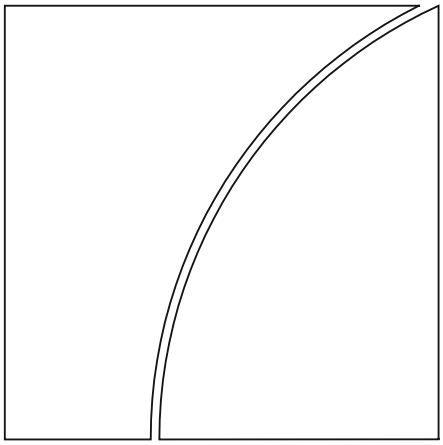
Irving Fisher Committee on Central Bank Statistics



IFC Bulletin

No 47

The role of data in supporting financial inclusion policy

Proceedings of the Bank of Morocco – CEMLA – IFC Satellite Seminar at the 61st ISI World Statistics Congress in Marrakech, Morocco, on 14 July 2017

May 2018

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Marrakech, Morocco, 14 July 2017

Seminar overview

Opening remarks

Session 1 – Capturing local aspects of financial inclusion

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The role of data in supporting financial inclusion policy

Overview of the IFC Satellite Seminar[1]

Bank of Morocco, Payment Systems and Means Oversight and Financial Inclusion Department team,[2] Jose Maria Serena Garralda and Bruno Tissot[3]

Introduction

Financial inclusion: a worldwide policy priority

The **Great Financial Crisis (GFC) reflected a widespread lack of financial literacy across society**. As financial illiteracy and the associated market abuses exacerbated the fragilities that emerged in the run-up to the GFC, policymakers have tightened their focus on strengthening financial literacy and consumer protection. **Policymakers also sought to improve access to financial services** for underprivileged or underserved groups. Two key objectives are to ensure credit access for small and medium-sized enterprises (SMEs) and to provide basic financial services to unbanked households. Meeting these objectives has created **new data collection needs**.[4]

The **rapid pace of financial innovation**, in addition, has reinforced policymakers' interest in financial inclusion. New digital payment systems (eg via smartphones), in particular, have improved access to financial services, especially in developing countries where take-up for "traditional" banking services has been lower. This has attracted significant attention among regulatory bodies and standard setters.[5]

[1] The views expressed here are those of the authors and do not necessarily reflect those of the Bank for International Settlements (BIS), the Bank of Morocco (BoM), the Center for Latin American Monetary Studies (CEMLA) or the Irving Fisher Committee on Central Bank Statistics (IFC). We thank Aurel Schubert, Katherine Hennings, and Stephan Müller for their comments and suggestions.

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[4] For policy recommendations at an early stage see International Finance Corporation, "Towards universal access. Addressing the Global Challenge of Financial Inclusion", 2010; and GPFI, "GPFI 2017 Progress Report", 2017, for a summary of recent activities and a description of ongoing initiatives.

[5] The BIS's Financial Stability Institute (FSI) has hosted three Global Partnership for Financial Inclusion (GPFI) Conferences on Standard-Setting Bodies and Financial Inclusion. For an overview of the most recent discussions see GPFI, "Global Standard-Setting Bodies and Financial Inclusion: The Evolving Landscape", *GPFI White Paper*, 2016, and also J Caruana, "New frontiers in the supervision and oversight of digital financial services", Basel, 26 October 2016; welcoming remarks at the Third GPFI-FSI Conference on Standard-Setting Bodies and Innovative Financial Inclusion.

Large data needs

Large and diverse information needs must be addressed if these issues are to be tackled. Detailed data are required ex ante to identify the appropriate policy measures, as are consistent time series to evaluate their effectiveness ex post.[6] Fortunately, a wide range of information sources already exists. For instance, data that can be used to assess the supply of financial services are widely available. More recently, a number of initiatives have started to complement this information with survey-based indicators (covering both households and firms), for instance, to assess financial literacy issues and the quality of users' access to financial services. Nevertheless, significant efforts are still required to exploit the full opportunities provided by existing administrative data sources.

Central banks have played a pivotal role in collecting financial inclusion statistics. At the global level, they have actively contributed to the G20 Financial Inclusion Action Plan (FIAP) that is pushing data collection initiatives in various areas – including digital financial services, SMEs finance, and financial literacy.[7] But the local data needed to cover financial inclusion issues can differ significantly across countries – depending, for instance, on their degree of financial deepening. Accordingly, many central banks have also taken steps to compile additional, domestic statistics to complement the global indicators; these can help to facilitate the centralisation of the various data sets that may already exist in a country.

The workshop: enhanced data to support financial inclusion policy

The experience of the Irving Fisher Committee on Central Bank Statistics (IFC) is that **sharing national experiences** can bring important benefits to the international statistical community. A major one is the identification of best practices – particularly useful when authorities are struggling to implement global initiatives locally. International discussions are also key to disseminating new techniques and raising awareness of related achievements and limitations.

Focusing more specifically on financial inclusion, a key conclusion of previous IFC work is the **importance of the role played by data**. This is because of the broad aspects to be considered when dealing with financial inclusion issues (eg financial supervision, consumer protection, economic policy), and also because of the close interaction between measurement and policy actions in this area.[8]

Central banks are in a unique position to promote the use of data for financial inclusion purposes, reflecting the extent and diversity of their mandates and policies in this area. Against this backdrop, the IFC, in cooperation with the Bank of Morocco (BoM) and the Center for Latin American Monetary Studies (CEMLA), organised a

[6] For an overview of the related data aspects, see B Tissot, "Statistical challenges related to financial inclusion", 2015; paper presented at the 60th congress of the International Statistical Institute in Rio, http://unstats.un.org/unsd/accsub-public/Session-ISI/Documents%202015/Paper-BIS-Tissot.pdf.

[7] Many central banks take active part in the GPFI, which is carrying forward the FIAP; this strategy was first endorsed at the Seoul G20 Summit in 2010 -see G20, "The G20 Seoul Summit Leaders' Declaration", November 11-12 2010. As a result, many central banks have an active role in the Alliance for Financial Inclusion (AFI), the OECD International Network on Financial Education, the IMF Financial Access Survey, or the World Bank Global Findex Initiative.

[8] For a summary of previous discussions, see IFC, "Financial inclusion indicators", *IFC Bulletin* no 38, January 2015.

workshop in July 2017 to discuss **how statistics can be better used to support financial inclusion policy needs.** Almost 100 participants convened, representing 34 central banks and several international financial organisations and other institutions.

In his opening remarks, Abdellatif Jouahri, Governor of the BoM, emphasised that **policies to promote financial inclusion need to be guided by data**. To this end, three aspects were essential. First, international data collection initiatives are instrumental if one wants to use globally harmonised data sets. The World Bank Global Findex and the IMF Financial Access Survey (FAS) are good examples of such global initiatives designed to assess financial inclusion – from the supply and the demand side, respectively. Second, local authorities should conduct data collection exercises to measure aspects that are specifically relevant in their jurisdictions. For instance, the collection of high-quality data on very small, small, and medium-sized enterprises (VSMEs) is a key objective of the BoM in order to support enterprises' access to finance. Since VSMEs play an important role in Morocco, the BoM has launched an initiative to centralise and analyse data on this particular segment. Third, local authorities and international institutions can usefully cooperate to improve the quality of the data collected on financial inclusion. For instance, the BoM has conducted, in cooperation with the World Bank, a survey to assess households' perception of financial services. The BoM also interacts with the central banking community on those topics. Such cooperation efforts have been particularly useful for developing the National Financial Inclusion Strategy.

Claudia Buch, Vice President of the Deutsche Bundesbank and Chair of the IFC, emphasised in her remarks that financial inclusion can promote economic prosperity and help strengthen economic opportunities. At the same time, it requires consumers and investors to acquire additional skills and abilities. Widespread access to financial markets and to a greater variety of products can increase the likelihood of uninformed financial decisions or fraud. A certain level of financial literacy is therefore required to properly manage risks. This is particularly important for young people, whose financial decisions can affect lifetime income and wealth. Thus, young cohorts have an important stake in current policy decisions on fiscal policy and pension reforms. From this perspective, **effective financial education** is important, not least to ensure informed financial decision-making. The challenge is that educational programmes have to be properly implemented in order to deliver the intended results. In particular, they need to take account of national educational systems. Successful approaches can vary between countries, given the differences in educational systems and other institutional features affecting financial literacy. In this context, the 2017 German G20 presidency contributed to the improved analysis, sharing and design of information on financial literacy programmes.[9]

The meeting was organised **in four parts covering various aspects of the role that data can play to support financial inclusion policy.** The first part emphasised the importance of capturing local characteristics of financial inclusion when setting policies. The second part focused on the need to measure financial literacy, which has proved important when assessing financial resilience. The third part discussed how the evolution of financial markets can create new data gaps, and the efforts to address

[9] Policymakers, researchers, and practitioners will benefit from the new data promoted by the OECD/International Network on Financial Education (INFE): see C Buch, "Financial literacy and financial inclusion: Priorities of the G20 German presidency" speech at the fourth OECD/GFLEC Global policy research symposium to advance financial literacy, 2017.

them. The last part dealt with the importance of the initiatives to construct globally harmonised, and historically comparable, data sets on financial inclusion.

Key takeaways

The discussions highlighted a number of key issues regarding the compilation of statistics for effective policy implementation to promote financial inclusion, with specific implications for central banks:

- **Policymakers need harmonised cross-country data to design and evaluate financial inclusion policies**. Several sets of statistics are already available, thanks in particular to the ambitious post-crisis international data collection initiatives. These statistics can help, for instance, in assessing the potential of digital innovation to provide services to financially excluded groups.
- **Time consistency is also key, not least to assess the effectiveness of financial inclusion policies.** Global harmonisation can help from this perspective, by providing a stable framework for collecting data over time.
- **National authorities often need to launch additional data collection initiatives to capture aspects of local interest**. For instance, advanced countries have a great interest in financial inclusion aspects related to economic fragilities (eg risk of excessive indebtedness). Similarly, countries that seek to promote access to financial services for certain population segments need specific data related to the groups being targeted.
- **Central banks play an important role in the production of financial inclusion data.** They are in an almost unique position to exploit administrative data sets, especially on the financial system, thanks to the information reported by banks and other financial institutions. They can also complement such supply side statistics with other sources, leveraging their experience in conducting surveys and measuring financial literacy.
- **Data needs can rapidly change because financial markets are constantly evolving** – witness the pace of innovation in digital payments and financial services (eg via smartphones). This can result in unexpected data needs, because of the limitations of "traditional" administrative sources of information (such as banking data) to capture these changes. Besides, innovation can lead to new ways of collecting data (eg big data techniques).[10]
- Countries should focus on an **integrated view of financial inclusion statistics**. This is because they involve several policy areas, such as financial infrastructure provision or consumer protection. As a result, the data are often scattered across different institutions within a country.
- Significant **coordination is required to address these issues, although international experience is quite diverse.** One way is to better formalise data cooperation between the various stakeholders; another is to clarify that one institution is in charge of centralising country information in the context of a clearly defined financial inclusion strategy. In any case, central banks can,

[10] See IFC, "Big data", *IFC Bulletin*, no 44, September 2017.

and have indeed done so already in many places, play a useful role in fostering such a coordinated approach.

2. Capturing local aspects of financial inclusion

The first session, chaired by Aurel Schubert, IFC Vice-Chair and European Central Bank, emphasised that financial inclusion **data collection has both a global dimension and also important domestic aspects**. First, local policy priorities might differ significantly across countries. Domestic specificities should be carefully considered to ensure time series are compiled consistently, a prerequisite for effective policy evaluation.[11] Furthermore, there is a need for adequate local frameworks for cooperation and data-sharing especially in countries where data on the use of financial services are dispersed among several authorities.

These issues were highlighted in the first presentation, by the Bank of Portugal (BoP), which stressed the importance of **enhancing granular information on borrower quality.** In particular, a key policy objective is to identify the types of borrower that run a risk of losing access to formal financial services, noting that these groups may differ across jurisdictions. The Central Credit Register (CCR) set up by the BoP is an important source of information in this respect. Its data on credit liabilities on a loan-by-loan basis can be used by financial institutions to assess borrower risk profiles.

The Bank of France also underlined the **importance of capturing country-specific data on households' financial fragilities** as a way to support the provision of basic financial services to them. Monitoring these fragilities is a policy priority in many advanced economies, where access to financial services is relatively widespread but can be suddenly interrupted for certain groups of households. In France, the Banking Inclusion Committee, a tripartite council chaired by the central bank's Governor, is coordinating a national strategy to address this issue and facilitate the continuous provision of basic financial services (eg specific bank accounts with reduced fees and minimal services; microcredit facilities; and answers to questions about financial issues) to financially fragile households. This requires the collection of data with many local characteristics.

This was echoed in the presentation from the Central Bank of Malaysia (CBM), which stressed the **need for consistent time series data to evaluate financial inclusion policies**. This is particularly important for the CBM, which has been formally tasked with setting up a strategic plan to foster financial inclusion in Malaysia. This plan seeks to develop new financial services and products, enhance financial infrastructure, and improve financial literacy. To monitor progress, specific data sets and indicators will need to be designed, collected, analysed and, for policy evaluation purposes, monitored over time. This means that local considerations have to be carefully considered, for instance, to ensure that the same indicator can continue to be monitored even if it is not part of a globally harmonised financial inclusion data set.

[11] See also the "Sasana statement" (www.bis.org/ifc/publ/ifcb38v.pdf) as well as B Gadanec and B Tissot "Key messages of the Sasana Workshop on Financial Inclusion Indicators – Promoting financial inclusion through better data", *IFC Bulletin*, no 38, February 2015.

Lastly, the BoM emphasised that **cooperation is key to carrying out national financial inclusion strategies**, in particular when there is a need to centralise the data collected by various distinct institutions. Almost by definition, this cooperation has a very domestic character. For instance, the BoM is gathering and centralising financial inclusion data, across several dimensions (eg access, usage and quality. Complex domestic information must be assembled from a variety of sources, for instance on the concrete barriers to accessing financial products, the actual needs of the population, financial behaviours and the various measures taken by local authorities. Geospatial Information System-type tools are used to document these local characteristics. The BoM also takes part in global networks, not least with the aim of identifying and implementing best practices.

3. Compiling data on financial literacy

The second session, chaired by Katherine Hennings, IFC Vice-Chair and Central Bank of Brazil (CBB), discussed **the importance of financial knowledge measurement as part of national strategies to promote financial inclusion**. By preventing financial mistakes, financial literacy could help to counter the build-up of vulnerabilities. As a starting point, the OECD International Network on Financial Education (INFE) has set common rules for compiling relevant data. These standards can be complemented in various ways, for instance to enhance the quality of the information collected from households, to better incorporate the impact of life-cycle or macroeconomic factors, to monitor consumer protection issues and to assess how financial services are responsibly used. In this context, country-wide coordination is often the key to success, since national-level measures to enhance financial literacy often involve several institutions.

As an example of recent initiatives to assess financial literacy, the Bank of Spain presented the Spanish Survey on Financial Competences and the **importance of the associated quality challenges.** This survey has been based on the global questionnaire coordinated by the OECD-INFE, complemented by features to address the problem of non-responses. Interviewers have been specially trained, and the quality of interviews has been checked to address this issue pre-emptively.

The Bank of Italy also showed that **financial literacy measurement should take into consideration a variety of factors such as the state of the economic cycle or life-cycle considerations.** The global OECD-INFE questionnaire can be usefully complemented by domestic considerations to adjust for such factors, for instance to better understand how financial decisions are taken by Italian households and the associated potential vulnerabilities.

Furthermore, and as argued by the CBB, it was **important to go beyond "simple" financial literacy indicators** in order to gauge the soundness of households' usage of financial services. To get the big picture and measure "financial citizenship", one should consider additional information on the real availability of financial services and their effective use. To this end, the CBB combines administrative information from bank records with survey results on financial education and consumer protection.

Lastly, the Dutch National Bank presentation stressed that **coordination among institutions is a key factor to consider when promoting financial literacy**. For

instance, the measures taken in the Netherlands aim to foster resilience – a concept encompassing access to services, consumer protection, and appropriate behaviour – involve about 100 public and financial institutions, as well as universities, that need to be coordinated.

4. Closing data gaps in an evolving environment

The third session, chaired by Gülbin Şahinbeyoğlu from the Central Bank of the Republic of Turkey, emphasised the urgency of closing data gaps in areas where measures have been taken to promote financial inclusion. For instance, various countries have made efforts to facilitate financial access for SMEs, but information on this sector is still relatively limited. This information gap needs to be filled if the impact of these policies is to be properly assessed. However, **data gaps related to financial inclusion can rapidly change with the financial and economic environment**. Changes can also be triggered by the effects of the financial inclusion measures themselves. In particular, the introduction of new financial instruments to facilitate access to the underserved can transform financial markets (eg by opening the door to new types of financial product supplier), creating additional information needs. Innovation in retail payments has, for example, given rise to new data requirements.

Indeed, the Central Bank of Chile presentation highlighted how **policy actions can rapidly and significantly change the financial inclusion situation**. The recent introduction of CuentaRut, a sight deposit account at a state-owned bank, has facilitated financial access for low-income households in Chile. Accounts are easily opened, free of charge, and all major types of payment can be processed. This has been considered a success, with more than half of the population now holding such an account. But one consequence is that traditional financial inclusion indicators, such as the number of accounts held in commercial banks, may have lost some of their relevance.

The **Moroccan Observatory of Small and Medium-sized Enterprises** (VSMEsO) focused on the data gaps related to small firms. To evaluate their impact, policy efforts to support access to finance have to be accompanied by adequate data collection. To this end, the VSMEsO sought to centralise all the relevant data, for instance, in the administrative records of different public institutions. This necessitated the implementation of a common identification system.

As argued in the third presentation, by a private Nigerian firm, a growing information need relates to **digital retail payments, which are expanding rapidly.** This is key in Nigeria, since payments are increasingly made outside the regular banking system eg through mobile money operators. This not only opens up new data gaps, for instance, in measuring the activities of these new market participants, but it also makes some previous data sets obsolete. For instance, traditional indicators such as the number of ATMs per inhabitants understates the progress of financial inclusion.

The complexity of this issue was emphasised by CEMLA, building on recent experience in Latin America and the Caribbean region. Even if households have increasing access to digital payment systems, central banks must still ensure that households can actually hold a formal bank account. From this perspective, innovation **calls for more financial inclusion indicators, not fewer.**

Another challenge as argued by the BIS, is that **progress on financial inclusion may lead to additional data needs in other areas, for instance with respect to monetary policy**. Indeed, greater access to financial services could affect the aggregated prices of goods and services, leading to a reassessment of monetary policy objectives and indicators. This could have important data implications, for instance, if central banks needed to monitor inflation volatility more intensively.

5. The need for cross-country harmonised time series

The fourth session, chaired by Hock Chai Toh, CBM, showed that **effective policy evaluation requires cross-country and historically comparable financial inclusion indicators**. Several international initiatives have boosted the availability of such data sets, thanks to the harmonisation of administrative records by central banks and other regulators. One outcome is that it is now possible to compute synthetic or multidimensional indicators in order to make valid comparisons between different countries. In addition, an increasing number of data points are being collected, allowing the impact of financial inclusion policies to be more consistently evaluated.

A key data set in this regard is the **Financial Access Survey (FAS)**, which is based on coordinated international work to harmonise administrative data on access to finance. As emphasised by the IMF, the FAS has already been used to explore trends in financial inclusion, since the time series are internationally comparable and go back to 2004. This has been particularly useful in measuring areas of improvement (eg use of mobile money by financially excluded groups) as well as emerging policy issues (eg non-bank service providers, gender gaps in financial access).

Another important data set is the **Global Findex survey**, which covers up to 150,000 individuals to shed light on usage of financial services worldwide. The World Bank confirmed the usefulness of this data set in assessing informal financial services – as a complement to "traditional" administrative sources, which are by construction more geared to capturing formal financial services. The data set also helps to illuminate household financing needs (eg revealing the importance of housing loans in higher-income economies as compared with borrowing for health and education reasons in developing countries), as well as differences in financial literacy across countries.

Such global data sets open up new opportunities for research, as highlighted by the BBVA's presentation of **a synthetic multidimensional index on financial inclusion**, which combines a large number of demand and supply side statistics. This index is comparable across countries and over time, and it is easy to interpret – an important advantage, given the rapidly expanding number of financial indicators. Moreover, the synthetic index allows countries to be consistently and comparably ranked over time, facilitating analysis of contributing factors. Thus, it can be useful in guiding policy and evaluating its impact.

As summarised in the final presentation, from the BIS, **both internationally harmonised statistics and the ability to capture national characteristics are important when evaluating financial inclusion policies**. This was a clear message of the IFC's 2016 survey of member central banks.[12] Because of differences in financial

[12] See IFC, "Measures of financial inclusion –a central bank perspective", *IFC Report*, June 2016.

inclusion policy mandates, data collection initiatives should be tailored to local needs. But national policymakers also benefit from globally consistent data sets, for instance, when seeking to formulate policy priorities, conduct benchmarking exercises and identify best practices.

Satellite Seminar on Financial Inclusion
held in conjunction with the 61st World Statistics Congress

Opening remarks by Mr. Abdellatif JOUAHRI

Governor of Bank Al-Maghrib

Marrakech, July 14, 2017

"While data is important, the right data is essential"
Albert Einstein

Honorable Chair of the Irving Fisher Committee,
Honorable Governor of the BEAC,
Distinguished guests,
Ladies and gentlemen,

It is with great pleasure that I welcome you to Morocco on the occasion of this international seminar on financial inclusion, which will focus on data and their important role in developing policies and strategies that take into account on-the-ground realities and then measuring and assessing the impact of these policies.

First of all, I would like to thank our partners, the Irving Fisher Committee on Central Bank Statistics and the Center for Latin American Monetary Studies for their valuable contribution to the organization of this event, held as usual on the sidelines of the 61st World Statistics Congress.

The topic of our meeting further underscores the importance that central banks and international standardization bodies attach to financial inclusion. It is a subject that is of increasing interest to them, particularly with regard to its interactions with financial stability, resulting in hindering the policies put in place to develop access to and use of financial services.

A sustainable and efficient financial inclusion requires a long-lasting balance between innovation and the safeguards that need to be developed in order to ensure the soundness of the financial sector.

Ladies and gentlemen,

As you know, financial inclusion has become an important factor in economic efficiency and social equity, and international organizations have, for nearly a decade, underlined its importance and the need for public authorities to adopt national strategies for financial inclusion.

The World Bank considers financial inclusion as a key factor for poverty alleviation and has set itself the goal of achieving universal access to

financial services by 2020. Under this framework, it targets 25 priority countries, including Morocco.

To this end, it launched in 2012 the Financial Inclusion Support Framework (FISF), aligned with the Maya Declaration, to support the implementation of country commitments.

For its part, the G20 has made financial inclusion one of its working themes, and in 2009 established an expert group who drew up the nine Core Principles for Innovative Financial Inclusion. In 2010, the G20 launched the Global Partnership for Financial Inclusion, including all G20 countries and interested non-G20 countries. This partnership helps strengthen coordination and collaboration between the various national and international stakeholders through its three key Implementing Partners: the Alliance for Financial Inclusion (AFI), the Consultative Group to Assist the Poor (CGAP), and the International Finance Corporation (IFC).

Certainly, all these organizations, to name but a few, and policy-makers are aware of the increasingly critical role of data and its impact on the efficiency of the decision-making process, from the design phase to monitoring and evaluation.

The use of rigorous, objective and reliable data helps to accurately assess the state of financial inclusion, set realistic goals, identify obstacles, design relevant policies and monitor and assess the impact.

Based on this premise, several international initiatives have been launched to contribute to the development of standard indicators and study tools in order to better understand the components of financial inclusion and better analyze their impact on financial stability and integrity as well as on economic development and the population's well-being.

It is within this framework that the World Bank and the International Monetary Fund have developed surveys specifically designed to assess financial inclusion from the "supply" and "demand" side.

The Global Findex is currently the most comprehensive global database to assess the financial behavior of individuals by analyzing the use of financial services in nearly 140 countries.

The IMF's Financial Access Survey, conducted annually since 2009, is another important source of data on financial inclusion. It provides an overview of the availability and use of financial services by individuals and firms by collecting appropriate information from various providers of financial services.

Data collected through these surveys have enabled policymakers in several countries to benefit from the opportunities identified to further promote financial inclusion. They also provide analysts with a reliable basis for understanding the causal links between financial inclusion and financial stability, on the one hand, and between inequality and economic growth, on the other.

In addition to surveys, international organizations have mobilized to develop a range of indicators to assess the different dimensions of financial inclusion.

Since the Cannes Summit in 2011, the G20 has focused on developing financial inclusion indicators, including indicators on access to and use of financial services, financial literacy, and the quality of financial service provisioning and consumption, as part of a continuous reflection process integrating new international trends in this field, notably the development of new distribution models and the emergence of digital financial services.

The AFI also published a set of basic indicators on access to and use of financial services in 2013 and on quality in 2016 with the aim of harmonizing data among its members by providing them with a common tool to ensure comparability and foster peer learning.

Ladies and gentlemen,

In Morocco, since 2007 both the Ministry of Finance and Bank Al-Maghrib have considered financial inclusion as a major instrument to develop a comprehensive strategy of the financial sector by 2020 which aims to deepen the national banking market, develop capital markets and position our country as a regional financial hub.

Through our commitment to the Maya Declaration in 2013, we announced our pledge to promote access to and use of quality financial services based on sound and solid foundations. That same pledge was

reaffirmed in 2016 as part of the roadmap of aligning the Moroccan financial sector to sustainable development goals at the COP 22 held last year in Marrakech.

This commitment reflects our willingness and determination to continue our financial inclusion efforts, which have enabled Morocco to become a regional benchmark, given the significant progress it has achieved in this regard. Such efforts have been reported by the World Bank and the IMF during their last Financial Sector Assessment Mission (FSAP) conducted in 2015.

Ladies and gentlemen,

Aware of the importance of data for designing relevant policies, Bank Al-Maghrib has taken specific measures to develop, in line with international standards, a set of indicators which address two fundamental dimensions of financial inclusion: access to and use of financial services. As for the “quality” dimension, it is monitored for the time being through the Banking Services Price Index, which we developed in 2011 and which accurately reflects the cost and trend of banking services.

Moreover, considering the weight of very small, small and medium enterprises (VSMEs) in our industrial fabric and their role in employment and wealth creation, we mobilized various public and private actors to establish an observatory for VSMEs. Founded in 2016, this observatory aims at (1) centralizing national and regional data and information on VSMEs, and (2) generating demographic, economic and financial information on economic sectors in order to allow stakeholders to respond more effectively to the issue of financing this specific category of companies.

We have also established two credit bureaus, the first in 2007 and the second in 2016, in order to provide credit institutions and similar bodies with a common platform for the exchange of data. The objective of this platform is to help these institutions better assess the risks incurred on their counterparties, through solvency reports specifying the commitments of their customers and their payment behaviors. It also allows Bank Al-Maghrib to measure the use of loans by the population and to evaluate the impact of actions taken on the supply and demand side.

And in 2013 we launched, jointly with the World Bank, a survey on Moroccan households' perception of financial services. This survey helped us identify the barriers hindering the development of financial inclusion and allowed us to better prepare our first national financial education strategy.

A second survey called "Global FINDEX" will be conducted shortly and will serve as a basic diagnosis to define our national financial inclusion strategy.

Ladies and gentlemen,

The data collected over the past few years show the real progress made and the challenges ahead: disparities between regions, rural and urban areas, gender, data quality improvement and the development of an effective tool to measure impact.

These challenges emphasize the need to continue our joint efforts, both nationally and internationally, and to get mobilized, in an overall and harmonized manner, to develop financial inclusion of the population across all segments.

Data reliability is not an issue specific to Bank Al-Maghrib. This was evidenced by the last report of the Irving Fisher Committee on "Measures of Financial Inclusion - Central Bank Perspectives", prepared on the basis of a survey carried out during the 4th quarter of 2015 in 47 countries.

The findings and recommendations of this report, which will be debated at length today, reveal that it is of paramount importance to improve data in a much more concerted and shared framework for a better international coordination.

Ladies and gentlemen,

Our one-day high-level meeting will cover a number of themes that are challenging to all of us: Is financial inclusion a challenge for national financial stability? How does it affect monetary policy transmission? What measure should central banks take to safeguard the objectives of financial stability and monetary stability while improving access to financial markets?

I remain convinced that making this gathering an annual tradition will enable us to provide the most appropriate responses to meet these challenges.

I wish full success to this seminar and wish you a pleasant stay in Morocco.

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*
Marrakech, Morocco, 14 July 2017

Assessing financial inclusion in Portugal from the central bank's perspective[1]

João Cadete de Matos and Luís D'Aguiar,
Bank of Portugal

[1] This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Assessing financial inclusion in Portugal from the central bank's perspective

João Cadete de Matos[1] and Luís D'Aguiar[2]

Abstract

The paper discusses the evolution of financial services in Portugal and, in particular, the role and contribution of *Banco de Portugal* as a financial services provider – with emphasis on the services offered by its Central Credit Register and within the context of its Banking Conduct Supervision activities, and how they have been used to pre-empt over-indebtedness and to monitor the access to financial services, while shedding light into the usage of innovations in the payment systems. Finally, an attempt at documenting and measuring the evolution of financial inclusion in Portugal is made on the basis of the results of the *Banco de Portugal*'s Survey on the Financial Literacy of the Portuguese Population.

Keywords**:** financial inclusion; financial services; payment systems; central credit register.

1. Introduction

Financial inclusion – loosely defined here as the ability of individuals or enterprises to obtain formal financial services that are appropriate to their needs, including access to credit and bank accounts, payments facilities, insurance, and other risk management services – is essential in fostering the development and competitiveness of an economy and in mitigating the asymmetries in the distribution of income across and within countries. However, while there has been some progress worldwide toward wider access to formal financial services, significant challenges remain – *e.g.*, more than two billion adults do not have access to formal or semi-formal financial services; they are the financially excluded in a world where access to financial services can mean the difference between surviving or thriving (ATISG, 2010). What is more, financial exclusion seems to be no longer only a phenomenon in developing and emerging countries, especially in the aftermath of the 2007-08 financial crisis. Indeed, as Coffinet & Jadeau (2017) discuss, the data currently available show that, even in developed countries, many people remain excluded from the financial system, with no access to basic banking products, as is clearly the case with a plain transaction account.

The increased awareness of this problem led policymakers, regulators and development agencies globally to consider the promotion of financial inclusion as a priority. The G-20, for instance, has identified financial inclusion as a key driver of economic growth, reduced economic vulnerability for individual household, poverty alleviation, and improved quality of life for people around the world. On the occasion of its Seoul Summit in 2010, a number of initiatives directed to improving access to financial services and expanding opportunities for poor households and micro-, small- and medium-sized companies was approved (the Financial Inclusion Action Plan, the Global Partnership for Financial Inclusion and a flexible SME Finance Framework).

Against this background, the paper describes the provision of formal financial services in Portugal and, in particular, the role and contribution of *Banco de Portugal* as a financial services provider – with emphasis on the services offered by its Central Credit Register and within the context of its Banking

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Conduct Supervision activities, and how they have been used to pre-empt over-indebtedness and to monitor the access to financial services, while shedding light into the usage of innovations in the payment systems. The focus of the paper will be more on the provision of financial services rather than in measuring the access to them, in view of the methodological difficulties inherent to the measurement of access to finance as well as the lack of comprehensive and reliable data (*e.g.*, on the people using financial services, the types and quality of services they receive and the price they pay for such services, and also the barriers they face to broader access). That said, the absence of significant non-price barriers for firms and households in the use of financial services in Portugal, on the one hand, and the fact that the provision of financial services may be seen as an indication of the potential access to financial services, on the other hand, give justifying argument for the approach that has been followed. Notwithstanding, an attempt at documenting and gauging the evolution of financial inclusion in Portugal will be made, on the basis of the results of the *Banco de Portugal*'s Survey on the Financial Literacy of the Portuguese Population.

2. The evolution of financial services provision in Portugal

The provision of financial services in Portugal has been growing at a fast pace since 1986, the year that marked the Portuguese accession to the European Economic Community (EEC). This trend was fuelled by a substantial increase in the use of technological innovations (mainly in telecommunications), which made it possible to implement teleprocessing networks, either within the larger banks or through interbank links, with visible benefits to the supply of financial services, particularly in the field of retail payments. This increase was backed by the creation of SIBS (*"Sociedade Interbancária de Serviços"*), a company that was founded in 1983 by a number of resident banks (as of today, the company's shareholders stand for practically the whole retail banking sector in the country). Its aim was to introduce a single payment platform that met the banking establishments' needs while developing their facilities and technology, and extending their international scope.

In 1985, this network became operational under the *Multibanco* designation. *Multibanco*, a sophisticated network shared by every bank operating in the economy that fully integrates automated teller machines (ATMs) and electronic funds transfer at point of sale (EFTPOS) terminals, profoundly transformed the way retail payment operations were carried out in Portugal. Since its implementation, new features have been constantly added to the system (involving no extra costs to its users): in addition to cash deposits/withdrawals and balance/transactions inquires, customers can also do money transfers (both to other customers in the same bank and to other banks), deposit and order cheques, pay utilities bills, pay services and purchases, pay taxes and Social Security contributions, top-up mobile phones, transport ticketing and event booking and ticketing.

The activity of SIBS was instrumental in generating economies of scale deriving from a more rational and effective use of the financial, technical and human resources needed to develop more advanced payment instruments and systems. Also, SIBS made the *Multibanco* network open to all those taking part in payment systems operations, which allowed for network economies and the safety inherent in a single system. In addition, this scheme has returned to its users a substantial part of the productivity gains generated from on-going technological and organisational developments, both directly, through the supply of a service that is ever wider, of better quality and at a better price, and indirectly, through increasing efficiency in the banking system as a whole.

Quantitative relevance

The Payments and Settlement Systems Statistics dataset of the European Central Bank Statistical Data Warehouse offers ample coverage about the characteristics and the dimension of the Portuguese payments system as well as of the other European Union Member States.

Figure 1: ATM demographic coverage
(Number of ATMs per million inhabitants)

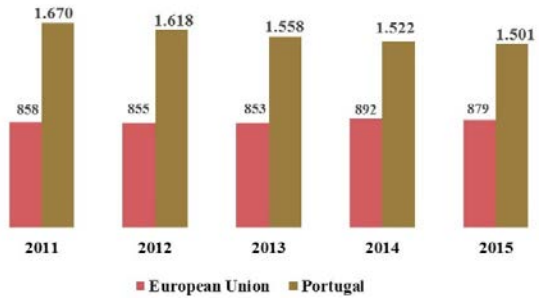
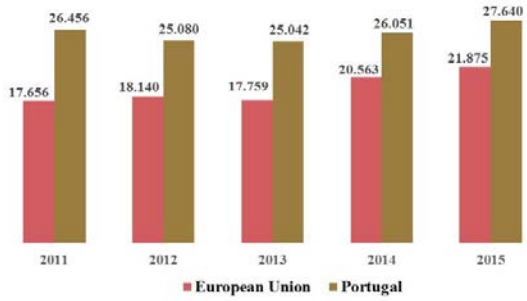


Figure 2 – POS demographic coverage
(Thousands per million inhabitants)



Looking into this dataset, one sees that, *inter alia*, the value of transactions carried through card payments with cards issued by resident Payment Service Providers (PSPs) in Portugal has been growing steadily between 2011 and 2015, totalling 65.4 EUR billions in 2015 (55.7 EUR billions in 2011); also, the demographic and geographic coverage of the ATM and POS networks are shown to rank amongst the highest in the European Union and the Euro area. The number of ATMs provided by resident PSPs in Portugal reached 15.6 thousands in 2015 – roughly 1500 per million inhabitants (the 2nd highest demographic coverage in both the European Union and the Euro area) and 169 per 1,000 sq. km. In addition, the number of POS terminals provided by PSPs in Portugal amounted to 286.4 thousands in 2015 – approximately 27,640 per million people (the 6th highest demographic penetration in the European Union and the 5th in the Euro area) and 3,106 per 1,000 sq. km. The number of cards with a cash function issued by resident PSPs totalled almost 20 million in 2015 (19 million in 2011), while the number and related value of transactions with cards issued by PSPs totalled, respectively, about 1,375 million in this year (1,237 million in 2011) and approximately Euro 65.4 billion (55.7 EUR billions in 2011).

A *Banco de Portugal*'s study conducted in 2016 estimated that, during 2013, the usage of the different payment instruments represented a cost of 1.6 per cent of the country's Gross Domestic Product (GDP), which was shared almost equally between the banks, non-financial firms and consumers. Moreover, the study also found that the share of this costs that were supported by the banks – estimated at 883,4 million euros – have surpassed the direct and indirect benefits generated by the usage of different payment instruments – which only amounted to an estimate of 627,2 million euros. However, when the same analysis was broken down by the different instruments, it became clear that the debit cards and the cheques were, for banks, the only "profitable" payment instrument as their benefits covered their costs in 130 per cent and 100 per cent, respectively. Conversely, cash was the payment instrument which generated the greatest gap between costs and benefits, as the costs coverage rate was only 5 per cent.

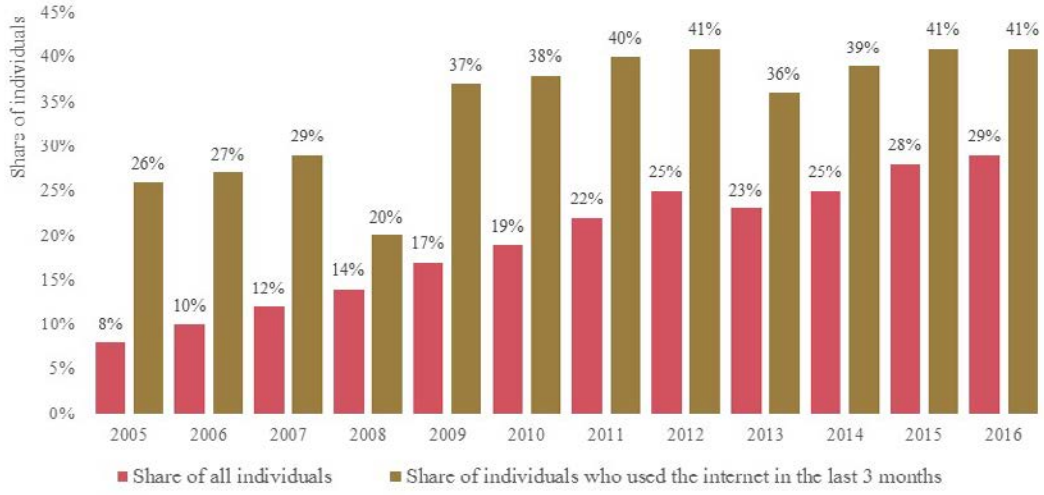
The same study also found that, from a cost perspective, the debit card is relatively more socially efficient than cash – representing, respectively, a cost of 50 and 53 cents per transaction – and that, for payments below 1,89 euros, cash is the less socially costly payment instrument. Above this threshold, the debit card was found to always be the less socially costly payment instrument.

Home banking and mobile banking in Portugal

The availability of Information and Communication Technologies (ICT) has also led the Portuguese banks to make considerable efforts to modernise customer access to financial services in new, cheaper ways, and to more people. As a complement to in-person services, online connections with corporate customers, home banking and mobile banking (m-banking) are now extensively available in Portugal and increasingly used by firms and households.

Indeed, the information currently available on the on-line bank penetration in Portugal (from the "Statista" website) shows that, in 2016, 29 per cent of all individuals used the internet for on-line banking, and that such usage was higher for those who had used the internet within the last three months, at 41 per cent (see figure 3).

Figure 3 – Online banking penetration in Portugal (2005-2016)



Source: https://www.statista.com/statistics/380873/online-banking-penetration-in-portugal/

With m-banking, banks get information to their customers no matter where they are and at reduced costs. This is vital for a number of banking services (*e.g.*, alerts), as well as for traditional marketing campaigns.

From the demand-side viewpoint, people often do not have time to get to a bank branch, and the Internet may not be an option in some cases – circumstances that favour the use of a more straightforward channel. For a sizeable part of the Portuguese population, using mobile phones to have access to certain financial services, like checking bank balances or conduct other basic operations, should be like a second nature. The Portuguese are clearly a tech-savvy nation. Indeed, the European Commission's *Report on the Implementation of the Telecommunications Regulatory Package*, published in 2015, outlined that Portugal stands out from the EU average when comparing the fixed broadband coverage (100 per cent *vs.* 97 per cent), the share of households subscribing high-speed connections (54 per cent *vs.* 26 per cent for connections faster than 30 megabits per second (Mbps) and 22 per cent *vs.* 9 per cent for connections faster than 100 Mbps) and the coverage of LTE Mobile broadband[3] (94

[3] In telecommunication, Long-Term Evolution (LTE) is a standard for high-speed wireless communication for mobile phones and data terminals, based on the Global System for Mobile (GSM) / Enhanced Data (rates for) GSM Evolution (EDGE) and Universal Mobile Telecommunications System (UMTS) / High Speed Packet Access (HSPA) technologies. It increases the capacity and speed using a different radio interface together with core network improvements. (Wikipedia)

per cent *vs.* 79 per cent). Notwithstanding, the report also details that Portugal is still relatively behind the European Union (EU) average in the penetration of mobile broadband networks (46 per cent *vs.* 72 per cent).

The continuous expansion of Internet banking and m-banking in Portugal should contribute to improve noticeably the access to financial services, by offering services that are, concurrently, more affordable and more suited to the prospective customers, particularly to that segment of the so-called "marginally banked" (*i.e.*, people with a deposit account that have no electronic payment facilities and no payment card or cheque book) and for those who have a bank account but rarely use the related electronic payment facilities and cards.

In view of the above, it is safe to say that the Portuguese retail payment system is widely recognised today as a highly developed system, in terms of technology, accessibility, time-saving features and nationwide coverage. The system processes millions of operations on a daily basis, both counter-based at thousands of bank branches and electronically through the ATM / POS system. Finally, its overall quality can be recognised by what is in relative terms a very small number of complaints on the part of the banks' clientele.

3. The role of the Banco de Portugal as provider of financial services

Banco de Portugal is the Portuguese central bank and is an integral part of the European System of Central Banks (ESCB). As such, it pursues the objectives and participates in the performance of the tasks entrusted to the ESCB, particularly the maintenance of price stability, which is viewed as a pre-condition for increasing economic welfare and the growth potential of an economy. The *Banco de Portugal* is also accountable for the efficient and safe functioning of the country's payment systems – including the issue of banknotes and clearing services –, an essential condition for the sound operation of the economy. In addition, the *Banco de Portugal* provides a wide range of services to the banks – *e.g.*, the running of the Central Credit Register (including the centralization of information on protested bills and on cheque defaulters) – and to the non-financial companies – *e.g.*, the maintenance of its Central Balance-Sheet Data Office and the production of specific sectoral studies. Moreover, the *Banco de Portugal* supervises the resident credit institutions and other financial companies, thus providing for the stability and the soundness of the financial system and ensuring the efficiency of its operation, the safety of deposits and of depositors and the protection of consumers of financial services. Also, *Banco de Portugal* regulates, oversees and sanctions the conduct of credit institutions, financial companies, payment institutions and electronic money institutions offering retail banking products and services. It also promotes the financial information and education of bank customers. Last but not least, another service provided by the *Banco de Portugal* to the community includes the compilation, analysis and dissemination of monetary, financial, exchange and balance-of-payments statistics, which are instrumental to decision-making and, in this way, influence the financial activity in the economy.

Services related with the Central Credit Register

The Central Credit Register (CCR) is a database managed by the *Banco de Portugal* on the basis of credit-related information (including potential liabilities, such as, unused amounts on credit cards and open credit lines) that is supplied by its participants (all resident credit-granting institutions). The main aim of the CCR is to provide information to assist the participants in their appraisal of the risks attached to extending credit. To this end, the participants can assess aggregate information on the credit liabilities of each client *vis-à-vis* the financial system. Moreover, any individual person has the right to be informed about the data recorded in his/her name in the CCR and, where necessary, ask the participant responsible

for the reporting to *Banco de Portugal* to correct and update such information. The *Banco de Portugal* is legally authorised to use the CCR information for: (i) the supervision of credit institutions and other financial companies; (ii) the analysis of the stability of the financial system; (iii) monetary policy operations and intra-daily credit; and (iv) the compilation of official statistics –*e.g.*, on the distribution of credit by branch of activity.

The CCR database fulfils all the requirements for data protection, as laid down by the National Commission for Data Protection.

Banco de Portugal ensures the centralisation and the subsequent dissemination throughout the banking system (generally on a daily basis) of credit incidents (protested bills) submitted to the Notary Public Offices by financial institutions, thus providing the financial institutions with additional means to better evaluate the risks of their active operations.

Banco de Portugal is also responsible for checking compliance with the duties assigned to the credit institutions as regards the use of cheques. In particular, *Banco de Portugal* centralises the information reported by credit institutions and discloses through the banking system the list of cheque defaulters.

Services related with the market conduct supervision of credit institutions

In a market characterized by contractual freedom and financial innovation, it is incumbent upon the *Banco de Portugal* to check for compliance with the minimum requirements of information to customers on the financial conditions applied to the different operations and services, as well as on the respective risks – a mission that will hereafter refer to as banking conduct supervision, as opposed to prudential supervision, which is more focused on guaranteeing the soundness of financial undertakings and contributing to the stability of the financial system. Informed decision-making by the banks' clientele, especially aware of the risks inherent to financial products and services, is a key requirement to the efficient operation of the retail financial markets and to mitigate the level of risk in the financial system. Indeed, the disclosure by credit institutions of relevant information concerning their products and services, in a transparent, intelligible and standardised way, promotes such decision-making. However, the dissemination of information along those lines may not be enough, given that the clients' decisions are also determined by their level of financial literacy. Therefore, it is also necessary to foster financial education among the public at large.

Banco de Portugal's banking conduct supervision is structured on the basis of a number of reciprocally complementing guiding rules, ranging from the requirement for credit institutions to observe the principle of transparency and rigour when informing their clients along the various stages of the marketing of banking products and services, to the development of the normative framework that governs the conduct of credit institutions in the retail financial markets. Concurrently, they include monitoring compliance with regulations – *e.g.*, via surveillance activity related to the commercialization or promotion of financial products and services, by responding to clients' complaints and through comprehensive on-site inspections – as well as fixing cases of non-compliance and, in the most serious situations, applying administrative sanctions. Another guiding principle consists of promoting the quality of the demand for financial products and services, by fostering initiatives that contribute to raising the clients' competences in assessing costs, expected income and risks related to those products and services.

4. Measuring financial inclusion in Portugal

The international financial crisis has highlighted the importance of financial literacy and informed decision making by bank customers as a form of fostering financial inclusion and improving the efficiency and stability of the financial system. In this context, central banks and financial supervisors have attributed increasing importance to initiatives promoting financial literacy and becoming more involved in the definition and implementation of national strategies on financial education. The promotion of financial literacy contributes to foster the benefits of the instruments regulating transparency and duties of information of credit institutions and, therefore, to the more efficient functioning of financial markets. Citizens who are better informed have greater capacity to understand the information that is conveyed to them by the credit institutions, helping, thereby, to monitor the markets. By choosing financial products that are suited to their risk profile and financial needs, bank customers allocate their funds in the most efficient manner and contribute to the stability of the financial system.

In recognition of the importance for the citizens of taking informed and careful decisions in the management of their personal finance, the *Banco de Portugal* decided, in 2010 and in 2015, to carry out a Survey on the Financial Literacy of the Portuguese Population, taking into account the principles and best practices adopted internationally. The Survey was structured so as to enable obtaining information about the financial attitudes, behaviour and level of understanding of financial matters by the population. Through the assessment of the various dimensions of the concept of financial literacy, the Survey contributes towards identifying the population groups and financial topics with the most significant gaps in terms of literacy. This represents an important means of diagnosis of the degree of financial literacy of the population and, as such, is an indispensable step towards the definition of financial education priorities.

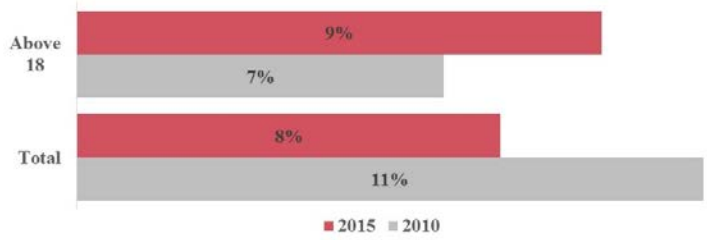
Outcome of the Survey

The results shown by the 2015 Survey are positive with respect to financial inclusion, where the degree of use of the banking system by the population is particularly high, and show a gradual improvement when compared to the results of the 2010 survey. This is also an important indicator of social integration, which compares very favourably in international terms. The degree of financial inclusion, ascertained namely through the percentage of citizens with access to a bank account, is in line with that of other developed countries. Likewise, the data on the use of electronic means of payment confirms the importance that bank customers in Portugal attribute to electronic currency.

Inclusion in the banking system

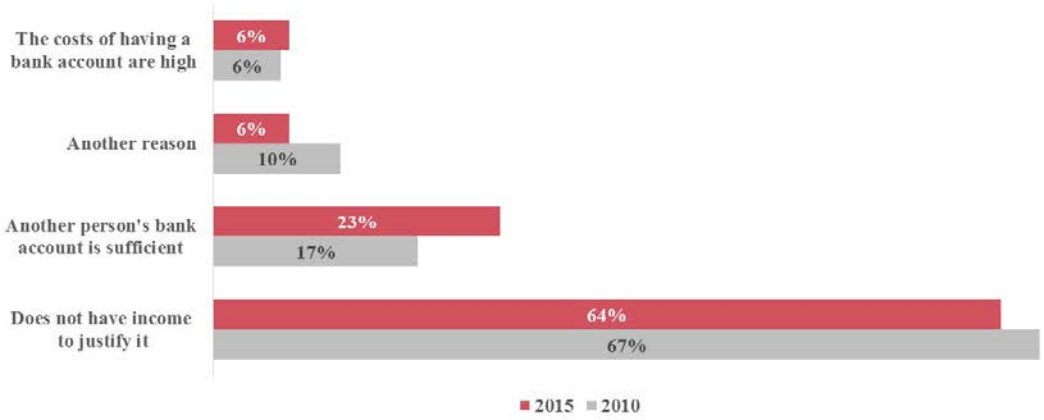
In 2015, approximately 9 per cent of the respondents did not hold a current account, which represented an increase of around 2 percentage points when compared with the record of 2010. However, when we consider only the interviewees above the age of 18, the percentage of those without a current account falls to 6,5 per cent, thus representing only a reduction of 1 percentage point since 2010. Moreover, in 2015, 55,3 per cent of the total of respondents who do not have a current account were aged 16 and 17 or over 70, as opposed to 50 per cent in 2010.

Figure 4 – Percentage of interviewees without a current account



As the reason for not having a current account, 64,2 per cent of the individuals indicated that their income was insufficient to justify it – which represented an improvement of 3,2 percentage points when compared to 2010 – and 23,4 per cent referred that another person's account was sufficient – an increase of 6,7 percentage points since 2010.

Figure 5 – Reasons for not having a current account



Holding of a bank account

For the interviewees with a bank account, the average number of accounts recorded in 2015 was 1,3, slightly below the average registered in 2010 (1,4 accounts). Approximately 74 per cent of those who have a bank account have only one account, account and 23 per cent hold two accounts. Moreover, it was found that 57,5 per cent stated using the account more than once a week and that the number of bank accounts and the frequency of their use were positively correlated with the schooling (and income) level. This latter result derives from the positive relationship between these two last indicators.

Figure 6 – Number of bank accounts

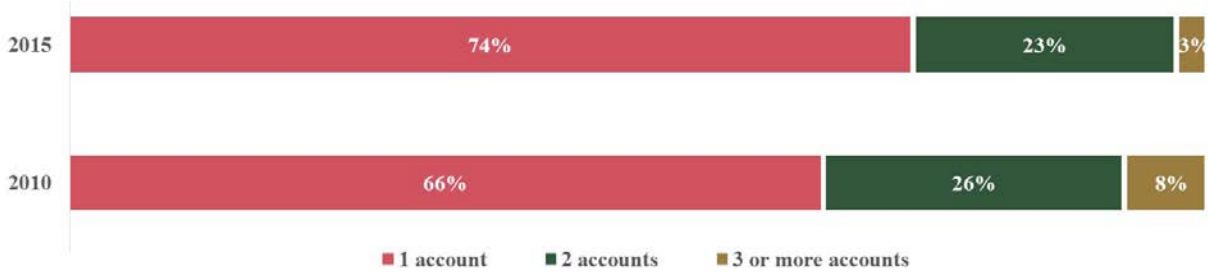
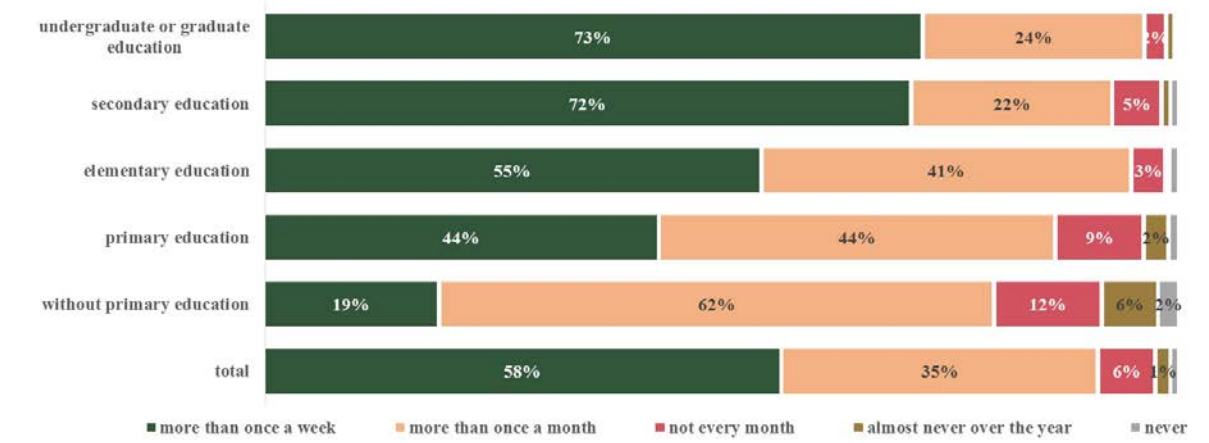


Figure 7 – Frequency of the use of bank accounts, by education

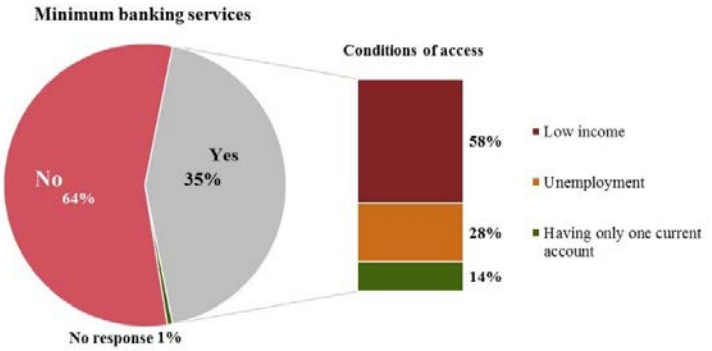


Access to minimum banking services

The minimum banking services system promotes financial inclusion, by enabling access to a current account and respective debit card, with annual costs not above 1 per cent of the guaranteed minimum monthly remuneration. In order to have an account under this system, customers are merely required not to have another bank account.

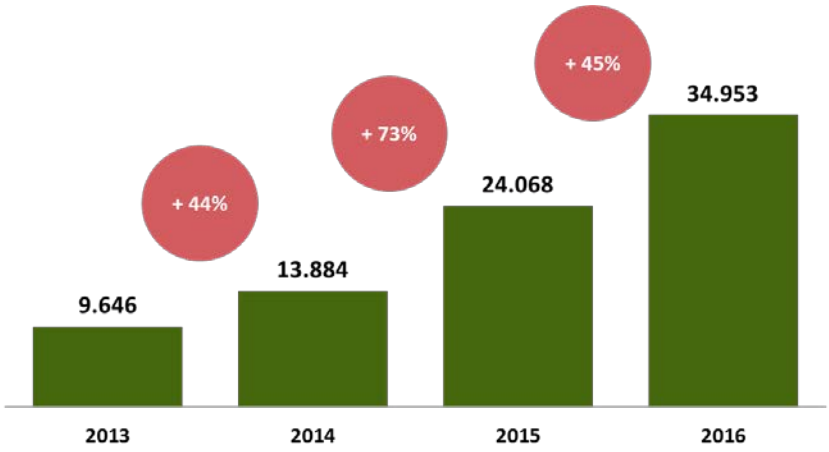
The degree of information on this right is still somewhat low, since 63,7 per cent of the respondents stated not knowing of its existence and the related access conditions, which, nevertheless, represents a positive improvement when compared to the same response rate in 2010 (71 per cent).

