Approach to Financial Savings and Intermediation:

MEXICO'S MUNICIPALITIES SAVINGS AND INTERMEDIATION DATASET USER'S MANUAL







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This document introduces a new set of databases that, for the first time, will allow financial analysts and researchers to have a comprehensive assessment of the development of the Mexican Financial System at the municipality-level. The dataset Mexico's Municipalities Savings and Intermediation (MSI dataset) is based on administrative records contained in the regulatory reports that banks and other financial institutions file with CNBV.¹ This dataset has three unique features. First, it provides detailed information on the balance of savings and credit by institution, across municipalities and through time. Second, in the case of the credit databases, it allows the user to analyze several characteristics of borrowers, such as firm size, economic activity, and income level, among others. Third, it includes many socioeconomic characteristics of the municipalities, for instance: population (by gender and age), average years of schooling, communications infrastructure and social programs. This facilitates a wide range of applications and saves researchers the time and effort of gathering relevant indicators from different sources.

The rest of the document is organized as follows. Section 2 presents an overview of the databases. Section 3 presents the definition and sources of information of the savings indicators. Sections 4 to 7 introduce the commercial, mortgage and consumer credit indicators of all the financial institutions included in the database. Finally, section 8 defines the socioeconomic indicators.

¹ CNBV stands for *Comisión Nacional Bancaria y de Valores* which is the authority in charge of the regulation and supervision of financial intermediaries in Mexico.



The MSI dataset consists of 11 modules of information. Modules 1 to 8 contain financial information from the regulatory reports. Modules 9 to 11 contain socioeconomic characteristics of the municipalities from other sources.

Diagram 1 shows the general structure of the MSI dataset. As it is shown, Modules 1 to 8 can be classified according to two dimensions. The first is the *type of financial institution* which provides the information (vertical axis in Diagram 1).Those institutions encompass: 1) commercial banks, 2) development banks, 3) regulated multi-purpose financial societies (SOFOMs-R), 4) limited purpose financial societies (SOFOLs), 5) people's financial societies (SOFIPOs), and 6) regulated cooperatives (see Appendix 2 for a brief description of each type of institution). For practical purposes we have grouped those institutions into two sectors: i) people's financial sector (PFS, which includes SOFIPOs and cooperatives), and ii) banks and other financial institutions.

The second dimension is the *type of financial information* each module contains (horizontal axis in Diagram 1). All financial information contained in the MSI dataset belongs to one of the following categories: 1) savings, 2) operative information, 3) commercial credit, 4) mortgages, and 5) consumer credit. Not all financial institutions provide information on those five categories. The reason is that the law restricts financial institutions' activities in different ways. For instance, SOFOMs cannot receive deposits from the public. Hence, Module 1 (a savings module) does not include SOFOMs.²

Type of institution			Operative information	Commercial credit	Mortgage	Consumer credit
Development banks	s					
to put of banks		Module 1	Module 2	Module 3		Module 5
SOFOMs-R					Module 4	
SOFOLs	ık ll ns					
SOFIPOs Co-operatives-	Non-bar financia institutio	Module 6	Module 7		Module 8	
	Type of institution Development banks Commercial banks SOFOMs-R SOFOLs SOFIPOs Co-operatives- R	Type of institution Development banks straight of the second sec	Type of institution Savings Development banks Module 1 Commercial banks Module 1 SOFOMs-R Image: Soften constraints SOFOLs Mucrossing constraints SOFIPOs Module 1 Co-operatives- R Module 6	Type of institutionSavingsOperative informationDevelopment banksgraduate surgeModule 1Module 2Commercial banksgraduate surgeModule 1Module 2SOFOMs-Rgraduate surgegraduate surgeModule 2SOFOLsgraduate surge surgeModule 6Module 7SOFIPOsNumeric surgeModule 6Module 7	Type of institutionSavingsOperative informationCommercial creditDevelopment banksgraduate superativesModule 1Module 2Module 3Commercial banksgraduate superativesModule 1Module 2Module 3SOFOMs-Rsuperative superativesModule 6Module 7Module 7SOFIPOsNodule 6Module 6Module 7Module 7	Type of institutionSavingsOperative informationCommercial creditMortgageDevelopment banksgrad barksModule 1Module 2Module 2Module 3Module 3Commercial

DIAGRAM 1. MSI DATASET MODULES OF FINANCIAL INDICATORS

Modules 9 to 11 (not included in Diagram 1) contain socioeconomic indicators grouped by their periodicity. Module 9 includes annual indicators such as population by gender and age and presence of poverty-alleviation programs. Module 10 contains quinquennial information about education and number of households. Module 11 comprises geographic information such as municipalities' surface area,

 $^{^2}$ This document includes a Codebook in *xls* format (MSI_dataset_Codebook.xls), which gives a complete description of all the variables included in the modules. We recommend that the dataset to be used along with these manual and codebook.

latitude, longitude and altitude. All the variables included in each module are defined in the following sections.³

Table 1 shows the timespan for each module and its periodicity (monthly, quarterly, etc.). The longest period is covered by Modules 1 and 2. For the rest of the modules, records before the period shown in Table 1 do not exist because the institutions were not required to file those reports with CNBV.

Modulos	Periodicity	Time Covered												
Modules		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
1. Savings	Quarterly	1Q											1Q	
2. Operative information	Quarterly	1Q											1Q	
3. Commercial credit	Monthly		Sep											Jul
4. Mortgage	Monthly										Jul			Jul
5. Consumer credit	Monthly										Jun		Feb	
6-8. PFS	Quarterly											Jun	Dec	
9-11. Socioeconomic indicators	Different													

Table 1. Dataset timespan and periodicity

The main objective of the dataset is to provide information at the municipality level. However, the dataset goes beyond the municipality, since the data is also disaggregated by different characteristics of the deposits and the borrowers within each municipality. We have also included a concentrated database with the main indicators aggregated at the municipality level (*Key_indicators*).

The eleven modules and the *Key_indicators* databases share two identifiers: date (DATE) and municipality id (MUNID). Additionally, Modules 1 to 9 share the identifier INSTITUTION. With these identifiers it is possible to combine all databases. A detailed description of each identifier is provided in the following tables.

DATE: Date of Report

Description:	DATE indicates the date when the financial institution reported the information. Periodicity varies according to the module: savings, operative and PFS information is quarterly and credit information is monthly.
Availability:	The period available depends on the module. The timespan of each module is shown in Table 1.
Codes:	The reporting date has the format YYYYMM.

³ The Table "All Modules: Variables" in *MSI_dataset_Codebook.xls* contains all the available variables with a more detailed description of their periodicity.

MUNID: Municipality

Description:	MUNID is a five-digit string variable that identifies each municipality within a state. The first two digits correspond to the state code and the last three to the municipality. Those codes are the same as INEGI's. ⁴							
	In the original reports of savings and credit filed with CNBV prior to December 2008 and September 2009, respectively, municipality codes did not match INEGI's. For those periods, a conversion process was carried out in order to standardize the municipality codes and make them consistent with INEGI's. For a detailed description of this process see "Appendix 1: Municipality Identifiers Conversion Process". When it was not possible to identify a municipality, the last three digits of MUNID appear as "000" in the databases.							
	The municipa	lity identifier has different definitions in each Module.						
	Module	Definition of MUNID						
	Module 1	In most cases, the municipality indicates where the financial institution has its branches and therefore, holds the deposits. However, in the regulatory reports there is not a well-defined criterion for banks to report this information. Some banks reported deposits where they were made, and some others reported them where the client opened the account or where the client lives. Therefore, when combining deposits data with operative information, in some cases banks report deposits in a municipality with no branches or no deposit accounts.						
	Module 2	As in module 1, MUNID indicates, in some cases, the municipality where the branch of the financial institution is located.						
	Module 3	Identifies the municipality where the debtor's main economic activity takes place.						
	Module 4	Identifies the location of the house that backs the credit.						
	Module 5	Indicates the municipality where the borrower lives. As a consequence, the financial institution that issued the loan might belong to a different municipality.						
	Module 6	Identifies the municipality where the branch of the financial institution is located.						
Availability:	The available	period depends on the module.						
Codes:	See Table "A	Il Modules: States" and "All Modules: Municipalities" in MSI_dataset_Codebook.xls.						

⁴ INEGI stands for National Institute of Statistics and Geography, which is an autonomous public institute responsible for the regulation and coordination of the National System of Statistical and Geographical Information in Mexico. It is also responsible for the national censuses, the integration of the national accounts, and the elaboration of the Consumer and Producer Price Indexes.

INSTITUTION: Institution

Description:	INSTITUTION is a five-digit string variable that uniquely identifies each financial institution. The dataset contains information about commercial and development banks, SOFOMERS, SOFOLES, Cooperatives, and SOFIPOS.
	As explained in Appendix 2, the institutions mentioned above can be classified as banks or non- bank financial institutions; the first category includes commercial, development banks and SOFOMs-R. The second category is constituted by regulated cooperatives, SOFIPOs and SOFOLs.
Availability:	The creation of new institutions, the extinction of others, and the mergers and acquisitions of the existing ones imply that not all financial institutions appear every period. Additionally, in a few cases institutions did not file the regulatory reports and therefore there are missing values. See table "Case Count" in <i>MSI_dataset_Codebook.xls</i> of the corresponding module for a detailed list and a description of their availability.
Codes:	See Table "All Modules: Institutions" in MSI_dataset_Codebook.xls.



