXXO and Telecomunicaciones de México, to provide access to banking services through the store or branch network of these establishments. The services provided through correspondents vary from bank to bank, but often include payment services, money withdrawal, money deposits, and credit card payments (see Consejo Nacional de Inclusión Financiera 2011 for more information). The average number of banking correspondents for the 95 municipalities in the Mexican Financial Capability Survey is 2 per 10,000 adults, exceeding the 1.2 bank branches per 10,000 adults. Figure 6.3 shows that correspondents provide more bank access points in these municipalities compared to bank branches. Only 11 municipalities have no correspondents, compared to 19 that have no bank branch. In addition, 20 municipalities have three or more banking correspon-

FIGURE 6.3 DISTRIBUTION OF BANK BRANCHES AND CORRESPONDENTS ACROSS MUNICIPALITIES



Source: Consejo Nacional de Inclusión Financiera 2011.

Note: Data are for the 95 municipalities in the Mexican Financial Capability Survey.

dents per 10,000 adults, versus only 4 municipalities with a corresponding number of bank branches per 10,000 adults. The analysis in table D.4 in appendix D shows the extent to which the presence of bank branches and banking correspondents in a municipality is associated with use of formal financial products by respondents to the Mexican Financial Capability Survey.

Results suggest that banking correspondents increase access to formal financial products only for individuals with high financial capability or high financial knowledge. The results in table D.4 show no statistically significant relationship between the number of commercial bank branches in a municipality and the number of individuals in the survey who use formal financial products. Although the relationship is not causal, the number of banking correspondents is associated with greater use of bank accounts and credit cards for individuals with high financial capability or high financial knowledge. For individuals with low financial capability or low financial knowledge, neither bank branches nor banking correspondents are associated with use of financial products, after controlling for other factors, including income. As discussed earlier, individuals with low financial capability rely more on informal than formal financial products. The results here suggest that the increase in formal sector access points through banking correspondents has not been sufficient to integrate these individuals into the formal financial sector.

C onclusions and recommendations

Important challenges related to financial behavior, attitudes, and knowledge have been identified for different segments of the Mexican population based upon data from this first nationally representative survey on financial capability.

- Chapter 2 highlights weaknesses in daily money management and planning processes, finding that 41 percent of those surveyed consistently budget, and just 20 percent monitor expenses rigorously. Furthermore, it suggests that many Mexican households are financially strained, with 70 percent reporting regular or occasional shortages of funds to cover basic expenses and the majority having no provisions to cover major expenses, planned or unplanned. Planning for old age is infrequent, with less than a third of the population under the age of 60 reporting any plans in place to cover old-age expenses.
- Chapter 3 shows gaps in financial inclusion, finding that 49 percent of the population does not currently use any financial products. Among those who do, informal loans and accounts at financial institutions are the products used most commonly. More than 60 percent of those using financial products reported verifying terms and conditions and comparing various products before making financial decisions. However, only 37 percent of the survey population was able to do a simple interest rate calculation—an ability that would be necessary to analyze financial products.
- Chapter 4 describes five distinct clusters within the sample population that were identified using individual scores for the components of financial capability. The most common clusters were short-term money managers and unsophisticated money managers, which made up 33 percent and 25 percent of the surveyed population, respectively. One of the smaller clusters consisted of young impulsive spenders (12 percent of those surveyed).
- Chapter 5 compares the financial capability of Mexicans to respondents in six other countries and finds that Mexicans have a relatively shorter planning time horizon and are less likely to plan how they would spend their money. The Mexicans surveyed did, however, report a fairly high inclination toward saving behavior relative to the other countries. With respect to formal financial

knowledge, Mexicans displayed a weaker performance relative to respondents in most of the other surveyed countries on interest rate calculations, understanding of the concept of risk and return, and understanding of portfolio diversification.

- Chapter 6 provides evidence of linkages between financial knowledge, financial capability, and financial inclusion, as measured by the use of formal financial products. The chapter suggests that banking correspondents increase access to formal financial products primarily for individuals with high financial capability or high financial knowledge. This finding in turn suggests that expanding financial knowledge and enhancing financial capability are crucial steps toward the goal of accelerating responsible financial inclusion.

Increasing the overall financial capability of Mexicans will require a multipronged, multistakeholder strategy involving improved design of financial management tools and financial products, targeted financial education to enhance capability, and supportive regulation ensuring adequate consumer protection. The seven policy recommendations listed below are based on lessons learned and describe interventions that have been successfully implemented in other countries. Taken together, they could address the challenges related to financial capability that Mexicans face.

1. **Promoting technology that increases timely access to personal financial information can foster more precise daily money management and encourage planning behaviors that are missing in many of those surveyed.**
 - Designated Mexican authorities and other stakeholders could support the development of **mobile phone– and Internet-based personal finance tools** and their distribution through financial and educational institutions. These tools can help households track spending by categorizing transactions and motivating saving toward budget goals. In recent years, a number of tools with web and/or mobile phone interfaces have been developed, such as HelloWallet, Mint, Pageonce, Rocket, and Juntos Finanzas. In particular, Juntos Finanzas (which won the 2012 Mexico G20 innovation award for financial inclusion) is suitable for a range of Mexican households, as it was developed specifically to help cash-based households, is available in English and Spanish, and is an SMS (short message service) -based application that works with the simplest mobile phones. Financial authorities could encourage tool developers to partner with financial institutions to promote the use of these tools among their clients and to develop complementary tools for personal finance. CONDUSEF recently launched an app supporting household budgeting. Nearly all of the Mexican population has access to a mobile phone and a quarter of the Mexican population uses the Internet

(INEGI 2010), so Internet- and mobile phone–based personal finance tools are a particularly good way to reach youth, who are disproportionately active users of these media.

- Financial sector regulators and other relevant authorities could encourage financial institutions and other stakeholders to use **text messages and social media** to relay simple notices and information related to personal finance, such as managing account balances, loan repayment, adhering to debt management plans, and savings mobilization. A randomized control trial in the Philippines found that personalized reminders to repay loans were associated with timely repayment (Karlan, Moren, and Zinman 2012). A study of financial institutions in Bolivia, Peru, and the Philippines showed that letters or text message reminders to save increased the likelihood of reaching saving goals by 3 percent and the total saved in the reminding financial institution by 6 percent (Karlan et al. 2012). Some NGOs in India have provided financial behavior–related content by voicemail in an effort to reach illiterate populations. This recommendation also has particular potential to reach the youth population that actively uses mobile phones and social media. The financial education and behavior messages promoted through social media should be based upon concepts for which there exists evidence and general agreement.
2. **To address the challenge of too little funds set aside for retirement and other predictable life events, encourage a culture of voluntary saving.**
- Mexican authorities and other stakeholders could consider **implementing media campaigns**—e.g., through **television programs**—to transmit key messages related to financial capability, such as the need to increase voluntary saving for retirement. In 2010, 95 percent of Mexicans owned a TV (INEGI 2010). Developing concise key messages and transmitting them through mass media interventions could capture the attention of large segments of the population. For example, those who viewed financial education messages provided through a popular South African soap opera had a significantly higher financial knowledge of the issues highlighted in the soap opera storyline, and were almost twice as likely as those who did not view the soap opera to borrow from formal sources and were less likely to engage in gambling (Berg and Zia 2013). *Telenovelas* (Mexican soap operas) are highly popular and could be used to spread key messages.
 - Financial sector authorities (such as CONDUSEF) could enhance content related to **teachable moments when people might be seeking information about financial decisions**. A teachable moment could be paying for education; the purchase of a home; a milestone occasion such as a

marriage, the birth of a child, or retirement; or even the registering of a consumer complaint on a financial product. Using a sample of Indonesian migrants, Doi, McKenzie, and Zia (2012) show that financial education can have large effects when provided at a teachable moment, but that this impact varies by training recipient. Duflo and Saez (2011) find positive impacts of financial education on planning for retirement or investment portfolio choices, leading to an increase in retirement plan participation. New Spanish-language content on the U.S. Consumer Financial Protection Bureau website offers one model of providing clear information at key decision points.¹ It includes information on how to buy a car or a home or pay for college; this could be used to augment information CONDUSEF currently offers related to loan cost calculators.

3. **Strengthen savings mobilization, particularly to cover unanticipated financial shocks, by encouraging financial institutions to adopt attractive product design elements.**
 - **Labeling savings** for specific goals is a simple, relatively cheap way to make gains from a savings account feel tangible and curb tendencies to overspend. In Colombia, banks such as AV Villas are piloting mobile phone wallets with different “pockets” named for specific goals (such as vacations, special events, or education). In Mexico, the mobile wallets provided by a diverse set of financial institutions, including microfinance institutions, could be similarly equipped. A randomized controlled trial found that treatment groups in Ghana with access to accounts that individuals labeled for specific savings goals saved 31 percent more on average than the control group (Karlan et al. 2012). A Peruvian financial institution created jigsaw puzzles with pictures of savings goals (such as a child in school or a vehicle). The group receiving a puzzle piece for each deposit was 2.3 percentage points more likely to meet its savings commitment than the control group (Karlan et al. 2009).
 - **Commitment savings** accounts enable users to voluntarily restrict access to their savings for a set period of time, helping them establish discipline while avoiding the distraction of less valuable daily purchases. For example, after one year, individuals in the Philippines who gave up access to their savings for a set period of time increased their savings 81 percent relative to a control group (Ashraf, Karlan, and Yin 2006). An experiment that randomly assigned some Kenyan farmers the choice to commit some of their earnings immediately to a savings account dedicated to fertilizer

¹ Accessible in Spanish at <http://www.consumerfinance.gov/es/>.

or wait a few days before committing the funds found that 57 percent of those who immediately saved in the account purchased fertilizer in the next planting season, compared with 30 percent in the control group (Duflo, Kremer, and Robinson 2006). Finally, a deferred payment scheme that utilizes **future dated mobile payments** (i.e., the ability to send money to oneself at a future date), has been proposed as the functional equivalent of traditional commitment savings for mobile phones. The customer's funds would not be accessible until the date is reached, and the future date would be associated with a purpose in the customer's mind (Mas 2013).

