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Financial inclusion and its determinants: the case of Argentina

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Financial inclusion and its determinants: the Argentine case

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Abstract

This paper analyses the three dimensions determining financial inclusion in the case of Argentina, from a micro-economic perspective. On the supply side, formal financial services are accessed through traditional channels: branches and ATMs, with an as-yet incipient regulation for financial inclusion, unlike the situation in neighbouring countries. In terms of use, a person's level of education, income and age are all important variables which determine whether they have financial products such as accounts, credit and debit cards, formal credit and electronic payments. Finally, the factors affecting the perception of different barriers of involuntary exclusion are: income and age.

Key terms: formal financial system, use, access, barriers.

JEL: D14, G21.

1 Introduction

There is agreement in the economic literature about the idea that financial inclusion is a critical factor for greater wellbeing¹. However, even though much has been published at both a theoretical and empirical level about the strong positive relationship between economic growth and financial development, a fuller understanding of these dynamics takes in more than this. There are a large number of non-financial factors such as telecommunications development, individual characteristics, cultural issues and policy implementations, among others, which condition the use and quality of financial services.

Financial inclusion is defined as the process by which access to and the use of formal financial services are maximised, whilst minimising unintended barriers, perceived as such by those individuals who do not take part in the formal financial system (Cámara & Tuesta, 2014). This smoothing of perceived barriers is linked to the quality of formal financial services and the welfare gained by using them. The main purpose of financial inclusion is to mitigate the potential barriers, so that individuals for whom the marginal benefit of being banked exceeds its marginal cost may access this type of services without being affected by market faults².

This paper hopes to contribute to the literature on financial inclusion by analysing the three dimensions which define it (access, use and barriers to formal financial services), as they apply to Argentina. First, we look at the scenario for accessing formal financial services, which determines the necessary but not sufficient conditions for financial inclusion. Second, using significant correlations, we try to isolate the specific issues which are important in determining the use of formal financial service and by these means achieve greater financial inclusion. We also identify those features which define the various reasons for financial exclusion.

It is helpful to differentiate between use and access. Access to financial services is defined by the supply of the same and is a necessary condition for financial inclusion (Cámara & Tuesta, 2014). Use is determined by supply and demand. This use of formal financial products (savings, credit, insurance, etc.) raises the likelihood of consumption, since they smooth the income cycles caused by unanticipated needs or by irregular income flows and as such optimise the allocation of resources over time, improving standards of living. Few empirical studies exist which analyse the determinants of financial inclusion from a micro-economic perspective or which quantify the impact of different factors on participation in the formal financial system (Allen *et al.*, 2012; Cámara *et al.*, 2014; Hoyos *et al.*, 2014). In this framework, it is critical to understand which socio-economic factors are encouraging the use of the formal financial system, and to what degree. This will help to deepen our knowledge base applicable to the design and evaluation of economic policies designed to encourage financial inclusion.

Allen *et al.* (2012) find a positive association between greater financial inclusion and better access to formal financial services (for a total of 123 countries) in the form of lower banking costs, greater proximity to bank branches and less paperwork. In terms of individual characteristics, the groups most vulnerable to financial exclusion are those with lower incomes and those living in country areas³. Cámara *et al.* (2014) report similar results for Peruvian households, also identifying education and gender as factors relevant to financial inclusion. In similar vein, Hoyos *et al.* (2014) show in their study on Mexico that education is one of the most important determinants in explaining financial inclusion. Being a woman and receiving an income from work are variables that are also important in increasing the probability of financial inclusion.

1: From a macroeconomic point of view, Goldsmith's seminal article (1969), showing the relationship between financial and economic development, generated an ever-increasing interest which has not waned (De Gregorio & Guidotti, 1995; Demetriades & Hussein, 1996; Arestis & Demetriades, 1997; Khan, 2001; Calderon & Lui, 2003 and Christopoulos & Tsionas, 2004 among others). See Levine, 1997 for a full discussion of the relationship between financial development and economic growth.

2: Numerous mobile banking experiences in several African countries and Mexico have shown that making access to financial services easier may be a key part of making their usage more widespread.

3: The authors have found similar results when looking at saving.

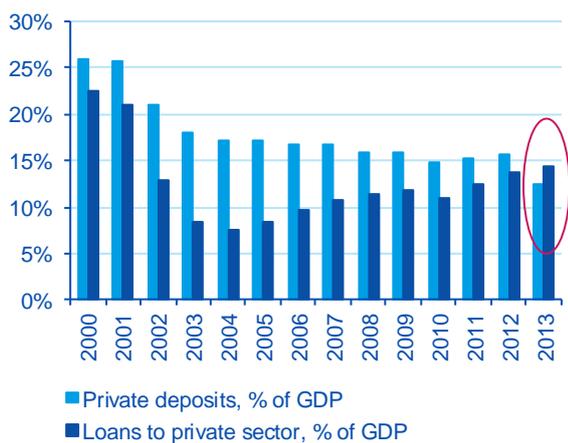
The rest of the paper is organised as follows. Section 2 describes the characteristics of the Argentine financial system from the supply side. Section 3 presents data for the demand side and the methodology used for the analysis of financial inclusion. Section 4 explains the empirical results and, finally, section 5 summarises our key conclusions.

2 Characteristics of the formal financial system in Argentina: a supply-side approach

a. Size of the formal financial system

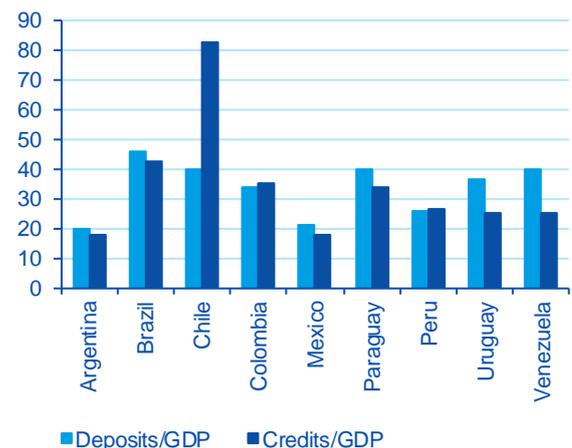
Most analyses of a country’s banking penetration use two ratios: deposits as a proportion of GDP, and credits over GDP. In Argentina, these ratios were at their highest towards the end of the Convertibility period, but fell notably with the crisis and “pesification” of 2002, with the steeper fall occurring in credits, given that the *corralito* prevented an even more drastic fall in deposits. This caused the volumes of deposits and credit in the banking system to contract, bottoming out in 2004. Subsequently, the Argentine economy’s high rate of growth was accompanied by improvements in the deposits to GDP and credits to GDP ratio, and particularly so in the latter indicators. In 2013, negative interest rates and high devaluation expectations caused the deposit to GDP ratio to fall, troughing for the first time in years to below the credit to GDP ratio.