The information comprised in the dataset has five caveats. First, as explained in the overview, the municipality identifier reveals different definitions of the information and in some cases definitions are not clear. In the deposits and operative information databases, the municipality can represent: 1) the deposits received by the branches in that municipality; 2) the municipality where the depositor opened the account or 3) the municipality where the depositor lives. Therefore, when combining deposits data with operative information, there are cases in which a bank reports deposits information but no branches or no deposit accounts in the same municipality. For the rest of the databases the municipality is well defined. In the commercial credit database it means where the firm has its main operations. In the mortgage database the municipality indicates where the borrower lives.

Second, there might be some differences with other sources of information, for instance, with the monetary aggregates published by Banco de Mexico (Banxico) or even with aggregated data from CNBV.⁵ Discrepancies are expected because databases only include information that can be identified geographically within Mexican territory. Thus, the deposits that have been made outside Mexico or credits given to firms living abroad are not considered.

Third, there is no information on other financial regulated institutions, such as credit unions, leasing and factoring companies.⁶ CNBV does not have a regulatory report for these institutions with information at the municipality level. Also, the dataset does not include information from non-regulated institutions, such as non-regulated SOFOMs and non-regulated cooperatives. However, to complement the dataset described here we are conducting a survey to the main players in the non-regulated sector. Along with a questionnaire on outreach, performance and size, the survey includes an in-depth interview with the managers of these institutions. The aim is not just to get information about the savings they receive and the loans they grant, but to get a better understanding of their business models and other qualitative characteristics.

Fourth, nowadays CNBV's administrative records are rigorously and continuously verified. That was not necessarily the case in the past, for they were seldom used or published. Even though all the information included in the dataset meets good quality standards, there were some specific cases in which some data had to be revised. We have included a detailed explanation of the revisions made in such cases (Appendix 3).

Fifth, regulatory reports have suffered changes during the periods covered by the databases, and there might be changes in the future. Even though in those periods the information is comparable, future changes in the regulatory reports could reduce such comparability in case the databases are updated.

⁵ Banco de México is the central bank of Mexico. By constitutional mandate, it is autonomous in both its operations and management. Its main function is to provide domestic currency to the Mexican economy and its main priority is to ensure the stability of the domestic currency's purchasing power

⁶ Leasing and factoring institutions are known as "Credit Auxiliary Organizations". A brief definition can be found in Appendix 2.

Module 1: Savings Indicators

The savings database contains information on deposits balances in banks at the municipality-level, from March 2000 to March 2011 on a quarterly basis. The data come from regulatory report *"Anexo 38"* prior to September 2008 and from report *"R08-Información por Localidad"* for the rest of the period.⁷ In order to make a consistent equivalence between both reports and with banks' financial statements, deposits were grouped according to their availability for withdrawal: time deposits, demand deposits and banking bonds.

There are other considerations worth mentioning. The municipality indicates different definitions of the information, according to each bank's criterion. Some banks reported the deposits in their branches, others reported the deposits according to the municipality where the depositor opened the account and others the municipality where the depositor lives. The database has information by municipality from most commercial banks and only for a few development banks.⁸ PFS institutions are also allowed to receive deposits but their information comes from a different regulatory report. Therefore, PFS data are included in a different module.

Data disaggregation and quality has improved with time:

- 1. Information for the Federal District (Mexico City or DF) is not disaggregated at the municipality (delegation) level before September 2008, when the old report was effective. For recent periods, information is disaggregated for the 16 wards of the DF, which throughout are considered as municipalities.⁹
- 2. When analyzing the data trends, we noticed two unusual peaks, one in March 2002 and another in March 2006. In those points in time and only for some banks, total deposit balances do not seem in line with the observed trend in previous years nor with banks' financial statements. Those outliers were due to misreporting by some financial institutions. In order to make the data consistent we "corrected" the outliers with an interpolation process. Appendix 3 analyzes those peaks and explains the methodology used.

The dataset includes disaggregated information within each municipality by institution and type of deposit. This means that each record of the variable DEP_BAL indicates the deposits balance for a particular DATE, MUNID, INSTITUTION and DEP_TYPE. Figure 1 in Appendix 4 shows how the deposits data actually look.

⁷ The regulatory reports for deposits exist since 1995. However, the information prior to 2000 does not meet the quality standards required to be included in the database. Also, the database ends in the first quarter of 2011 because a new regulatory report was introduced in April 2011 with different accounting principles and it has not been possible yet to make the recent data comparable with the information of this database. The report layouts of "Anexo 38" and "R08-*Informacion por Localidad"* are available upon request to CNBV.

⁸ These banks are BANSEFI and BANJERCITO. BANSEFI stands for Bank of National Savings and Financial Services and BANJERCITO is the National Bank for the Army, Air Force and Navy of Mexico. Nowadays, those are the only development banks allowed to take deposits. However, in the past there were other development banks that could have been allowed to take deposits and they reported this information at the municipality level.

⁹ DF's wards are administrative units with elected officials and similar in many respects to municipalities.

The rest of this section explains Module 1 variables, and the table "Module 1: Case Count" in the codebook (*MSI_dataset_Codebook.xls*) gives a description of the availability, periodicity and codes for each variable. The *Key_indicators* database includes information at the municipality level.

Continuous variables

DEP_BAL: Deposit Balance

Description:	DEP_BAL is a numeric, continuous variable that indicates the balance of deposits, in current pesos, in banks at each municipality at the end of the quarter. It includes deposits in domestic and foreign currency.
Availability:	From March 2000 to March 2011 on a quarterly basis.

Categorical variables

DEP_TYPE: Deposit Type

Description:	DEP_TYPE classifies deposits information in three categories, based on their availability for withdrawal. This classification also makes possible the comparison with other aggregated data available, such as banks' financial statements or Banxico's financial system information.						
		1 = Demand deposits.	Demand Deposits groups all deposits that can be withdrawn without any notice. Financial institutions can either pay or not interests to the account holder. Deposits in savings accounts, checking accounts and current accounts belong to this category.				
		2 = Time deposits.	<i>Time Deposits</i> include deposits that have to stay in the financial institution during a certain period of time before the user can withdraw them. Banker's acceptances, negotiable orders of withdrawal and deposits withdrawable on pre-established days are classified in this category.				
		3 = Banking bonds.	Banking Bonds are interest bearing or discounted debt certificates.				
Availability:	From	March 2000 to Mar	ch 2011 on a quarterly basis.				

Description:	INS_TYPE classifies banks according to whether they are private (commercial bank) or public (development bank). See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
	1 = Commercial Bank 2 = Development Bank
Availability:	From March 2000 to March 2011 on a quarterly basis.

Module 2: Operative Information

Module 2 contains operative information of commercial, development banks and SOFOMs-R. The information comes from the same regulatory reports as the savings information (Module 1). This module is disaggregated by municipality as well as by other variables. Figure 2 in Appendix 4 shows how these data look like.

The database consists of three variables, in addition to the common identifiers (DATE, MUNID, and INSTITUTION). The rest of this section briefly explains such variables, and the table "Module 2: Case Count" in the codebook (*MSI_dataset_Codebook.xls*) gives a more detailed description about the availability, periodicity, cases and codes for each variable.

Continuous Variables

N_UNITS: Number of units

Description:	N_UNITS indicates the number of "units" belonging to the corresponding category of the operative information. A unit can represent the number of ATMs, the number of bank employees or the number of branches.
Availability:	From March 2000 to March 2011 on a quarterly basis.

Categorical Variables

OI_TYPE: Type of Operative Information

Description:	OI_TYPE indicates the type of operative information, as follows:
	1 = Number of ATMs
	2 = Checking Account Contracts (individuals)
	3 = Checking Account Contracts (corporations)
	4 = Savings Account Contracts
	5 = Payroll Account Contracts
	6 = Certificate of Deposit Contracts
	7 = Credit Card Contracts
	8 = Debit Card Contracts
	9 = Administrative Staff
	10 = Service Staff
	11 = Branches
	12 = Checking Account Contracts
	13 = General Staff
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	From March 2000 to March 2011 on a quarterly basis.

Description:	FI_TYPE classifies banks according to whether they are private (commercial bank) or public (development bank).
	 1 = Commercial Bank 2 = Development Bank See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	From March 2000 to March 2011 on a quarterly basis
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Module 3: Commercial Credit Indicators

This module contains data about the balances of loans made by financial institutions to firms, individuals with entrepreneurial activities and government entities. The information is available from September 2001 through July 2012 on a monthly basis and it was obtained from the regulatory report R04-C, which includes credit-level information of banks, SOFOMs-R and SOFOLs.¹⁰

Five considerations should be borne in mind. First, in the commercial credit data, a municipality indicates the place where the borrower maintains its main economic activities (i.e. the legal address). Consequently, when combining savings or operative data with this module, there are municipalities that report credit information but no savings or operative data.

Second, Mexican financial institutions can grant loans to firms with an address outside Mexico. Since they cannot be identified within Mexican territory, those records were excluded from the database. Third, financial institutions can also give loans to other financial institutions, such as SOFOMs-R and SOFOLs, which also appear in the database as loan issuers. In order to avoid a double counting problem, the loans that financial institutions lend to each other were excluded.¹¹

Fourth, credit information is disaggregated within each municipality by other characteristics, such as credit status, economic sector, credit allocation, etc. Figure 3 in Appendix 4 shows how the data look like. The *Key_indicators* database includes some variables of this module aggregated at the municipality level.