- **Remittance-linked products** aligned with the needs of migrant workers and their families offer the opportunity to move transfers directly into savings products. Such products could draw on insights from a study of U.S.-based El Salvador migrants (Ashraf et. al 2011), which found that savings accounts that offer the remittance senders greater monitoring and control over their account accumulate the most savings.
 - **Encouraging recipients of social welfare benefits** to save transfers into their associated bank account rather than withdrawing their entire transfer at once would support saving among a segment of the population that now demonstrates relatively low use of formal financial services. For example, accounts in the state-owned Bank of National Savings and Financial Services (BANSEFI) opened for Oportunidades social welfare beneficiaries are underutilized, in large measure because Oportunidades benefits are not paid into these accounts, even though the bank's infrastructure (cards and point-of-sale terminals) is used to effect the payments. The contract between the Ministry of Social Development (SEDESOL) and BANSEFI does not permit Oportunidades beneficiaries to delay or receive benefits partially, or to use money paid into their account to purchase goods electronically at retail stores. Instead, programs could pay benefits directly into beneficiary bank accounts, allowing beneficiaries to administer their funds as they see fit. Social benefit recipients could also be given an easy account portability option, which would increase competition among banks and provide incentives to market additional products to beneficiaries and extend correspondent networks into marginalized communities. A similar approach might be used for social programs that attempt to alleviate food insecurity and provide income support to the elderly.
4. **Continue to develop financial infrastructure to improve access to formal financial services for segments of the Mexican population that are currently not using financial services or that are using suboptimal informal services.**

- Mexican governmental authorities could enact regulatory changes that allow additional **financial institutions, such as financial cooperatives and deposit-taking microfinance institutions (popular financial societies—SOFIPOs) to operate through bank correspondents**. This authorization would strengthen financial access, as most retail correspondent chains do not extend into slums or peri-urban areas or smaller towns. Today, Telecomm (a government agency) is the only Mexican banking correspondent chain that reaches smaller towns. Authorities could allow deposit-taking SOFIPOs and the cooperatives that are present in those areas to sign up banking correspondents on the same terms as do banks (i.e., on a fully funded, real-time basis). In this way, these financial institutions could expand geographically and could offer more convenient service to their customers. Note that permitting SOFIPOs and cooperatives to engage as banking correspondents would require changes in their respective governing laws. Relatedly, financial institutions, including public entities, could consider assigning additional networks to operate bank correspondents. For example, full utilization of the extensive network of Diconsa subsidized rural food stores, Pemex gas stations, and *cajas de ahorro* would expand the potential for basic savings.
- Efforts to **widen the scope of transactions executed through bank correspondents** would support financial inclusion. Although the opening of low-risk deposit accounts is permitted by regulation, few banks are opening these accounts through correspondents. Currently, many banking agents deliver a limited range of operations, so access and usage points are restricted. Building the business case for financial institutions to offer additional financial products and services through correspondents is a key challenge.
- Mexican government authorities could strengthen regulations to build a stronger, more open mobile payments network. For example, regulations to support the **interoperability of the mobile payment system** would help ensure that consumers can execute transactions irrespective of the mobile network operator or bank chosen. Currently, certain mobile financial services are not interoperable with other telecommunications providers or even with other banks, limiting market growth. Promoting new business models that support the growth of a mobile payments network, such as mobile point-of-sale schemes, has shown promise in other developing economies; these are now being rolled out in Mexico as well.
- **Scaling up promising programs to expand financial access to rural areas** would increase opportunities for Mexicans to save and participate

in other formal financial transactions. A recent Telecomm pilot project in Oaxaca found that, following installation of mobile network communication infrastructure and the provision of mobile phones to the population, 48 percent of those in the pilot became “savers” with balances exceeding Mex\$100, and 33 percent became active users of mobile financial services (CGAP 2013). Participants were provided with instruction on how to use mobile financial services—another example of taking advantage of a teachable moment to provide financial education.

- Mexican authorities could **promote the marketing of basic accounts**. In 2007, the Mexican Congress approved a law that made it mandatory for all institutions that receive money deposits to offer basic payroll accounts. There are now some 24 million basic accounts, the majority of which are associated with payroll collection for formal employees. Through “mystery shopper” visits to financial institutions, Gine, Martinez-Cuellar, and Mazer (forthcoming) find that, although Mexican law requires basic savings accounts to be offered at all banks, such accounts were not offered to a single shopper in more than 100 visits to institutions—despite these low-cost products being a good match for the needs of many of the consumers in the exercise. These bank accounts may not be having the intended impact on savings access for low-income consumers; this situation could be improved through more specific marketing rules so providers make consumers aware of the product’s existence.
 - Encourage programs **supporting linkages** from informal to formal products—e.g., between *tandas* and banks. In Egypt, the **rotating savings and credit association model** was combined with bank insurance to protect member savings in case a member defaults (El-Gamal et. al 2011). Similarly, India’s National Bank for Rural Development has had a program in place since 1992 to link informal self-help groups (groups that collect small amounts of savings from members) with banks. The banks deal with the group rather than individuals, thereby helping to minimize the transaction costs on these relatively small deposits while paying a market rate of interest.
5. **Support consumer protection interventions that help mitigate the effects of limited formal financial knowledge of segments of the Mexican population.**
- Relevant Mexican authorities could require regulated financial institutions to incorporate research on **good practices for disclosure and pricing regimes** for financial consumers. A study of the use of AFORES (retirement investment funds) in Mexico finds that workers with low financial knowl-

edge are better able to analyze and compare the fees charged by funds when these are presented as total costs in pesos rather than as an annual percentage rate (Hastings and Tejada-Ashton 2008). A study executed by the Consultative Group to Assist the Poor (CGAP), CONDUSEF, and the World Bank notes similar findings regarding consumer understanding of percentages; it also finds that even sales agents for financial products had poor knowledge of the definitions of key terms required to be disclosed to consumers, such as total annual cost or total annual earnings for savings and credit cards (Gine, Martinez-Cuellar, and Mazer forthcoming). In consumer credit products, total annual cost should be expressed as “total amount you pay,” with the amount due expressed in pesos rather than as a percentage value. Other interventions suggested by the researchers include having banks present sample user profiles for new customers that best approximate their behavior (e.g., light user versus heavy user) to help them make more decisions across product features more easily. Mexican authorities could also consider interventions related to promoting impulse control, such as requiring credit card companies to allow users to place lower ceilings on charges than those approved by the credit card company.

- Developing **market conduct regulations** governing banking transactions occurring outside the traditional banking infrastructure will be critical. As new methods of transactions develop—such as mobile banking—or new types of correspondents arise, the relevant Mexican authorities may need to adapt regulations to reflect these new channels.
6. **School-based financial education programs could address the deficiencies in financial behaviors and knowledge identified in this report, but should be designed and implemented carefully given the mixed impact of global interventions to date.**
- Mexican authorities could consider carefully designed **school-based programs** to offer opportunities to educate youth on a regular basis before they make key financial decisions. Current dialogue about the Mexican public educational system includes discussion of increased time for classroom instruction and increased opportunities for experiential education—both of which offer opportunities for financial education curricula. Insights from existing school-based financial education programs could inform this design. For example, Bruhn et al. (2013) conducted a randomized evaluation of a financial education program in Brazilian public high schools that incorporated modules into different aspects of the curriculum and integrated assignments that involved family budgeting. They find positive effects on knowledge, attitudes, and behaviors, including a 24 percent increase

in student savings rates and spillovers to parents such as a 17 percent increase in the number of parents who track monthly expenses. School-based education programs could be coupled with programs promoting responsible use of financial products, such as the opening of savings accounts for youth. Once designed, courses can also be transmitted in *tele-secundarias*, which provide secondary education through television broadcasts in areas that are rural or otherwise difficult to access.

- Mexican authorities should consider the mixed evidence on the impact of financial education programs within their **planned policy framework for financial education**. Programs provided by financial institutions are particularly challenging. Bruhn, Ibarra, and McKenzie (2013) describe a financial literacy course offered by a financial institution in Mexico City and find that take-up of voluntary programs is extremely low and that the benefits of the training were partial (a 9 percent increase in financial knowledge and a 9 percent increase in savings outcomes but no impact on credit card behavior, retirement saving, or borrowing). While financial literacy courses may be beneficial for some segments of the population (such as individuals with higher levels of education, who are accustomed to learning in a classroom setting), other types of interventions may be needed to reach the broader population.
7. **Sustained analysis is needed to support the Mexican financial capability agenda.**
- Building on the baseline of the comprehensive financial capability data set underlying this report, Mexican authorities could consider **monitoring a smaller subset of questions** from the Financial Capability Survey over time, possibly as part of ENIF. If properly designed, such a survey could provide the opportunity to test the impact of program interventions over time. More frequent monitoring and evaluation could be considered by utilizing the G20-recommended indicators related to financial capability that are currently under development.
 - Mexican authorities could also opt to **participate in the next round of the OECD’s Programme for International Student Assessment (PISA) financial literacy exercise**. This participation would increase the body of knowledge on financial literacy strengths and weaknesses of the youth population, and permit Mexico to benchmark its youth to peers in other OECD countries.
 - Additional research could explore linkages between the Financial Capability Survey and other Mexican data sources.

Construction of financial capability scores

The text in sections A.1 and A.2 is taken from Kempson, Perotti, and Scott (2013: 58–61), a publication of the Russia Financial Literacy and Education Trust Fund. The main objective of the Russia Financial Literacy and Education Trust Fund measurement project was to develop indicators of financial capability that are as neutral as possible with respect to culture and to education or income levels. One of the key questions to be answered through empirical analysis was the possibility to construct valid measures that can be used for comparisons across countries.

A.1 IDENTIFYING FINANCIAL CAPABILITY COMPONENTS

The aim of the analysis is to construct a score S_c for each component c of financial capability ($c = 1, \dots, C$, where the number of components C is unknown) as a linear combination of the (standardized) variables V_1, V_2, \dots, V_K contained in the data set, which have correlation matrix Σ :

$$S_c = w_{c1} \frac{V_1 - \mu_1}{\sigma_1} + w_{c2} \frac{V_2 - \mu_2}{\sigma_2} + \dots + w_{cK} \frac{V_K - \mu_K}{\sigma_K}$$

where μ_i and σ_i denote, respectively, the mean and standard deviation of V_i , and the weights w are unknown. A key advantage of factor analysis is that the weights attributed to each component are not determined in advance, but are calculated through empirical analysis and therefore reflect the importance of each variable in the context of interest; low- and middle-income countries for this project. A specific weight w_{ci} (which denotes the importance of the i th variable for component c) can be zero, meaning that variable i is not relevant for a specific component c . In short, this means that neither the number nor the nature of the components is determined a priori. For example, if there are 10 variables in the data set, it might be that two components exist, where the first is a combination of the 1st, 3rd, and 10th variables only, and the other variables are relevant for the second component. By looking at which specific variables are relevant for a particular component, it is possible to identify the nature of the component. The results of this analysis are then compared to the manifestations of financial capability that emerged from the focus groups. If

the components are comparable to the focus group concepts, they can be considered reliable measures for these concepts.

Several procedures exist to extract components from data. A frequently applied method is PCA [principal component analysis], which captures all of the variance of the variables and is the most adequate technique when the measurement scales are not yet validated. PCA is based on maximization of the variance of S_1 to find the weights for the first component (w_{11}, \dots, w_{1k}), maximizing the variance of S_2 to find the weights of the second component (w_{21}, \dots, w_{2k}), and so on, subject to the constraint that the sum of the squared weights for each component be equal to one. The weights that solve this maximization problem are a function of the matrix of correlations between the components, and of its eigenvalues and eigenvectors. This method produces a matrix Λ of factor loadings, which represent the correlation between each variable and the components. The columns of this matrix are equal to the eigenvectors of the correlation matrix Σ , scaled by the square root of the corresponding eigenvalue.

