

Determinants of Financial Inclusion in Mexico

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Outline

- 1. Motivation**
- 2. Literature**
- 3. Data**
- 4. Methodology**
- 5. Conclusions**

The policy agenda and the need of a better knowledge

- Financial inclusion policies has been getting and increasing importance in the Mexican agenda as a way to improve the level of banking penetration, one of the lowest in LatAm (27,5%, World Bank Global Findex).
- Different initiatives has been promoted by the Mexican government in recent years: correspondent banking, promoting competition by “niche banks”, basic accounts, mobile banking and remittances and social programs based on a financial services (e.g. debit card).
- Socioeconomic conditions in a middle-income economy, particularly high informal economy, could impose high barriers to savings.
- There is still a lack of knowledge of the factors that could spur or deter FI in Mexico.

Goals

- Find how individual's conditions and relevant variables affect financial inclusion in Mexico by constructing a dependent variable based on asset and liability products.

Literature

- Broad consensus on the relevance of FI: poverty trap and inequality reduction (Banerjee and Newman, 1993; Galor and Zeira, 1993; Aghion and Bolton, 1997; Beck Demirguc-Kunt and Levine, 2007); financial access and savings (Aportela., 1999; Ashraf et al, 2010); productive investment (Dupas and Robinson, 2009), consumption (Dupas and Robinson, 2009;. Ashraf et al, 2010b) and gender gap reduction (Ashraf et al., 2010).
- How to measure FI? Honohan (2007), Demirgüç-Kunt (2012), Sarma (2008, 2012), Cano (2013), Camara and Tuesta (2014). Negrín and Marin (2013) in the case of Mexico.
- What impacts FI?: Different perspectives: education (Khander and Pitt, 1998), informal and informal Savings (Collins et al, 2009; Hoyo et al, 2013; Perry et. al. 2007); remittances (Anzoategui 2011, CEMLA et al. 2012); social programs (Bold et al, 2012); socio-economic barriers (Hoyo et. al 2013).
- We want to contribute to the literature from a more broad perspective, taking advantage of a new specific FI survey for Mexico.

Database

- National Financial Inclusion Survey- ENIF 2012, commissioned by CNBV, INEGI and AFI.
- It gathers information about the use of and access to financial products and services by households.
- 87 questions. 7000 households in urban and rural areas. Representative of the country as a whole.

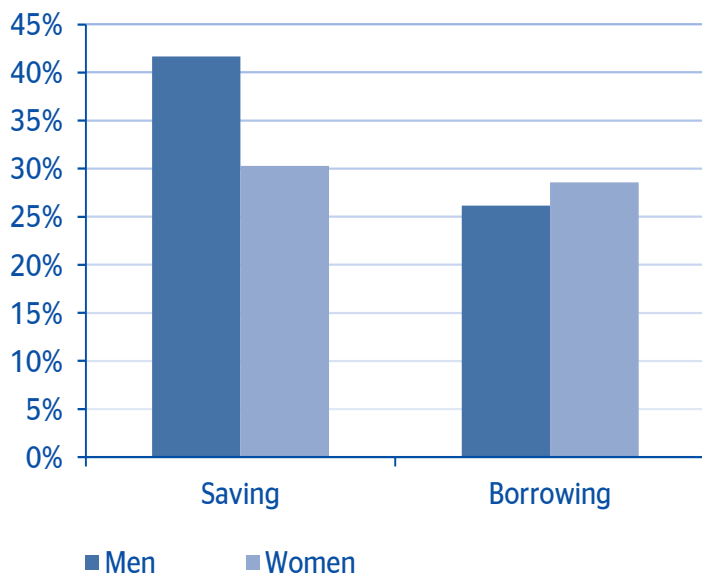
National Financial Inclusion Survey -ENIF 2012