Fifth, a borrower can have loans with more than one bank within the same municipality. This implies that adding up the number of borrowers (variable NR_BORR) for all banks in that municipality will not represent the number of unique borrowers, leading to an overstatement of the number of total borrowers in the banking system. This is also the case if we aggregated the information at the state or at the national level, since a borrower can have credits in other municipalities or in other states. In the *Key_indicators* database we have included the number of unique borrowers in each municipality.

The commercial credit database consists of 12 variables, besides the common identifiers (DATE, MUNID, and INSTITUTION). These variables are defined below, and the table "Module 3: Case Count" in the codebook (*MSI_dataset_Codebook.xls*) gives a more detailed description of their availability, periodicity and codes.

¹⁰ There are two versions of the report R04-C. The first version was effective from September 2001 through June 2009. The second version was introduced in July 2009, and, as in the savings indicators, some variables disappeared and others were disaggregated. For example, the variable of company size (COMP_SIZE) was available until June 2009, but in the second report it disappeared. Two variables of company size were introduced instead: number of employees (NR_EMPLOYEE) and revenues amount (REV_AMOUNT). Both versions of the regulatory report R04-C layouts are available upon request to CNBV.

¹¹ The double counting problem can arise if we include the liabilities of a financial institution at the same time as its assets. If we assume that the funding of financial institutions (liabilities) is entirely used to grant loans (assets), including both records would imply counting that loan twice. This could lead to an overestimation of the total amount of credit balances.

Continuous Variables

CRED_BAL: Credit Balance

Description:	CRED_BAL is the outstanding credit balance, in current pesos, at the end of the period. It includes the principal owed plus not charged accrued interests, capitalized or refinanced interests, fees or any other concept that generate charges.
	CRED_BAL can be negative or equal to zero. Negative values correspond to prepayments made by borrowers to a certain credit product, i.e., credit cards for business. Values equal to zero can appear for a certain period if all the borrowers in that municipality paid the total outstanding value of their loans.
Availability:	September 2001 to July 2012 on a monthly basis.

NR_CREDS: Number of Credits

Description:	NR_CREDS is the number of credits that the financial institution has in its records at the corresponding date. Each record in the database corresponds to the number of credits with the characteristics indicated by the categorical variables.
Availability:	September 2001 to July 2012 on a monthly basis.

NR_BORR: Number of borrowers

Description:	NR_BORR is the number of borrowers, which share the same categorical values (according to the categorical variables in the database), of the financial institution at the date of report. A borrower can receive more than one credit by one financial institution, which means that the number of credits can be at least the same as the number of borrowers. Also, one borrower can have loans with more than one institution. Therefore, the sum of NR_BORR in each municipality is not the same as the number of unique borrowers. The number of unique borrowers in each municipality can be found in the <i>Key_indicators</i> database.
Availability:	September 2001 to July 2012 on a monthly basis.

Categorical variables

BORR_TYPE: Type of borrower

Description:	BORR_TYPE identifies five types of borrowers:
	1 = Federal Government and Decentralized Entities
	2 = Federal District Government (Mexico City or D.F.)
	3 = State and Municipality Governments
	4 = Firms
	5 = Individuals with entrepreneurial activities
	See Table "All Modules: Dictionary" in MSI_dataset_Codebook.xls for a detailed description of

	each category.
Availability:	September 2001 to July 2012 on a monthly basis.

CRED_ALLOC: Credit Allocation

26 = Housing Development27 = Working Capital28 = Factoring Operations29 = Pure Leasing Operations30 = Financial Leasing Operations31 = Municipality or State33 = Direct Field Support Program37 = Loans to Credit UnionsSee Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description ofeach category.Availability:September 2001 to July 2012 on a monthly basis. A frequency table by code and date is shownin Table "Module 3: Case Count" in <i>MSI_dataset_Codebook.xls</i>	Description:	CRED_ALLOC indicates the use that the borrower is giving to the credit resources. It includes the following categories: 0 = Not Apply 11 = Without a specific use 21 = Debt Consolidation 22 = Fixed Assets 23 = Public Works 24 = Infrastructure Projects 25 = Commercial Development
28 = Factoring Operations29 = Pure Leasing Operations30 = Financial Leasing Operations31 = Municipality or State33 = Direct Field Support Program37 = Loans to Credit UnionsSee Table "All Modules: Dictionary" in MSI_dataset_Codebook.xls for a detailed description ofeach category.Availability:September 2001 to July 2012 on a monthly basis. A frequency table by code and date is shownin Table "Module 3: Case Count" in MSI_dataset_Codebook.xls		26 = Housing Development 27 = Working Capital
29 = Pure Leasing Operations 30 = Financial Leasing Operations 31 = Municipality or State 33 = Direct Field Support Program 37 = Loans to Credit Unions See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.Availability:September 2001 to July 2012 on a monthly basis. A frequency table by code and date is shown in Table "Module 3: Case Count" in <i>MSI_dataset_Codebook.xls</i>		28 = Factoring Operations
30 = Financial Leasing Operations 31 = Municipality or State 33 = Direct Field Support Program 37 = Loans to Credit Unions See Table "All Modules: Dictionary" in MSI_dataset_Codebook.xls for a detailed description of each category. Availability: September 2001 to July 2012 on a monthly basis. A frequency table by code and date is shown in Table "Module 3: Case Count" in MSI_dataset_Codebook.xls		29 = Pure Leasing Operations
31 = Municipality or State 33 = Direct Field Support Program 37 = Loans to Credit Unions See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category. Availability: September 2001 to July 2012 on a monthly basis. A frequency table by code and date is shown in Table "Module 3: Case Count" in <i>MSI_dataset_Codebook.xls</i>		30 = Financial Leasing Operations
33 = Direct Field Support Program 37 = Loans to Credit Unions See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category. Availability: September 2001 to July 2012 on a monthly basis. A frequency table by code and date is shown in Table "Module 3: Case Count" in <i>MSI_dataset_Codebook.xls</i>		31 = Municipality or State
37 = Loans to Credit Unions See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category. Availability: September 2001 to July 2012 on a monthly basis. A frequency table by code and date is shown in Table "Module 3: Case Count" in <i>MSI_dataset_Codebook.xls</i>		33 = Direct Field Support Program
See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category. Availability: September 2001 to July 2012 on a monthly basis. A frequency table by code and date is shown in Table "Module 3: Case Count" in <i>MSI_dataset_Codebook.xls</i>		37 = Loans to Credit Unions
Availability:September 2001 to July 2012 on a monthly basis. A frequency table by code and date is shown in Table "Module 3: Case Count" in <i>MSI_dataset_Codebook.xls</i>		See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
	Availability:	September 2001 to July 2012 on a monthly basis. A frequency table by code and date is shown in Table "Module 3: Case Count" in <i>MSI_dataset_Codebook.xls</i>

ECO_ACT: Economic Activity

Description:	ECO_ACT identifies the economic activity from which the borrower obtains the largest share of her income. The codes listed below are consistent with the North American Industry Classification System:
	0 = Not Apply
	11 = Agriculture, stockbreeding, forestry, fishing and hunting
	21 = Mining
	22 = Utilities
	23 = Construction
	31 = Food Manufacturing
	32 = Wood Product Manufacturing
	33 = Primary Metal Manufacturing
	42 = Wholesale Commerce

	44 = Retail Commerce
	48 = Transportation and Warehousing
	49 = Postal Service
	51 = Information through massive media
	52 = Finance and Insurance
	53 = Real Estate and Rental and Leasing
	54 = Professional, Scientific and Technical Services
	55 = Management of Companies and Enterprises
	56 = Administrative and Support and Waste Management and Remediation Services
	61 = Educational Services
	62 = Health Care and Social Services
	71 = Arts, Entertainment and Recreation
	72 = Accommodation and Food Services
	81 = Other Services
	92 = Public Administration
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	September 2001 to July 2012 on a monthly basis.

D_COLLAT: Dummy of collateral

Description:	D_COLLAT is a dummy variable that identifies whether or not the borrower pledged an asset to ensure the payment of the obligation.
	0 = No collateral provided
	1 = The borrower pledged an asset as collateral. The pledges can include: cash, shares, personal assets, real estate, inventory, financial instruments (bonds) or a set of collaterals
Availability:	September 2001 to July 2012 on a monthly basis.

NR_EMPLOYEE: Number of Employees

Description:	NR_EMPLOYEE categorizes firms according to eight ranges of number of employees, as follows:
	0 = 0 employees
	1 = Between 1 and 10
	2 = Between 11 and 30
	3 = Between 31 and 50
	4 = Between 51 and 100
	5 = Between 101 and 150
	6 = Between 151 and 200
	7 = Between 201 and 250

	8 = Greater than 250
Availability:	July 2009 to July 2012 on a monthly basis. From September 2001 to June 2009, financial institutions only reported the variable FIRM_SIZE, which classifies firm's size in <i>Very Small, Small, Medium</i> , etc. It was constructed according to firm's number of employees and economic sector, but the actual number of employees was not reported. From July 2009 onwards, financial institutions report number of employees (NR_EMPLOYEE).

REV_AMOUNT: Amount of Revenues

Description:	REV_AMOUNT categorizes firms in ten ranges according to the total amount of revenues, in current pesos, obtained in the year immediately prior to the loan issuance:
	1 = Revenues greater than 0 and up to 1 million pesos
	2 = Revenues greater than 1 million and up to 4 million pesos
	3 = Revenues greater than 4 million and up to 10 million pesos
	4 = Revenues greater than 10 million and up to 25 million pesos
	5 = Revenues greater than 25 million and up to 50 million pesos
	6 = Revenues greater than 50 million and up to 100 million pesos
	7 = Revenues greater than 100 million and up to 150 million pesos
	8 = Revenues greater than 150 million and up to 200 million pesos
	9 = Revenues greater than 200 million and up to 250 million pesos
	10 = Revenues greater than 250 million pesos
	REV_AMOUNT is equal to missing if the information is not available.
Availability:	July 2009 to July 2012 on a monthly basis.