Figure 8 – Knowledge of minimum banking services and related conditions



Of the respondents who stated knowing the minimum banking services (mainly individuals with primary or elementary education), only 14 per cent gave the correct answer "having only one current account" when questioned on the conditions of access to this system. This leads to the conclusion that only 5per cent of the total respondents actually revealed knowing what are the minimum banking services, which, albeit is a seemingly low result, is already a great improvement since 2010, when only 1,4 percent of the interviewees knew what were minimum banking services. Indeed, this improvement has also been translated through the steep growth of the number of accounts of minimum banking services, given than, only in the past four years, the number of such accounts has more than tripled.

Figure 9 – Evolution of the number of minimum banking services accounts



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Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

Assessing financial inclusion in Portugal from the central bank's perspective[1]

João Cadete de Matos,
Bank of Portugal

[1] This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Assessing financial inclusion in Portugal from the central bank's perspective

BANCO DE PORTUGAL
EUROSYSTEM

João Cadete de Matos

Director • Statistics Department

IFC – Bank Al Maghrib Satellite Seminar on Financial Inclusion

Marrakech, Morocco | 14 July 2017

AGENDA

1 Motivation

2 The provision of financial services in Portugal

3 The role of the *Banco de Portugal* as a provider of financial services

4 Measuring financial inclusion in Portugal

5 Conclusions

MOTIVATION

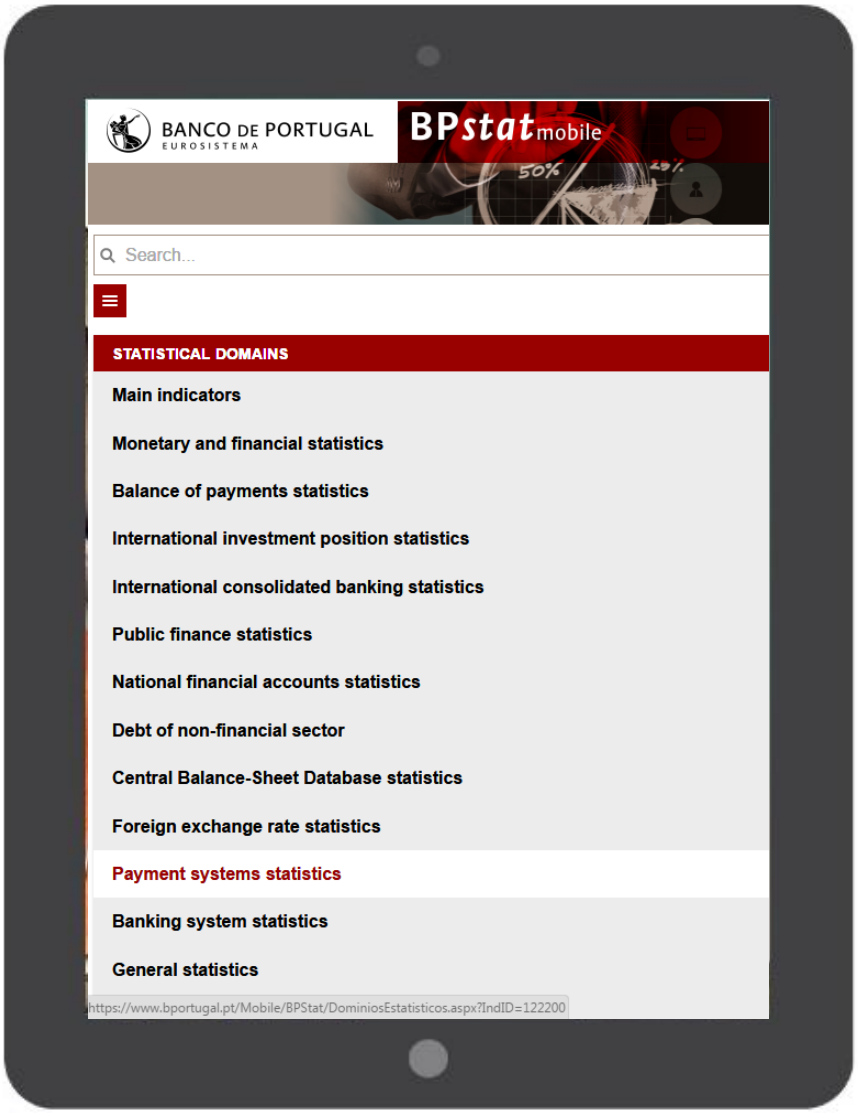
FINANCIAL INCLUSION

The ability of individuals or enterprises to **obtain formal financial services appropriate to their needs**

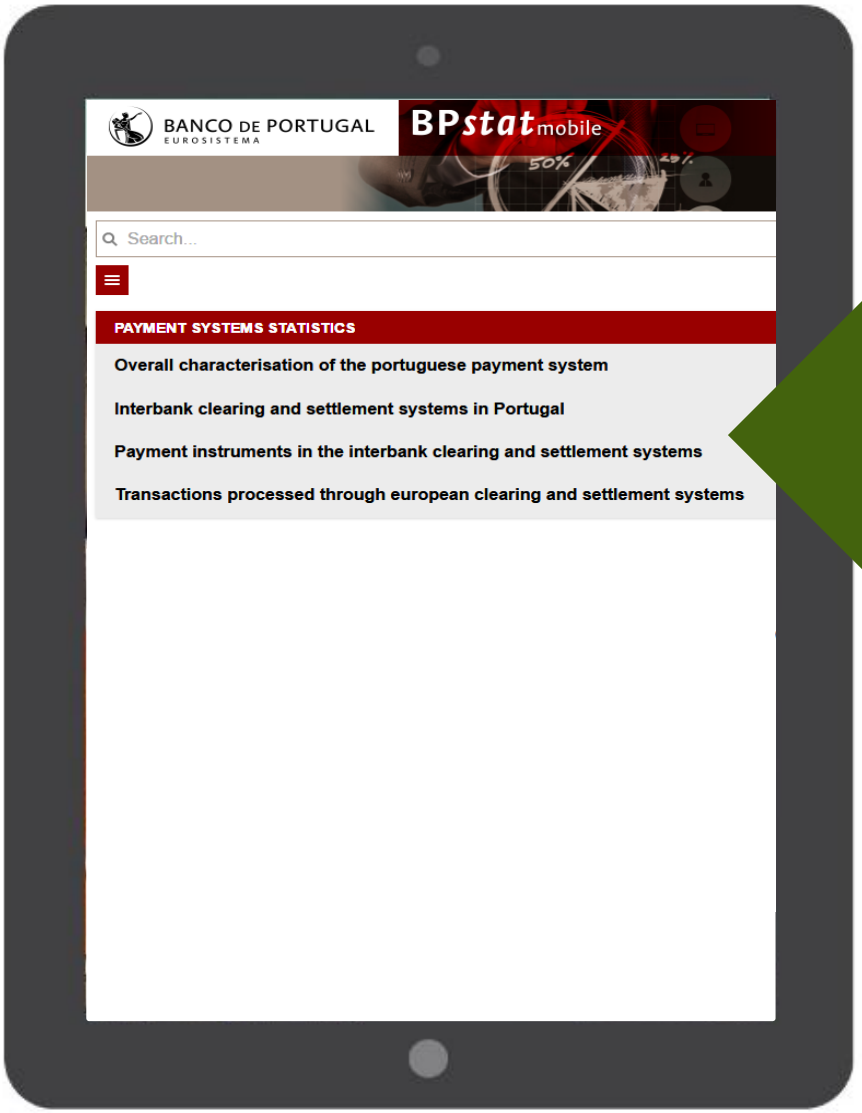
In 2010, more than **2 BILLION** adults **didn't have access to financial services** (ATISG*, 2010)

MAJOR CHALLENGE FOR CENTRAL BANKS AND POLICY MAKERS WORLDWIDE

*ATISG: Access through Innovation Sub-Group of the G-20 Financial Inclusion Experts Group



HOW CAN THE *BANCO DE PORTUGAL* HELP POLICY-MAKERS IN ADDRESSING THIS CHALLENGE?



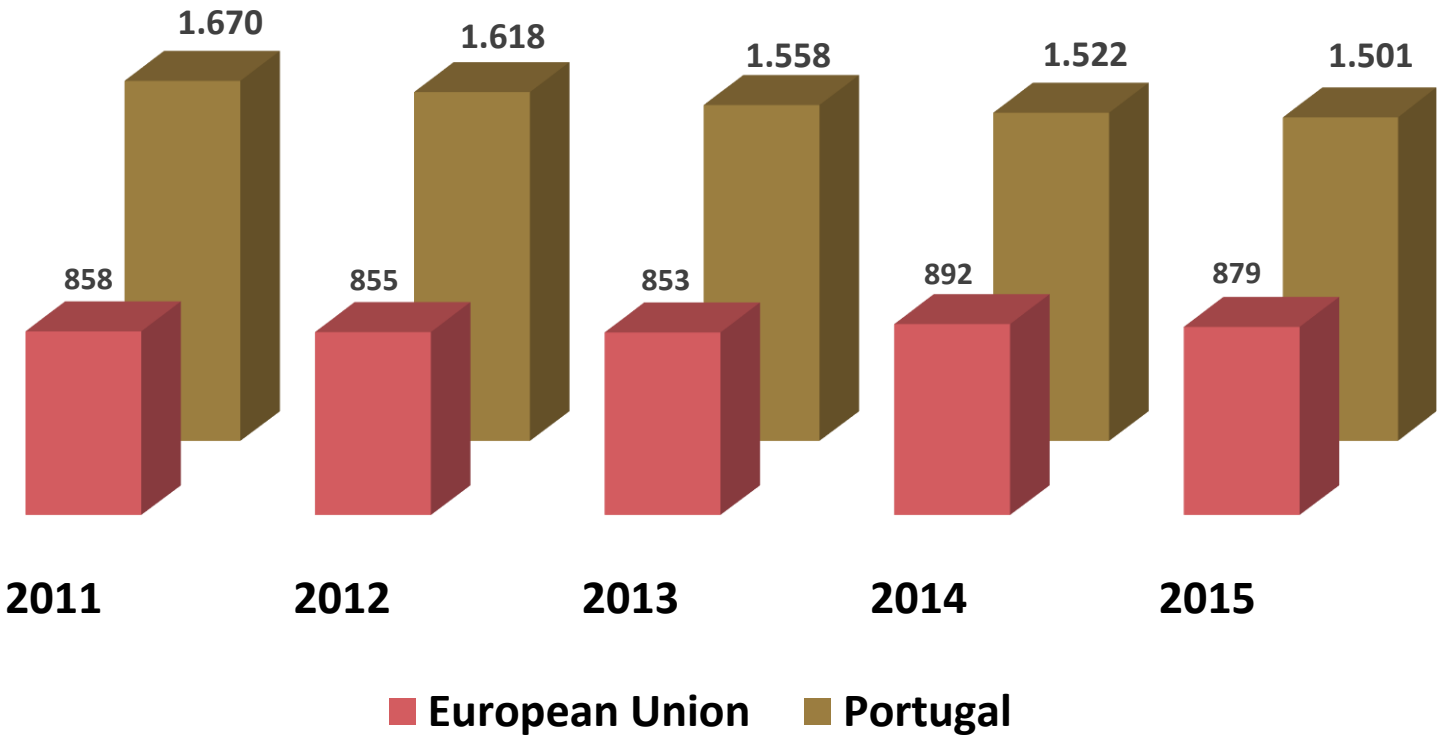
These data can be used to monitor the provision of financial services in Portugal

HOW CAN THE *BANCO DE PORTUGAL* HELP POLICY-MAKERS IN ADDRESSING THIS CHALLENGE?

THE PROVISION OF FINANCIAL SERVICES IN PORTUGAL

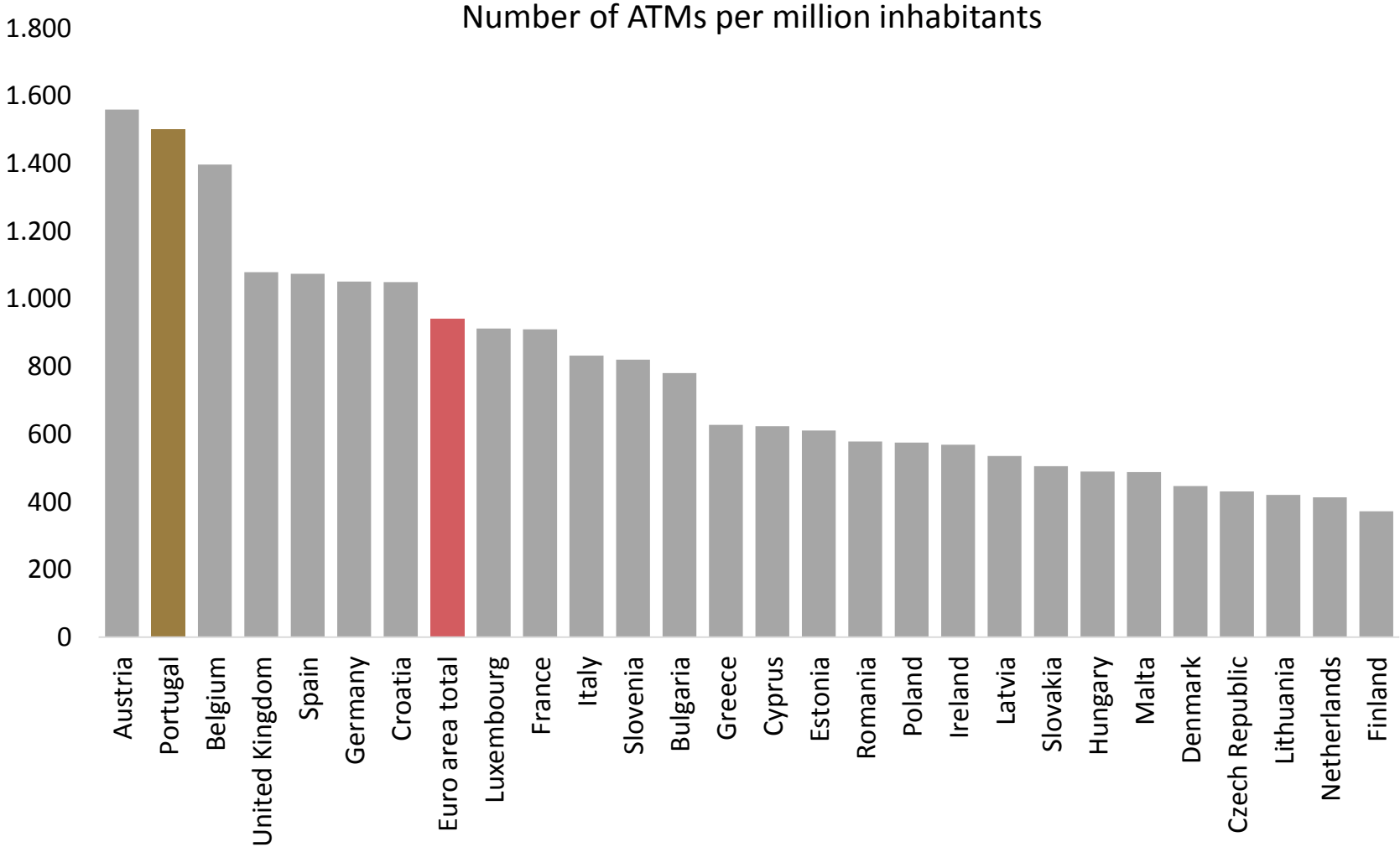
ATM DEMOGRAPHIC COVERAGE

Number of ATMs per million inhabitants



ATM DEMOGRAPHIC COVERAGE IN 2015

Number of ATMs per million inhabitants



And why is that? … The role of MULTIBANCO

The ability of individuals or enterprises to **obtain formal financial services appropriate to their needs**

In addition to cash operations, it offers a wide range of more than 60 different services (*e.g.*, money transfers, payments for utilities bills, payments to the State and the Social Security, mobile phone top-ups, transport ticketing, event booking and ticketing, …)

"Portugal's ATMs are among the most high functional of Western Europe. A wide range of unusual facilities are also available (…). ATMs are also advanced in terms of hardware features."

RETAIL BANKING RESEARCH BULLETIN

"Portugal's MULTIBANCO system is acknowledged to be one of the most sophisticated and comprehensive in the world."

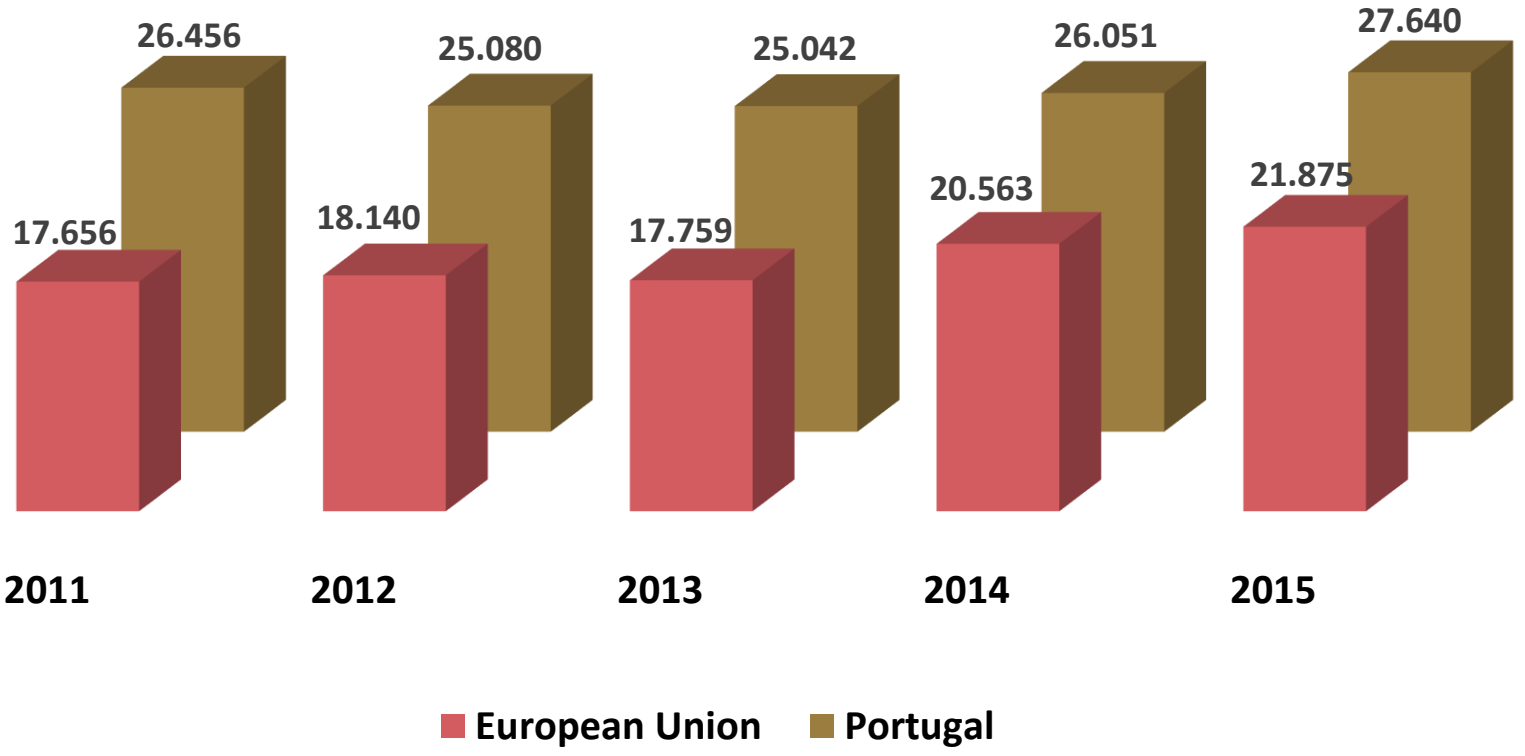
EUROBUSINESS

"… the example of the Portuguese system, SIBS, suggests that greater innovation may arise out of a system where all the processing for a number of payment methods is carried out centrally."

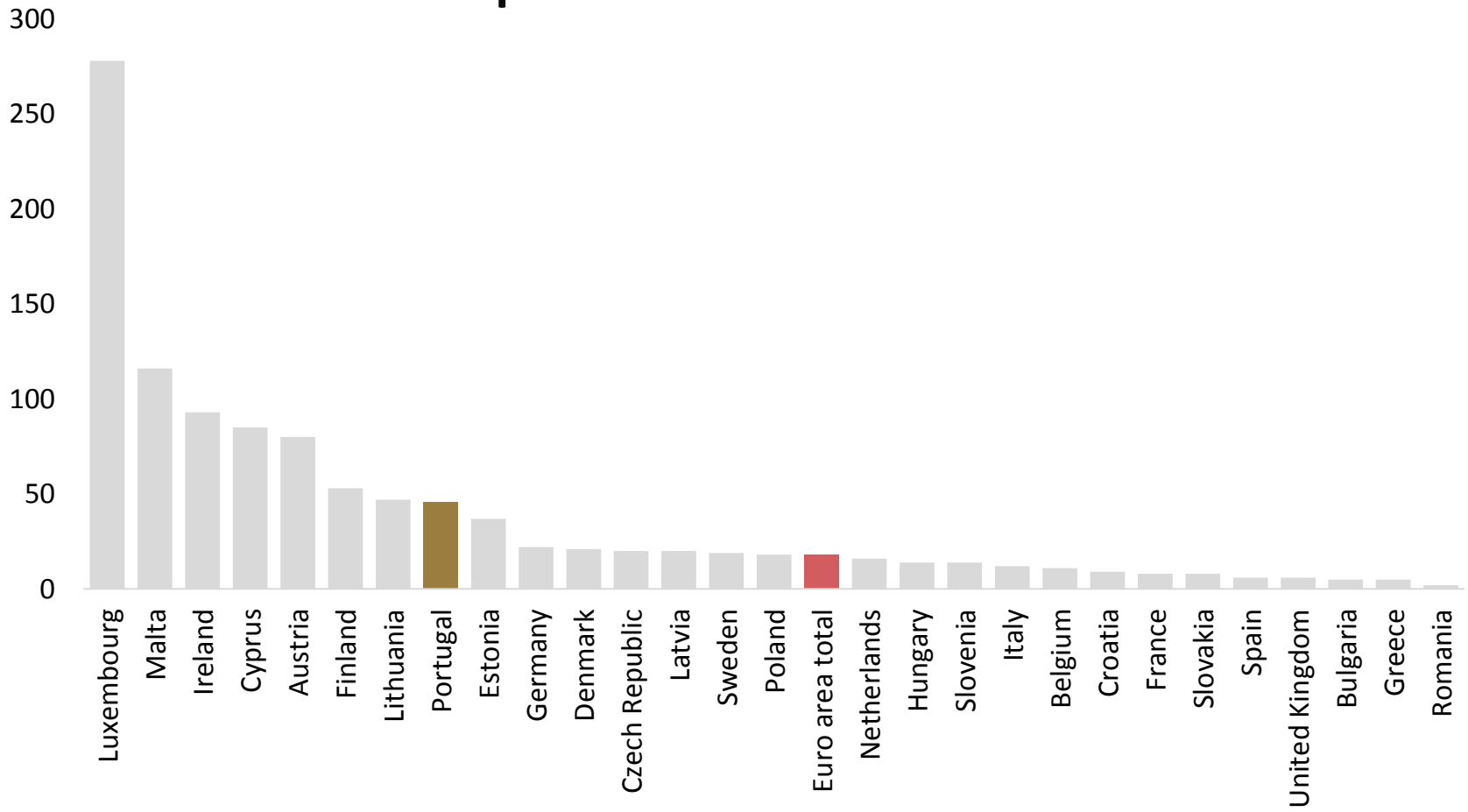
THE OFFICE OF FAIR TRADING

POS DEMOGRAPHIC COVERAGE

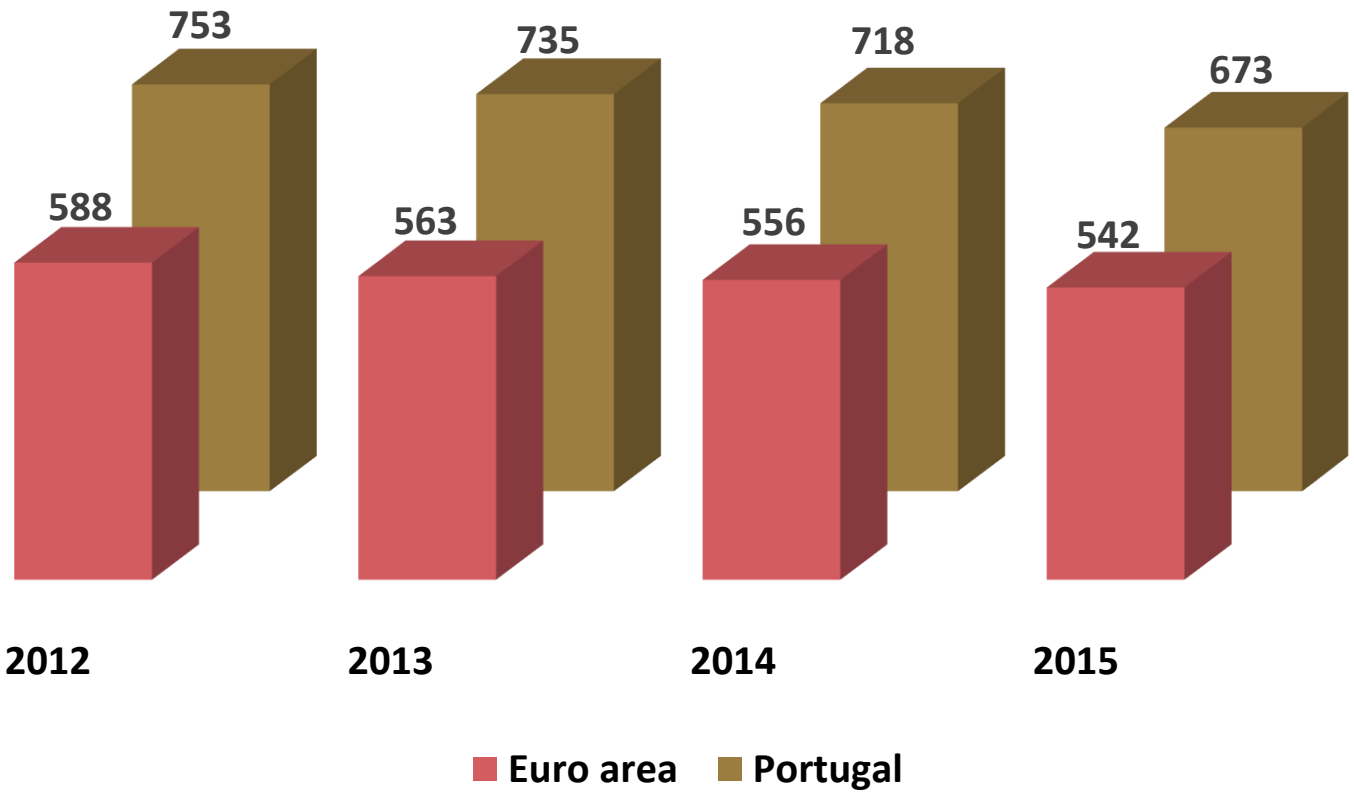
Thousands per million inhabitants



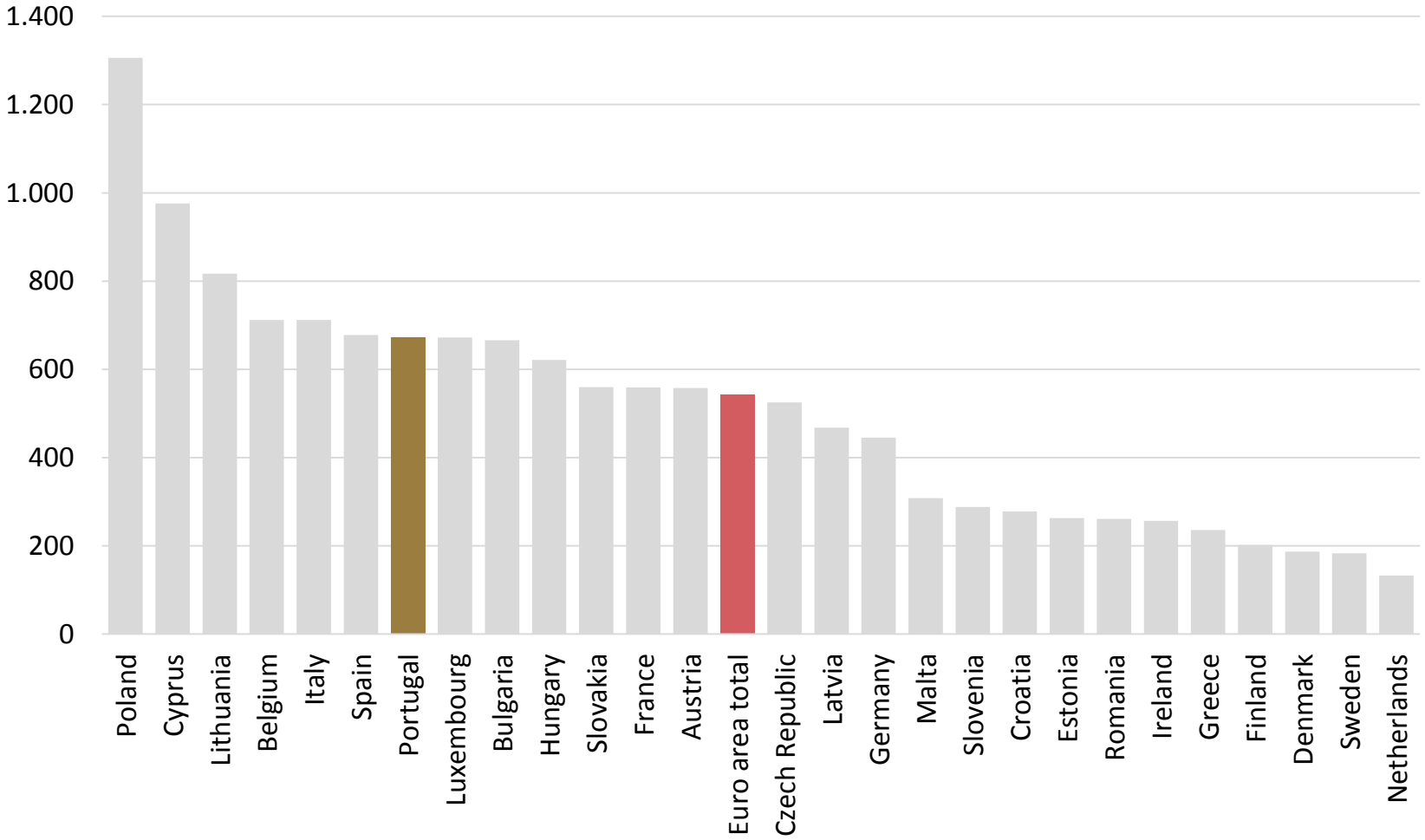
Number of institutions offering payment services per million inhabitant in 2015



Number of offices of institutions offering payment services per million inhabitant in 2015

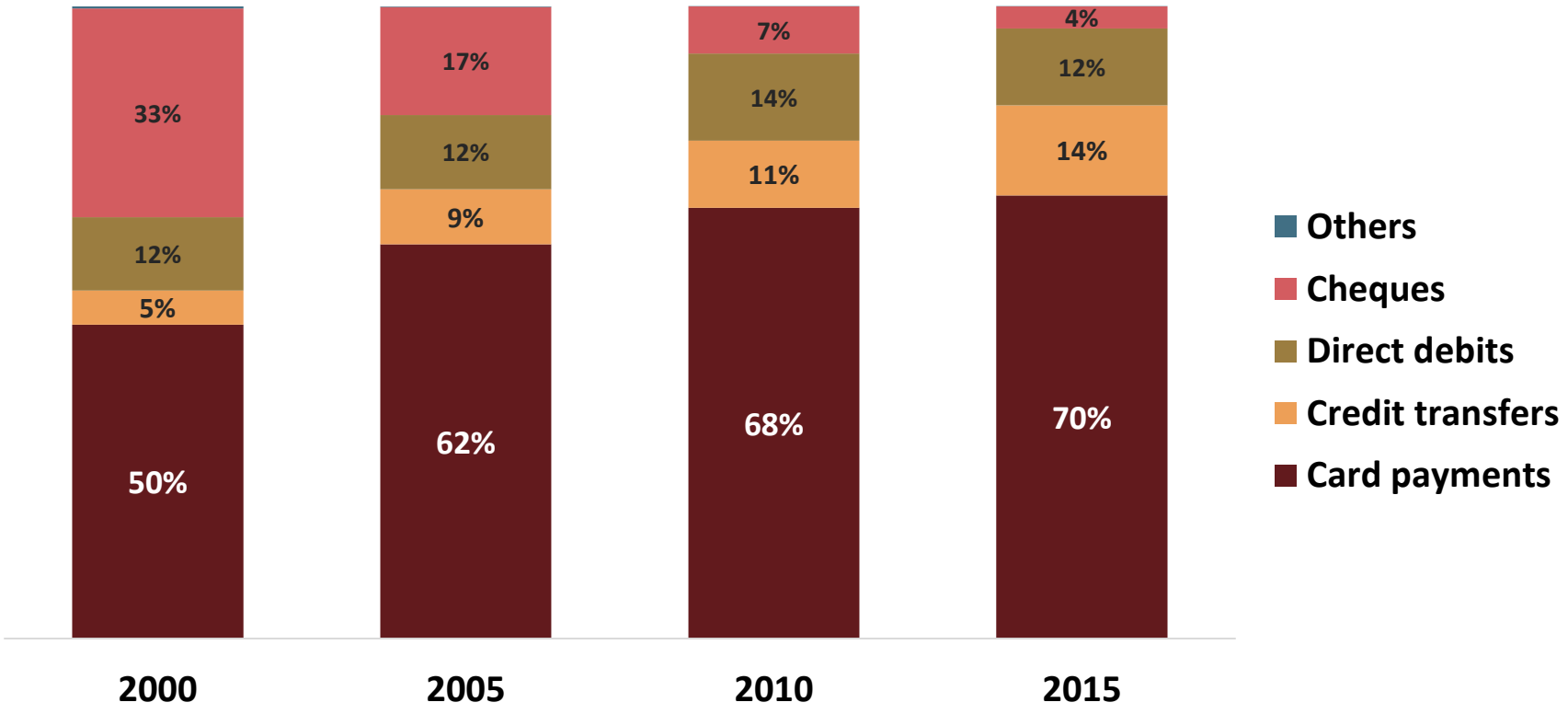


Number of offices of institutions offering payment services per million inhabitant in 2015



TRANSACTIONS PER TYPE OF PAYMENT SERVICE

Portugal 2000-2015



THE ROLE OF THE *BANCO DE PORTUGAL* AS A PROVIDER OF FINANCIAL SERVICES

BANKING CONDUCT SUPERVISION

Banco de Portugal promotes the **financial information and education of bank customers**, complementing the regulation and oversight of the retail banking markets.

HOW? By providing…

- useful information on banking products and services
- simulators
- glossary of financial terms
- answers to frequently asked questions

WHERE? Bank Costumer Portal

clientebancario.bportugal.pt

THE CENTRAL CREDIT REGISTER (CCR)

Database managed by *Banco de Portugal*.

Registers information supplied by reporting institutions (institutions that grant loans) concerning the credit liabilities of their clients (individuals and organizations)

MAIN PURPOSE

To support credit institutions when EVALUATING THE RISK of granting credit to the economic agents (allowing them to obtain information on the aggregated indebtedness of their clients or any individual / organization asking for a loan).

DATA REPORTED

Loans outstanding granted to households and corporations by type and purpose

- Potential loans
- Securitised loans
- Type and value of collateral or guarantee
- Original and residual maturity
- Credit defaults
- Country where the loan was granted
- etc

THE PORTUGUESE CCR: SOME FIGURES

20 million
records monthly

6 million
private individuals

292 thousand
corporations

186
reporting agents

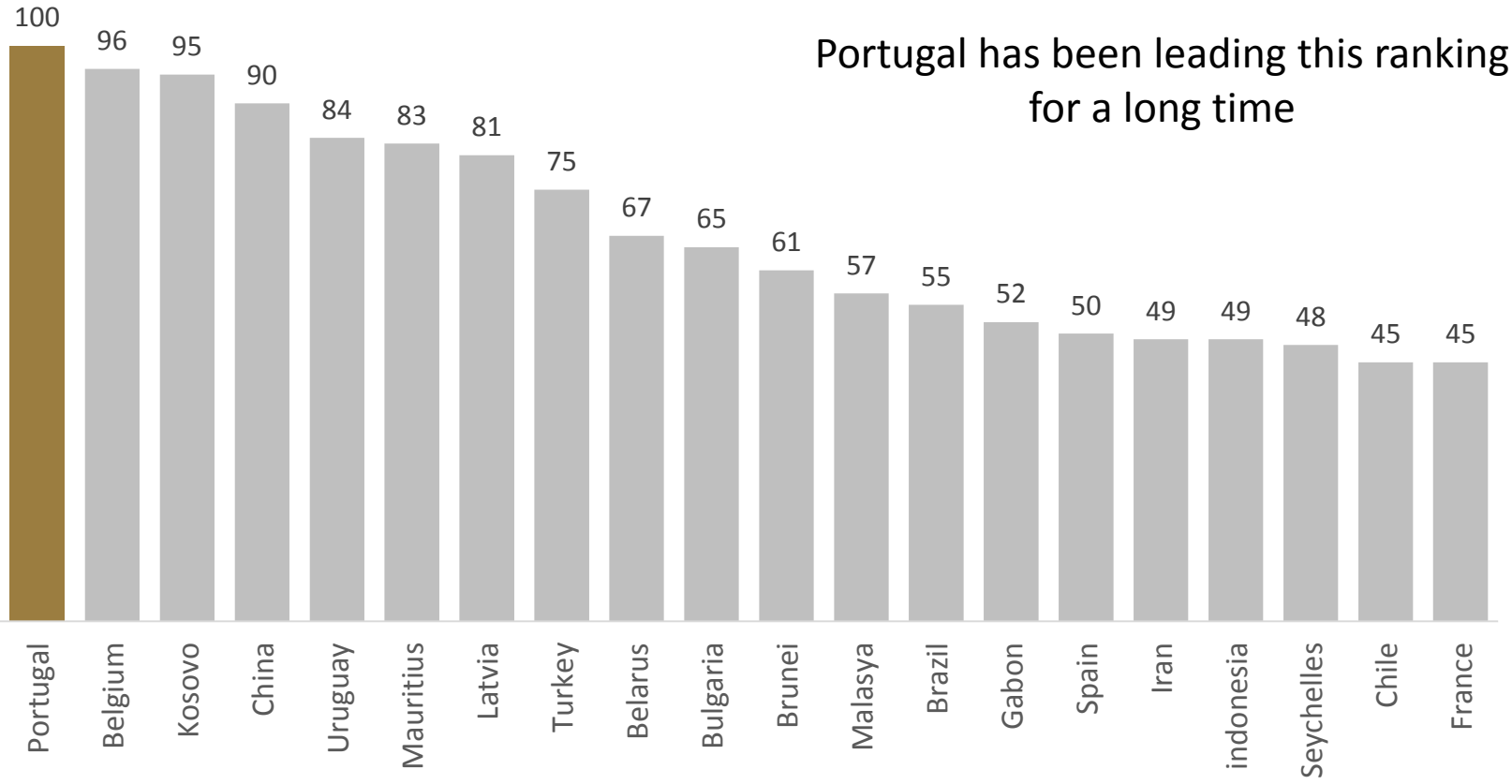
50€
threshold

15
different types of loans

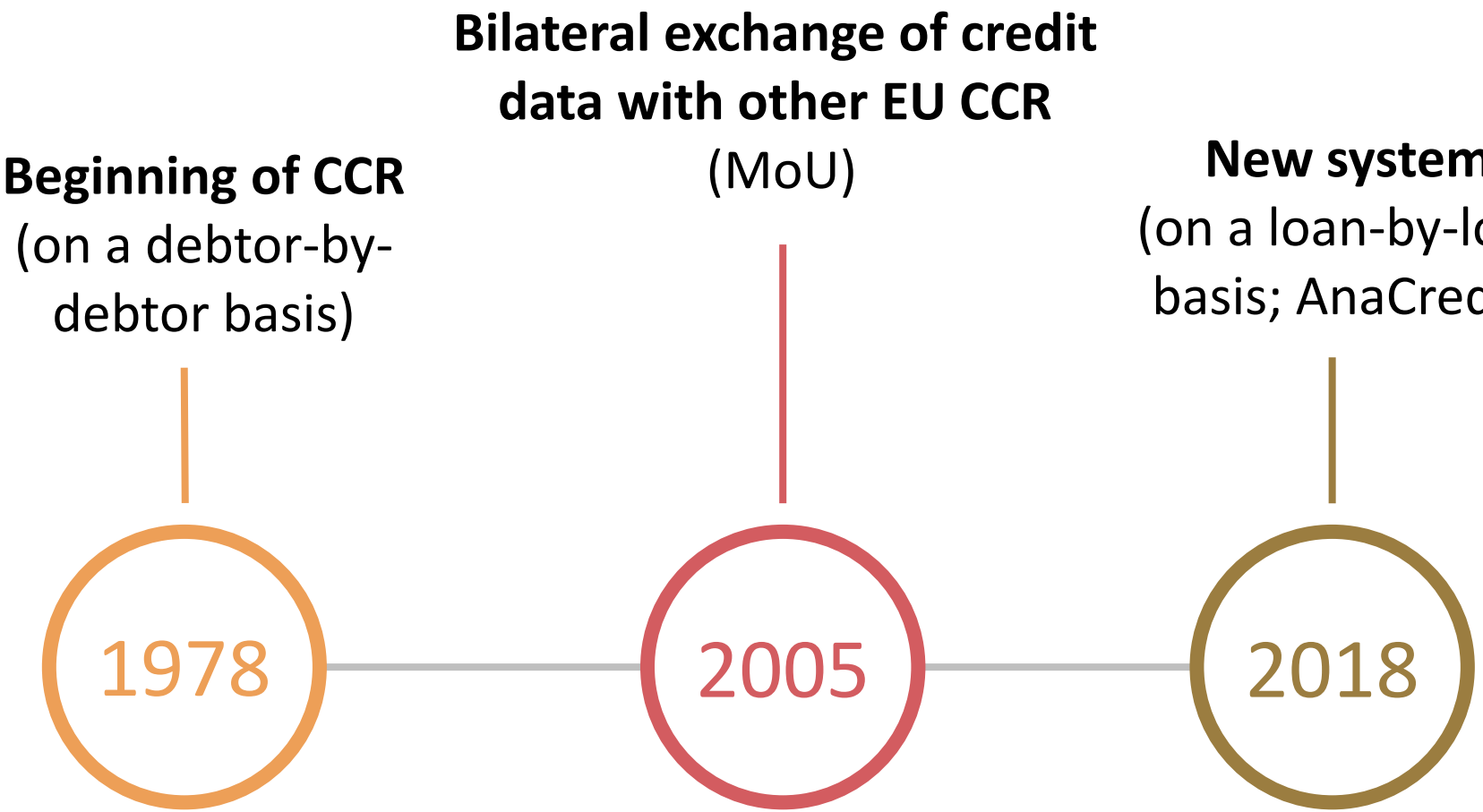
6 working days deadline

CENTRAL CREDIT REGISTER COVERAGE RATE

as % of adult population

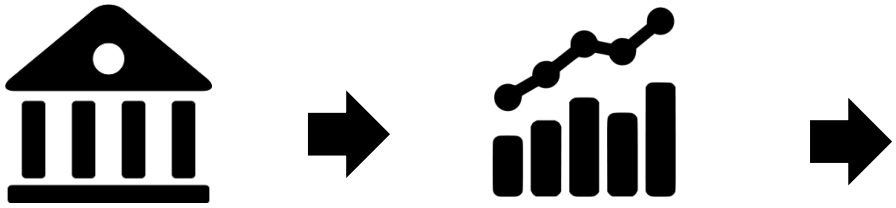


Portugal has been leading this ranking for a long time


Beginning of CCR
(on a debtor-by-debtor basis)
1978
Bilateral exchange of credit data with other EU CCR
(MoU)
2005
New system
(on a loan-by-loan basis; AnaCredit)
2018

THE PORTUGUESE CCR: THE WAY FORWARD

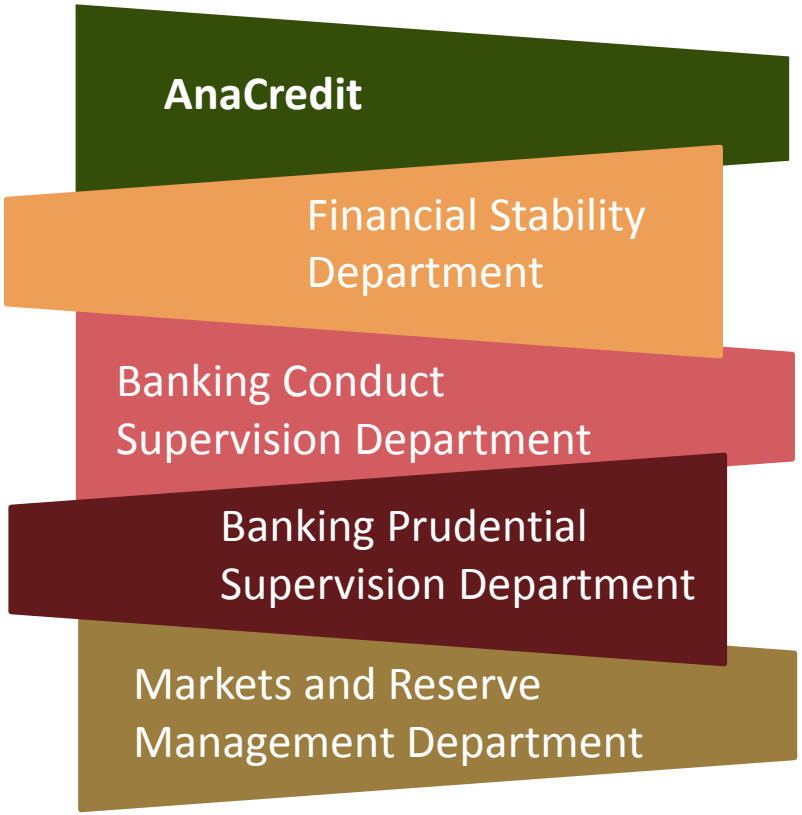
Transmission of information on loans: New CCR (2018)



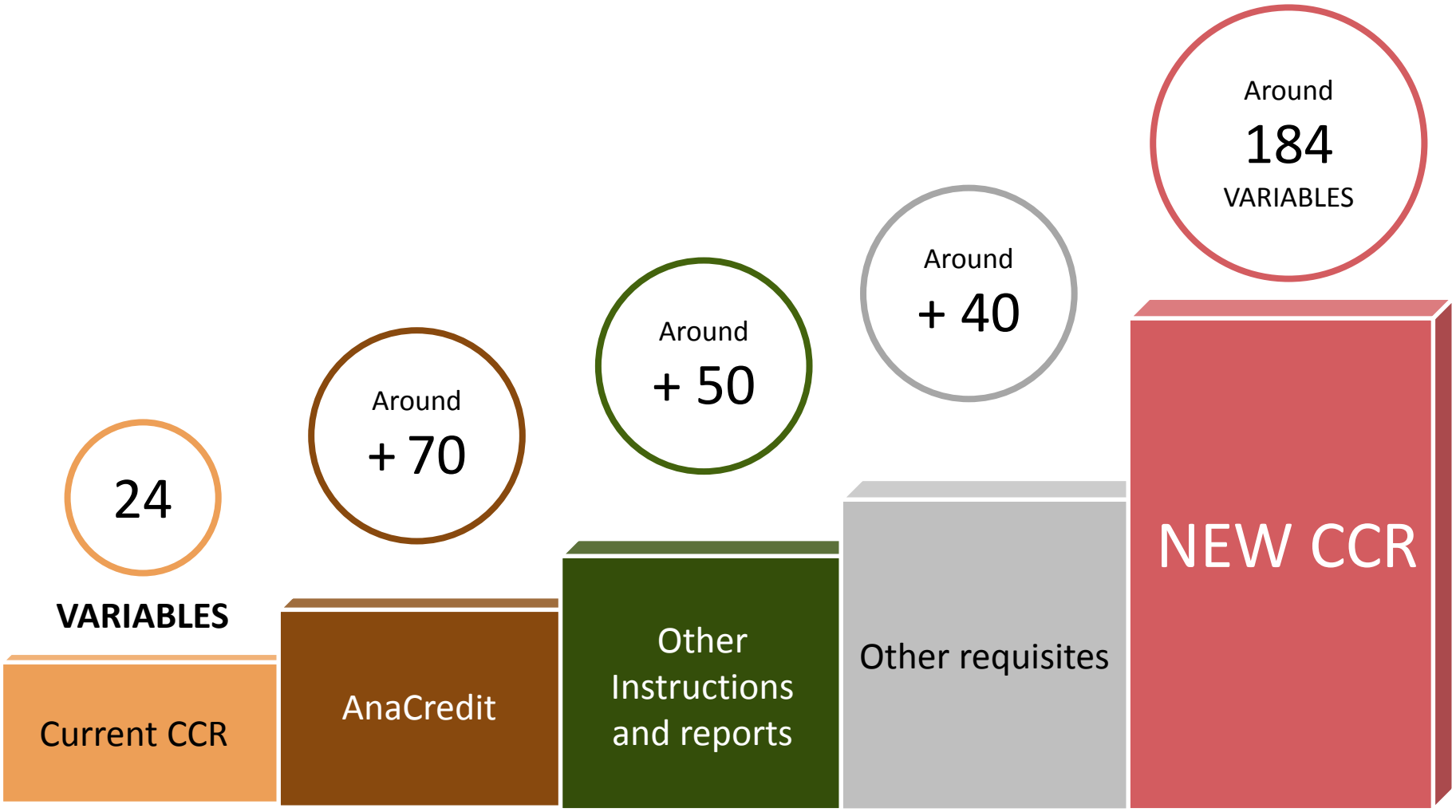
Credit Institutions

Statistics Department
(new CCR, including
MIR on loans)

INTEGRATED MANAGEMENT OF INFORMATION



NEW CCR VARIABLES



MEASURING FINANCIAL INCLUSION IN PORTUGAL

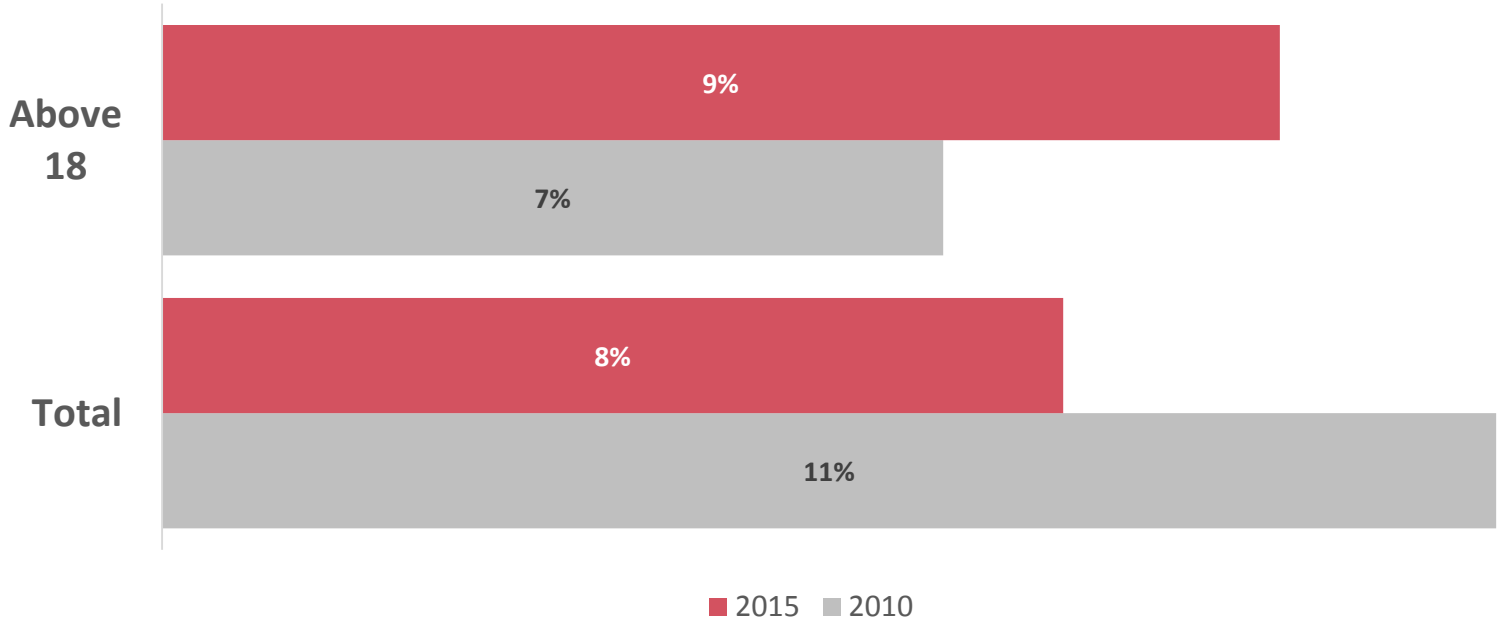
MEASURING FINANCIAL INCLUSION IN PORTUGAL

BANCO DE PORTUGAL CONDUCTED A SURVEY ON THE FINANCIAL LITERACY OF THE PORTUGUESE POPULATION

To acquire information on the financial attitudes, behaviours and on the levels of understanding of financial matters by the population

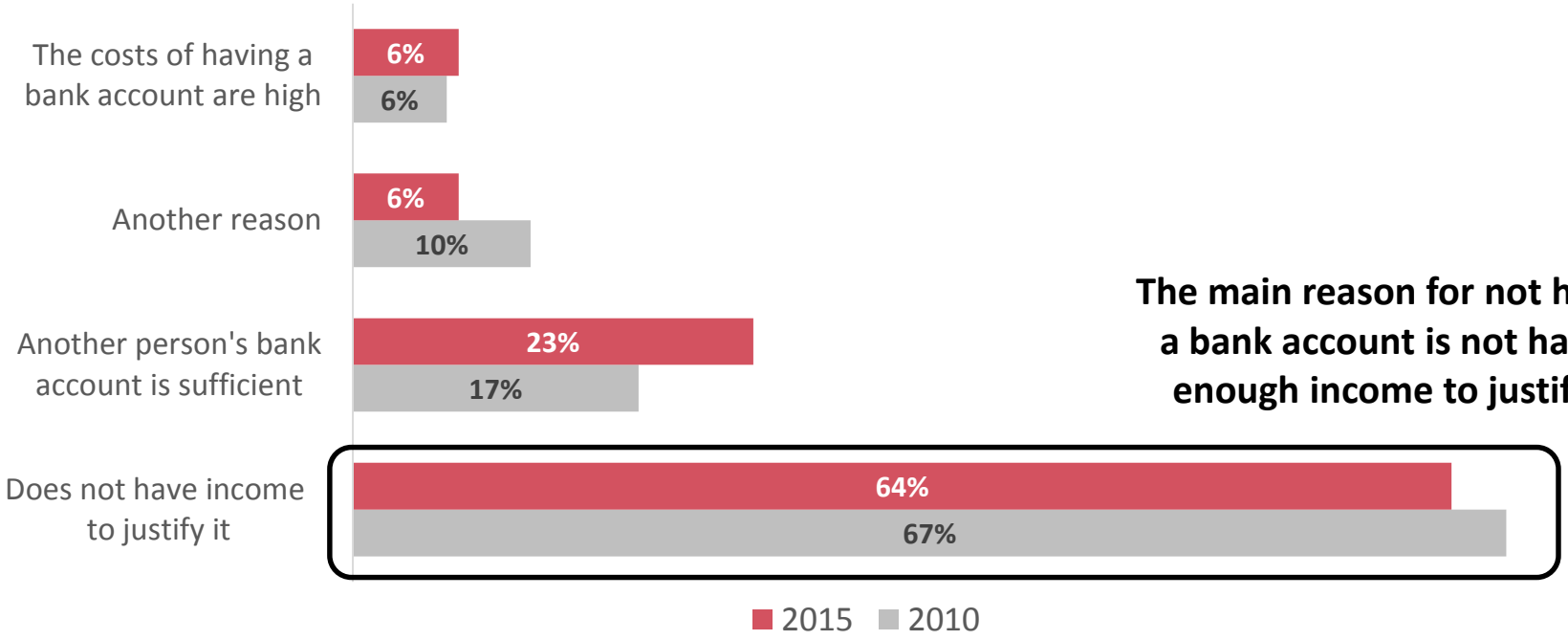
MEASURING FINANCIAL INCLUSION IN PORTUGAL – RESULTS OF THE SURVEY

PERCENTAGE OF INTERVIEWEES WITHOUT A CURRENT ACCOUNT



MEASURING FINANCIAL INCLUSION IN PORTUGAL – RESULTS OF THE SURVEY

REASONS FOR NOT HAVING A BANK ACCOUNT

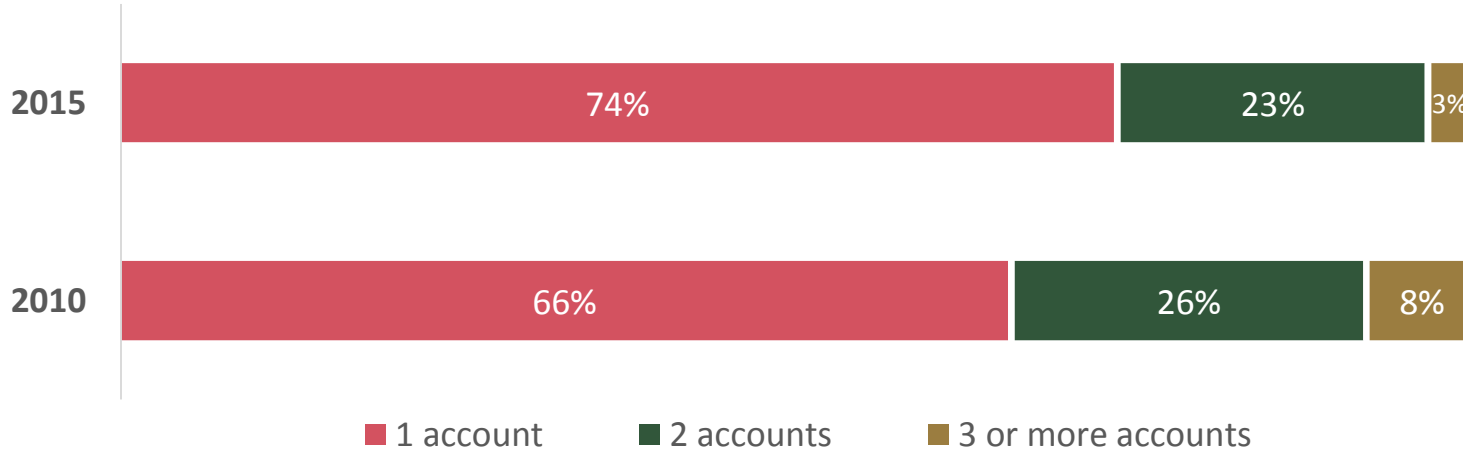


The main reason for not having a bank account is not having enough income to justify it

MEASURING FINANCIAL INCLUSION IN PORTUGAL – RESULTS OF THE SURVEY

For the individuals who have a bank account...