Figure 1
Deposits/GDP and credits/GDP, variation



Source: BBVA Research

Figure 2
LatAm: Comparison of ratios (2012)



Source: BBVA Research

Comparative banking penetration ratios for 2012, obtained from the IMF Financial Access Survey, put Argentina in almost last place in the region according to both indicators.

b. Channels for accessing the formal financial system

The financial system has gone through a complete transformation in the last few decades, which has been seen in a constant stream of mergers, absorptions and acquisitions of share packages in local institutions. The larger banks have absorbed smaller ones and thus managed to expand their business, setting off a trend in concentration. Whereas in the midst of the Asian crisis there were 139 financial institutions in 1997, this number has now shrunk to 82.

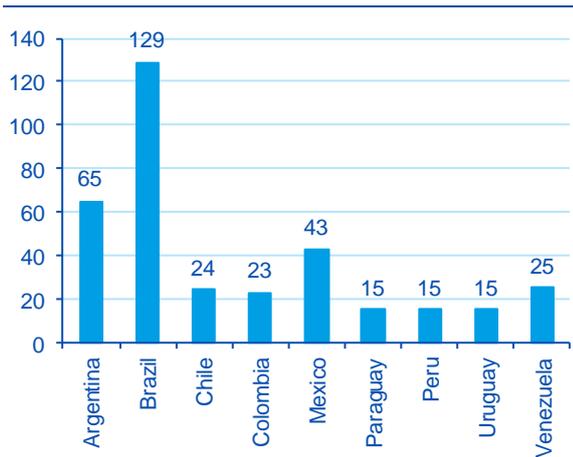
Table 1
Number of institutions classified by the origin of their capital

	Dec 97	Dec 13
Number of financial institutions	139	82
Banks	114	66
Public banks	19	12
Private banks	95	54
Financial firms	17	15
Credit unions	8	1

Source: BBVA Research

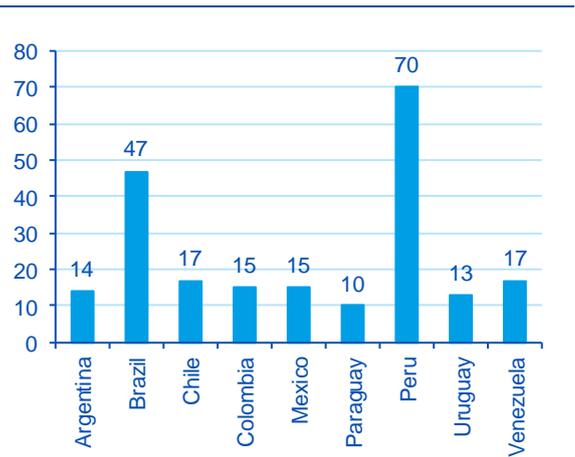
If we restrict our focus to banking institutions, whereas in December 1997 there were 114 banks in all (19 publicly owned and 95 in private hands), there are currently 66 banks (12 with public capital and 54 with private capital). Despite this reduction in number, Argentina remains second in the ranking of Latin American countries by number of commercial banks, after Brazil.

Figure 3
Number of commercial banks (2012)



Source: BBVA Research

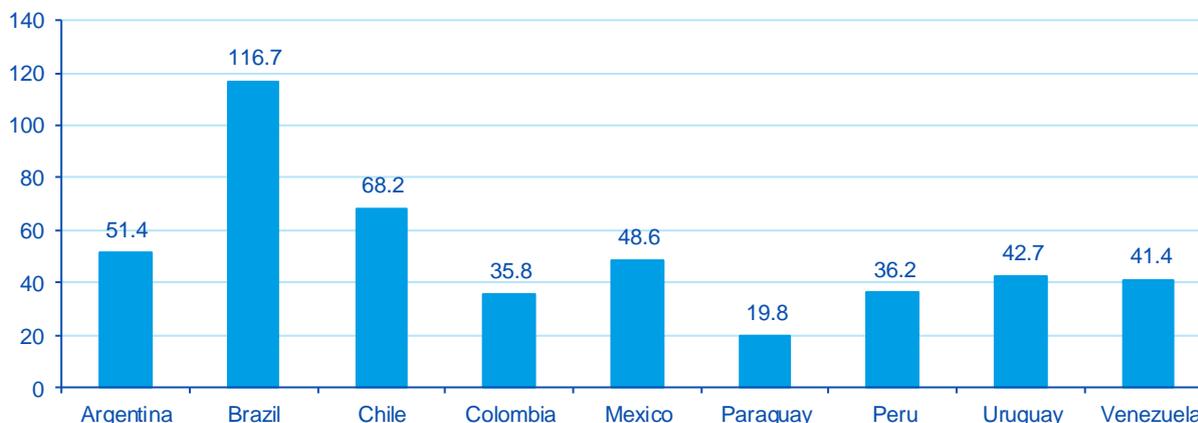
Figure 4
Bank branches per 100,000 adults (2012)



Source: BBVA Research

In 2013, Argentina had 4,456 banking branch offices, of which practically 50% were in the federal capital and in the province of Buenos Aires. If we standardise this indicator, we can see that Argentina has an average of 14 branches per 100,000 adults, a ratio that is well below that of Peru or Brazil, but similar to the remaining countries in the region. The number of automatic teller machines (ATMs) has risen steadily over the last few years and according to the latest FAS figure (from 2012) Argentina has 51 ATMs per 100,000 adults, a ratio which puts the country in third place in the region, after Brazil and Chile. The latest figure published by the central bank (BCRA), for 2013, indicates that the number of ATMs has continued to increase to 59 per 100,000 adults.