Alternative extraction methods include principal factoring (reducing the variance explained by the components to the shared variance among the variables, not total variance), and maximum likelihood (aimed at reproducing the correlation matrix). Principal factoring is preferred when a clear a priori structure for the scales and constructs in the analysis is assumed. Maximum likelihood has the advantage of being able to test the statistical fit of the component solution. A completely different method is confirmatory factor analysis, in which the structural relationships between the variables are determined a priori and tested using maximum likelihood estimation. Since the goal of the present project was to develop measure(s) of financial capability, an exploratory type of analysis was favored; hence PCA was selected as the main analysis technique.

PCA extracts as many components as there are variables in the correlation matrix, in order of decreasing explained variance. Typically, the first few components explain a large percentage of the variance, say over 50 percent. At some point, the marginal contribution of a component becomes too low and the remaining components are omitted. One common criterion to decide about the number of components to be retained is that a component have an eigenvalue greater than one, meaning that the component explains more than the average variance explained by each component. Another criterion, often applied in combination with the eigenvalue criterion, is the scree test, in which the eigenvalues are plotted against the components. Since the principal components are ordered from high to low, the eigenvalues at first drop very quickly, then level off. Usually there is a break in the slope of the line drawn through the first few eigenvalues and the slope of the line drawn through the remaining

eigenvalues. The “kink” between the two lines indicates the cutoff point for components: those before the kink are retained and those after it are omitted.

It is recommended that at least three measures be included in the PCA, several of which should be substantially correlated. To test whether the set of chosen variables is adequate for PCA, Kaiser’s measure of sampling adequacy is usually calculated and a value over 0.60 is considered adequate (Tabachnick and Fidell 2001). For the analysis, the Kaiser measure was calculated and a value higher than 0.60 was obtained except for one component of capability (using information, for which it was 0.56).

Although the principal components explain the common variance among the variables, the component weights, shown in the component loading matrix, cannot be interpreted easily. The initial PCA solution represents the variables in the orthogonal component space. By rotating the space, the variables can be represented such that they are maximally related to certain components, indicating convergent validity, and minimally to other components, indicating discriminant validity. Rotation results in high weights for some components and low weights for other components for the same variable. The rotated component loading matrix can be interpreted more easily, since typically each component is related to a particular set of variables, and not to the remaining variables. The interpretation then follows from the nature of the high-loaded variables. For example, a component that is highly related to questions such as “When you receive money, do you plan how it will be used?,” “Do you plan exactly how you will use the money or only make a rough plan?,” and “Do you keep to the plan you made for spending your money?” might be interpreted as “budgeting.” Rotation may be accomplished in many different ways, the main ones being orthogonal rotation, assuming that the components are unrelated, and oblique, in which case the components are allowed to be correlated. If the structure of the data is not known beforehand, it is good practice to run PCA with oblique rotation first, and if the component correlations are low (e.g., below 0.32), to present the orthogonal rotation, effectively neglecting the low correlations (Tabachnick and Fidell 2001). Interpretation problems arise if the same variable has more than one high loading, in which case the components cannot be interpreted uniquely. Sometimes a solution is to drop such a variable from the analysis.

To assess the reliability of the components, the standard Cronbach’s alpha is used as a measure of reliability based on the number of items related to a component (the more items, the higher the internal consistency will be) and on the average correlation between the items. Cronbach’s alpha varies between 0 and 1, and values higher than 0.65 are typically considered to denote satisfactory reliability. In this project, the Cronbach’s alpha calculated for the components was higher than 0.65 except for

two components (using information and not being impulsive, for which it was 0.37 and 0.61, respectively).

The results of the analysis showed that 10 components could be identified in each country and that their composition was comparable across countries. Two additional components were identified but only applied to subgroups of the population (people under 60 years, and people who choose financial products personally). These components are described in more detail in chapter 6 of Kempson, Perotti, and Scott (2013)].

A.2 CONSTRUCTING COMPONENT SCORES

Once a group of variables is identified as loading on the same component, a single score can be calculated for each individual with respect to that component, by weighting each variable by the coefficients obtained through the PCA. The most commonly used procedure to obtain the coefficients w is the regression approach... which calculates the matrix of score coefficients as $\Lambda\Sigma^{-1}$.

The component scores are standardized (have zero mean and unit variance) and in principle may run from $-\infty$ to $+\infty$. However, because the range of values of the observed variables is limited, the range of component scores is also limited. One more easily interpretable way of presenting the component scores consists of rescaling them between extremes formed by the responses of an extremely incapable person (who would score 0) and responses of an extremely capable person (who would score 100). This procedure amounts to having the questionnaire completed (hypothetically) by two such extreme persons, then calculating their respective component scores to be used for rescaling. The rescaling formula is

$$S^* = 100*(S - a)/(b - a)$$

with S the original component score, a the minimum score, and b the maximum score.

A.3 COMPARING FINANCIAL CAPABILITY

Regression analysis was used to examine the extent to which respondents' individual characteristics were associated with each of the 10 components of financial capability. Table A.1 lists the sample summary statistics for the covariates used in the regressions. All are binary variables (equal to 1 if the category applies to the respondent, equal to 0 otherwise), except for the number of adults in the household and the financial knowledge score. The means presented for the binary variables are interpreted as follows: for example, if "female" is on average equal to 0.53, then this means 53 percent of the sample are women.

TABLE A.1 SAMPLE STATISTICS FOR KEY SOCIODEMOGRAPHIC VARIABLES

VARIABLE	MEAN	STANDARD DEVIATION
Female	0.53	0.50
Age 18–30	0.29	0.46
Age 31–40	0.25	0.43
Age 41–50	0.19	0.40
Age 51–60	0.12	0.33
Age 60+	0.14	0.35
Primary education at most	0.36	0.48
Secondary education	0.55	0.50
Tertiary education	0.09	0.28
# household members 18+	2.82	1.17
Living with a partner	0.69	0.46
Has dependent children	0.55	0.50
Rural area	0.38	0.49
Income group 1	0.37	0.48
Income group 2	0.34	0.47
Income group 3	0.17	0.37
Income group 4	0.13	0.33
Has financial products	0.51	0.50
E1: Formal employee	0.24	0.43
E2: Informal employee	0.15	0.36
E3: Self-employed	0.03	0.16
E4: Unemployed	0.05	0.22
E5: Waiting for busy season	0.02	0.14
E6: Student	0.04	0.19
E7: Retired	0.04	0.20
E8: Sick	0.01	0.12
E9: Housework	0.27	0.44
E10: Other	0.15	0.35
Financial literacy score	2.79	1.27
Responsible for day to day	0.74	0.44
Responsible for planning	0.75	0.44
Responsible for choosing financial product	0.66	0.74
Income seasonality: no income	0.10	0.30
Income seasonality: variable income	0.60	0.49
Income seasonality: stable income	0.30	0.46

Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: $n = 2,022$.

Segmenting the population using cluster analysis

This appendix draws on analysis from Kempson, Perotti, and Scott (2013) summarizing results from all of the countries in the Russia Financial Literacy and Education Trust Fund financial capability project. Cluster analysis was used by the project team to segment the population into groups with comparable levels of capability. This iterative procedure aggregates individuals into groups that have shared attributes distinguishing them from others in the population (in this case, similar financial capability strengths and weaknesses). This approach was used, for example, in the United Kingdom and in the Netherlands. The clustering process consists of two steps: proximity analysis (to calculate dissimilarity measures between respondents) and hierarchical cluster analysis (to determine the number of clusters). The steps are described below, as per Kempson, Perotti, and Scott (2013: 64).

B.1 PROXIMITY ANALYSIS

This step is only required if a single measure of financial capability cannot be developed. In this case, individuals need to be compared along many dimensions, by calculating a dissimilarity measure that takes into account all the dimensions. Several methods can be used to calculate dissimilarity, but a very common one is the squared Euclidean distance, defined as

$$d(X, Y) = \sum_i (X_i - Y_i)^2$$

with X_i and Y_i the values of the i th variable for individuals X and Y . In other words, the distance between two observations is calculated as the sum of the squared differences between the values of the observations. Note that this measure should not be interpreted as an overall index of capability, but simply as a practical method to identify individuals who have similar capability scores across the different dimensions.

B.2 HIERARCHICAL CLUSTER ANALYSIS

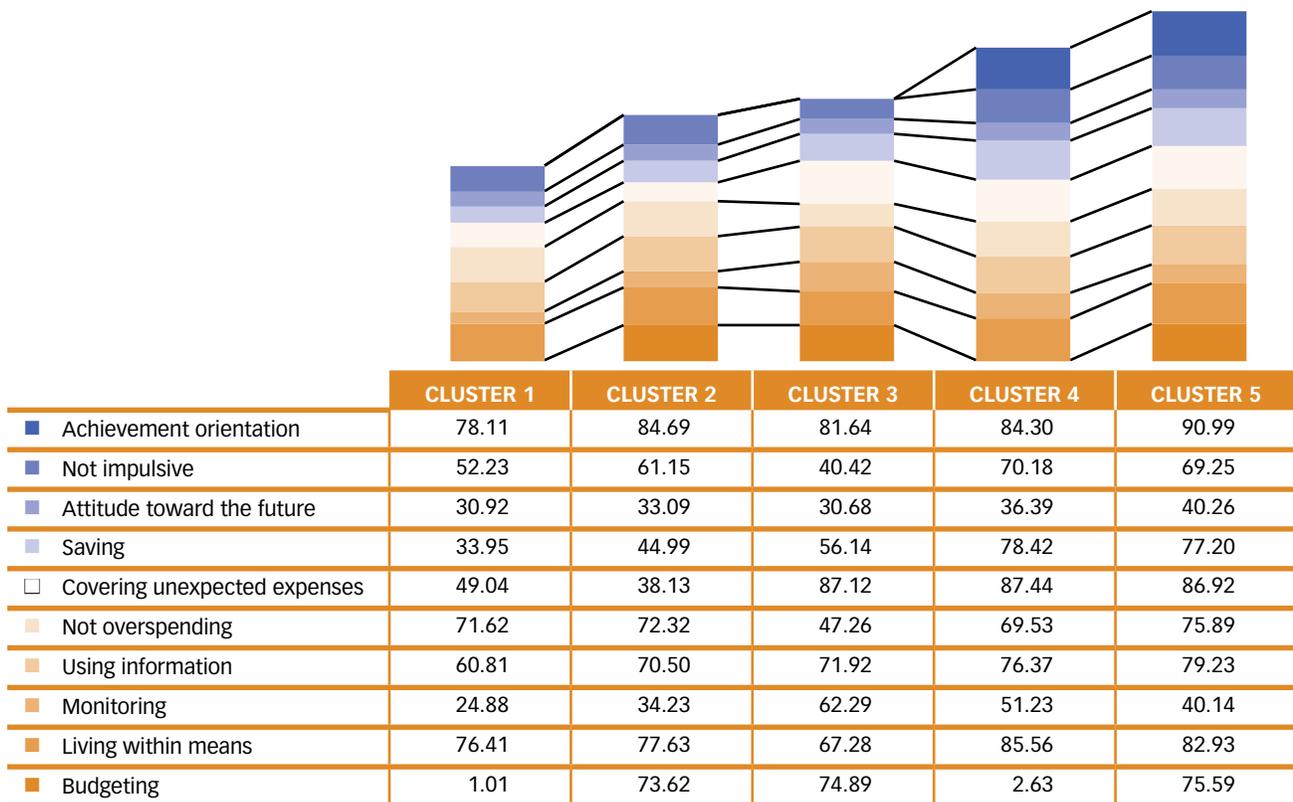
The distances between the respondents serve as a starting point for the hierarchical cluster analysis to determine the number of clusters or groups of respondents. The procedure initially assigns each of the N respondents to a separate cluster, so that in the first iteration there are N clusters. In each of a maximum of $N-1$ consecu-

tive steps, the two most similar clusters are merged. Clusters that are combined in later stages are more dissimilar than clusters that are combined in earlier stages. If the within-cluster variation in adjacent steps becomes too large, it is considered an indication that the two clusters are too dissimilar for merging: the process is terminated before merging the dissimilar clusters. The differences of the minimized within-cluster sum of squares between two steps are used to determine the number of clusters (Ward’s method; see Bacher, Pöge, and Wenzig 2010).

