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Determinants of financial inclusion in Mexico based on the 2012 National Financial Inclusion Survey (ENIF)

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Abstract

Even though 97% of the population in Mexico has at least one access point into the financial system, only 38% has some sort of saving or credit product in a formal financial institution. These figures show the insufficient use of the formal financial system and highlight the importance of analysing the determinant factors for financial inclusion in Mexico in more depth.

This paper explores the factors determining financial inclusion in Mexico from the demand side, based on information from the 2012 National Financial Inclusion Survey (ENIF in the Spanish acronym). In order to identify the relevant factors, we have built financial inclusion indicators using the multiple correspondences method of analysis, taking into account whether people have credit and savings products, whether jointly (Aggregate Indicator) or individually (Savings Indicator and Credit Indicator).

Using a non-linear regression analysis we endeavour to explain the factors influencing financial inclusion, bearing in mind not only whether people are banked, but also the possession of a set of formal financial products. In addition, we carry out the same analysis for the sub-group in the informal labour market, the sector of the population which generally suffers most financial exclusion.

The results obtained for a range of financial inclusion indicators, both for the total population and for workers in informal sectors, show the need for making detailed analyses in order to encourage more participation in the formal financial system, by designing specific public policies for each population group depending on their socio-economic circumstances and geographical location.

Keywords: financial inclusion, personal finance, financial institutions.

JEL: G21, G23, G28, O16.

1 Introduction

When defining inclusive financial systems, we are talking about a set of savings, loan, payment and risk management products which meet the differing needs of the population, in sustainable and efficient conditions. This ideal scenario, however, is very different from the one we see in real life, if we go by the Global Findex Survey, conducted by the World Bank in 148 countries including Mexico, which shows us that 61% of adults in Latin America and the Caribbean are excluded from formal financial structures, and can only use informal financing structures or their own resources to cover their consumption or investment requirements.

Financial inclusion is defined by the Mexican National Banking and Securities Commission (CNBV in the Spanish acronym), as "the access to, and use of, financial services within an appropriate regulatory framework which guarantees structures for consumer protection and promotes financial education to improve the financial capabilities of all segments of the population". This definition covers not only the availability of access (supply), but also the effective use of financial services by individuals (demand). Although consumer protection and financial education are not directly included in this research, mainly because of a lack of information to measure these dimensions, they are assumed to be an integral part of financial inclusion.

Recent literature on financial inclusion, particularly that focusing on impact assessments[1] and empirical, survey-based exercises, has studied the benefits of financial inclusion in depth, such as access to loans in more favourable conditions than those available in the informal market (Campero & Kaisser 2013, Karlan & Zinman 2013, Straub 2003), the possibility of investing in new businesses or expanding existing ones (Armendariz & Morduch 2005; Rajan & Zingales 1998), access to resources for education and health (Khandker & Pitt 1998), the security that formal saving provides and the option of managing or mitigating risk with insurance (Collins *et al.* 2009; World Bank 2008). As well as these factors associated with the possession of specific products, transactional services can provide functions that individuals require, such as receiving remittances, easier and more secure (Anzoategui 2011, CEMLA 2012), or the payment of governmental transfers to social programmes (Bold *et al.,* 2012) .

Bearing in mind that the study of financial inclusion in Mexico is limited[2], and in order to make the most of the copious information in the 2012 National Financial Inclusion Survey (ENIF), carried out by the National Banking and Securities Commission (CNBV), the National Statistics and Geography Institute (INEGI) and the Alliance for Financial Inclusion (AFI), this paper explores the factors determining financial inclusion in Mexico, from the demand side. To identify which factors are important, in the first measurement we built a financial inclusion indicator using the method of multiple correspondence analysis. The indicator takes into account the possession of credit and savings products and, as such, determines in detail the level of inclusion enjoyed by individuals.

Using non-linear regression analysis[3], we try to explain the factors influencing the Aggregate Financial Inclusion Indicator (savings and credit products) taking each separately, with one indicator for savings products (Savings Indicator) and another for lending products (Credit Indicator). The use of the inclusion indicator as a dependent variable has the purpose of aggregating financial products, so that the information available can be maximised and a more accurate picture of individual financial inclusion can be drawn (Cano *et al.* 2013).

1: Especially work carried out by Burgess & Pande (2005), Dupas & Robinson (2009), Johnson (2004), Karlan & Zinman (2013), Khandker & Pitt (1998) among other impact assessments, which give pointers as to the advantages of financial inclusion, such as: increase in consumption and in productive investment, incentive to join the formal economy, higher saving, a rise in expenditure on education and healthcare, and poverty reduction.
2: Castañeda *et al.* (2011) describe policies and innovations for improving financial innovation in Mexico. Love & Sánchez (2009) analyse credit and investment restrictions in the Mexican countryside. Peña & Vázquez (2012) assess the impact of banking correspondents. Hoyo *et al.* (2013) analyse the barriers to financial inclusion on the basis of the National Financial Inclusion Survey.
3: Estimates with quasi-maximum likelihood using the binomial function (Papke & Wooldridge 1996).

Furthermore, with the aim of analysing the types of financial inclusion on the part of people in the informal labour market, the research takes as a proxy for informality the occupational position of the individual. Thus, self-employed workers are considered “informal” and with this population group we replicate the methodology described above. This exercise means that we can get closer to the problems of this group, which is the one that on the whole suffers most exclusion in all categories.

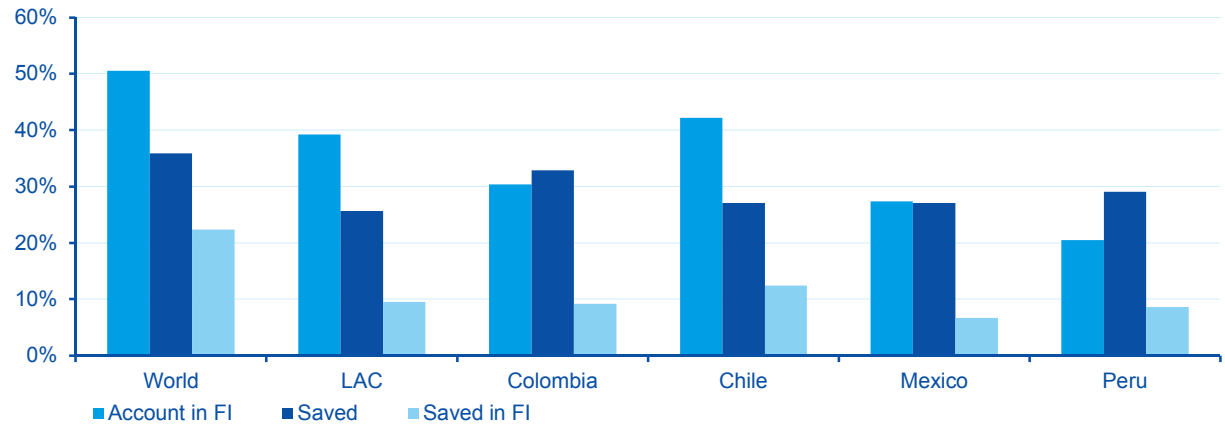
The work described below has four main sections as well as this introduction. In the first section we describe the current state of financial inclusion in Mexico, comparing it with certain countries in Latin America. The second section describes the methodology used in the analysis and presents the results of the econometric models, and the final section draws conclusions from the research and makes recommendations.

2 Financial inclusion in Mexico

According to Demirgüç-Kunt & Klapper (2012), Mexico has a huge disparity in the use of financial services between geographies and country development levels; that is, it finds significant differences in the way that people save, get loans, make payments and manage risks. In these areas, it is important to make a brief analysis putting Mexico in the current international context.