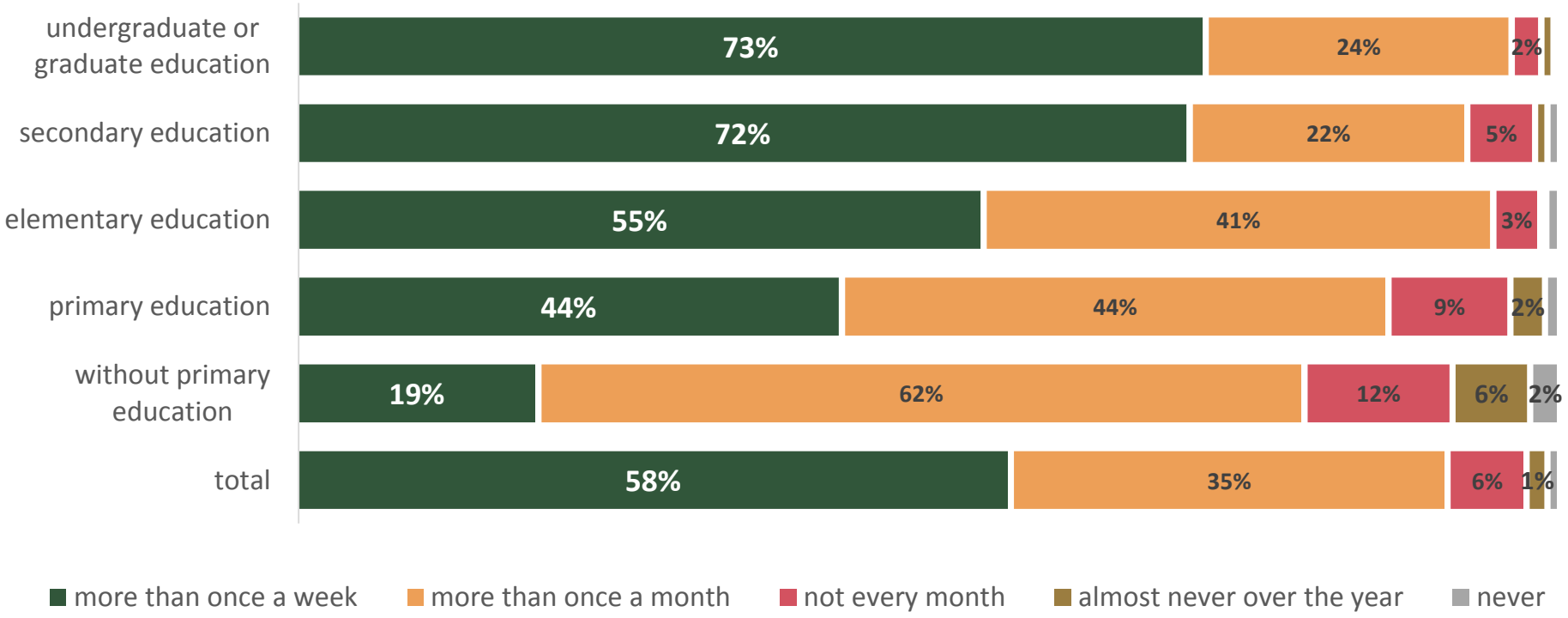
HOW MANY CURRENT ACCOUNTS DO YOU HOLD?



MEASURING FINANCIAL INCLUSION IN PORTUGAL – RESULTS OF THE SURVEY

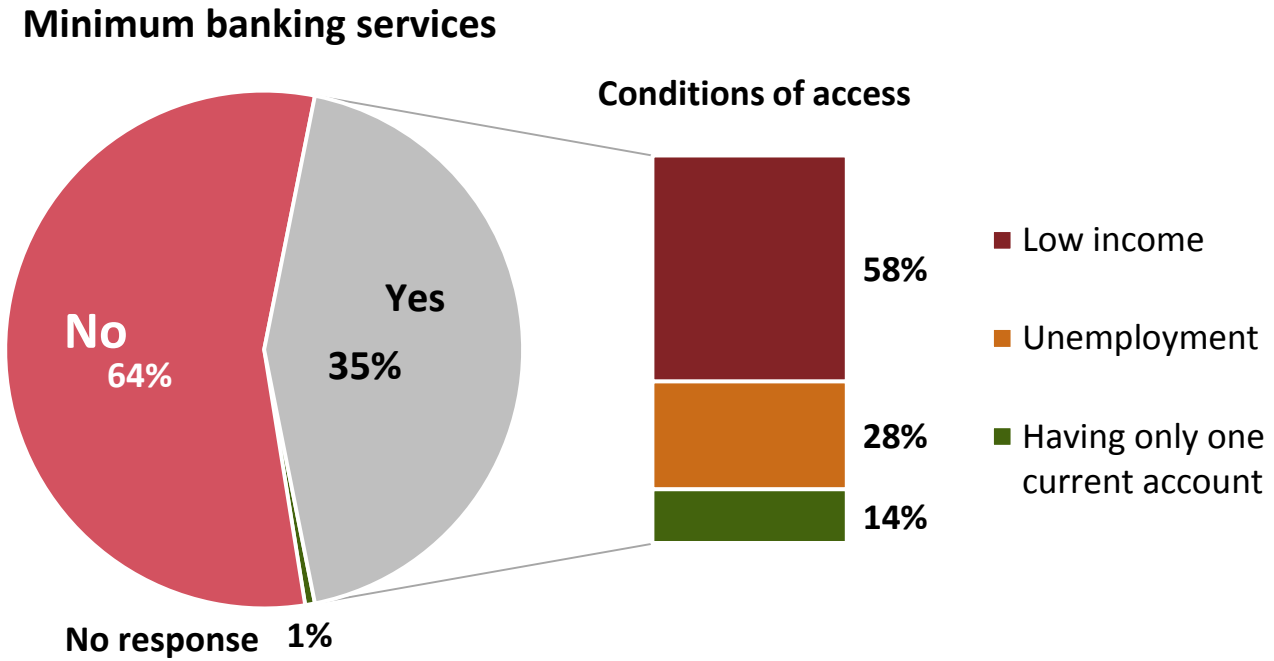
For the individuals who have a bank account...

FREQUENCY OF USE OF BANK ACCOUNT



MEASURING FINANCIAL INCLUSION IN PORTUGAL – RESULTS OF THE SURVEY

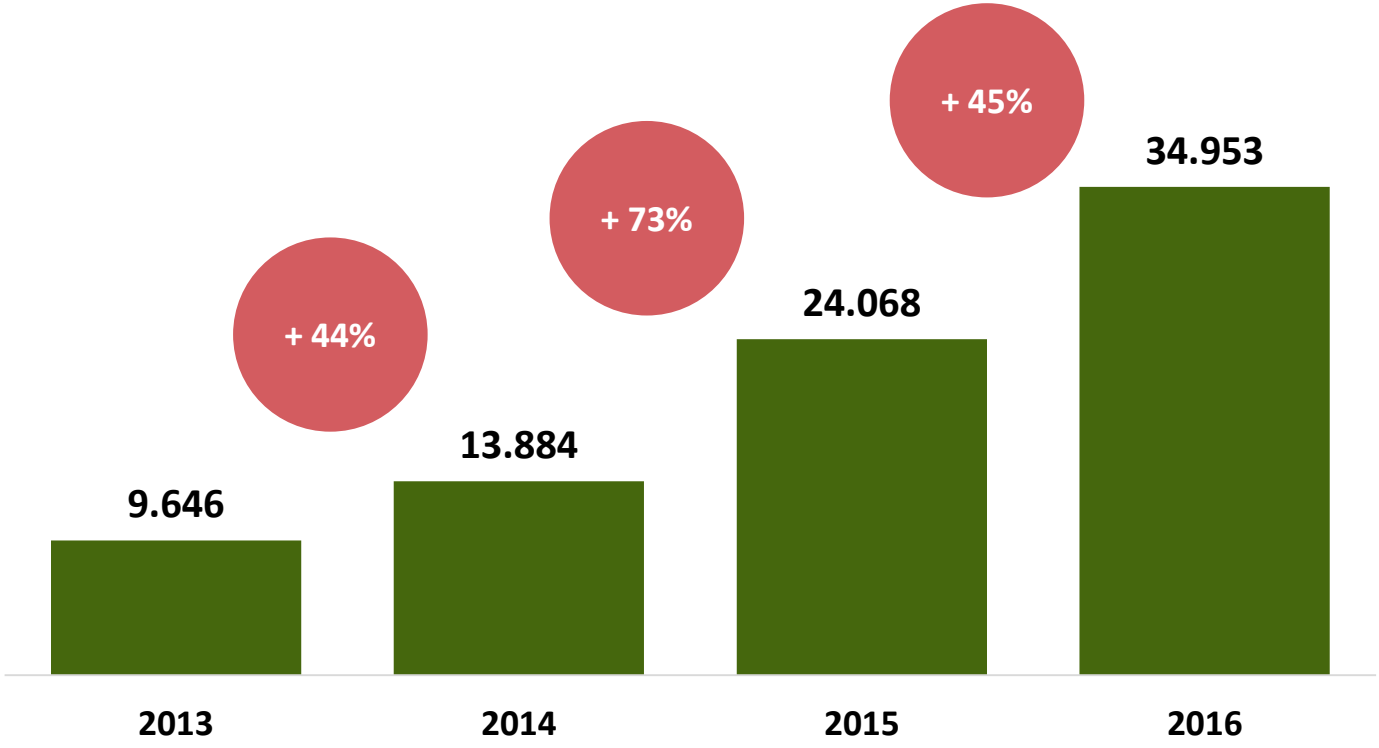
WHAT IS REQUIRED IN ORDER TO ACCESS THE MINIMUM BANKING SERVICES?



MINIMUM BANKING SERVICES: an initiative taken by *Banco de Portugal* to promote financial inclusion

MEASURING FINANCIAL INCLUSION IN PORTUGAL – RESULTS OF THE SURVEY

EVOLUTION OF THE NUMBER OF MINIMUM BANKING SERVICES ACCOUNTS



MINIMUM BANKING SERVICES ACCOUNTS HAVE MORE THAN TRIPLED SINCE 2013!

CONCLUSIONS

PAYMENT STATISTICS are increasingly more **RELEVANT IN EVALUATING THE DEGREE OF FINANCIAL INCLUSION** of an economy and, thus, **CRITICAL FOR POLICYMAKERS AND CENTRAL BANKS**

The **DEVELOPMENT OF COMPREHENSIVE CENTRAL CREDIT REGISTERS** are key to **FOSTER FINANCIAL INCLUSION**, by supporting credit institutions in the assessment of credit risk

Central banks also play an important role as **CONDUCT SUPERVISORS**, by **ADVERTISING BEST PRACTICES** and **MANAGING COMPLAINTS** that encourage credit institutions to promote financially inclusive actions

Despite that the **CURRENT RESULTS ARE ENCOURAGING**, the challenges ahead demand that policymakers and central banks **KEEP FINANCIAL INCLUSION HIGH IN THE AGENDA**

THANK YOU FOR YOUR ATTENTION

jcmatos@bportugal.pt

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

Financial inclusion: scope, organisation and results in France[1]

Jacques Fournier,
Bank of France

[1] This presentation was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Financial inclusion: scope, organisation and results in France

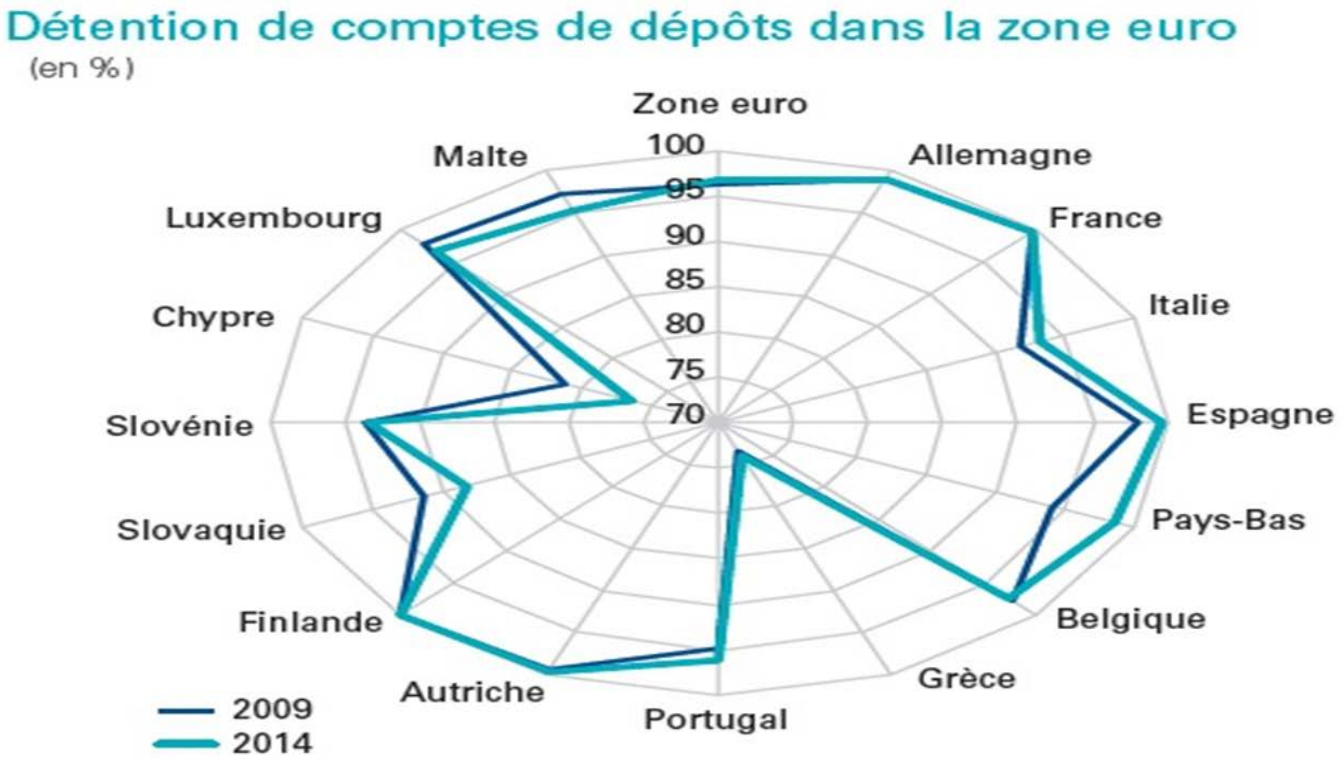
Jacques Fournier, Banque de France

IFC Satellite Seminar on Financial Inclusion Marrakech, 14 juillet 2017

What scope, what definition ?

- In our view, Banking inclusion is a global issue for Aes as for EMEs
- This presentation will focus on an experience in an AE
- In France, financial inclusion is defined as allowing private persons to benefit from sustainable banking products and services adapted to their needs.

Financial inclusion in euro zone: % persons with a bank account



Sources : Banque de France et BCE (HFCS 2009 et 2014).

Financial inclusion :3 basic needs to serve

- Access to a bank account
- Regular use of accounts
- Access to credit

Financial inclusion : What governance

In France, Banking Inclusion Committee (BIC) as of July 2013

- Chaired by the Governor of the Banque de France
- Tripartite membership
  - ✓Six de jure members representing the public authorities
  - ✓ Six representatives from credit institutions
  - ✓ Six representatives from caritative associations

Financial inclusion : becoming part of public statistics

BIC Functions (Banque de France being the operational body):

- **Collecting quantitative and qualitative data**
- **Defining and publishing indicators**
- **Making recommendations**

A few numbers:

- 2,4 millions financially fragile clients (out of a population of 67 million persons)
- 500,000 citizen (aged 18+) without any bank account

⇨ **3 millions financially fragile people**

Concrete action : 3 main ways

- **Right to have a bank account**

Implemented by Banque de France

67 000
designations
in 2016

+ 115 %
between
2008 and 2015

– 3 %
in 2016

- **“Specific offer” for fragile people**

Specific offer:

* reduced fees

* minimal services: 2 bank checks per month, a debit card with pre-authorization, …

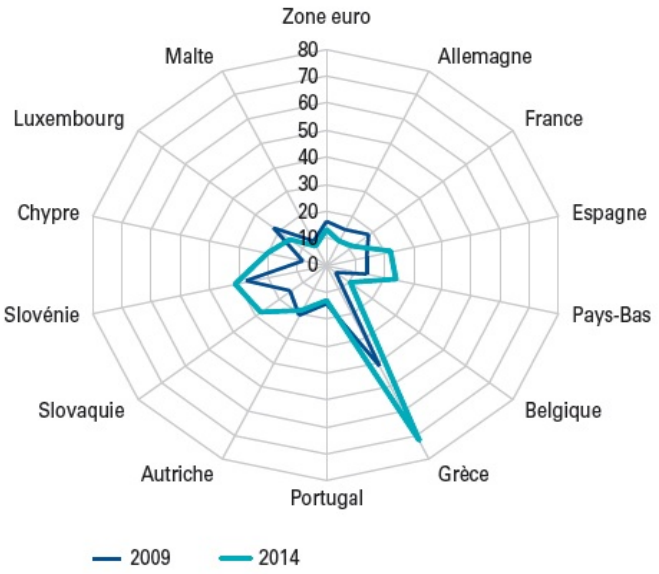
*a specific monitoring by the bank

Access by households to credit in Europe

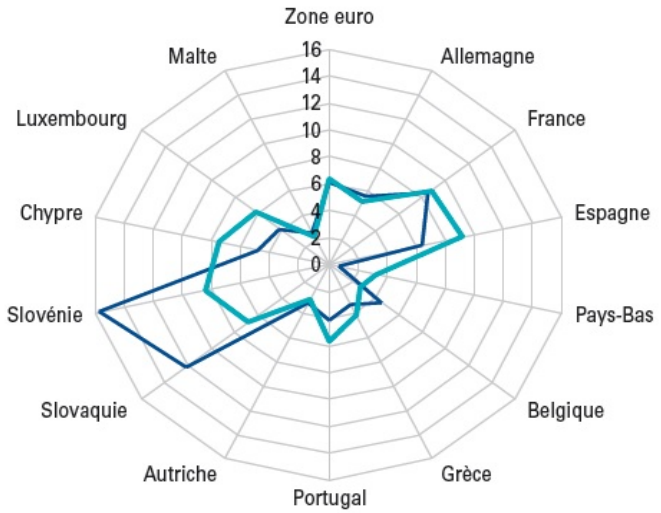
Les ménages face à la demande de crédit

(en %)

a) Part de ménages rationnés



b) Part de ménages s'autocensurant

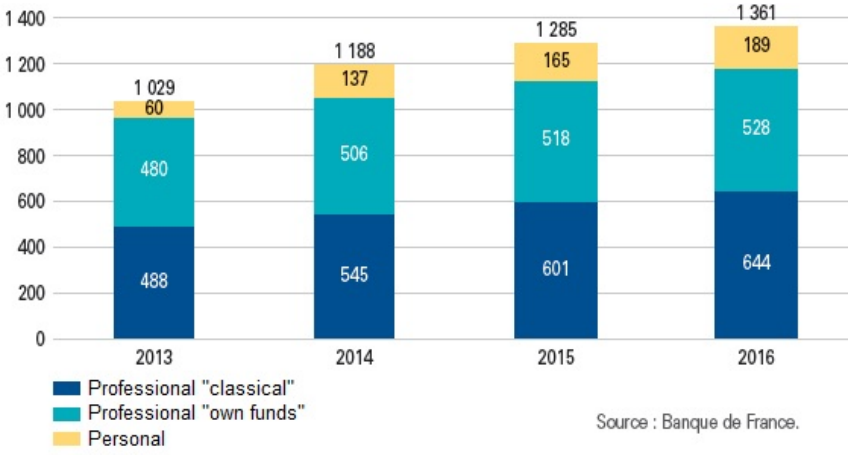


Sources : Banque de France et BCE (HFCS 2009 et 2014).

Concrete action : 3 main ways

- **Microcredit (less than 5 kE for personal loans, less than 25 kE for professional loans) selected and afterwards monitored by a caritative institution + the bank**

EUR 1,4 bn in 2016



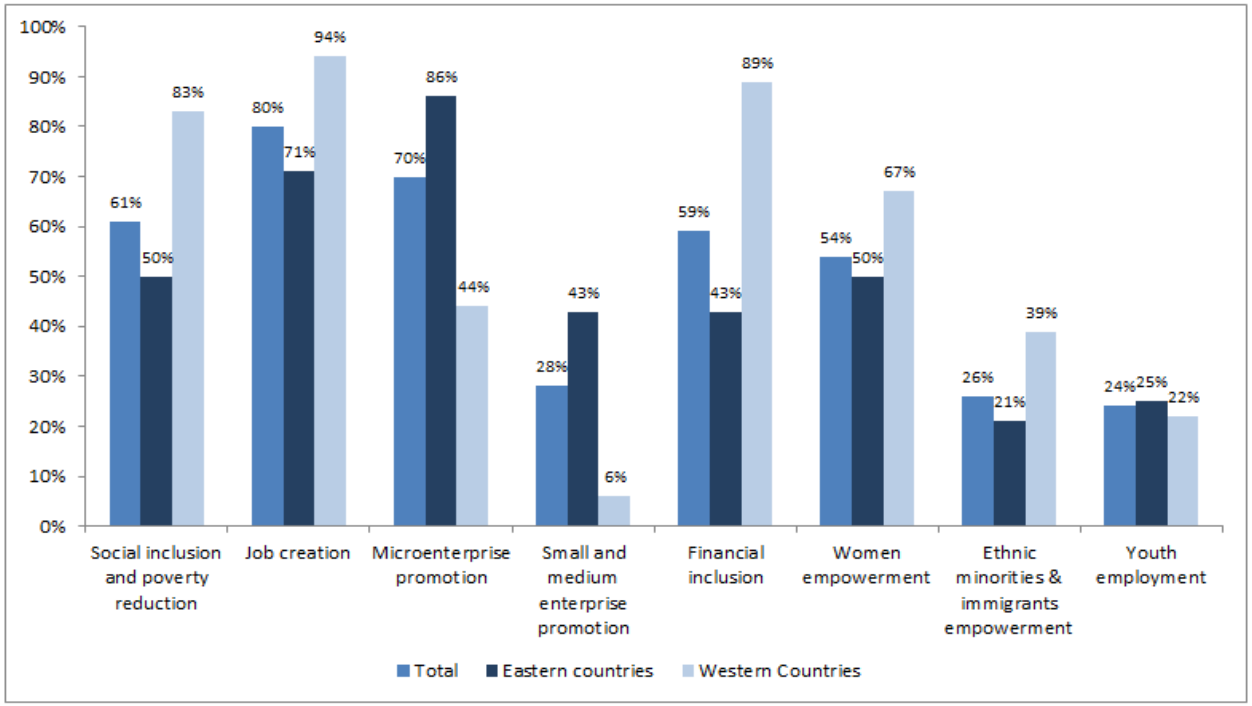
Source : Banque de France.

Banque de France action beyond statistical measurement:

- **Microcredit awards**
- **An advisor in each of the 13 regional branches**

Micro credit: No unique model in Europe

NGO's missions by region



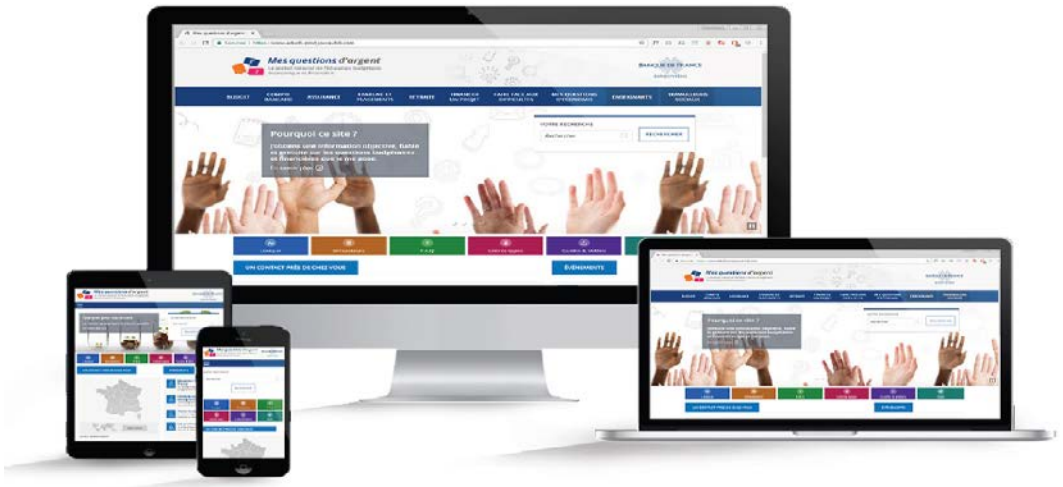
Source : EMN-MFC Survey 2014-2015

Concrete action : 3 main ways

- **Financial education**

Banque de France has been formally appointed as national coordinator for economic and financial education

A new website
mesquestionsdargent.fr
with specific topics for financially fragile people



mesquestionsdargent.fr

Specific topics for fragile people

Information sheets for social workers

<u>now:</u>

- **Payment incidents database**
- **Overindebtedness**
- **Banking inclusion**

<u>by end 2017</u>:

- **Banking relationships**
- **Credit**
- **Insurance**
- **Claims…**

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

National financial inclusion strategies and measurement framework[1]

Zarina Abd Rahman,
Central Bank of Malaysia

[1] This presentation was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

National Financial Inclusion Strategies and Measurement Framework

IFC Satellite Seminar on Financial Inclusion
Marrakech, 14 July 2017

This presentation is based on the article “Unlocking Shared Benefits for All through Inclusive Finance” (http://www.bnm.gov.my/files/publication/fsps/en/2015/cp02_002_box.pdf) issued in Financial Stability and Payment Systems Report 2015.

Zarina Abd Rahman
Financial Inclusion & SME Financing Section
Development Finance and Enterprise Department
Bank Negara Malaysia

Contents

Malaysia – General information

- **Geographic coordinates:**
  - 2 30 N, 112 30 E
- **Area:**
  - Total: 329,758 km^2
- **Population** (2016 est.)**:**
  - 31.7 million
  - 20.5 million adults
  - Annual growth rate of 1.5%
- **Demography:**
  - 51% male
  - 49% female
- **Life expectancy at birth**
  - Total population: 74.9 years
  - Male: 72.5 yrs; Female:77.4 yrs
  - Median age: total: 28 years
- **Dependency ratio:** 44%
- **Households:** 7.6 milion

- **Labour force participation:**
  - Total population: 67.7%
  - Unemployment rate:3.4%
- **Urbanisation** (2015)
  - Urban population: 74.7% of total population
- **Literacy** (2015)
  - Total population: 94.6%
  - Male: 96%; Female: 93%
- **Financial literacy** (2015)
  - Total population: 57%
  - Male: 57%; Female: 56%

Sustainable and progressive advancement of the financial inclusion agenda

One of the primary functions of the *Central Bank Act 2009* is to promote a sound, progressive and inclusive financial system

CBA 1958
Mandates broadly defined

Principal objects

- Issue currency and maintain reserves, safeguarding the value of currency
- Promote monetary stability and a sound financial structure
- Promote reliability, efficiency and the smooth operability of national payment and settlement systems, and ensure that systems policies are directed towards Malaysia's advantage
- Act as a banker and financial adviser to the Government
- Influence the credit situation to Malaysia's advantage

CBA 2009
Strategically focused

Principal objects

Promote **monetary stability** and **financial stability** conducive to the **sustainable growth** of the Malaysian economy

Primary functions

- Formulate and conduct monetary policy
- Promote an exchange-rate regime consistent with fundamentals
- Regulate and supervise financial institutions
- **Promote a sound, progressive and inclusive financial system**
- Provide oversight of the money- and foreign-exchange market
- Hold and manage Malaysia's foreign reserves
- Issue currency
- Exercise oversight of payment systems

The Financial Inclusion Framework was developed under the Financial Sector Blueprint (2011–2020) to enhance financial inclusion in Malaysia

Desired outcomes for the underserved

Vision

An inclusive financial system that **best serves all members of society, including** the **underserved,** to have access to and usage of **quality, affordable essential financial services** to **satisfy their needs** towards **shared prosperity**

- **Convenient accessibility**
- **High take-up**
- **Responsible usage**
- **High satisfaction**

Broad strategies

1. **Innovative channels**
2. **Innovative products & services**
3. **Effective FIs & infrastructure**
4. **Well informed & responsible underserved**

10 financial inclusion strategies under the Financial Sector Blueprint

1	2	3	4
1. Introduce agent banking	3. Introduce flexible microfinancing	6. Strengthen DFIs' capabilities	9. Leverage on NGOs for capacity building programmes
2. Leverage on technology-based innovative channels	4. Introduce micro-saving products	7. Organise structured training programmes on financial inclusion	10. Improve financial literacy via mobileLINK & strategic partnerships
	5. Introduce micro-insurance/takaful	8. Introduce framework for measurement & Financial Inclusion Index	

Continuous monitoring & evaluation framework

Agent banking provides basic financial services to the rural areas

Transaction mode

- Online real time
- Within the premises of the agent bank

Services offered

- Deposits
- Cash withdrawals
- Fund transfers
- Bill payments & prepaid top-up
- Loan/financing repayments
- Opening of savings accounts (*since 2015*)

Prohibited services

- Issuance of ATM/debit cards
- Money services business activities
- Loan/financing appraisal

Achievements
(as at end -2016)

- 5 FIs involved
- 7,984 bank agents nationwide
- 100.3 million transactions totaling RM8.5 billion

Served areas & population

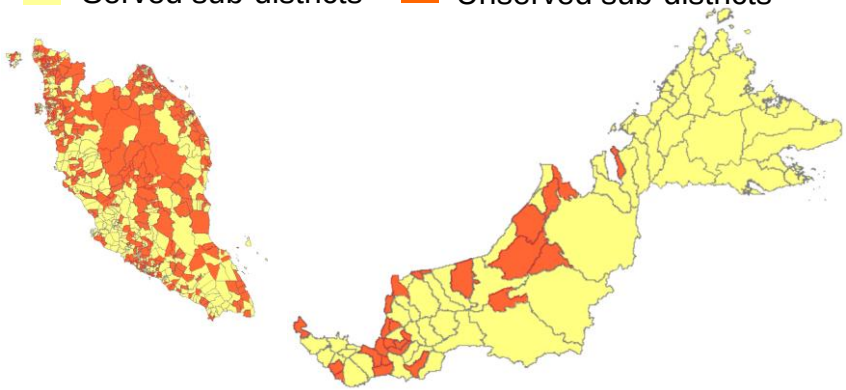
- 100% of districts by mid-2011
- 97% of mukims/DUNS with a population of at least 2,000 (end 2011: 46%)
- 99% of population (2011: 82%)

1 *Innovative Channel:*

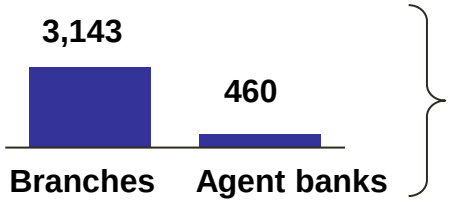
The implementation of agent banking has vastly expanded the outreach of financial services to the underserved in Malaysia

Previously

1 **46%** *mukims* served (*end-2011*)



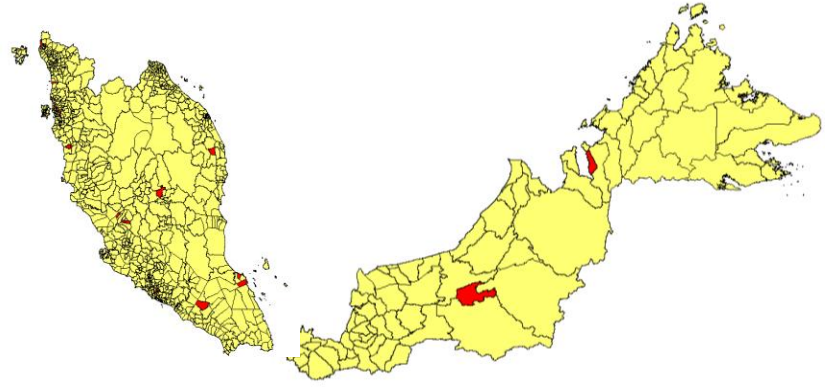
2 **17** cash in & cash out access points per 100K adults
Financial access point by type (end-2011)



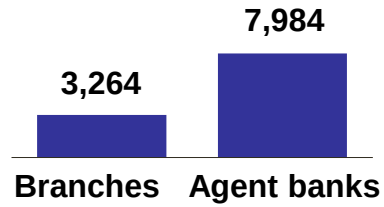
3,603 cash in & cash out access points nationwide

After the introduction of the agent banking regulatory framework in year 2012

97% *mukims* served (*end-2016*)



47 cash in & cash out access points per 100K adults
Financial access point by type (end-2016)



11,248 cash in & cash out access points nationwide

SMEs – A critical component of growth in the Malaysian economy, representing 98.5% of total establishments

SME Definition (effective 1 Jan 2014)

a) Annual sales turnover; OR

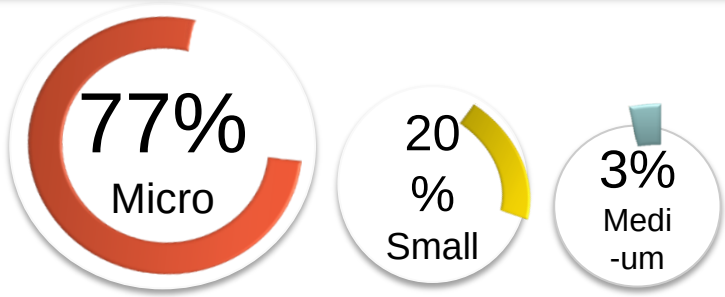
Size	Manufacturing	Services & other sectors
Micro	< RM300,000	< RM300,000
Small	RM300,000 – <RM15 mil	RM300,000 – <RM3 mil
Medium	RM15 mil – RM50 mil	RM3 mil – RM20 mil

b) No of employees:

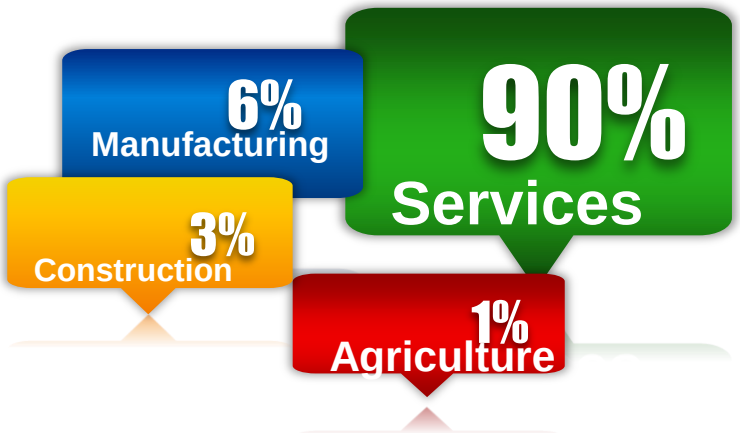
Size	Manufacturing	Services & other sectors
Micro	< 5	< 5
Small	5 – < 75	5 – < 30
Medium	75 – 200	30 – 75

Source: SME Masterplan 2012-2020, SME Corp Malaysia and SME Census 2011, DOSM

98.5% (653,158) business establishments in the country are SMEs



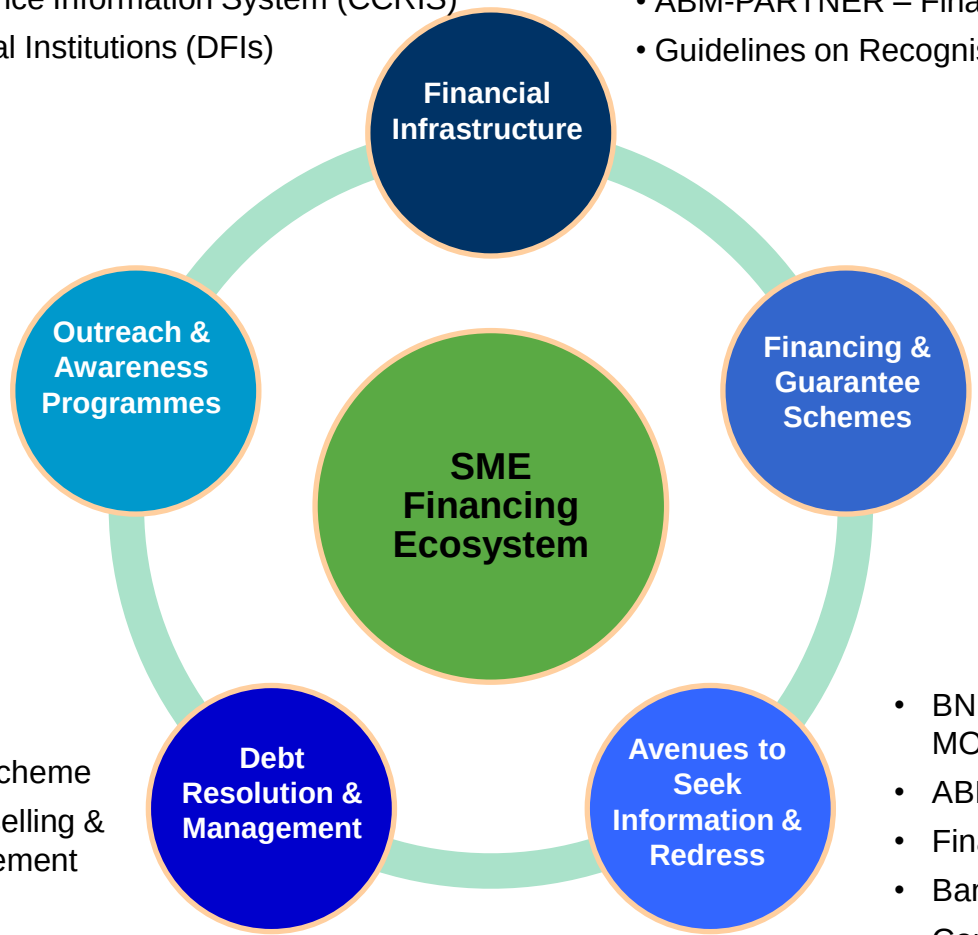
SMEs cut across **all sectors** of the economy



The SME Financing Ecosystem provide a comprehensive building block to enhance access to financing

- Microfinance and Agent Banking Frameworks
- Credit Guarantee Corporation / Credit Bureau Malaysia
- Central Credit Reference Information System (CCRIS)
- Development Financial Institutions (DFIs)

- Fintech Enabler Group; Regulatory Sandbox
- Investment Account Platform
- ABM-PARTNER – Financing Application Facilitation
- Guidelines on Recognised Markets for ECF and P2P



- *Karnival Kewangan*
- Train-the-Trainers
- Nationwide SME events
- Media promotions
- Distribution of materials through local authorities

- BNM's SME Funds
- Guarantee Schemes
- Green Technology/Intellectual Property Financing
- Government Funds

- Small Debt Resolution Scheme
- Credit Counselling & Debt Management (AKPK)

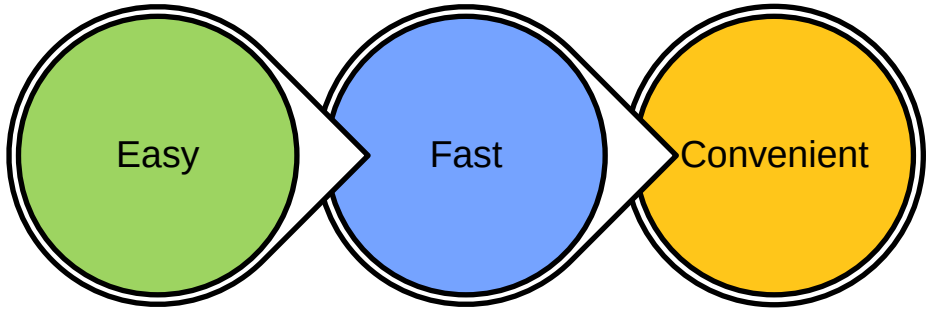
- BNMLINK, BNMTELELINK, MOBILELINK
- ABMConnect Helpdesk
- Financial Inclusion Microsite
- Bankinginfo web portal
- Complaint & Advisory at Fis
- Office of the Financial Ombudsman

Skim *Pembiayaan Mikro* – a comprehensive, sustainable microfinance institutional framework introduced in 2006

Definition

- **Financing up to RM50,000 (~USD11k) to micro enterprises for business purposes**

Key Benefits



- No collateral
- Minimum documentation
- Simple procedure

- Fast approval
- Fast disbursement

- Widely accessible

Accessibility of Micro Financing

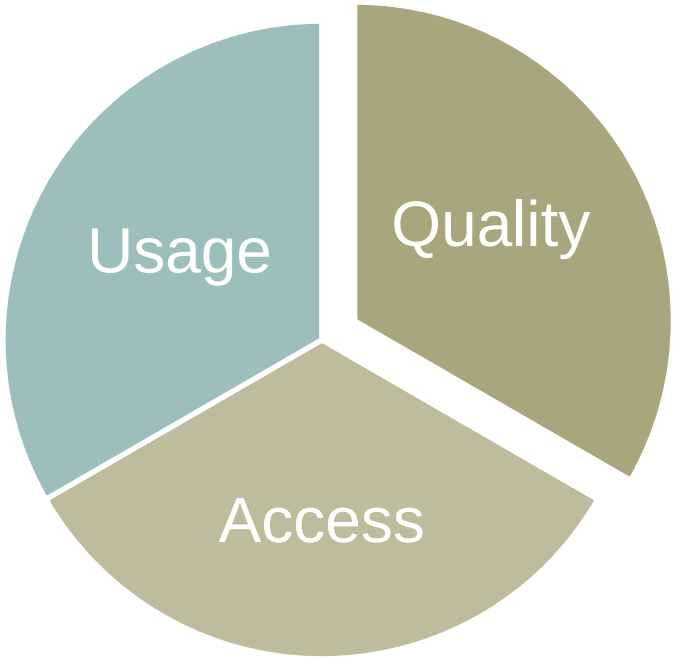
- **Offered by 10 financial institutions with more than 2,100 access points**

Source: Bank Negara Malaysia

Measurement Framework & Financial Inclusion Index

There are various types of data and indicators, each fill an important gap in the measurement landscape

AFI's Data Dimensions



Access:
It refers to the ability to use the services and products offered by formal financial institutions.

Usage:
It refers to the depth or extent of financial services and product use.

Quality:
It refers to the relevance of the financial services or products to the lifestyle needs of the consumer, demonstrated in attitudes and opinions towards those products that are currently available to them.

Core Set of Financial Inclusion Indicators

Dimension	Indicator	Comments
Access	Number of access points per 10,000 adults at a national level segmented by type and administrative unit.	Regulated access points where cash-in and cash-out transactions can be performed.
	% of administrative units with at least one access point.	
	% of total adults population living in administrative units with at least one access point.	

Dimension	Indicator	Proxy	Comments
Usage	% of adults with at least one type of regulated deposit account	Number of regulated deposit accounts per 10,000 adults	Adult is 15 and older, or an age defined by country.
	% of adults with at least one type of regulated credit account	Number of regulated credit accounts per 10,000 adults	

Global Supply and Demand Side Indicators on Financial Inclusion that could be consider for Index

Supply-side	Demand-side
For MFIs, commercial banks, credit unions and financial cooperatives: • Automated teller machines (ATMs) • Number of borrowers • Branches • Deposit account • Loan account • Mobile mobile account, money agent outlets, balance value (% of GDP), mobile money transactions • Outstanding deposits and loans (% of GDP)	Percentage (%) of adults with: • Account at a financial institution (all adults, women, adults poorest 40%, richest 60%, young, elder, rural & urban areas). • Mobile account • Debit and credit card • ATM as the main mode of withdrawal • Use of an account to receive wages, government transfers, to pay utility bills • Use of debit card to make payments • Sent / receive domestic remittances • Saved and borrowed

Source: Global Findex database, World Bank, and Financial Access Survey, IMF.

An Index incorporates key indicators into a single, comprehensive number

Key Salient Features

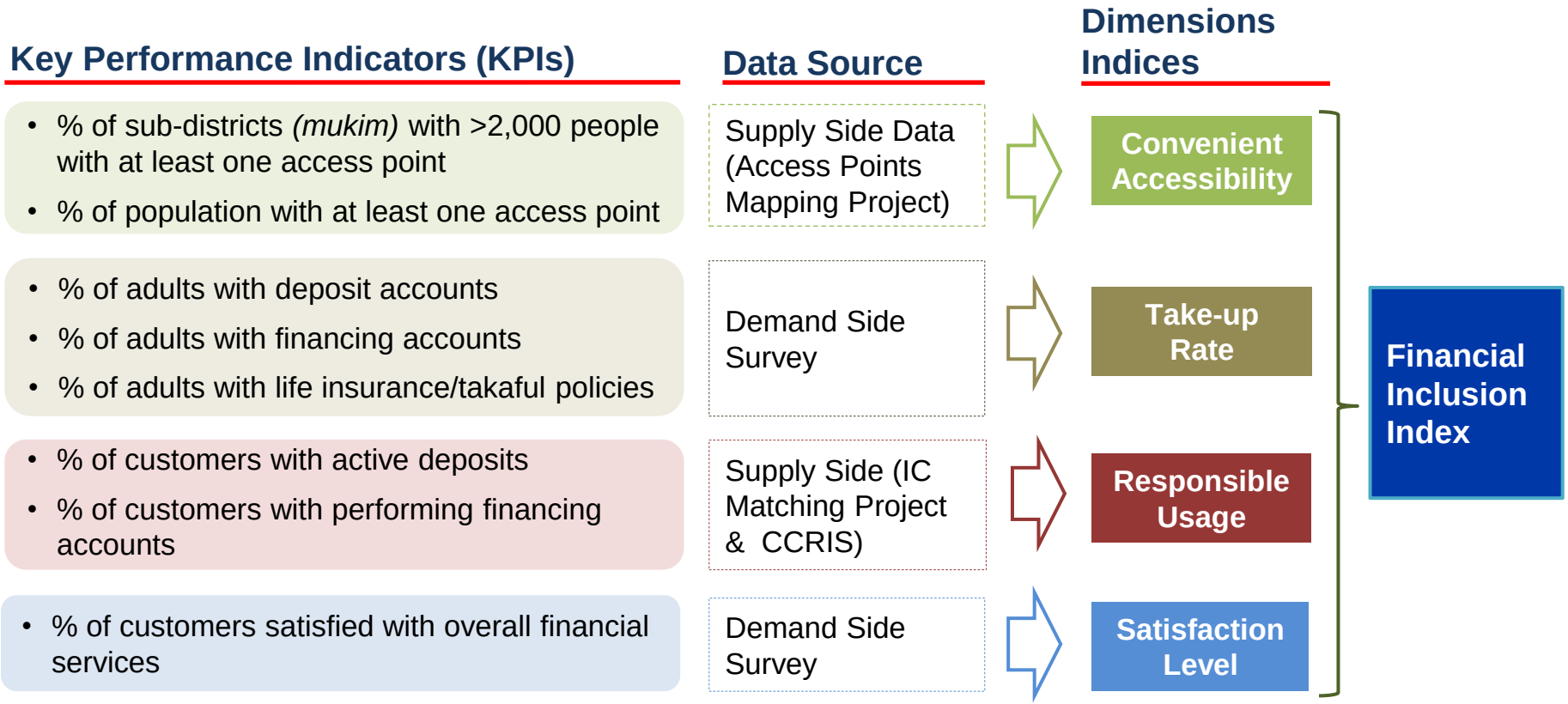
1. **Leverage on AFI Core Set of Financial Inclusion Indicators** formulated by the AFI Financial Inclusion Data Working Group (FIDWG)

2. **Customised the AFI Core Set** to reflect **KPIs of Malaysia Financial Inclusion Framework** by defining 4 dimensions of financial inclusion:
   - **Convenient Accessibility**
   - **Take-up Rate**
   - **Responsible Usage**
   - **Satisfaction Level**

Dimensions & Indicators

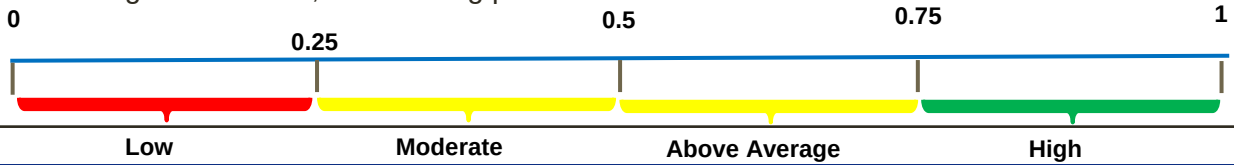
Dimension	Key Performance Indicators	Target (%) Set in 2012
Convenient Accessibility	• % of sub-district with at least 2000 population with at least 1 access point	90
	• % of population living in sub-district with at least one access point	95
Take-Up Rate	• % of adult population with deposit accounts	95
	• % of adult population with financing accounts	50
	• % of adult population with life insurance/takaful policies	40
Responsible Usage	• % of customers with active deposits	90
	• % of customers with performing financing accounts	97
Satisfaction Level	• % of customers who are satisfied – Overall financial services	80

A Financial Inclusion Index has been developed to track the overall progress of financial inclusion in Malaysia

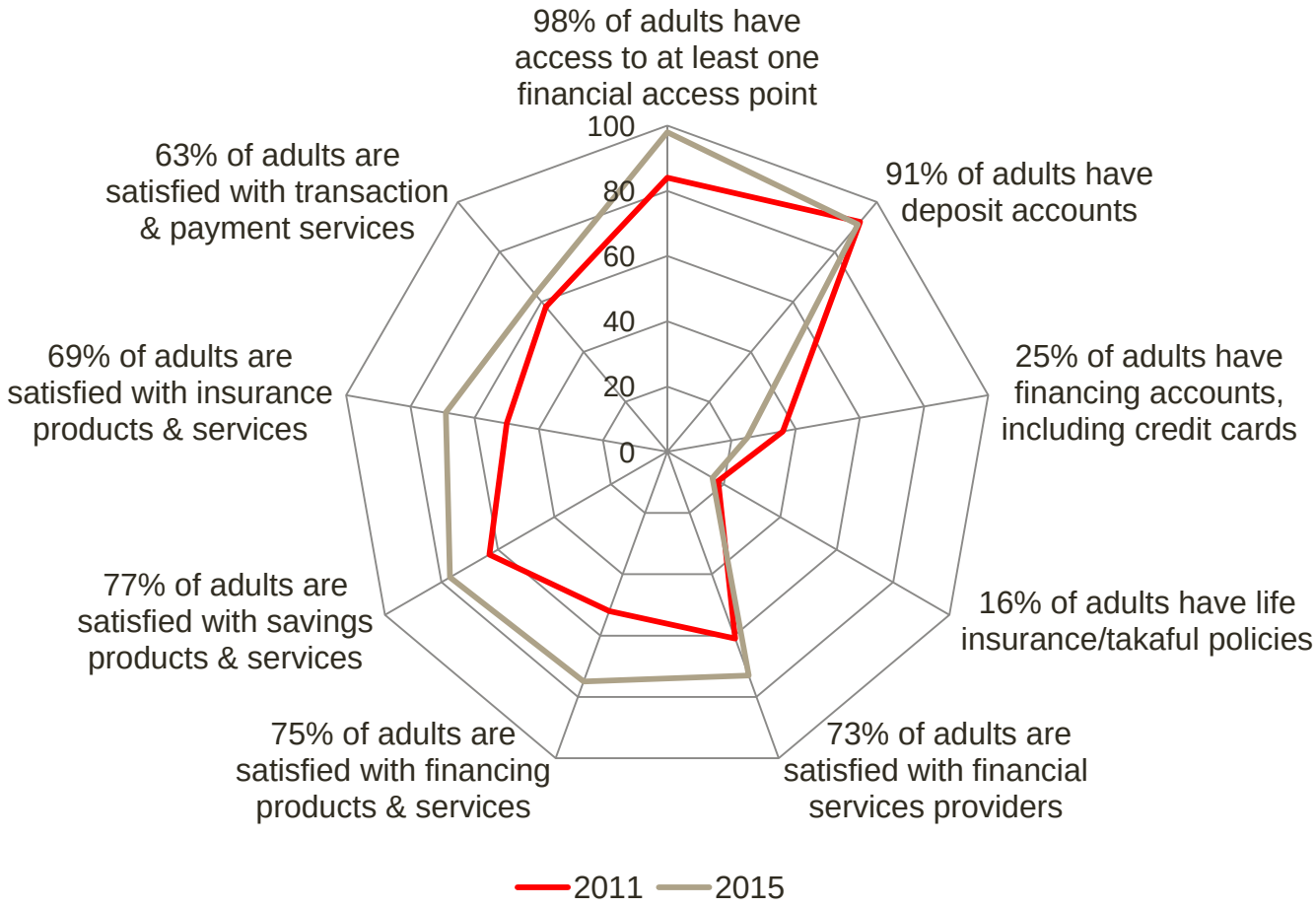


Malaysia recorded high financial inclusion index, 0.90 in 2015 from 0.77 in 2011 (1.00 reflects full inclusion)

Dimension	Indicators	Data (%) 2011	Data (%) 2015	Target (%)	Index of Each Indicator	Weight	Index of Each Dimension	Equal Weighted Dimension	Equally Distributed FII
Convenient Accessibility	• % of mukim with at least 2000 population with at least 1 access point	46	97	90	1.08	0.5	**1.06**	0.25	**0.90** (0.899)
	• % of population living in mukim with at least one access point	82	99	95	1.04	0.5			
Take-Up Rate	• % of adult population with deposit accounts	92	91	95	0.96	0.5	**0.61**	0.25	
	• % of adult population with financing accounts	36	25	50	0.50	0.25			
	• % of adult population with life insurance/takaful policies	18	16	40	0.40	0.25			
Responsible Usage	• % of customers with active deposits	87	92	90	1.02	0.5	**1.02**	0.25	
	• % of customers with performing financing accounts	97	98	97	1.01	0.5			
Satisfaction Level	• % of customers who are satisfied – Overall financial services	61	73	80	0.91	1	**0.91**	0.25	**FII 2011: 0.77**
Index ranges from 0 – 1, with 1 being perfect financial inclusion								1.00	0 – 1.00



Improvement in accessibility and satisfaction of financial services but moderate take-up of financial products



Who Are the 8% Unbanked Adult Population?