We can then describe, or profile, the types of people who tend to be in each of the clusters by summarizing their sociodemographic characteristics (age, gender, relationship with household head, education, income, etc.). Regression models can also be estimated to look at these characteristics jointly. For example, by estimating a logistic regression model for the probability of belonging or not belonging to each of the clusters, we may find that people with specific characteristics (e.g., women or respondents with dependent children) are more likely to belong to a particular cluster than people with different characteristics.

Figure B.1 presents the results of the cluster analysis and describes the mean score for each cluster across the 10 components of financial capability.

FIGURE B.1 SCORES ON FINANCIAL CAPABILITY COMPONENTS BY CLUSTER



Source: World Bank and Government of Mexico Financial Capability Survey data.

Youth financial capability

This appendix compares the youth population, aged 18–24, with the adult population, on financial behavior, attitudes, and knowledge with the goal of providing insights into a population that is commonly targeted for financial education interventions. Young people are entering an increasingly complex financial services market due to technological advances, and financial deregulation. Parents are not uniformly equipped to transmit sound financial management skills. Research shows that financial capability is strongly correlated with family economic and educational levels, and those inequalities in financial capability persist across generations (Lusardi, Mitchell, and Curto 2010). Higher-income and urban populations are typically more likely to access financial services. For poorer parents, their educational levels—and consequently their financial knowledge—may be lower than that of their children.

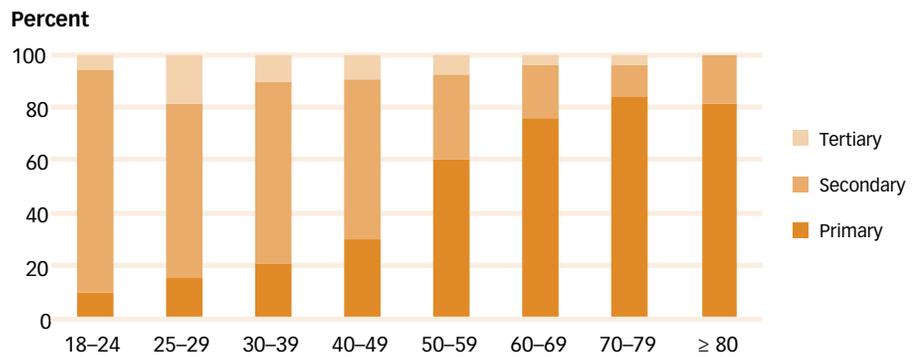
The age range of respondents in the Mexican Financial Capability Survey is 18–97, with a median age of 39. For this analysis, “youth” is defined as those between the ages of 18 and 24. The adult population is divided into two categories, those between the ages of 25 and 59—typically the age range for active labor force participation—and those aged 60 and over, classified here as the elderly.

C.1 EDUCATION, EMPLOYMENT, AND PARTICIPATION IN FINANCIAL DECISION MAKING

Mexican youth are, on average, more likely to be better educated than older cohorts (figure C-1). A large majority of youth (84 percent) has completed secondary education, compared to only 66 percent of the age 25–29 group and 68 percent of the age 30–39 group. Twenty-two percent of youth respondents in Mexico are students, compared to only 2 percent of those aged 25–29.

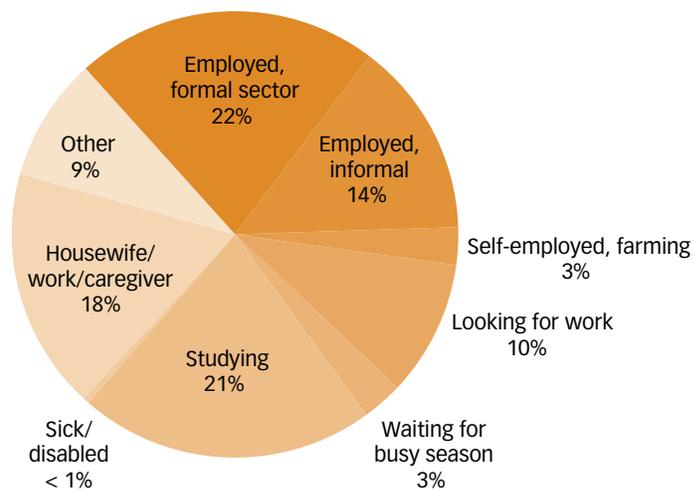
The majority of youth is employed in the formal or informal sector, or is studying (figure C-2). Formal sector employment peaks for the age 25–29 group: this sector employs 22 percent of youth and 42 percent of adults age 25–29. Formal employment rates hover around 30 percent for the age 30–49 group, after which rates decline sharply to 16 percent for the age 50–59 group. A significant proportion—17 percent—of Mexican youth is employed in the informal/self-employed sectors. Thirty-four percent of young Mexican women in the age 18–24 group report

FIGURE C.1 EDUCATIONAL ATTAINMENT BY AGE



Source: World Bank and Government of Mexico Financial Capability Survey data.

FIGURE C.2 EMPLOYMENT OF YOUTH (AGED 18-24)



Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: n = 267 (136 male; 131 female).

no employment outside the home. The proportion of women in homemaker roles increases significantly with age, rising to 52 percent of women aged 25–60 and to 67 percent of women aged 60 and over.

Mexican youth are less likely to contribute to the household or to participate in household financial decision making than adults. Youth aged 18–24 are the age group least likely to contribute to the household budget and participate in household financial decision making. Only 51 percent of the age 18–24 group contributes to the household budget, and only 55 percent participates in financial decision making in

the household. The majority of Mexico's youth (59 percent) aged 18–24 report living with their parents, compared to 32 percent of those in the age 25–29 cohort. Thirty-seven percent of youth report being “mainly” responsible for personal spending, compared to 66 percent of adults aged 25–59 and 63 percent of those over age 60. Only 11 percent of youth report that they head a household and are responsible for both personal and household expenditures, compared to 47 percent of adults aged 25–59 and 64 percent of those over age 60.

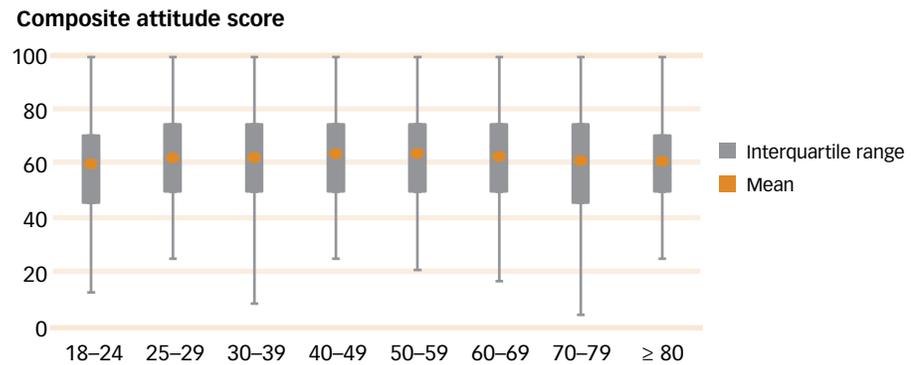
C.2 FINANCIAL KNOWLEDGE, ATTITUDES, AND BEHAVIORS

Mexican youth overall score slightly better than Mexican adults on most measures of financial knowledge, but the difference is not statistically significant. While youth score slightly higher on questions of financial knowledge compared to the 60 and over age group, their financial knowledge is largely on par with adults age 25–59 (figure 4.5). This finding is not surprising, given that the average educational level of youth is higher than for older age groups. As the purchasing power of the age 18–24 group increases and as they gain financial independence, increases in their financial knowledge beyond the level of the current adult cohort would be expected. Younger age groups are more likely to understand how the value of money decreases due to inflation: 58 percent of both youth and adults aged 25–59 indicated that they understand the time value of money (inflation) relative to only 46 percent of those over age 60. Most youth are able to do simple division (85 percent) and understand the concept of an interest rate (82 percent).

Youth are more concerned about the future than are older age groups. Attitudes form a crucial link between knowledge and behaviors. Of particular interest in looking at youth financial capability is how they prioritize short- versus longer-term needs, how impulsive they are, and how oriented they are toward achievement. Only 37 percent of youth strongly agree with the statement that the future will take care of itself, compared to 45 percent of adults aged 25–59 and 63 percent of the elderly (figure 4.6). This concern, however, does not appear to translate into planning for longer-term needs, as indicated by the positive response rate to questions about living for the present and having a short-term focus. Analysis of responses to questions about attitude and achievement orientation indicates that, while they are more impulsive in their speech and actions than adults, youth's achievement orientation is comparable to that of older cohorts. A composite score for attitudes was developed based on individual responses to questions about attitude toward the future, impulsivity, and achievement orientation. As shown in figure C.3, youth have the lowest mean score among the age groups: 59 out of 100. However, the differences in score between youth and the older age groups are not statistically significant.

While there is some variation in financial behaviors across age groups, this variation is less than for financial knowledge. On indicators of sound financial management, such as not overspending and budgeting, youth score slightly worse than adults.

FIGURE C.3 MEAN SCORE ON A COMPOSITE INDEX OF ATTITUDES BY AGE GROUP



Source: World Bank and Government of Mexico Financial Capability Survey data.

Mexican youth find it significantly more difficult to not overspend compared to older age groups, and youth score significantly lower on budgeting behavior than do adults (figure 4.7). Possible reasons for this disparity may be that youth have greater expenses than do adults as they try to establish careers and households or, conversely, that since the majority of youth live with parents, they have some buffer against the consequences of overspending.

Few youth (and adults) report actively monitoring spending. The mean score for youth on monitoring expenses is 35, indicating only an approximate knowledge of how much money is available and how funds are spent. However, youth do report living within their means for the most part. The mean score for Mexican youth on living within their means is 77, indicating fairly low rates of indebtedness and short-term borrowing.

The majority of youth in Mexico use information in their financial decision making, although at a slightly lower level than reported for the adult population. The mean score for youth on using information is 68, compared to 72 for both the adult (aged 25–59) and elderly (over age 60) populations. A larger difference between youth and adults exists with regard to selecting from among various financial products. Saving behavior among youth and adults is comparable, but adults outperform youth on the ability to cover unexpected expenses. Mexican youth are significantly less likely than adults to have obtained information and chosen financial products. Only 41 percent of youth had personally chosen and bought a financial product in the last five years compared to 54 percent of adults.