Figure 5
ATMs per 100,000 adults (2012)



Source: BBVA Research

Table 2
Geographic distribution of branches and ATMs

	Province	Branches	ATMs	Branches/100,000 inhab	ATM/100,000 inhab
1	Federal District	825	3918	27.1	128.7
2	Buenos Aires	1381	5897	8.5	36.2
3	Catamarca	25	113	6.4	29.0
4	Cordoba	441	1595	12.6	45.7
5	Corrientes	94	214	9.0	20.4
6	Chaco	63	259	5.6	23.2
7	Chubut	99	280	18.1	51.3
8	Entre Ríos	132	519	10.2	40.1
9	Formosa	20	129	3.5	22.7
10	Jujuy	33	236	4.6	33.2
11	La Pampa	108	147	32.1	43.7
12	La Rioja	28	93	7.8	26.0
13	Mendoza	160	704	8.7	38.2
14	Misiones	64	317	5.5	27.3
15	Neuquén	100	258	16.6	42.9
16	Río Negro	73	323	10.8	47.6
17	Salta	63	416	4.9	32.1
18	San Juan	39	228	5.4	31.6
19	San Luis	52	188	11.2	40.6
20	Santa Cruz	49	165	16.2	54.6
21	Santa Fe	457	1846	13.7	55.2
22	Santiago del Estero	53	197	5.8	21.7
23	Tucumán	81	458	5.2	29.5
24	Tierra del Fuego	27	122	18.8	84.7
	Total	4467	18622	10.6	44.1

Information as of 31-03-14

 Provinces with most branches per 100,000 inhabitants

 Provinces with most ATMs per 100,000 inhabitants

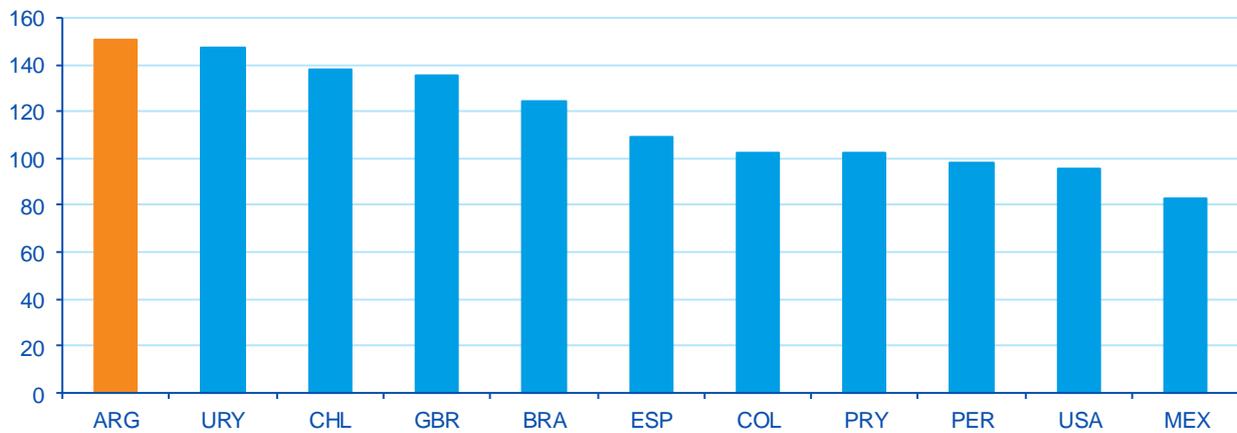
Source: BBVA Research

The banking agent is a third party who sets up a business relationship or link with a bank in order to offer, in the bank’s name and on its behalf, a financial service to customers. One of the roles of these agents is to carry out the activity of a branch office in places where it would not be profitable for the bank to operate one. So, in small communities where there are suppliers interested in offering financial services but it would not be profitable to operate a branch, the banking agent can bridge the demand gap. This is why they are important players in terms of financial inclusion.

In Argentina, although there are companies which do intermediate for certain banking transactions (card and mortgage payments), they do not carry out the principal transactions required of an agent (deposits and cash withdrawals). The companies operating in Argentina, such as Rapipago and Pago Fácil, are simply payment networks, and as such financial inclusion is not extended through this route.

On the other hand, Argentina shows great potential for the development of mobile banking. The mobile telephony market has increased significantly in the last decade, and the country has led the growth in ICT penetration. The number of lines per 100 inhabitants has risen from 17 in 2002 to 152 in 2012. Compared with other countries in the region and even with some developed countries, which we have included for the purposes of comparison, Argentina has a high number of mobile phone lines per inhabitant, easily beating the countries in the sample, with the exception of Uruguay, which is close behind. This leaves the country well placed for the development of mobile banking, given the extensive penetration of mobile telephony among the population, although a large number of devices are basic ones — not smartphones — with the result that their use for mobile banking is limited to the sending and reception of SMS.

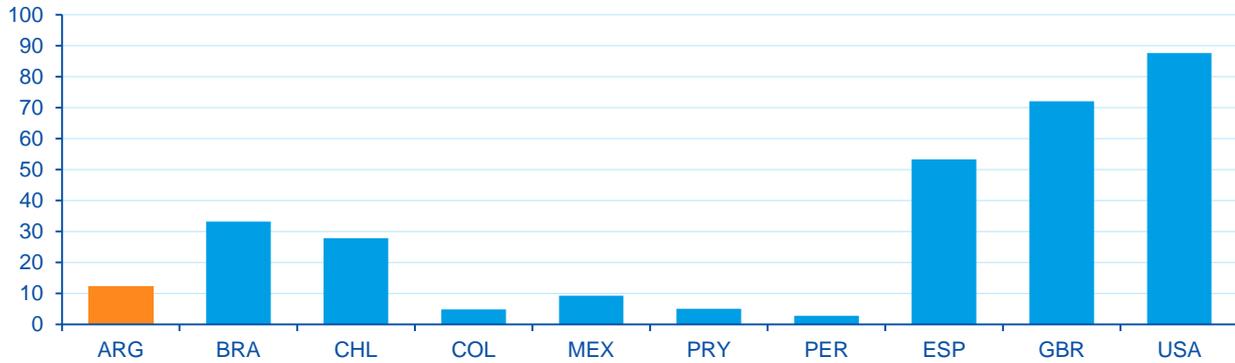
Figure 6
Mobile phone lines per 100 inhabitants in 2012 by country



Source: BBVA Research

However, when we compare the number of active mobile broadband subscriptions per 100 inhabitants, Argentina is well behind developed countries and even behind the more advanced countries in the region, such as Brazil and Chile. This may be related to the low number of smartphones, although this is increasing fast.