The statistics in this survey show that 50.5% of the world's population over 15 years-old has an account in a financial institution (bank, credit union, cooperative) and that 22% made some kind of saving in a financial institution in 2011. In Mexico these rates fall to 27.4% and 7% respectively, levels lower than those seen in Latin America and the Caribbean[4], where the corresponding percentages are 39.2% and 9.5%, and they are also lower than in comparable countries such as Chile and Colombia, as Figure 1 below illustrates. By contrast, although only 7% of the Mexicans surveyed replied that they had put savings into a formal financial institution over the previous year, 27.1% indicated that they had made monetary savings. This gap between the savings made and the percentage banked with financial institutions proves the existence of informal savings mechanisms and also the poor use of formal financial channels in Mexico. After analysing these results, we can say that Mexico is lagging and has lower savings figures than those of other countries corresponding to its stage of development. This situation deserves detailed analysis, not only for savings products but for financial inclusion in general.

Figure 2.1
Population with an account in a Financial Institution (FI) and with saving in an FI, 2011



Source: BBVA Research with data from Global Findex

The fact that people do not use the formal financial system is a reaction to the supply barriers and the barriers perceived by the population from the point of view of individual demand. According to Hoyo, Peña & Tuesta (2013), insufficient or variable income and self-exclusion are the most important barriers in the Mexican market, and are influenced by variables denoting individual vulnerability (such as the level of income, gender, education and occupation), the geographic variable as to the size of the community where the individual lives, and variables linked to the preference for the informal financial market. What is more, in general low income populations lack financial capabilities, and so are unaware of the potential benefits they could obtain from using formal financial services.

4: Includes Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.

Nationally, the subject of financial inclusion has received much official attention, with the CNBV introducing regulatory changes so that more people can benefit from the financial system through appropriate use of financial products and services, via mobile banking[5], incorporating banking correspondents to provide financial services, simplifying the requirements for opening bank accounts (simplified accounts), as well as encouraging competition between banks by creating niche banking[6].

Competition has been encouraged in the banking sector with the use of basic standardised products[7]. Meanwhile, the Federal Government has set up a programme which enables small savers to receive the yield paid by Treasury Certificates (Direct CETES Programme) which formerly could only be accessed by large investors.

A consequence of the increasing literature about financial inclusion, and the interest on the public and private agenda in the subject, is the huge effort being made to measure it. To this end, there have been several measurement projects, such as that run by Honohan (2007), the G20[8], the World Bank (Demirgüç-Kunt & Klapper, 2012) and the Bank of Mexico's Multidimensional Financial Inclusion Index. The CNBV began publishing reports a few years ago on the issue, describing some of the initiatives to create statistics and financial indicators from the supply side.

The supply of financial services can be quantified by referring to the number of access points in a given population nucleus, that is, the financial infrastructure or distribution channels though which financial services are offered. The access points in Mexico are branches, banking correspondents, ATMs, point-of-sale terminals, mobile banking and internet banking.

The Fifth Financial Inclusion Report (2013)[9] reported that 73% of municipalities in Mexico (covering 97% of the adult population) have at least one access point into both the banking sector (commercial and development banking) and the widely-used savings and loan institutions (cooperatives and micro-financing firms).

Table 2.1
Indicators of access to financial services nationally to December 2012

Channel	Number per 10,000 adults
Branches	1.93
Banking correspondents	2.83
Automatic teller machines	4.89
Point-of-sale terminals	66.73
Accounts linked to mobile phone	105.99

Source: BBVA Research with data from the Fifth Financial Inclusion Report

In terms of banking services use, Table 2 shows that said use is limited, a fact which is borne out in the paragraphs below, which compare Mexico's data with those of other Latin American countries.

5: See Alonso *et al.* (2013).
6: See Hoyo *et al.* (2013).
7: Banks are required to offer a basic deposit banking product (basic account for the general public) with no commissions, with a monthly pay-in of up to 165 times the minimum wage; as well as a basic wage product with the same features (basic wage account). There is also a basic credit card product, with no annual commission or any other conditions, with a credit limit of up to 200 times the minimum wage.
8: For more information, see: http://www.gpfi.org/news/moving-financial-inclusion-measurement-setting-appropriate-targets.
9: National Financial Inclusion Council (2013).

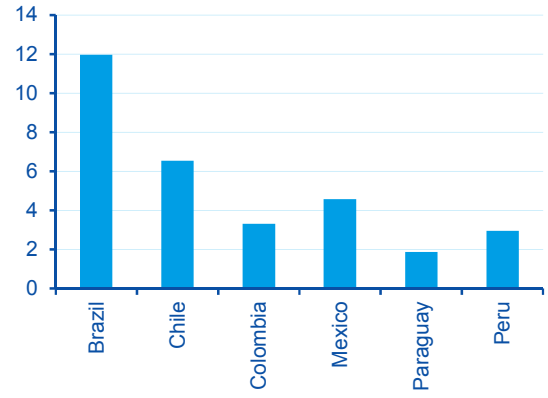
Table 2.2
National indicators of service usage of multiple banking to December 2012

Channel	Number per 10,000 adults
Traditional current accounts	8,356
Savings accounts	9
Term deposits	244
Debit cards	10,238
Credit cards	3,108
Mortgage loans	131

Source: BBVA Research based on the Fifth Financial Inclusion Report

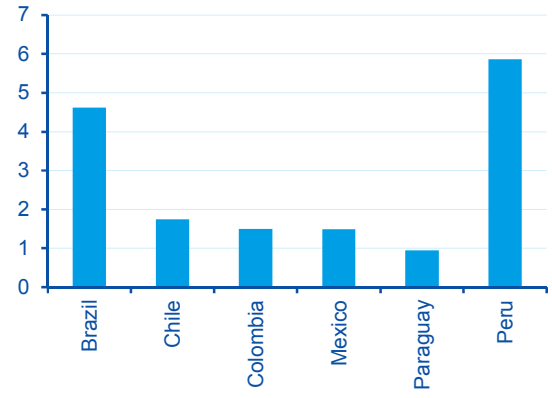
In a comparison with other countries of reference in Latin America, and according to information from the International Monetary Fund's Financial Access Survey, conducted in 2011, countries such as Brazil and Chile, and even Peru in the case of bank branches (including banking correspondents) have a bigger supply of access channels to banking services than Mexico (Figures 2.2 and 2.3). The same differentiation occurs with the number of deposit accounts (Figures 2.4 and 2.5).