FIRM_SIZE: Firm Size

Description:	FIRM_S as show	FIRM_SIZE categorizes firms size according to their number of employees and economic sector, as shown below: ¹²					
		Code	Category	Industry	Commerce	Services	
		0	Not Available	NA	NA	NA	
		1	Micro	up to 30	up to05	up to 20	
		2	Small	31 to 100	06 to 20	21 to 50	
		3	Medium	101 to 500	21 to 100	51 to 100	
		4	Large	more than 500	more than 100	more than 100	

¹² FIRM_SIZE categories are consistent with Ministry of Economy's classification (formerly known as Ministry of Commerce and Industrial Development), published in March 30th, 1999.

		5	Government Entity	-	-	-	
Availability:	Septemb available continue	per 2001 t e. Howeve ed reportin	to June 2009 on a mo er, due to the change lig the variable FIRM_	onthly basis. Star in the report, the SIZE instead of	ting in July 2009, re are some case NR_EMPLOYEE	FIRM_SIZE is n es where the inst and REV_AMO	iot titutions UNT.

DEFAULT: Loan default status

Description:	DEFAULT indicates if the loan is in default ¹³ :
	1 = Non Default 2 = Default
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	September 2001 to July 2012 on a monthly basis.

Description:	INSTYPE classifies each financial institution in four categories:
	1 = Commercial Bank 2 = Development Bank 3 = Limited Purpose Financial Society (SOFOLs) 4 = Regulated Multi-Purposes Financial Society (SOFOM-R)
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> or Appendix 2 of this manual for a detailed description of each category.
Availability:	September 2001 to July 2012 in a monthly basis.

¹³ Loan default occurs when the loan has not been liquidated under the terms and conditions agreed. It also occurs when the borrower is declared in bankruptcy or insolvency.

Module 4: Mortgage Indicators

Module 4 contains information about mortgage loans issued to individuals by banks and other financial institutions. The information was obtained from the regulatory report R04-H that financial institutions file with CNBV since June 2009.¹⁴ Data are disaggregated by borrowers' characteristics within each municipality. Figure 4 in Appendix 4 shows what the data looks like. The *Key_indicators* database includes some variables of this module aggregated at the municipality level. The municipality represents the location of the property that backs the loan.

The mortgage database consists of 15 variables, besides the common identifiers (DATE, MUNID, and INSTITUTION). These variables are defined below, and the table "Module 4: Case Count" in the codebook (*MSI_dataset_Codebook.xls*) gives a more detailed description of their availability, periodicity and codes.

Continuous variables

CRED_BAL : Credit Balance

Description:	CRED_BAL reports the outstanding credit balance, in current pesos, at the end of the period. Includes the principal of the mortgage loan plus not charged accrued interests, capitalized or refinanced interests, commissions, and any other charge. CRED_BAL is equal to missing if the information is not available.
Availability:	July 2009 to July 2012 on a monthly basis.

HOM_VAL_OR: Home Value in the Original Appraisal

Description:	HOM_VAL_OR indicates the value of the property according to the appraisal done by the financial institution at the time the loan was originated. HOM_VAL_OR is equal to missing if the information is not available.
Availability:	July 2009 to July 2012 on a monthly basis.

HOM_VAL_MAR: Home Value in the Market

Description:	HOM_VAL_MAR indicates the amount of money that the borrower paid for the property (i.e. the price established in the sales agreement). HOM_VAL_MAR is equal to missing if the information is not available.
Availability:	July 2009 to July 2012 on a monthly basis.

¹⁴ In this module, there is no information from development banks because this regulatory report is not mandatory for them. The layout of report R04-H is available upon request to CNBV.

FEES: Fees

Description:	This variable reports the fees, in current pesos, charged to the borrower in the period equal to DATE. This includes any fees charged by the financial institution that issued the loan (except origination fees) and those related to any type of insurance (unemployment insurance). FEES is equal to missing if the information is not available.
Availability:	July 2009 to July 2012 on a monthly basis

ORG_FEES: Origination Fees

Description:	ORG_FEES reports the amount, in current pesos, of fees and other expenditures charged to the borrower at the time the loan was originated. It includes loan origination fees, appraisal costs, costs of credit history reviews, costs of socioeconomic studies and other expenditures at the time the loan was originated. ORG_FEES is equal to missing if the information is not available.
Availability:	July 2009 to July 2012 on a monthly basis.

H_FUND: Housing Fund Amount

Description:	H_FUND reports the amount, in current pesos, taken from the borrower's housing fund and used as the down payment or to cover the origination fees. Housing funds are managed by public agencies (INFONAVIT, FOVISSSTE or ISSFAM) and their resources come from monthly contributions of the borrower's income. ¹⁵ H_FUND is equal to missing if the information is not available.
Availability:	July 2009 to July 2012 on a monthly basis.

COF_AMO: Co-financed Amount

Description	COF_AMO reports the amount of the loan co-financed by one of the housing fund agencies. COF_AMO is equal to missing if the information is not available.
Availability:	July 2009 to July 2012 on a monthly basis.

INCOME: Monthly Income

Description:	INCOME indicates the borrower's total monthly income before taxes, in current pesos, according to the socioeconomic study that the financial institution has performed. INCOME is equal to missing if the information is not available.
Availability:	July 2009 to July 2012 on a monthly basis

¹⁵ INFONAVIT, FOVISSSTE and ISSFAM are public financial institutions that act as mortgage originators and pension fund managers for private sector, government and army workers, respectively. They also manage the workers' housing funds, whose resources come from their salary.

NR_CREDS: Number of Credits

Description:	NR_CREDS reports the number of mortgage loans for each characteristic indicated by the categorical variables for each financial institution and municipality. NR_CREDS is equal to missing if the information is not available.
Availability:	July 2009 to July 2012 on a monthly basis.

Categorical variables

INC_TYPE: Type of Income

Description:	INC_TYPE classifies the borrower's main income source according to two categories of employment:
	1 = Not a salaried employee (e.g. self-employed, entrepreneur) 2 = Salaried employee
	INCTYPE is equal to missing if the information is not available. See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	July 2009 to July 2012 on a monthly basis.

EMPLOY_SEC: Employment Sector

Description:	EMPLOY_SEC classifies the borrower's employment in four categories:
	 1 = State Public Sector 2 = Municipality Public Sector 3 = Federal Public Sector 4 = Private Sector
	EMPLOY_SEC is equal to missing if the information is not available. See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	July 2009 to July 2012 on a monthly basis.

CRED_ALLOC: Credit Allocation

Description:	CRED_ALLOC classifies the purpose of the loan:
	1 = Land Acquisition for House Building

	2 = Simultaneous Land Acquisition and House Building
	3 = Own House Construction
	4 = Acquisition of a New or Used House
	5 = Extension and/or Remodeling
	6 = Payment of Liabilities
	7 = Liquidity Credit
	8 = Credits Issued to Ex-Employees or Employees of the Financial Institution
	CRED_ALLOC is equal to missing if the information is not available. See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	July 2009 to July 2012 on a monthly basis.

DEFAULT: Loan default status

Description:	tion: DEFAULT indicates if the credit is in default:	
	1 = Non Default 2 = Default	
	DEFAULT is equal to missing if the information is not available. See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.	
Availability:	July 2009 to July 2012 on a monthly basis.	

INS_TYPE: Type of Financial Institution

Description:	INS_TYPE classifies financial institutions in three categories:
	1 = Commercial Bank 3 = Limited Purpose Financial Society (SOFOL)
	4 = Regulated Multi-purposes Financial Society (SOFOM-R)
	INS_TYPE is equal to missing if the information is not available. See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> or Appendix 2 of this manual for a definition of each category.
Availability:	July 2009 to July 2012 on a monthly basis.

CRED_TYPE: Type of Credit

Description:	CRED_TYPE classifies each credit in two categories:
	1 = The credit was granted after June 2009 and at the date reported in DATE it had not

	suffered changes in its terms and/or conditions
	0 = Otherwise
	The mortgage regulatory report got into operation in July 2009. Most of the credits granted before that date have some missing information (for instance Origination Fees and Home Value in the Original Appraisal). This is also the case for the credits that suffered changes in their terms and/or conditions at the date reported by DATE.
	CRED_TYPE is equal to missing if the information is not available. See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> or Appendix 2 of this manual for a definition of each category.
Availability:	July 2009 to July 2012 on a monthly basis.

Module 5: Consumer Credit Indicators

Module 5 contains data on consumer loans issued to individuals from June 2009 to February 2011 on a monthly basis. The information comes from the report "R04B *Créditos al Consumo*" that financial institutions filed with CNBV between June, 2009 and February, 2011.¹⁶

The consumer credit database consists of 7 variables, besides the common identifiers (DATE, MUNID, and INSTITUTION). These variables are defined below, and the table "Module 5: Case Count" in the codebook (*MSI_dataset_Codebook.xls*) gives a more detailed description of their availability, periodicity and codes.

Continuous variables

INI_CRED_BAL: Initial Credit Balance

Description:	INI_CRED_BAL reports the outstanding credit balance, in current pesos, at the beginning of each month. It includes the principal, accrued interests, capitalized or refinanced interests, fees, and other charges.
	Credit balance can be negative in the case of prepayments or excess payments.
Availability:	June 2009 to February 2011 on a monthly basis.