	Section	Content
1.	RESIDENTS AND HOUSEHOLDS IN THE BUILDING	Number of people in the building and households
2.	SOCIO-DEMOGRAPHIC FEATURES OF THE MEMBERS OF THE HOUSEHOLD	Age, name and gender of all members of the household
3.	SOCIO-DEMOGRAPHIC FEATURES OF THE SELECTED REPRESENTATIVE	Marital status, education, occupation, income, health, household income
4.	COST MANAGEMENT	Record of expenses, management of income, resources in the event of exogenous shocks
5.	INFORMAL AND FORMAL SAVING	Possession and use of saving products, barriers
6.	INFORMAL AND FORMAL CREDIT	Possession and use of savings products, barriers
7.	INSURANCE POLICIES	Possession of insurance policies, of what kind, reasons for not having them
8.	RETIREMENT SAVINGS ACCOUNT	Information about AFORE accounts
9.	REMITTANCES	Remittances received, channel and use
10.	USE OF FINANCIAL CHANNELS	Use of ATMs, bank branches and banking correspondents

Financial inclusion in Mexico: some evidence

- Despite the fact that 97% of adults in Mexico have at least one point of access to the financial system, only 38% have taken out a savings or credit product with formal financial institutions.
- This low use of the formal financial system flags up the importance of **analysing** in more detail the **determinants of financial inclusion (FI)** in Mexico, from the **demand** side.

Saving and borrowing by gender



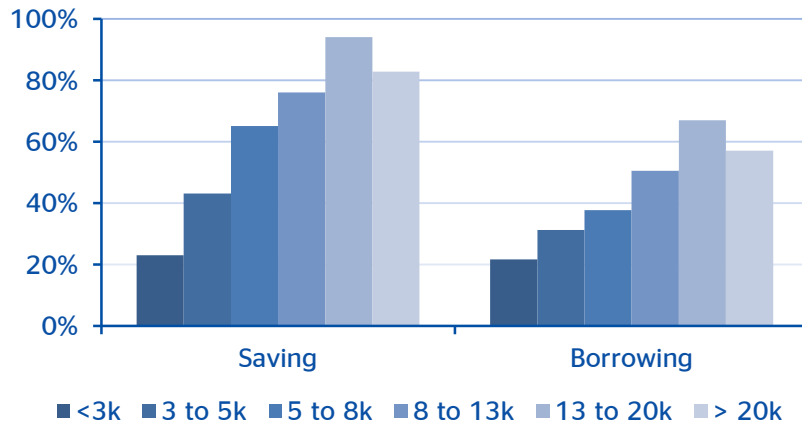
- Nationwide, ownership of **savings** products is **lower among women** (30%) than men (42%).
- However, in **loan** products, ownership is **higher among women** (29%) than men (26%).

Financial Inclusion in Mexico: some evidence

Saving* and borrowing** by income level (MXN)

Income level is positively correlated with both, savings and loan products.

- In the highest income group, ownership of both types of products tapers downwards.

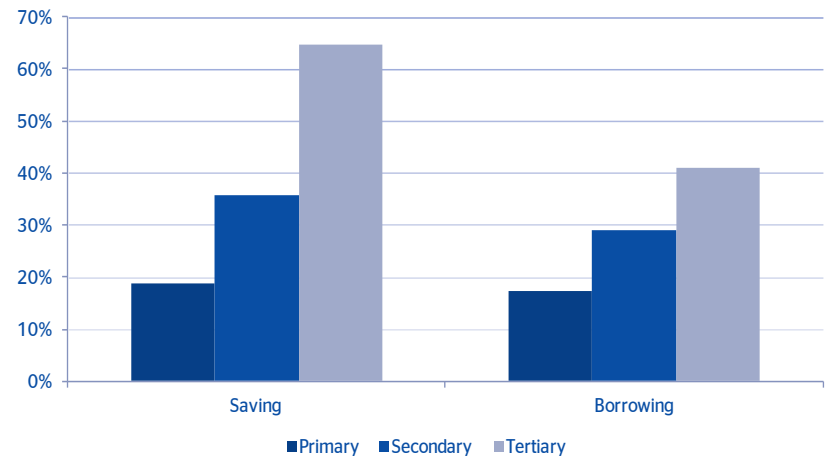


- Educational level is also positively correlated with both, loan and saving products.