Methodology to analyze linkages between financial capability and financial inclusion

D.1 RELATIONSHIP BETWEEN FINANCIAL KNOWLEDGE AND FINANCIAL CAPABILITY

To analyze the relationship between financial knowledge and financial capability, table D.1 displays the results from 10 separate ordinary least squares regressions of the following form:

$$FinancialCapability_{i,m} = \alpha + \beta FinancialKnowledge_{i,m} + \gamma X_{i,m} + \delta Z_m + \varepsilon_{i,m} \quad (1)$$

where *FinancialCapability* is 1 of 10 measures of financial capability (see full list in table D.1), *FinancialKnowledge* is the financial knowledge score (see definition in table D.5), *X* is a set of individual control variables (see table D.7), and *Z* is a set of municipality control variables (see table D.8). The control variables are included to isolate the relationship between financial knowledge and capability that is not driven by these other variables. The standard errors of the regression are clustered at the municipality level.

The numbers reported in the first row of table D.1 are the coefficients β from the 10 regressions. That is, they show the partial correlations between financial knowledge and each measure of capability after controlling for personal and municipality characteristics that could be driving the relationship. The sizes of the correlations represent the increase in each financial capability measure for a one-point increase in the financial knowledge score (as described below, the financial knowledge score runs from 0 to 8, representing the number of correct answers to five financial knowledge questions, while the financial capability measures are scaled from 0 to 100).

Figure 6.1 in chapter 6 graphically displays the results in table D.1. The numbers plotted in this figure show by how much each financial capability measure increases when the financial knowledge score increases by one standard deviation (the standard deviation of this score is 1.8), where the increase in the capability measure is scaled to represent percentage points of the standard deviation of the capability measure.

TABLE D.1 RELATIONSHIP BETWEEN FINANCIAL KNOWLEDGE AND FINANCIAL CAPABILITY

VARIABLE	DEPENDENT VARIABLE: FINANCIAL CAPABILITY				
	BUDGETING	MONITORING EXPENSES	USING INFORMATION	NOT OVER-SPENDING	LIVING WITHIN MEANS
Financial knowledge score	1.536 (0.987)	0.772 (0.801)	0.530 (0.472)	2.712*** (0.619)	1.359*** (0.479)
Female	4.910*** (1.857)	1.592 (1.499)	0.536 (1.187)	1.166 (1.190)	1.238 (0.922)
Middle aged (35–39)	2.433 (1.726)	-0.481 (1.657)	0.989 (1.137)	4.653*** (1.532)	1.444 (1.274)
Old age (60+)	4.953* (2.947)	5.098** (2.422)	2.694 (1.877)	6.814*** (2.287)	5.330*** (1.296)
Married	1.017 (2.026)	-3.244* (1.784)	-0.335 (1.124)	-1.123 (1.510)	1.178 (0.968)
Secondary education	1.376 (2.525)	1.580 (2.114)	-2.384 (1.533)	-4.842*** (1.623)	-1.706 (1.061)
Higher education	7.205*** (2.713)	1.625 (2.130)	-0.865 (1.721)	-8.145*** (2.126)	1.390 (1.323)
Formal job	8.980*** (3.157)	5.984** (2.615)	2.770 (2.027)	-5.425** (2.533)	-0.227 (1.784)
Employed	-1.572 (2.300)	0.281 (2.171)	-2.571 (1.748)	-1.526 (1.963)	-1.788 (1.372)
Medium income	1.803 (2.278)	5.109** (2.460)	3.293* (1.703)	3.056* (1.739)	2.708*** (0.955)
High income	9.038** (3.820)	19.801*** (3.026)	10.272*** (1.992)	0.695 (2.613)	1.981 (1.857)
Household questions	16.431*** (4.075)	13.201*** (3.344)	10.883*** (2.682)	-1.268 (3.167)	-2.618 (2.082)
Rural location	-8.353* (4.902)	-1.583 (4.051)	-3.475 (2.439)	-0.682 (3.157)	2.733* (1.657)
Bank branches/10,000 adults	-0.240 (2.167)	-2.699 (1.724)	-1.102 (1.213)	-3.544** (1.747)	-0.605 (0.939)
Correspondents/10,000 adults	-1.808 (1.319)	-1.742* (0.905)	-0.731 (0.605)	1.415 (1.055)	0.765* (0.441)
GDP per capita (million pesos)	34.657 (78.120)	33.744 (45.979)	16.395 (30.938)	-59.161 (44.693)	-20.463 (26.396)
Central West region	-7.784 (7.116)	2.893 (3.752)	7.415*** (2.856)	8.854* (4.594)	1.052 (2.502)
Northeast region	-4.204 (3.766)	8.192* (4.395)	-0.214 (2.999)	0.397 (4.655)	0.908 (3.193)
Northwest region	6.144 (7.775)	8.395 (6.723)	10.005** (4.189)	29.342*** (5.044)	-2.311 (3.061)
South/Southeast region	-2.388 (3.800)	-6.031* (3.597)	1.890 (2.654)	9.633*** (3.279)	-0.072 (2.304)
Constant	26.413*** (8.784)	23.678*** (7.015)	57.525*** (4.788)	56.806*** (4.908)	69.899*** (3.864)
R-squared	0.082	0.125	0.073	0.142	0.045
Observations	1,834	1,834	1,834	1,834	1,834

(continued)

TABLE D.1 RELATIONSHIP BETWEEN FINANCIAL KNOWLEDGE AND FINANCIAL CAPABILITY (continued)

VARIABLE	DEPENDENT VARIABLE: FINANCIAL CAPABILITY				
	COVERING UNEXPECTED EXPENSES	SAVING	ATTITUDE TOWARD THE FUTURE	NOT BEING IMPULSIVE	ACHIEVEMENT ORIENTATION
Financial knowledge score	1.114* (0.590)	2.583*** (0.629)	1.123** (0.505)	1.739*** (0.638)	1.744*** (0.387)
Female	1.830 (1.325)	2.272 (1.442)	-1.169 (1.179)	1.860 (1.370)	-1.259 (1.032)
Middle aged (35–39)	1.850 (1.472)	-0.517 (1.924)	0.448 (1.437)	5.233*** (1.824)	-0.182 (1.004)
Old age (60+)	2.269 (2.801)	2.229 (3.067)	-2.860 (2.003)	7.556*** (2.366)	-0.760 (1.748)
Married	1.226 (1.365)	1.663 (1.855)	0.340 (1.362)	1.893 (1.488)	1.261 (1.055)
Secondary education	1.340 (1.972)	0.339 (1.907)	3.344** (1.641)	0.609 (1.729)	-0.783 (1.445)
Higher education	1.938 (2.536)	2.610 (2.427)	4.526** (2.052)	3.413* (1.958)	0.031 (1.713)
Formal job	-0.094 (2.533)	4.716 (2.895)	0.350 (2.294)	-3.198 (2.500)	2.189 (2.150)
Employed	3.170 (2.046)	-2.234 (2.460)	-2.396 (1.841)	-1.150 (1.990)	-1.516 (1.825)
Medium income	2.519 (1.912)	8.468*** (2.434)	3.466** (1.545)	1.600 (1.724)	3.746*** (1.280)
High income	13.961*** (2.212)	20.515*** (2.294)	3.571 (2.555)	3.606 (2.678)	5.775*** (1.811)
Household questions	12.411*** (3.490)	11.519*** (3.124)	3.690 (2.747)	1.415 (3.704)	4.723** (2.091)
Rural location	4.461 (2.736)	-3.339 (3.330)	-0.220 (2.603)	2.351 (2.887)	-2.007 (2.226)
Bank branches/10,000 adults	0.589 (1.429)	-1.534 (1.703)	-0.538 (1.395)	-1.331 (1.294)	-2.215 (1.351)
Correspondents/10,000 adults	-0.842 (0.823)	-1.337 (0.813)	1.121* (0.637)	1.156* (0.604)	0.594 (0.533)
GDP per capita (million pesos)	-7.433 (41.997)	-3.762 (56.610)	-90.654** (42.47)	-65.438* (38.549)	40.333* (23.652)
Central West region	-6.291* (3.487)	-2.639 (3.991)	-10.812*** (3.466)	6.067 (4.017)	2.192 (2.545)
Northeast region	5.416 (3.959)	6.961 (4.417)	1.713 (3.995)	-6.153* (3.729)	-10.092*** (3.120)
Northwest region	-11.252** (5.592)	31.576*** (8.202)	3.232 (5.774)	4.544 (4.755)	13.930*** (2.560)
South/Southeast region	-2.687 (3.459)	-1.488 (4.141)	-2.430 (3.603)	2.072 (3.327)	2.529 (2.015)
Constant	39.851*** (5.746)	28.977*** (6.143)	26.738*** (5.174)	41.938*** (6.385)	71.041*** (3.900)
R-squared	0.078	0.160	0.066	0.056	0.112
Observations	1,834	1,834	1,834	1,834	1,834

Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: Robust standard errors, clustered at the municipality level, in parentheses. Statistical significance levels: * 10 percent, ** 5 percent, *** 1 percent.

D.2 RELATIONSHIP BETWEEN FINANCIAL KNOWLEDGE, FINANCIAL CAPABILITY, AND PRODUCT USAGE

To analyze the relationship between financial knowledge, financial capability, and product usage, table 6.1 in chapter 6 displays the results from 66 separate ordinary least squares regressions (6 product usage measures multiplied by 11 financial knowledge or capability measures) of the following form:

$$ProductUsage_{i,m} = \alpha + \beta FinancialCapability_{i,m} + \gamma X_{i,m} + \delta Z_m + \varepsilon_{i,m} \quad (2)$$

where *ProductUsage* is a dummy variable indicating whether the individual *i* in municipality *m* reports having the financial product (see full list of product usage dummy variables in table D.6), *FinancialCapability* is a measure of financial knowledge or capability (see full list in table D.5), *X* is a set of individual control variables (see table D.7), and *Z* is a set of municipality control variables (see table D.8). The control variables are included to isolate the relationship between financial capability and product usage that is not driven by these other variables. The standard errors of the regression are clustered at the municipality level.

The numbers reported in table 6.1 are the coefficients β from the 66 regressions. Due to space constraints, not all coefficients from all 66 regressions are reported, but tables D.2 and D.3 display the full regressions for the financial knowledge score and the financial capability index. The first row of coefficients in each of these tables corresponds to the coefficients reported in in table 6.1. The remaining rows show the coefficients that are not reported in the main text.

Figure 6.2 in chapter 6 plots the percentage of individuals with low financial education who report having each financial product, where low financial capability is defined as having a financial capability index below the median. The bars for individuals with high financial capability are computed as the percentage of individuals with low financial education who report having each financial product plus the coefficient β from the following regression multiplied by 100 (for each financial product):

$$ProductUsage_{i,m} = \alpha + \beta HighFinancialCapability_{i,m} + \gamma X_{i,m} + \delta Z_m + \varepsilon_{i,m} \quad (3)$$

where all variables are defined as in equation (2), except that *HighFinancialCapability* is an indicator variable for the individual having a financial capability index above the median. The standard errors of the regression are clustered at the municipality level.