FIN_CRED_BAL: Final Credit Balance

Description:	FIN_CRED_BAL reports the outstanding credit balance, in current pesos, at the end of the month. It includes the principal, accrued interests, capitalized or refinanced interests, fees, and other charges.
	Credit balance can be negative in the case of prepayments or excess payments.
Availability:	June 2009 to February 2011 on a monthly basis.

CRED_LINE: Credit Line

Description:	CRED_LINE indicates the line of credit that the financial institution approved to the debtor.
Availability:	June 2009 to February 2011 on a monthly basis.

NR_CRED: Number of Credits

¹⁶ The information of consumer credit is available until February 2011 because after this date a different version of the report R04-B was introduced. CNBV stopped receiving this report and now *B*anxico is the institution responsible for these data. We will include information for the following periods as soon as we can make them comparable to the information contained in this database.

Description:	NR_CRED reports the number of consumer loans with the same categorical values issued by financial institutions in each municipality.
Availability:	June 2009 to February 2011 on a monthly basis.

Categorical variables

CRED_TYPE: Type of Consumer Credit

Description:	CRED_TYPE classifies consumer loans in eight categories as follows:
	1 = Leasing 2 = Credit Card 3 = Auto Loan 4 = Loan for Durable Goods 5 = Personal Loan 6 = Payroll Loan
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	June 2009 to February 2011 on a monthly basis.

DEFAULT: Credit default status

Description:	DEFAULT indicates if the loan is in default
	1 = Non Default 2 = Default
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	June 2009 to February 2011 on a monthly basis.

Description:	INSTYPE classifies all financial institutions in two categories:
	1 = Commercial Bank
	4 = Regulated Multi-Purposes Financial Society (SOFOM-R)
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	June 2009 to February 2011 on a monthly basis.

Modules 6 to 8: Information of the People's Financial Sector Institutions (PFS)

PFS institutions are mainly constituted by two entities: Cooperatives and SOFIPOs. Both financial institutions are allowed to offer savings and credit services, and they are typically located in low income municipalities, where there are no other financial services. They can offer other services such as: payments from government poverty-alleviation programs, remittances, payment of electricity or water bills, and insurances. The main difference between them is that a Cooperative is a member-owned not-for-profit entity that only provides services to its members, while a SOFIPO is a for-profit entity that can provide services to the general public.¹⁷

Modules 6 to 8 provide information of deposits, credit balances and operative information of those institutions at the municipality level. The information comes from a report that entities send to the CNBV in a quarterly basis. Due to the structure of the report, it is only possible to identify aggregated balances, i.e. it does not include other characteristics within municipalities as in other modules.

The three databases have three identifiers (DATE, MUNID, INSTITUTION). In addition, Module 6 and 7 have one continuous variable and two categorical. Module 7 has two continuous variables and two categorical. These variables are defined below, and the "Module 6 to 8: Case Count" in the codebook (*MSI_dataset_Codebook.xls*) gives a more detailed description of their availability, periodicity and codes.

¹⁷ A total of 63 Cooperatives and 41 SOFIPOs were supervised by the CNBV at December, 2011. However, there are Cooperatives that are not under CNBV's supervision. In order to obtain savings and credit information from them, CNBV and CFSP are conducting a survey to those institutions.

Module 6: Savings Indicators of PFS



DEP_BAL: Deposit Balance

Description:	DEP_BAL indicates the balance of deposits, in current pesos, that PFS institutions hold in each municipality at the end of each quarter.
Availability:	June 2010 to December 2011 on a quarterly basis.

Categorical Variables

DEP_TYPE: Type of Deposit

Description:	DEP_TYPE classifies the deposits in PFS institutions as follows:
	1 = Savings Account
	2 = Current Account
	3 = Time Deposit
	4 = Debit Card Account
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	June 2010 to December 2011 on a quarterly basis.

Description:	INS_TYPE classifies each financial institution in two categories:
	5 = SOFIPO 6 = Cooperative
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	June 2010 to December 2011 on a quarterly basis.

Module 7: Credit Indicators of PFS



Continuous Variables

NR_CRED: Number of Credits

Description:	NR_CRED reports the number of credits issued, according to CRED_TYPE, by the financial institution.
Availability:	June 2010 to December 2011 on a quarterly basis.

CRED_BAL : Credit Balance

Description:	CRED_BAL reports credit balances, in current pesos, at the end of the quarter.
Availability:	June 2010 to December 2011 on a quarterly basis.

Categorical Variables

CRED_TYPE: Type of Credit Issued

Description:	CRED_TYPE classifies the credits issued by the financial institution as follows:
	1 = Consumer Credit
	2 = Commercial Credit
	3 = Mortgage Credit
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	June 2010 to December 2011 on a quarterly basis.

Description:	INSTYPE classifies each financial institution in two categories:
	5 = SOFIPO
	6 = Cooperative
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	June 2010 to December 2011 on a quarterly basis.

Module 8: Operative Information of PFS



Continuous Variables

N_UNITS: Number of Units

Description:	N_UNITS indicates the number of "units" belonging to the corresponding category of the operative information. A unit can represent the number of ATM's, the number of employees or the number of branches.
Availability:	From June 2010 to December 2011 on a quarterly basis.

Categorical Variables

OI_TYPE: Type of Operative Information

Description:	OI_TYPE indicates the type of operative information:
	 1 = Number of ATMs 2 = Savings Account Contracts 3 = Current Account Contracts 4 Time Deposit Contracts
	 4 = Time Deposit Contracts 5 = Debit Card Account Contracts 6 = Branches See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	From June 2009 to December 2011 on a quarterly basis.

Description:	INS_TYPE classifies each financial institution in two categories:
	5 = SOFIPO
	6 = Cooperative
	See Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of each category.
Availability:	June 2010 to December 2011 on a quarterly basis.

Module 9 to 11: Socioeconomic indicators

The dataset also contains geographic and socioeconomic information from municipalities and its population. The variables included were chosen using two criteria. First, their relevance based on a literature review of the variables commonly used in empirical studies. Second, their availability.¹⁸ The data mainly come from the National System of Health Information and INEGI.

Socioeconomic indicators were grouped according to their periodicity (annual, quinquennial, fixed) and provide information about education, social programs, social security and demography.

Module 9: Socioeconomic Indicators on an annual basis.

Poverty-alleviation Programs

Oportunidades

Description:	<i>Oportunidades</i> (formerly known as <i>Progresa</i>) is a poverty-alleviation program aimed to support families in extreme poverty. Through cash payments to those families, <i>Oportunidades</i> helps to improve households' education, health and nutrition ¹⁹ . Regarding this program, there are two variables available:
	OP_AMOUNT reports the amount of money paid by the Federal Government to the beneficiary families in the municipality.
	OP_FAMILY is the number of beneficiary families in the municipality.
Source:	INEGI: State and Municipality System Databases. http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined
Availability:	From 2000 to 2010 on a yearly basis. The number of municipalities for which data are available is not constant due to the differentiated implementation of the program.

Liconsa

Description:	<i>Liconsa</i> is a state-run company devoted to the industrialization of high-quality milk and its distribution at subsidized prices, in order to contribute to the proper nutrition of the population. The information available related to this program is the following:
	LICON_STORES reports the number of Liconsa stores in the municipality.
	LICON_FAM is the number of beneficiary families in the municipality.

¹⁸ The literature review can be found in Appendix 5.

¹⁹ For more information visit: <u>http://www.oportunidades.gob.mx</u>

	LICON_BENEF reports the number of beneficiaries in the municipality.
Source:	INEGI: State and Municipality System Databases.
	http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined
Availability:	From 2000 to 2010 on a yearly basis.

Diconsa

Description:	<i>Diconsa</i> is a state-run company which main purpose is to contribute to the nutrition of the population, through the supply of basic and complementary products to rural communities with a high marginalization index. DICONSA indicates the number of stores that operate in each municipality.
Availability:	From 2000 to 2010 on a yearly basis.
Source:	INEGI: State and Municipality System Databases.
	http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

Communications

POST_OFFI: Postal Offices

Description:	POST_OFFI reports the number of postal offices that operate in the municipality.
Availability:	From 2000 to 2010 on a yearly basis.
Source:	INEGI: State and Municipality System Databases. http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

TEL_OFFI: Telegraph Offices

Description:	TEL_OFFI reports the number of telegraph offices that operate in the municipality.
Availability:	From 2000 to 2010 on a yearly basis.
Source:	INEGI: State and Municipality System Databases.
	http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

RO_LENGTH: Length of Roads

Description:	RO_LENGTH reports the length, in kilometers, of the road network. This variable includes
	highways, freeways, etc.