Gaps in financial inclusion across demographics, with women, youth and low income at the greatest disadvantage

Gender

55% women

More than half of the unbanked population are women

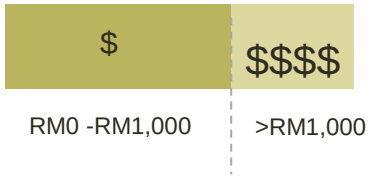
Age Group

46% from age of 15-24 years old

Youth are less likely to have a formal account

Income

86% no income & low income



Adults with no income or low income are less likely to be banked

Region

33% in East Malaysia

Adults living in the rural and remote location are less likely to be banked

Additional financial indicators to be monitor moving forward…

SME FINANCING INDICATORS

		2011	2015	2020
1	Higher share of SME financing to business financing	39%	47%	Above 40%
2	Maintain high approval rate	80%	81%	Maintain above 80%
3	Improve impaired financing ratio	5.8%	3.2%	3%

SEX DISAGGREGATED DATA

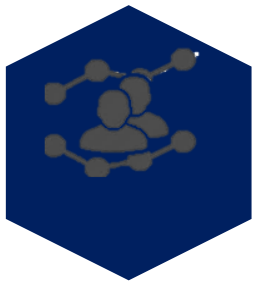
		2015	2020
1	Women account ownership and active account user at the formal financial institutions		
2	Women business owners		

Bridging the Last Mile

– Leveraging on Innovation and Technology for Financial Inclusion

Six game changers were identified to further facilitate progressive and sustainable financial inclusion. Sustained focus will be given on establishing more strategic partnerships and empowering consumers

Financial Inclusion Strategic Plan (Revisited) 2017 - 2020



1. **Unlocking big data to extend financial services**

2. **Proliferate "cashless clusters"**

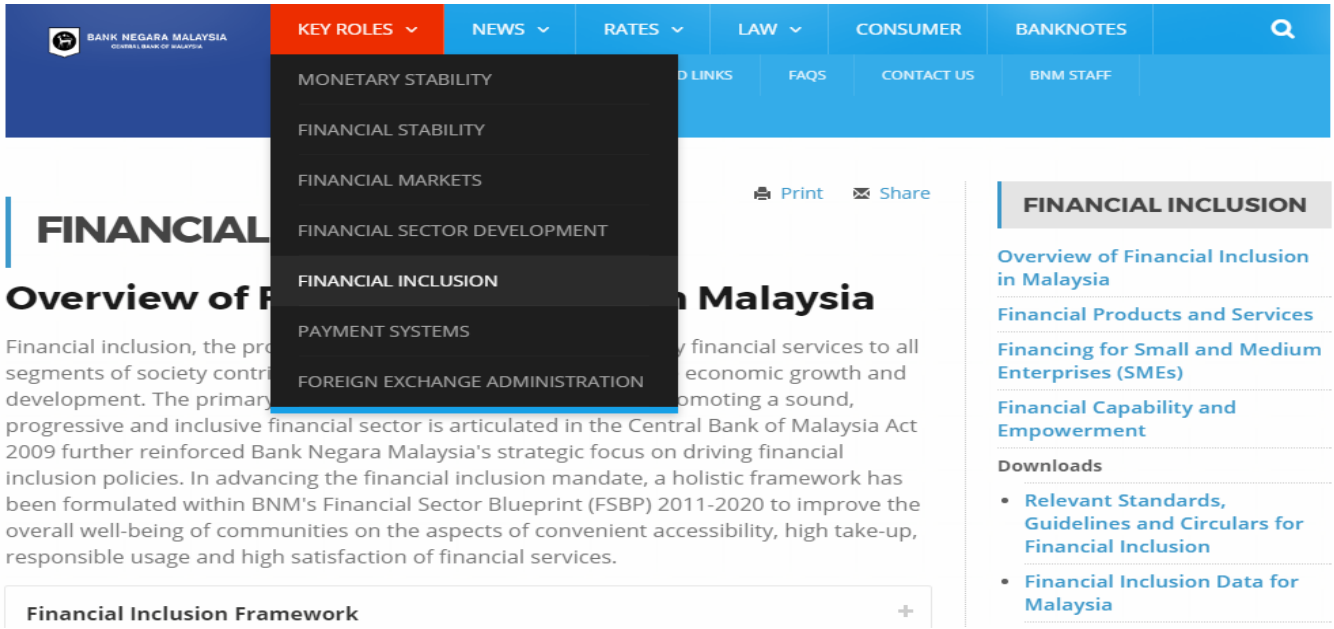
3. **Leverage on telco & agent bank, particularly for for micro-insurance distribution**

4. **SME Financing Aggregator**
   - Online SME Financing Application Platform
   - Financial Accelerator Lab

5. **FIs as angel investors through NGO partnerships**

6. **Revitalising DFIs to drive the financial inclusion agenda**

For more information, please refer to Financial Inclusion microsite, within Bank Negara Malaysia's website (www.bnm.gov.my)



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Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*
Marrakech, Morocco, 14 July 2017

International collaboration on assessing financial inclusion – Bank of Morocco's monitoring and evaluation framework[1]

Asmaa Bennani and Ibtissam El Anzaoui,
Bank of Morocco

[1] This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

International collaboration on assessing financial inclusion

Bank Al-Maghrib's Monitoring and Evaluation Framework

Authors: Mrs. Asmaa Bennani[1] & Ibtissam El Anzaoui[2]

Abstract

Over the last decade, financial inclusion has become one of Bank Al-Maghrib's focus areas. Indeed, the last triennial strategic plans of the central bank of Morocco include explicit financial inclusion commitments related to: (i) Financial services development and low income banking strategies implementation, (ii) National Financial Education Strategy establishment, (iii) promotion of Electronic payment and (iv) Consumer protection reinforcement.

This ambition and determination to make the financial sector more accessible and adequate for the different segments of the population led Bank Al-Maghrib to establish a participative framework where the public and private sectors actors are mobilised and involved in the different stages of financial inclusion policies process including monitoring and evaluation. As a result, by the end of 2016, 69% of adults have been reached by the banking sector registering 65% increase compared with 2008.

This paper will highlight how the collaboration (at national, regional and international level) can be a success factor for financial inclusion assessment especially to overcome the main challenges related to collecting and increasing the accuracy of data.

Keywords: Collaboration, Financial Inclusion, Data, Reporting and Surveys

Contents

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Introduction

Since 2007, Bank Al-Maghrib has been committed to promote financial inclusion in Morocco. Several policies have been developed in collaboration with public and private sector actors in order to overcome barriers to access to and usage of good quality formal financial services. In this regard, Bank AL-Maghrib focused on gathering the private and public sector to collaborate and face the main challenges related to the exclusion of a signification portion of the population from formal financial sector and led the different financial inclusion action plans such as those related to the national financial education strategy, consumer protection and banking penetration.

To make sure that all the undertaken policies have the expected impact, Bank Al-Maghrib established an evaluation and monitoring framework capitalising on international best practices. This experience shows the importance of reliable data in designing sound policies as well as collaboration to build effective and adequate assessment framework in order to take a stock of the current state, define direction and measure the effectiveness of the policies.

Bank AL-Maghrib's experience will be presented through three sessions:

- The first session will describe how the "Monitoring and Evaluation framework" has been developed and how collaboration with national and international networks was a key gateway to define relevant indicators, collect quantitative and qualitative data in order to design evidence based policies, and raise awareness amongst national stakeholders about financial inclusion data.
- The second session will point out the main challenges faced by Bank Al-Maghrib during the implementation of the monitoring and evaluation framework (sources of data, diversity of stakeholders, accuracy of sex-disaggregated data, …)
- The third session will bring into light the on-going activities conducted by Bank Al-Maghrib in order to enhance the assessment process mainly the implementation of a geospatial information system (GIS) based on international experiences and developing a social impact measurement tool.

Collaboration with national and international actors will be raised as a success factor in designing and implementing relevant tools of monitoring and evaluation.

Monitoring and Evaluation framework development process

Recognizing the importance of data in designing strong policies, Bank Al-Mahrib has over the last years developed a monitoring and evaluation framework based on international practices. This tool aims at providing relevant information in order to:

- Learn about the current state of financial inclusion: barriers to access and usage, financial behaviour of the population, key reasons of using informal services…

- Show to stakeholders the main achievements and milestones related to financial inclusion policies as well as how effective have been financial inclusion policies and what goals haven't been achieved.
- And identify remaining challenges especially in terms of disparities between groups of revenue, administrative units, genders and micro, small and medium enterprises.

Building an effective and a comprehensive monitoring and evaluation framework supposes an important effort from different actors to collect supply side and demand side data and measure financial inclusion. Hence, Bank AL-Maghrib focussed not only on conducting nationwide survey but also on developing specific reporting to complete information produced by financial services providers:

- **Supply side data collection** trough involving banks, finance companies and microcredit institutions in the process in order to collect reliable and comprehensive data on access points and usage of deposit and credit as well as global fees on basis services.
- **Demand side survey implementation** as a key component of the monitoring and evaluation framework. Data was collected through a nationwide financial capability survey that was conducted by Bank Al-Maghrib with the collaboration of the World Bank. The results informed financial sector about the banking penetration, the barriers to financial inclusion, and the financial behaviour of the population regarding financial decision making and usage of informal and formal services.

In both cases, Bank Al-Maghrib ensured that the collected data is in position to provide a clear snapshot of the current state of financial inclusion in Morocco with the possibility to compare it with other countries. For this reason, the monitoring and evaluation framework to be implemented must cover all the financial inclusion dimensions "Access, Usage and Quality".

As a result, it was necessary to mobilize several actors within the central bank as well as financial services providers and international institutions in order to make sure that the required data from the supply or demand side will be available within the time limits and in accordance with the agreed format. Thus, two approaches have been followed: Bottom-up and top-down approaches.

Bottom up approach: Demand side data

In 2013, Bank Al-Maghrib took the initiative to develop a national financial education strategy under a Moroccan Foundation that has in its governance structure public and private actors. In this context, Bank Al-Maghrib joined efforts with the World Bank in order to conduct a nationwide survey and evaluate financial capability[3] of Moroccan building on the international experiences and expertise in this area. The survey was the first in its kind in Morocco and one of the first experiences in the Middle East and North Africa region.

[3] Financial capability is measured by knowledge of financial concepts and products, attitudes, skills and behaviour related to day-to-day money management, planning for the future, choosing financial products and staying informed.

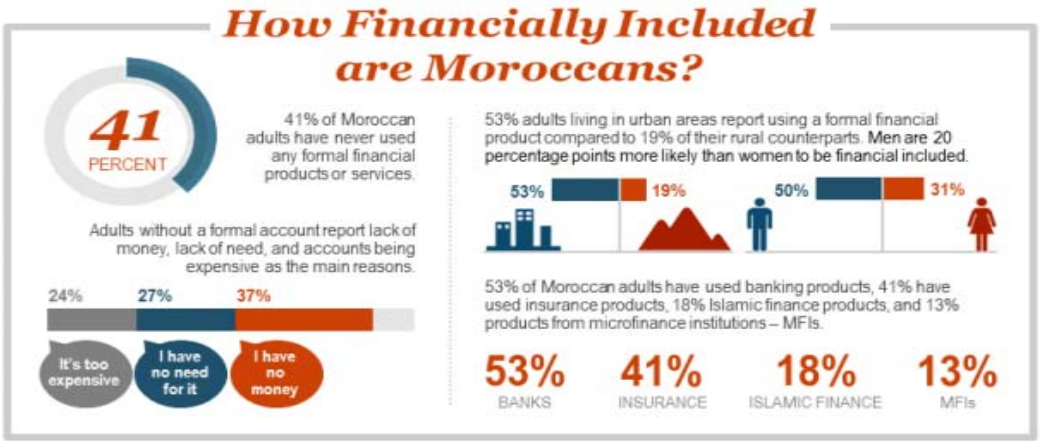
Implementing such a survey reflected how important financial inclusion is for Bank Al-Maghrib's agenda. Financial literacy and consumer protection, considered as the main pillars of its policies, were amongst the key axes of the survey that provided a diagnostic for the preparation of the strategy, especially for setting quantifiable and concrete targets and the assessment of the effectiveness of financial education programs.

The collaboration with the World Bank allowed the Central Bank to establish an adequate methodology and collect accurate and comparable data. Indeed, the questionnaire of the survey has been extensively tested in the context of low- and middle income countries and was developed with support by the Russia Financial Literacy and Education Trust Fund (RTF). Moreover, about 70 focus groups and more than 200 cognitive interviews in eight countries have been organised to identify the concepts that are relevant in low- and middle-income settings, and to test and adapt the questions to ensure that they are well understood and meaningful across income and education levels.

The questionnaire has been then tailored to the Moroccan context taking into consideration Bank Al-Maghrib's priorities. In this respect, it has been added specific questions related, for instance, to usage of Shari'ah compliant financial products and services and deposit insurance awareness.

Regarding the sample, the financial capability survey was nationally representative of active population with a total of 3,000 adults based on the most recent 2004 census of Population and Housing, provided by the national statistics office (HCP). The population was divided into strata based on area (urban/rural) with urban areas further subdivided by housing type (luxurious housing, old medina housing, social and economic housing, precarious and clandestine housing).

As a result, the survey provided important insights[4] to Bank Al-Maghrib and other stakeholders about financial inclusion that served for the formulation of the national financial education strategy.



[4] http://responsiblefinance.worldbank.org/~/media/GIAWB/FL/Documents/Publications/Enhancing-Financial-Capability-and-Inclusion-in-Morocco-FINAL.pdf

Top-down approach: Supply side data

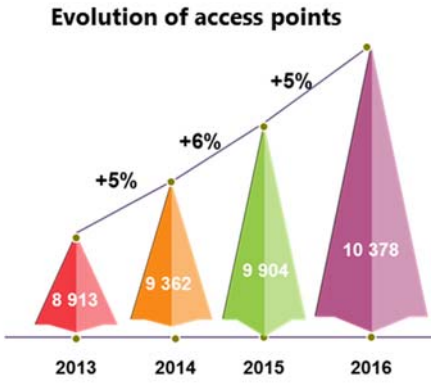
Besides demand side data, Bank Al-Maghrib has a vested interest in supply side data not only for risk management but also for measuring financial inclusion and impact of policies developed in this area.

In this respect, Bank Al-Maghrib built its experience on international practices and developed financial inclusion indicators based on FIDWG[5]'s (as a member of AFI[6] since 2010) working paper[7]. Hence, Bank Al-Maghrib implemented specific reportings that have been reported by banks at biannual basis informing about: banking networks that include not only banks' branches but also ATMs and banking intermediaries' access points, usage of deposit and credit, the banking penetration per gender and enterprise' sizes as well as the global fees on the basic banking services.

Moreover, the tow credit bureaus, established in 2007 and in 2016, provide data on the use of loans by the population and allow Bank Al-Maghrib to complete the financial inclusion database and enhance the accuracy of the produced indicators. In addition, those credit bureaus provide credit institutions and similar bodies with a common platform for the exchange of data. The objective of this platform is to help these institutions better assess the risks incurred on their counterparties, through solvency reports specifying the commitments of their customers and their payment behaviours.

Thus, Bank Al-Maghrib evaluates the different dimensions of financial inclusion through the following indicators: (1) banking density, (2) distribution of access points amongst the different administrative units as defined by regional breakdown of the Kingdom, (3) rate of banking penetration, (4) usage of deposit accounts (5) loans by adult population and MSMEs[8] (6) and banking services price index measuring the trend of the basic banking services as applied by the principal banks.

By the end of 2016, the indicators reflected a positive evolution of financial inclusion, making Morocco as a regional benchmark, but also the persistent gaps between urban and rural areas, genders and MSMEs:



[5] Financial Inclusion Data Working Group

[6] Alliance for Financial Inclusion

[7] Measuring Financial Inclusion: Core Set of Financial Inclusion Indicators (March 2013)

[8] Micro, Small and Medium Enterprises

Furthermore, Bank Al-Maghrib mobilised various public and private actors to establish an observatory for VSMEs[9] that started its activities in 2016. This observatory aims at (1) centralizing national and regional data and information on VSMEs, and (2) generating demographic, economic and financial information on economic sectors in order to allow stakeholders to respond more effectively to the issue of financing this specific category of companies.

Based on the above, collaboration is a key factor for an effective monitoring and evaluation framework. In fact, exchanging experiences and joining efforts at the national and international level contributed to raise awareness about the importance of data but also to build an adequate database for developing sound financial inclusion policies.

Thus, Bank Al-Maghrib's experience shows the importance of collaboration at different level of the process, from designing indicators and collection of data to calculating indicators and making evidence based policies. In addition, collaboration is important:

- ***Within Bank Al-Maghrib***: mainly to explore banking supervision and credit bureaus databases and to build on their experiences.
- ***At national level*** with financial services providers especially banks, finance companies and microcredit institutions in order to collect the required data.

[9] Very small, small and medium enterprises.

- ***With the Arab world***: as part of the regional collaboration framework where Bank Al-Maghrib shares experiences and collaborate in guiding Arab countries in their own experiences.
- ***And at the international level*** mainly with AFI and the World Bank for technical assistance as well as facilitating the development of international baselines.

Challenges related to financial policies assessment

Given the multiple facets of financial inclusion and actors, Bank Al-Maghrib faced during the assessment process several challenges.

First, the multi-dimensions and the broad scope of financial inclusion involve implementing a set of indicators to achieve the ultimate goal of assessment. Thus, the process engages different sources of data with different providers who may have different references, in terms of the population segmentation or gender of enterprises, or even have no interest in financial inclusion. Thus, granular data gathering must be preceded by careful analysis and investigations of the availability and quality of data besides raising stakeholders' awareness about the importance of their role in this process.

This preliminary phase should be followed by a clear action plan in order to address progressively the identified issues especially in case of unavailability of some key information, such as sex disaggregated data, as well as the eventual adjustments in the providers' information systems. For example, Bank Al-Maghrib took the initiative to establish common definitions and rules for the banks in order to make sure that their financial inclusion reportings are based on the same references.

In addition, financial inclusion has more and more evolutionary environment due to the trends of technology. This is why the monitoring and evaluation framework should reflect the new financial services providers as new access points and channels to get financial services closer to the population. This is also important to insure comparability at regional and international level and to reflect the new challenges and opportunities related to financial environment. Hence, monitoring and evaluation framework should rely on a flexible information system that hosts a unique and a comprehensive database covering all financial services providers, including insurance companies[10], while protecting personal data.

Furthermore, the interactions between financial inclusion and economic and social development call for a serious impact measurement system. Indeed, financial inclusion policies aim at enhancing the welfare of the population beyond the immediate objectives of promoting saving, investment and risk mitigation. Policy makers should think of a reliable framework to measure social and economic impact of financial inclusion based on randomised impact evaluation. This evaluation

[10] Insurance companies are usually out of the scope when there is no national financial inclusion strategy. In case of Morocco, information on insurance is currently limited as it's beyond the central bank's scope and falls under an independent regulator.

should start with a clear definition of the quality dimension's facets that include basically affordability, transparency, consumer protection and financial education.

Moreover, conducting surveys, as a crucial tool of financial inclusion assessment, should rely on a clear methodology and rigorous process in order to provide good quality data and insure comparability over time. In this regard, the sample size must reflect the structure of the population and should be sufficiently granular to allow the compilation of different levels of aggregation for adequate analysis at a country level. However, giving the important costs that could be implied, it is appropriate to fix overriding criteria (region, urban and rural, income groups, gender...) based on supply side indicators or the policymakers' priorities for example. It is also important to take into consideration the difficulty to evaluate the needs of excluded while they have limited financial capability. It's then important to complement the surveys conclusions with qualitative studies such as financial diaries or focus groups in order to refine the conclusion of surveys and understand what is the most suitable for the vulnerable segments.

Another challenge is related to double-counting that may bias financial inclusion indicators and overestimate the banking penetration. To deal with this problem, Bank Al-Maghrib implemented an accounts central that consolidate the whole information on banking accounts, as provided by banks, based on the identity of clients.

Finally, the predomination of informal sector especially in developing countries hinders the evaluation of enterprises' financial inclusion. The creation of an Observatory for MSMEs in Morocco is a first step to deal with this challenge and to establish an effective action plan in order to produce more accurate data for policymakers.

Moving forward for an impact measurement

Despite the significant progress that has been achieved in Morocco, policymakers are still facing important gaps mainly between regions (especially rural and urban areas), enterprises sizes, income groups as well as genders. The remaining challenges require a strong collaboration and commitment within a national financial inclusion strategy (NFIS) in addition to an adequate monitoring and evaluation framework based on a geospatial mapping (GIS).

Thus, Bank Al-Maghrib is strongly committed to develop a NFIS and to address all the barriers to access to and usage of formal financial services. In collaboration with the Ministry of economy and Finance, Bank Al-Maghrib initiated the process and set a national framework in order to pool the public and private sectors' efforts and harmonize their objectives looking for providing the Moroccans with an inclusive financial environment and promoting their welfare and socio-economic development.

In this context, the Moroccan authorities have implemented a consultative system in order to raise stakeholders' awareness and to ensure that the NFIS will be embraced and implemented at national level while mobilizing the required resources. In this respect, a search conference has been organized on May 22&23 and gathered public and private actors who had the opportunity to exchange with

international experts on the NFIS formulation process based on international experiences and to identify success factors and stakeholders concerns.

Furthermore, in order to gain a better and more comprehensive understanding of the state of financial inclusion in Morocco, as well as of the individual factors influencing this area, Bank Al Maghrib is working on the implementation of a GIS that will point out relevant financial inclusion indicators combined with demographic and socio-economic data (access points per financial service providers, savings, credit, insurance, poverty index, population, income, gender, illiteracy…). This mapping will allow Bank Al-Maghrib to conduct more in-depth analysis on the evolution of financial inclusion and to build evidence based policies including the NFIS.

As part of this project, Bank Al-Maghrib intends to develop a comprehensive statistical analysis model building on the financial inclusion database. Indeed, developing a multi-variable analysis model will enable financial inclusion actors to understand correlations between socio-economic factors and financial inclusion and this way bringing to light the impact of the undertaken policies. Besides financial services providers, the Moroccan Statistical Institution (HCP) and Credit Bureaus will contribute as well to the implementation of this statistical model.

In addition, Bank Al-Maghrib has launched during the last months a FINDEX survey that has been tailored to the Moroccan context in order to inform the Moroccan authorities and the NFIS stakeholders about the state of financial inclusion from the demand side. This survey will cover all the Moroccan regions representing, therefore, urban and rural areas as well as genders. Being the second demand side survey conducted in Morocco after the above-mentioned financial capability, it will present the impact of the undertaken actions and set a good baseline for the NFIS.

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BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

Assessing financial inclusion policies in Morocco[1]

Asmaa Bennani,

Bank of Morocco

[1] This presentation was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Assessing Financial Inclusion Policies in Morocco

Agenda

1. Monitoring and Evaluation framework development process
2. Challenges related to financial policies assessment
3. Our journey continues

Monitoring and Evaluation framework development process (Part 1/4)

1 Learn about current state

2 Show key milestones

3 Define next steps

Monitoring and Evaluation Framework

Supply side

- Access points /Geospatial data
- Bancarization rate
- Usage rate of basic services
- Usage per clients category (Enterprise size)

Demand side

- Barriers to financial inclusion
- Access and usage to informal /formal financial services
- Financial inclusion opportunities
- Gender gap
- Reasons of exclusion/ gaps
- Other qualitative aspects

Monitoring and Evaluation framework development process (Part 2/4)

1. What should be improved?
2. What issues to address?
3. How effective our policies are?

Dimensions to evaluate	Required information	Source of data

"bottom-up" approach

Conduct a national survey

Design specific reporting for FI

"top-down" approach

Methodology/ Execution/ Analysis/ Recommendations

Indicator/ Indexes aligned with international standards

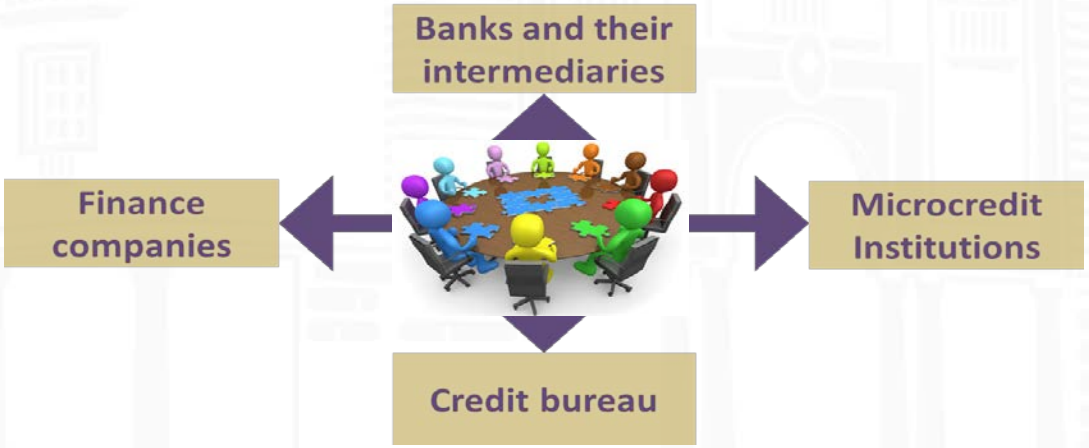
- FIDWIG meetings and guideline notes
- Study visit at BDF
- World Bank's collaboration

Monitoring and Evaluation framework development process (Part 3/4)

Monitoring and Evaluation Framework

Calculated on an annual basis, financial inclusion indicators cover 3 dimensions:

Access	Usage	Quality
1. Number of access points per 10,000 adults at a national level **2.** % population living in administrative units with at least one access point	**1.** % of adults with at least one type of regulated deposit account **2.** % of adults with at least one type of regulated credit account	**1.** Banking services Price Index (affordability) **2.** Financial literacy (Results of the financial capability survey)



Monitoring and Evaluation framework development process (Part 4/4)

The implementation process requires collaboration at different levels:

01	**Within the Central Bank:** - Banking Supervision Department - Network and Central Registries Department
02	**National Level:** Banks/ Microcredit Institutions/…
03	**Regional Level:** - Arab Monetary Fund - Arab Central Banks
04	**International Level:** Intern. Org./ Intern. networks

Data collection

Access to expertise and experiences

Sharing our own experiences/ Benchmark for the region

Challenges related to financial policies assessment (Part 1/2)

Financial inclusion is a broad and multidimensional concept that implies:

- Various indicators in order to present a clear and comprehensive snapshot
- Need of granular data in order to respect each specific segment of the population
- Multiple data providers with different references

Financial inclusion is a dynamic concept that implies:

- Necessity of keeping up with trends related to the emergence of new financial services providers
- Need of cross-country comparative analysis
- Continuous adjustment process

- Strong commitment of the data providers
- Flexible Information System
- Unique and exhaustive database covering all FSPs
- Common references, clear methodology and rigorous process for periodic reporting and surveys

Detailed and accurate data to identify priorities and measure progress

Challenges related to financial policies assessment (Part 2/2)

1	Demand side data
	Complexity of evaluating the potential demand from the excluded segments with limited financial skills.
	Cost of defining a representative sample based on: age, gender, areas (urban and rural), socio-professional profile,…
	Lack of a comprehensive database of **informal enterprises**
	Good quality data requires **a rigorous process** of collection, verification and analysis

2	Supply side data
	Double-counting as banks' reporting are based on accounts instead of individuals
	Lack of harmonized criteria regarding Enterprises' segmentation
	In the absence of a NFIS, FI actors are **not committed/ aware enough** to contribute to unique and good quality database
	Impact of the indicators on FSPs' **information systems** (sex desegregated data)
	Unavailability of information and **Complexity** of measuring the quality dimension

Our journey continues (Part1/2)

Geospatial Data

Improving the quality of data

Support the National Financial Inclusion Strategy

- Identify different levels of financial inclusion
- Identify areas with limited access and unmet demand => Where are the most excluded areas? Who are their main FSPs?
- Analyze linkage with socio-economic factors
- Build evidence based policies => tool for strategic decision-making
- Conduct a national survey => evaluate the current state of FI in Morocco and pinpoint the remaining challenges
- Set up a comprehensive database of banking accounts => Correct double-counting based on Ids
- Prepare a dedicated report on FI

Addressing bottlenecks + unlocking opportunities for socio-economic development

Our journey continues (Part2/2)

Building on FIDWIG members' experience and the support of AFI allow us to determine our direction and anticipate challenges

Good quality data is a key driver of our FI policies and is leading us to an effective NFIS

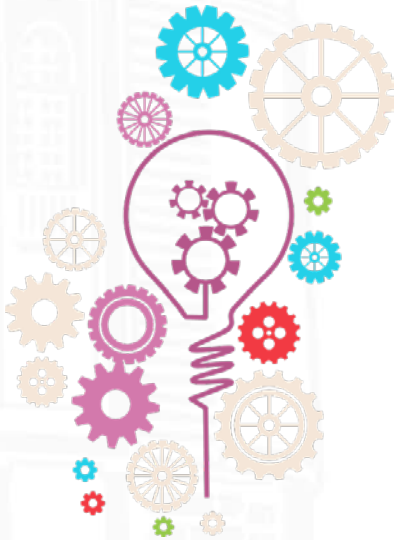
In race toward full FI, Bank Al-Maghrib is bringing together private and public actors to overcome data challenges but also to build strong policies.

01 Creation of working group: Ministry of Finance & Bank Al-Maghrib

02 WG meetings and consultation of stakeholders (public and private) led to the governance structure definition including

03 Workshop with key stakeholders (public and private) to discuss financial inclusion issues and set strategic priorities

Collaboration is part of the process




Thank you for your attention

Any questions?


Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*
Marrakech, Morocco, 14 July 2017

Measuring financial competences in a large-scale survey: the Spanish Survey of Financial Competences[1]

Josep Amer, Olympia Bover, Laura Hospido and Ernesto Villanueva,
Bank of Spain

[1] This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Measuring financial competences in a large-scale survey

The Spanish Survey of Financial Competences[1]

Josep Amer, Olympia Bover, Laura Hospido, Ernesto Villanueva[2]

Abstract

This document summarizes several methodological aspects of the 2016-2017 Survey of Financial Competences, a joint initiative of the Banco de España (BdE) and the Comisión Nacional del Mercado de Valores (CNMV) aimed at measuring the financial competences of the adult population in Spain. The survey is comparable to a blue print elaborated by the International Network of Financial Education, an initiative recently implemented in a large number of countries. We use a large sample provided by the National Statistical Institute, of randomly selected individuals that is representative of the whole Spanish population and of each of its regions. In addition to financial competences, this face-to-face survey elicits basic information on demographics, household financial pressure as well as measures of individual's expectations about their retirement, labor market opportunities and the evolution of housing prices. We discuss the measures taken during the fieldwork to guarantee the quality of the responses. Namely, we discuss the monitoring of interviews via authorized recording, the phone supervision of each case once the interview is completed and, finally, the platform-based editing of each interview. Those are key inputs that determine the admission of a valid observation or the requirement to repeat (selected parts of) interviews. Finally, we use specific examples to illustrate the relationship between monitoring and interviewer behavior.

1. Introduction

Evidence from a variety of countries suggests that a sizable fraction of the population has deficient knowledge about basic financial notions on interest rates, compounding, inflation or risk diversification. Furthermore, even when one compares individuals with similar degree of education or income, those with lower financial knowledge hold lower wealth levels, higher debt and a higher degree of financial stress.[3] As financial products become increasingly complex over time, it is important to identify the characteristics and choices of groups of the population with insufficient financial knowledge.

This study describes some methodological aspects of the Survey of Financial Competences (ECF, by its Spanish initials), an initiative aimed at measuring the financial competences of the population 18-79 in Spain. The ECF follows a blueprint questionnaire elaborated by the International Network of Financial Education, an assessment of the financial knowledge, attitudes and behavior of representative samples of the adult population. A large number of countries have recently implemented the blueprint under the

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1 This document is a summary of a presentation at the Satellite Seminar on Financial Inclusion, held in Marrakech on July 14th, 2017 and organized by Bank-Al-Maghrib, Centro de Estudios Monetarios Latinoamericanos (CEMLA) and the Irving Fisher Committee (IFC).

2 Josep Amer is a PhD student at the European University Institute. The rest of the authors work at Banco de España. Laura Hospido is also a research fellow at IZA.

3 See, for example, Lusardi and Mitchell (2011), Alessie, Lusardi and Van Rooij (2011) or Stango and Zinman (2009).

coordination of the Organization of Economic Cooperation and Development (OECD). As a result, the results of the ECF will be comparable to those in other countries. However, the ECF contains a number of extensions and adaptations to the Spanish case that we describe below

A characteristic of the ECF is the collection of representative information of financial practices of the population of each of the 17 Autonomous Communities in Spain (except the Autonomous Cities of Ceuta and Melilla). Representativeness at the regional level is important because the competences about education are transferred to regional authorities. Moreover, the demographic and socio-economic composition of the population varies widely across Autonomous Communities. Therefore, to identify which segments of the population are at risk of financial exclusion or are less knowledgeable about basic financial matters, it is important to achieve not only representativeness of the Spanish population as a whole but also of each Autonomous Community.

We describe the adaptations of the blueprint questionnaire to the Spanish case and lay out the measures taken to ensure appropriate measurement of financial competences. To that end, we review the questionnaire (Section 2), the sampling (Section 3) and the methods applied during fieldwork to ensure high response rates and a good quality of the interviews (Section 4). Section 5 describes the procedures to validate completed interviews and provides examples illustrating the relationship between monitoring and interviewer behavior.

2. The questionnaire

The questionnaire contains the following sections:

1. Basic demographics and labor force status
2. Household's portfolio and sources of information.
3. Sources of income in the old age and if not working
4. Attitudes toward saving
5. Financial competences
6. Competences in Economics
7. Main residence
8. Expenses and financial fragility

The questionnaire of the ECF follows a blueprint by the International Network on Financial Education (INFE), implemented in a large number of countries in 2015-2016. That exercise measures what financial products individuals know, hold or have recently acquired. If respondents have recently acquired one, the blueprint also asks which type of information they used to make that decision. Another main block of the INFE exercise is a series of questions measuring financial knowledge. Those questions measure if the respondent is familiar with the notion of interest rate and can apply it in simple computations. Further questions measure if respondents understand interest rate compounding, risk diversification and the role of inflation.

The ECF questionnaire follows the INFE measurement exercise. However, it also includes some adaptations to the Spanish context. Firstly, the ECF asks about labor market status, individual expectations about employment loss (if employed) or employment finding (if unemployed), as well as measures of impatience. That information is important to characterize precisely the expectations and attitudes of individuals with low financial literacy.

A second feature of the ECF is that it is not only a survey on individuals, but also aims at collecting information about the household's level of financial competence. Namely, the survey asks each individual if he or she is familiar with household's asset and debt holdings, as well as about the reasons that determined the financial choices. If the individual is not familiar with the financial matters, an informed person provides complementary information about the household portfolio and his or her own financial competences. We think that measuring household's competences is important in countries where large households with different generations are not uncommon.

Thirdly, with the aim of disentangling financial from other generic competences, the ECF also includes items measuring basic reading comprehension (extracted from the 1994 International Adult Literacy Survey) as well as graph comprehension (extracted from the 2012 Program for International Adult Competences, PIAAC).

Finally, following the National Capability Survey in the United States, the ECF includes a module on housing, where respondents provide information about whether they own or rent the house of main residence, the reasons for their choice and their expectations about the evolution of the price of the dwelling. If they financed the purchase of their house with a loan, the survey collects some information about basic loan characteristics.

Other characteristics

The survey was implemented via Computer-Assisted Personal Interviews, to facilitate data handling as well as interviewers navigation of the questionnaire. As discussed below, computer-assisted interviews allowed implementing basic consistency checks.

3. Sample design

The sample was drawn by the National Statistical Institute to be representative of the population of Spanish individuals aged 18-79 living in private households. It is also representative of each of the 17 regions as, to a large extent, the educational system is ran at that level. The sample contains about 21,000 individuals, drawn from the most recent Census. The ECF is a probability sample, obtained through a two-stage sampling design, stratified in the first stage units by region and municipality size. The first stage units are the census sections in the country and the second stage are the people between 18 and 79 who have their main residence in the sections selected for the sample.

The fieldwork started in end-September 2016 and ended in June 2017. The reference period was mostly the moment of the interview, but there were exceptions. Some questions referred to last 12 months (whether household expenses exceeded income, or if the household had fallen into arrears). There were also retrospective questions about the last two years (if the individual had acquired a financial product during that period) or the last five (if the individual had had some disagreement with a financial institution).

4. Fieldwork

Efforts to mitigate non-response

Each sample member received an envelope containing an introductory letter signed by the Governor of Banco de España and the Chairperson of the Comisión Nacional del Mercado de Valores (CNMV). The envelope also contained a letter by the field work agency and a brochure describing the main aims of the study. The introductory letter from BdE and the CNMV was anonymous and included on a separate envelope within the one sent by the field work agency to emphasize the point that neither institution knew the identity and address of the potential interviewee. The letter from both institutions also contained a webpage and a telephone number in BdE to reassure on legitimacy of survey and to answer any question. Finally, it was written in each of the official languages of each region (Catalan and Spanish in Catalonia and the Balearic Islands, Basque and Spanish in the Basque Country, Galician and Spanish in Galicia and Valencian and Spanish in Valencia). Finally, local branches were informed about the ongoing survey in case sample members turned to them for confirmation.

Contractually, each interviewer had to make at least five attempts to locate each sample member in person (at least once on weekends). However, the number of attempts often exceeded that threshold, especially for sample members who had not been reached by the end of the fieldwork.

Training of interviewers

In mid-September 2016, immediately prior to the start of the fieldwork period, one hundred and eighteen interviewers went through a centralized two-day training about the contents of the survey, the protocols, and the use of support material (cardboards, letters from BdE and CNMV and a small gift for participants). Interviewers were divided into four groups, each trained by a member of the field work company. A representative of BdE participated in each group to clarify matters that were to arise during the explanation of the questionnaire. Interviewers also received a manual containing definitions of relevant variables, examples and some classifications (like four digit occupations).

Aside from issues general to all surveys, the protocol included training points specific to a Survey of Financial Competences. The first training point was the relevance of reading questions exactly as posed in the questionnaire. For example, and unlike financial surveys, when asking if the interviewee knew some specific financial product, interviewers were instructed not to provide definitions–as the survey aims at measuring knowledge of these products. Interviewers were also instructed to detect basic inconsistences and introduce explanatory comments. Such inconsistencies are especially likely to arise in a sample that is representative of individuals aged 18-79 as some respondents delegated financial matters to other household members. For example, some individuals answered that they did not have a bank account, but subsequently mentioned that they held financial products that usually require such product. Those comments, especially common in interviews to the least financially literate respondents, proved very useful during the edition phase.

A third training point stressed the role of the interviewer in imposing discipline when measuring competences. Interviewers asked other family members to leave the room during the section measuring financial knowledge or, if that was not possible, they emphasized that no one could assist the sample member. On the other hand, interviewers were instructed to record if the interviewee used items like paper and pencil or a personal calculator in financial competence questions.

A final training point referred the coding of occupation of the interviewee. That variable was included with the double purpose of obtaining information about the socio-economic status of respondents, as

well as about the tasks they conducted in their main job. In particular, respondents had to provide a verbal description of their current or main occupation, which the interviewer coded and subsequently introduced into an automatic search algorithm that proposed the corresponding 4-digit occupation.

By the end of the two-day training, all interviewers took a test, consisting in conducting a shortened interview where one of the members of the training team acted like the interviewee. Interviewers either performing poorly in that test, or coding answers incorrectly underwent additional training before going into the fieldwork or moved to other studies.

Fieldwork controls

Immediate follow-up after each interview

Within five days after each interview had been conducted, the supervisors of the field work company phoned the interviewee to check that the guidelines had been implemented. The phone supervisor asked the interviewee the recalled duration of the interview, whether the interviewer asked the consent to be recorded, used a tablet, showed cards or gave a small gift. In addition, the supervisor confirmed selected responses in the interview using a pre-defined script –for example, household composition and housing tenure.

In specific cases when the phone supervision was not successful, the field work company sent another interviewer to verify in person that the interview had taken place. BdE was immediately told about any incidence.

Time and audio recording

The time duration of 10% of the questions was recorded, and neither the interviewer nor the interviewee knew which ones.[4]

In addition, interviewers asked all interviewees their consent to be recorded. The wording of the question clarified that the purpose of the audio was to check whether the interview was following the protocol. Upon acceptance, the tablet recorded 5% of the questions, and neither the interviewer nor the interviewee knew which ones. More than two thirds of interviewees gave their consent, and the fraction increased as fieldwork progressed –see Figure 1.

Audio recording is useful for reasons beyond fieldwork control. It allows a better understanding on how interviewees receive complex questions. A first example is a question about the main occupation of the respondent. There, respondents described the tasks they did at their jobs and their level of responsibility. The interviewer assigned then a four-digit ISCO code using an automated search tool provided by National Statistical Institute. Audios were very useful in guaranteeing that interviewers were eliciting the information needed to code occupation correctly.

A second example refers to the measurement of expectations about the evolution of the house of residence over the next year. In that question respondents allocated 100 points to 5 possible price increases. Audios were again crucial to monitor if the interviewee understood the question correctly.

Duration and audio recording were important monitoring tools that allowed detecting anomalous interview durations or audio recording rates once we used cases in similar locations as a benchmark. Monitoring interviews during the field work was crucial to provide quick feedback when errors were detected.

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[4] The only exception was a question on reading comprehension, where interviewers measured the time required to read and understand a written text unrelated to financial matters.

5. Validation

The CAPI program was developed to detect basic inconsistencies between questions. As already mentioned, those inconsistencies are likely because some individuals are unsure about their own financial situation. The program allowed re-routing in case errors were detected. For example, some individuals had financed high expenses using a personal loan, despite having reported previously that no loan was contracted during the last two years. The program automatically re-asked the questions missing –in this case, the source of information used to acquire the loan.

Aside from those checks, there was an extensive validation of interviews during fieldwork, with the aim of detecting errors and providing feedback to interviewers as soon as possible. To that end, the personnel from BdE had provided a one-day training course to four reviewers in the field work company. The validation was done via a Web-based platform that permitted access to each (properly anonymized) interview. The field work company and BdE could both access each interview, but not at the same time. The platform included fields that allowed three rounds of interactions about each case.

The protocol was the following. Once finished, each interview was reviewed by the fieldwork company, which could recommend through the platform changes in the data, re-contacting the interviewed household or, in extreme cases, completely redoing (parts of) the interview. In all of those cases, the BdE team reviewed the proposals of the fieldwork company and decided on a case-by-case basis. On the other hand, the BdE team also reviewed at random interviews marked as correct by the field work company to make sure that all interviewers were receiving feedback about their performance.

In cases where some answers were contradictory with previous ones, and after the approval of BdE, the fieldwork company re-contacted the interviewee by phone. The most common reasons for re-contacting an individual were doubts about his or her degree of financial inclusion. For example, an individual could report not having a bank account, but receiving public pension income. As most of these payments are made through bank accounts, there was a reasonable doubt about whether or not the individual held the financial product. Another common case for re-contact was that of individuals reporting a collateralized loan but not real estate property whatsoever. Finally, inconsistencies about household composition –because the one reported in the interview differed from the one in the phone supervision – or about the labor market status of the individual always led to a phone re-contact.

Finally, in a handful of cases, the BdE decided that the interview had to be repeated because of deficiencies in measuring financial competences or strong doubts if it had really taken place.[5]

As a result of this validation process, the field work company provided immediate feedback to each interviewer, either positive or providing suggestions for improvement. That feedback was especially important during the first weeks of field work to avoid the accumulation of errors.

The main validation tools were the duration of questions, geo-location of interviews and, especially, audios. Durations served as a basic tool in detecting if some interviewers shortened or read too quickly important questions. On the other hand, audios turned out to play an important role. Firstly, they helped in detecting deviations from the protocol, like imprecise wording or non-neutral attitude of the interviewer –especially relevant in the Section of financial competences. Secondly, knowing that the interview was recorded helped to discipline the interviewer.

[5] In total, all interviews were reviewed by the field work company and about 40% were reviewed additionally by the BdE team.

Examples

This Section provides examples comparing how interviewer behavior varies depending on whether or not the interviewee gave consent for the recording. These examples are meant to be illustrative of the relevance of field work monitoring, but are not necessarily informative about the causal impact of consent to be recorded on interviewer behavior. By the same token, they are not meant to be representative of the typical behavior of interviewers.

An important question in the ECF asks, "Are you informed about the financial matters in your household? By this we do not only mean if you know the financial products the household has, but also the reasons why some decisions were taken". If the interviewer answered "yes", the interview would proceed as usual. However, if he or she answered "not", an informed household member would have to answer an extra section on financial competences, thus lengthening the duration of the interview.

Figure 2 presents two histograms of time durations of the question on knowledge about household financial matters of two actual interviewers (interviewer "A" and "B"). That is, it shows the fraction of interviews where the question about knowledge of financial matters lasted 4-5 seconds, 6-7 and so on. The duration of the question differs across interviews depending on whether or not the interviewer had to repeat the question, whether the interviewee hesitated about the answer or because of other reasons.

The white (green) histogram in Figure 2 shows the distribution of durations of the question (measured in seconds) when the interviewee gave (refused) his or her consent for the recording. In the case of interviewer "B" (shown in the rightward panel), the distribution of times taken to make the question about familiarity with financial matters does not depend much on whether or not the interviewee gave his or her consent. However, the behavior of interviewer "A" differs. We observe a distribution of durations similar to that of interviewer "B" when the interviewee gave his or her consent to be recorded. However, when the interviewee refused to be recorded, we observe a number of interviews with unusually low durations (well below 10 seconds). In such cases, the fieldwork company provided feedback to the interviewee, asking for additional details about the protocol followed when the interviewee did not provide his or her consent to be recorded. In addition, those cases were studied in detail by the revision teams of the BdE and the fieldwork company and, in some instances, the sample member was re-interviewed.

The provision of those warnings seems to have been effective. Figure 3 shows the distribution of time durations of the same question of a third interviewer (Interviewer "C"). In this case, the histogram compares two moments in the fieldwork. The histogram in green shows the distribution of time durations of the question about being familiar with household finances before the warning while the histogram in white shows the same distribution after the warning. Interestingly, no interview has time durations below 10 seconds after the warning, while these represented more than 15% of the total before. These changes indicate that monitoring of interviewers is very important to guarantee a correct implementation of the survey.

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Lusardi A. and O. Mitchell (2011) Financial Literacy Around the World: An Overview *Journal of Pension Economics and Finance* Volume 10 Issue 4, Pages 497-508.

Stango V. and J. Zinman (2009) "Exponential growth bias and household finance" *Journal of Finance* Volume 64, Issue 6, Pages 2807–2849.

Figure 1. Fraction of interviews where the interviewee gave consent to be recorded, by week of fieldwork

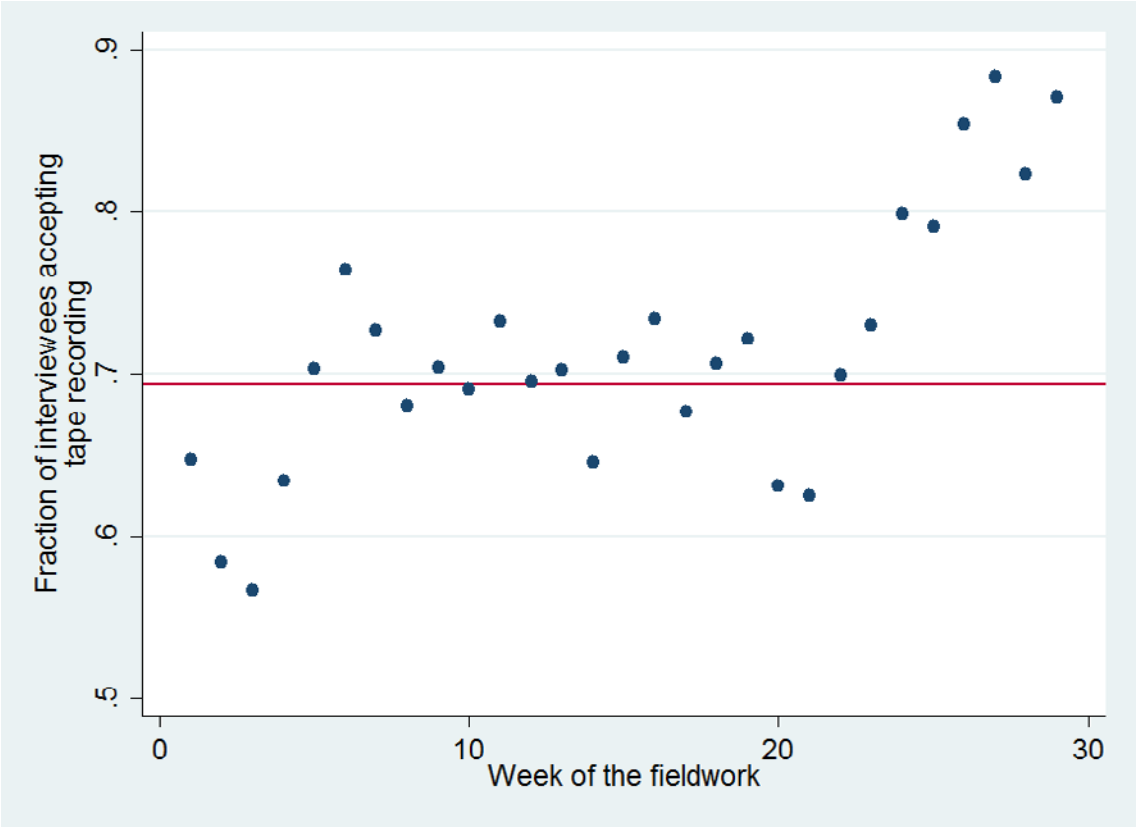
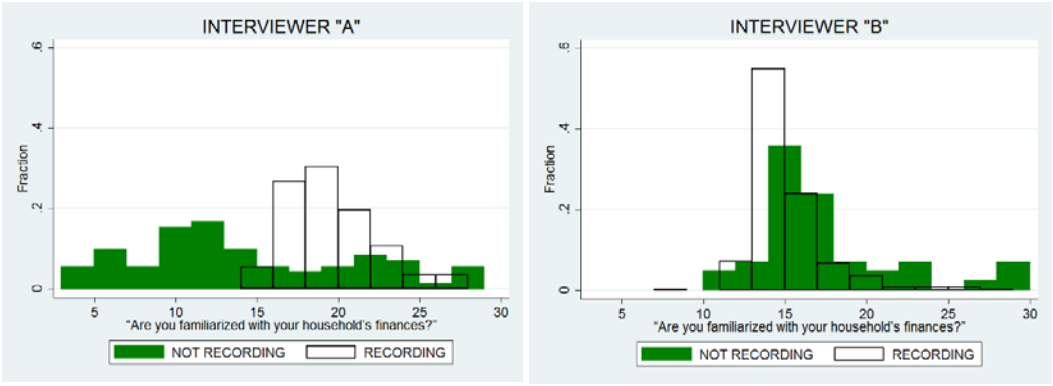
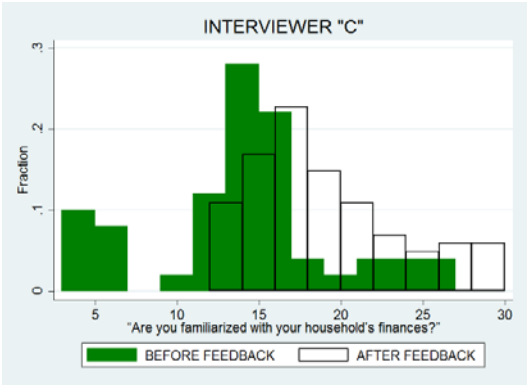


Figure 2: Duration of questions of two interviewers, by interviewee consent to be recorded.



The Panels show histograms of time durations -in seconds- of the question "Are you informed about the financial matters in your household? By this we do not only mean if you know the financial products the household has, but also the reasons why decisions were taken". The histogram in white (green) reflects time durations when interviewee gave (refused) consent to be recorded.

Figure 3: Duration of questions of one interviewer, before and after a warning was issued.



The Panels show histograms of time durations -in seconds- of the question "Are you informed about the financial matters in your household? By this we do not only mean if you know the financial products the household has, but also the reasons why decisions were taken". The histogram in green (white) reflects time durations before (after) a warning was given to the interviewer.

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BANK FOR INTERNATIONAL SETTLEMENTS

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Measuring financial competences in a large-scale survey: the Spanish Survey of Financial Competences[1]

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MEASURING FINANCIAL COMPETENCES IN A LARGE SURVEY: The Spanish Survey of Financial Competences.

Josep Amer (BdE), Olympia Bover (BdE), Laura Hospido (BdE, IZA), Ernesto Villanueva (BdE)

Bank Al-Maghrib – CEMLA – IFC Satellite Seminar on Financial Inclusion

July 14th 2017

OUTLINE OF THE PRESENTATION

1. **Introduction.**
   - Aim of the Spanish Survey of Financial Competences
   - Measures of financial literacy
   - Basic characteristics (sampling, reference period)

2. **Contents of the Survey.**
   - Sections of the survey
   - Adaptations of the INFE questionnaire

3. **Fieldwork.**
   - Efforts to minimise non-response
   - Interviewer training
   - Validation and Control
   - Examples

4. **Conclusions.**

1. INTRODUCTION

Aim of the survey: measuring financial competences, quality of decision-making and financial outcomes among the adult population in Spain.

Survey on the financial competences of the population 18-79 years of age

Face-to-face survey to a large sample of individuals, questionnaire presented as CAPI.

Information about the person chosen at random, but also of financial competences from a household member informed about the household finances.

Adapts a questionnaire coordinated by OECD, currently implemented in a number of countries.

Initiative of the INFE (International Network of Financial Education)

First pilot in 2010, 14 countries participated.

Questionnaire revised and the second measurement involves 30 countries.

The core of the Spanish questionnaire is broadly based on the one provided by INFE but has special features.

General motivation: The strong correlation between the lack of basic financial competences and poor financial outcomes

Lusardi and Mitchell (2008, 2011), Alessie, Lusardi and Van Rooij (2011b), Stango and Zinman (2009)

1. INTRODUCTION: Examples of INFE questions on Financial Competences

QK4_a) Suppose you put €100 into a savings account with a fixed interest rate of 2% per year. There are no fees and taxes subject to this account. You don't make any further payments into this account and you don't withdraw any money. How much money would be in the account at the end of the first year, once the interest payment is made?

Record response numerically - - - *a) Don't know* *b) Refuse to answer*

1. INTRODUCTION: Examples of INFE questions on Financial Competences (ii)

QK4_a) Suppose you put €100 into a savings account with a fixed interest rate of 2% per year. There are no fees and taxes subject to this account. You don't make any further payments into this account and you don't withdraw any money. How much money would be in the account at the end of the first year, once the interest payment is made?

Record response numerically - - - *a) Don't know* *b) Refuse to answer*

QK4_b) Once more, if you don't make any further payments neither withdraw any money, once the interest payment is made, how much money would be in the account at the end of five years [remembering there are no taxes and fees and the payment is made every year]? Would it be:

a) More than €110 ***b) Exactly €110*** ***c) Less than €110*** ***d) Or is it impossible to tell from the information given***

e) Don't know *f) Refuse to answer*

QK5) I would like to know whether you think the following statement is true or false: It is usually possible to reduce the risk of investing in the stock market by buying a wide range of stocks and shares.

a) True ***b) False*** *c) Don't know* *d) Refuse to answer*

1. INTRODUCTION: Examples of INFE questions on Financial Competences (iii)

QK4_a) Suppose you put €100 into a savings account with a fixed interest rate of 2% per year. There are no fees and taxes subject to this account. You don't make any further payments into this account and you don't withdraw any money. How much money would be in the account at the end of the first year, once the interest payment is made?

Record response numerically - - - *a) Don't know* *b) Refuse to answer*

SIMPLE INTEREST RATE

QK4_b) Once more, if you don't make any further payments neither withdraw any money, once the interest payment is made, how much money would be in the account at the end of five years [remembering there are no taxes and fees and the payment is made every year]? Would it be:

a) More than €110 ***b) Exactly €110*** ***c) Less than €110*** ***d) Or is it impossible to tell from the information given***

e) Don't know *f) Refuse to answer*

INTEREST RATE COMPOUNDING

QK5) I would like to know whether you think the following statement is true or false: It is usually possible to reduce the risk of investing in the stock market by buying a wide range of stocks and shares.

a) True ***b) False*** *c) Don't know* *d) Refuse to answer*

RISK DIVERSIFICATION

1. INTRODUCTION: Basic features.

- **Representative sample of the population of Spanish individuals aged 18-79 living in private households**
  It excludes institutionalized population.

- **Representative of each of the 17 regions as, to a large extent, they run the educational system.**
  Sample of about 21,000 individuals, drawn from the most recent Census.
  Probability sample, stratified by Primary Sampling Unit (*Sección Censal*).