Figure 2.2
ATMs per 10,000 adults, 2011



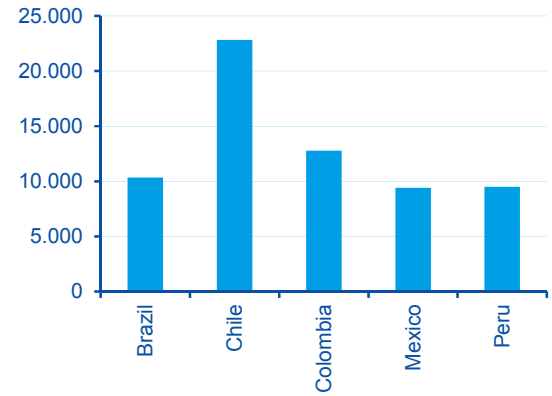
Source: BBVA Research based on the Financial Access Survey, IMF

Figure 2.3
Bank branches and correspondents per 10,000 adults, 2011



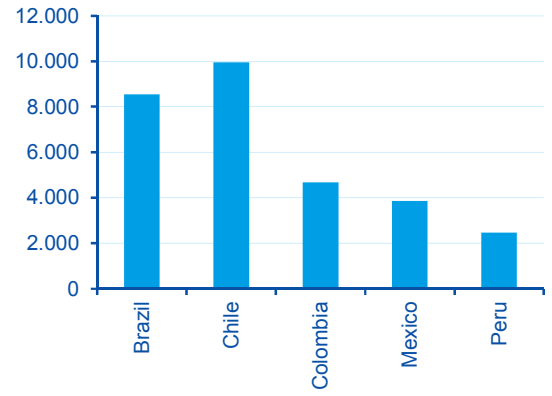
Source: BBVA Research based on the Financial Access Survey, IMF

Figure 2.4
Deposit bank accounts per 10,000 adults, 2011



Source: BBVA Research based on the Financial Access Survey, IMF

Figure 2.5
Credit bank accounts per 10,000 adults, 2011

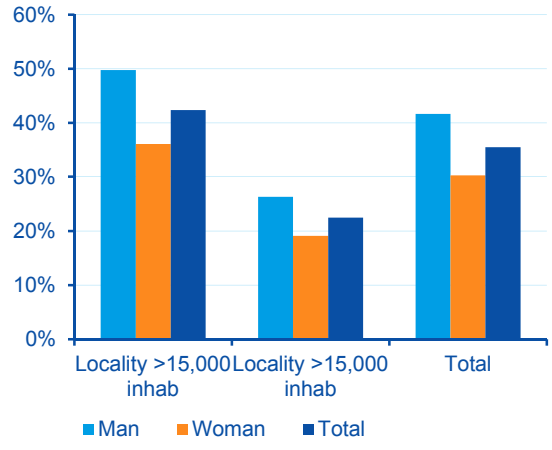


Source: BBVA Research based on the Financial Access Survey, IMF

2.1. Features of demand

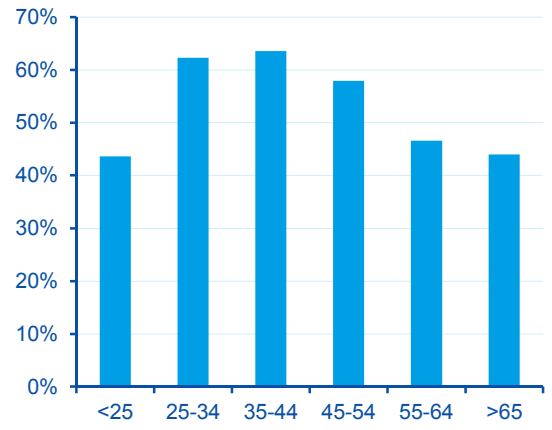
In Mexico, according to the ENIF, 35.5% of adults have a savings, wage or investment account in a formal financial institution. Nevertheless, when we analyse by specific socio-economic variables, we find that financial inclusion is strongly linked to the size of the locality, the individual's gender, educational and income level.

Figure 2.6
Banking usage by location and gender



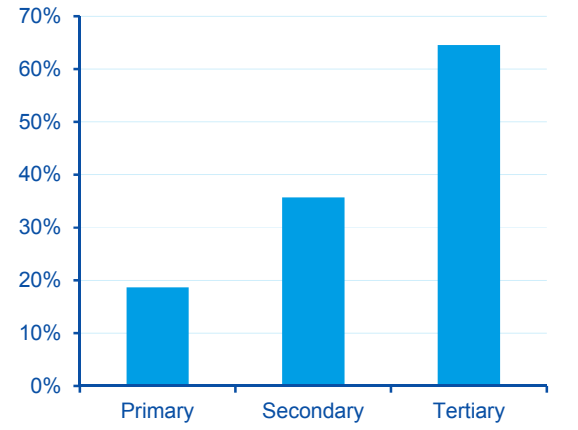
Source: BBVA Research with data from ENIF

Figure 2.7
Banking usage by age



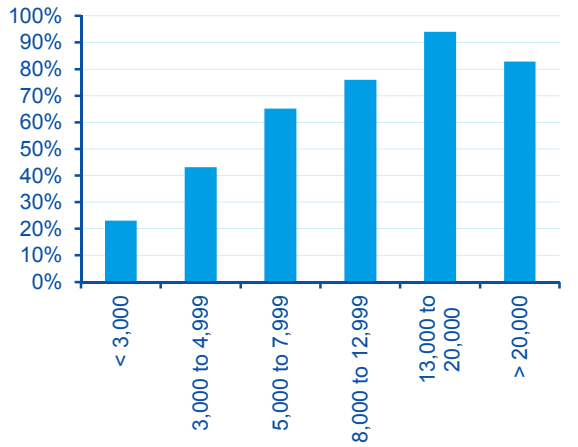
Source: BBVA Research with data from ENIF

Figure 2.8
Banking usage by education level



Source: BBVA Research with data from ENIF

Figure 2.9
Banking usage by income level



Source: BBVA Research with data from ENIF

On a national scale, women are less banked (30%) than men (42%), irrespective of the size of the locality they live in. In towns with over 15,000 inhabitants, the proportion of users of formal savings is higher (42%) than in small localities (22%). A person's age is also an important factor for financial inclusion, since people in the middle age ranges are more banked (64%) than the young or the elderly (44%). In terms of educational level, the more education received, the more banking usage: 18% of adults with only primary education are banked, whereas 36% of those with secondary education are, and 65% of those with tertiary education. Likewise, the higher the income, the more banking usage[10], since 94% of people earning between MXN13,000 and MXN20,000 a month are banked, whereas only 23% of adults earning less than MXN3,000 have an account.

Although only 35.5% of the Mexicans surveyed replied that they had saved in a formal financial institution in the last year, 43.7% stated that they had made savings using informal mechanisms. This is a widespread phenomenon, since on a worldwide level 29% of savers do not use the financial system to save.

When it comes to informal lending, Campero & Kaiser (2013) point to evidence in Mexico that the informal market is highly valued when households face negative shocks, with family and friends playing an important role when there are unexpected financial needs. This concurs with the replies to the ENIF: in the event of an emergency, the Mexicans on the whole ask their families and friends for loans (67.4%) or they pawn their possessions (36.3%). These data support the hypothesis that people prefer informal mechanisms, since the figures show the relationship between the perception of no interest in, or no need for, formal savings and credit services, and the use of the informal market.

10: Except for those earning more than MXN20,000 a month, who have a lower banking usage (84%) compared to the group earning between MXN13,000 and MXN20,000 (93%), which may be due to the fact that those with higher incomes can access other savings mechanisms.

3 Methodology and results

3.1. Methodology

3.1.1. National Financial Inclusion Survey ENIF 2012

The National Financial Inclusion Survey is commissioned by the CNBV, the INEGI and the AFI. The main aim of the survey is to generate information about the use of, and access to, financial products and services by households, in order to design financial inclusion indicators and to help public policy decision-making on this issue.

The survey was conducted in 2012 by the INEGI with around 7,000 households located in urban and rural areas. This distribution of the sample ensures that it is representative of the country as a whole, by gender and by locality (those with fewer than 15,000 inhabitants and those above that figure).