Availability:	From 2000 to 2010 on a yearly basis.
Source:	INEGI: State and Municipality System Databases.
	http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

Municipal Finances

MUN_REV: Municipal Revenues

Description:	MUN_REV reports the revenues, in current pesos, of the municipality government.
Availability:	From 2000 to 2010 on a yearly basis.
Source:	INEGI: State and Municipality System Databases. http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

MUN_EXP: Municipal expenditures

Description:	MUN_EXP reports the expenditures, in current pesos, of the municipality government.
Availability:	From 2000 to 2010 on a yearly basis.
Source:	INEGI: State and Municipality System Databases.
	http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

Population

RURAL: Rural Status

Description:	RURAL classifies the municipalities according to its population size in six categories:
	1 = Rural municipalities: population between 1 and 5,000 inhabitants
	2 = Municipalities in transition: population between 5,001 and 15,000 inhabitants
	3 = Semi-urban municipalities: population between 15,001 and 50,000 inhabitants
	4 = Urban municipalities: population between 50,001 and 300,000 inhabitants
	5 = Semi-metropolitan municipalities: population between 300,001 and 1,000,000 inhabitants
	6 = Metropolitan municipalities: population greater than 1, 000,000 inhabitants
Availability:	From 2000 to 2011 on a yearly basis.
Source:	National Banking and Securities Commission (2010). Second Report of Financial Inclusion. http://www.cnbv.gob.mx/prensa/paginas/inclusionfinanciera.aspx



Social Security

Population with Social Security

Description:	These variables allow identifying the number of people with access to Social Security Programs offered by institutions such as ISSSTE and IMSS. The variables are classified according to three characteristics: sex, age and access to Social Security. A total of 88 variables are available, see Table "All Modules: Dictionary" in <i>MSI_dataset_Codebook.xls</i> for a detailed description of them.
Source:	National System of Health Information (2009). http://www.sinais.salud.gob.mx/demograficos/poblacion.html
Availability:	From 2000 to 2011 on a yearly basis. These variables have information of 2,454 municipalities. ²⁰

²⁰ From 2005 to 2010, two municipalities were created ("Tulum" in 2008 and "San Ignacio Cerro Gordo" in 2010, with INEGI codes 14125 and 29003, respectively), making a total of 2,456. For those municipalities, the data of population with social security is not available.

Module 10: Quinquennial Basis

Demographic Information

MALEH_SHARE: Male-headed Households

Description:	MALEH_SHARE reports the share of households whose head is male.
Availability:	From 2000 to 2010 on a quinquennial basis.
Source:	INEGI: National Population and Housing Census (2000-2010) http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

AVE_AGEH: Average Age of the Head of the Household

Description:	AVE_AGEH reports the average age of the household head.
Availability:	From 2000 to 2010 on a quinquennial basis.
Source:	INEGI: National Population and Housing Census (2000-2010)
	http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

INDIGH_SHARE: Share of Household Heads who Speak an Indigenous Language.

Description:	INDIGH_SHARE reports the share of household heads who speak an indigenous language.
Availability:	From 2000 to 2010 on a quinquennial basis.
Source:	INEGI: National Population and Housing Census (2000-2010) http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

DWELLINGS: Number of Dwellings.

Description:	DWELLINGS report the number of dwellings in each municipality. A dwelling refers to the physical construction (e.g. a house) where members of one or more households live.
Availability:	From 2000 to 2010 on a quinquennial basis.
Source:	INEGI: National Population and Housing Census (2000-2010) http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

INDIGPOP_SHARE: Indigenous Language Share

Description:	INDIGPOP_SHARE is the number of inhabitants who speak an indigenous language as a proportion of the total population in each municipality.
Availability:	From 2000 to 2010 on a quinquennial basis.
Source:	INEGI: National Population and Housing Census (2000-2010)
	http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

HOUSEHOLDS: Number of Households

Description:	HOUSEHOLDS report the number of households.
Availability:	From 2000 to 2010 on a quinquennial basis.
Source:	INEGI: National Population and Housing Census (2000-2010) http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

Education

Schooling

Description:	Schooling variables provide information about the education years of the head of the household.
	SCHOOLING reports the average education years of the household head in each municipality.
	SCHOOLINGH`N' is a set of variables that indicates the share of household heads with N years of education.
Availability:	From 2000 to 2010 on a quinquennial basis.
Source:	INEGI: National Population and Housing Census (2000-2010)
	http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

Module 11: Fixed Basis

Geography

NAME: Name of the Municipality

Description:	NAME is the name of the municipality.
Availability:	For 2,456 municipalities.
Source:	INEGI: National Population and Housing Census (2000-2010)
	http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

AREA: Surface Area of the Municipality

Description:	AREA reports the continental surface expressed in square kilometers. According to the National Institute of Statistics and Geography, the continental surface is the territory in the continent (i.e. excluding island's surface).
Availability:	For the existing municipalities in 2005.
Source:	INEGI: National Population and Housing Census (2000-2010)
	http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

Localization

Description:	Localization is constituted of three variables and indicates the geographic position of the municipality where the government authority is located. LATITUDE reports the latitude in decimal degrees. LONGITUDE reports the longitude in decimal degrees. ALTITUDE reports the altitude in decimal degrees.
Availability:	For the 2,457 existing municipalities in 2011 ²¹ .
Source:	INEGI: National Population and Housing Census (2000-2010) http://sc.inegi.org.mx/sistemas/cobdem/contenido-arbol.jsp?rf=undefined

²¹ The municipality "Bacalar" in Quintana Roo (INEGI code 23010) was created in February, 2011.

Appendix 1: Municipality identifiers conversion process

The main objective of the project is to provide information about the Mexican financial system at the municipality-level. For this reason, it is necessary to identify each municipality in a unique and consistent way across time. Before July 2009 all credit data were registered in the regulatory reports using a municipality ID defined by Banco de Mexico (the central bank). After that date, all credit data were registered using the ID defined by INEGI. On the other hand, before September 2008 all savings were registered using an ID defined by the CNBV, and after that date the ID was replaced by the one defined by INEGI.

The purpose of the matching process was to standardize the IDs to the ones established by INEGI. The matching was made on a name-by-name basis. First, the name of the corresponding state was searched in INEGI catalogue. Second, the name of the municipality was searched within the state. There are some states that have more than one municipality with the same name. In those cases complementary information from the CNBV's catalogue was used to select the best match. There were also cases where was not possible to assign the information to a municipality with certainty. The municipality identifier "000" was assigned to those cases.²²

²² The resulting catalog that matches the municipalities is available upon request to: <u>svazquez@cnbv.gob.mx</u> or ssalazar@cnbv.gob.mx.

Appendix 2: Non-bank financial institutions (NBFIs)

SOFOM is the acronym for Multi-purpose Financial Society. It is a public limited liability company which offers lending services to the population. By law, these entities cannot take savings from the public. The lending services they offer include not only credit but other types of lending, like financial leasing and factoring. The SOFOMs do not need CNBV's authorization to operate, unless they have patrimonial links or joint interests with a banking institution. The former are non-regulated while the latter remain regulated by the CNBV.

SOFOL is the acronym for Limited Purpose Financial Society. It is a public limited liability company which offers lending services to the population. By law, these entities cannot take savings from the public. As opposed to SOFOMs, all SOFOLs need CNBV's authorization to operate. Therefore, all SOFOLs are regulated entities. SOFOLs can only offer credit to the public, not financial leasing or factoring. According to the law, all SOFOLs must convert to SOFOMs by the end of 2012, other way they must finish their operations.

Cooperatives belong to what is called the People's Financial Sector in Mexico. These entities can offer credit to the public and can take deposits as well. By law, all co-operatives with more than 1 million dollar assets must have CNBV's authorization by the end of 2012. All co-operatives below the 1 million threshold will remain unregulated. Cooperatives in Mexico are commonly known as "Cajas".

SOFIPO is the acronym for People's Financial Society and, as its name suggests, it belongs to the People's Financial Sector in Mexico. These entities can offer credit to the public and can take deposits as well. Unlike Cooperatives, SOFIPOs are public limited liabilities companies. All SOFIPOs are regulated by the CNBV.

Credit Unions are liability companies. They can only offer credit to their members, and they can only operate in the industry group to which their members belong. It must be noted that these institutions are not Credit Unions as they are known in U.S. In Mexico, Credit Unions cannot take deposits from the public. U.S. Credit Unions are similar to the Mexican Co-operatives. All Credit Unions are regulated by the CNBV, but they do not send information at the municipality level.

Credit Auxiliary Organizations include financial leasing companies, financial factoring companies and warehousing companies. All these entities are regulated by the CNBV. However, they do not send information at the municipality level.

Appendix 3: Methodology used to correct outliers in deposits data

In order to evaluate the quality of the deposits information, the data at the municipality level was aggregated and compared against information coming from banks' financial statements published by CNBV. Figure 1 presents both data (municipality and financial statements) for the period between December 2000 and December 2010. For the total deposits balance we found two peaks: one in the first quarter of 2002 and the other in the first quarter of 2006.



Figure 1. Municipality Data vs Financial Statements

In order to identify outliers at the bank level, we compared financial statements and municipality level information for each bank and for each type of deposit. The list of the banks for which we found outliers is shown in Table 1. Outliers were found in eleven quarters from September 2001 to March 2006. In March 2002 and March 2006 we found outliers for 20 and 26 banks, respectively. For the rest of the periods we only identified one bank.

Table 1. Periods and institutions with outliers

Date	Institution
September 2001	40042
December 2001	40113
March 2002	40002, 40003, 40021, 40036, 40060, 40110, 40012,

	40103, 40119, 40032, 40059, 40108, 40116
June 2002	40042
December 2002	40042
March 2003	40036
September 2003	40102
September 2004	40127
March 2005	40022
December 2005	40060
March 2006	40014, 40036, 40059, 40103, 40113, 40059, 40021, 40037, 40072, 40108, 40116, 40030, 40042, 40086, 40110, 40058, 40032, 40044, 40102, 40112, 40106, 40060

40022, 40037, 40072, 40112, 40014, 40030, 40044,

Once the outliers were identified, we substitute this information with estimated values. The substitution process consisted in replacing the outliers with interpolated values using the bank's financial statements –of the outlier period- and the bank's share of deposits balances-of the previous and the following period- across municipalities; i.e.:

$$I_t^{i.j,k} = Q_t^i * \frac{1}{2} \left(S_{t-1}^{i.j,k} + S_{t+1}^{i.j,k} \right)$$

Where,

 $I_t^{i,j,k}$: is the interpolated deposit balance of type k in the municipality j for bank i at period t.