* Do you have a savings, payroll, investment or other type of account in a bank?

** Including lending institutions and department store cards, do you have a loan, credit or credit card?

Saving and borrowing by educational level



Determinants of FI in Mexico

- Using information from the ENIF, we have built Financial Inclusion Indicators measuring the ownership of credit and savings products jointly (Aggregate Index) and separately (Savings Index and Borrowing Index).
- FI Indicators are built using the Multivariate Correspondence Analysis, which allows a large number of variables to be represented by a small number of dimensions or factors.
- The replies of individuals as to their ownership of financial products will be weighted relative to the contribution of each product to the index. If the person does not own any financial products, the index takes the value of 0 and goes up to a maximum of 1 if all the products are taken into consideration.
- Taking each indicator into account, we estimate our model using the Generalised Linear Model to analyse the socio-economic variables affecting financial inclusion proxied by our three types of indicator.

Methodology

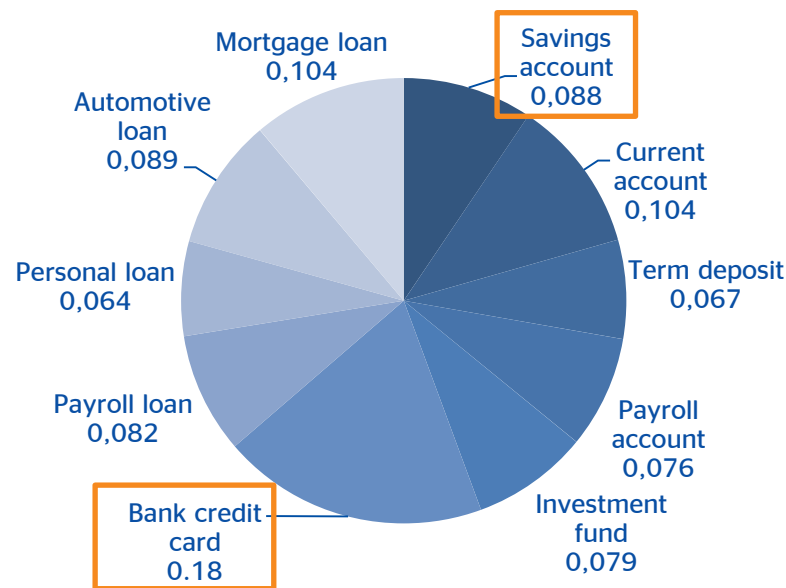
- Generalized Linear Model: Maximum Likelihood
- $\eta = \sum_i^n X_i \beta + \varepsilon$
- $\eta_i \equiv E(Y_i)$, link function is a logistic $g(\mu) = \log\left(\frac{\mu}{1-\mu}\right)$
- X_i : vector of individual characteristics
- β : parameters
- ε : error term that follows a binomial distribution since our endogenous variable is bounded, (0-1)

Aggregate FI Index

FI - Aggregate Indicator

Variable	Ratio	Signif
Woman	0.0763	
Age	0.0453	***
Age squared	-0.0004	**
Size of home	0.0020	
Head of the household	0.1332	**
Married or civil partnership	0.1017	*
Educational level	0.1567	***
Employee	0.0444	
Employer	0.1628	
Self-employed	-0.2569	
Unpaid worker	-0.1565	
Inactive	-0.1759	
Household with savings	0.2924	***
Capacity to withstand shocks	0.3799	***
Receiving remittances	0.0759	
With labour income	0.2272	***
Town <15k inhabitants	-0.4622	***
Nº. branches in the state	0.2450	***
Nº. Banking correspondents	0.0222	
Remarks	6109	
Pseudo R2	0.309	

Breakdown of the Aggregate Index (weights obtained by MCA)