The questionnaire set had 87 questions, grouped into ten sections; these are listed below with a summary of their contents:

Table 3.1
National Financial Inclusion Survey -ENIF 2012

Section	Content
Residents and households in the building	Number of people in the building and households
Socio-demographic features of the members of the household	Age, name and gender of all members of the household
Socio-demographic features of the selected representative	Marital status, education, occupation, income, health, household income
Cost management	Record of expenses, management of income, resources in the event of exogenous shocks
Informal and formal saving	Possession and use of saving products, barriers
Informal and formal credit	Possession and use of savings products, barriers
Insurance policies	Possession of insurance policies, of what kind, reasons for not having them
Retirement savings account	Information about AFORE accounts
Remittances	Remittances received, channel and use
Use of financial channels	Use of ATMs, bank branches and banking correspondents

Source: BBVA Research based on the ENIF questionnaire

As can be appreciated, the ten sections of the survey contain valuable information which enables us to identify clearly the indicators of financial inclusion and to typify household demand by product type, channels and barriers to participating in the formal financial system.

Making use of the ENIF 2012 information and including indicators of access by locality[11], with the aim of bearing in mind aspects of supply, the methodology described below was applied.

3.1.2. Estimate of financial inclusion indicators using Multiple Correspondence Analysis

Multiple Correspondence Analysis (MCA) is a multivariate method which enables us to distil a large set of category variables into a small number of dimensions or factors, avoiding information loss. This methodology is similar to the analysis of principal components, which is commonly used for continuous variables or time series.

As pointed out by Cano *et al.* (2013), empirical studies on financial inclusion which apply econometric techniques tend to suffer problems with information loss, since they are based on indicators which bound the

11: Number of branch offices and correspondents per municipality, according to information from the National Banking and Securities Commission (2012).

concept of financial inclusion to the possession of a specific product such as a loan or an account in a formal financial institution[12]. Applying a method such as MCA helps to make the most of all the information available, because multiple variables can be used in the analysis, which reveal whether the subject of the study has different liability (credit), asset (savings, insurance) or transactional (current account) products or not.

The MCA is a multivariate method which uses the analysis of contingency tables and constructs a Cartesian diagram based on the distance between the variables analysed. The ***Z*** contingency table has ***i*** number of rows, which represent the number of individuals analysed, and ***j*** number of columns, the number of which corresponds to the categories of the variables included in the estimate. In other words, the matrix has the form ***ij***. Matrix ***Z*** takes values of 0 and 1 in every row (the individual), so that if the element belongs to the category corresponding to the variable (for example the answer to the question about the "credit card" variable was "yes") it takes the value of 1, and if not the element is 0 (Rencher 2002).

Although the classic MCA is estimated on a binary matrix[13], this paper applies the Burt matrix method $= Z^T Z$. The Burt matrix is squared and symmetrical and is composed of all the tables resulting from combining all the variables two by two. The diagonal on the matrix represents the combining of each variable by itself.

The algorithm for estimating MCA, following Greenacre (2008), is applied by taking these steps:

1. Matrix B is divided into the total sum of its elements, $b = \sum_{i,j} b_{i,j}$, to obtain the matrix of correspondences, ***P***=$\frac{1}{b}$*B*. The mass of rows r_i and columns r_j is calculated.

2. To obtain the coordinates of rows and columns, and thus see the relationship between rows and columns, the decomposition in singular values is used, $S = (p_{i,j} - r_i r_j)/\sqrt{r_i r_j}$. The decomposition generates the vectors (u_k) and eigenvalues (λ_k) in the k dimension.

3. The standard coordinates of rows (**i**) and columns (**j**) are calculated as:

   $\alpha_{ik} = v_{ik}/\sqrt{r_i}$ for the rows, and $\Upsilon_{jk} = v_{jk}/\sqrt{r_j}$ for the columns.

   Using these, the principal coordinates for rows (**i**) and columns (**j**) are estimated, $f_{ik} = \alpha_{ik}\lambda_k$ for the rows, and $g_{jk} = \Upsilon_{js}\lambda_k$ for columns.

4. The principal adjusted inertias are calculated[14] from the results above. The sum of the weighted (by the corresponding mass) squares of the principal coordinates in the *k* dimension is the principal inertia, λ_k.

   The total inertia is the sum of the eigenvalues, $\sum_{k=1}^{k} \lambda_k$, and it is useful to observe the inertia ratios explained by each of the dimensions. This last value enables us to decide the number of dimensions taken into account in the analysis.

   Finally, the contributions of the j column and the i row, in the **k** dimension are the components of the inertia: $cont_i = \frac{r_i f_{i\,k}^2}{\lambda_k}$; $cont_j = \frac{r_j g_{j\,k}^2}{\lambda_k}$.

With the MCA methodology described here, this research calculated three different financial inclusion indicators: one indicator for savings products ("Savings Indicator"), one for credit products ("Credit Indicator") and an indicator which considers both credit and savings products ("Aggregate Indicator"). The indicators are based on the following estimates:

First, the MCA was carried out on savings and credit products jointly. To do this, the accumulated inertia was calculated as explained in methodological point 4, for each dimension in the analysis, as shown in the Table below:

12: Most financial inclusion research (Allen et al. 2012, Aportela 1999, Greene & Rhine 2013) only uses the possession of the account as a variable of participation in the formal financial system.
13: For more information see Greenacre (2008).
14: The principal inertia resulting from the MCA solutions is adjusted to resolve the so-called "inertia percentage problem". This estimate refers to optimising the adjustment of the matrixes outside the diagonal. See Greenacre (2008).

Table 3.2
MCA for savings and credit products. Analysis dimensions and % of inertia explained

Dimension of Analysis	Accumulated inertia	%
1	**0.01533**	**83.16**
2	0.000689	3.74
3	1.04E-05	0.06
Total	0.018435	100

Source: BBVA Research with data from ENIF

The first dimension to be estimated accounts for 83.16% of the inertia, so we analyse the contributions of each financial product for this dimension:

Table 3.3
MCA for savings and credit products. Contributions of each product to the dimension with the greatest inertia explained (Dimension 1)

Product	Makes	Contribution
Savings account	No	0.017
	Yes	0.088
Current account	No	0.002
	Yes	0.104
Fixed term deposit	No	0.001
	Yes	0.067
Wage account	No	0.021
	Yes	0.076
Investment fund	No	0.001
	Yes	0.079
Bank credit card	No	0.018
	Yes	0.180
Payroll loan	No	0.002
	Yes	0.082
Personal loan	No	0.002
	Yes	0.064
Car loan	No	0.001
	Yes	0.089
Mortgage	No	0.002
	Yes	0.104

Source: BBVA Research with data from ENIF

The contributions show that within asset products the highest contributors to inertia are the current account and the savings account, in other words, products that are useful for making transactions and for saving. On the liability side, a bank credit card is indisputably the highest contributor to inertia. That is, the products with the highest weighting in the financial inclusion indicator in Mexico are the current account and the bank credit card.

After this, the MCA was carried out on asset products, details of which are given in Appendix 2.2. This analysis confirms that it is the current account which contributes most to total inertia of this kind of product. In this model the first dimension accounts for 90.66% of total inertia. Finally, the MCA estimate was carried out for liability products only (see Appendix 2.1b), where, again, the greatest contribution to inertia was shown to be the credit card. In this analysis dimension 1 explains 93.5% of the inertia (see Appendix 2.1a).

The contributions of each liability and asset product were used to weight the individual's reply as to whether they possessed these products, so we built an indicator which goes from 0 to 1. If the individual possesses no financial products, the indicator takes the value of 0 and can go up to a maximum of 1 if all products are taken into consideration.