 Q_t^i : is the deposit balance of bank *i* at period *t* from the bank's financial statements.

 $S_t^{i,j,k}$: is the deposit share of type k in the municipality j for bank i at period t. This share is defined as:

 $S_t^{i,j,k} = \frac{D_t^{i,j,k}}{D_t^{j,k}} = \frac{\text{deposit balance of type } k \text{ in the municipality } j \text{ for bank } i \text{ at period } t}{\text{deposit balance of type } k \text{ in municipality } j \text{ at the period } t}$

t: quarter when the outlier was reported

t-1: quarter preceding the outlier

t + 1: quarter following the outlier

The caveat of using a linear interpolation method is losing precision, especially if in that quarter the deposit balances actually suffered a big change. However, the user can retrieve Q_t^i and implement other interpolation methods.

Appendix 4: Databases view examples

Table 2. Module 1: Savings Indicators

DATE	MUNID	INSTITUTION	DEP_BAL	DEP_TYPE	INS_TYPE
200003	01000	40030	54,226,393	1	1
200006	01003	40002	6,236,388	1	1
200206	04004	40021	24,555,037	2	1
200303	02001	40012	237,204,214	2	1
200509	02002	40021	1,680,152,608	1	1
200609	03003	40014	327,523,325	2	1
200709	01000	37166	1,980,919	2	2
200906	04002	40014	638,523,949	2	1
201012	02004	40143	43,890	1	1
201012	03008	40021	441,922,817	1	1
201103	02003	40014	108,984,146	1	1

Table 3. Module 2: Operative Information

DATE	MUNID	INSTITUTION	N_UNITS	OI_TYPE	INS_TYPE
200003	01000	40030	235	4	1
200003	01006	40012	2	11	1
200003	05035	40003	529	4	1
200003	08037	40068	2,961	12	1
200003	11020	40044	1,375	6	1
200003	13077	40021	2	11	1
200003	14096	40012	2	11	1
200003	15106	40003	12,413	12	1
200003	16112	40012	2,063	6	1
200003	20010	40002	1	11	1
200003	23001	40003	1	11	1

Table 4. Module 3: Commercial Credit Indicators

DATE	MUNID	INSTITUTION	CRED_BAL	NR_CREDS	NR_BORR	BORR_TYPE	CRED_ALLOC	ECO_ACT	D_COLLAT	NR_EMPLOYEE	REV_AMOUNT	FIRM_SIZE	DEFAULT	INS_TYPE
200109	01000	40002	22,144,724	2	1	4	27	31	0			4	1	1
200109	01001	40002	255,462	1	1	4	11	31	0			0	1	1
200109	01001	40021	1,231,490	1	1	4	21	54	0	•	•	1	1	1
200109	03003	40014	484,148	2	2	4	22	23	0			2	1	1
200109	15045	40014	43,930,340	3	1	4	11	33	0			4	1	1
200507	15104	40002	7,077,384	1	1	4	27	31	0			2	2	1
200801	30141	40072	448,850	1	1	4	27	0	1			1	1	1

Table 5. Module 4: Mortgage Indicators

DATE	MUNID	INSTITUTI ON	CRED_BAL	HOM_VA L_OR	HOM_VAL _MAR	FEES	ORG_FEES	INCOME	NR_CREDS	INC_TYPE	EMPLOY_ SEC	CRED_ ALLOC	DEFAULT	INS_T YPE	CRED_T YPE
200907	01001	40002	1,490,036	0	0	0	0	0	9	2		7	1	1	0
200907	01001	40014	1,395,886	2,145,000	1,950,000	1,611	44,061	25,209	1	2	3	4	1	1	1
200907	06002	40072	6,095,126	0	0	449	0	0	18			7	1	1	0
200908	03003	40021	288,932,273	0	0	12,500	0	0	260			4	1	1	0
200909	02001	40021	730,501	4,293,000	4,293,000	0	22,236	121,385	2	2	4	7	1	1	1
200909	30087	40014	145,264,823	0	0	124,786	0	0	316			4	1	1	0
200910	26018	40030	251,714	756,000	756,000	0	17,392	23,365	1	2	3	4	1	1	1
200911	19049	40136	988,838	2,390,620	2,390,620	0	93,923	159,500	2	1		1	1	1	1
200912	14097	40021	5,637,088	0	0	0	0	0	7			7	1	1	0
200912	22014	40036	1,249,520	5,232,200	1,252,759	0	44,322	200,000	1	2	4	3	1	1	1

Table 6. Consumer Credit Indicators

DATE	MUNID	INSTITUTION	INI_CRED_BAL	FIN_CRED_BAL	CRED_LINE	NR_CRED	CRED_TYPE	DEFAULT	INS_TYPE
200906	01001	40002	655,208,891	666,982,281	1,939,060,177	45,589	2	1	1
200906	01001	40012	206,103,124	175,617,453	455,569,873	23,257	2	1	1
200906	01002	40002	0	0	14,436	1	4	1	1
200906	04001	40072	1,193,255	1,172,866	1,425,283	10	3	1	1
200906	11031	40002	208,038	202,514	219,500	20	6	2	1
200907	30193	40012	43,668,888	43,029,359	59,285,477	393	3	1	1
200909	30030	40036	16,858	11,726	9,000	4	2	2	1
200911	27015	40002	70,353	0	77,437	1	2	2	1
201001	20309	40072	14,625	14,300	19,500	1	6	1	1
201003	15023	40012	1,532,342	1,601,016	3,877,308	474	2	1	1

Table 7. Module 6: Savings Indicators of Popular Savings and Loan Entities

DATE	MUNID	INSTITUTION	DEP_BAL	DEP_TYPE	INS_TYPE
201006	01001	29016	6,540	4	6
201006	01001	29081	185	2	6
201006	04002	29056	1,000	3	6
201006	11025	29056	12,820,571	3	6
201006	14057	29056	177	2	6
201006	16030	29056	1,061	4	6
201006	20034	29056	1,781,324	1	6
201006	20300	29056	3,745	2	6
201006	21015	29090	876	1	6
201006	24035	29090	137,839	3	6



	DATE	MUNID	INSTITUTION	NR_CRED	CRED_BAL	CRED_TYPE	INS_TYPE
Γ	201006	01001	29016	445	25,255,320	2	6
	201006	01001	29093	5,119	49,504,183	1	6
	201006	05022	29090	1	787,328	3	6
	201006	14037	29094	41	13,837,844	2	6
	201006	19039	29090	25	14,613,868	3	6
	201006	21016	29078	55	494,642	1	6
	201006	30039	29056	7	1,228,617	3	6
	201112	14035	29075	8	113,255	1	5
	201112	30100	29056	24	107,216	1	6
	201112	32029	29056	300	11,290,872	1	6

Table 8. Module 7: Credit Indicators of Popular Savings and Loan Entities

Table 9. Module 8: Operative Information of the Popular Savings and Loan Entities

DATE	MUNID	INSTITUTION	N_UNITS	OI_TYPE	INS_TYPE
201006	01001	29016	1	6	6
201006	01001	29056	6	6	6
201006	03009	29090	1	3	6
201006	11013	29004	1,121	4	6
201006	14018	29056	1	6	6
201006	15050	29090	2	2	6
201006	18001	29090	20	3	6
201103	20502	29033	1	2	6
201106	14052	29056	1	3	6
201109	18013	29090	1	3	6

Table 10. Module 9: Socioeconomic Indicators on an annual basis

DATE	MUNID	OP_AMO UNT	OP_FAMILY	LICON_ STORES	LICON_ FAM	LICON_BE NEF	DICONSA	POST_OFFI	TEL_OF FI	RO_LENGTH	MUN_REV	MUN_EXP	RURAL	F_20_24_NSS
2000	01001	988	215	22	9,482		16	348	9	369	811,900,000	811,900,000	5	8,594
2000	01010	925	214	1	239		6	5	0	218	18,394,091	18,394,091	3	419
2000	20003			1		55	2	1	0		1,163,122	1,163,122	1	87
2000	28025			0	0		0	18	1	37	34,182,697	34,182,697	3	698
2001	14015	748		0	0	0		14	1	53	71,305,516	71,305,516	4	1,147
2004	07105	10,678	2,134	3		768		16	1	44	20,280,316	20,280,316	2	543
2008	12001	269,814	34,318	78	18,169	32,494	56	183	8	549	1,976,000,00 0	1,976,000,000	5	20,309
2010	13008							15	1				3	1,176

DATE	MUNID	MALEH_RATIO	AVE_AGEH	INDIGH_RATIO	DWELLINGS	INDIGPOP_RATIO	HOUSEHOLDS	SCHOOLING	SCHOOLINGH7
2000	01001	0.807672	43.5689	0.004295	141,208	0.002687	147,269	8.31948	0.013355
2000	01010	0.838667	44.3069	0	2,952	0	3,000	4.95019	0.005496
2000	07020	0.877934	43.9618	0.062293	7,200	0.071666	7,881	3.7532	0.013269
2000	20012	0.861249	43.9716	0.715312	1,756	0.668861	1,809	3.11066	0.007493
2000	28034	0.911345	50.0265	0	2,365	0	2,380	4.23705	0.005268
2005	14027	0.789063	50.1562	0.018277	380	0.009059	384	3.86649	0
2005	20561	0.725806	48.8871	0.016129	51	0.004386	62	3.62712	0
2010	07024	0.880023	45.2032	0.998868	1,767	0.997819	•	3.62174	0.00906
2010	20106	0.725275	54.7363	0	91	0.003559	•	3.9011	0
2010	30024	0.821776	47.5532	0.01309	3,288	0.004906		3.78218	0.006711