*** Significant to 99%, ** Significant to 95%, *Significant to 90%

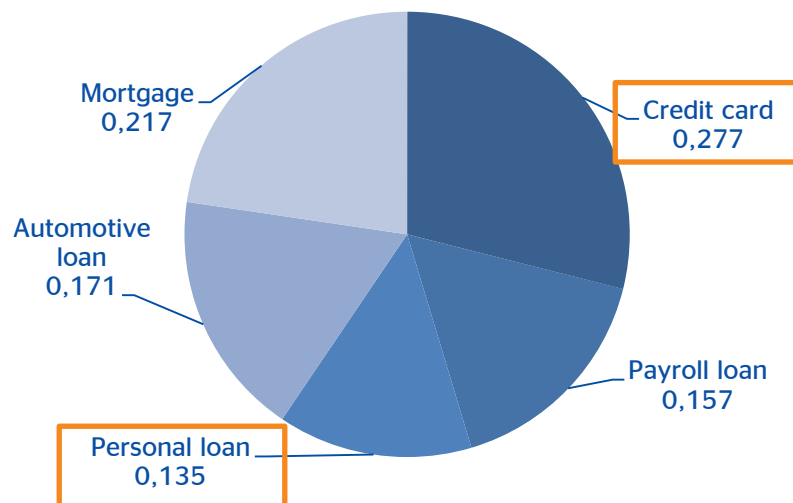
Source: BBVA Research calculations based on ENIF 2012

Borrowing Index

FI- Borrowing Indicator

Variable	Ratio	Signif
Woman	0.3724	***
Age	0.0943	***
Age squared	-0.0010	***
Size of home	0.0247	
Head of the household	0.2346	**
Married or civil partnership	0.3231	***
Educational level	0.1566	***
Employee	-0.0162	
Employer	0.2345	
Self-employed	-0.1129	
Unpaid worker	-0.1403	
Inactive	-0.1153	
Household with savings	0.2520	**
Capacity to withstand shocks	0.1500	
Receiving remittances	-0.1187	
With labour income	0.2776	***
Town <15k inhabitants	-0.6115	***
Nº. branches in the state	0.2126	**
Nº. Banking correspondents	0.0633	**
Remarks	6109	
Pseudo R2	0.15	

Breakdown of the Borrowing Index
(weights obtained by MCA)



*** Significant to 99%, ** Significant to 95%, *Significant to 90%

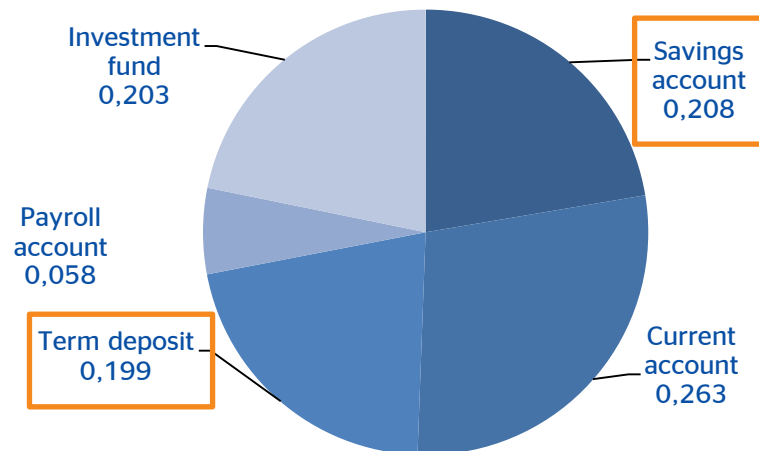
Source: BBVA Research calculations based on ENIF 2012

Savings Index

FI- Savings Indicator

Variable	Ratio	Signif
Woman	-0.1454	**
Age	0.0330	**
Age squared	-0.0003	
Size of home	-0.0163	
Head of the household	0.0418	
Married or civil partnership	-0.0495	
Educational level	0.1576	***
Employee	-0.0501	
Employer	0.5323	*
Self-employed	0.0363	
Unpaid worker	0.0849	
Inactive	0.0426	
Household with savings	0.3525	***
Capacity to withstand shocks	0.6900	***
Receiving remittances	0.3842	***
With labour income	0.1978	***
Town <15k inhabitants	-0.2590	***
Nº branches in the state	0.2672	***
Nº Banking correspondents	-0.0223	**
Remarks	6109	
Pseudo R2	0.253	