Figure 7
Active mobile broadband subscriptions per 100 inhabitants

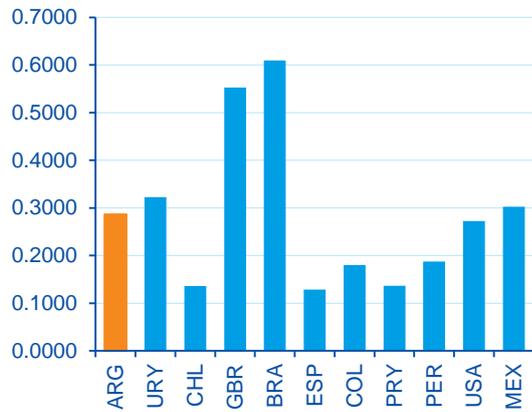


Source: BBVA Research

Continued growth in the demand for smartphones means that investment in the mobile telephony sector is very necessary, specifically in networks, in order to improve the service. Argentina’s defective 3G capability is overloaded, precisely because of the large number of lines in use, making it more difficult to develop a fit-for-purpose mobile telephony service. Nevertheless, at the beginning of 2014, the government announced it would be allocating bandwidth on the spectrum for the roll-out of 3G and 4G technologies. Nearly at year-end, one of the companies was awarded a small section of 3G bandwidth and the option to roll out the new 4G technology, which would increase the sector’s efficiency. Awarding more tenders would improve 3G mobile telecommunications and take-up on the part of users of the 4G service. Argentina was the last country in Latin America to introduce 4G technology, at the end of 2014.

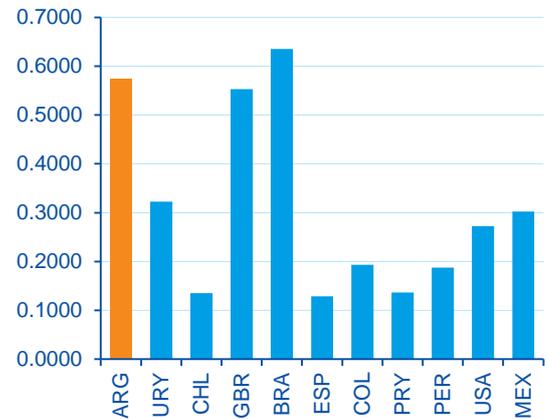
In terms of communications costs, Argentina continues to be more expensive compared with other countries in the region, excepting only Brazil. The cost per minute, in US dollars, of calling other mobiles is 29 cents, whereas the cost of a call to a landline is 57 cents. In relative terms, the cost per minute of calling another mobile at peak times is higher when compared with Chile, Peru and even Spain, whereas the cost of calling from a mobile to a landline is double the average costs in the region, although similar to countries such as the United Kingdom and Brazil, which are the most expensive countries in the sample.

Figure 8
Mobile - prepaid mobile phone – Price of a one-minute local call (peak time to the network) in USD



Source: BBVA Research

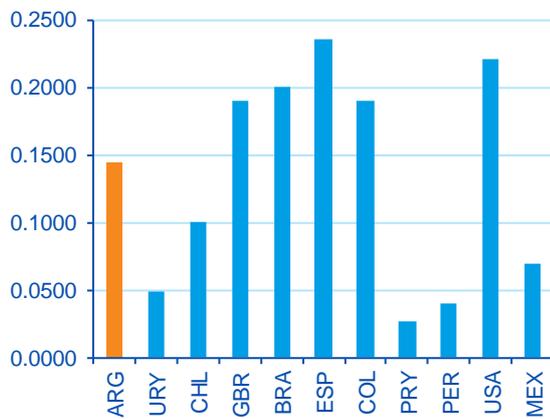
Figure 9
Mobile - prepaid mobile phone – Price of a one-minute local call (peak time to the network) in USD



Source: BBVA Research

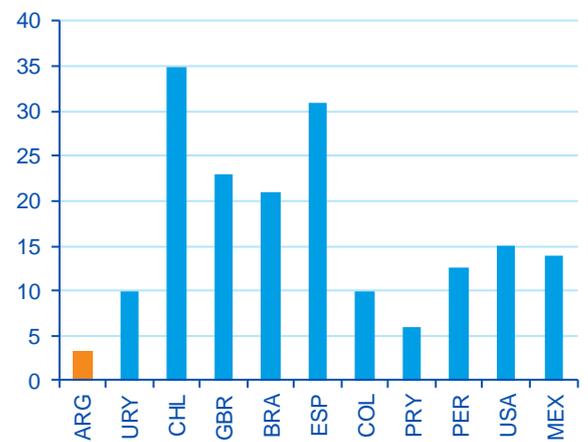
The cost of sending an SMS to another telephone outside the network is a little under 15 cents, higher than other countries in the region apart from Brazil and Colombia, although less than in developed countries⁴.

Figure 10
Mobile – prepaid mobile phone – Price of an SMS in USD



Source: BBVA Research

Figure 11
Monthly subscription to the residential telephone service in USD



Source: BBVA Research

4: When it comes to landline telephony costs, Argentina has the lowest monthly line rental in dollars, but more as a result of administered prices than of the efficiency of the service.

According to *Ipsos Media* research carried out for *Google*, in Argentina smartphones have a market penetration of 31% (1Q13), representing a rise of 7% in one year (from 24% en 1Q12), which is a higher penetration than in Mexico (21%) and Brazil (13%). What is more, 78% of the mobiles sold in the first half of 2014 were smartphones, whereas over the same period in 2013 these were 47% of the total, according to market information.

c. Regulatory framework for financial inclusion

There is no law in Argentina that directly promotes the use of banking services by the population; however different measures undertaken in the last few years do encourage financial inclusion, at least partially.