- **Reference period:**
  Conducted between end-September 2016 and end-June 2017.
  Mainly reflects situation in the moment of the interview:
  - *Some questions refer to last 12 months (whether expenses higher than income) and up to the last 2 years (acquisition of financial assets).*
  - *Others to next 12 months (expectations about the value of the main residence in a year's time).*
  - *Some questions refer to previous two years (if acquired some financial product).*

2. CONTENTS OF THE SURVEY

1. **Basic demographics and labor force status**
   - Age, household composition
   - Employment status, occupation, probability of job loss and of finding job
2. **Respondent's portfolio and sources of information.**
   - Knows financial products, holds them now, acquired them during the last 2 years?
     - *Checking and savings accounts, mortgages, pension and mutual funds, stocks, bonds, consumer loans, credit cards, life and health insurance.*
   - Information on acquisition of financial products
3. **Sources of income in old age**
   - Current or expected
4. **Attitudes toward saving**
5. **Financial competences**
6. **Competences in Economics**
7. **Main residence**
   - Tenure, reasons renting/purchasing, subjective expectations about growth of own house price next two years
   - If indebted: Mortgage monthly installment and original loan-to-value.
8. **Expenses and financial fragility**
   - Qualitative: whether or not expenses exceed revenues over last 12 months and, if yes, how financed the difference between expenses and revenues.
   - Quantitative: expenses in food, education and income (the latter in ranges).
   - Entered into loan arrears last year?

2. CONTENTS OF THE SURVEY: Special features

- **Survey to individuals, but also aim to collect information about the financial competences of an informed household member.**

  Ask respondent if he or she is familiarized with household's asset and debt holdings, as well as about the reasons for financial choices.

  If individual is not familiarized, interview a person who is informed about the household portfolio.

  - *Household financial competences.*

- **Complement INFE questionnaire with information on general competences.**

  Literacy: reading and understanding a (non-financial) text.

  Understanding graphs:

  - *Non-financial: based on PIAAC assessment of numeracy and literacy (evolution of number of births).*
  - *Financial: based on UK Financial Capability Survey (evolution of the value of mutual funds).*

- **Module on housing.**

  Housing tenure and reasons that led to that choice.

  Subjective expectations about house price growth over the next year.

  If financed house with mortgage: loan to value at purchase and current monthly installment

3. FIELDWORK: Efforts to reduce non-response and training of interviewers.

- **Efforts to mitigate non-response:**

  Letter signed by Governor of BdE and President of SEC (CNMV) sent in advance.

  At least 5 attempts to locate each sample member in person.

  At least once on weekends.

  Webpage and BdE telephone provided to interviewees to reassure on legitimacy of survey and answer questions.

- **Two-day training on survey content, protocol, material (cardboards)**

  Centralized (118 interviewers).

  In mid-September, immediately before the start of fieldwork.

  All interviewers tested at the end of the two-day training.

3. FIELDWORK: Efforts to reduce non-response and training of interviewers (ii)

- **Special training points in a Survey of Financial Competences:**
  1. Reading questions exactly as posed in questionnaire.

  2. Spotting basic inconsistencies and introducing comments.

     Always important, more so in a survey measuring financial inclusion.

     E.g. individual does not have a bank account, but reports holding a mortgage.

     Errors are common among the least financially literate respondents.

  3. Imposing discipline in section of financial competences.

     Importance of other household members not helping in competence questions.

3. FIELDWORK: Control

1. After each interview completed, company phoned back the respondent (100% rate)

Was the interview conducted? Selected responses checked following predefined script.

Household composition, housing tenure, compliance with protocols and duration.

BdE immediately informed about any inconsistencies –more on this below.

2. Recording durations

The duration of 11% of the questions is recorded.

Neither interviewer nor interviewee knew which ones.

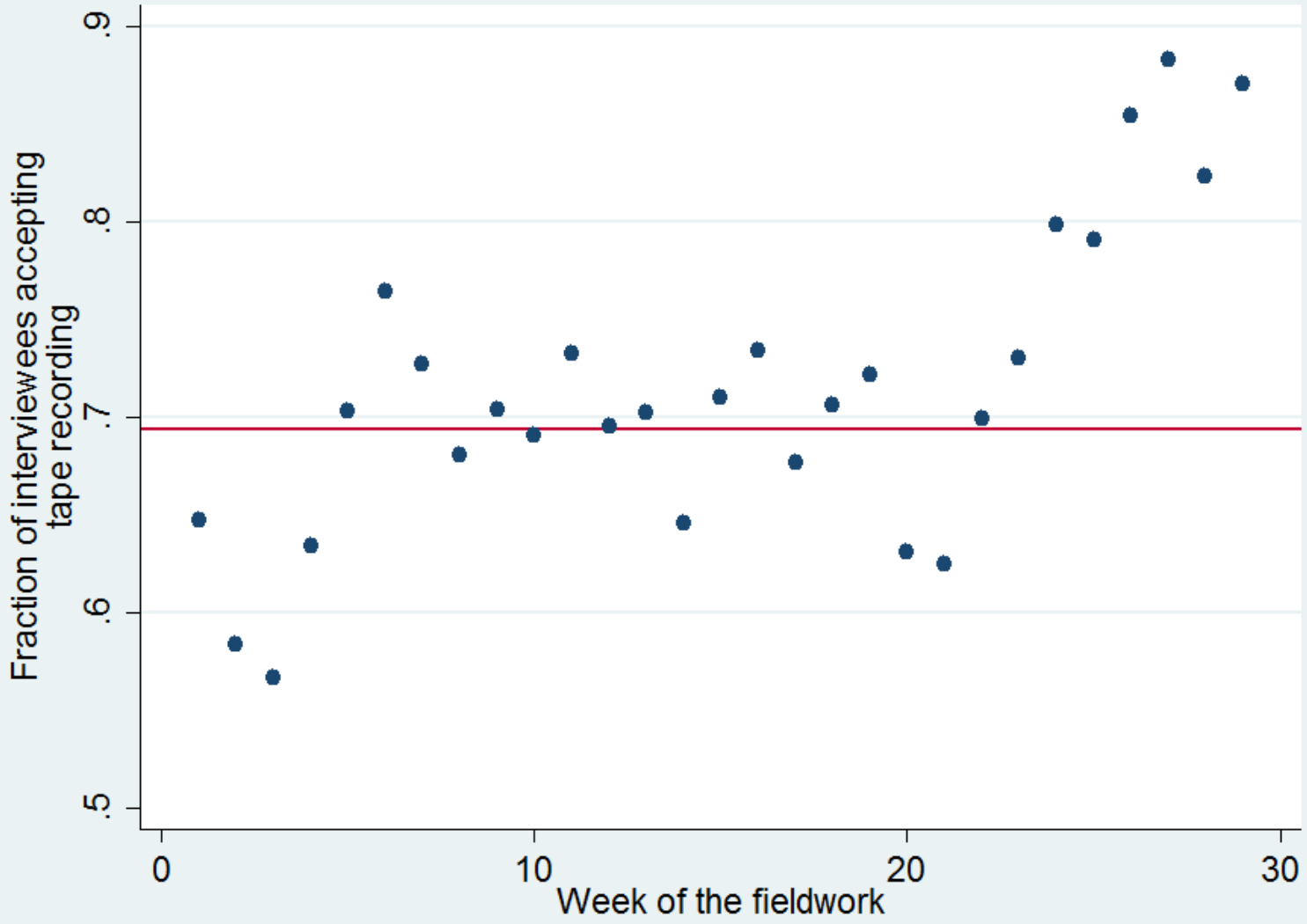
Except for 1 question (reading ability)

3. Audio recording

Interviewee consent needed (Graph).

5% questions recorded, neither interviewer nor interviewee knew which ones

3. FIELDWORK: Fraction of interviewees accepting tape recording



3. FIELDWORK: Control (ii)

1. **Audio recording has methodological interest for some difficult questions**

   Occupation.

   Respondents describe what they do at their jobs and interviewer assigns ISCO code using an automated search tool provided by Statistical Institute).

   Expected growth of the value of house of main residence over one year.

   Allocate 10 points to 5 predetermined bins with possible values.

2. Duration and audio recording allow detecting interviewers with anomalous interview durations, audio recording rates, etc.

Interviewers in similar locations used as a benchmark (statistical control).

3. Duration and audio recording also allow monitoring and quick feedback if errors are detected.

Examples later in the talk

3. FIELDWORK: Validation

- **Web-based system to access, review and edit each (anonymised) case.**

  Reviewers from BdE and fieldwork company could interact on each case

- **Each completed interview was reviewed by the fieldwork company, that can recommend through the platform:**

  Editing some variables.

  Re-contacting the respondent.

  Completely redoing the interview.

- **BdE reviews the cases and decides about all edits and re-contacts.**

  But also supervises at random.

  Immediate feedback to interviewers.

- **Doubts about financial inclusion usually led to re-contacting the respondent**

  Examples:

  Respondent does not have a bank account, but reports receiving pension income or unemployment insurance.

  Holds a mortgage, but reports no real estate property.

  Other reasons were doubts about household composition or labor market status.

3. FIELDWORK: Validation (ii)

- **Reviewed interviews as fieldwork progresses**
  - Crucial to correct errors early.
  - Provide interviewers with feedback.

- **Time spent on each question serves as a basic control**
  - Serves in detecting if some interviewers shorten or read too quickly some questions.

- **Role of audios**
  - Help in detecting deviations from protocol.
    - *Imprecise wording, non-neutral attitude in financial competence questions, etc*
  - Discipline the interviewer.
    - *McGonagle, Brown and Schoeni (2015): "Interviewee consent to be recorded lengthens interviews by 3.5%"*

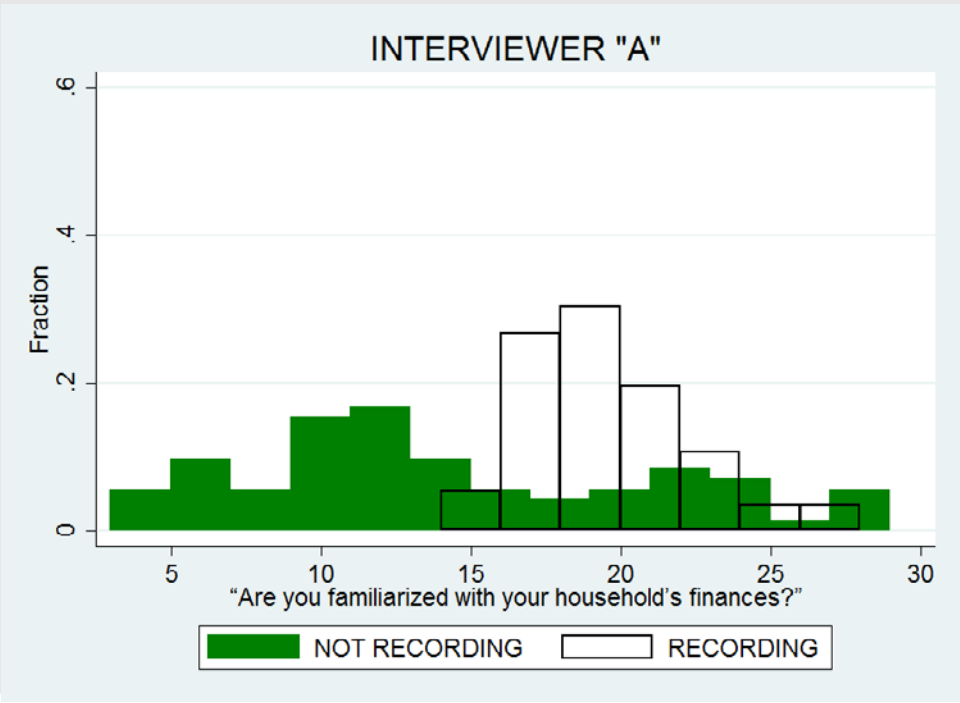
- **Next, we provide two examples on interviewer monitoring (one is an extreme case)**
  - Time duration of question: "Are you informed about household finances?"
  - Classified by "whether interviewed person gave consent to record"

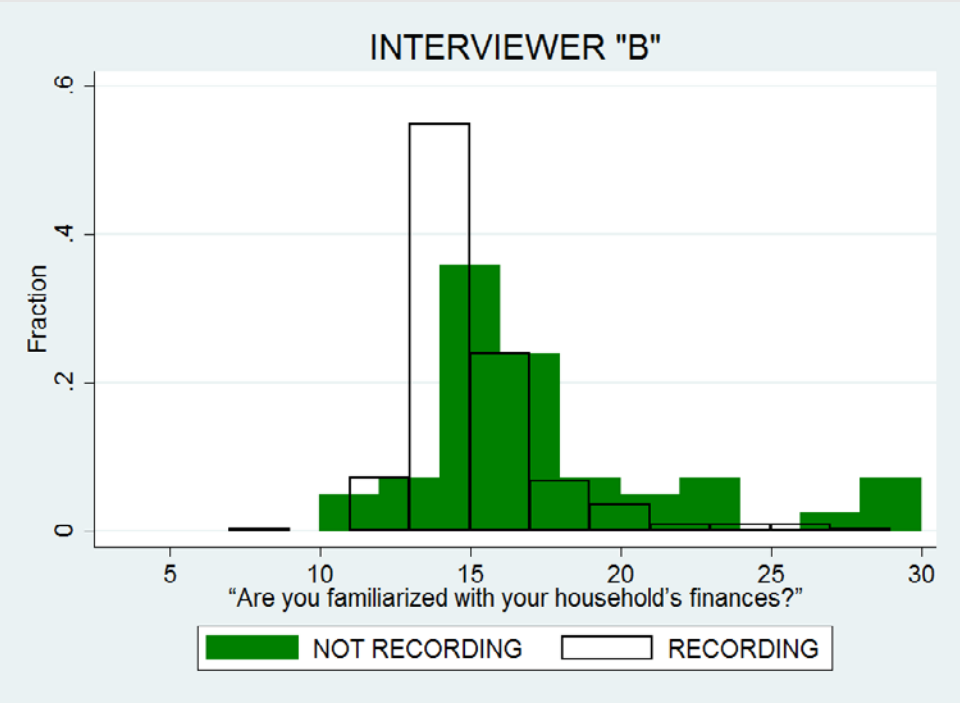
3. FIELDWORK: Example on usefulness of monitoring

Graph displays histogram of durations of a particular question (if respondent informed about household finances)

Interviewer "A" makes the question much faster when not recorded (interviewer "B" does not)

HISTOGRAM OF TIME DURATION OF A PARTICULAR QUESTION BY WHETHER OR NOT INTERVIEWEE GAVE CONSENT TO RECORD





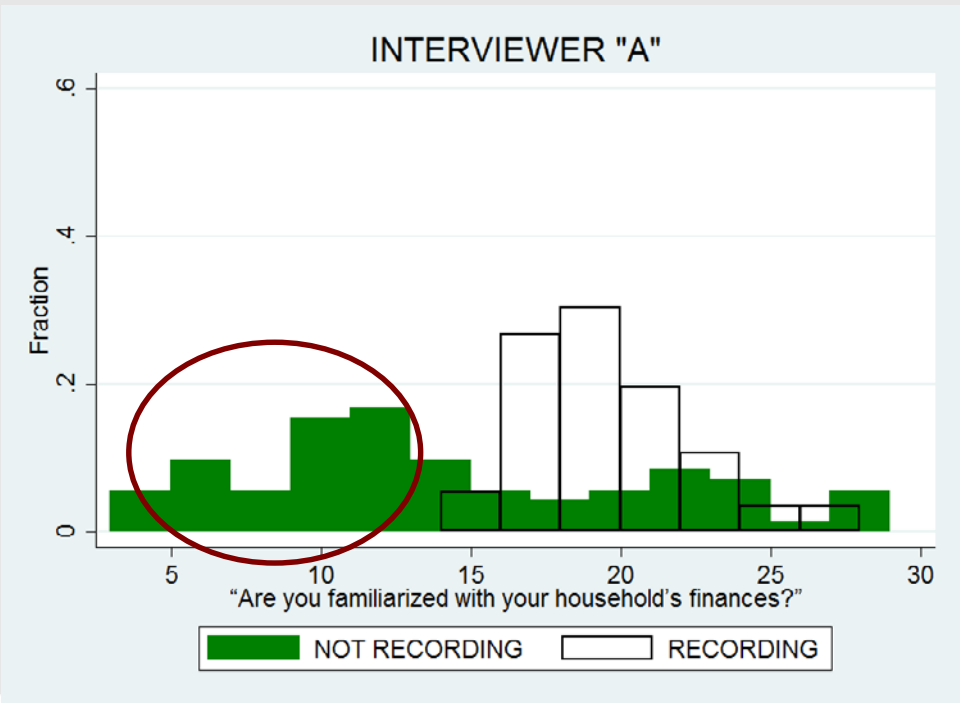
3. FIELDWORK: Example on usefulness of monitoring (ii)

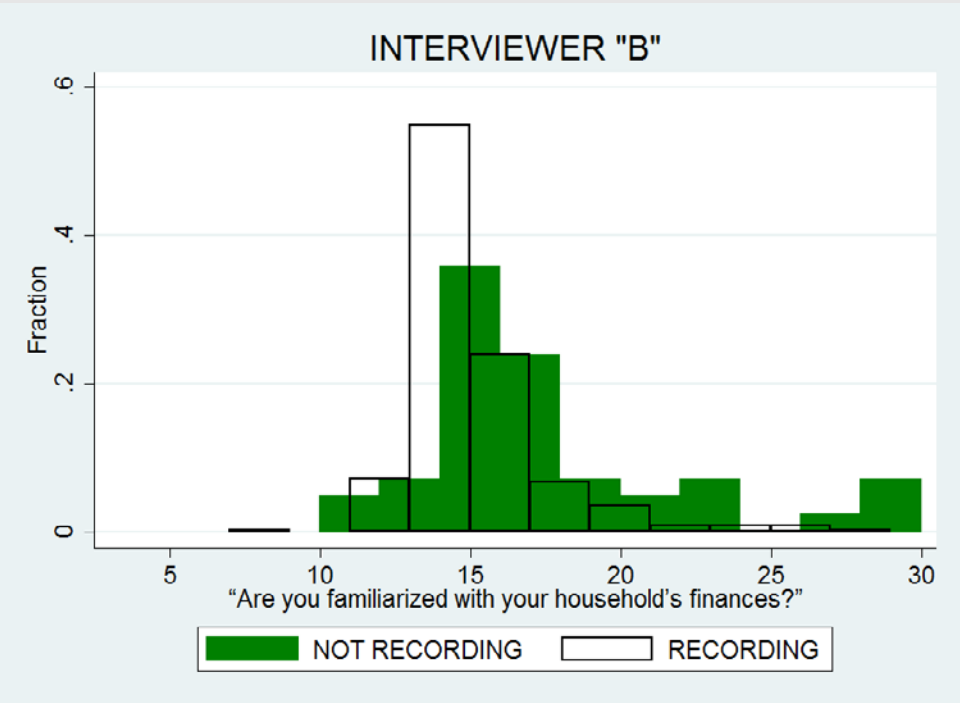
Short durations, coupled with other information, led to:

1. **Immediate warning to interviewer.**

2. In some cases, re-visiting the respondent's household to elicit information from an informed individual

HISTOGRAM OF TIME DURATION OF A PARTICULAR QUESTION BY WHETHER OR NOT INTERVIEWEE GAVE CONSENT TO RECORD

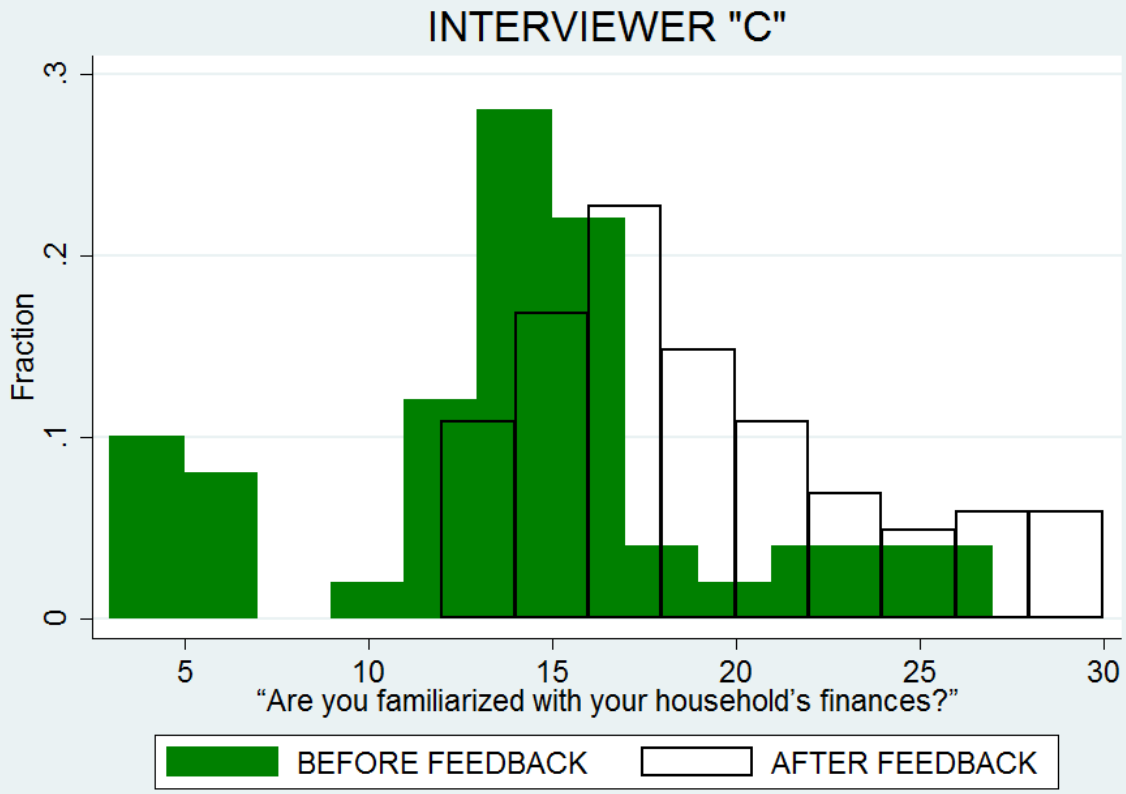




3. FIELDWORK: 2nd example on usefulness of monitoring

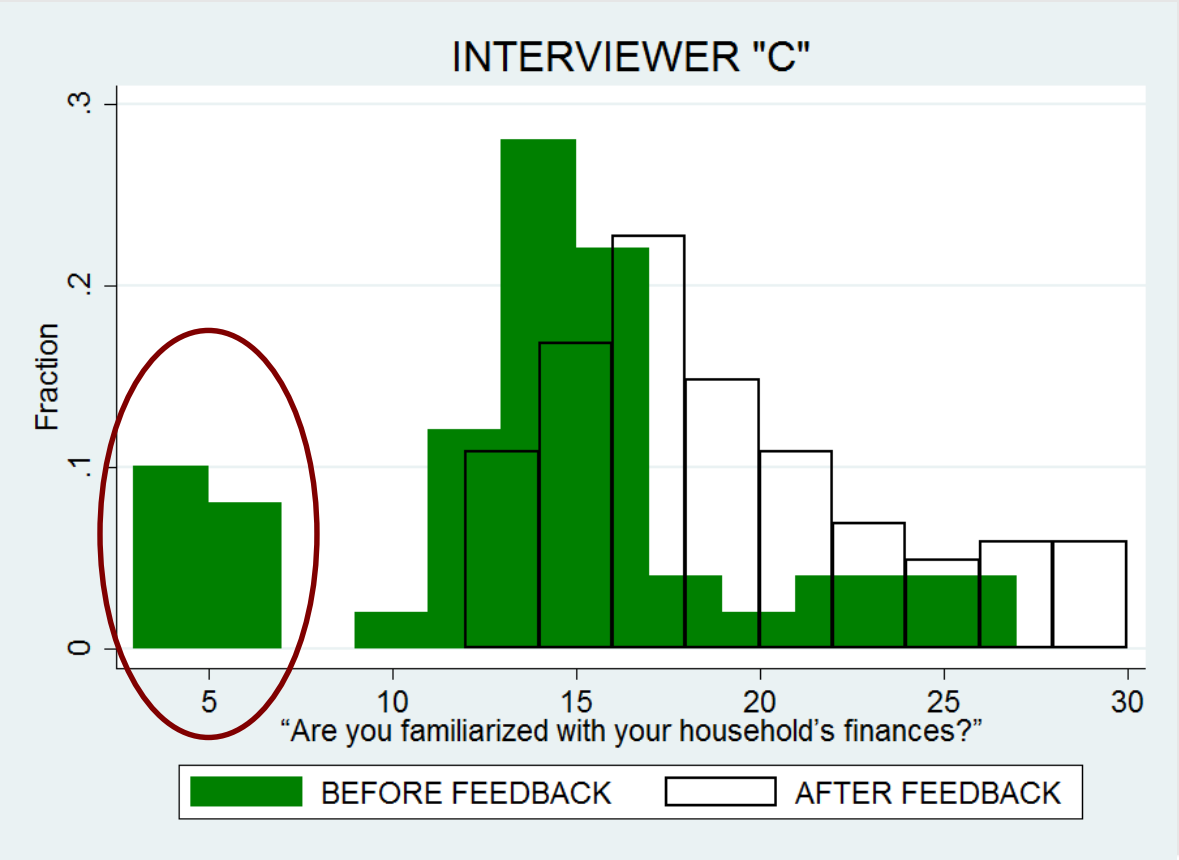
Graph displays histogram of durations of same question as above (if respondent informed about household finances).

Two histograms, reflecting two different moments of fieldwork (before and after warning provided).



3. FIELDWORK: 2nd example on the usefulness of monitoring (ii)

Unusually short durations for a complex question less common after warning was provided *("Please, read the question as it is written in the questionnaire")*



4. CONCLUSIONS

- **This presentation has described the contents and main characteristics of the Survey of Financial Competences in Spain.**
  - Part of a coordinated effort by OECD to measure financial competences in 30 countries.
  - Adapted to Spanish environment and including additional relevant features
- **Described the fieldwork**
  - Measures to minimize non-response.
  - Interviewer training.
  - Control during fieldwork.
  - Validation.
- **Control and validation processes are always important to achieve data quality.**
- **Specially so in a Survey of Financial Competences.**
  - Important to distinguish if an individual does not have a financial product or, alternatively, he or she has the product but did not understand the wording of the question.
  - Control and validation processes are crucial in telling apart both cases.
  - Some illustrations on monitoring.

THANKS FOR YOUR ATTENTION!

INTRODUCTION TO FINANCIAL COMPETENCES SECTION

The following section of the questionnaire includes several exercises, some simpler than others.

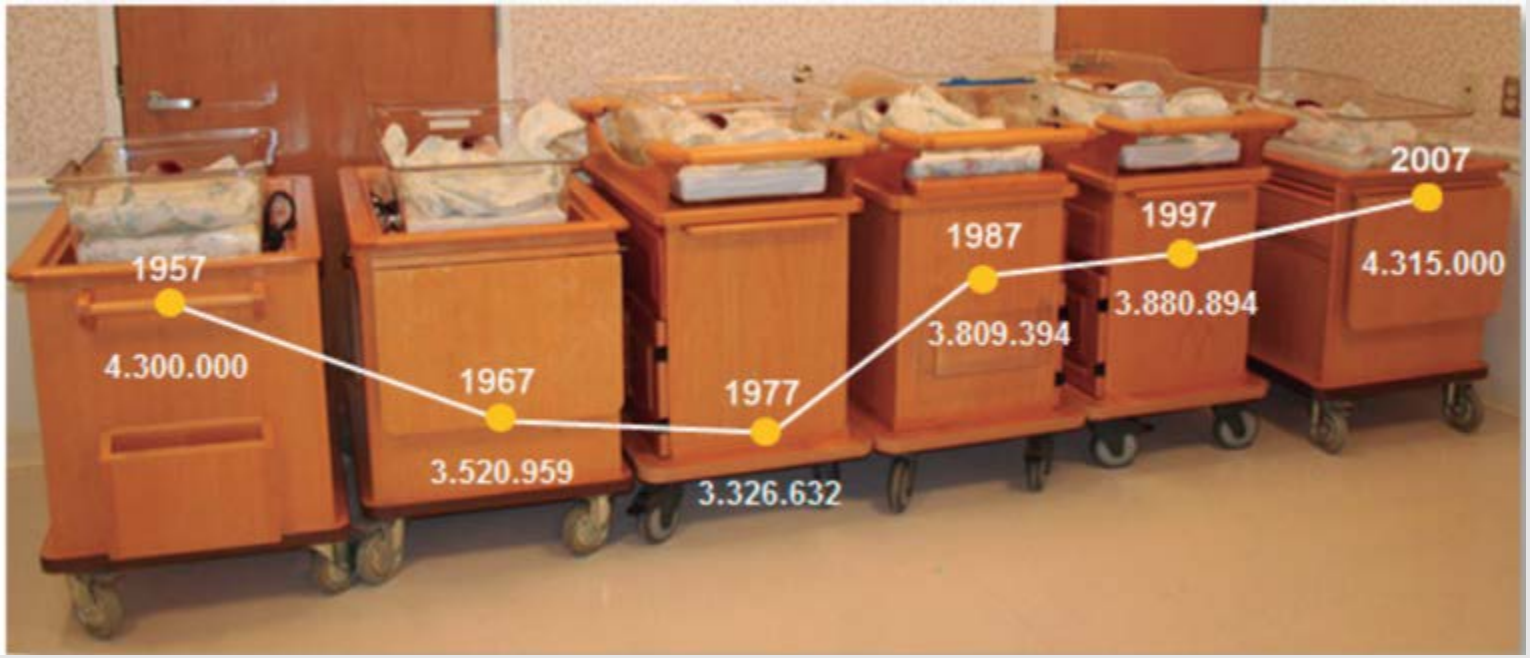
If you think you have the correct answer, you probably do.

It does not matter if you can not answer them all, but it is important that you try to respond to each.

So that we can obtain valid information you need to answer in private, so that no one can help you.

NUMERIC COMPETENCES (i)

The following graph shows the number of births in the United States from 1957 to 2007. Data are presented every 10 years



During which period or periods was there a decline in the number of births?

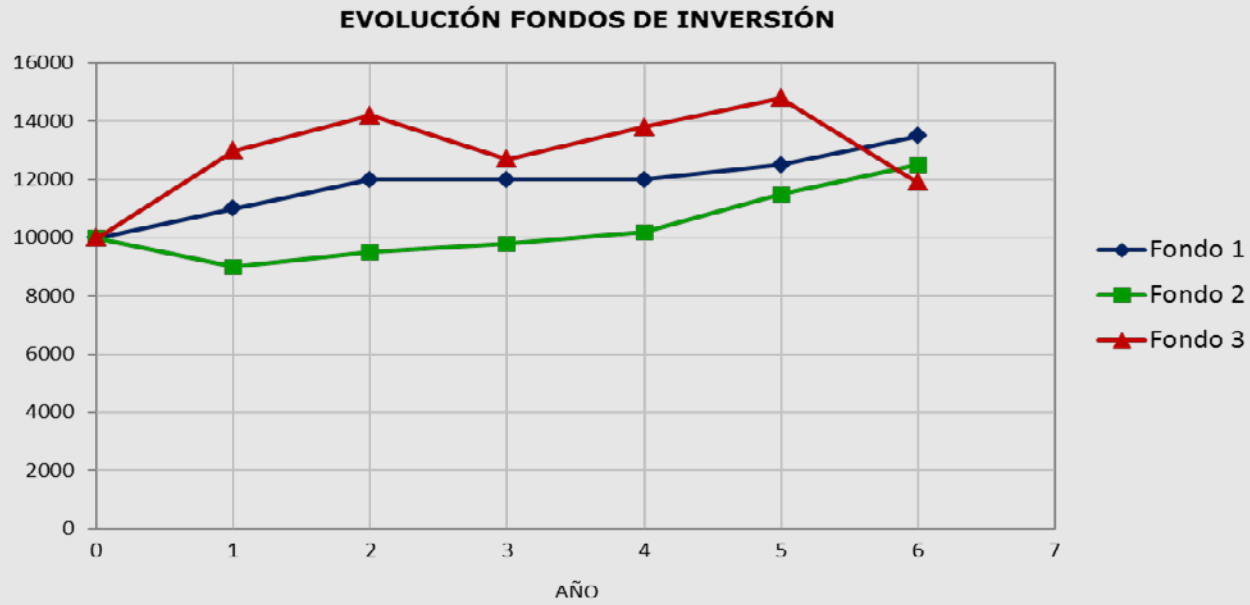
a. 1957-1967 b.1967-1977 c. 1977-1987 d. 1987-1997 e. 1997-2007
f. Don't know g. Refused

Source: PIAAC, sample item 3: Births in the United States

NUMERACY QUESTION (ii)

QNquiz3. This chart shows how a €10,000 investment would have performed in different types of investment funds over the last six years. Assuming that fees and charges are the same for all funds, which fund gave the best return after six years?

~ Fund 1
~ Fund 2
~ Fund 3
~ Don't know
~ Refused



Source: UK FCS QNquiz3 and Showcard N3

QUESTION ON LITERACY

e0401) Point the sentence that tells what Ms. Cabañero ate during the swim.

a) Don't know b) Refused c) Cannot read

e0402) At what age did Cabañero begin swimming competitively?

Record response numerically - - -

a) Don't know b) Refused c) Cannot read

e0403) Please, select the sentences that better summarizes the text that you just read:

a) The news talks about why long-distance swimming is not an Olympic test.

b) The news talks about the attempts of a swimmer to swim across the Strait of Gibraltar.

c) The news talks about the dangers of crossing the Strait of Gibraltar by swimming.

d) The news talks about how women are better than men in long-distance swimming.

e) Don't know f) Refused g) Cannot read

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank ob Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*
Marrakech, Morocco, 14 July 2017

Measuring the financial literacy of the adult population: the experience of the Bank of Italy[1]

Antonietta di Salvatore, Francesco Franceschi,
Andrea Neri and Francesca Zanichelli,
Bank of Italy

[1] This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Measuring the financial literacy of the adult population: the experience of Banca d'Italia

Antonietta di Salvatore, Francesco Franceschi, Andrea Neri and Francesca Zanichelli

Banca d'Italia has recently conducted a survey to investigate financial literacy and inclusion among Italian adults. The survey is part of an OECD project to create an internationally comparable dataset on this important topic. The questionnaire used has been developed by the International Network for Financial Education (OECD - INFE). The sample consists of about 2,500 persons interviewed using two different methods. Some 40 percent of them had a face-to-face interview while the others used a tablet. Our findings show the existence of substantial knowledge gaps with respect to other G20 countries, which are most evident among less educated respondents, among the elderly and among women. Compared to other countries, Italy shows a very low level of financial knowledge but respondents seem to be aware of their weaknesses (or they are at least prudent in assessing their level of financial literacy). We also discuss some critical aspects of the OECD's methodology that should be addressed in order to improve the measurement of financial literacy and to increase cross-country comparability.

Keywords: financial Literacy, financial inclusion, mode effect

JEL classification:

Contents

Introduction

Several studies show an individual's ability to understand and use basic financial and economic concepts plays an important role in achieving an appropriate level of economic wellbeing (see, among others, Lusardi and Mitchell 2011 and 2014). Adequate skills enable individuals to take advantage of the opportunities offered by a developed financial system, at the same time taking risks into account in a proper manner.

The evidence available suggests that the level of basic and financial competencies of the Italian population is low compared with the most advanced economies. Within the Programme for the International Assessment of Adult Competencies (PIAAC), the OECD ran a survey measuring literacy, numeracy and problem-solving skills of populations aged 16-65. Among the 24 countries surveyed, Italy turned to be at the bottom of the distribution both in literacy and numeracy (OECD, 2013). Klapper, Lusardi, and van Oudheusden (2015) use the Standard & Poor's Ratings Services Global Financial Literacy Survey to show that only 37 per cent of Italians correctly understand basic financial concepts, much less than the EU average of 52 per cent. In line with the theoretical predictions of Lusardi, Michaud and Mitchell (2011; 2013), Fornero and Monticone (2011), exploiting data from the Bank of Italy's *Survey on Household Income and Wealth*, show that the level of financial knowledge in Italy is: hump-shaped over the life cycle; increases with the level of education; is higher among men; and is higher in northern (richer) regions.

Detailed information on adult financial literacy, comparable across countries, had however been lacking until the recent development of the OECD-INFE harmonized methodology (OECD 2015). The first results were presented in the OECD-INFE International Survey of Adult Financial Literacy Competencies (2016), which included 30 countries. Subsequently, following a call by G20 Leaders at the 2016 Hangzhou Action Plan meeting, a report on financial literacy across G20 countries was presented at the 2017 G20 summit meeting in Hamburg (OECD 2017).

At the beginning of 2017, Banca d'Italia ran a sample survey on approximately 2,500 adult individuals using the OECD-INFE harmonized questionnaire (Italian Literacy and Financial Competence Survey, IACOFI). The survey was carried out using two different methodologies: 1,500 individuals responded via a tablet device designed to be easily used by all subgroups of the population (even the less educated or the more elderly), while the remaining 1,000 individuals were interviewed personally using CAPI methodology (Computer Assisted Personal Interviews).

The data collected have enriched the limited information available for Italy and will contribute to implement the National Strategy for Financial Education that Italy recently decided to develop.

This paper presents the main results based on this survey. A comparison with other countries is performed on the basis of national data published in the G20/OECD report of 2017.

The OECD-INFE framework

According to a comprehensive definition, financial literacy is a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial wellbeing (OECD, 2011).

The International Network for Financial Education (INFE) has developed a questionnaire widely adopted around the World (OECD-INFE, 2015), measuring three areas of financial literacy: knowledge, behaviour and attitudes.

The knowledge component aims at assessing the understanding of basic concepts which are a pre-requisite for making sound financial decisions. It is based on the three topics that have become the standard in the literature on financial literacy (Lusardi and Mitchell, 2011): understanding simple and compound interest, inflation and the benefits of portfolio diversification.

The second component measures the diffusion of behaviour that often indicates the ability to manage money properly. In particular, the behaviour index is based on questions that assess whether people have a budget, are able to pay debts and utilities with no concerns, and acquire information before making investments.

The attitudes component tries to evaluate, aside from actual knowledge and behaviours, personal traits such as preferences, beliefs and non-cognitive skills, which have been shown to affect personal well-being. In particular, in the INFE methodology this component is meant to capture attitudes towards precautionary saving and towards the long term in general.

The overall level of financial literacy is given by the sum of the three components and it ranges between 1 and 21: a maximum of 7 points derives from the knowledge questions, 9 from behaviour, and 5 from attitudes.

Finally, according to the OECD methodology, there are no penalties for wrong answers and therefore the missing answers ("don't' know") are treated the same as the wrong ones. The OECD-INFE methodology is the result of a multidisciplinary contribution, reflects policy makers' experiences and attempts to measure the level of financial literacy in a comprehensive manner. Even though this methodology represents a useful tool for policy makers, it is affected by some weaknesses that will be addressed in a specific section.

Financial literacy gaps in the Italian population

Overall, the survey results show a very low level of financial literacy in Italy compared with the G20 average (figure 1).

The financial knowledge score is on average 3.5 out of a maximum of 7 points, compared with a G20 average of 4.3. The percentage of respondents who achieved a minimum target score (5 or more, according to the OECD methodology) is slightly above 30 percent, versus the G20 average of 48 percent. Italians are broadly not aware of the benefits of portfolio diversification: only 37 percent of respondents understand that risks can be reduced by buying a wide range of stocks and shares (table 1). Furthermore, less than half of the respondents are able to calculate a simple interest rate while only 23 percent are able both to calculate a simple interest and recognize the additional benefit of compounding over five years.

These results are likely to be affected by the different respondents' behaviours across countries. For instance, Italy seems to be characterized by a high non-response rate for financial knowledge questions: only one in three individuals answers all 7 questions, versus 45 percent in the UK and 66 percent in Canada, the only two countries for which micro data are available (table 2). Moreover, the response behaviour of Italian respondents appears to be influenced by the survey mode: the percentage of "I do not know / refused" is lower for face-to-face interviews. However, our preliminary results show that this aspect cannot explain by itself all the difference with other countries (di Salvatore *et. al*. 2017).

Also the Italian behaviour score is below the G20 average: 4.4 versus 5.4 on a scale of 0 to9. The proportion of respondents who achieved a minimum target score (at least 6 out of 9, according to the OECD methodology) is less than 30 percent, compared with a G20 average of 52 percent. The behavioural score is negatively impacted by the low propensity of Italians to pursue long-term financial goals: only 27 percent of respondents agree with the statement "I set long-term financial goals and strive to achieve them". Budgeting is barely used: only 37 percent of adults state that their family sets an early budget to decide how much of their income will be spent to cover their living expenses and how much of it will be saved (table 3). However, Italian adults show a lower tendency to borrow: only 15 percent of adults have been in a situation where family income was insufficient to cover their living costs and resorted to borrowing to make ends meet in the last 12 months.

On the other hand, Italy is quite aligned with the attitude score with a value slightly higher than 3 out of 5, versus 3 the G20 countries average of 3. Besides, the pattern in the responses to the three questions for the attitude score is rather similar: 40 percent of the Italian respondents show a positive saving orientation (they do not agree that it is more satisfying to spend than to save for the long term), 21 percent disagree that money is there to be spent and 37 percent disagree that they tend to live for the day. The corresponding G20 average percentages are 43, 29 and 48 percent, respectively (table 4).

The role of socio-demographic characteristics

The level of financial knowledge is not uniform throughout the population (table 5).

Education is one of the most important factors in ensuring adequate levels of understanding of financial concepts. The average knowledge score drops from about 4 for graduates to about 3.2 for those with secondary education and to 2 for those with lower education levels. There are also gender gaps, even though with a lower intensity than those recorded in other countries (OECD 2017). In particular, highly educated women record lower financial knowledge scores than their male peers (table 6). In addition, financial skills increase with age for younger individuals and then decrease for older ones, with a peak at about age 44. Finally, the scores are lower for those who are not working such as housewives, the retired, the unemployed or individuals seeking their first employment.

Therefore, it is likely that differences in socio-demographic composition play a role in explaining country performances. Compared with other countries, Italy is characterized by a higher share of individuals with low levels of education: about 47 percent of the adult Italian population has a primary level of education, while the same group accounts for only 14 percent of the population in Germany and does not exceed 10 percent in Canada and the UK.

In order to assess how much of the gap with other countries is attributable to the different socio-demographic composition, we compute the three financial literacy indicators for Italy under five alternative scenarios where sample weights have been rearranged so that the distribution of some socio-demographic variables is equal to the corresponding ones of Germany, France, the Netherlands, Canada and the United Kingdom. The auxiliary information on the socio-demographic distributions comes from the Household Finance and Consumption Survey (HFCS) for the first three countries, whereas for Canada and the United Kingdom we use micro data from the OECD survey on financial literacy.

In particular, we create 54 socio-demographic classes resulting from the combination of 9 age classes, 3 education classes, and the two gender classes. The gap in the average financial literacy score between country *X* and Italy can be decomposed as follows:

$$p_X - p_{IT} = \sum_{c=1}^{54} (w_c^X - w_c^{IT}) * p_c^{IT} + \sum_{c=1}^{54} w_c^X * (p_c^X - p_c^{IT})$$

where p_c^{IT} and p_c^X denote the average scores in class c respectively for Italy and for country *X* and w_c^{IT} and w_c^X are the sums of sample weights in class c respectively for Italy and for country *X*. The first summation accounts for the part of the gap which is due to the different socio-demographic compositions in the two countries, while the second summation reflects the gap in the average scores between the two countries in the single socio-demographic classes.

The first summation can be computed as the difference between the Italian score in the counterfactual scenario relative to country *X* and the actual Italian score. In order to compute the counterfactual score, the sample weight for respondent *i* belonging to class *c* is re-proportioned according to the following formula:

$$\widetilde{w}_{i,c} = w_{i,c}^{IT} * \frac{w_c^X}{w_c^{IT}}$$

which has no impact on the distribution of characteristics within the class but aligns the total proportion of class *c* in the population to the one in country *X*.

The results under different scenarios are given in table 7. The counterfactuals of the three indicators show higher values in all simulations, compared with the actual scores. This indicates that the socio-demographic composition in Italy actually has a negative effect on its average score. The share of the gap in financial knowledge scores that is due to the different demographic composition ranges from 11 percent in the case of France and the Netherlands (over an initial gap of about 1.4 points) to 26 and 38 percent, respectively, for Canada and the United Kingdom (over an initial gap of about 1.4 and 0.7 points).

The results of the counterfactual exercise show that differences in the socio-demographic composition are important but not sufficient to account for all the gap in the financial literacy scores between Italy and other countries, as differences in the average scores of the socio-demographic classes between countries play an important role as well. For example, in Canada average scores are higher than the corresponding Italian ones across almost all the classes. In the case of the UK, instead, the socio-demographic component has a higher impact on the gap (accounting for about 40 percent of the initial gap) and the differences in average scores with respect to Italy are more pronounced in the classes with the highest education levels.

Respondents' self-assessment of financial knowledge

The level of self-confidence in financial matters may shape financial behaviour and how confidently people answer knowledge questions, thus avoiding the "don't know" option.

In the survey there is a direct question to assess the level of self-confidence. The question reads as follows: "How would you rate your level of financial knowledge on a scale of 1 to 5 compared with other adults in your country? " (1 = well below average, 5 = well above average). The question does not contribute to the final score.

The answers to this question reveal that respondents in Italy are aware of their knowledge gaps. More than half of them believe that their financial literacy is below average: this percentage is around 30 percent in the G20 average (figure 2). Only 5 percent of them rate their knowledge above average, compared to the 25 percent in G20 countries, while the remaining 43 percent rate themselves on average. Moreover, in comparison with the countries for which micro-data are available, Italian adults underestimate their actual competencies more extensively. For example, almost a quarter of individuals think that they have skills below average while achieving an actual score that is higher than average. In Canada and the United Kingdom, this percentage is equal to 6 and 3 percent (table 8) respectively.

A low self-assessment is associated with a lower participation in financial markets: individuals who believe they have low financial competencies are less inclined to hold investment products, to use debt instruments, or to have private pension plans (figure 3).

In addition, the perception of having poor financial skills is also associated with a greater propensity to give a "don't know" answer. About 22 percent of adults do not answer more than half of the financial knowledge questions; this percentage

rises to 25 percent for those who consider their financial skills below average or well below average, while it drops to only 7 percent among those who rate themselves above or well above average. In the United Kingdom, only 11 percent of adults do not answer more than half of the questions, while the corresponding percentage in Canada is just over 3 percent.

In the literature on consumer protection, as well as in the practice of policy making, there is growing interest in the cognitive and behavioural biases affecting consumers' decisions (Lefevre and Chapman, 2017).

Overconfidence is one of the main recognized biases. An investor is overconfident when he/she overestimates his/her own ability to successfully perform a particular task or to make an accurate judgment. The IACOFI survey allows us to study a specific form of overconfidence, that of individuals believing that their financial knowledge is on average or above average when it is actually below.

According to this definition, in Italy about 22 percent of the population is overconfident, much less than in the United Kingdom and Canada (respectively 45 and 30 percent, table 8).

The probability of being overconfident, rather than correctly evaluating one's own financial knowledge is higher among men, highly educated individuals, people living in southern regions, and self-employed workers in Italy (table 9, column 1). These results are quite in contrast to evidence from Canada and the UK, where overconfident individuals are more likely to be found among women and among the less educated (table 9, column 2 and 3).

Overconfidence is associated with a higher probability of having borrowed money (table 10). It is impossible however to precisely disentangle the mechanism linking overconfidence and borrowing behaviour. On the one hand it is possible that overconfident individuals are, other things being equal, more likely to borrow money as a result of an optimistic view of their future income. On the other hand individuals who have just signed up for a mortgage (or another debt contract) may feel more familiar with economic concepts and overestimate their actual financial knowledge.

Moreover, IACOFI data also show that overconfident individuals are more exposed to specific forms of risk, such as investing in something that turns to be worthless, accidentally providing personal financial information, experiencing the unauthorized use of a personal payment card (table 11).

Some remarks on the OECD's methodology

The OECD-INFE toolkit on financial competencies is an important framework to measure the level of financial literacy of adult population. It is based on the experience of the most active policy makers, some of which are from Anglo-Saxon countries, where one of the main concerns is household financial fragility and over-indebtedness. It is therefore a useful tool to identify specific forms of financial illiteracy and bad behaviors. However, the OECD methodology has some critical aspects that should be addressed, possibly to improve its general validity and cross-country comparability, but also to strengthen the ability to measure financial literacy.

First, the overall indicator is given by the sum of three indicators that do not contribute to the final indicator in the same way: behaviours, with a maximum score of 9 points, are those that weigh most on the final score, while the knowledge indicator, which is the most commonly used in the literature, only contributes with a maximum of 7 points out of 21.

A second critical aspect is that the indicators of behaviour and motivation are based on heuristics that policy makers have developed, but that are not easily generalizable. In fact, defining what is good behaviour or a good motivation for all respondents ignores non-negligible differences relating to different moments in the life cycle, to the external and institutional conditions, and not least to individual preferences. For example, a high propensity to save is always considered good behaviour regardless of the respondent's age and this is in contrast with the life-cycle theory. Moreover, the purchase of financial assets in the two years before the survey is a precondition for subsequent questions contributing to the behaviour indicator. However, financial asset purchases not only reflect the literacy level of individuals but also the economic picture at the time the survey is conducted or other institutional factors such as the development of financial markets or the current tax system. Questions about financial market participation should not therefore be considered as measures of individuals' financial literacy. The total score should be based on behaviour that is strongly affected only by individuals' choices, such as whether or not a person double-checks his or her records or asks various sources for advice before making an investment. A second weakness is the risk of inflating financial literacy gaps, since the higher the level of financial knowledge the higher the probability of having behaving "correctly".

A third aspect relates to the unit of analysis. The OECD framework is designed for the adult population and, as a consequence, respondents are randomly selected within households. The random selection of the individual may not be the most appropriate when the financial decisions are taken at the household level and when the family realizes some form of labour division which also includes financial decision making (Hsu 2016). For instance the head of the household could be the one who is in charge of financial decisions. The choice of randomly selecting an individual within the household assumes that he/she is representative of the other members of the family. Yet, when tasks are specialized this assumption could be easily contradicted, implying that a survey on randomly selected individuals may not properly measure the overall level of financial literacy. The Italian survey on household income and wealth (SHIW) has sporadically included some questions aiming at measuring the level of financial competences of the person who is most involved in managing the finances of the household. The level of financial knowledge resulting from the SHIW survey is higher than the one coming from the IACOFI survey: the share of respondents who are familiar with the economic concepts of inflation and risk diversification are 12 and 14 percentage points higher in the SHIW survey. This result holds even when restricting to the IACOFI survey respondents who report to participate in the household day-to-day decision making about money.

So, there also is a case for defining also financial literacy at the household level as well. The random selection of a member of the household may penalize those countries with larger average family size. Indeed, figures 4 and 5 seem to suggest the existence of a negative association between average size of households and the average level of financial literacy. The OECD framework includes a question on who participates to the household decision making about money, this information,

however, enters the financial literacy score only in the grading of one question, namely the one regarding the adoption of a household budget. Another possibility is to adopt a different criterion to select the respondents. After an initial random selection, the selected person should be asked some screening questions in order to make sure that he or she makes some financial decisions in the household. If this is not the case then the selection process should skip to next household member. Another possibility is to interview both the randomly selected person and the person who is most knowledgeable about the household finances.

Finally, the OECD methodology considers the missing answers ("don't know"), as wrong answers ignoring that "knowing not to know" can actually lead to more virtuous behaviors such as being more prone to ask for advice or to seek as much information as possible before making a decision. Moreover, our preliminary results show that the propensity to give a "don't know" answer is negatively associated with levels of self-confidence, even after controlling for the actual level of financial knowledge and other observables characteristics (di Salvatore *et. al.* 2017). Since levels of self-confidence vary across countries, in the absence of penalties for the wrong answers, the methodology tends to reward individuals (and countries) with a higher propensity to answer questions.

Concluding remarks

Banca d'Italia has recently conducted a survey to investigate financial competencies and inclusion among Italian adults using the OECD-INFE questionnaire.

The overall level of financial literacy in Italy is one of the lowest among G20 countries. Italians struggle in particular with the knowledge of basic economic concepts and they are less likely to put in practice good behaviours such as setting a household budget. They are however close to the G20 average in terms of attitude toward the long run.

Financial literacy is particularly low among the least educated, the elderly, and women (for the latter in particular with concern to basic knowledge).

Socio-demographic characteristics of the Italian population, such as the low level of education, explain only part of the gap with other G20 countries However, Italian respondents seem to be aware of their weaknesses (or at least they are cautious in assessing their level of knowledge) and this could represent a good starting point for policy measures.

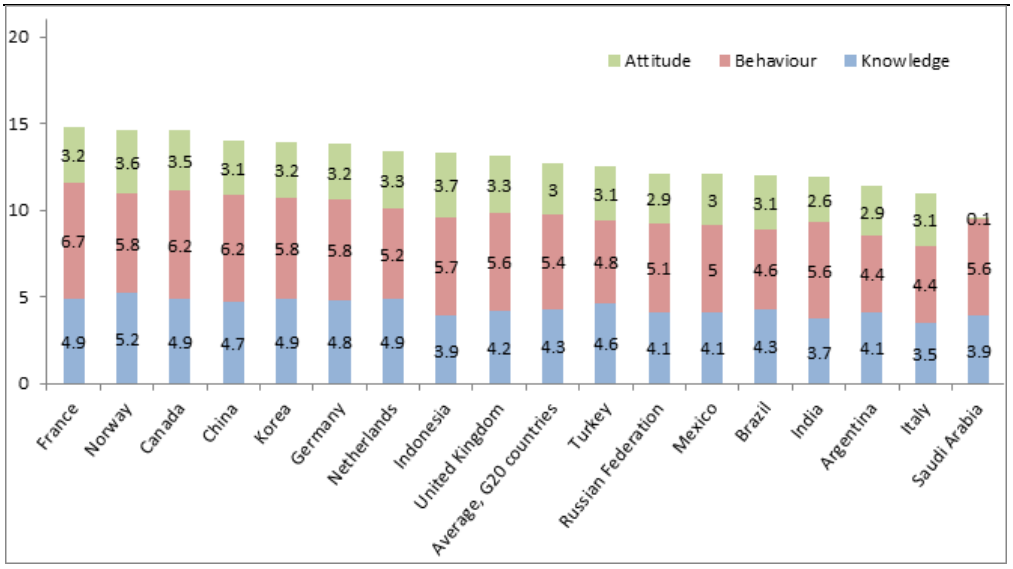
Our findings also suggest that the level of self-confidence is associated with both financial market participation and with some risky behaviours which are relevant for consumer protection (such as accidentally providing personal financial information or experiencing unauthorized use of payment card).

We finally provide a short discussion of the OECD methodology, suggesting a few improvements that could increase cross-country comparability, the quality of financial literacy measurement and strengthen the link with economic theory.

Appendix: Figures and Tables

Financial knowledge, attitudes and behaviour

(averages; weighted data) Figure 1



The G20 average does not include the Netherlands and Norway which participate as guest countries under the German G20 presidency

Examples of Financial Knowledge questions

K1. *Assume you are going to receive a gift of €1,000. Now imagine that you have to wait for one year to get the money and that inflation stays at 1 percent. In one year's time will you be able to buy:* (a) More than you could buy today; (b) The same amount; (c) Less than you could buy today; (d) Don't know; (e) Refused.

K2. *You lend €25 to a friend one evening and he gives you €25 back the next day. How much interest has he paid on this loan?*

K3. *Suppose you put €100 into a no fee savings account with a guaranteed interest rate of 2% per year. You don't make any further payments into this account and you don't withdraw any money. How much would be in the account at the end of the first year, once the interest payment is made?*

K4. *and how much would be in the account at the end of five years, remembering there are no fees or tax deductions, you don't make any further payments and you don't withdraw any money? Would it be* (a) More than €110; (b) €110; (c) Less than €110 euro; (d) Don't know; (e) Refused

K5. *It is usually possible to reduce the risk of investing in the stock market by buying a wide range of stocks and shares. (True or false?)*

Share of correct answers to Financial Knowledge questions

(percentages; weighted data) Table 1

Question	K1	K2	K3	K4*	K3 and K4*	K5
Argentina	69	87	22	37	8	59
Brazil	65	78	50	30	18	77
Canada	57	93	58	56	39	68
China	70	78	74	55	42	57
France	59	94	57	54	34	75
Germany	71	86	58	53	39	65
India	41	67	42	35	15	50
Indonesia	14	76	78	38	36	48
Italy	48	54	47	33	23	37
Japan	56	--	66	43	39	46
Korea	71	83	52	53	35	81
Mexico	74	92	12	32	3	64
Russian Federation	65	88	48	46	27	41
Saudi Arabia	27	69	46	34	33	60
South Africa	25	70	42	36	13	55
Turkey	55	84	54	32	19	74
United Kingdom	38	83	57	52	36	52
Average G20 countries**	**53**	**80**	**51**	**42**	**27**	**59**
Netherlands	*65*	*92*	*76*	*61*	*56*	*53*
Norway	*76*	*91*	*80*	*65*	*58*	*59*

* According to OECD methodology a correct answer to question K4 is only accepted if the respondent has given the correct answer to question K3 as well.