3.1.3. General linear model (GLM)

The financial inclusion indicator built using MCA takes values between 0 and 1; this means that estimates with linear models are problematic. In view of this limitation, Papke & Wooldridge (1996) posited making estimates with quasi Maximum Likelihood as a suitable method for variables bounded between 0 and 1. Using this premise, several pieces of subsequent research have applied generalised linear model methodology, with a logistic connecting function and binomial error distribution[15].

Generalised Linear Models (GLM) are estimated by Maximum Likelihood and represent an extension of linear models. GLM, developed by McCullagh & Nelder (1989), is estimated with iterative algorithms, in which the hypothesis tests are based on likelihood comparisons between nested models. GLM has two characteristics: the error structure and the link function. Errors may have a binomial, Poisson, Gamma or negative binomial distribution, with which the assumption of normal distribution of errors in linear models is overcome. The link function which makes the linear ratio between the explanatory variable ("woman", for example) and the explained variable (financial inclusion indicator) by transforming the latter, may be logistical, logarithmical, probit or negative binomial.

The basic functional form of the model estimated using GLM e: $\eta = g(\mu)$ where η is the linear predictor defined according to the distribution applied to the dataset analysed, μ is the population average and $g(\mu)$ is the link function. Given that the variable we are analysing in this paper is bounded, error distribution is binomial and the most appropriate link function is a logistical one (*logit*)[16]. Thus, the model can be expressed as:

$$\eta = ln\left({}^{\mu}/_{(1-\mu)}\right)$$

η is also specified as the linear sum of the effects of the explanatory variable set X_i, therefore $\eta = \sum_i^n X_i\beta + \varepsilon$. In our case X are the variables which collect the individual's characteristics (gender, marital status, age, among others), about their occupation, income, location and the financial offering where the individual lives (see Appendix 1 for details); n are the 19 explanatory variables; β are the parameters which are estimated in the model and ε is a random error.

The GLM method was selected for this project instead of others such as the Beta regression set out by Ferrari & Cribari-Neto (2004), since Papke & Wooldridge (1996) find problematic the assumption of beta distribution in empirical data in which notes accumulate at the extremes (0 to 1). This is the case of financial inclusion data, since there is a large concentration of individuals who are financially excluded and who take the value of 0 in the variable being explained.

The results of the GLM model for the financial inclusion indicator, using ENIF data, are explained in the next section.

15: When Papke & Wooldridge (1996) wrote their seminal article on handling this type of data, there were no statistical programmes for executing the calculation. Subsequently, Stata introduced the corresponding algorithm with the GLM method (see: Cox & McDowell at: http://www.ats.ucla.edu/stat/stata/faq/proportion.htm).
16: Again following Papke & Wooldridge (1996) and the model's canonical or natural ratios.

3.2. Analysis of the determinants of financial inclusion

Taking into account the Aggregate Financial Inclusion Indicator, the personal characteristics that influence financial inclusion are age, position in the household and marital status. These variables are statistically significant and are in line with the findings of other research studies such as that by Cano *et al.* (2013) for Colombia, Greene and Rhine (2013) for the United States, Cámara *et al.* (2013) for Peru and Hoyo *et al.* (2013) for Mexico. As was to be expected, financial inclusion increases with age until it reaches a tipping point (represented by the age, squared) at 57.46 years old. This means that throughout someone's life the financial inclusion indicator increases but on reaching this age it begins to wane. On the other hand, being the head of the household and married or living with someone has a positive correlation with the indicator.

The estimated model proves that in Mexico education is one of the most important determinants, as far as individual characteristics are concerned, in explaining financial inclusion. As in other research studies (Allen *et al.* (2012), Goodstein & Rhine (2013) Mitton (2008), Kempson *et al.*. (2013) and Djankov *et al.*. (2008)), the higher the education level the higher the participation in the formal financial system. This may be because education is a way of measuring knowledge, skillsets and the capacity to make decisions, which when applied to the financial system means better financial capabilities for participation in formal financial markets (World Bank 2013a). Financial knowledge promotes the acquisition of savings, credit and insurance products that are suitable to the needs and preferences (profitability, risk, costs, etc.) of each individual.

The variables identifying household behaviour in terms of savings and the possibility of responding to setbacks are also statistically significant in the Aggregate Indicator for financial inclusion. The "ability to withstand shocks" variable is an approximation of people's vulnerability in the face of exogenous shocks such as illness, job loss, natural disaster or similar scenarios which require additional resources. To measure this item in the model, we built a proxy, which is a *dummy,* based on the question *"If you had to make an emergency outlay for an amount equivalent to your monthly income, could you pay it?"* This variable is significant in the analysis and has a positive influence (1.6%) on the financial inclusion indicator, which is logical and analogous to the findings of other studies (Greene & Rhine (2013) in which suffering negative situations in the home increases the likelihood of being excluded financially.

When it comes to household savings, we understand that the individual analysed belongs to a household in surplus if there is money left after covering their expenses[17]. The savings in the household are taken as a *dummy*, neither the amount nor the purpose to which the saving will be put is taken into consideration, so the saving may be formal, informal, used to buy goods or investments of any kind which are not necessarily linked to the financial system. The result shows that the "saving" variable is positively correlated with the financial inclusion indicator; as such, asset products can be an appropriate gateway into the formal financial system.

While the "receipt of remittances" variable is not statistically significant, on the other hand "waged"[18] is one of the most important variables in accounting for financial inclusion. As with most of the demand side studies which seek to explain the factors behind the decision to take part in the formal financial system, (Allen *et al.* 2012; Anzoátegui *et al.* 2012; Cano *et al.* 2012; Beck & de la Torre 2006, to mention some), in the model calculated, having a wage or salary implies more financial inclusion. Income from work tends to come in through the financial system, so it becomes a viable way for people to take part in the formal financial system. However, this does not always happen when the job is in the informal economy or the income is variable or scarce. As the paper by Hoyo *et al.* (2013) posits, in Mexico the main barrier to being financially included is the lack of income or its instability.

17: Affirmative reply to the question. "*Is there money left over at the end of the month after you have covered your expenses or those of your household?".*
18: ENIF does not have information about other sources of income, apart from wages or salaries.

In terms of the effect of financial infrastructure (branch offices and bank correspondents), some studies exist, such as that by Burgess & Pande (2005) in India, which find major impacts when branch offices are opened in rural areas which previously did not have financial coverage. However, other authors such as Goodstein & Rhine (2013) conclude that financial supply, measured by the existence of bank branches near the individual's home, has little effect on the possession of a bank account. In the case of Mexico, as in India, the result of the model shows that the effect of the supply of bank branches has a positive and statistically very significant relationship with the Aggregate financial inclusion Indicator. Nevertheless, the supply of banking correspondents does not affect this indicator. This could be explained by the fact that correspondents are relatively new channels[19] which still have a lot of untapped potential: although 94% of the adult population has access to a correspondent, only 30% uses it[20].

Furthermore, if the locality where the individuals live is small, this has a negative influence on the Aggregate Indicator (-1.7%), so the assumption is that this type of municipality offers adverse conditions to financial inclusion. Although this fact tends to be related to scarce supply, the model already controls for this variable, so it is possible that the negative correlation is accounted for by idiosyncratic features, or the social mores of these communities which influence the decision not to take part in the formal financial system. This hypothesis has been corroborated by Campbell *et al.* (2012), when they analysed financial exclusion once the individuals had already had some kind of contact with a banking institution (bank accounts closed due to lack of activity); according to these authors, the rules of the communities where these individuals live, and social capital, account for financial exclusion in the United States.