Breakdown of the Savings Index
(weights obtained by MCA)



*** Significant to 99%, ** Significant to 95%, *Significant to 90%

Source: BBVA Research calculations based on ENIF 2012

FI indicators: total population

GLM estimation

Variable	Aggregate Index	Borrowing Index	Savings Index
Woman		*** (+)	** (-)
Age	*** (+)	*** (+)	**
Age squared	**	***	
Head of household	** (+)	** (+)	
Married or civil partnership	* (+)	***	
Educational level	*** (+)	*** (+)	*** (+)
Employer			* (+)
Household with saving	*** (+)	** (+)	*** (+)
Capacity to withstand shocks	*** (+)		***
Receiving remittances			*** (+)
With labour income	*** (+)	*** (+)	*** (+)
Town <15k inhabitants	*** (-)	*** (-)	*** (-)
Nº branches in the state	*** (+)	** (+)	*** (+)
Nº Banking correspondents		** (+)	

- The “**woman**” variable is not significant for the Aggregate Index, but it is for both the Borrowing Index (+) and the Savings Index (-).
- Possible explanation: when all the products are looked at together, the effect is cancelled out. This result is worth further analysis in subsequent research.

*** Significant to 99%, ** Significant to 95%, *Significant to 90%

Source: BBVA Research calculations based on ENIF 2012

Focusing on the informal population

GLM estimation

Variable	Aggregate Index	Borrowing Index	Savings Index
Woman	** (+)	** (+)	
Age	** (+)	** (+)	
Age squared	** (-)	** (-)	
Educational level	*** (+)	*** (+)	*** (+)
Household with savings			** (+)
Capacity to withstand shocks	*** (+)	* (+)	*** (+)
Receiving remittances	* (+)		** (+)
With labour income	*** (+)	*** (+)	*** (+)
Town <15k inhabitants	* (-)		
Nº banking correspondents	** (+)		* (+)

• Unlike the model for the total population, in the informal population, the variables “**woman**”, “receiving **remittances**” and “number of banking **correspondents**” each have a **positive** effect on the Aggregate Index.

• Possible explanation: Positive effect of public programmes focused on vulnerable women, such as those run by Bansefi and *Oportunidades* (96% of the beneficiaries are women).

Takeaways

- **Educational** level (a proxy for financial capabilities) and **Income** are significant and positive correlated with our 3 FI indexes for the total sample. It is also significant when focused on informal workers.
- Living in **small localities** are significant and negatively correlated with our 3 FI indexes for the total population.
- Being a **woman** is significant and positively correlated with the Borrowing Index and negatively with Savings Index (-). There are some likely explanations based on specific government programs, (*Bansefi* and *Oportunidades*) but it needs further research.
- Some of the recent strategies followed by the financial system such as the implementation of Corresponding Banking and the use of Remittances services as a tool to FI do not provide conclusive results. For the total sample, **Remittances** seem to be only important for the Savings Index and the presence of **Corresponding bankings** is only significant for the borrowing index. Probably it is related with the kind of services that they provide.
- For the total sample, the number of **Branches** is significant and positively correlated with our 3 indexes.

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- Interpretation of Regression Coefficient (β):
 - In linear regression, the slope coefficient is the change in the mean response as x increases by 1 unit
 - In logistic regression:

$$\frac{\text{odds}(x+1)}{\text{odds}(x)} = e^{\beta} \quad \left(\text{odds}(x) = \frac{\pi(x)}{1-\pi(x)} \right)$$

- Thus e^{β} represents the change in the odds of the outcome (multiplicatively) by increasing x by 1 unit
- If $\beta = 0$, the odds and probability are the same at all x levels ($e^{\beta}=1$)
- If $\beta > 0$, the odds and probability increase as x increases ($e^{\beta}>1$)
- If $\beta < 0$, the odds and probability decrease as x increases ($e^{\beta}<1$)