** The average does not include the Netherlands and Norway which participate as guest countries under the German G20 presidency.

Note: Estimates refer to the adult population (18-79 years old).

"Don't Know"/"Refused" as snswers to Financial Knowledge questions

(percentages of respondents) Table 2

Number of "Don't Know"/"Refused"	0	1	2	3	4	5	6	7
Italy	31.7	21.7	13.8	11.3	8.0	7.2	6.2	0.2
Tablet device	*25.9*	*17.1*	*12.7*	*13.3*	*9.3*	*10.8*	*11.0*	*0.0*
CAPI	*38.5*	*25.4*	*13.9*	*9.0*	*6.7*	*3.7*	*2.3*	*0.5*
UK	45.0	21.9	14.4	7.8	4.6	2.7	2.0	1.6
Canada	66.4	19.1	8.0	3.2	2.2	0.8	0.3	0.1

Examples of Financial Behaviour questions

B1. *I would like to know how much you agree or disagree that the following statement applies to you, personally. Please use a scale of 1 to 5, where 1 tells me that you completely agree that the statement describes you and 5 shows that you completely disagree: "I set long term financial goals and strive to achieve them".*

B2. *Who is responsible for making day-to-day decisions about money in your household?* (a) You make these decisions by yourself; (b) You make these decisions with someone else; (c) Someone else makes these decisions; (d) Don't know; (e) Refused

B3. *and, does your household have a budget? A household budget is used to decide what share of your household income will be used for spending, saving or paying bills. ?* (a) Yes; (b) No; (c) Don't know; (d) Refused

Share of adults showing positive Financial Behaviours

(percentages; weighted data) Table 3

Question	B1*	B2**	B3**	B2 and B3**
Argentina	49	67	55	39
Australia	--	94	74	70
Brazil	46	80	43	36
Canada	58	92	63	58
China	68	95	75	72
France	61	90	85	76
Germany	59	91	35	32
India	64	88	59	54
Indonesia	66	98	68	67
Italy	27	79	37	31
Japan	47	--	--	--
Korea	46	89	76	71
Mexico	59	80	44	37
Russian Federation	46	93	50	47
Saudi Arabia	68	96	60	59
South Africa	49	67	60	43
Turkey	44	86	78	68
United Kingdom	45	96	53	51
United States	57	90	56	52
Average G20 countries* **	**53**	**87**	**60**	**54**
Netherlands	*39*	*94*	*40*	*39*
Norway	*44*	*97*	*33*	*32*

* Points are given if the respondent agrees with the statement (options 1 and 2)

** Respondents who make decisions by themselves or with other household members. (options (a) and (b))

*** The G20 average does not include the Netherlands and Norway which participate as guest countries under the German G20 presidency.

Note: Estimates refer to the adult population (18-79 years old).

Financial Attitude questions

A1. *I would like to know how much you agree or disagree that the following statement applies to you, personally. Please use a scale of 1 to 5, where 1 tells me that you completely agree that the statement describes you and 5 shows that you completely disagree: "I tend to live for today and let tomorrow take care of itself"*

A2. *I would like to know how much you agree or disagree that the following statement applies to you, personally. Please use a scale of 1 to 5, where 1 tells me that you completely agree that the statement describes you and 5 shows that you completely disagree: "I find it more satisfying to spend money than to save it for the long term"*

A3. *I would like to know how much you agree or disagree that the following statement applies to you, personally. Please use a scale of 1 to 5, where 1 tells me that you completely agree that the statement describes you and 5 shows that you completely disagree: "Money is there to be spent"*

Share of adults that disagree with the statements (4 or 5 on the scale)

(percentages; weighted data) Table 4

Question	A1	A2	A3
Argentina	44	42	23
Australia	58	--	--
Brazil	42	55	27
Canada	64	47	38
China	53	48	21
France	68	48	23
Germany	55	45	22
India	28	27	22
Indonesia	40	70	75
Italy	37	40	21
Japan	55	36	--
Korea	51	44	26
Mexico	36	48	32
Russian Federation	45	29	22
Saudi Arabia	18	14	15
South Africa	54	44	35
Turkey	54	45	19
United Kingdom	53	44	34
Average G20 countries*	**48**	**43**	**29**
Netherlands	*55*	*46*	*19*
Norway	*78*	*53*	*28*

* The G20 average does not include the Netherlands and Norway which participate as guest countries under the German G20 presidency.

Note: Estimates refer to the adult population (18-79 years old).

Financial Literacy scores in Italy

(averages; weighted data) Table 5

	Knowledge	Behaviour	Attitude
Gender			
Women	3.42	4.42	3.12
Men	3.63	4.43	3.04
Age			
Below 35	3.47	4.06	2.84
35-44	3.67	4.59	3.06
44-54	3.63	4.61	3.05
55-64	3.58	4.40	3.20
Over 64	3.32	4.54	3.32
Education			
University degree / some university studies	4.04	4.77	3.17
Secondary school (completed)	3.78	4.55	3.08
Some secondary school	3.18	4.21	3.01
Primary school (completed)	2.98	4.20	3.18
Some primary school	1.98	3.36	3.01
Labour force status			
Self-employed	3.74	4.72	3.02
In paid employment	3.69	4.70	3.08
Looking after the home	3.19	4.20	3.10
Unemployed/looking for first occupation	3.19	4.00	2.86
Retired	3.39	4.53	3.33
Student	3.85	3.44	2.76
Town population size			
Less than 20,000	3.50	4.41	3.13
Between 20,000 and 40,000	3.24	4.46	2.86
More than 40,000	3.66	4.43	3.11
Geographical area			
North	3.58	4.53	3.15
Centre	3.63	4.49	3.11
South	3.38	4.25	2.98
Total	**3.52**	**4.43**	**3.08**

Financial Literacy scores by socio-demographic class

Table 6

Sex	Men						Women					
Education	Less than high school diploma			At least high school diploma			Less than high school diploma			At least high school diploma		
Age	< 41	41-60	> 60	< 41	41-60	> 60	< 41	41-60	> 60	< 41	41-60	> 60
Financial Literacy scores by socio-demographic class *(averages)*												
Knowledge	2.8	3.3	3.4	3.9	4.2	4.2	3.2	3.1	3.0	3.7	3.9	3.5
Behaviour	3.8	4.0	4.4	4.4	4.9	5.2	4.0	4.3	4.4	4.5	4.7	4.5
Attitudes	2.6	3.0	3.3	3.0	3.1	3.4	2.8	3.0	3.3	3.1	3.2	3.3
Share of population by socio-demographic classes *(percentages)*												
Italy	6.1	7.7	9.5	11.7	9.6	3.5	5.0	8.9	10.2	12.6	12.0	3.3
Germany	2.7	1.2	0.8	14.8	18.3	12.4	3.3	2.1	3.7	14.1	16.4	10.2
France	2.8	4.2	4.9	16.0	13.9	7.0	2.0	5.1	7.0	17.1	13.7	6.3
Netherlands	2.9	5.1	5.6	14.0	13.0	7.1	3.1	4.8	8.9	17.1	12.6	5.7
United Kingdom	0.9	0.5	1.4	19.0	14.6	11.8	1.0	1.4	1.0	18.8	16.3	13.5
Canada	1.7	1.3	1.1	16.5	16.6	11.3	1.7	2.0	1.2	17.0	18.3	11.3

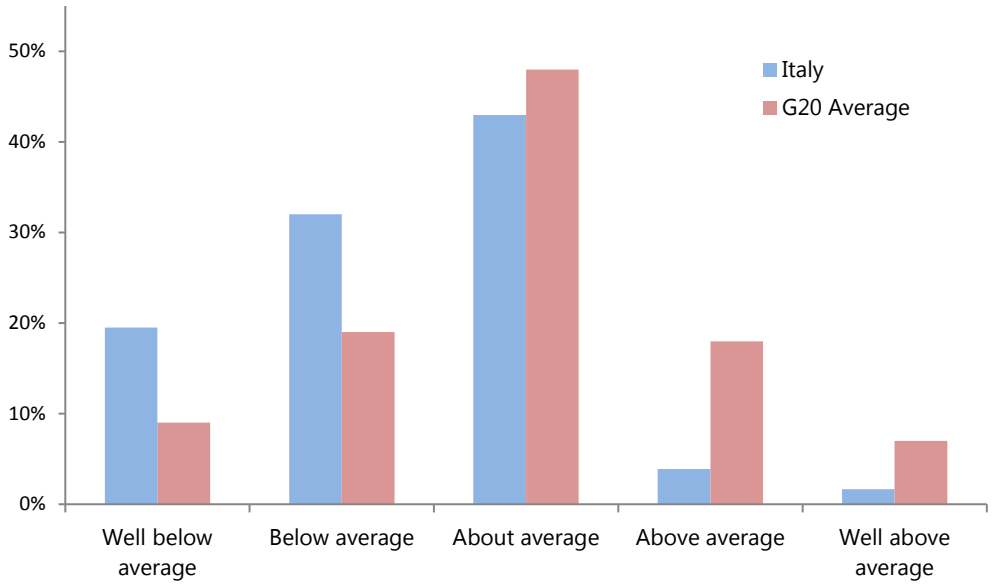
Financial literacy scores in counterfactual scenarios

Table 7

		Italy	Germany	The Netherlands	France	UK	Canada
Knowledge	Actual	3.52	4.80	4.90	4.90	4.20	4.90
	Counterfactual	--	3.76	3.68	3.68	3.78	3.88
Behaviour	Actual	4.43	5.80	5.20	6.70	5.60	6.20
	Counterfactual	--	4.64	4.56	4.56	4.61	4.62
Attitude	Actual	3.08	3.20	3.30	3.20	3.30	3.50
	Counterfactual	--	3.15	3.15	3.14	3.15	3.15

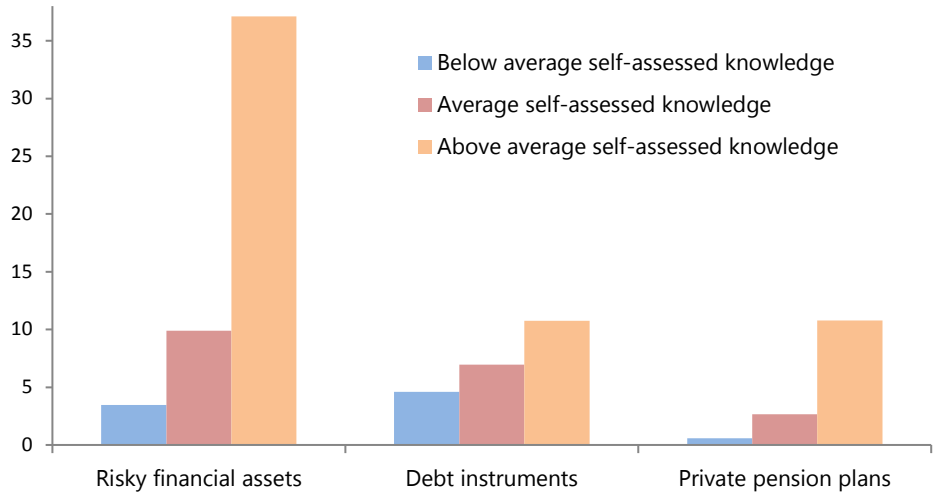
Self-assessment of financial knowledge

Figure 2



Proability of holding financial products by self-assessed financial knowledge

Figure 3



Note: Estimates refer to the adult population (18-79 years old).

Distribution of adults by self-assessed and actual knowledge class

(percentages; weighted data)

Table 8

	Italy		Canada		UK	
	Actual knowledge**					
Self-assessment*	Below average	Above average	Below average	Above average	Below average	Above average
Below average	27.5	23.2	10.2	5.8	8.8	2.9
Average	20.2	23.4	22.5	33.3	30.6	25.9
Above average	2.2	3.6	6.4	21.9	12.3	19.5

* The "below average" class includes the survey options "very low" and "quite low" financial knowledge, and the "above average" class includes the survey options "very high" and "quite high" financial knowledge.

** The "below average" class includes all actual scores lower or equal than national average.

Note: Estimates refer to the adult population (18-79 years old).

Probability of being overconfident: logit model.

Table 9

	(1) Italy	(2) Canada	(3) United Kingdom
Men	0.334**	-0.869***	-0.705***
	(0.163)	(0.181)	(0.188)
Age: 18-29	(omitted)	(omitted)	(omitted)
30-39	-0.201	-0.0218	0.163
	(0.347)	(0.311)	(0.278)
40-59	-0.0512	-0.185	-0.0800
	(0.323)	(0.269)	(0.264)
60-69	-0.473	0.0224	0.447
	(0.413)	(0.382)	(0.402)
70 and above	-0.669	-0.0689	0.942*
	(0.450)	(0.478)	(0.536)
South	0.547***	Province f.e.	Country f.e.
	(0.158)		
Secondary and tertiary education	0.344**	-0.772***	-0.268
	(0.164)	(0.206)	(0.210)
Student	(omitted)	(omitted)	(omitted)
Self-employed	1.285***	-0.632	-1.213
	(0.466)	(0.583)	(0.762)
Employee	0.837**	0.0579	-1.639**
	(0.413)	(0.503)	(0.703)
Looking after the home	0.645	0.311	-1.225
	(0.485)	(0.880)	(0.898)
Unemployed	0.444	-0.987	-1.736**
	(0.432)	(0.635)	(0.849)
Retired person	0.708	-0.122	-1.845**
	(0.511)	(0.610)	(0.819)
Other	1.544**	-0.743	-1.083
	(0.734)	(0.592)	(0.777)
Constant	-0.0643	1.338**	2.316***
	(0.421)	(0.574)	(0.714)
Observations	1,139	601	673

Probability of holding a financial instrument (logit model).

Table 10

	Italy		Canada		UK	
	Mortgage	Unsecured or pension backed loans	Mortgage	Secured bank loans	Mortgage	Secured bank loans
Overconfident	1.148***	-0.544	0.520***	0.520**	0.523*	2.435***
	(0.282)	(0.367)	(0.191)	(0.246)	(0.313)	(0.682)
Men	0.638**	0.0947	0.275	0.226	0.319	-0.00457
	(0.302)	(0.308)	(0.170)	(0.228)	(0.283)	(0.678)
Age: 18-29	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
30-39	1.507**	0.521	1.327***	1.006*	0.217	-1.849*
	(0.668)	(0.661)	(0.328)	(0.544)	(0.320)	(1.050)
40-59	1.105*	0.230	1.562***	1.945***	-0.529	-0.541
	(0.645)	(0.622)	(0.309)	(0.488)	(0.378)	(0.827)
60-69	-0.572	0.0569	0.973**	2.274***	-1.412*	-2.951**
	(0.956)	(0.910)	(0.398)	(0.562)	(0.764)	(1.175)
70 and over	0.0304	-0.773	1.404***	1.768**		
	(0.974)	(1.060)	(0.535)	(0.732)		
South	-0.591*	0.00533	Prov. f.e.	Prov. f.e.	Count. f.e.	Count. f.e.
	(0.325)	(0.281)				
Secondary and tertiary education	0.328	-0.209	0.157	-0.212	0.557	0.185
	(0.357)	(0.322)	(0.200)	(0.248)	(0.347)	(0.845)
Student	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)	(omitted)
Self-employed	0.508	14.29	0.942	0.376	1.106	1.214
	(1.213)	(.)	(0.704)	(1.122)	(0.776)	(1.384)
Employee	0.567	15.36	0.893	0.647	0.871	0.131
	(1.176)	(.)	(0.660)	(1.070)	(0.650)	(1.148)
Looking after the home	0.500	14.21	1.417*	0.730	1.680**	(omitted)
	(1.298)	(.)	(0.843)	(1.264)	(0.815)	
Unemployed	-0.989	13.26	0.401	0.0458	-1.651	-0.130
	(1.285)	(.)	(0.772)	(1.239)	(1.241)	(1.649)
Retired person	-0.473	14.65	-0.00487	-0.0729	-2.439*	(omitted)
	(1.385)	(.)	(0.751)	(1.148)	(1.289)	
Other	1.967	15.30***	0.203	0.0769	-1.444	(omitted)
	(1.370)	(0.363)	(0.739)	(1.144)	(1.029)	
Constant	-5.459***	-18.01	-3.299***	-3.763***	-3.074***	-4.409***
	(1.141)	(.)	(0.731)	(1.151)	(0.721)	(1.509)
Observations	2210	2210	854	683	736	452

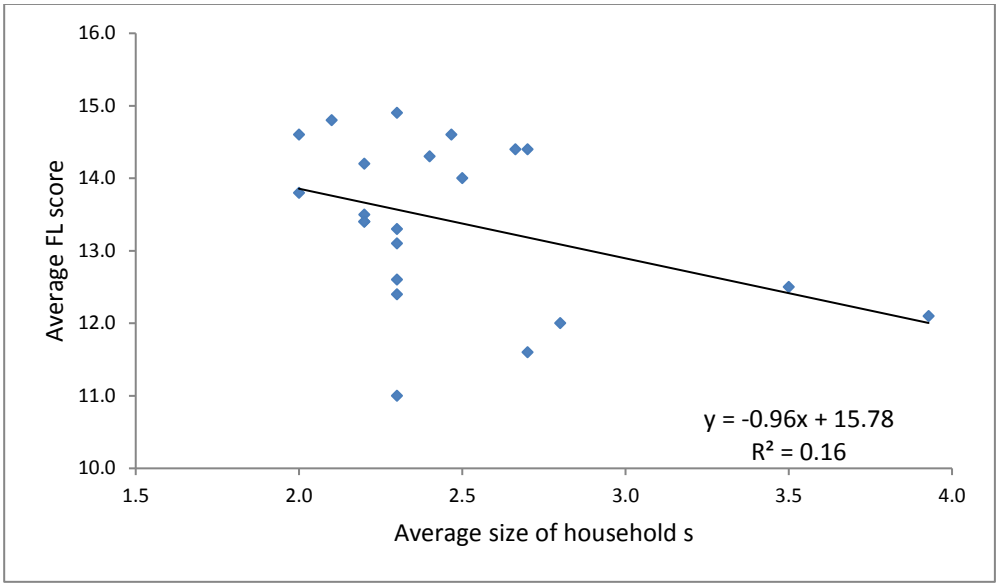
Probability of behaving in a risky way (logit model).

Table 11

	Worthless investments	Phishing	Unauthorized payments
Overconfident	1.026***	1.366***	1.151***
	(0.163)	(0.181)	(0.190)
Men	0.115	-0.0989	0.0498
	(0.173)	(0.194)	(0.205)
Age: 18-29	(omitted)	(omitted)	(omitted)
30-39	0.228	-0.226	-0.436
	(0.384)	(0.401)	(0.430)
40-59	0.347	0.0599	0.229
	(0.354)	(0.362)	(0.379)
60-69	-0.0383	-0.111	-0.961*
	(0.434)	(0.476)	(0.566)
70 and over	0.118	0.448	0.0902
	(0.543)	(0.615)	(0.624)
South	-0.359**	-0.184	-0.260
	(0.172)	(0.199)	(0.196)
Secondary and tertiary education	-0.0850	-0.207	-0.150
	(0.161)	(0.191)	(0.200)
Student	(omitted)	(omitted)	(omitted)
Self-employed	0.362	0.338	0.470
	(0.500)	(0.532)	(0.565)
Employee	0.0553	0.368	0.335
	(0.477)	(0.493)	(0.534)
Looking after the home	0.245	-0.0741	0.553
	(0.522)	(0.568)	(0.600)
Unemployed	-0.336	-0.0207	0.0693
	(0.489)	(0.494)	(0.523)
Retired person	0.175	-0.530	0.0580
	(0.599)	(0.691)	(0.722)
Other	-0.0578	--	--
	(0.953)		
Constant	-2.407***	-2.654***	-2.817***
	(0.381)	(0.416)	(0.440)
Observations	2,210	2,190	2,190

Relation between average size of households and Financial Literacy score in OECD countries

Figure 4

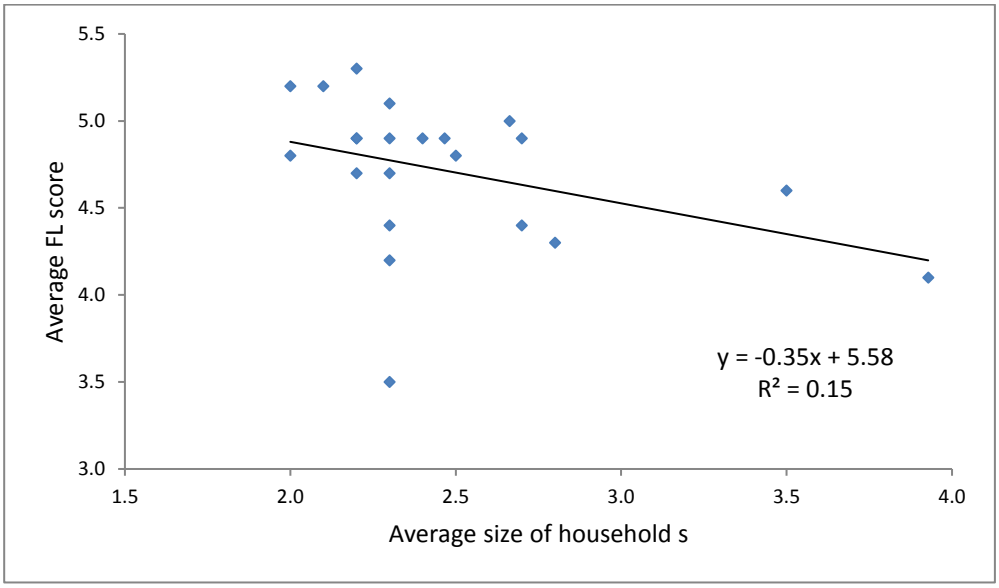


The average size of households comes from the OECD database (http://www.oecd.org/els/family/database.htm)

OECD countries: Austria, Belgium, Canada, Croatia, Czech Republic, Estonia, Finland, France, Germany, Hungary, Italy, Korea, Latvia, Lithuania, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Turkey, United Kingdom.

Relation between average size of households and Financial Knowledge score in OECD countries

Figure 5



The average size of households comes from the OECD database (http://www.oecd.org/els/family/database.htm)

OECD countries: Austria, Belgium, Canada, Croatia, Czech Republic, Estonia, Finland, France, Germany, Hungary, Italy, Korea, Latvia, Lithuania, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Turkey, United Kingdom.

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Klapper L., Lusardi A., Van Oudheusden P. (2015): "Financial Literacy Around the World (2015): Insights From The Standard & Poor's Ratings Services Global Financial Literacy Survey".

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Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

Measuring the financial literacy of the adult population: the experience of the Bank of Italy[1]

Antonietta di Salvatore, Francesco Franceschi, Andrea Neri and Francesca Zanichelli,
Bank of Italy

[1] This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

BANCA D'ITALIA
EUROSISTEMA

Measuring financial literacy and inclusion of the adult population: the OECD-INFE framework

by di Salvatore, Franceschi, Neri and Zanichelli

Bank Al-Maghrib – CEMLA-IFC Satellite Seminar on Financial Inclusion,
Marrakech, Morocco, July 14

Foreword

- G20 Leaders in the 2012 and 2014 have recognized the importance of financial literacy and inclusion and requested international comparable surveys
- OECD has launched a project to create an internationally comparable dataset.
- A blueprint questionnaire used has been developed by the International Network for Financial Education (OECD -INFE)
- Banca d'Italia has recently conducted a survey to contribute to this initiative
- The results have been presented in the G20 meeting in July

Focus of the presentation

The measurement of financial literacy

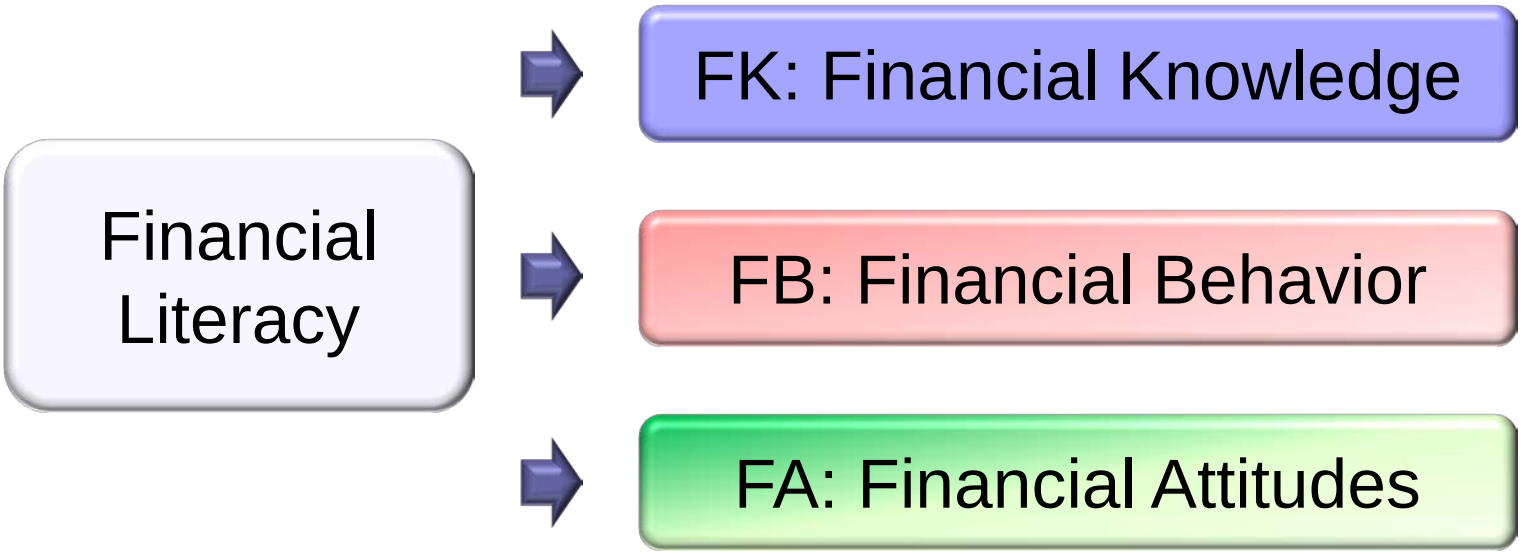
Reasons:

- Financial literacy is a strong determinant of financial inclusion
- Financial literacy can be improved by policy intervention
- There is no widely accepted framework to measure FL

The Italian survey

- Focus: financial literacy and inclusion
- Target: adult population (18+)
- Sample: 2,500 individuals
- Two probabilistic samples (electoral lists, population registers)
- Two different methodologies: 40 % CAPI – 60% *Tablet*

OECD Methodology



*«A combination of awareness, **knowledge**, skills, **attitude** and **behaviors** necessary to make sound financial decisions and ultimately achieve individual financial well-being»*

OECD Methodology

- Inflation
- Simple and compound interest
- Risk diversification
- Risk ↔ Return
- …

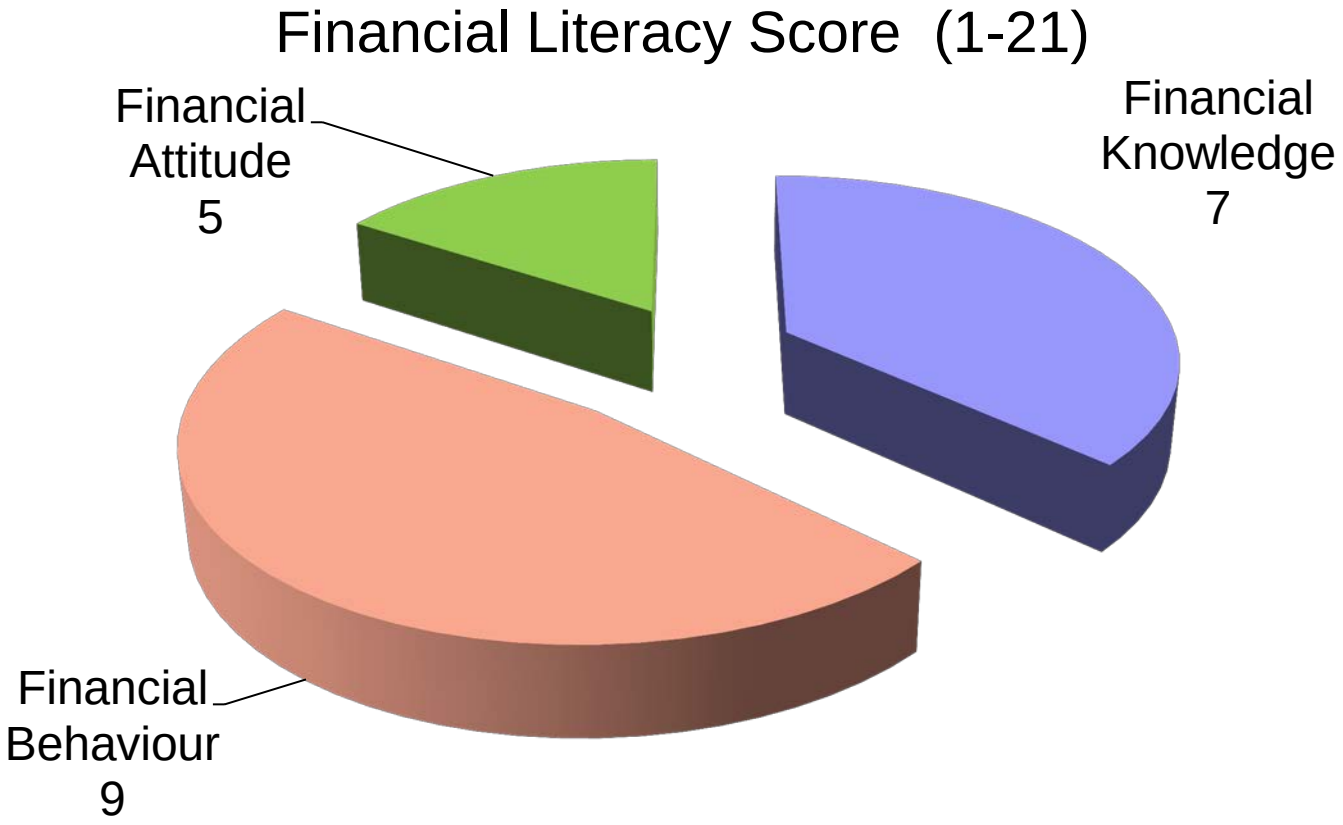
OECD Methodology

- Budgeting
- Active saving
- Shopping for financial products
- Making ends meet
- …

OECD Methodology

- Short term living vs planning ahead
- Attitudes towards money spending
- …

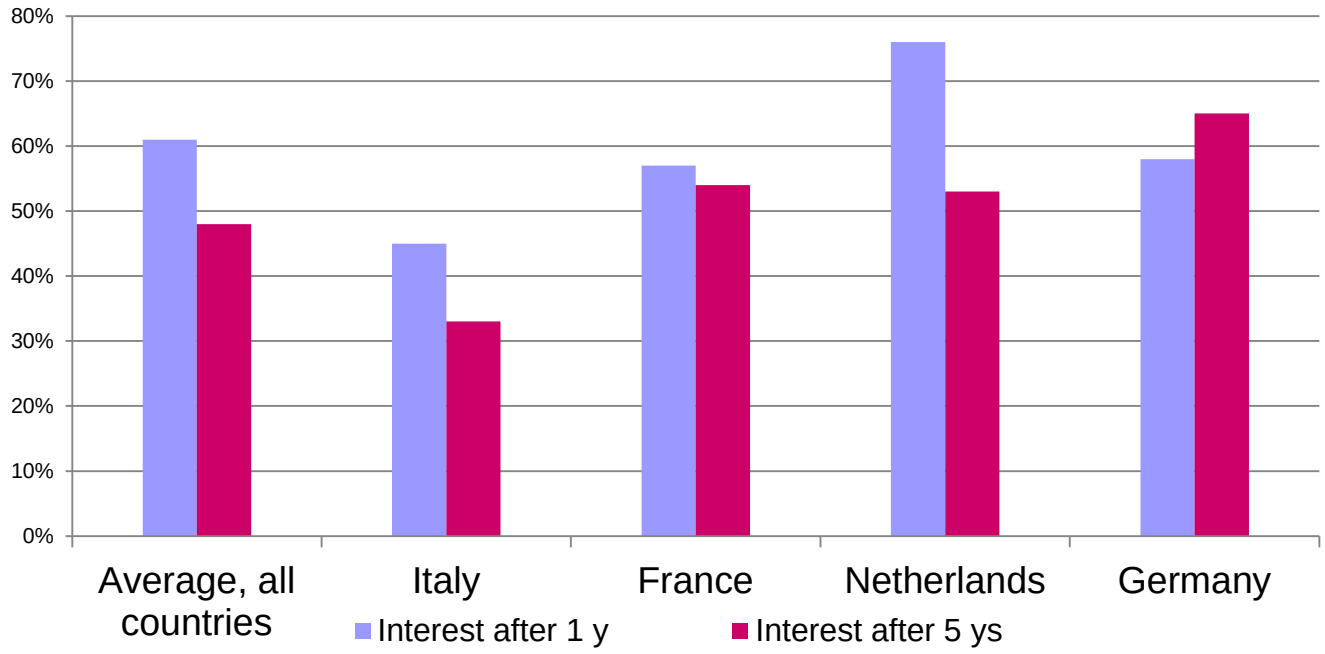
OECD Methodology



Financial knowledge (1)

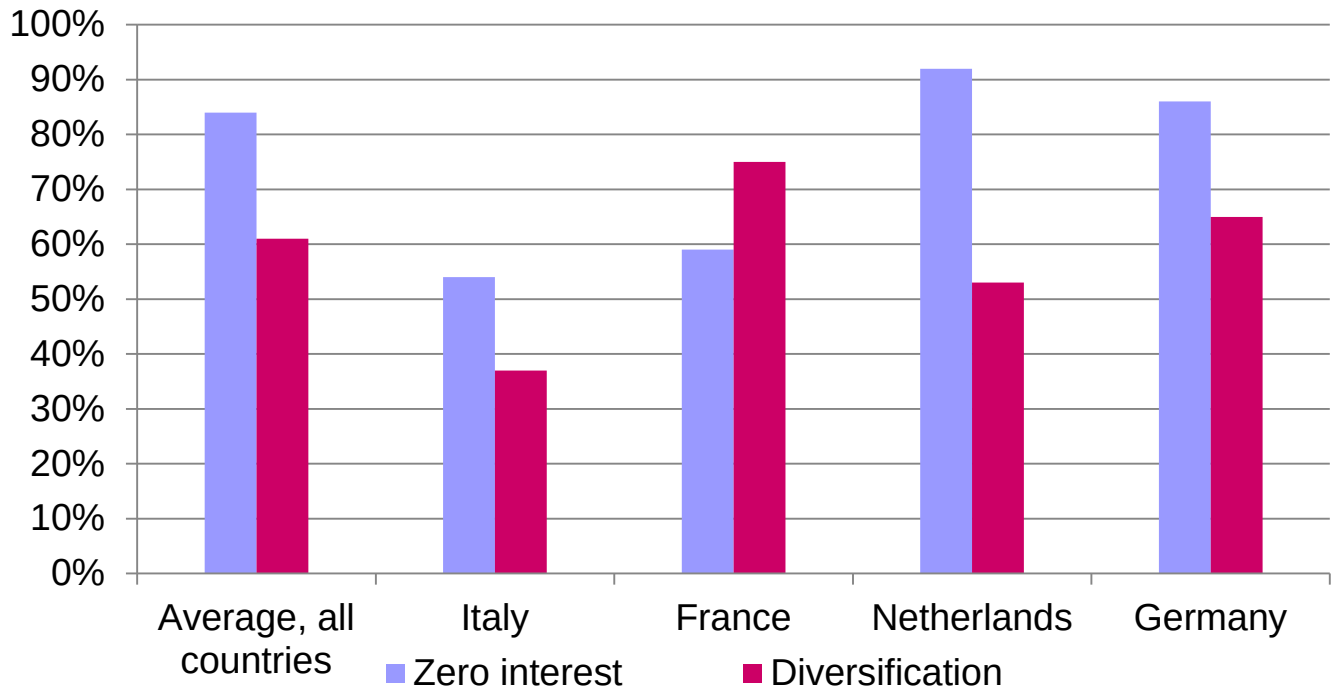
Suppose you put EUR 100 into a no-fee savings account with a guaranteed interest rate of 2% per year. You do not make any further payments into this account and you do not withdraw any money. How much would be in the account at the end of the first year, once the interest payment is made?

And how much would be in the account at the end of five years?



Financial knowledge (2)

- *You lend $25 to a friend one evening and he gives you $25 back the next day. How much interest has he paid on this loan?*
- *It is usually possible to reduce the risk of investing in the stock market by buying a wide range of stocks and shares*



The impact of socio-demographic characteristics

- men score better than women
- the level of education appears to be of high relevance for scores
- U-shape for age

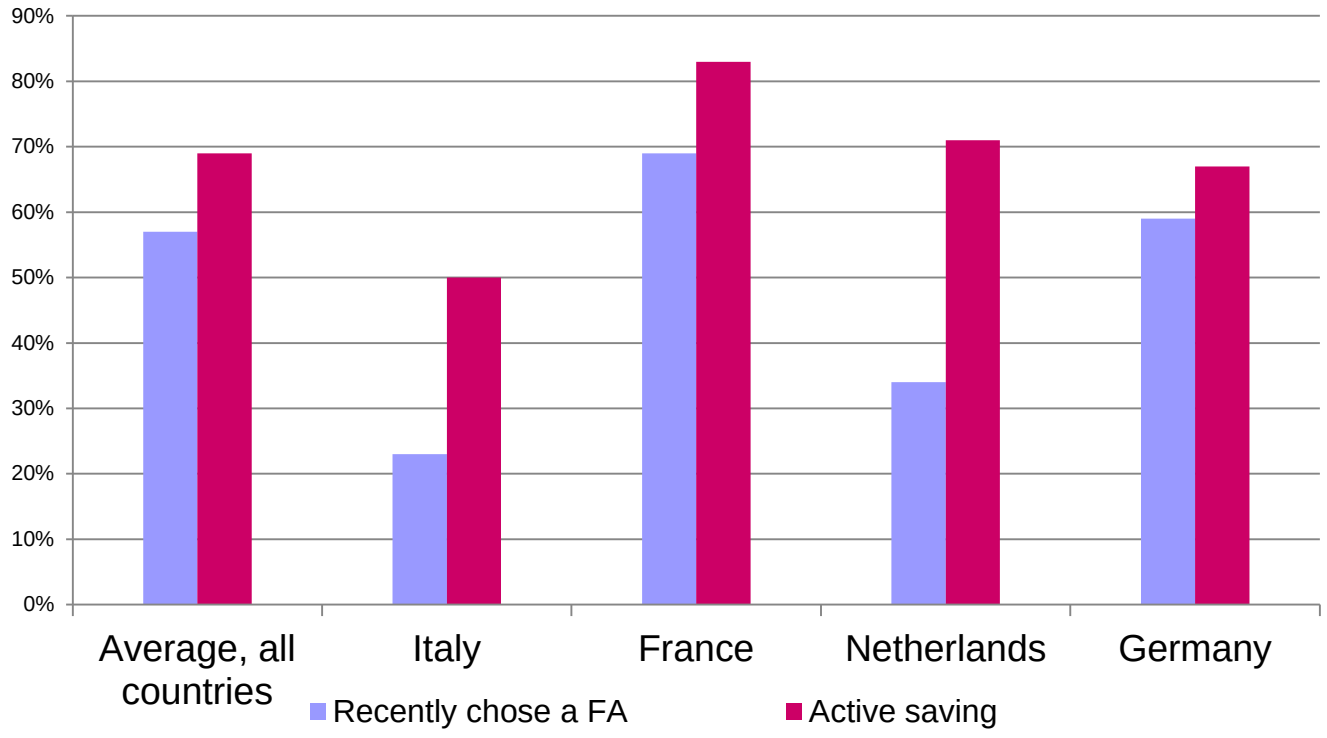
The role of socio-demographics in cross-country comparisons

- Counterfactual analysis by aligning the population characteristics

	Germany	France	UK	Canada
Gap	**1,28**	**1,38**	**0,68**	**1,38**
% explained by demographics	**19%**	**12%**	**38%**	**26%**

Financial Behaviour (1)

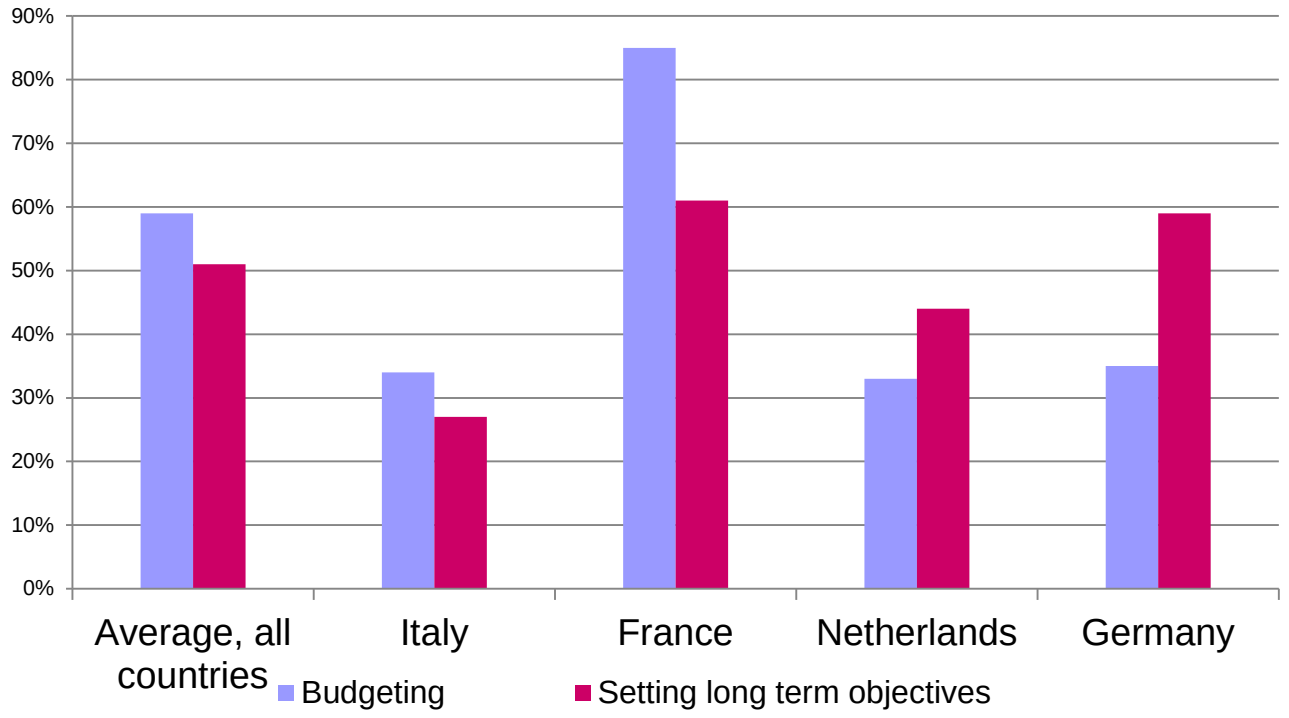
- *In the last two years, which of the following types of financial products have you chosen? (showcard)*
- *In the past 12 months have you been [personally] saving money in any of the following ways? (showcard)*



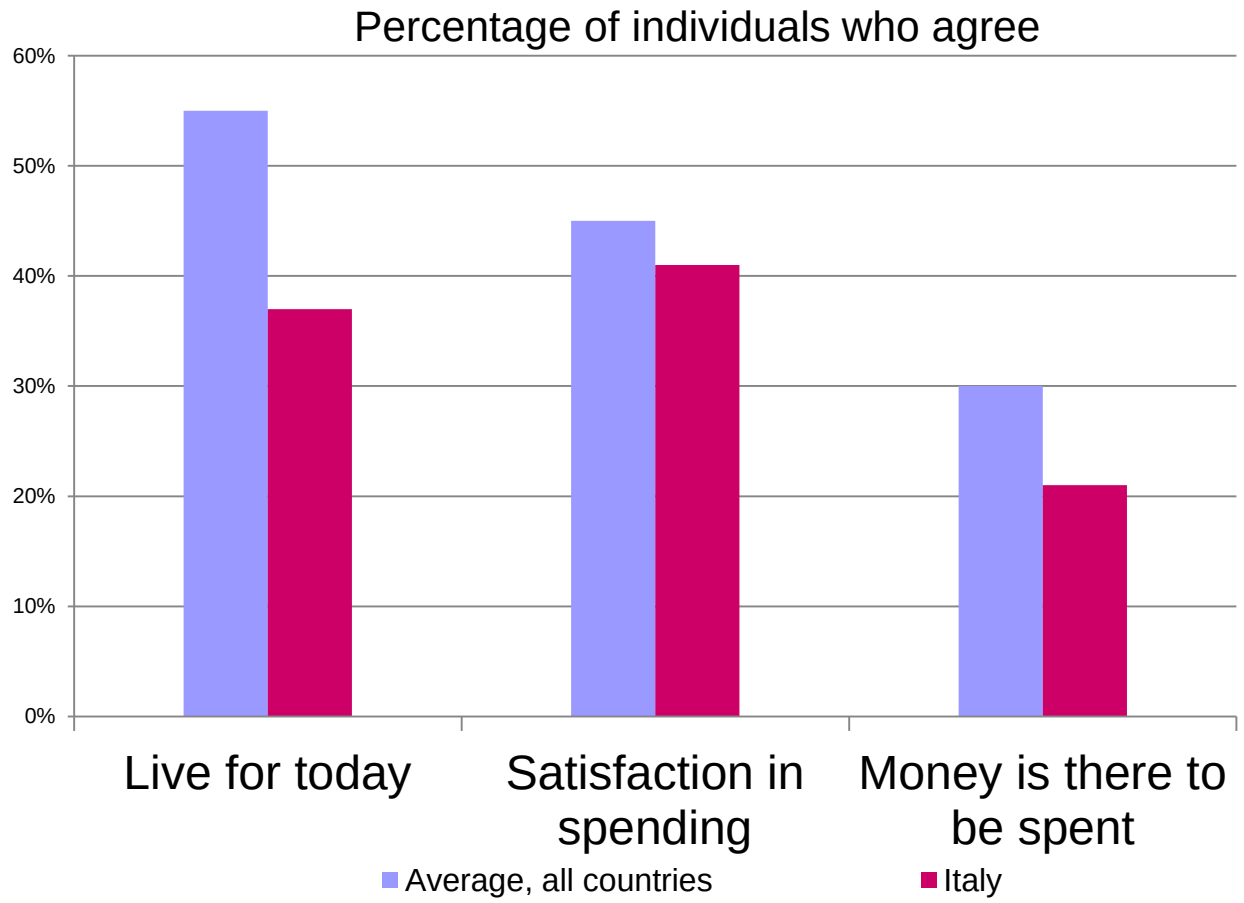
Financial Behaviour (2)

- *Does your household have a budget? A household budget is used to decide what share of your household income will be used for spending, saving or paying bills*

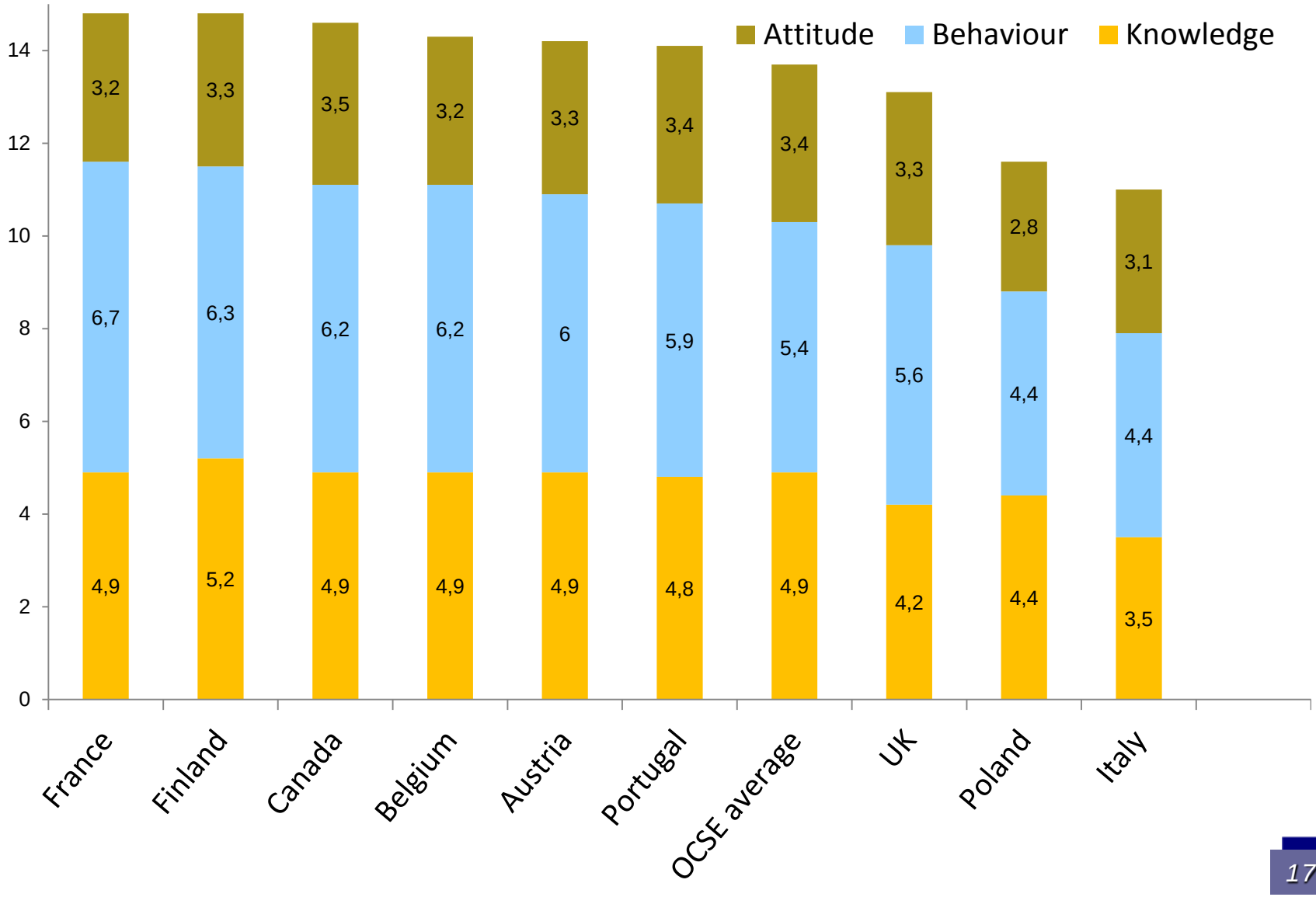
- *I set long term financial goals and strive to achieve them*



Financial attitude

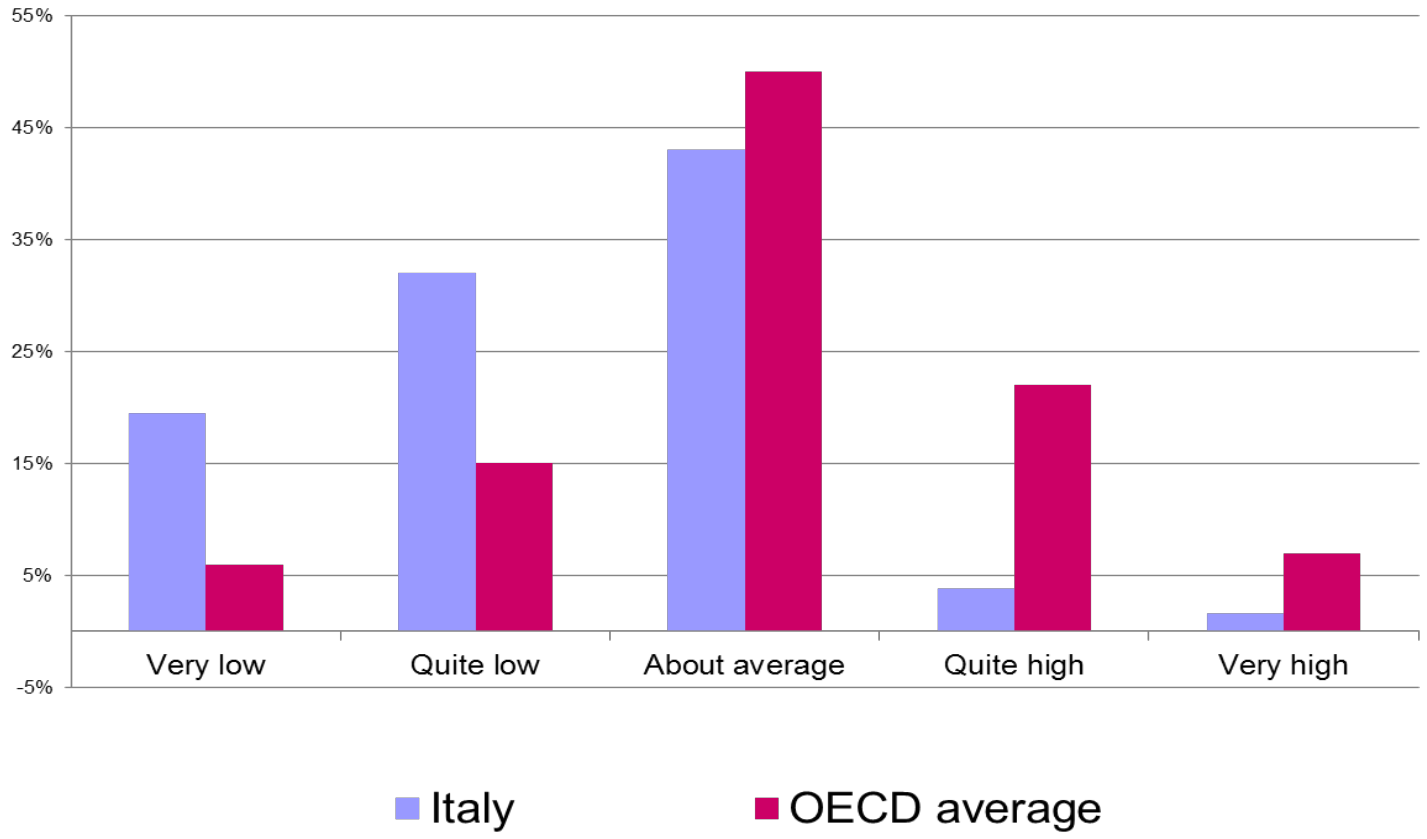


Total score

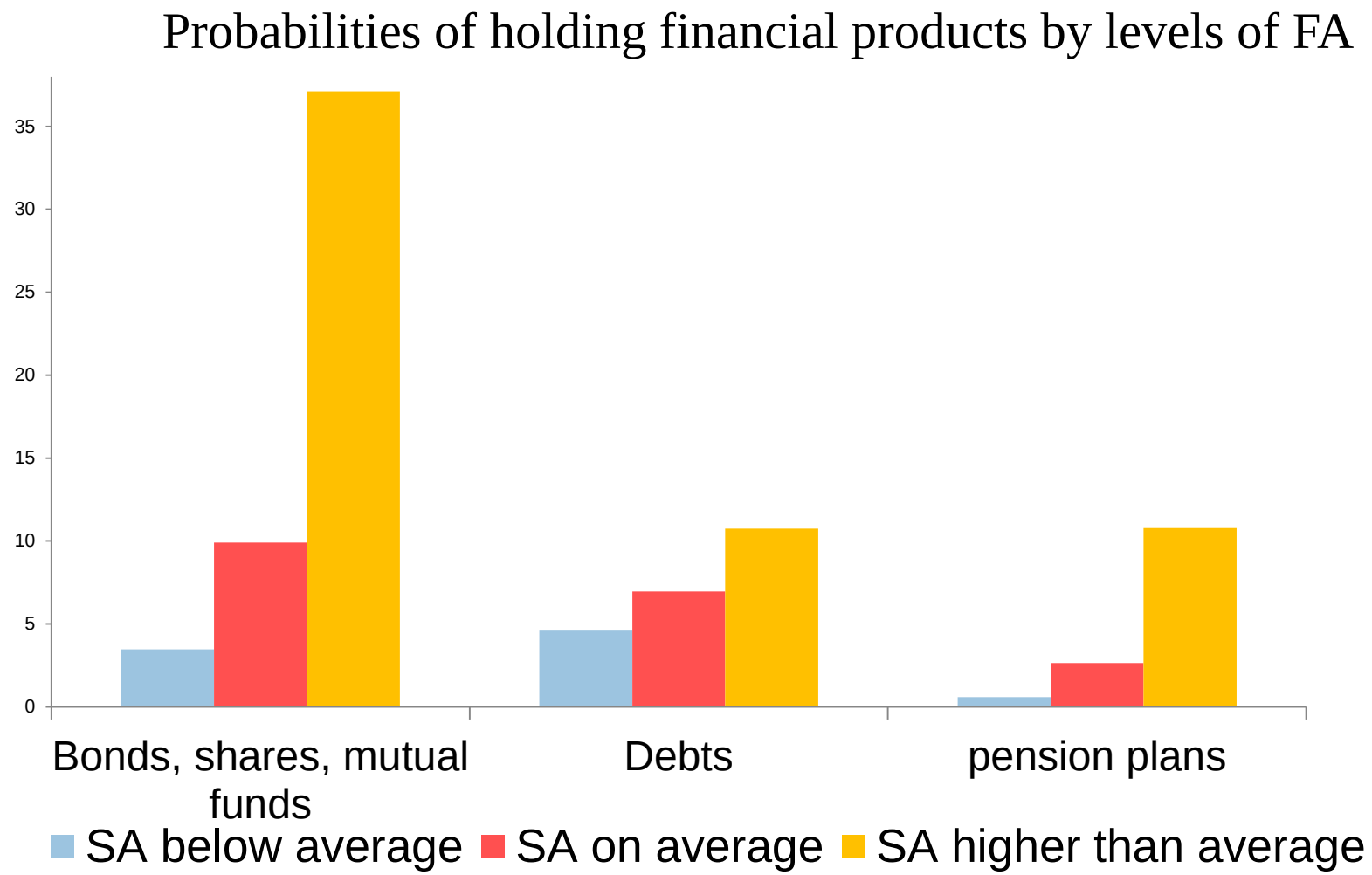

Attitude
Behaviour
Knowledge
0
2
4
6
8
10
12
14
3,2
6,7
4,9
3,3
6,3
5,2
3,5
6,2
4,9
3,2
6,2
4,9
3,3
6
4,9
3,4
5,9
4,8
3,4
5,4
4,9
3,3
5,6
4,2
2,8
4,4
4,4
3,1
4,4
3,5
France
Finland
Canada
Belgium
Austria
Portugal
OCSE average
UK
Poland
Italy