Some of the most significant measures:

- 1- Since 2002, of the total applicable VAT, 5pp has been returned on purchases made with debit cards, excluding fuel purchases. This measure, while requiring approval every year, has been extended and continues. This rebate of 5pp was initially applicable on purchases made with credit cards as well, although this was terminated in December 2007, the argument being that it only benefited higher income groups.
- 2- Mandatory “wage accounts”. Since May 2010, all banking accounts into which remunerations are paid are treated as “wage accounts”, irrespective of the category under which they were opened. These accounts are free of charge to the worker, who can withdraw their wages, family allowance, etc. as cash. Every account holder, as well as being able to designate a co-signatory who is authorised to carry out operations that have been authorised by the account holder, can access the entire ATM network without additional costs.

Firms are required to pay wages into these wage accounts. Originally, in 1997, only firms with more than 100 employees were obliged to pay wages through a bank account. In 1999, the requirement was extended to all firms with more than 25 employees and, finally, in 2001 the requirement became universal for all companies.

Quarterly information published by the central bank BCRA shows that as of March 2014 (latest figure available), there were about 7,717,000 wage accounts in Argentina. Although their growth is due to their obligatory nature across the board, in March 2014 they had actually fallen by 3.9% from the December figure, after unusual levels of growth in the second half of 2013. This variation serves as an indicator of employment changes throughout the country.

Figure 12
Number of “wage accounts”, variation



Source: information from financial institutions, BCRA

- 3- The central bank has also established retirement funds, pensions and the social welfare plans, among other benefits, laid out in the “A” 5231 statement, which can be paid through a free wage account, with an associated debit card. Financial institutions may charge neither for opening or stewardship of these accounts, nor for movements in their balances and information requests.
- 4- Universal free account. The main feature of this banking instrument is that it has no opening or maintenance costs and is available to all adults who do not already have a bank account. This is a BCRA initiative to extend banking penetration. A person needs only their identity card to open an account; in the case of foreigners, they can open an account if they prove they have been living in the country for at least one year and have either an Argentine identity card or else a proof of identity issued in their own country and a certificate showing that their application for an Argentine identity card is being processed. Those who have an account in order to receive universal child benefit may also open a universal free account. This type of account does not admit overdrafts or any kind of transaction which may put the balance into negative figures.
- 5- Reduction in costs for bank transfers and increase in the sums permitted. Bank account holders may transfer up to ARS20,000 a day using electronic banking or automatic teller machines totally free of charge (see the “A” 5473 statement). Over and above this amount, charges rise incrementally, up to a maximum of ARS150 when the sum transferred is higher than ARS120,000 in the case of electronic banking and up to a maximum of ARS300 when the transfer is for more than ARS100,000 when made at bank branch offices. As well as encouraging the use of bank transfers over cash, this is also a security measure, reducing the need to move cash from one institution to another.
- 6- The use of the cashier’s cheque was another measure instigated by the central bank at the end of 2010 (“A” 5130 statement) with the aim of reducing the use of cash and increasing security in banking operations. This free instrument must be requested from the bank branch holding the account and the registered signature, and may be cashed in pesos or dollars, although in the case of the latter, only for property sale-purchase transactions.

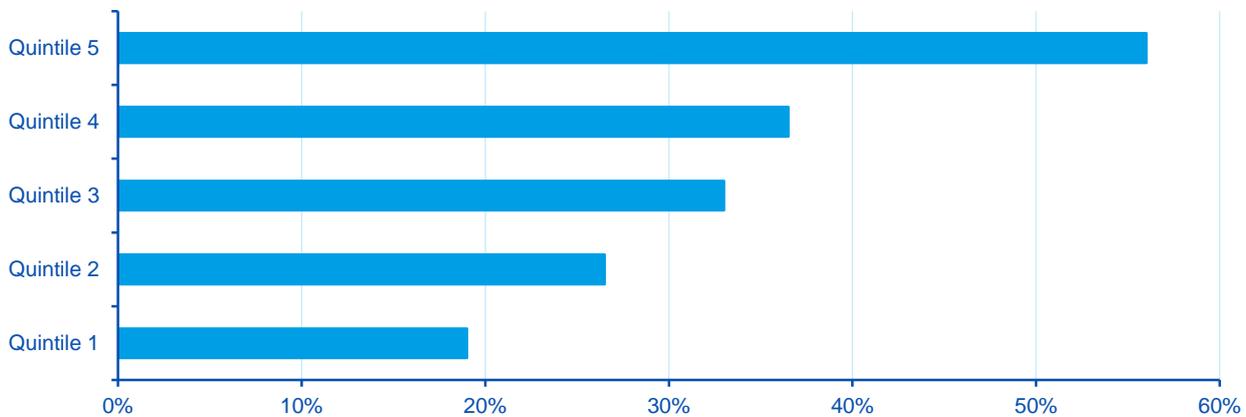
3 Data and methodology

a. Global Findex: use and barriers to the formal financial system

The Global Findex (2012) data base is a financial survey created by the World Bank providing standardised information about 147 countries, which covers around 97% of the world's population. The survey sample contains at least 1000 people per country, randomly selected from the population over 15 years of age and is representative on a country level. The survey contains questions about whether people have formal bank accounts, how they use these accounts, how savers behave, whether they have a loan, how they use the loans they have taken out, whether they have insurance policies and barriers to the use of bank accounts⁵. This survey offers detailed information about how financial services are used, and how they are not, from the demand side.

In terms of having a bank account and how it is used, the survey reveals that 33.1% of the adult population has an account in a formal financial institution, a post office, a cooperative or a microfinance institution. This percentage is slightly higher among men (34.6%) than women (31.8%). By income quintile, only 18.9% of individuals in the poorest quintile have an account, whereas this percentage rises to 55.5% in the wealthiest quintile.

Figure 13
Account holders, by income quintile

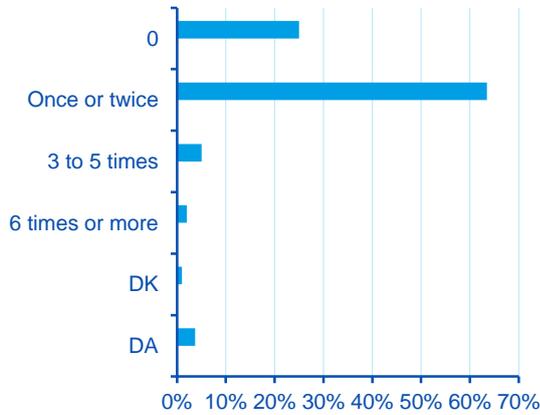


Source: In-house with Global Findex (2012) data

Amongst those with an account, 84.4% use it for personal transactions, 2.9% for business and 9.8% for both. 29.8% of the adult population has a debit card, with a smaller proportion, 21.9%, having a credit card.