Table 3.4
GLM model for the Aggregate Financial Inclusion Indicator. Total population

Variable	Ratio	St. Err	Signif
Woman	0.0763	0.0606	
Age	0.0453	0.0132	***
Age squared	-0.0004	0.0002	**
Size of the household	0.0020	0.0155	
Head of the household	0.1332	0.0639	**
Married or living together	0.1017	0.0595	*
Educational level	0.1567	0.0125	***
Employee	0.0444	0.2824	
Employer	0.1628	0.3162	
Independent	-0.2569	0.2861	
Non-remunerated worker	-0.1565	0.3457	
Inactive	-0.1759	0.2836	
Household with savings	0.2924	0.0554	***
Ability to withstand shocks	0.3799	0.0542	***
Receives remittances	0.0759	0.0817	
With job income	0.2272	0.0258	***
Locality with less than 15,000 inhabitants	-0.4622	0.0628	***
No. branches in the state	0.2450	0.0509	***
No. banking correspondents	0.0222	0.0181	
Notes	6109		
Pseudo R2	0.309		

*** Significant to 99%, ** Significant to 95%, *Significant to 90%.
Source: BBVA Research calculations based on ENIF 2012

19: Banking correspondents are channels that were introduced in 2010; since then their annual growth has been 97%, providing access in 1,410 municipalities as of December 2012. Before coming into force, two out of every three municipalities lacked coverage from the financial system (Peña & Vázquez 2012). In two years the increasing penetration of correspondents has changed the panorama of formal financial services.
20: National Council for Financial Inclusion (2013).

On the other hand, the results for the Credit Indicator (Table 6 and Appendix 3.1) are similar to those of the Aggregate Indicator, in terms of the statistical significance of the variables and the direction of the relation with the Credit Indicator, although certain differences stand out. In fact, when only the Credit Indicator is taken into account, the ability to withstand shocks is no longer significant, while the ratios of banking correspondents and the "woman" variable become statistically significant and positive. Thus, when only credit products are measured, it appears that women have a greater financial link than men. The result can be accounted for by the bias in micro-credits towards women[21], and the high rates of repayment that have been proven (Duflo 2012) in special lines of credit (group and communal credit and alternative methodologies to the requirement of collateral). Other studies focussing on credit (Johnson 2004) show differences by countries, and in those where there is a clear discrimination in women's legal rights their financial inclusion is lower. Demirgüç-Kunt *et al.* (2013) find that for developing countries there are no significant differences in terms of access to formal credit between men and women, a result which changes when savings or possession of a bank account are analysed. When it comes to the significance of the number of banking correspondents, although the direct relation between correspondents and credit is not evident (since this type of product cannot be contracted through this channel), according to figures from the National Financial Inclusion Council (2013), 59.6% of transactions carried out in 2012 through banking correspondents were loan payments[22]. This means that correspondents have been particularly helpful in facilitating loan payments, which boosts the indicator for this type of product.

When the model is estimated only for asset products, i.e. for current accounts, wage accounts, term deposits and investment funds, the results diverge more from the complete model (Table 6 and Appendix 3.2.). Thus, in the Savings Indicator, the "head of household" and "married/cohabiting" variables are not significant, while the "woman", "employer" and "receives remittances" variables are statistically relevant. The "woman" variable has a negative correlation with financial inclusion, which is consistent with the findings of Allen *et al.* (2012), Demirgüç-Kunt *et al.* (2013) and the World Bank (2013). Being an employer and receiving remittances has a positive correlation with the Savings Indicator; these two variables have thrown up this result in the study conducted by Anzoátegui *et al.* (2012) on the receipt of remittances in El Salvador, and by Aportela (1999) on the savings of employers who are heads of households taking part in the BANSEFI expansion plan in Mexico[23].

To enable comparison between the models analysed in this section, Table 6 shows the results of the three estimates.

21: *Compartamos Banco* is the biggest microfinance institution in Latin America; in Mexico it has 2.3 million customers of whom 71% are women who use the "Woman's credit" product (Data to 2012, see: http://www.compartamosbanco.com).
22: 71.7 million transactions took place in banking correspondents in 2012, of which 59.6% were loan repayments, 25% deposits, 10.9% withdrawals and 4.3% payments for services. Operations in which simplified accounts are opened are still marginal.
23: BANSEFI's expansion programmes, referred to in Aportela's study (1999) are: the opening of 99 offices in 34 municipalities, 27 of these lacking any financial institution, and the introduction of savings products designed to help lower income people save, *Cuentahorro* and *Tandahorro*.

Table 3.5
Synopsis of GLM model results for financial inclusion indicators. Total population

Variable	Aggregate Indicator	Credit Indicator	Savings Indicator
Woman		***	**
Age	***	***	**
Age squared	**	***	
Size of household			
Head of the household	**	**	
Married or co-habiting	*	***	
Educational level	***	***	***
Employee			
Employer			*
Independent			
Non-remunerated worker			
Inactive			
Household with savings	***	**	***
Ability to withstand shocks	***		***
Receiving remittances			***
Waged	***	***	***
Locality with less than 15,000 inhabitants	***	***	***
Number of branches in the state	***	**	***
Number of banking correspondents		**	

*** Significant to 99%, ** Significant to 95%, *Significant to 90%.
Source: Cálculos BBVA Research based on ENIF 2012

It is interesting to note in the table above that the "woman" variable is not significant for the Aggregate Indicator, but that it is for the Credit Indicator and for the Savings Indicator. In the case of the first the correlation is positive, i.e. women have more links to credit products; to the contrary, for savings products the correlation is negative, implying that they are more excluded from the point of view of financial products such as accounts, deposits and investments. Given that the correlations of women are inverted in savings and credit products, it would appear that when all the products are looked at as a whole, the effect is cancelled out. This result is worth further investigation in subsequent studies.

Finally, it is important to highlight than none of the variables relating to the individual's occupation is statistically significant in either the Aggregate Indicator or the Credit Indicator. The only significant variable is that of "Employer" in the Credit Indicator, for which reason the analysis was bounded to identify the relationship financial inclusion and informal worker; the results of this exercise are shown in the next section.

3.2.1. People working in the informal economy: an approach

In order to focus the analysis on those working in the informal economy, self-employed workers and day labourers were considered as informal workers. Although this is not an exact way of classifying informal workers, ENIF has data neither on types of contract, nor on the characteristics of the workplace.

The estimated model coincides with that of the complete population in the significance and direction of the variables on age, education level, ability to withstand shocks, reception of income from work and living in a locality of under 15,000 inhabitants. This implies that, independently of the type of population analysed, the effect of these variables is unchanged. To the contrary, the "woman", "receiving remittances" and "number of banking correspondents" variables do have a positive effect for the subgroup of people in the informal sector. In addition, the variable on the number of banking branches is not significant in the informal population. The

reasons for this relation are not entirely clear and require more analysis. However, some possible explanations are: greater financial inclusion among women in the informal sector could be due to the effect of public programmes such as the one run by BANSEFI and *Oportunidades*[24], focussing on vulnerable women, which have managed to make them financially included with savings and credit products, and the "Employer" variable may be influenced by the support received through the national programme providing micro-financing for micro-entrepreneurs (PRONAFIM[25]). Finally, in the case of banking correspondents, informal workers may use this channel more than the rest of the population, and bank branches less, given that in the model the variable on branch numbers is not significant.

In terms of the model for the whole population, in the case of informal workers, "head of the household", "married or cohabiting", "surplus in household" and "number of branches in the state" are statistically insignificant. It appears that these variables do not influence the degree of financial inclusion of informal workers.