The coefficient β in equation (3) represents the difference in product usage across individuals with high and low financial capability, after controlling for individual and municipality characteristics that could be driving this difference.

TABLE D.2 FINANCIAL KNOWLEDGE AND USE OF FINANCIAL PRODUCTS

VARIABLE	DEPENDENT VARIABLE: DUMMY VARIABLE INDICATING WHETHER THE INDIVIDUAL HAS/PARTICIPATES IN A					
	BANK ACCOUNT	CREDIT CARD	BANK LOAN	TANDA	PAWN SHOP LOAN	LOAN FROM FAMILY OR FRIENDS
Fin. knowledge score	0.029*** (0.007)	0.017** (0.008)	0.006 (0.005)	0.000 (0.005)	0.005 (0.004)	-0.013 (0.009)
Female	-0.003 (0.021)	-0.008 (0.018)	-0.025* (0.015)	0.055*** (0.017)	-0.020 (0.014)	-0.011 (0.017)
Middle aged (35–39)	0.089*** (0.019)	0.076*** (0.018)	0.048*** (0.015)	-0.006 (0.016)	0.007 (0.018)	-0.011 (0.023)
Old age (60+)	0.142*** (0.025)	0.081*** (0.028)	0.039* (0.021)	-0.030 (0.022)	-0.010 (0.022)	-0.080** (0.033)
Married	-0.008 (0.017)	0.008 (0.016)	-0.016 (0.014)	0.009 (0.018)	-0.004 (0.012)	0.007 (0.021)
Secondary ed.	0.020 (0.019)	0.055*** (0.019)	0.045** (0.019)	0.038* (0.020)	0.031* (0.017)	0.003 (0.031)
Higher ed.	0.108*** (0.026)	0.106*** (0.026)	0.051** (0.021)	0.001 (0.020)	-0.007 (0.021)	-0.005 (0.038)
Formal job	0.094*** (0.028)	0.100*** (0.033)	0.060** (0.030)	-0.029 (0.023)	-0.057** (0.027)	-0.070* (0.036)
Employed	-0.046** (0.021)	-0.024 (0.022)	-0.019 (0.019)	-0.004 (0.020)	0.039* (0.022)	0.022 (0.028)
Med. income	0.080*** (0.020)	0.014 (0.017)	0.034** (0.015)	-0.018 (0.021)	0.004 (0.016)	-0.047 (0.029)
High income	0.206*** (0.034)	0.191*** (0.037)	0.105*** (0.029)	0.010 (0.026)	-0.013 (0.022)	-0.098** (0.038)
HH questions	0.017 (0.034)	0.045 (0.029)	0.048* (0.025)	0.064*** (0.021)	-0.029 (0.033)	0.007 (0.051)
Rural location	-0.013 (0.032)	-0.017 (0.040)	-0.037 (0.030)	0.008 (0.023)	-0.033* (0.019)	0.025 (0.040)
Branches/10,000 adults	-0.004 (0.017)	0.016 (0.015)	0.011 (0.015)	-0.007 (0.013)	-0.002 (0.012)	-0.033 (0.022)
Corr./10,000 adults	0.012 (0.009)	0.014 (0.010)	-0.006 (0.006)	0.010 (0.006)	-0.005 (0.005)	0.005 (0.011)
GDP per capita (million pesos)	0.375 (0.554)	0.449 (0.561)	0.290 (0.271)	0.367 (0.250)	0.219 (0.304)	0.141 (0.536)
Central West	0.071* (0.043)	0.103** (0.048)	0.012 (0.024)	0.050 (0.032)	-0.028 (0.030)	0.037 (0.043)
Northeast	0.068 (0.046)	-0.013 (0.034)	0.025 (0.041)	-0.033 (0.031)	-0.002 (0.030)	0.022 (0.053)
Northwest	-0.028 (0.071)	-0.037 (0.077)	0.024 (0.072)	-0.088** (0.038)	0.084 (0.052)	0.196** (0.079)
South/SE	0.063** (0.025)	0.052 (0.034)	0.057** (0.027)	0.021 (0.027)	-0.012 (0.027)	0.056 (0.044)
Constant	-0.244*** (0.069)	-0.231*** (0.071)	-0.079 (0.049)	-0.012 (0.037)	0.118** (0.048)	0.322*** (0.077)
R-squared	0.182	0.184	0.072	0.031	0.020	0.039
Observations	1,834	1,834	1,834	1,834	1,834	1,834

Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: Robust standard errors, clustered at the municipality level, in parentheses. Statistical significance levels: * 10 percent, ** 5 percent, *** 1 percent.

TABLE D.3 FINANCIAL CAPABILITY AND USE OF FINANCIAL PRODUCTS

VARIABLE	DEPENDENT VARIABLE: DUMMY VARIABLE INDICATING WHETHER THE INDIVIDUAL HAS/PARTICIPATES IN A					
	BANK ACCOUNT	CREDIT CARD	BANK LOAN	TANDA	PAWN SHOP LOAN	LOAN FROM FAMILY OR FRIENDS
Financial capability index	0.056*** (0.008)	0.037*** (0.010)	0.009 (0.006)	-0.005 (0.007)	-0.014** (0.006)	-0.033*** (0.011)
Female	-0.012 (0.020)	-0.007 (0.017)	-0.023 (0.015)	0.061*** (0.017)	-0.012 (0.013)	-0.002 (0.020)
Middle aged (35–39)	0.074*** (0.019)	0.066*** (0.016)	0.042*** (0.015)	-0.004 (0.015)	0.010 (0.017)	0.000 (0.022)
Old age (60+)	0.119*** (0.024)	0.066** (0.027)	0.029 (0.019)	-0.024 (0.021)	-0.008 (0.021)	-0.065* (0.033)
Married	-0.006 (0.016)	0.005 (0.016)	-0.012 (0.014)	0.013 (0.017)	-0.002 (0.012)	0.016 (0.022)
Secondary ed.	0.027 (0.018)	0.054*** (0.017)	0.042** (0.018)	0.038* (0.020)	0.031** (0.015)	-0.011 (0.029)
Higher ed.	0.116*** (0.025)	0.101*** (0.026)	0.050** (0.021)	0.005 (0.017)	-0.000 (0.020)	-0.000 (0.036)
Formal job	0.091*** (0.026)	0.093*** (0.033)	0.051* (0.029)	-0.026 (0.022)	-0.053** (0.026)	-0.068* (0.036)
Employed	-0.042** (0.020)	-0.018 (0.021)	-0.013 (0.018)	-0.003 (0.019)	0.040** (0.020)	0.029 (0.029)
Med. income	0.061*** (0.020)	0.004 (0.017)	0.036** (0.014)	-0.013 (0.020)	0.013 (0.016)	-0.037 (0.031)
High income	0.156*** (0.032)	0.167*** (0.038)	0.102*** (0.027)	0.021 (0.028)	0.007 (0.021)	-0.073* (0.039)
HH questions	-0.024 (0.034)	0.012 (0.028)	0.038 (0.025)	0.071*** (0.020)	-0.017 (0.031)	0.044 (0.051)
Rural location	-0.005 (0.033)	-0.014 (0.039)	-0.038 (0.030)	0.007 (0.022)	-0.038** (0.019)	0.020 (0.039)
Branches/ 10,000 adults	0.004 (0.016)	0.016 (0.014)	0.009 (0.014)	-0.006 (0.013)	-0.006 (0.012)	-0.034 (0.023)
Corr./10,000 adults	0.015 (0.009)	0.015 (0.010)	-0.005 (0.006)	0.008 (0.007)	-0.004 (0.005)	0.004 (0.012)
GDP per capita (million pesos)	0.431 (0.551)	0.511 (0.540)	0.256 (0.253)	0.478** (0.241)	0.190 (0.309)	0.245 (0.590)
Central West	0.076* (0.043)	0.093** (0.047)	0.012 (0.023)	0.043 (0.029)	-0.031 (0.029)	0.038 (0.044)
Northeast	0.050 (0.041)	-0.022 (0.031)	0.017 (0.038)	-0.033 (0.031)	-0.005 (0.031)	0.020 (0.055)
Northwest	-0.123 (0.077)	-0.091 (0.079)	0.004 (0.070)	-0.086** (0.036)	0.089 (0.055)	0.236*** (0.078)
South/SE	0.067*** (0.024)	0.053* (0.031)	0.052** (0.026)	0.018 (0.025)	-0.012 (0.027)	0.044 (0.044)
Constant	-0.401*** (0.076)	-0.332*** (0.080)	-0.094 (0.059)	-0.001 (0.050)	0.198*** (0.059)	0.405*** (0.098)
R-squared	0.195	0.190	0.069	0.032	0.023	0.042
Observations	1,935	1,935	1,935	1,935	1,935	1,935

Source: World Bank and Government of Mexico Financial Capability Survey data.

Note: Robust standard errors, clustered at the municipality level, in parentheses. Statistical significance levels: * 10 percent, ** 5 percent, *** 1 percent.

Tables D.4 displays the results from three separate ordinary least squares regressions (one for each formal financial product) of the following form:

$$\begin{aligned} ProductUsage_{i,m} = & \alpha + \beta HighFinancialCapability_{i,m} + \beta_1 HighFinancialCapability_{i,m} \times \\ & BankBranches_m + \beta_2 LowFinancialCapability_{i,m} \times BankBranches_m + \\ & \beta_3 HighFinancialCapability_{i,m} \times Correspondents_m + \beta_4 LowFinancialCapability_{i,m} \times \\ & Correspondents_m + \gamma X_{i,m} + \delta Z_m + \varepsilon_{i,m} \quad (4) \end{aligned}$$

where all variables are defined as in equation (2), but instead of including control variables for bank branches per 10,000 adults or correspondents per 10,000 adults, the regression includes four interaction terms between (1) number of bank branches per 10,000 adults in the municipality times an indicator variable for the individual having high financial capability or knowledge, (2) number of bank branches per 10,000 adults in the municipality times an indicator variable for the individual having low financial capability or knowledge, (3) number of correspondents per 10,000 adults in the municipality times an indicator variable for the individual having high financial capability or knowledge, and (4) number of correspondents per 10,000 adults in the municipality times an indicator variable for the individual having low financial capability or knowledge. The standard errors of the regression are clustered at the municipality level.

Table D.4 reports the coefficients β_1 , β_2 , β_3 , and β_4 that represent the partial correlation between bank branches or correspondents and financial product usage for individuals with high or low financial capability (or knowledge), respectively.