Individuals' self-assessment of financial knowledge

How you would rate your overall knowledge about financial matters compared with other adults in your country?
(missing responses excluded, percentages)



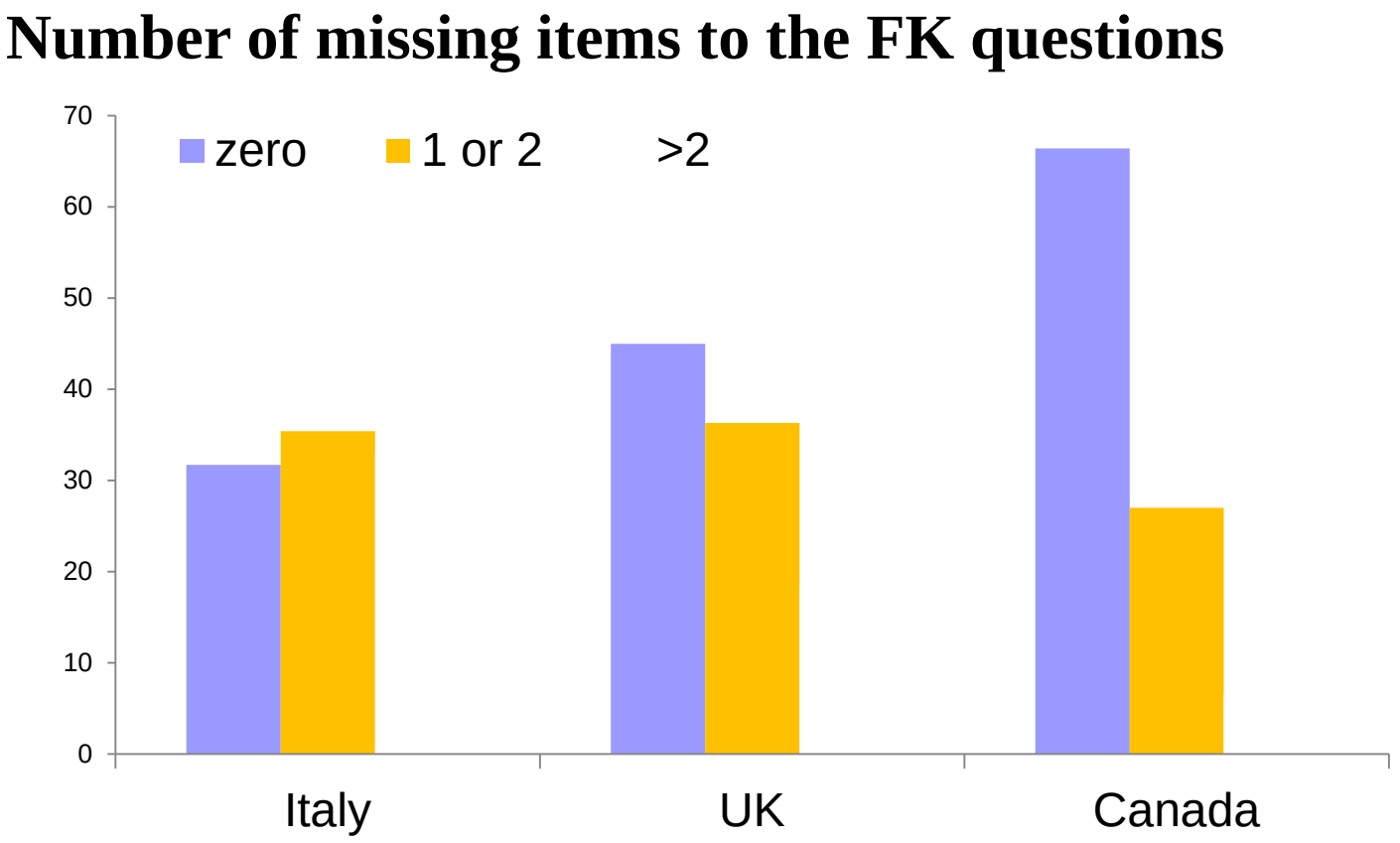
Self-assessment and financial inclusion



FL and Self-assessment explain behaviour

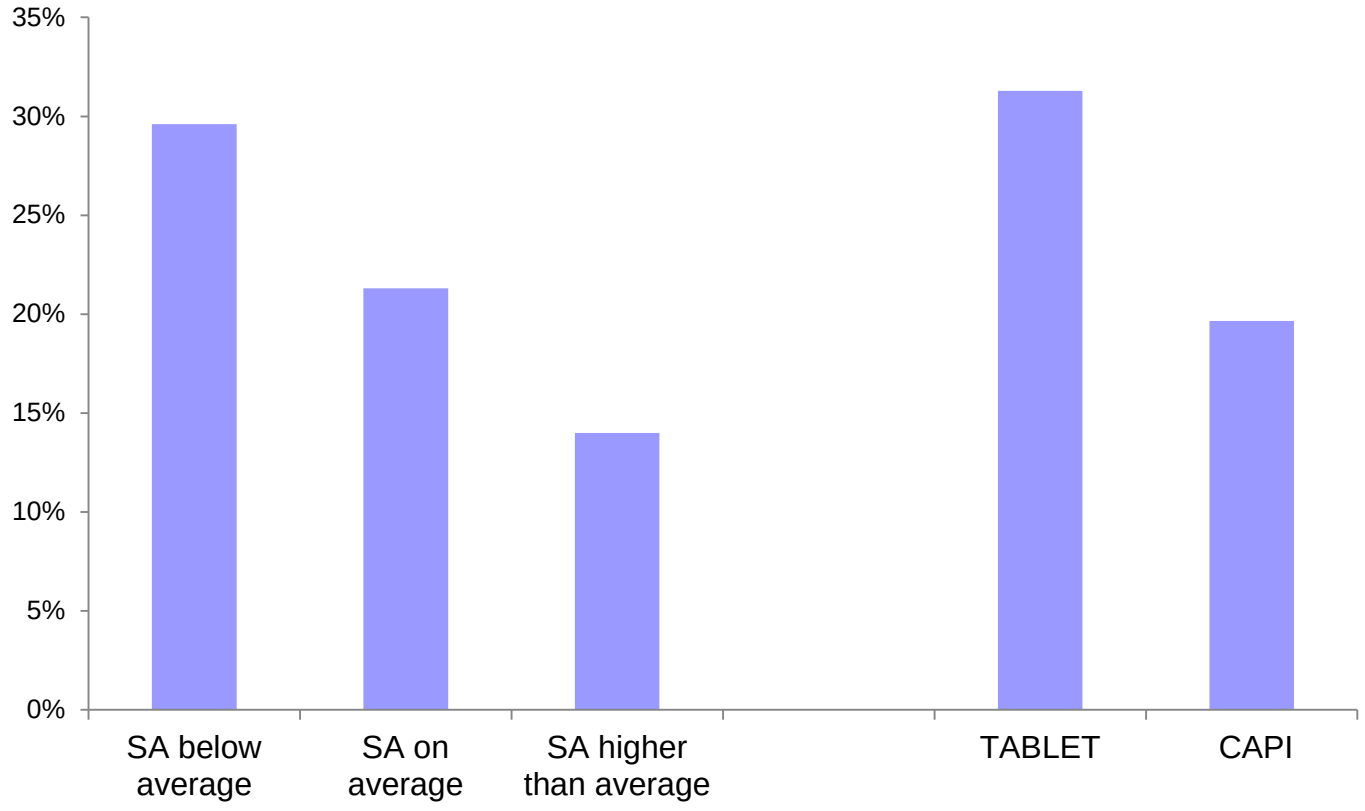
	PENSION PLAN PARTICIPATION		SAVING		TIMELY BILL PAYMENT		RAINY DAYS FUNDS		FINANCIAL PRODUCTS	
	Odds ratio (Pr > Chi Sq)		Odds ratio (Pr > Chi Sq)		Odds ratio (Pr > Chi Sq)		Odds ratio (Pr > Chi Sq)		Estimate (Pr > |t|)	
Parameter	With controls	Without controls	With controls	Without controls	With controls	Without controls	With controls	Without controls	With controls	Without controls
FK score	**1.186 (0.0012)**	***1.237 (<.0001)***	1.009 (0.7757)	*1.063 (0.0453)*	**1.093 (0.0112)**	***1.141 (<.0001)***	**1.256 (<.0001)**	**1.305 (<.0001)**	**0.0475 (0.001)**	***0.0689 (<.0001)***
FA score	**1.254 (0.0163)**	***1.219 (0.0213)***	**1.302 (0.0002)**	***1.394 (<.0001)***	**1.376 (<.0001)**	***1.574 (<.0001)***	1.048 (0.5153)	1.136 (0.0585)	**0.0848 (0.013)**	***0.1048 (0.002)***
Self-assessed FK	**1.551 (<.0001)**	***1.939 (<.0001)***	**1.606 (<.0001)**	***1.638 (<.0001)***	**1.261 (0.0033)**	***1.238 (0.0028)***	**1.511 (<.0001)**	**1.46 (<.0001)**	**0.2015 (<.0001)**	***0.2412 (<.0001)***

Some methodological issues…



Some methodological issues…

Share of (item) nonresponse by SA and Mode of Interview



Conclusions

The OECD methodology is a valuable instrument for policy makers

Possible areas for improvement

- Some of Behavioural questions should be reconsidered
- The attitude questions are «questionable»
- Has the sum of FK FB e FA some economic meaning?
- Missing important themes such as the issue of pensions

Conclusions

- Awareness is not considered but seems to have relevant policy implications:
  1. Knowing that you don't know is the first step for improvement;
  2. It seems to have great explanatory power on behaviour even after controlling for FK scores;
  3. Could over-confidence or under-confidence be a problem?

- Don't Know is considered as a «wrong answer»

  DKs (and the final score) depend on the method of interview and on respondents' risk adversion

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

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Marrakech, Morocco, 14 July 2017

Financial citizenship statistics production[1]

Katherine Hennings and Danniel Lafetá Machado,
Central Bank of Brazil

[1] This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Financial Citizenship Statistics Production

Danniel Lafetá

July 2017

cidadania financeira | BANCO CENTRAL DO BRASIL

Financial Citizenship

Presentation outline

- Concepts
- Indicators of access to and use of financial services – supply side
- Financial literacy and financial consumer protection indicators – demand side
- Next steps

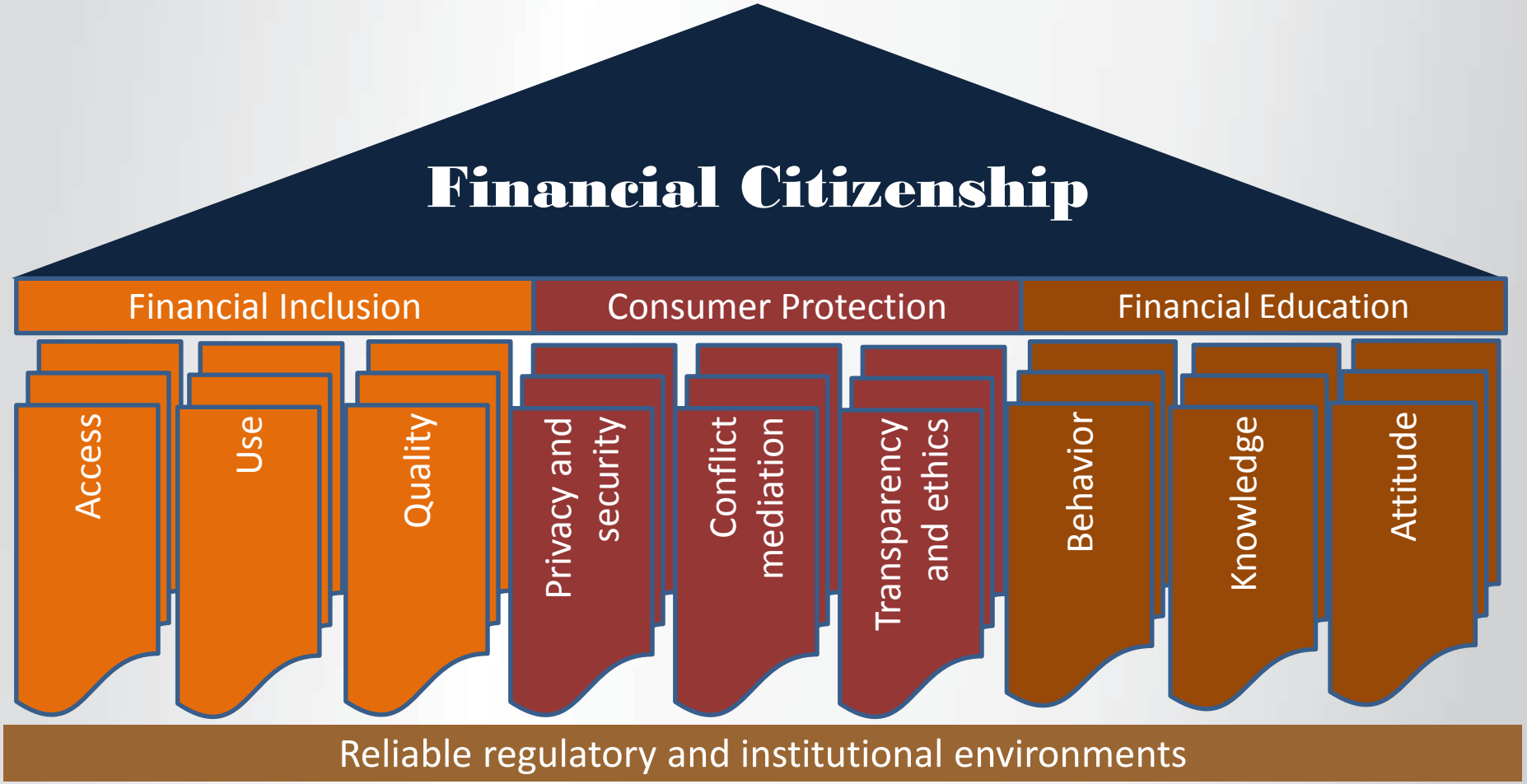
Financial Citizenship

Expanded concept of financial inclusion

It represents the citizen's active role in accessing and using financial services, and it depends on:

- infrastructure (access channels);
- financial services (diversified offer);
- sound decisions (financial literacy);
- consumers' conflicts support (demands agaisnt banks); and
- adequate regulatory framework.

Financial Citzenship



Financial Citizenship

In the Central Bank of Brazil, efforts are based on diagnosis and are channeled through:

- regulation;
- supervision;
- attendance;
- financial education; and
- coordination of the national financial inclusion strategy.

Measuring Financial Citizenship

Groups of indicators for FC measuring		
Financial Inclusion (bank records)	**Financial education** (survey)	**Financial consumer protection** (survey)
Access	Knowledge	Demand rank
Use	Attitude	Channels of attendance
	Behavior	Conflict resolution

Financial Inclusion Report

RFI

2010

II RFI

2011

Dep. for Financial Citizenship Promotion

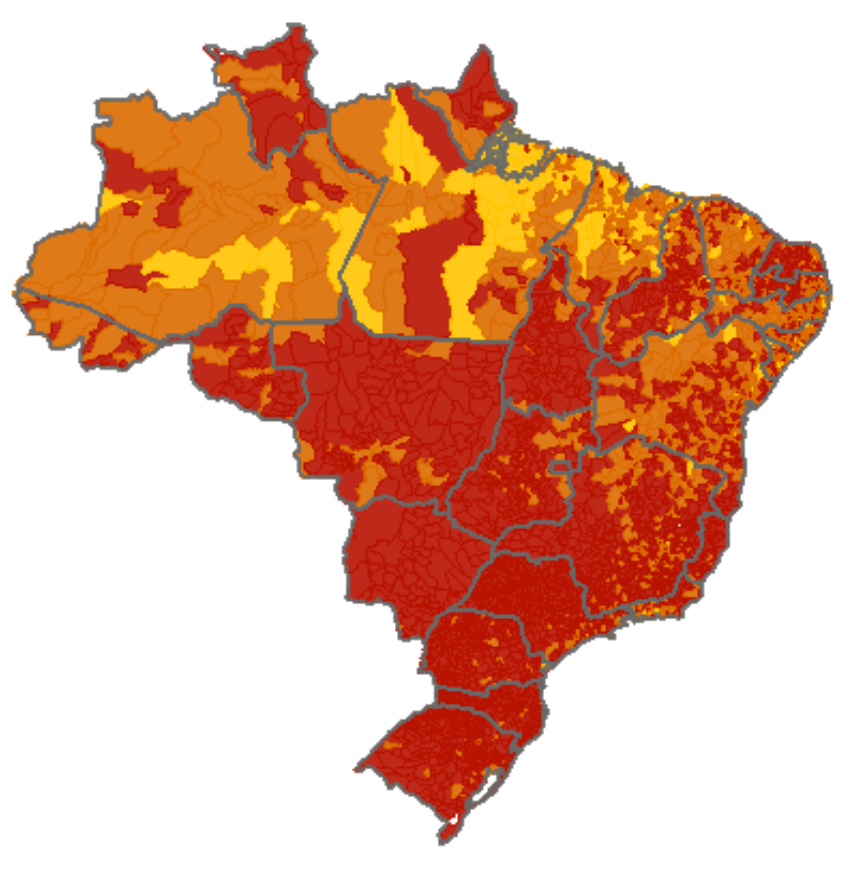
Sources of Financial Inclusion Data

BCB's databases

- **Unicad** – registration database for financial institutions (service points);
- **SCR** – credit database (indebtedness, default);
- **CCS** – relationship database (banking);
- **COSIF** – accounting database (deposit accounts);
- **SAG** – consortium database;
- **DEBAN** – payments database (transactions, access channels).

Access and use indicators – supply side

Points of Service: physical access channels (branches, service points, electronic service points and correspondents)



Geographical distribution of **points of service per 10,000 adults** – 2015

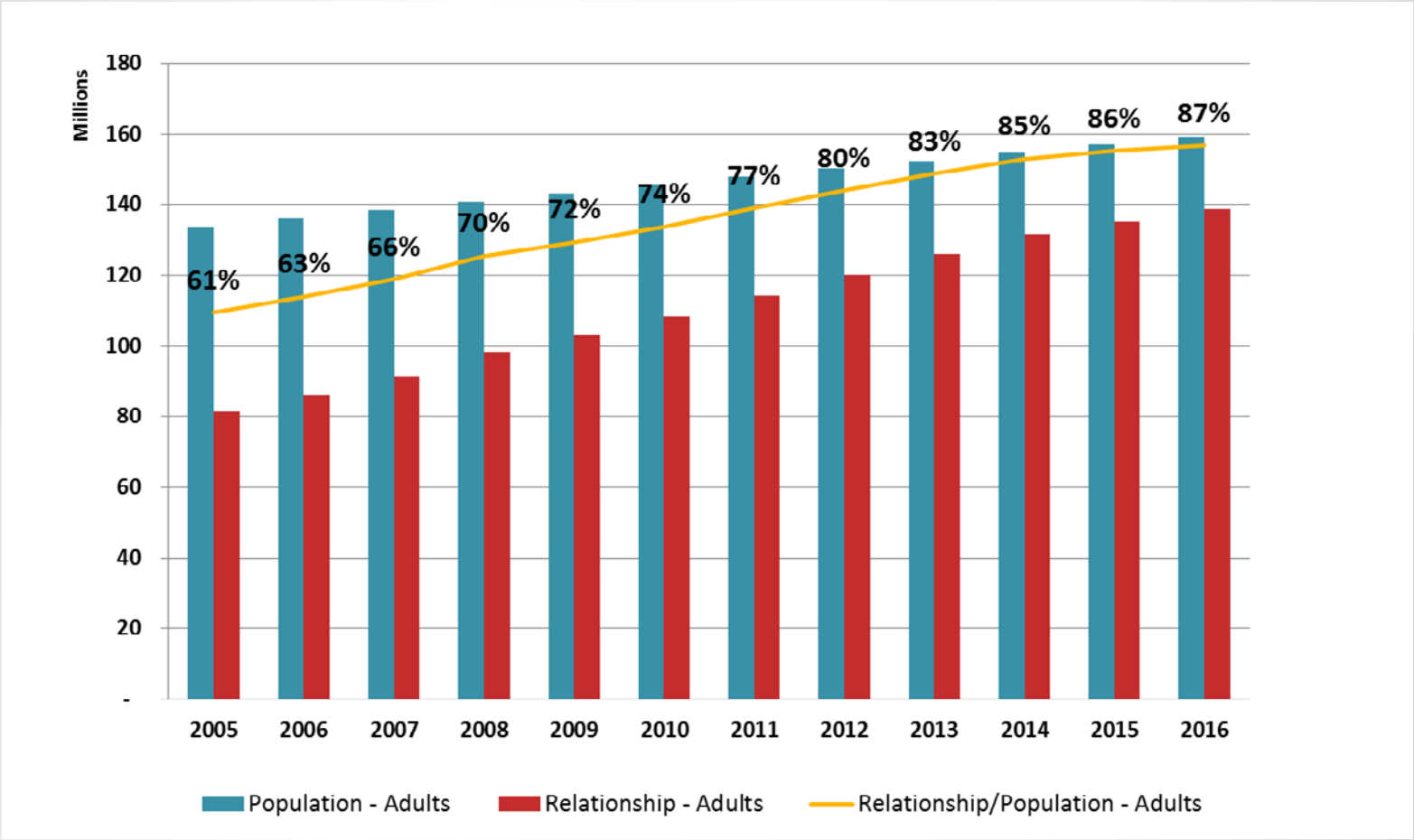
Scale	Municipalities
0	0
0 –I 2	3
2 -- I 8	263
8 -- I 15	1.519
Acima de 15	3.785

Source: BCB (UNICAD), IBGE

Note: ATMs and POS not considered

Access and use indicators – supply side

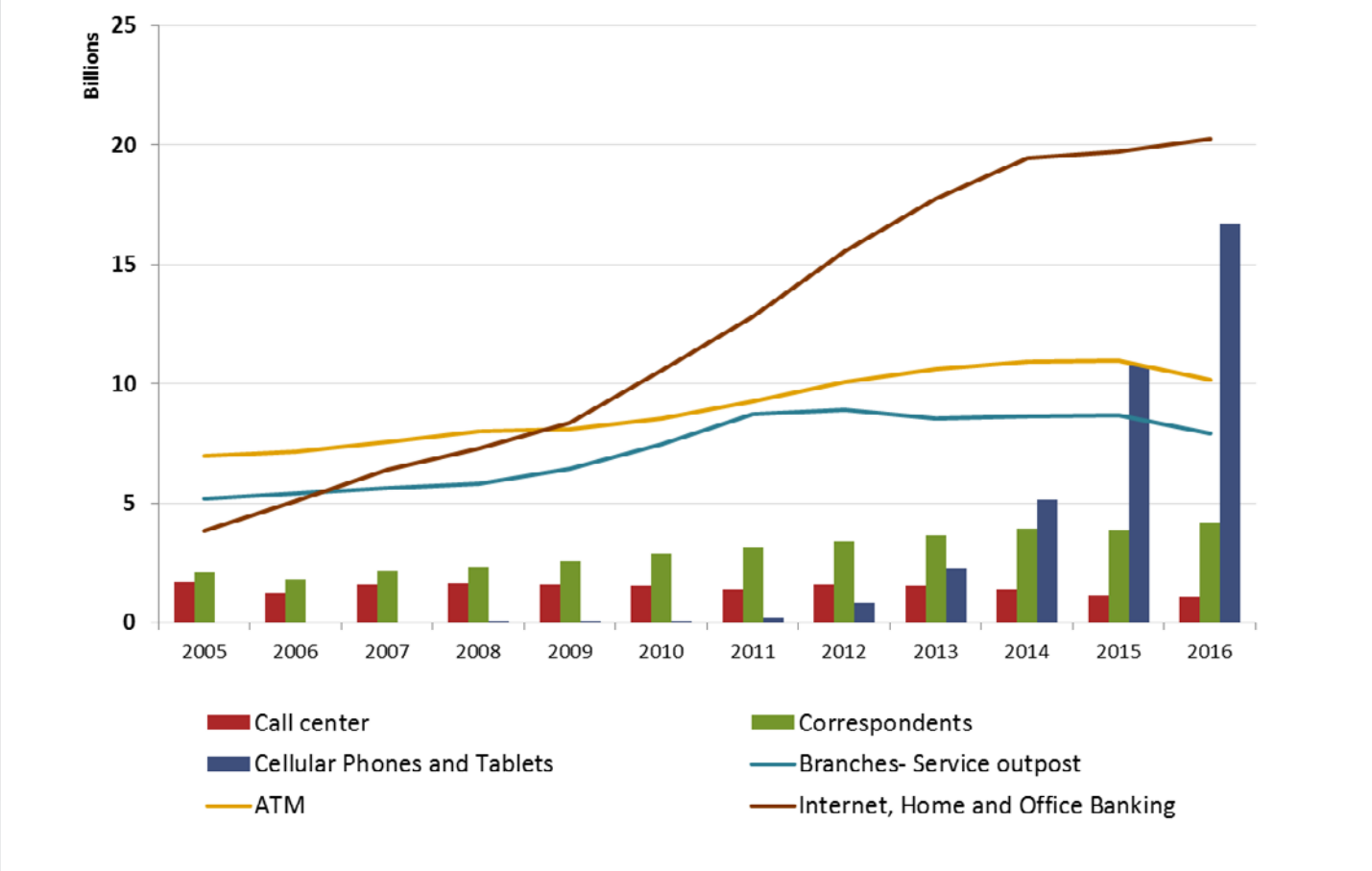
Adults with banking relationship



Source: BCB (CCS), SRF

Access and use indicators – supply side

Number of transactions per access channel

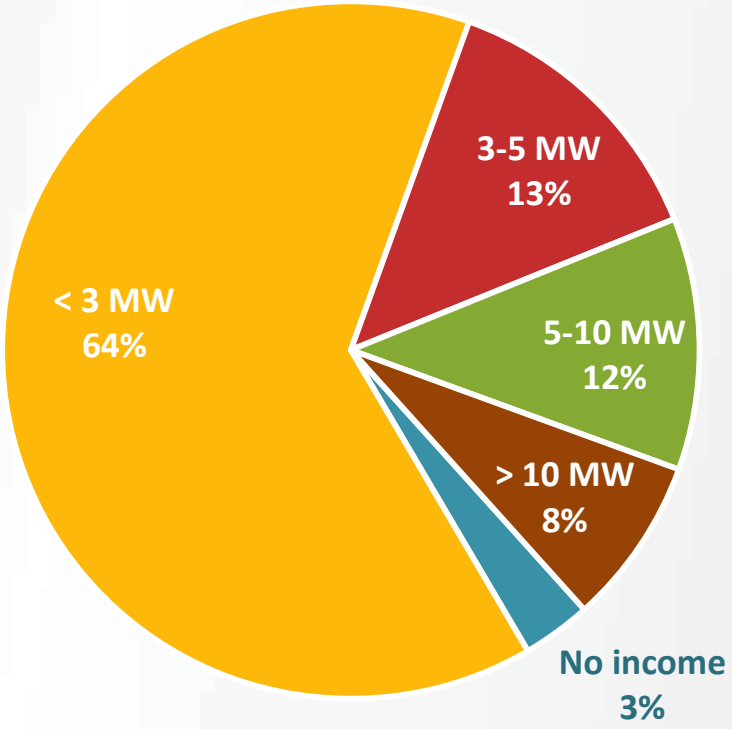


Source: BCB (DEBAN-SPB)

* Pagamentos, depósitos, transferências, crédito, saques, consultas.

Access and use indicators – supply side

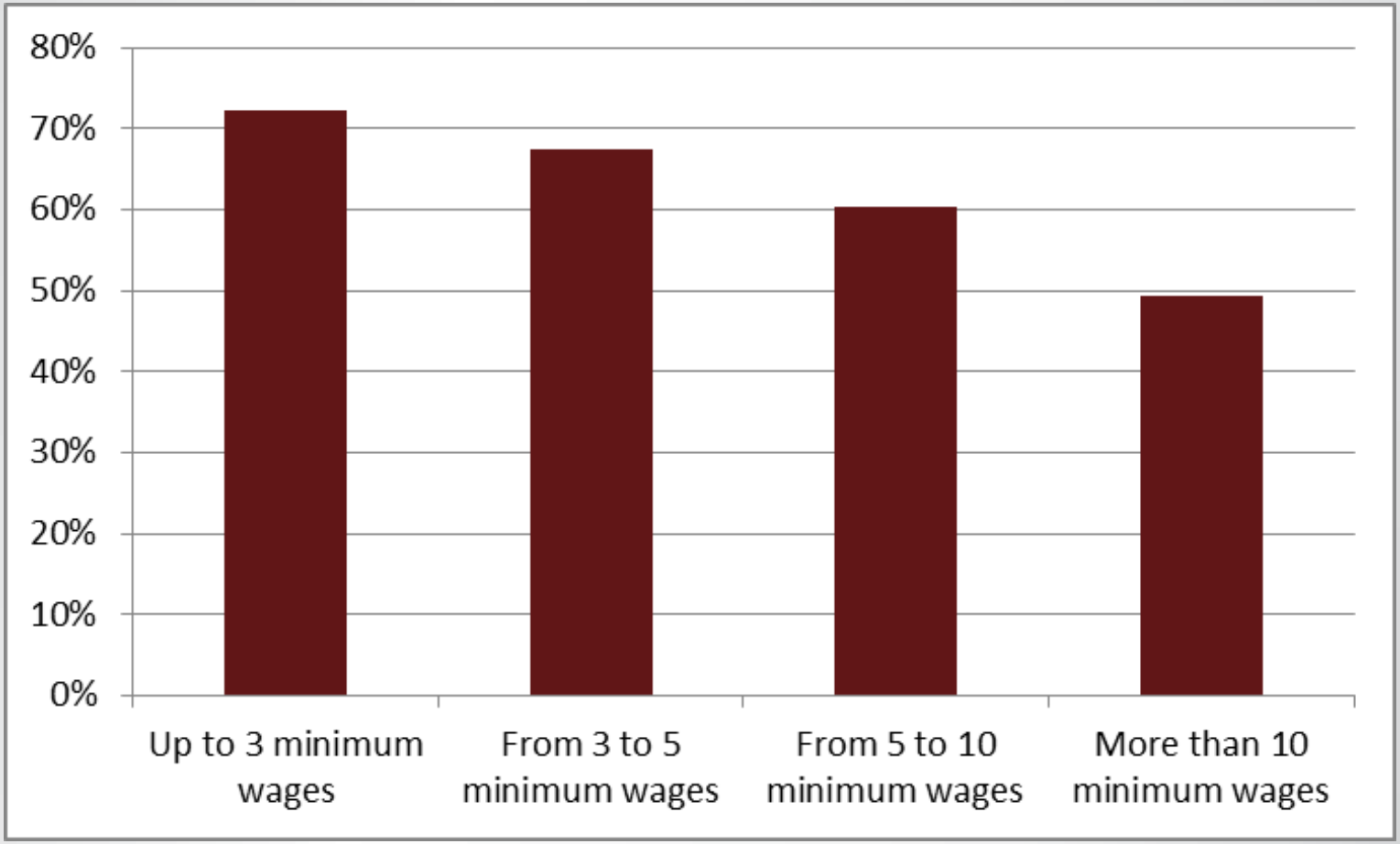
Credit takers by income bracket – 2016



Source: BCB (SCR)

Access and use indicators – supply side

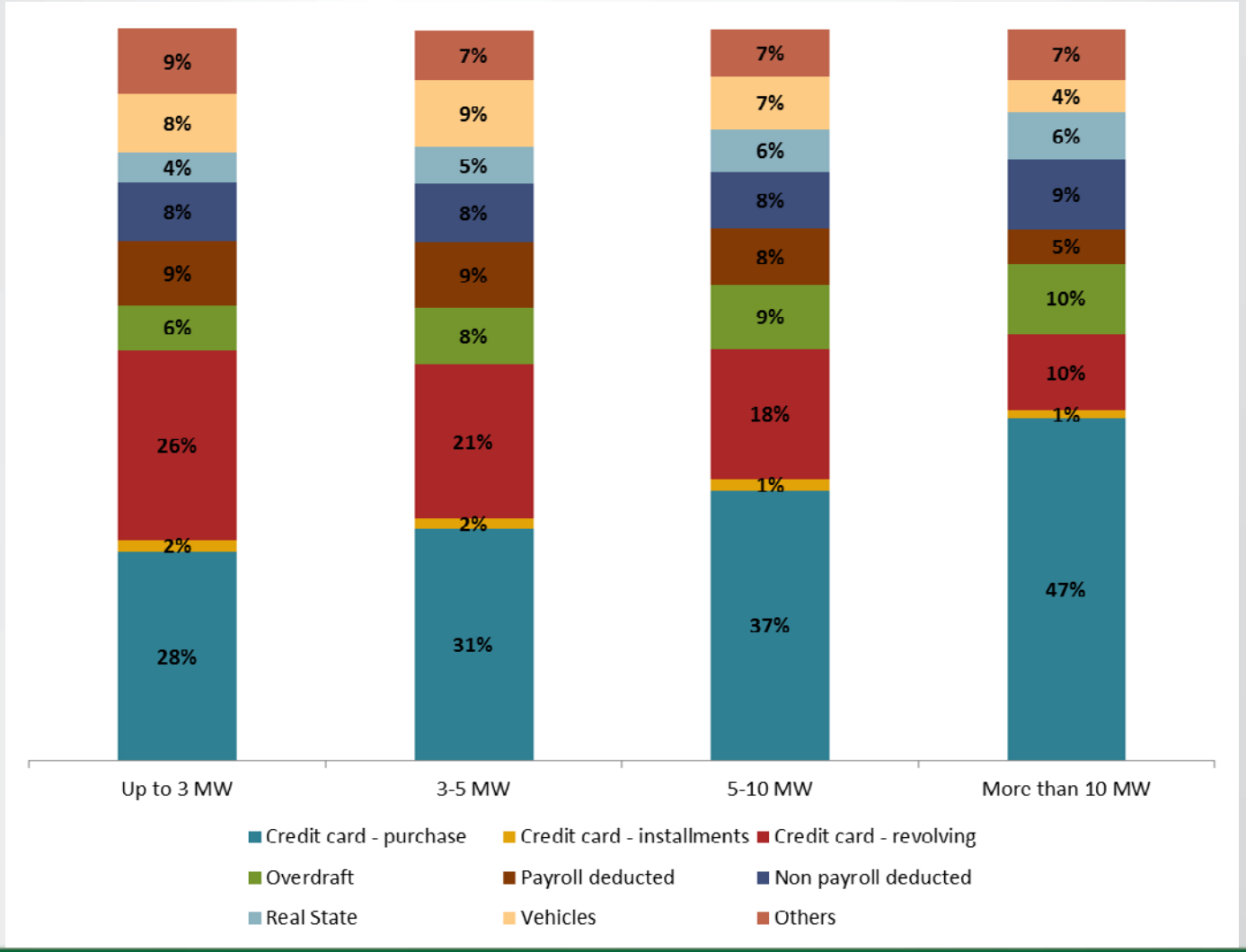
Indebtedness by income bracket – December 2016



Source: BCB (SCR)

Access and use indicators – supply side

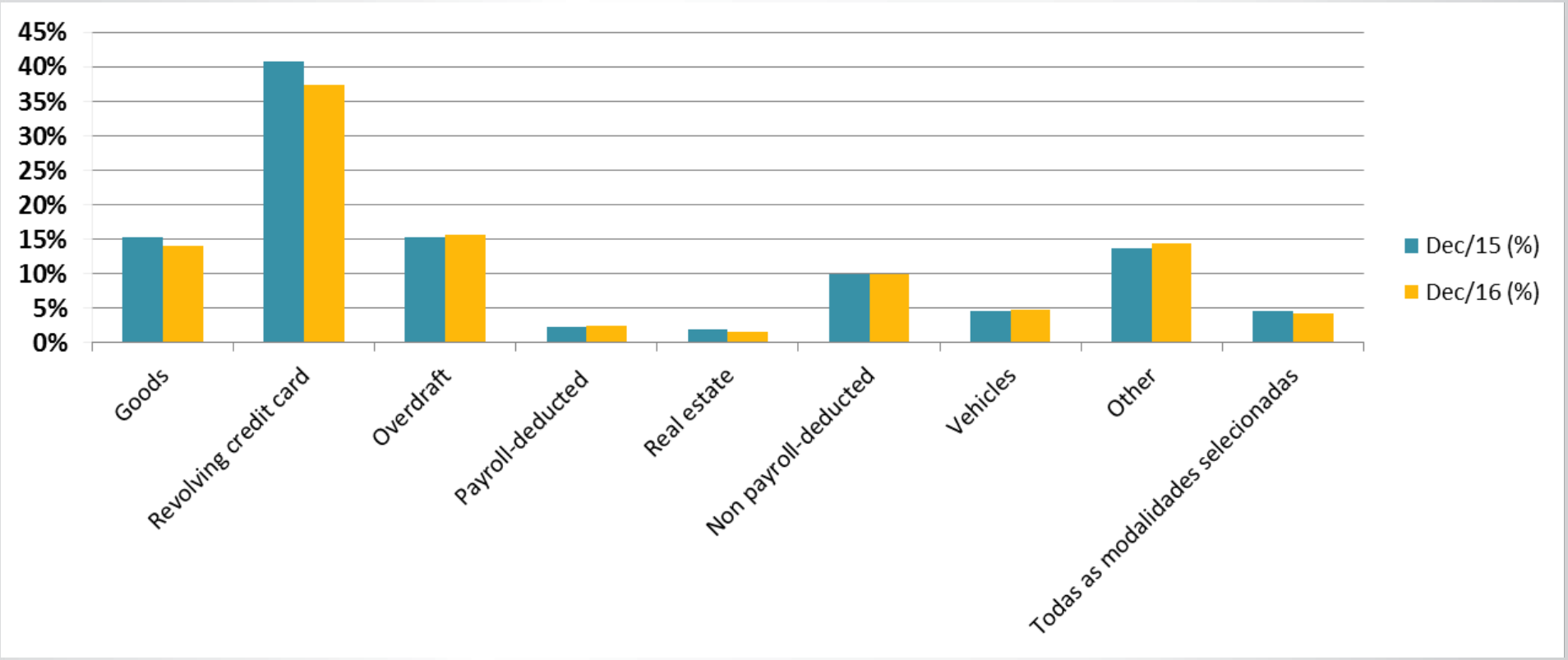
Debt service by income bracket and modality – 2016



Source:
BCB (SCR)

Access and use indicators – supply side

Non-performing credit rate by modality – 2016



Source: BCB (SCR)

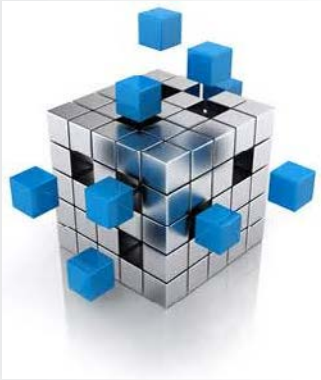
Time Series Management System (SGS)

DW Expansion
Financial Inclusion
(MSE)

SGS + Open
Data Portal

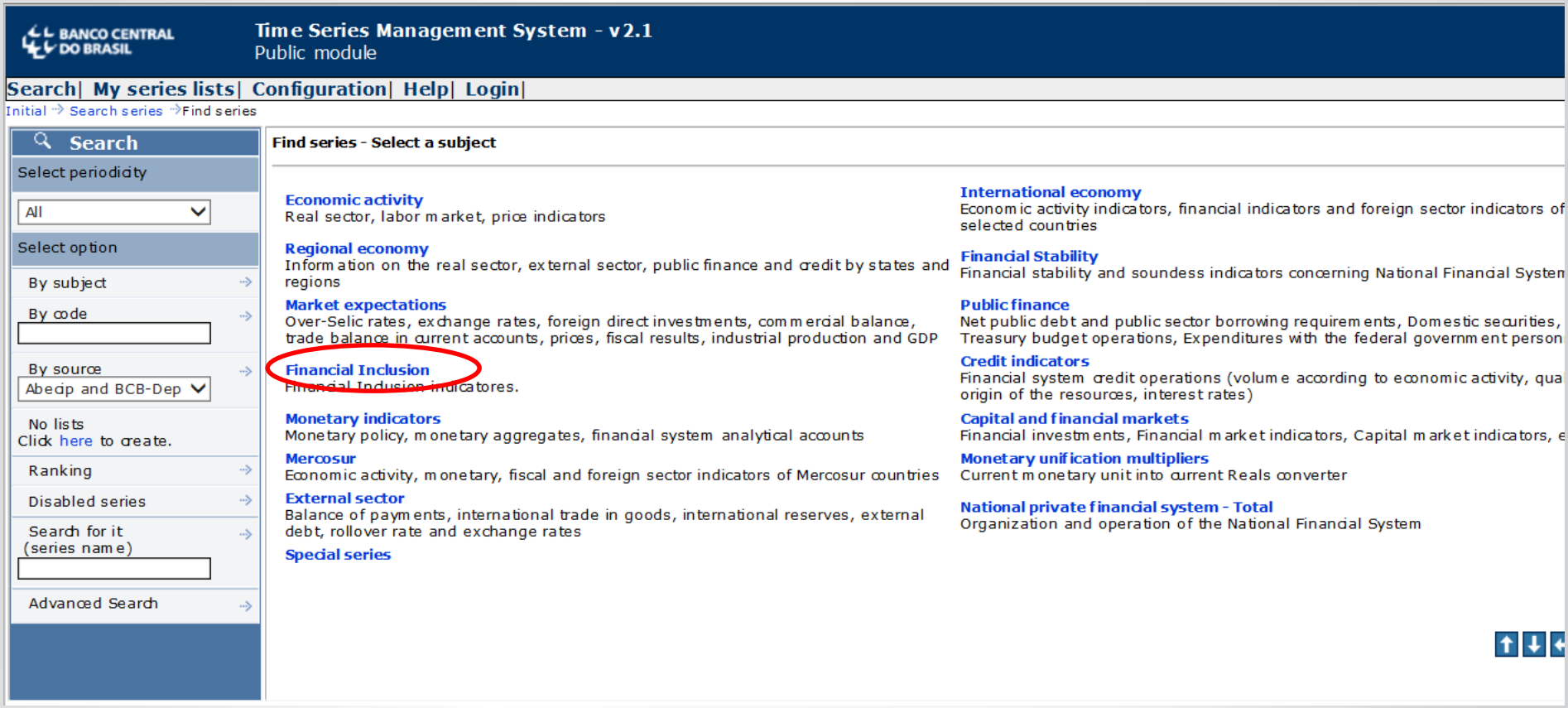
2016

2016/17



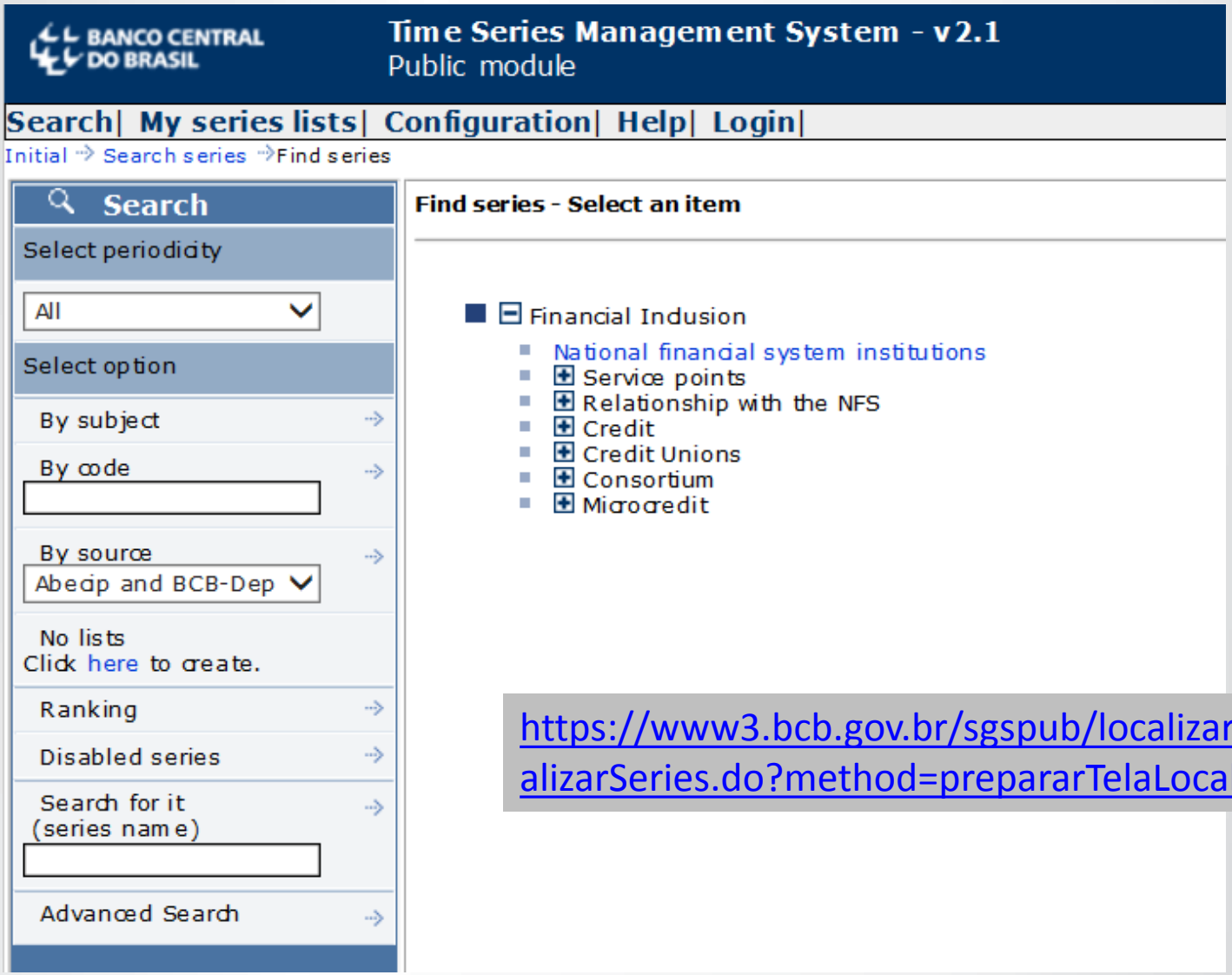
SGS

Time Series Management System (SGS)



https://www3.bcb.gov.br/sgspub/localizarseries/localizarSeries.do?method=prepararTelaLocalizarSeries

Series details



https://www3.bcb.gov.br/sgspub/localizarseries/localizarSeries.do?method=prepararTelaLocalizarSeries

Surveys

Use and Quality of Financial Services Survey – 2014:

- 2500 adults, proportionally distributed among the country's regions.
- Main themes analyzed :
  - ✓ Ownership and use of bank accounts;
  - ✓ Financial planning;
  - ✓ Savings;
  - ✓ Access to credit;
  - ✓ Service channels – conflict resolution.

Surveys

Financial inclusion and education survey – toolkit INFE/OCDE 2015 (BC/SERASA/IBOPE)

- 2,000 people between 18 and 79 years old.
- The survey positioned Brazil in relation to financial inclusion and education (knowledge, attitude and behavior). The participation of the country in the survey enables the comparison of the country with 29 other countries/economies.
- Some results:
  - ✓ About 48% of interviewees answered correctly at least 5 out of 7 questions about financial education knowledge.
  - ✓ Only 36% of families centralize financial issues in one of the members and prepare a domestic budget.
  - ✓ Only 30% saved in the last 12 months.
- It must be repeated.

Next Steps

Complementary databases

Incorporation of other databases in the construction of financial inclusion indicators and implementation of surveys:

- **Federal Tax Revenue Authority**
- **FGC**
- **RAIS**
- **SME registry**
- **MDS** – single registry
- **IBGE**

Work plan for 2017 BC/IBGE:

1. Survey proposal to be discussed during the 3rd Financial Citizenship Forum (Nov/2017), with the participation of IBGE and other public and private entities, interested in many ways in the theme, such as researchers, policymakers and others.
2. Adjustment period;
3. Implementation of the survey (POF – FC Module – IBGE's proposal) in 2018;
4. Results processing in 2019/20.

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

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Marrakech, Morocco, 14 July 2017

What is financial inclusion and how to stimulate this in the Netherlands?[1]

Michiel van Doeveren,
Netherlands Bank

[1] This paper was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

What is financial inclusion and how to stimulate this in the Netherlands?

Strategy to foster financial inclusion

Michiel van Doeveren[1]

1. What is Financial inclusion?

Financial inclusion ensures free access to, and use of, appropriate financial services for all people and businesses at affordable cost and participation in society of disadvantaged groups based on equal rights and duties.

Around the world, two billion people do not have access to financial products, such as a current account. In particular, large groups of poor people are excluded from financial services, either because there are no banks in their area or because banks do not consider them creditworthy. Financial inclusion therefore means that these people are given access.

2. Financial inclusion in the Netherlands

In the Netherlands, too, some groups have little knowledge of and limited access to financial services. For example, many people are unaware of the ins and outs of complex financial issues, such as pensions. This exposes them to the risk of taking wrong decisions, potentially undermining their financial resilience.

This is why central banks and other financial authorities are committed to promoting financial accessibility and knowledge. Policies aimed at making the financial system more widely accessible contribute to sustainable economic growth and, hence, to financial stability. We use our national Forum on the Payment System to foster accessibility for all vulnerable groups. Moreover we support various financial knowledge projects, such as the Money Week (*Week van het geld*) project for primary school pupils and the Money Wise (*Wijzer in geldzaken*) platform.

International institutions such as the World Bank and the Bank for International Settlements (BIS) are preparing statistics and analyses in the area of financial inclusion. Their data about the availability and demand for financial services and about their quality are needed for strategy development. DNB will contribute in 2016 by refining a financial inclusion indexation methodology.

[1] Senior policy advisor, Netherlands Bank (m.a.j.m.van.doeveren@dnb.nl)

3. Innovation boosts financial inclusion

Various innovations help widen financial inclusion. The internet has made it easy to open and use a current account, and mobile phones allow quick and easy payment transfers.

A well-known example is the M-Pesa network to transfer money by mobile phone, which is now operational in Africa (2007), Asia and Romania (2014) and Albania (2015). A key factor in these initiatives is that the exchange of transaction details must be secure.

4. Closure

Departing from its key tasks as central bank De Nederlandsche Bank finds it important to stimulate financial inclusion for all consumers and business. Financial accessibility, financial knowledge and financial resilience are three dimensions in the broad definition that DNB uses. The National Forum on the Payment System fosters accessibility for all vulnerable groups in retail payments.

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

What is financial inclusion and how to stimulate this in the Netherlands?[1]

Michiel van Doeveren,
Netherlands Bank

[1] This presentation was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Strategy to foster financial inclusion

Bank Al-Maghrib – CEMLA-IFC Satellite Seminar on Financial Inclusion, Marrakech, Morocco,

Michiel van Doeveren, 14 July 2017

DeNederlandscheBank

EUROSYSTEEM

Agenda

- What is financial inclusion?
- Elements of a strategy for financial inclusion
- CPMI-WB report Payment Aspects of Financial Inclusion April 2016
- Financial knowledge, Financial Resilience and Financial behaviour in the Netherlands
- Making an index for Financial Inclusion
- Conclusions

Financial Inclusion

- Full financial inclusion is a state in which all people and businesses who can use them have access to a full range of financial services at an affordable price and good quality.