Table 11. Module 10: Quinquennial Basis

Table 12. Module 11: Fixed Basis

MUNID	NAME	AREA	LATITUDE	LONGITUDE	ALTITUDE
01001	AGUASCALIENTES	1,179	21.880833	-102.29611	1,885
07020	LA CONCORDIA	2,582	16.116112	-92.688889	540
08002	ALDAMA	9,233	28.838612	-105.91111	1,270
10019	OTAEZ	1,708	24.698055	-105.99333	1,716
20302	SAN PEDRO ATOYAC	72	16.488056	-97.985558	239
20402	SANTA MARIA CORTIJO	90	16.450832	-98.285553	80
20502	SANTIAGO ZACATEPEC	176	17.158611	-95.914444	1,395
30119	OTATITLAN	50	18.176945	-96.034164	16
31007	CACALCHEN	101	20.982222	-89.227776	10
32001	APOZOL	293	21.470278	-103.09083	1,274

Appendix 5: Literature review

The MSI dataset includes geographic and socioeconomic indicators that can be useful when analyzing savings and credit data and their relationship with municipalities' characteristics. The first criteria used to choose these variables was reviewing part of the literature and identifying commonly used indicators. The existent literature between finance and socioeconomic characteristics is extensive and this review does not pretend to cover all. It only gives a brief summary of some of the most relevant authors and studies that study these topics.

Demographic and social security variables

The rural status, the size of the population in each municipality and its distribution by social security condition are variables usually used in studies of savings and credit. For example, Loayza, Schmidt-Hebbel and Serven (2000) found that the proportion of urban population and the old and young dependency ratio have a significantly negative impact on the private savings rate. Cigno and Rosati (1992), using Italian data, studied the extent to which market-based and state-provided social security services affect savings and fertility decisions. They found evidence of an increase in the savings rate when the social security coverage rises, while an increase in the social security deficit has the opposite effect.

In contrast, Chou, Liu and Huang (2004) examined the effects of Taiwan's 1995 introduction of the National Health Insurance program on households' savings and consumption. They found that such program reduced households' precautionary savings and increased their consumption once the health insurance became available. On the other hand, when Horioka and Wan (2007), analyzed household savings in China they used rural status and different demographic indicators as control variables. They found that the variables related to the age structure of the population usually do not have a significant impact on households' savings rate, while the lagged savings rate, income growth, and (in some cases) the real interest rate and the inflation rate are the main determinants of variations of savings rate over time and across regions.

Other commonly used demographic indicators are the age and gender of the head of the household, number of households, average household size, percentage of households in which the head speaks an indigenous language and income. The literature that uses these indicators and relates them with savings and credit behavior is extensive and covers many approaches, such as household characteristics and precautionary savings (Lusardi, 1998), retirement savings (Sunden and Surette, 1998) or Banks, Blundell and Tanner (1998), just to mention a few. Another examples are the works of Kaboski and Townsend (2005), who studied the impact of microfinance institutions at the village level in Thailand and used some demographic indicators as control variables; or Demirgüc-Kunt, López, Martinez and Woodruff (2011) who analyzed the causal link of remittances in Mexico's financial development, and include in their models indicators like population size and ratio of householders who speak an indigenous language.

In recent years, the experimental studies have become popular. De Mel, McKenzie and Woodruff (2009), by conducting a field experiment, analyzed the differences in income generated by a positive capital shock to male and female microenterprise owners. They found sustained increases in income for male owners but no increases in income for female owners. Based on non-experimental information, they also found evidence of lower returns to female-owned enterprises in other countries.

On those same lines, Karlan and Zinman (2009), complemented their previous randomized experiments about consumer credit in South Africa, and conducted similar field experiments to measure the impact of credit access to microentreprenerus in Manila. Among their results, they found that business profits are higher when male enterpreneurs have access to credit, rather than female entrepreneurs.

Education

At the macro-level, the empiric literature that studies the determinants of financial development and its relationship with economic growth commonly uses schooling information as control variables. Along these lines, Ross Levine's work has been one of the most important. Using econometric techniques like dynamic panel estimators and cross sectional instrumental variables, throughout his work he has evaluated the relationship between financial development and economic growth (Levine and King, 1993) and identified the determinants that explain the differences in financial depth across countries (Levine, Loayza and Beck, 2000). In most of these studies he includes schooling indicators as conditioning variables. In a more thorough literature review, Levine (2003, 2004) discusses other related works that also use schooling indicators.

At the micro-level, many studies have focused on the consequences of credit constraints in education. In the case of Mexico, Hanson and Woodruff (2003), using a sample of the 2000 Census of Population and Housing, examine the relationship between household migration behavior and educational attainment. They found that children who live in households with migrants to the United States complete more years of schooling than those without migrants. His findings are consistent with the idea that remittances help relax household credit constraints and therefore raise educational attainment. Studies for other countries, such as Jacoby and Skoufias (1997) for India, Deb and Rosati (2004) for Ghana and India, Guarcello, Mealli and Rosati (2010) for Guatemala also found that credit rationing is a determinant of school enrollment.

Education indicators have also played a more indirect role, i.e., as control variables to study other relationships between financial development and demographic characteristics. Kaboski and Townsend (2005), Chou, Liu and Huang (2004), Demirgüc-Kunt, López, Martinez and Woodruff (2011) or De Mel, McKenzie and Woodruff (2009)—whose works have been discussed above—are examples of studies that include schooling indicators in their models.

Poverty-alleviation programs

Since income transfer programs appeared, their impact on household behavior and conditions has been closely evaluated. Many empirical studies have measured the impact of these programs on private savings and financial services access and it is not the aim of this review to analyze them all. An important review of related empirical literature developed during the last decades of the 20th Century

can be found in Danziger, Haveman and Plotnick (1981). The World Bank and other international institutions have worked on many studies and reviews of the literature about income transfer programs and their impact on financial inclusion (Tesliuc and Lindert 2002, Rivero-Fuentes and McKernan 2005, Lindert, Skoufias and Shapiro 2006, and Bold, Porteous and Rotman 2012). Other studies have focused on the relationship between food security programs and microfinance. One that is worth mentioning is Zeller and Sharma (2000) who analyze the role of microfinance development to guarantee food security and poverty alleviation. They also describe some related programs in Africa and Asia.

Communications

In Mexico, telegraph offices play an important role in financial inclusion. They have agreements with the most important financial institutions which allow providing basic financial services, such as deposits, withdrawals and money orders, mainly in rural municipalities. Postal offices do not provide financial services but they can be used as a proxy to Telegraph Offices.

Beck, Demirgüc-Kunt and Martinez (2007) study which characteristics are determinants for the access and use of banking services. They find that better communication and transport infrastructure, measured as telephone mainlines per capita and rail km per 100 km² respectively, are associated with greater banking sector penetration (measured as the number of branches and ATMs relative to population and area).

Public finances

Public finances play an important role in determining savings. Masson, Bayoumi and Samiei (1998) found that government expenditure is negatively related with private saving in industrial countries, while the relationship is positive but not significantly in developing countries. Loayza, Schimidt-Hebbel and Servén (2000) study the determinants of saving rates across 150 countries over a period of 30 years. The study uses different specifications and estimation methods in order to measure the impact of demographic and macroeconomic variables such as young dependency ratio and government saving over the saving rates. The results are robust and show that an increase in one percentage point in government savings ratio reduces private savings by 0.29 percentage points.

De Castro and Fernández (2009) obtained similar results: a negative relation between private and public savings. Röhn (2010) also investigates the relationship for OECD countries; his results coincide with previous studies. However, he also stresses that the relation varies according to the composition of changes in public spending: the offset is greater when changes in revenues, such as tax cuts, instead of an increase in spending were done.

Geography

Geographic variables such as latitude, longitude, altitude and area have also been used in the empirical literature. They can be used to construct other indicators as in Beck, Demirgüc-Kunt and Martinez (2007), who use countries' area to calculate population density (inhabitant per square kilometer), the number of ATM per square kilometers and line rail kilometers per land area (as proxy for the transportation infrastructure).

In a subsequent paper, Demirgüc-Kunt, López, Martinez and Woodruff (2011) study the effect of remittances over the financial depth and breadth in Mexico. They used population density as a variable control and found that this variable is significantly and positively related with measures of bank branch development. Intuitively, a low population density is associated with longer distances, and raises the costs of using a bank branch.

The geographic coordinates could be useful to calculate distances among the municipalities. Degryse and Ongena (2005) analyze if the location of the firm relative to a financial institution and its competitors has consequences over the credit agreements. They find that the firm proximity to the lending office is associated with higher interest rates while their closeness to the competitors reduces it. Knyazeva and Knyazeva (2012) also analyze the role of distance in bank lending. They found that spreads increase with the distance between agents and financial institutions. Both findings can reduce the amount of credit issued to firms or individuals.

Alessandrini, Presbitero and Zazzaro (2009) study the effect of distance over the allocation of credit from another point of view. They studied the impact of functional distance, defined as the distance between the branch and its headquarters, over several indicators that could reflect financial constraints. They found that functional distance is positively associated with more demand of credit, a greater dependence of investment amounts of firms on the cash flows and a higher share of credit lines used by firms.

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