TABLE D.4 PARTIAL CORRELATIONS BETWEEN FINANCIAL ACCESS POINTS AND USE OF FINANCIAL PRODUCTS, BY FINANCIAL CAPABILITY AND FINANCIAL KNOWLEDGE LEVELS

	DEPENDENT VARIABLE: DUMMY VARIABLE INDICATING WHETHER THE INDIVIDUAL HAS A					
	BANK ACCOUNT		CREDIT CARD		BANK LOAN	
By financial capability level						
Bank branches per 10,000 adults × Individuals with high financial capability	0.011	(0.027)	0.041	(0.026)	0.021	(0.021)
Bank branches per 10,000 adults × Individuals with low financial capability	-0.013	(0.011)	-0.016	(0.011)	-0.005	(0.013)
Banking correspondents per 10,000 adults × Individuals with high financial capability	0.026*	(0.016)	0.032**	(0.014)	0.004**	(0.009)
Banking correspondents per 10,000 adults × Individuals with low financial capability	0.005	(0.007)	0.002	(0.008)	-0.004	(0.007)
By financial knowledge level						
Bank branches per 10,000 adults × Individuals with high financial capability	-0.013	(0.024)	0.021	(0.022)	-0.001	(0.021)
Bank branches per 10,000 adults × Individuals with low financial capability	0.003	(0.015)	0.009	(0.017)	0.023	(0.017)
Banking correspondents per 10,000 adults × Individuals with high financial capability	0.029**	(0.014)	0.025*	(0.013)	-0.008	(0.007)
Banking correspondents per 10,000 adults × Individuals with low financial capability	-0.003	(0.007)	0.003	(0.009)	-0.004	(0.008)

Sources: Consejo Nacional de Inclusión Financiera 2011; World Bank and Government of Mexico Financial Capability Survey data (see below for details and sources of control variables).

Note: Regressions include the following control variables (see tables below for definitions): female, middle-aged, old age, married, secondary education, higher education, formal job, employed, medium income, high income, household questions, rural location, bank branches per 10,000 adults, correspondents per 10,000 adults, GDP per capita (million pesos), and region dummy variables. Robust standard errors in parentheses. Statistical significance levels: * 10 percent, ** 5 percent, *** 1 percent.

TABLE D.5 MEXICAN FINANCIAL LITERACY SURVEY VARIABLE
DEFINITIONS: FINANCIAL KNOWLEDGE AND FINANCIAL CAPABILITY

VARIABLE	DEFINITION
Financial knowledge index	Number of correct answers to eight financial knowledge questions (index from 0 to 8)
Nine components of financial capability (budgeting, monitoring expenses, using information, not overspending, covering unexpected expenses, saving, attitude toward the future, not impulsive, achievement orientation)	As defined in previous chapters (scale from 0 to 100)
Financial capability index	Simple average of nine financial capability components listed above (scale from 0 to 100)

TABLE D.6 MEXICAN FINANCIAL LITERACY SURVEY VARIABLE
DEFINITIONS: FINANCIAL PRODUCT USAGE

VARIABLE	DEFINITION
Bank account	Based on question d_1_6 Dummy variable indicating whether the respondent reports having a "Cuenta bancaria (o con otra institución financiera)"
Credit card	Based on question d_1_7 Dummy variable indicating whether the respondent reports having a "Tarjeta de crédito"
Bank loan	Based on questions d_1_5 Dummy variable indicating whether the respondent reports having a "Crédito personal (bancario) o crédito nomina"
<i>Tanda</i>	Based on question d_1_10 Dummy variable indicating whether the respondent reports having "Tandas"
Pawn shop	Based on question d_1_9 Dummy variable indicating whether the respondent reports having "Empeño"
Loan from family or friends	Based on question d_1_11 Dummy variable indicating whether the respondent reports having "Préstamos de familiares o amigos"

TABLE D.7 MEXICAN FINANCIAL LITERACY SURVEY VARIABLE DEFINITIONS: INDIVIDUAL CONTROL VARIABLES

VARIABLE	DEFINITION
Female	Based on question r_2 Dummy variable indicating whether the individual is female
Age	Based on question r_4 Two dummy variables indicating whether the individual is middle-aged (35–59) or old (over 59); young (18–34) is the omitted category in the regressions
Marital status	Based on question f_2 Dummy variable indicating whether the individual is married
Education	Based on question r_8 Two dummy variables indicating whether the individual has completed secondary or higher education; primary education or less is the omitted category
Employment	Based on question f_5 One dummy variable indicating whether the individual works (either as an employee or self-employed); another dummy variable indicating whether the individual has a formal sector job
Income	Based on question f_23_mx Two dummy variables indicating whether the household has a medium (Mex\$3,000—Mex\$5,000) or high (> Mex\$5,000) income level; low income (< Mex\$3,000) is the omitted category
Survey questions	Based on question a_6 Dummy variable indicating whether the individual answered questions about the financial products that he or she personally uses or that the household uses
Rural location	Dummy variable indicating whether the individual lives in a rural area
Region	Four dummy variables indicating whether the individual lives in the Central West, Northeast, Northwest, or South/Southeast of Mexico; Central Mexico is the omitted category

TABLE D.8 MEXICAN FINANCIAL LITERACY SURVEY MUNICIPAL-LEVEL VARIABLE DEFINITIONS AND SOURCES

VARIABLE	DEFINITION	SOURCE
GDP per capita	Value added (sum across all industries) divided by total population (million pesos)	Value added from INEGI 2009; population from INEGI 2005
Bank branches per 10,000 adults	Number of commercial bank branches divided by number of adults living in the municipality times 10,000	Consejo Nacional de Inclusión Financiera 2011
Correspondents per 10,000 adults	Number of banking correspondents divided by number of adults living in the municipality times 10,000	

Literature review: financial knowledge, capability, and behavior

A number of studies have investigated the relationship between financial knowledge and financial behavior. Using data from the United States, Lusardi and Tufano (2009) find that individuals who have low measured levels of financial knowledge tend to pay minimum balances on credit cards, incur late fees on cards, and use informal sources of credit. Stango and Zinman (2009) show that people who make mistakes in interest and future value calculations tend to borrow more and save less. Lusardi and Mitchell (2009) illustrate that people with low levels of financial knowledge think less about retirement and that most of them have not planned for retirement at all. A survey of Russian households shows that financial knowledge is significantly and positively related to retirement planning involving private pension funds and schemes (Klapper and Panos 2011). And in Mexico, Hastings and Tejeda-Ashton (2008) conducted a survey that reveals that less knowledgeable individuals tend to choose mutual pension funds with higher fees.

These studies tend to measure financial literacy based on questions that test knowledge of the time value of money (inflation), interest rates, compounding, and risk diversification, although the specific measures used vary from study to study (see also Xu and Zia 2012 for a discussion of different measures of financial knowledge). Most studies do not aim to measure financial capability in addition to financial knowledge, and thus there is little existing evidence about the relationship between financial capability and financial behavior.

One caveat with the studies mentioned above is that these results are not necessarily causal. They show a correlation between proxies for financial knowledge and outcomes of interest, but these correlations may simply reflect unobserved characteristics of individuals such as their numeracy, ability, parental background, or other such features. Although some studies try to measure these characteristics and try to account for them in the analysis, some of these features may not be measurable and can thus potentially bias the results.

A growing literature tries to address this issue by relying on quasi-experimental or experimental variation in the provision of financial education programs to measure the impact of financial knowledge on financial behavior. The context of these studies

varies widely—for example, in terms of the economic environment and the type of individuals targeted through the financial education programs.

Compulsory financial education classes taught in high schools have been the subject of a number of studies. Bernheim, Garrett, and Maki (2001) use exogenous variation in high school financial education mandates across U.S. states to show that students exposed to financial education classes save more as adults. However, Cole and Shastry (2008) cast doubt on these findings, showing that they are not robust to controlling for state-fixed effects and examining effects over time. Shorter-term evidence comes from Bruhn et al. (2013), who conducted a randomized experiment providing financial education in Brazilian public high schools. They find positive effects on financial knowledge, attitudes, and behaviors, and an increase in savings rates. These impacts are small in absolute magnitude: a 3 percentage point increase in knowledge, and a 1 percentage point increase in savings. In Germany, Lührmann, Serra-Garcia, and Winter (2012) find teenagers given financial literacy training show increased interest in and knowledge of financial matters, and save more in a hypothetical task, but they do not measure actual savings.

Other studies have focused on providing financial education to working adults, recognizing the differences in households' financial needs and exposure across developed and developing countries. The literature in developed countries tends to study the impact of financial education on planning for retirement or investment portfolio choices. Duflo and Saez (2011) show that participation in seminars discussing retirement savings leads to an increase in retirement plan participation.

In the developing country context, impact evaluations of financial literacy training have studied the unbanked, insurance take-up, and migrants. One of the first papers to examine the impact of financial education in a developing country was by Cole, Sampson, and Zia (2011). The authors implemented a field experiment in Indonesia where they offered randomly selected unbanked households a financial education course geared toward opening a bank savings account. They find that the financial education course had no effect on the likelihood of opening a bank savings account in the full sample, but it had modest effects for uneducated and financially illiterate households. Cai (2011) used a randomized experiment to show that farmers in rural China are more likely to take up crop insurance and become less price sensitive after attending financial education sessions.

Gibson, McKenzie, and Zia (2012); Doi, McKenzie, and Zia (2012); and Seshan and Yang (2012) analyze how providing information and financial education affects the behavior of migrants and their households. Gibson, McKenzie, and Zia (2012) work with migrants in New Zealand and Australia, and find that financial education increases knowledge about remittance transaction costs but does not lead to changes in the amount of remittances sent or use of the cheapest remittance

method. Using a sample of Indonesian migrants, Doi, McKenzie, and Zia (2012) find that impacts on financial knowledge, behavior, and savings are largest when both the migrants and their families receive financial education. The results show that financial education can have large effects when provided at a teachable moment, but that this impact varies according to who is receiving the training. Seshan and Yang (2012) find that Indian migrants in Qatar increase savings after financial education training, but only if they had low financial knowledge to begin with.

Overall, the literature thus finds a positive relationship between financial knowledge and use of formal financial products. Impact evaluations of financial education courses suggest that this relationship is, at least in part, causal. However, these evaluations also highlight that financial education courses often only lead to behavior change for certain groups of individuals—such as those who had low knowledge to begin with—but not for others. In addition, the measured impacts are often small, and participation rates in financial education courses tend to be low. The small effects and low participation rates suggest that classroom-style workshops may not be the best way of conveying financial education to adults, who may not have the time or motivation to attend such workshops. The literature is now moving toward exploring whether innovative channels for providing financial education can affect behavior. Ongoing studies in India, Peru, South Africa, and the United States (among others) are testing whether the provision of information via videos, radio, mass media, or video games is effective in improving individuals' financial decisions (see, e.g., Berg and Zia 2013).

Finally, while literature has mostly focused on financial knowledge so far, it has also touched on concepts related to specific financial capability. Some of the financial education courses studied through impact evaluations try to teach techniques to improve budgeting and monitoring of expenses. For example, Bruhn et al. (2013) find that a comprehensive financial education program in Brazilian high schools leads to an increase in the percentage of students and parents who make a list of expenses. The program also increased saving rates. Other studies have examined the relationship between time preferences and saving behavior. Brown, Chua, and Camerer (2009) conducted a behavioral laboratory experiment and find that individuals with present-biased preferences have a tendency to overspend. Ashraf, Karlan, and Yin (2006) show that commitment savings accounts can help increase savings for individuals with present-biased preferences. However, more research is needed to investigate the relationship between different components of financial capability and the use of different financial products.