Table 3.6
Synopsis of GLM model results for financial inclusion indicators. Total population

Variable	Ratio	St. Err	Signif
Woman	0.2688	0.1308	**
Age	0.0844	0.0344	**
Age squared	-0.0009	0.0004	**
Size of household	-0.0281	0.0340	
Head of the household	0.0797	0.1419	
Married or co-habiting	0.0254	0.1537	
Educational level	0.1875	0.0276	***
Household with savings	0.2108	0.1486	
Ability to withstand shocks	0.5870	0.1272	***
Receiving remittances	0.2979	0.1734	*
Waged	0.2948	0.0529	***
Locality with less than 15,000 inhabitants	-0.2605	0.1493	*
Number of branches in the state	0.0656	0.1278	
Number of banking correspondents	0.0850	0.0410	**
Notes	1703		
Pseudo R2	0.293		

*** Significant to 99%, ** Significant to 95%, *Significant to 90%.
Source: BBVA Research calculations based on ENIF 2012

When the model for the Savings Indicator (Table 8 and Appendix 3.4.) is estimated, it is apparent that in comparison with the Aggregate Indicator, the "woman", "age" and "size of locality" variables are not significant, which also distinguishes it from the model for the complete population, where these variables are significant. In contrast with the Aggregate Indicator model, in the Savings Indicator the variable for people in households which save is statistically significant, which matches the results from the model for the population as a whole (Table 6).

The Credit Indicator model (Table 8 and Appendix 3.3.) contrasts with everything in the Savings Indicator; here the most important variables in interpreting the indicator are "woman", "age", "educational level" and "waged". All the significant variables in this model are also important in the Aggregate Indicator for the

24: In Mexico's most important social programme, "*Oportunidades*", 96% of the beneficiaries are women. *Oportunidades* and BANSEFI's financial inclusion programme have succeeded in bringing 6.5 million low income people into the banking system, the majority of whom are very vulnerable women (BANSEFI, Accounting Report 2006-2012).
25: PRONAFIM is a federal programme run by the Department for the Economy, designed to help to establish and consolidate the microfinance sector in Mexico, with the aim of supporting productive and entrepreneurial initiatives by men and women in poverty, in both urban and rural localities, who lack access to traditional bank financing, in order to contribute to improving their standard of living by creating self-employment and income-generation opportunities. PRONAFIM operates through two public trusts: the Trust for the National Micro-company Financing Programme (FINAFIM), and the Micro-financing Fund for Rural Women (FOMMUR).

informal population and in the Savings Indicator for the entire population. However, it is surprising that in this model none of the supply side or geographical location variables are statistically relevant.

Again, in order to make it easier to compare the three models, Table 8 summarises all three.

Table 3.7
Synopsis of GLM models of financial inclusion indicators. Informal population

Variable	Aggregate Indicator	Credit Indicator	Savings Indicator
Woman	**	**	
Age	**	**	
Age squared	**	**	
Size of household			
Head of the household			
Married or co-habiting			
Educational level	***	***	***
Household with savings			**
Ability to withstand shocks	***	*	***
Receiving remittances	*		**
Waged	***	***	***
Locality with less than 15,000 inhabitants	*		
Number of branches in the state			
Number of banking correspondents	**		*

*** Significant to 99%, ** Significant to 95%, *Significant to 90%.
Source: BBVA Research calculations based on ENIF 2012

4 Conclusions and recommendations

Although 73% of municipalities in Mexico (representing 97% of the adult population) have at least one point of access into the financial system, this coverage is lower than in other countries of reference in Latin America such as Brazil and Chile, and even Peru. The supply level achieved thanks to regulatory changes and the public policy of financial inclusion has only permeated to the 38% of adults between 18 and 70, who now have a savings or credit product in formal financial institutions.

We used the information from the National Financial Inclusion Survey from 2012 to design the Aggregate Indicator for financial inclusion (considering savings and credit products). Independently, the indicator for credit products and the indicator for savings products were both calculated using multiple correspondence analysis (MCA) methodology.

Although this study has a wider vision of financial inclusion insofar as it includes the possession of different asset and liability products in an indicator, for subsequent studies we would suggest including an approximation of the quality of the products, financial capabilities and consumer protection, all these being dimensions of financial inclusion. The limitation for this is the availability of information, but the CNBV continues to make progress in generating indicators and the interest of multilateral institutions in this type of subject is increasing.

As far as individual characteristics are concerned, education is one of the most important determinants in accounting for financial inclusion. This variable is statistically significant in explaining the Aggregate Indicator, the Asset Indicator and the Liability Indicator, both for the total population and for the sub-group of informal workers. The correlation is positive and indicates that, with more education, participation in the formal financial system increases, possibly because education is a proxy for financial capabilities.

Being a woman is another significant variable in the models for the population as a whole, whether for the Savings Indicator or the Credit Indicator, but it is not in the Aggregate Indicator. This result deserves further analysis, since it may be key to understanding why most financial inclusion studies, which are mainly based on the possession of an account in a formal institution, find that women are in an inferior position to men in terms of participating in the financial system.

As regards the importance of the income level in accounting for financial inclusion[26], the results of all the models calculated show the positive correlation between receiving a wage or salary and having greater financial inclusion.

The variables relating to the financial services offering produce confusing results: although the number of branches per state is significant for the three financial inclusion indicators (Aggregate, Savings, Credit) for the population as a whole, this variable is not significant in the models for informal workers. Meanwhile, the number of banking correspondents is significant in explaining the Credit Indicator for the total population, as well as the Savings Indicator and the Aggregate Indicator for informal workers. In terms of analysing the effect of banking correspondents, it would be valuable to carry on researching this, whether to identify factors which increase its use, or to identify the reasons why this channel is mainly used to pay loans.

The result of the negative correlation between financial inclusion and living in localities with less than 15,000 inhabitants is worth additional analysis in future studies. Although the hypothesis of community characteristics or social capital is plausible, the social norms or specific features of this kind of municipality need to be identified, such as for example greater presence in informal savings and credit mechanisms

26: The limitations of the information prevented us from conducting more wide-ranging analysis of sources other than labour, poverty and vulnerability.

(loans within the family, pawnshops or saving clubs[27]), with a view to applying the right policies or actions which allow its inhabitants to profit from the formal financial system.

The results obtained indicate the need to carry out detailed analyses to establish public policies best suited to raising the participation in the financial system of various groups in the population in line with their socio-economic characteristics and geographic location.

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27: ROSCAS or Rotating Saving Club Associations.