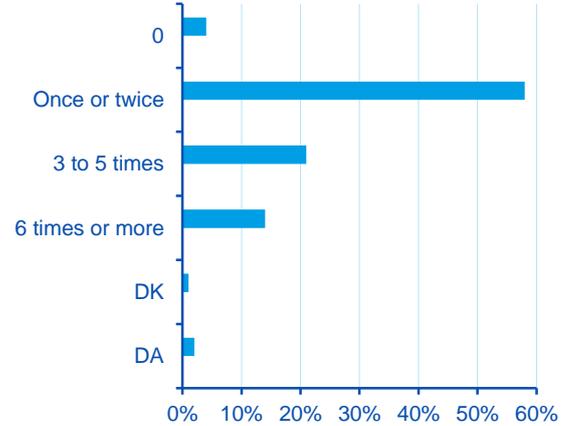
5: For a detailed explanation of the Global Findex data base, see Demirgüç-Kunt & Klapper (2012).

Figure 14
Frequency of use, number of deposits a month



Source: In-house, using Global Findex data (2012)

Figure 15
Frequency of use, number of cash withdrawals a month



Source: In-house, using Global Findex data (2012)

In terms of frequency, use is relatively low for both cash deposits and withdrawals. Figure 14 illustrates that more than 60% of people deposit money in their account once or twice a month, with less than 10% of these doing so more than twice a month. Around 25% never make deposits in their account. In terms of cash withdrawals (Figure 15), nearly 60% do so once or twice a month and a little over 20% take cash out three or five times a month.

The channels used to withdraw and deposit cash are in the vast majority the traditional ones: ATMs and bank branches. 80.3% of adults with a bank account normally obtain their cash from the ATM, 14.1% from the banking agency or branch, and just 0.3% from banking agents. When it comes to deposits, 20.0% of adults with a bank account normally deposit their cash using the ATM, 13.5% through the agency or bank branch, and 0.9% using banking agents. Most people, 62.3%, state that they do not deposit money in cash.

Cheques are used infrequently in Argentina, with just 2.7% of account-holding adults having paid by cheque in the previous 12 months. The use of cheques has been discouraged by the existence of a tax on banking debits and credits, known as “the cheque tax”. Finally, 17.1% of payments are made electronically.

Table 3

Global Findex descriptors: Argentina

Variable	Percentage
Use of the account in the last 12 months	
To receive money from a job or sale	47.8
To receive payments or transfers from the government	34.4
To receive remittances	2
To send remittances	1.8
Saving in the last 12 months	
For future expenses	54
For emergencies	61
Loan in the last 12 months	
Home purchase	0.4
Home building	4.5
Educational expenses	1.4
Emergency or health	3.1
Funerals and weddings	0.3
Use of mobile in the last 12 months	
To pay bills	1.1
To send money	0.1
To receive money	0
Health insurance in addition to state coverage	
	0.22

Source: In-house, using Global Findex data (2012)

The questions about the reasons why people perceive themselves as having been excluded from the formal financial system allow us to approach the study of financial inclusion from a different perspective. In this way we can collate signs about the importance of barriers, which give rise to the exclusion of certain types of individuals from the system. This is an important consideration when planning lines of action so that governments and financial institutions promote a more inclusive financial system which improves the quality of life and sustainable economic growth.

The pertinent question, in the Global Findex questionnaire, for identifying the perceived barriers determining the exclusion of an individual from the formal financial system is: *“Please tell me whether the following phrases describe the reasons why you personally DO NOT HAVE an account in a bank, cooperative or other financial institution”*. There are seven reasons most frequently given, which we have analysed: *“A) It is a long way away”, “B) Their services are very expensive”, “C) I do not have the necessary papers (identity card , etc.)”, “D) I do not trust financial institutions”, “E) I do not have enough money to warrant using them”, “F) For religious (or cultural) reasons” and “G) Because someone in the family already has an account”*. Each of the interviewees can choose more than one of the reasons supplied, so policies to encourage financial inclusion need to bear in mind different combinations of these responses instead of looking at each of them in isolation.

According to the Global Findex data, the lack of resources and the high cost of financial services are two of the obstacles perceived by the greatest number of the unbanked (62% and 35.8% respectively). The lack of trust in financial institutions is an obstacle in the eyes of 26.6% of the unbanked. Not having the necessary papers also appears to have a high positive correlation with not taking part in the formal financial system. 19.9% of this group see it that way. Other reasons with a lower weighting are indirect use, distance and religious scruples. 12.6% of people without a bank account say this is so because someone in their family already has one. Geographical distance is viewed as a barrier by only 4.7% of people. Finally, religious

reasons are not a significant factor in Argentina affecting decisions to have a bank account: only 0.5% of the unbanked use this argument.

b. Methodology

In this section we estimate a series of probit models which allow us to analyse the correlations that exist between financial inclusion and certain variables of interest.

Probit models, widely used for econometric analysis, are binary classification models where the dependent variable is binary. These models, estimated by Maximum Likelihood, quantify the probability of an individual belonging to the group under study. Given that, the endogenous variable is a binary response that only takes the values 0 or 1.

Let us assume that the decision to use formal financial services depends on a latent variable y^* which is determined by a set of exogenous variables, included in vector x' , so that :

$$y_i^* = x_i' \beta + u_i$$

$$y_i = 1 \text{ if } y_i^* > 0 ; y_i = 0 \text{ if } y_i^* \leq 0$$

where the subscript i represents individuals and β is a vector of parameters. u is a normally distributed error term with mean 0 and variance 1.