References

- Ashraf, Nava, Diego Aycinena, Claudia Martínez A., and Dean Yang. 2011. "Remittances and the Problem of Control: A Field Experiment Among Migrants from El Salvador." December.
- Ashraf, Nava, Dean Karlan, and Wesley Yin. 2006. "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines." *Quarterly Journal of Economics* 121 (2): 635–72.
- Atkinson, A., S. McKay, E. Kempson, and S. Collard. 2006. *Levels of Financial Capability in the UK: Results of a Baseline Survey*. London: Financial Services Authority.
- Atkinson, Adele, and Messy, Flore-Anne. 2012. "Measuring Financial Literacy: Results of the OECD/International Network on Financial Education (INFE) Pilot Study." OECD Working Papers on Finance, Insurance and Private Pensions No. 15. Organisation for Economic Co-operation and Development, Paris. <http://www.oecd-ilibrary.org/docserver/download/5k9csfs90fr4.pdf?expires=1372010490&id=id&accname=guest&checksum=BE1F58D657E23E518408E64530FBD806>.
- Bacher, J., A. Pöge, and K. Wenzig. 2010. "Cluster Analysis." In German. Munich: Oldenbourg Publ.
- Banamex-UNAM (Universidad Nacional Autónoma de México). 2008. "Primera Encuesta de Cultura Financiera en México." Mexico City.
- Berg, Gunhild, and Bilal Zia. 2013. "Financial Literacy through Mainstream Media: Evaluating the Impact of Financial Messages in a South African Soap Opera." World Bank.
- Bernheim, B. Douglas, Daniel M. Garrett, and Dean M. Maki. 2001. "Education and Saving: The Long Term Effects of High School Financial Curriculum Mandates." *Journal of Public Economics* 80 (3): 435–65.
- Brown, Alexander, Zhikang Chua, and Colin Camerer. 2009. "Learning and Visceral Temptation in Dynamic Savings Experiments." *Quarterly Journal of Economics* 124 (1): 197–231.
- Bruhn, Miriam, Gabriel Lara Ibarra, and David McKenzie. 2013. "Why Is Voluntary Financial Education So Unpopular? Experimental Evidence from Mexico." Policy Research Working Paper 6439, World Bank, Washington, DC.
- Bruhn, Miriam, Luciana de Souza Leão, Arianna Legovini, Rogelio Marchetti, and Bilal Zia. 2013. "Financial Education and Behavior Formation: Large Scale Experimental Evidence from Brazil." Presentation, World Bank, Washington, DC.
- Cai, Jing. 2011. "Social Networks and the Decision to Insure: Evidence from Randomized Experiments in China." *Development Impact* (blog), December 5. <http://blogs.worldbank.org/impacetevaluations/>.
- CGAP (Consultative Group to Assist the Poor). 2013. "Rural Adoption of Mobile Payments: Results of Telecomm/Mifon Pilot in Santiago Nuyoo, Oaxaca, Mexico." Presentation.

- CNBV (Comisión Nacional Bancaria y de Valores). 2009. "Reporte de Inclusión Financiera 1." Mexico City. <http://www.cnbv.gob.mx/Inclusi%C3%B3n/Paginas/Reportes.aspx>.
- . 2013. "Reporte de Inclusión Financiera 4." Mexico City. <http://www.cnbv.gob.mx/Inclusi%C3%B3n/Paginas/Reportes.aspx>.
- CNBV/INEGI (Comisión Nacional Bancaria y de Valores and Instituto Nacional de Estadística y Geografía). 2012. "National Survey for Financial Inclusion: Descriptive Analysis of the Results." Mexico City.
- Cole, Shawn A., Thomas Sampson, and Bilal Zia. 2011. "Prices or Knowledge? What Drives Demand for Financial Services in Emerging Markets?" *The Journal of Finance* 66 (6): 1933–67.
- Cole, Shawn A., and Gauri Kartini Shastri. 2008. "Smart Money: The Effect of Education, Cognitive Ability, and Financial Literacy on Financial Market Participation." Harvard Business School Working Paper No. 09071, Harvard University, Cambridge, MA.
- Consejo Nacional de Inclusión Financiera. 2011. "Base de Datos de Inclusión Financiera, Cuarto Reporte de Inclusión Financiera." <http://www.cnbv.gob.mx/Inclusión/Documents/Bases%20de%20Datos/Base%20de%20Datos%20IF%20201112.xlsx>.
- Doi, Yoko, David McKenzie, and Bilal Zia. 2012. "Who You Train Matters: Identifying Complementary Effects of Financial Education on Migrant Households." Policy Research Working Paper 6157, World Bank, Washington, DC.
- Duflo, Esther, and Emmanuel Saez. 2011. "The Role of Information and Social Interactions in Retirement Plan Decisions: Evidence from a Randomized Experiment." *Quarterly Journal of Economics* 118 (3): 815–42.
- Duflo, Esther, Michael Kremer, and Jonathan Robinson. 2006. "Understanding Technology Adopting: Fertilizer in Western Kenya—Evidence from Field Experiments." Unpublished working paper.
- El-Gamal, Mahmoud, Mohamed El-Komi, Dean Karlan, and Adam Osman. 2011. "Bank Insured Rosca for Microfinance: Experimental Evidence from Egypt." Rice University Department of Economics.
- Fornero, Elsa, and Chiara Monticone. 2011. "Financial Literacy and Pension Plan Participation in Italy." *Journal of Pension Economics and Finance* 10 (4): 547–64.
- Gibson, John, David McKenzie, and Bilal Zia. 2012. "The Impact of Financial Literacy Training for Migrants." Policy Research Working Paper 6073, World Bank, Washington, DC.
- Gine, Xavier, Cristina Martinez-Cuellar, and Rafe Mazer. Forthcoming. "Evaluating the Effectiveness of Mexico's Credit and Savings Disclosure Reforms."
- Hastings, Justine, and Lydia Tejeda-Ashton. 2008. "Financial Literacy, Information, and Demand Elasticity: Survey and Experimental Evidence from Mexico." NBER Working Paper No. 14538, National Bureau of Economic Research, Cambridge, MA.
- Hastings, Justine, and Olivia Mitchell. 2010. "How Financial Literacy and Impatience Shape Retirement Wealth and Investment Behaviors." University of Michigan Working Paper 2010-233.
- Heimann, Ursula, and Sergio Gómez Sainz. 2009. "Mapping of Financial Education Initiatives in Mexico." Sparkassenstiftung für international Kooperation.
- Huston, Sandra J. 2010. "Measuring Financial Literacy." *Journal of Consumer Affairs* 44 (2): 296–316.
- ILO (International Labour Organization). 2011. *Global Employment Trends 2011: The Challenge of a Jobs Recovery*. http://www.ilo.org/global/publications/books/WCMS_150440/lang-en/index.htm.

- INEGI (Instituto Nacional de Estadística y Geografía). 2005. "Conteo de Población y Vivienda 2005." <http://www.inegi.org.mx/est/contenidos/proyectos/ccpv/cpv2005/default.aspx>.
- . 2009. "Censos Económicos 2009." <http://www.inegi.org.mx/est/contenidos/espanol/proyectos/censos/ce2009/>.
- . 2010. "Censo de Población y Vivienda 2010." <http://www.censo2010.org.mx/>.
- Karlan, Dean, Melanie Morten, and Jonathan Zinman. 2012. "A Personal Touch: Text Messaging for Loan Repayment." NBER Working Paper No. 17952, National Bureau of Economic Research, Cambridge, MA.
- Karlan, Dean, Margaret McConnell, Sendhil Mullainathan, and Jonathan Zinman. 2009. "Limited Attention and the Salience of Savings." Working paper.
- . 2012. "Getting to the Top of Mind: How Reminders Increase Savings." Yale University. <http://karlan.yale.edu/p/Top%20of%20Mind%202012mar.pdf>.
- Kempson, Elaine, Valeria Perotti, and Kinnon Scott. 2013. *Measuring Financial Capability: A New Instrument and Results from Low- and Middle-Income Countries*. Washington, DC: World Bank.
- Klapper, Leora, and Georgios A. Panos. 2011. "Financial Literacy and Retirement Planning: The Russian Case." Policy Research Working Paper No. 5827, World Bank, Washington, DC.
- Lührmann, M., M. Serra-Garcia, and J. Winter. 2012. "The Effects of Financial Literacy Training: Evidence from a Field Experiment with German High-School Children." University of Munich Working Paper 201224, University of Munich, Munich.
- Lusardi, Annamaria. 2011. "Americans' Financial Capability." NBER Working Paper No. 17103, National Bureau of Economic Research, Cambridge, MA.
- Lusardi, Annamaria, and Olivia S. Mitchell. 2009. "How Ordinary Consumers Make Complex Economic Decisions: Financial Literacy and Retirement Readiness." Dartmouth University. <http://www.dartmouth.edu/~alusardi/Papers/LusardiMitchellOrdinaryConsumers.pdf>.
- . 2011. "Financial Literacy and Planning: Implications for Retirement Wellbeing." In O. S. Mitchell and A. Lusardi, eds., *Financial Literacy: Implications for Retirement Security and the Financial Marketplace*, 17–39. Oxford: Oxford University Press.
- . 2013. "The Economic Importance of Financial Literacy: Theory and Evidence." NBER Working Paper No. 18952, National Bureau of Economic Research, Cambridge, MA.
- Lusardi, Annamaria, Olivia Mitchell, and Vilsa Curto. 2010. "Financial Literacy among the Young." *Journal of Consumer Affairs* 44: 358–80.
- Lusardi, Annamaria, and Peter Tufano. 2009. "Debt Literacy, Financial Experience and Over-indebtedness." NBER Working Paper No. 14808, National Bureau of Economic Research, Cambridge, MA.
- Mandell, L., and L. S. Klein. 2007. "Motivation and Financial Literacy." *Financial Services Review* 16: 106–16.
- Mas, Ignacio. 2013. "Beyond Products: Building Integrated Customer Experiences on Mobile Phones." In J. Ledgerwood, ed., *The New Microfinance Handbook: A Financial Market System Perspective*, chapter 13. Washington, DC: World Bank.
- Sekita, Shizuka. 2011. "Financial Literacy and Retirement Planning in Japan." *Journal of Pension Economics and Finance* 10 (4): 637–56.

- Seshan, Ganesh, and Dean Yang. 2012. "Transnational Household Finance: A Field Experiment on the Cross-Border Impacts of Financial Education for Migrant Workers." <http://www-personal.umich.edu/~deanyang/papers/seshan%20yang%202012%20transnational%20household%20finance.pdf>.
- Stango, Victor, and Jonathan Zinman. 2009. "Exponential Growth Bias and Household Finance." *Journal of Finance* 64 (6): 2807–49.
- Tabachnick, B. G., and L. S. Fidell. 2001. *Using Multivariate Statistics*. Boston: Allyn and Bacon.
- Xu, Lisa, and Bilal Zia. 2012. "Financial Literacy Around the World. An Overview of the Evidence with Practical Suggestions for the Way Forward." Policy Research Working Paper 6107, World Bank, Washington, DC.



MINISTRY OF FINANCE OF
THE RUSSIAN FEDERATION