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5 Appendixes

Appendix 1

Table A.1
Description of variables used

Variable	Question in the survey	A definition
Woman	2.3 (NAME) is a man (NAME) is a woman?	Dummy: 1 is Woman and 0 is a man.
Age	2.4 How old is (NAME)?	Age in years.
Age squared	2.4	The square of the age.
Size of household	Total nº people in household	Nº of people in the household to whom the interviewee is related.
Head of the household	3.1 Are you the head of the household?	Dummy: 1 if is Head of the household and 0 if not.
Married or co-habiting	3.2 Are you currently..?.	Dummy: 1 if living with (1) or married (5) and 0 if otherwise.
Educational level	3.4 What was the last course you passed at school?	None (0) Pre-school (1) Primary (2) Secondary (3) Technical course after finishing secondary (4) Passed exams at 16 ("basic normal") (5) Passed exams at 17 or 18 (6) Technical course after passing 17-year exams (7) Bachelor's or professional degree (8) Teaching or doctorate (9)
Employee	3.7 In your job or business last month were you...?	Dummy: 1 if the reply was employee or day labourer and 0 if not.
Employer	3.7 In your job or business last month were you...?	Dummy: 1 if the reply was Employer and 0 if not.
Independent	3.7 In your job or business last month were you...?	Dummy: 1 if the reply was self-employed and 0 if not.
Non-remunerated worker	3.7 In your job or business last month were you...?	Dummy: 1 if the reply was unpaid worker and 0 if not.
Inactive	State of activity confirmed (built on the basis of questions 3.5 and 3.6)	Dummy: 1 if student, retired, handicapped or does not work 0 if otherwise.
Receiving remittances	9.1 Do you have family or friends living abroad who send you money?	Dummy: 1 if receiving money (1) and 0 if not.
Household saves	4.2 Do you have money left over at the end of the month after covering your expenses or those of your home ?	Dummy: 1 if the reply is "always" (1) or sometimes (2) and 0 if not.
Ability to withstand shocks	4.3 If you had to make an emergency outlay for an amount equivalent to your monthly income, could you pay it?	Dummy: 1 if the reply is yes (1) and 0 if not.
Locality with less than 15,000 inhabitants	Size of locality	Dummy: 1 if the locality is classified as less than 15,000 inhabitants (3 and 4) and 0 if not.
Waged	3.8 How much do you earn or receive a month for your work, activity or business?	Dummy: 1 if the reply was that income is from work and 0 if otherwise.
Number of branches in the state	Information from the CNBV	
Number of banking correspondents	Information from the CNBV	

Source: BBVA Research

Appendix 2. Multiple Correspondence Analysis-MCA

Appendix 2.1. MCA for liability products

Table A.2.1.a
Dimensions of the analysis and percentage of inertia explained

Dimension of the analysis	Accumulated inertia	Percentage
1	0.0248316	93.51
Total	**0.0265544**	**100**

Source: BBVA Research with data from ENIF

Table A.2.1.b
Each product's contribution to the dimension with greatest inertia explained (Dimension 1)

Product	Has	Contribution
Bank credit card	No	0.027
	Yes	0.277
Payroll loan	No	0.004
	Yes	0.157
Personal loan	No	0.005
	Yes	0.135
Automotive loan	No	0.001
	Yes	0.171
Mortgage	No	0.004
	Yes	0.217

Source: BBVA Research with data from ENIF

Appendix 2.2. MCA for asset products

Table A.2.2.a
Dimensions of the analysis and percentage of inertia explained

Dimension of the analysis	Accumulated inertia	Percentage
1	0.0194393	90.66
Total	**0.0214415**	**100**

Source: BBVA Research with data from ENIF

Table A.2.2.b
Each product's contribution to the dimension with greatest inertia explained (Dimension 1)

Product	Has	Contribution
Savings account	No	0.041
	Yes	0.208
Current account	No	0.006
	Yes	0.263
Fixed term deposit	No	0.004
	Yes	0.199
Wage account	No	0.016
	Yes	0.058
Investment fund	No	0.002
	Yes	0.203

Source: BBVA Research with data from ENIF

Appendix 3. GLM models with financial inclusion indicators

Appendix 3.1. GLM Model of the Credit Indicator. Total population

Table A.3.1
GLM model of the Credit Indicator. Total population

Variable	Ratio	St. Err	Signif
Woman	0.3724	0.1124	***
Age	0.0943	0.0243	***
Age squared	-0.0010	0.0003	***
Size of household	0.0247	0.0271	
Head of the household	0.2346	0.1141	**
Married or co-habiting	0.3231	0.1105	***
Educational level	0.1566	0.0225	***
Employee	-0.0162	0.5937	
Employer	0.2345	0.6305	
Independent	-0.1129	0.5970	
Non-remunerated worker	-0.1403	0.7148	
Inactive	-0.1153	0.5951	
Household with savings	0.2520	0.0986	**
Ability to withstand shocks	0.1500	0.0985	
Receiving remittances	-0.1187	0.1510	
Waged	0.2776	0.0459	***
Locality with less than 15,000 inhabitants	-0.6115	0.1140	***
Number of branches in the state	0.2126	0.0882	**
Number of banking correspondents	0.0633	0.0314	**
Notes	6109		
Pseudo R2	0.15		

*** Significant to 99%, ** Significant to 95%, *Significant to 90%.
Source: BBVA Research calculations based on ENIF 2012

Appendix 3.2. GLM model of the Savings Indicator. Total population

Table A.3.2
GLM model of the Savings Indicator. Total population

Variable	Ratio	St. Err	Signif
Woman	-0.1454	0.0679	**
Age	0.0330	0.0156	**
Age squared	-0.0003	0.0002	
Size of household	-0.0163	0.0179	
Head of the household	0.0418	0.0741	
Married or co-habiting	-0.0495	0.0682	
Educational level	0.1576	0.0139	***
Employee	-0.0501	0.2775	
Employer	0.5323	0.3164	*
Independent	0.0363	0.2800	
Non-remunerated worker	0.0849	0.3518	
Inactive	0.0426	0.2788	
Household with savings	0.3525	0.0644	***
Ability to withstand shocks	0.6900	0.0630	***
Receiving remittances	0.3842	0.0895	***
Waged	0.1978	0.0293	***
Locality with less than 15,000 inhabitants	-0.2590	0.0733	***
Number of branches in the state	0.2672	0.0598	***
Number of banking correspondents	-0.0223	0.0205	**
Notes	6109		
Pseudo R2	0.253		

*** Significant to 99%, ** Significant to 95%, *Significant to 90%.
Source: BBVA Research calculations based on ENIF 2012

Appendix 3.3. GLM model of Credit Indicator. Informal population

Table A.3.3
GLM model of Credit Indicator. Informal population

Variable	Coefficient	St. Err	Signif
Woman	0.4561	0.2192	**
Age	0.1549	0.0637	**
Age squared	-0.0018	0.0008	**
Size of household	-0.0443	0.0573	
Head of the household	-0.0286	0.2281	
Married or co-habiting	0.3671	0.2714	
Educational level	0.1590	0.0471	***
Household with savings	0.1052	0.2516	
Ability to withstand shocks	0.3679	0.2159	*
Receiving remittances	0.2367	0.2899	
Waged	0.3823	0.0927	***
Locality with less than 15,000 inhabitants	-0.3831	0.2563	
Number of branches in the state	0.2656	0.2031	
Number of banking correspondents	0.0774	0.0675	
Notes	1703		
Pseudo R2	0.172		

*** Significant to 99%, ** Significant to 95%, *Significant to 90%
Source: BBVA Research calculations based on ENIF 2012.

Appendix 3.4. GLM model of Savings Indicator. Informal population

Table A.3.4
GLM model of Savings Indicator. Informal population

Variable	Coefficient	St. Err	Signif
Woman	0.0624	0.1392	
Age	0.0483	0.0354	
Age squared	-0.0004	0.0004	
Size of household	0.0014	0.0351	
Head of the household	0.1328	0.1631	
Married or co-habiting	-0.2091	0.1592	
Educational level	0.2011	0.0296	***
Household with savings	0.3299	0.1438	**
Ability to withstand shocks	0.8322	0.1356	***
Receiving remittances	0.4021	0.1735	**
Waged	0.2399	0.0545	***
Locality with less than 15,000 inhabitants	-0.2618	0.1612	
Number of branches in the state	-0.1167	0.1356	
Number of banking correspondents	0.0785	0.0438	*
Notes	1703		
Pseudo R2	0.21		

*** Significant to 99%, ** Significant to 95%, *Significant to 90%.
Source: BBVA Research calculations based on ENIF 2012

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