There is a critical threshold, y_i , so that if y_i^* exceeds y_i then a household or enterprise has a bank account. y_i is not observable either, and we assume that it is distributed normally with the same mean and variance. Thus it is possible to estimate the parameters of interest, β , to obtain information on y_i^* .

$$P_i = P(y_i = 1 | x') = P(y_i \leq y_i^*) = P(Z_i \leq \beta x_i') = F(\beta x_i') \tag{1}$$

where Z is a standard normal variable, $Z \sim N(0, \sigma^2)$ and $F = \left(\frac{1}{\sqrt{2\pi}} \right) \int_{-\infty}^{\beta x_i'} e^{-z^2/2} dz$ is the cumulative distribution function of a normal variable.

We estimate our models by Maximum Likelihood. The marginal effects on the latent variable are calculated from the different coefficients estimated in the models. Given that $E(y^* | x') = x' \beta$, the interpretation of these marginal effects is similar to that obtained in linear regression models, where the coefficients represent the change in the probability of using bank services when $x_j \in \{x'\}$ change, all other things being equal.

4 Empirical results

The aim is to determine those factors which might somehow affect the likelihood of having a financial product in the formal system, by using significant correlations. Our purpose is also to identify the incidence of these same individual characteristics in order to establish why individuals do not participate in the formal financial system.

a. Having financial products: use

Table 2 shows the relationship between individual characteristics and the probability of individuals using different banking products. Specifically, we analyse the ownership of five products or services: an account in a financial, cooperative or micro-finance institution or post office (*account*), credit and debit cards, electronic payments (*e-payments*) and having a loan from any of the institutions in the formal financial system (*formal credit*). Tables A.1. and A.2. of the Appendix describe the variables included in each of the regressions.

As columns 1 to 3 show, most of the variables are statistically significant and have the expected sign. The only exception is the dummy for gender, which shows that there are no differences by gender in account ownership (whether in a financial, cooperative or micro-finance institution or a post office) or in credit and debit card ownership. This result concurs with the findings of Cámara *et al.*, (2014) for Peru. If we bear in mind, too, the magnitude of the estimated ratios, we note that these three products respond to a fairly similar profile of person. Each stage of education raises by 14% the likelihood of having these products. As might be expected, the likelihood of having a bank account, credit card or debit card all fall, and in the same proportion, as we move down the scale towards the lowest income quintiles. Finally, age increases the probability of consuming these products, and presents decreasing performances, which are significant, but of small magnitude.

When making electronic payments, educational attainment is a significant variable and with a positive sign. Furthermore, once controls are put in place for the remaining characteristics, the only significant differences are between the lowest income quintiles (quintiles 1 and 2) and the highest income individuals.

Having a loan in the formal financial systems seems to be affected by income level and age. The poorest people are more likely to have a loan, although there are no differences between quintiles 4 and 5. Age, while still a significant variable, has little impact. Finally, neither educational level nor gender appear to be significant factors for having a loan.

Table 4
Use of formal financial services

	Account	Debit card	Credit card	e-payments	Formal credit
Woman	-0,0242	0,0018	-0,0310	0,0364	0,0260
Education	0,1416 ***	0,1479 ***	0,1401 ***	0,0870 **	-0,0035
Quintile 1	-0,2778 ***	-0,2640 ***	-0,2065 ***	-0,1286 ***	-0,0440 **
Quintile 2	-0,2278 ***	-0,2124 ***	-0,1648 ***	-0,1266 ***	-0,0626 ***
Quintile 3	-0,1796 ***	-0,1774 ***	-0,1156 ***	-0,0789	-0,0341 *
Quintile 4	-0,1357 ***	-0,1321 ***	-0,0624 *	-0,0501	-0,0160
Age	0,0233 ***	0,0245 ***	0,0230 ***	0,0101	0,0060 ***
Age^2	-0,0001728 ***	-0,000197 ***	-0,000211 ***	-0,0001061	-0,0000544 ***

***, ** and * denote significance to 99%, 95% and to 90% respectively.
Source: In-house.

b. Perceived barriers to financial inclusion: quality

For the purposes of financial inclusion, there is a notable difference between people who do not use financial services because they are affected by some kind of barrier, and those who do not do so simply because they have no demand for these services⁶. So there is a distinction between involuntary and voluntary exclusion, and self-exclusion. The first of these covers reasons such as distance from the nearest access point, lack of necessary papers, the high costs of financial services, distrust of financial institutions and lack of money. When it comes to the voluntary reasons, there is little information available, with the only known reason being that of religious scruples.

We isolated those individual aspects which are germane in determining the exclusion from the formal financial system of a group. These individuals perceive obstacles which prevent them from satisfying their desire for financial services. We used the non-ownership of an account in a financial, cooperative or micro-finance institution or post office as the proxy for identifying individuals excluded from the formal financial system. At the same time, we classified the individuals by the reasons excluding them from formal financial services⁷. Tables A.1. and A.2. in the Appendix list the variables included in each of the regressions.

Table 5 lists six reasons for involuntary exclusion for which information is available, in order of importance. The probit model estimate allows us to identify the individual characteristics affecting the perception of each of these barriers.

In the first column of table 5, we see that income is the only significant variable for people perceiving lack of money as an obstacle to being banked. As one would expect, it is the people with the lowest incomes who are most likely to perceive this situation as a barrier. According to our estimates, the probability of perceiving this barrier on the part of the poorest individuals (quintiles 1, 3 and 4) is around 15% greater than for people in the highest quintile (quintile 5).

As we see in column 2, when it comes to the perception of the costs involved in having an account in a formal financial institution, only age appears to have an effect. The price paid for having a bank account is increasingly perceived as an obstacle as people become older (rising 1% by each year). Although we notice that there is a difference between individuals in the wealthiest quintiles and those in quintiles 4 and 5, this difference does not seem to be conclusive, given that it does not figure in the other income brackets.

6: One of the limitations in the Global Findex data base is that it does not provide information about self-exclusion. We should remember that not everyone wants to use financial services.

7: Note that one individual may be classified by more than one reason for exclusion from the formal financial system.

After financial issues such as lack of money or high fees for financial services, in the case of Argentina the lack of trust in financial institutions stands out as a reason for not participating in the formal financial system. Within this category, only age features as a significant characteristic: the older someone is, the more likely they are to perceive this reason as a determinant for financial exclusion⁸.

Not having the right documents is perceived as a barrier equally by all income levels and both sexes. Neither age nor education appears to play a significant role in terms of perception. This type of documentation enables financial institutions to minimise problems of asymmetric information and thus to assign a level of risk to each of their customers. The lack of information about the potential users of financial services makes it impossible to allocate this risk, and as such implies the financial exclusion of people who are potential banking service customers.

Finally, the distance from the closest bank access and having a shared account seem to be impacted by the same characteristics. Both income level and age are the most significant characteristics. In general, people on lower incomes are more inclined to perceive distance as a barrier to accessing the financial system and to sharing an account with a family member. However, although the effect of age is similar for these two barriers, it operates in the opposite direction. The younger the individual, the more likely they are to share a bank account with a family member. In contrast, older people are more prone to perceive distance as a barrier. This result, which is similar to the one found by Cámara *et al.* (2014), may be a manifestation that these older individuals are not aware of the advantages of accessing formal financial services through information and communications technologies.

Table 5

Barriers perceived by individuals excluded from the formal financial system

	Lack of money	Costs	Distrust of financial institutions	Documents required	Another family member has account	Distance
Woman	.0.0805	0.0199	-0.0178	-0.0087	0.0394	0.0081
Educ	-0.0738	-0.0938	0.0087	0.0564	0.0743	-0.0025
Quintile 1	0.1667 **	0.1472	-0.0560	0.1129	-0.1140 ***	0.7529 ***
Quintile 2	0.0927	0.1441	-0.0884	0.1148	-0.1018 ***	0.7120 ***
Quintile 3	0.1370 *	0.1232	-0.0597	0.1328	-0.1002 ***	0.8215 ***
Quintile 4	0.1718 **	0.2150 **	-0.0693	0.0869	-0.0601 ***	0.7079 ***
Age	0.0073	0.0128 *	0.0155 **	0.0015	-0.0016 *	0.0015 **
Age^2	-0.0000802	-9.8E-05	-0.0001329 **	-0.000036	0.000015	-0.00000976

***, ** and * denote significance to 99%, 95% and to 90% respectively.
Source: In-house.

8: Here, it is important that programmes and initiatives for bring banking closer to people should exist, such as those designed to encourage financial education, as well as advertising and public information campaigns to reinforce trust in financial institutions.

5 Conclusions and debate

The importance of financial inclusion for sustainable economic growth and as a key factor in increasing prosperity by reducing poverty is a proven fact. This paper analyses, from a micro-economic perspective, the three dimensions determining financial inclusion: access, use and barriers, in the case of Argentina.

On the supply side, formal financial services are basically accessed through traditional channels: branch offices and ATMs. When it comes to introducing new technologies as vehicles to make it easier to access the formal financial system, the high penetration of mobile telephony and the lack of investment in the telecoms sector point to there being ample room for improvement in this sector. In fact, the potential for mobile banking in Argentina is considerable, since the accumulated economic growth over the last decade and development in mobile telephony have enabled most of the population, including those with low to medium income levels, to own a mobile phone. Even those mobile phone users who do not have advanced technology devices can reap the benefits of progress made in mobile banking using SMS, a communication route that banks can exploit to capture new customers. However, as users of mobiles access more advanced technology through smartphones, the opportunities in mobile banking multiply. Mobile banking is considered by users of mobile phone and computers as an opportunity to improve operability with the financial system at any time and from anywhere.

As far as regulation goes, it is still very flimsy, unlike in neighbouring countries such as Peru, Colombia, Uruguay and Paraguay, which already have specific legislation for financial inclusion and considerably more advanced mobile banking systems.

In terms of use, if we focus on the factors that determine whether people have financial products or not, we find that the level of education, income and age are important variables. Finally, individual factors which affect the perception of different barriers to exclusion generally are income level and age. Although the income level may be a structural problem, age might reflect the absence of financial products that meet the needs of different groups. Awareness of the obstacles perceived by excluded individuals is important when proposing areas for action that governments and financial institutions could initiate to promote a more inclusive financial system which improves the quality of people's lives and sustainable economic growth.

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Appendixes

Table A.1

Description of the endogenous variables

Endogenous variable	Description
Use of financial products	
Account	Individuals replying in the affirmative when asked whether they have an account in a financial, cooperative or microfinance institution or post office.
Debit card	Individuals replying in the affirmative when asked whether they have a debit card.
Credit card	Individuals replying in the affirmative when asked whether they have a credit card.
e-payments	Individuals replying in the affirmative when asked whether they make electronic payments.
Formal credit	Individuals replying in the affirmative when asked whether they have a loan from a formal financial institution.
Perceived barriers: reasons why you personally DO NOT HAVE an account in a bank, cooperative or in any other financial institution	
Distance	Non-banked individuals choosing the reply: "It is too far away".
Costs	Non-banked individuals choosing the reply: "Their services are too expensive".
Documents required	Non-banked individuals choosing the reply: "I do not have the necessary documents (personal identification such as an identity card, etc.)"
Distrust of financial institutions	Non-banked individuals choosing the reply: "I do not trust financial institutions".
Another family member	Non-banked individuals choosing the reply: "Because someone in my family already has an account".
Lack of money	Non-banked individuals choosing the reply: "Not enough money to use them".

Source: In-house.

Table A.2

Description of exogenous variables

Exogenous variable	Description
Woman (0/1)	Dummy taking the value of 1 if the interviewee is a woman and 0 otherwise.
Education	Quantitative variable taking values from 1 to 3 depending on whether the individual has finished primary, secondary or higher education
Age	Age
Age ²	Age, squared
Quintile 1 (0/1)	Dummy taking the value of 1 if the interviewee is in the lowest income quintile, and 0 otherwise. Income quintiles refer to the incomes of those interviewed
Quintile 2 (0/1)	Dummy taking the value of 1 if the interviewee is in the second lowest income quintile, and 0 otherwise. Income quintiles refer to the incomes of those interviewed
Quintile 3 (0/1)	Dummy taking the value of 1 if the interviewee is in the middle income quintile, and 0 otherwise. Income quintiles refer to the incomes of those interviewed
Quintile 4 (0/1)	Dummy taking the value of 1 if the interviewee is in the second highest income quintile, and 0 otherwise. Income quintiles refer to the incomes of those interviewed
Quintile 5 (0/1)	Dummy taking the value of 1 if the interviewee is in the highest income quintile, and 0 otherwise. Income quintiles refer to the incomes of those interviewed

Source: In-house.

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