Relevance of Financial Inclusion (1)

- Access to a full suite of financial services: credits, savings, insurances and payments
- Provided with quality:convenient, affordable, suitable, provided with dignity and client protection

- To everyone who can use financial services: excluded and under-served people. Special attention to rural, people with disabilities, women, and often-excluded groups

Relevance of Financial Inclusion (2)

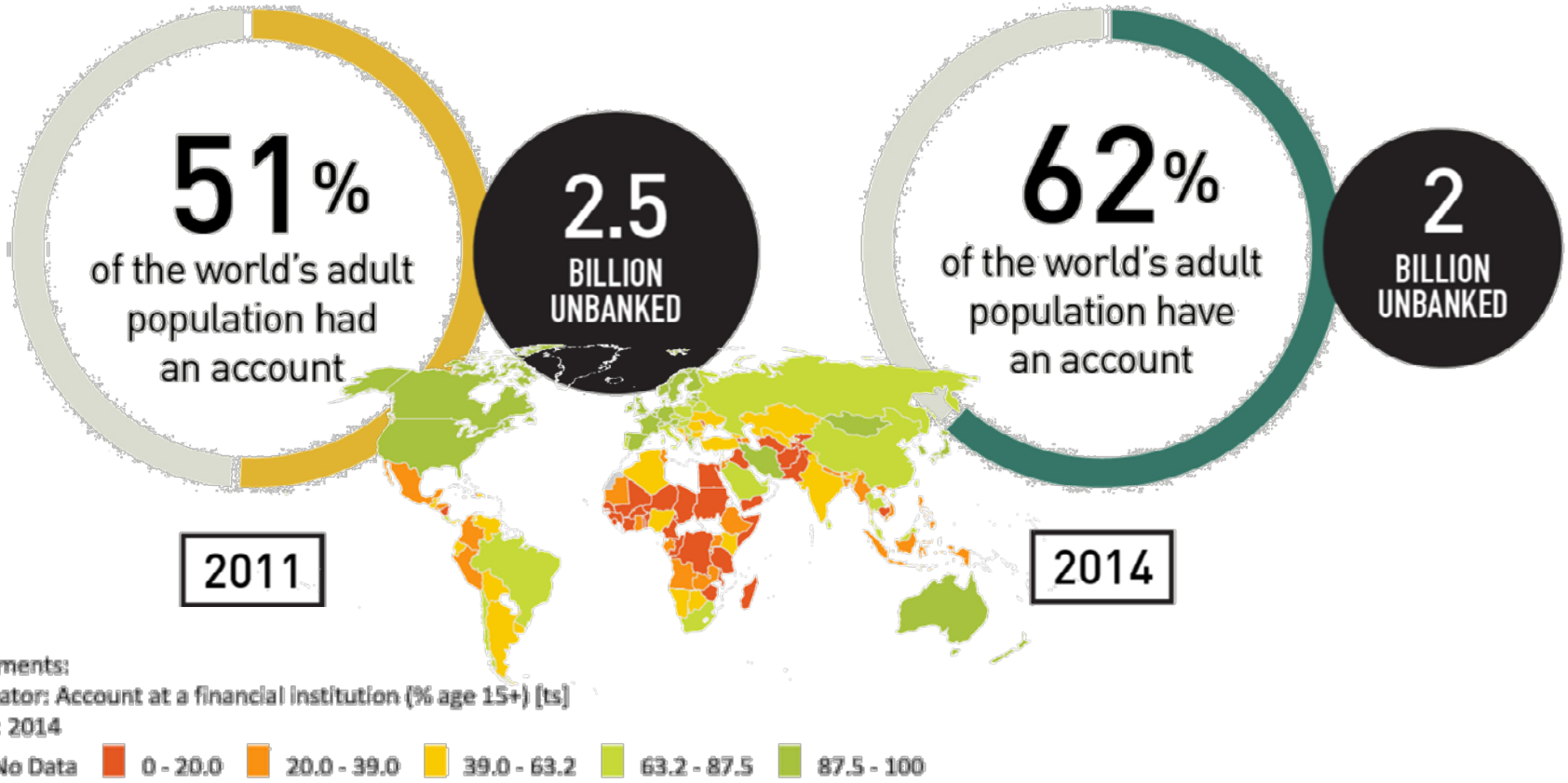
- With financial capability: clients are informed and able to make good money management decisions
- Through a diverse and competitive marketplace: a range of providers, robust financial infrastructures and clear regulatory framework
- Sustainability and Legitimacy

Source: Sustainable Development Goals at UN.org

Financial inclusion

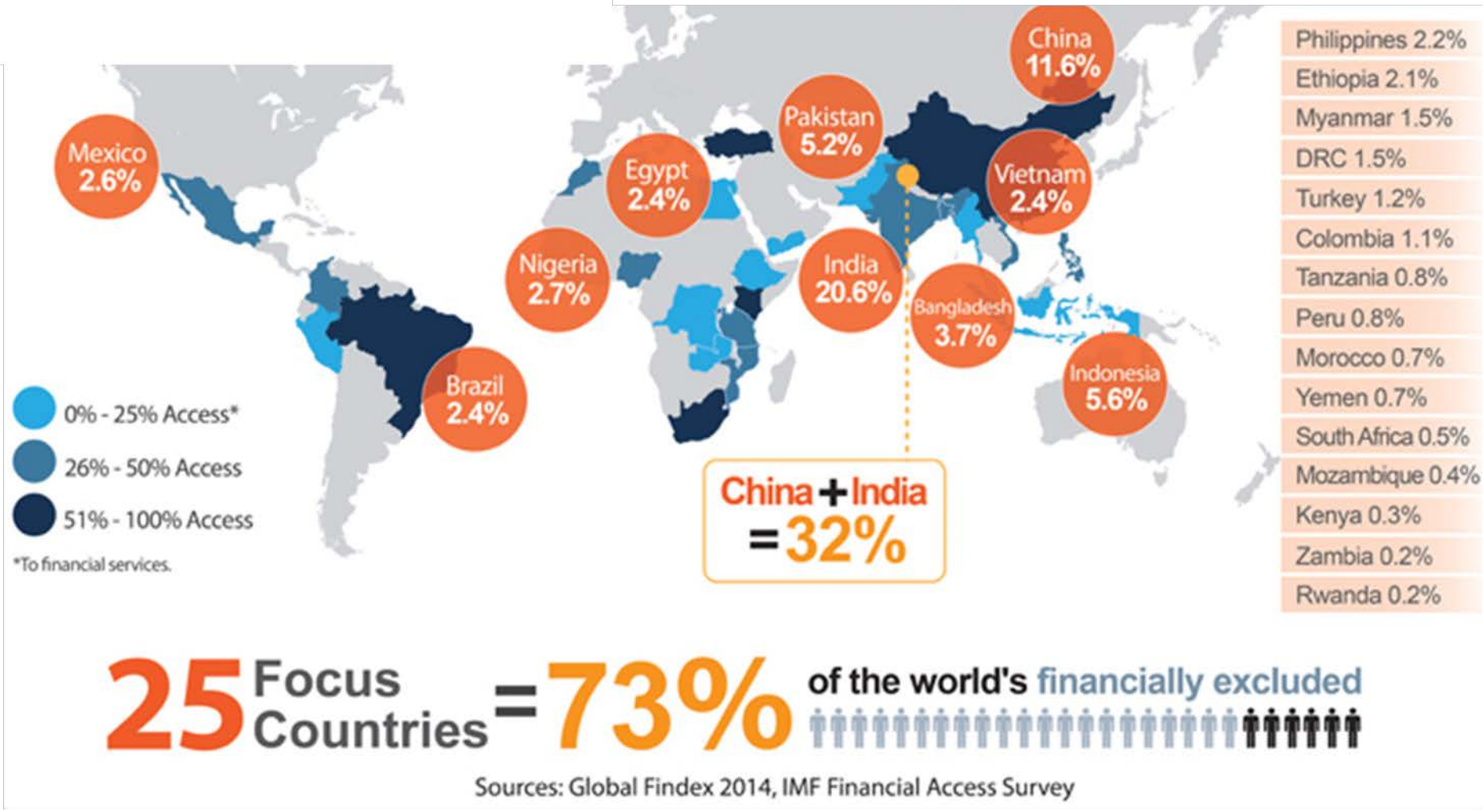
Gap is narrowing, but is still substantial

More adults have an account (with a financial institution or mobile money service) now than three years ago.



FINDEX 2014

25 countries account for 73% of the world's unbanked



Sources: Global Findex 2014, IMF Financial Access Survey

Universal Financial Access by 2020

By 2020, adults globally have access to an account or electronic instrument to store money, send and receive payments as the basic building block to manage their financial lives

- Access to a transaction account is a stepping stone to financial inclusion, which includes a full range of formal financial services
- Universal financial access is ambitious, yet achievable for the majority of the world's population by 2020, full financial inclusion will take longer
- Even with financial access, usage will not be universal, and not all countries will reach it

"Many national leaders have already taken bold steps to expand financial access in their own countries. To further that progress, it is important to create the right environment to catalyze private-sector investment and innovation"

H.M. Queen Máxima of the Netherlands, the UN Secretary-General's Special Advocate for Inclusive Finance for Development

2015 World Bank Group-IMF Spring Meetings

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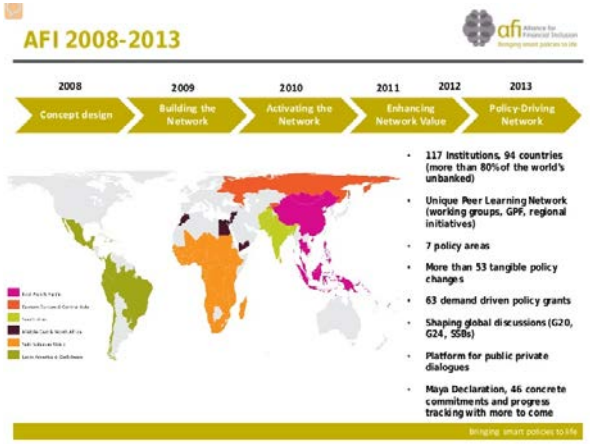
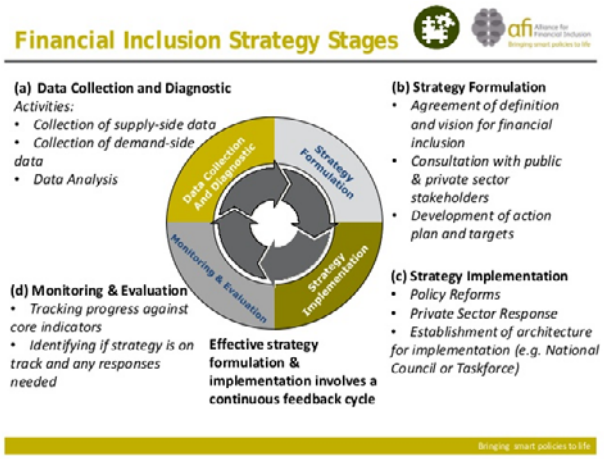
Goals and scope for a strategy on financial inclusion

- Awareness & Knowledge
- Accessibility
- Financial Behaviour
- Sustainability & Entrepeneurship
- Global and regional elements
- Stakeholders & cooperation





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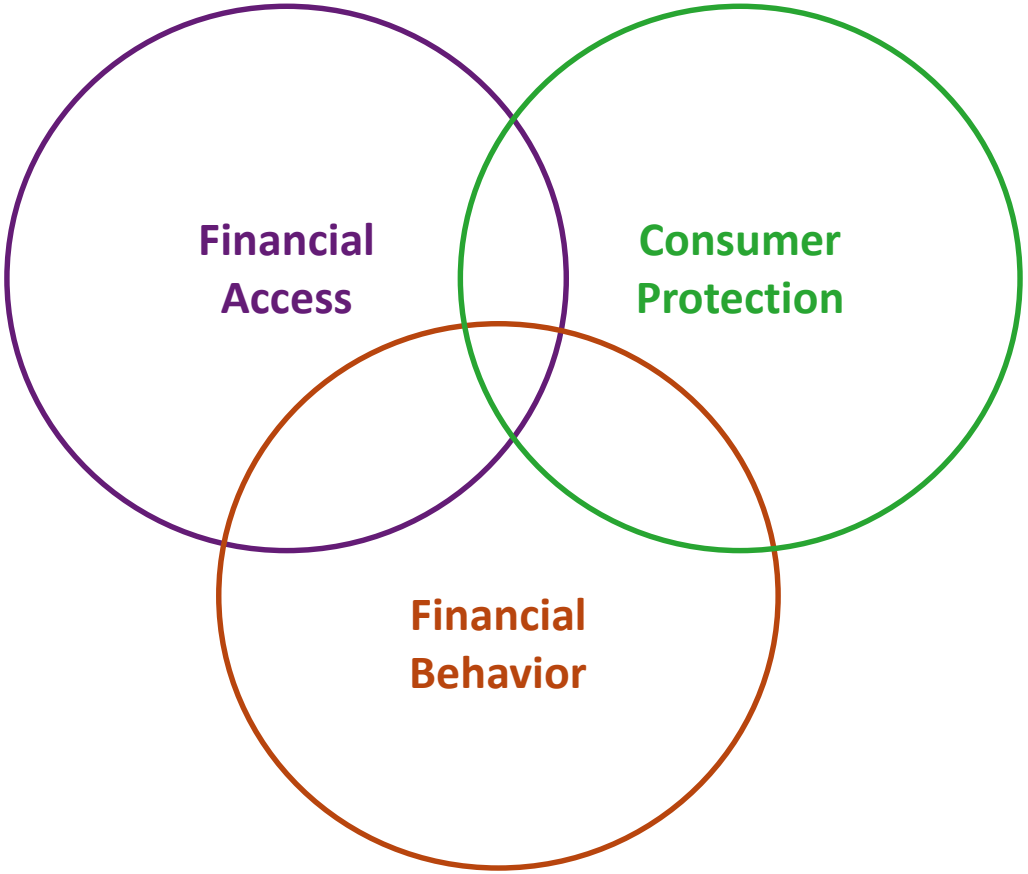
CPMI-WM Report Payment Aspects of Financial Inclusion

The report is premised on two key points:

- Efficient, accessible, and safe retail payment systems and services are critical for greater financial inclusion

- A transaction account is an essential financial service in its own right and can also serve as a gateway to other financial services

Financial resilience



Importance of financial resilience

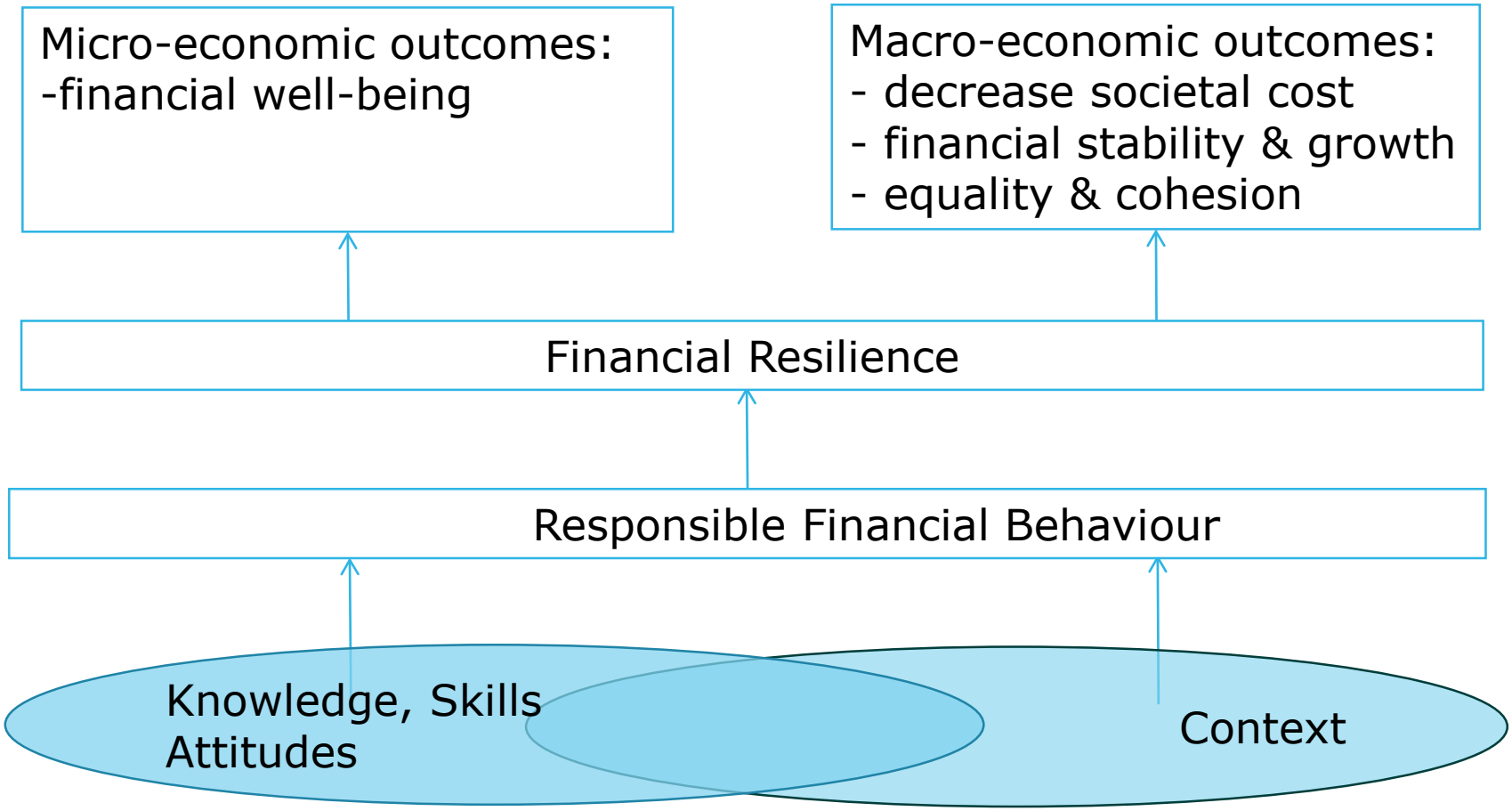
… for individual households

- dealing with increased responsibility and complexity
- preventing overindebtedness
- financial well-being

… for economies

- societal cost
- financial stability & growth
- wealth equality & social cohesion

Financial resilience and financial behaviour



Responsible financial behaviour (1)

- Experience with payment arrears
- Carefulness dealing with finances
- Experience with overdraft
- Managing expenditures
- Use of credit card

Responsible financial behaviour (2)

- Buying simple financial products: comparing product characteristics, terms and price
- Buying complex financial products: comparing product characteristics, terms and price
- Managing financial products

Some data on financial literacy

Debts

- Approximately 1,1M households have problematic debts
- Approximately 2,2M households have payment arrears

Youth

- Have problems dealing with money
- One in five 18- to 24-year-olds have payment arrears

Financial resilience

- 41% (5.1 mln) is not prepared for a significant decrease in income or major expenditure

Pension awareness

- 57% of the working population underestimate their pension age

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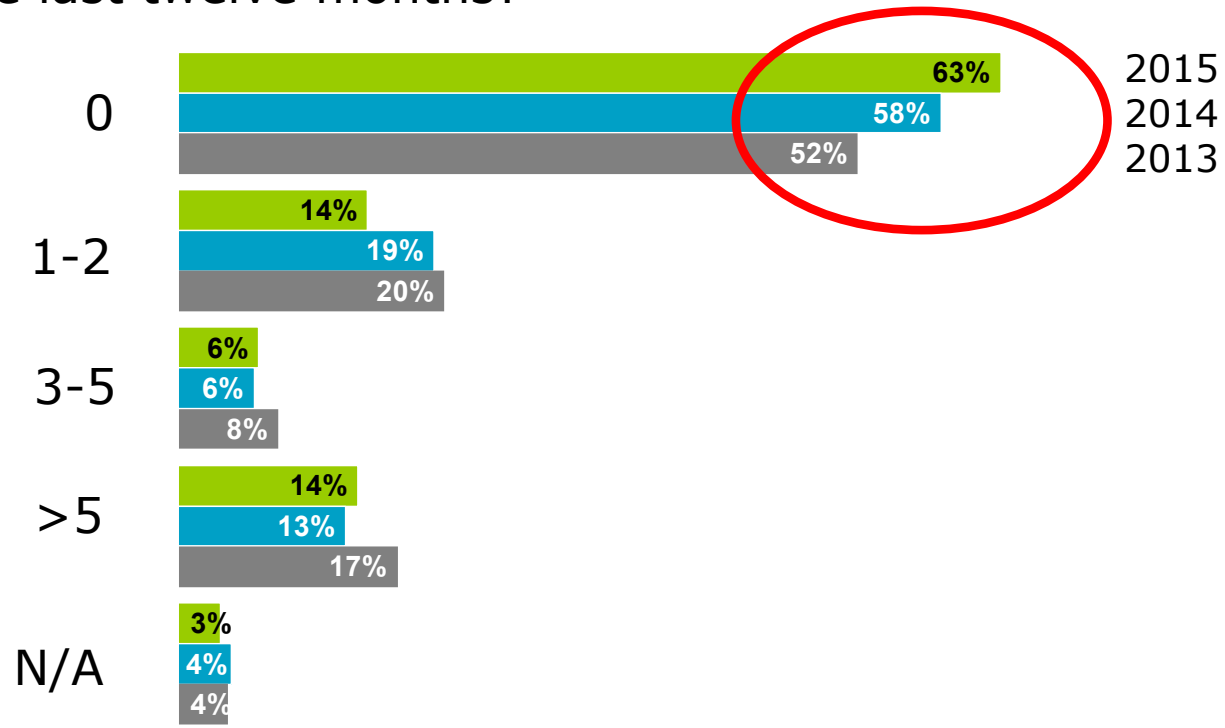
Ministerie van Financiën

Money Wise
www.moneywiseplatform.nl

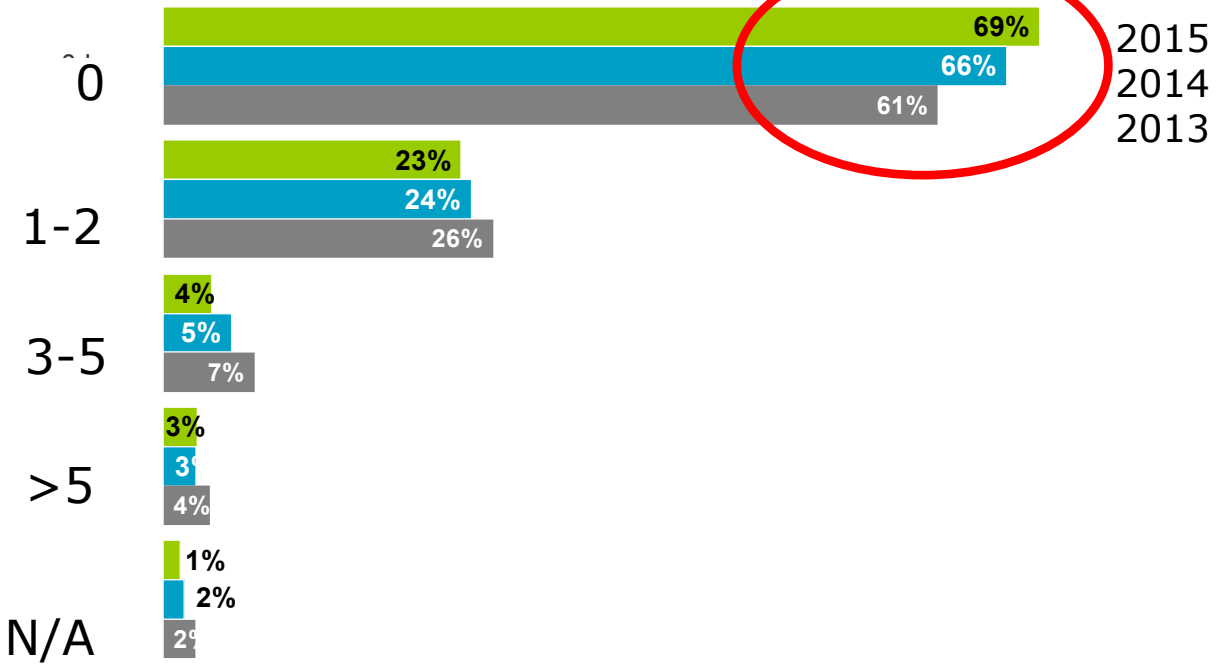
Financial Behavior Monitor 2015 (1)

How often did your have an overdraft on your current account in the last twelve months?



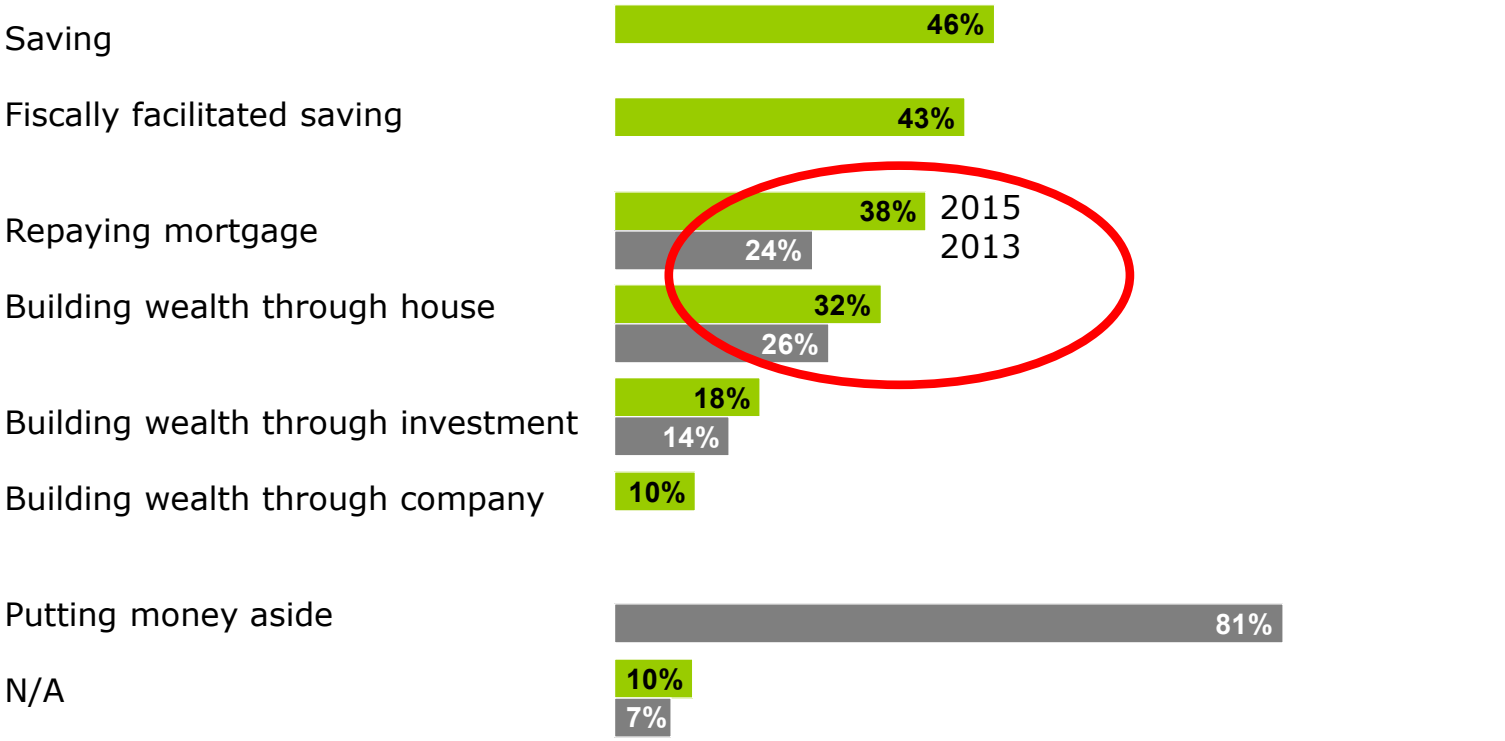
Financial Behavior Monitor 2015 (2)

How often did your get a payment reminder because you adn't paid a bill in time, in the last twelve months?

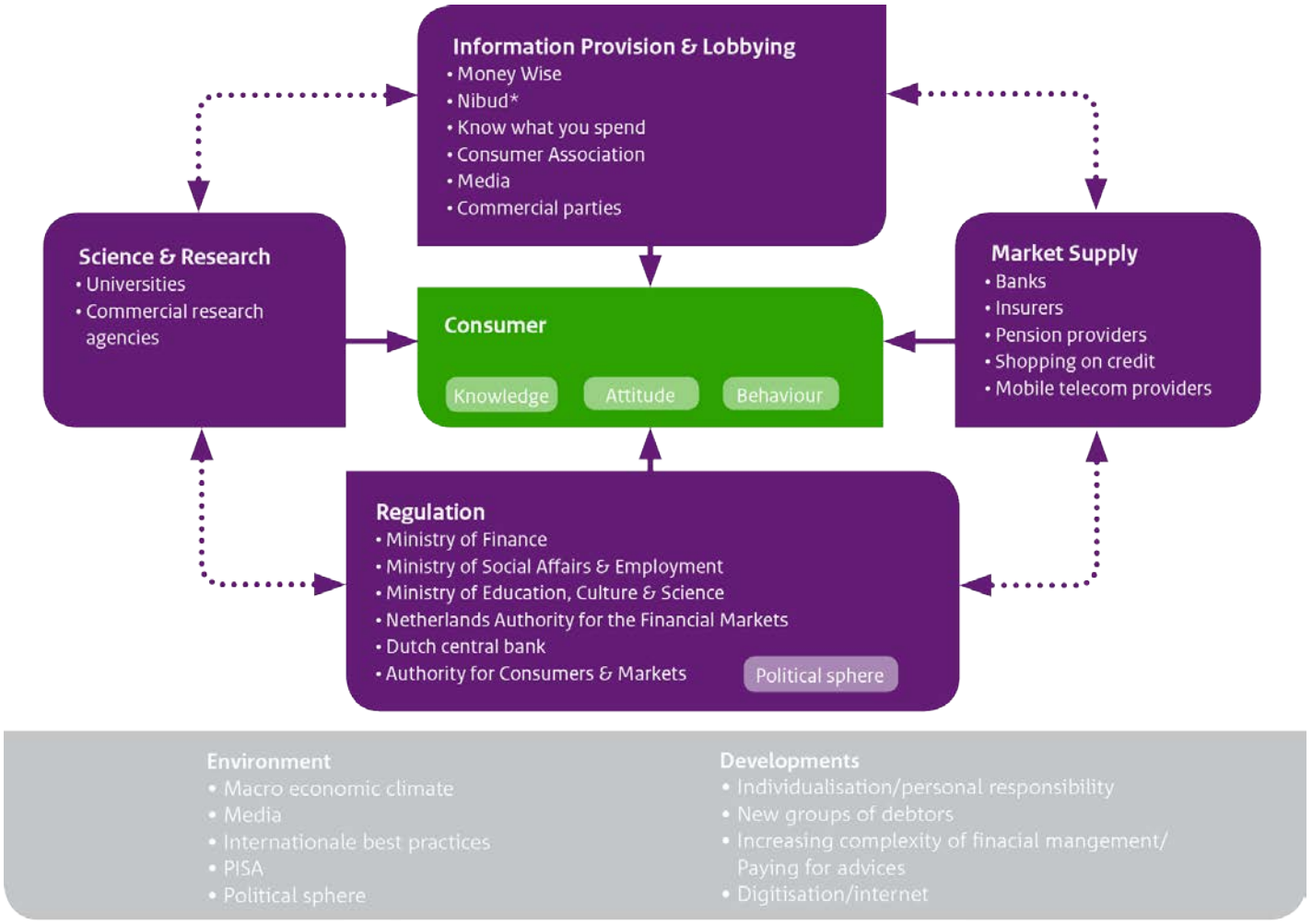


Financial Behavior Monitor 2015 (3)

What measures did you take to financially prepare for your retirement?



Financial Education



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National Strategy for Financial Education

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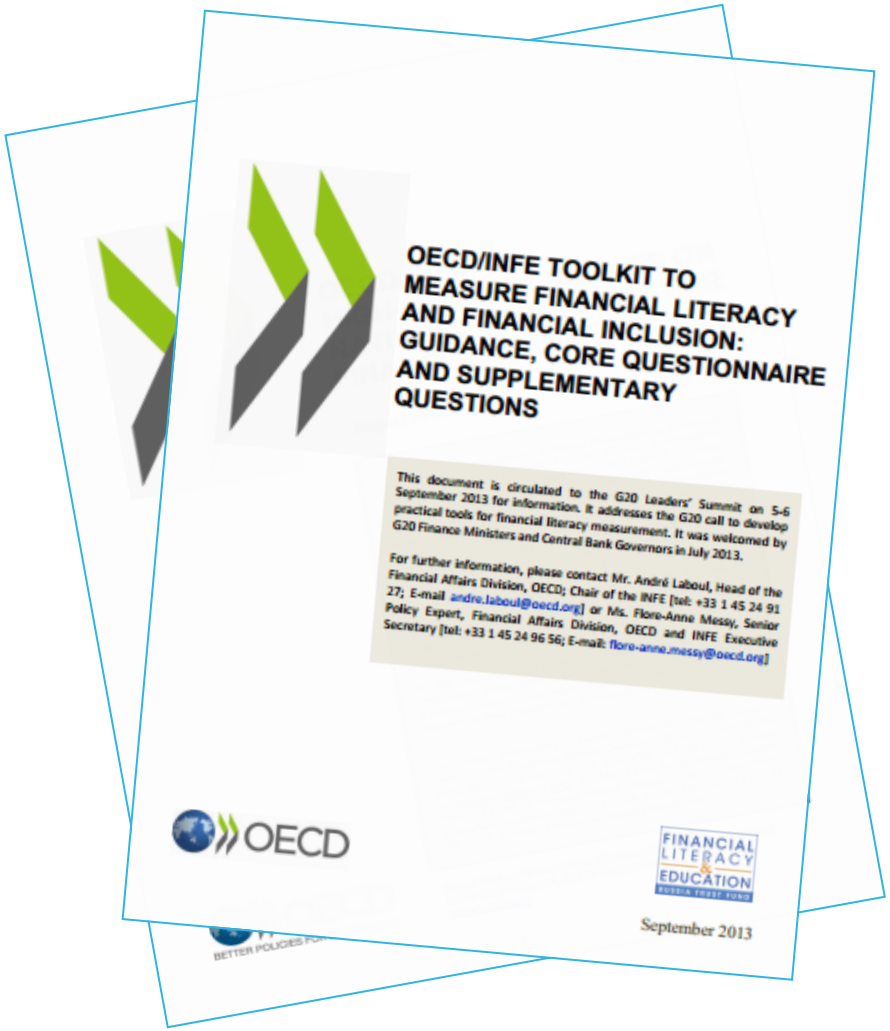
OECD/INFE Tools



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National Money Week

> 100 organizations

week van het geld

50%

NationalMoney Week
9 – 13 March, 2015

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Learnings

- Coordination and leadership are key
- Pooling strengths can work
- Agree on a joint mission and priorities through a national strategy
- Use insights from behavioral economics
- Start at a young age

Why do we need an index for Financial Inclusion?

- You receive a question from the governor:
  "What is the level of financial inclusion in our country?"

- Most likely (s)he will want an advice if financial inclusion is good or bad and what can/should be improved

- Can answer the question in different ways:
  - Financial inclusion at this point in time
  - Compare changes through time
  - Compare with other countries

- Before answering the question we need numbers that measure financial inclusion

- There is no single measure that captures financial inclusion

Measuring financial inclusion

Potentially long list of important factors

- Availability/supply of financial services
- Access to financial services
- Demand for financial services
- Effective use of financial services
- Quality of financial services
- Financial literacy
- SME financing
- Quality of infrastructure
- …and probably some other aspects I did not mention

- Not all factors are equally relevant

Concluding remarks

The success of financial inclusion depends on:

- Effective strategy: promote financial education,
- financial resilience and sound financial behavior
- User-friendliness, added value of new payment products, security, reachability & accessibility and efficiency compared to the existing products
- Efficient and robust market infrastructures
- Well organised governance model: role for governments and private organisations e.g. Financial Inclusion Committees
- Standardisation, cost reduction and innovations

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Marrakech, Morocco, 14 July 2017

The Chilean experience of a universal access debit card[1]

Erika Arraño and Juan Pablo Cova,
Central Bank of Chile

[1] This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

The Chilean experience of a universal access debit card[1]

Its importance in terms of financial inclusion and impact on narrow money

Erika Arraño and Juan Pablo Cova[2]

Abstract

In the last decade, Chile has shown a remarkable growth in number of debit cards per inhabitant, exceeding the performance of its peers in Latin American, as well as a number of developed economies. This responds to a particular phenomenon of financial inclusion, implemented by state-owned bank in the country. This is "CuentaRut", a universal access account, available to any citizen who has an identity card, Chilean or foreign, without income or background requirements, and nor opening or maintenance costs. This paper describes the advances to promote bank use by population through the access to this means of payment and its impact on the behavior of narrow money and its components –currency and sight deposits-, using a VAR model, and its impulse-response functions.

Keywords: Financial inclusion, debit card, narrow money, VAR, Chile.

[1] Prepared for the "Bank Al-Maghrib-CEMLA-IFC Satellite Seminar on Financial Inclusion", held in Marrakech, Morocco the 14th of July of 2017. The paper has benefitted from helpful comments from Pablo Filippi, Faruk Miguel, José Miguel Villena, and the valuable access to information that BancoEstado provided. The views expressed in this note do not necessarily represent those of the Central Bank of Chile.

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Contents

1. Introduction

In the latest years, the concept of financial inclusion has become increasingly relevant because there is recognition of the benefits it brings to the economic development of countries. In fact, in 2010, the G20 leaders acknowledged this issue is one of the main pillars for the global development agenda, so a plan to develop it through Global Partnership for Financial Inclusion (GPFI) was devised. Nowadays, many countries and organizations are launching programs in this area, facing different challenges associated with the idiosyncrasy of each culture.

Financial inclusion can be understood as an access to financial services or as an improvement in terms of quality and coverage. In particular, it should be oriented to making banks a viable option for the entirety of the population —especially lower income and rural groups— at a reasonable cost and with clear terms. Financial inclusion has positive social, economic and financial effects. It has an impact on the evolution of means of payment by making the interaction among economic agents more efficient and secure, promoting economic formalization and contracting tax evasion and criminal activities. It increases the possibility of saving and spending of homes. It also encourages productive investment opportunities. Finally, financial inclusion establishes the possibility of extending the client bases and, thus, the volume of activities for the financial system.

Financial inclusion policies should encourage the usage of modern means of payment and the correct performance of the financial sector, that is strengthen the security of the means and instruments of payment, reduce its costs while controlling that they do not become a mechanism which increases irrational indebtedness. In this regard, the government can have an active participation in the framework of its public policies on financial education.

Chile has shown important advances in financial inclusion in the last decades. In the banking area, several products and services have reached a high degree of penetration in the population. Amongst these products, debit cards stand out with 21 million valid cards on December 2016, which are usually associated with a sight deposit account that carries no checks[3]. A main actor behind this number is BancoEstado (42% share), which is a state-owned institution that considers social inclusion as part of its mission, and it has the objective of giving universal access to banking, including people who do not have access to financial services due to low income or physical distance. All of this is achieved through its product CuentaRut.

CuentaRut is an individual account for natural persons; it allows the administration of money in an easy and secure manner with minimal costs per transaction. It can be used to receive salaries, make a variety of payments and withdraw cash. Its name is associated to the unique identity registry for each person (Rut in Spanish) issued by the Civil Registry and Identification Service of Chile. The speed and massiveness with which this instrument has spread, even among immigrants, has permitted access to banking to a high percentage of the population. In fact, according to information from mid-2016, 98% of the adult

[3] Chilean population is estimated in more than 18 million inhabitants, where 80% is older than 15 years.

population has at least one financial product; CuentaRut plays a fundamental role in this statistic, reaching 62% coverage of the population 15 years or older, 8.7 million accounts have been opened at a national level. This number goes up to 65%, 9.2 million on December 2016. This places Chile at the high end in Latin American and around mid-range among developed countries when considering the number of debit cards per inhabitant.

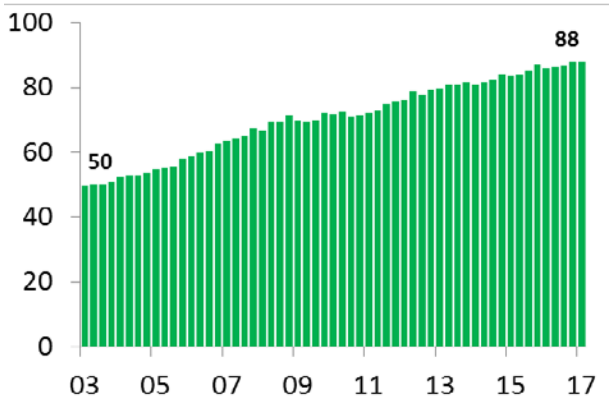
The dynamism shown by CuentaRut could have an impact on money; this can be measured through a VAR using the number of debit cards as a proxy. This exercise leads to the conclusion that CuentaRut has incentivized the substitution of currency with sight deposit accounts, in a context in which this has been the product with the highest share increases in narrow money.

This document is structured in four sections. CuentaRut and its impact on financial inclusion are described in section II. The methodology used and the results of the role CuentaRut has played in the evolution of the components of narrow money are presented in section III. Finally, section IV refers to the final comments.

2. CuentaRut and its impact on financial inclusion

Just as it is stated in the "Report on Financial Inclusion in Chile 2016", which was developed by the Superintendency of Banks and Financial Institutions (SBIF), substantial advances in financial inclusion have been achieved during the last decade, this has improved the access indicators, the usage and financial infrastructure, which have had an impact mainly in the lower income segment of the population. The prior has become true due to the economic growth the country has undergone, as well as to the development of public policies in this area. This has generated an increase in the depth of banking (ratio between total loans and GDP), this indicator has gone from 50% in the beginning of 2003 to just below 90% in the first quarter of 2017 (Figure 1).

Figure 1. Loans over GDP ratio (percent)



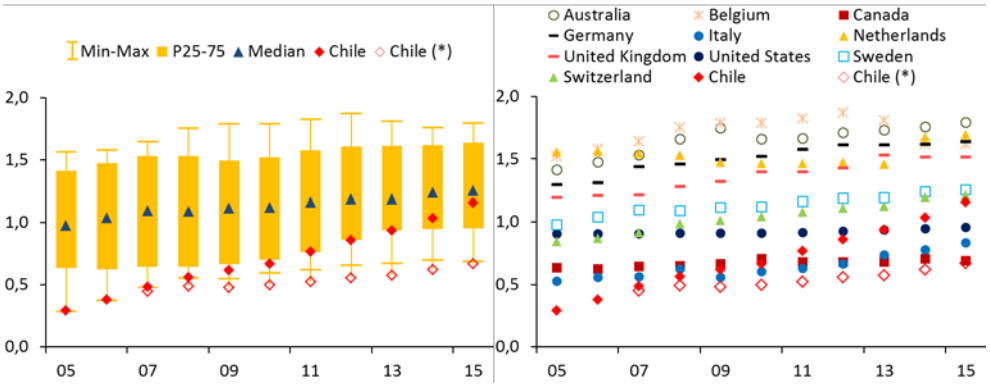
Source: Prepared by the authors based on information from Central Bank of Chile.

Regarding the access to financial services, with information until mid-2016, 98% of the population 15 years or older have at least one financial product. The most widespread of these products is the debit card which has over 70% coverage.

The state-owned bank (BancoEstado) is greatly responsible, with its CuentaRut product, for the more widespread access to financial services. In fact, watching the

evolution of the number of debit cards per inhabitant, based on information from the BIS/CPSS (Payment, clearing and settlement statistics –"Red Book"–) and CEMLA/World Bank ("Yellow Book"); it can be appreciated that Chile is the country with the greatest advancement in the number of cards in the last decade, narrowing the gap with developed economies and positioning itself in an advantageous position in the Latin American region (Figure 2 and 3). Actually, in 2015, Chile surpassed The US, Italy and Canada in the number of debit cards per inhabitant. Indeed, the number of cards went from 0.3 units per inhabitant in 2005 to 1.2 in 2015. If we were to deduct the CuentaRut cards, that number would drop to 0.7 units, which, in turn, would place Chile in the bottom of the distribution of developed economies or below the median of Latin American countries.

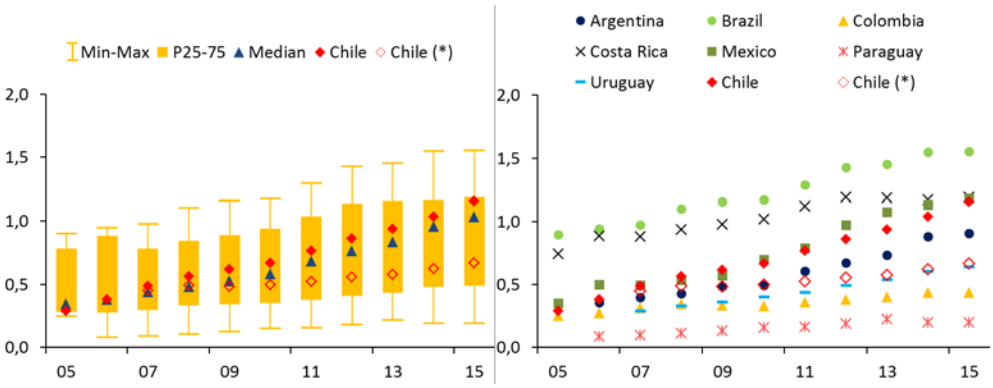
Figure 2. Number of debit cards per inhabitant: developed economies (debit cards per inhabitant)



(*) Chile without CuentaRut.

Source: Prepared by the authors based on BIS/CPSS –"Red Book"–, SBIF and BancoEstado.

Figure 3. Number of debit cards per inhabitant: Latin American economies (debit cards per inhabitant)



(*) Chile without CuentaRut.

Source: Prepared by the authors based on CEMLA/World Bank –"Yellow Book"–, SBIF and BancoEstado.

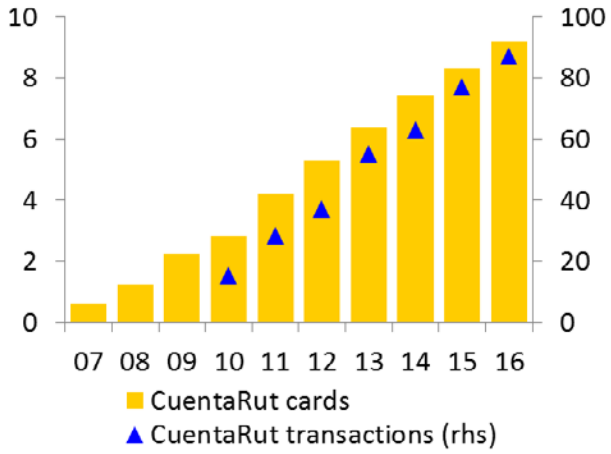
2.1. What is CuentaRut?

CuentaRut consists of an individual banking account or means of electronic payment for natural persons. It stands out because of its widespread inclusion giving access to every Chilean or foreigner with a residency (from 12 years old for women and 14 for men) to the financial system. The only requirement is to have an identity card (Rut) issued by the Civil Registry and Identification Service of Chile. A minimum income or financial history is not required. Additionally, it does not have opening or maintenance costs; nevertheless it has some transactional costs, mainly related to cash withdrawal from ATMs.

It may be used to receive salaries, pensions, subsidies, tax returns, scholarships, allowances and social benefits, for example catastrophe relief aid. Also, CuentaRut allows the holder to pay utility bills, pay taxes, do shopping through POS, deposit in other accounts and withdraw cash.

Work started to go into the CuentaRut Project in BancoEstado in 2005; it was launched to the market on September 2006. It started a gradual penetration in 2007, card issuance and the number of transactions carried out with them maintained a steady growth, reaching, on December 2016, 9.2 million accounts. Meanwhile, CuentaRut transactions reached 87 million in the same period (Figure 4).

Figure 4. Number of CuentaRut cards and transactions (millions of cards; millions of transactions)

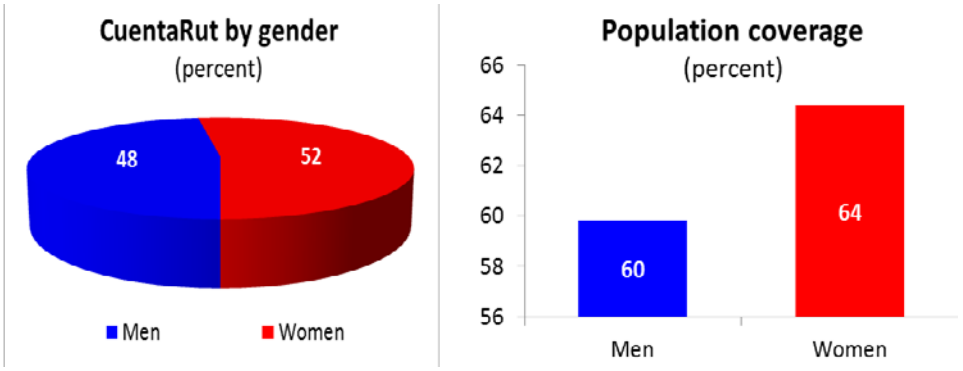


Source: Prepared by the authors based on information from BancoEstado.

2.2. Who are the CuentaRut holders?

According to BancoEstado data from June 2016, 52% of the holders of this account are women; such number constitutes 64% of the total female population over 12 years of age. The number of men holding said account constitutes 60% of the male population over 14 years of age (Figure 5).

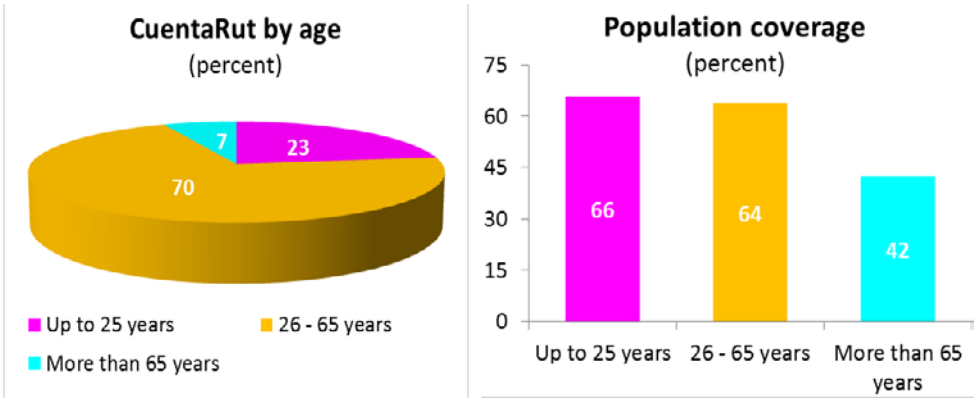
Figure 5. CuentaRut by gender and population coverage



Source: Prepared by the authors based on information from BancoEstado and National Institute of Statistics (INE).

Regarding the age groups, 23% of the holders are 25 years of age and under –which constitutes 66% of the young population–, 70% range from 26 to 65 years of age –almost 65% of the adult population–; and 7% of the holders are 65 and over –42% of the elderly population– (Figure 6).

Figure 6. CuentaRut by age and population coverage

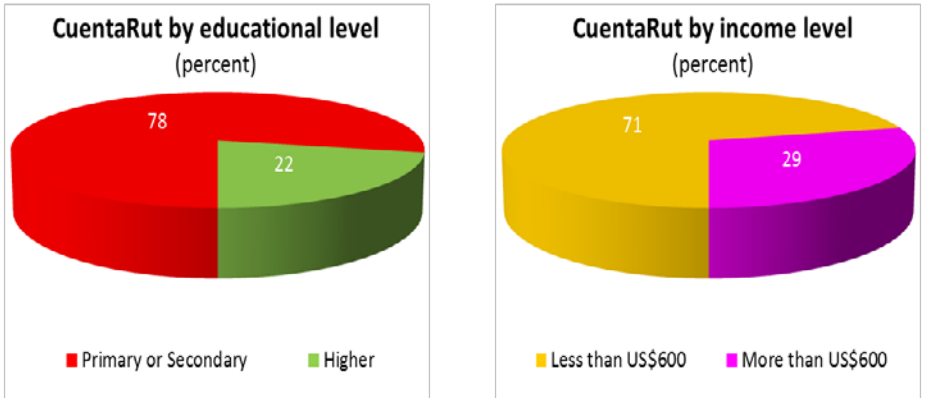


Source: Prepared by the authors based on information from BancoEstado and National Institute of Statistics (INE).

According to a BancoEstado customer survey, young CuentaRut holders think "it represents the practicality and safety of not having to use cash and the comfort of using the internet with CuentaRut". Adults "value the security and the ability to pay bills and to withdraw cash". Finally, the elderly think "it represents a product that facilitates the collection of their pensions".

As it was previously mentioned, financial inclusion should give access to low income and rural- dwelling individuals (Figure 7).

Figure 7. CuentaRut by education and income level (*)



(*) It considers an exchange rate of $670 per USD.

Source: Prepared by the authors based on information from BancoEstado.

From the total CuentaRut holders as of June 2016, only 22% have higher education, and, according to income levels, 71% perceive a monthly salary of under US$600 (approximately $400,000). It is worth mentioning that 3.6 million people perceive incomes below the minimum wage, i.e. US$390 or $257,500.

Considering all the requirements to access banking products (namely: a monthly income higher than $600, seniority, sound financial history, a permanent residency for foreigners, amongst others), CuentaRut gives access to a great portion of the population which would probably be outside the system without this product.

As for the geographical coverage given the political and administrative structure of the country, CuentaRut has an average 62% share on a regional level (Figure 8), a little over 30% of the total accounts are concentrated in rural or secluded areas. For example, in the Putre township (which is located in the north of the country, in the Andes high mountains, 3,500 meters above sea level and 145 Kms. away from the regional capital), CuentaRut coverage reaches 77% of individuals over 15 years of age. It is also worth mentioning that this commune is among the poorest in Chile.

Figure 8. CuentaRut by region, number of accounts and population coverage June 2016

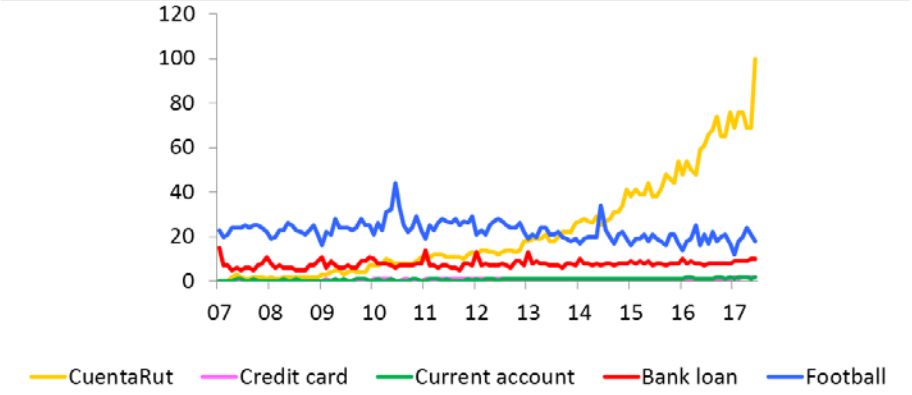
Region:	CuentaRut accounts:	Population coverage:
XV: Arica	115,473	63%
I: Tarapacá	162,518	64%
II: Antofagasta	304,938	64%
III: Atacama	161,233	68%
IV: Coquimbo	389,917	65%
V: Valparaíso	920,782	64%
RM: Metropolitana	3,505,508	61%
VI: O'Higgins	451,016	63%
VII: Maule	505,310	62%
VIII: Bío-Bío	1,028,279	62%
IX: Araucanía	484,112	63%
XIV: Los Ríos	195,966	62%
X: Los Lagos	410,334	63%
XI Aysén	56,292	68%
XII: Magallanes	82,709	64%
Whole Country	8,774,388	62%

Source: Prepared by the authors based on information from BancoEstado.

Even though the number is small compared to the total cards issued; the share among foreigners is of about 60% of the total registered non-nationals on June 2016, around 281,000 accounts. 75% of these people have monthly incomes of under US$600. In general, it is required to have a permanent resident visa, which takes some time to obtain, in order to open a checking account in Chile. This is why CuentaRut represents the opportunity for immigrants to have access to the banking system by just holding a Chilean Identification card (Rut), which is possible to obtain by having a temporary visa and valid passport.

Beyond the indicators shown by issuance and CuentaRut holders, a good way to measure the interest for this product is Google trends, whose results indicate that there has been a sustained increase in the search of this instrument through time. It surpasses the searches for other banking products, such as credit cards, checking accounts and loans. It even surpasses the searches for popular topics like "football", the most massively followed sport in Chile (Figure 9).

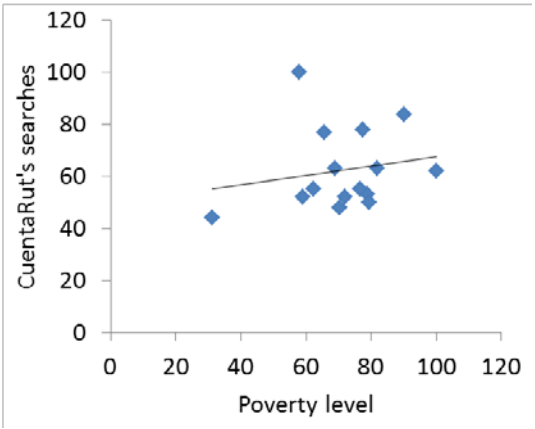
Figure 9. Google searches (index June 2017 CuentaRut = 100)



Source: Google Trends.

Additionally, when breaking down the searches by region, there is a positive correlation between CuentaRut searches and poverty levels in each location. This is in line with this product being one of the few that is within the reach of low income individuals (Figure 10).

Figure 10. Searches for CuentaRut and poverty level by region (index: region with more searches and poorer level = 100)



Source: 2015 Casen survey and Google Trends.

Consequently, CuentaRut has given access to the formal banking system to a great portion of the population that, for a variety of reasons (low income, distance to urban areas, etc.), would be excluded from the financial system. This instrument has allowed Chile to be in a privileged position in Latin America as far as the access to banking services goes.

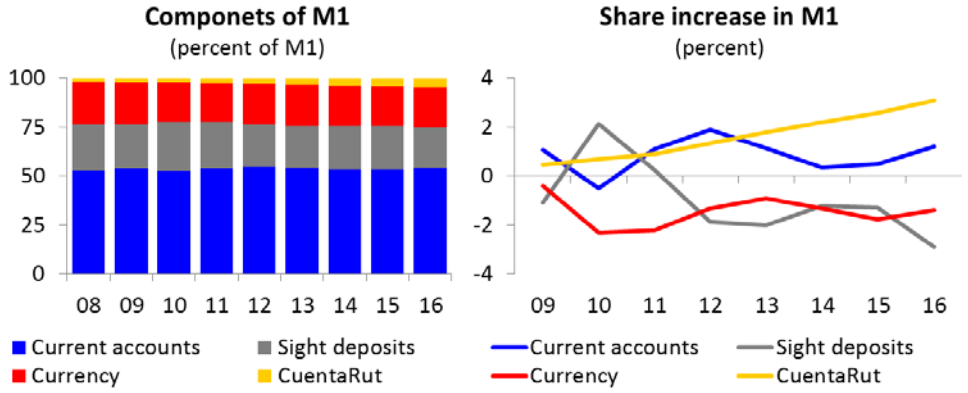
3. Impact on narrow money and its components

In Chile, M1 monetary aggregate corresponds to a definition of money in a narrow sense, that is, it includes the more liquid financial instruments, currency together with transferrable deposits[4]. Its definition is in line with the recommendations contained in the "Monetary and Financial Statistics Manual compilation guide" of the International Monetary Fund (IMF)[5], and it is comparable to the definition of money other countries have. It breaks down in three components:

1. Currency: It includes banknotes, coins and checks issued by the Central Bank of Chile, minus the banking system cash balances.
2. Checking account deposits: They comprise checking account balances maintained by clients from the non-financial private sector, net of float.
3. Sight deposits and savings: They comprise the balances in sight deposit accounts different from checking accounts, sight drafts and other sight obligations net of float from the non-financial private sector. CuentaRut is included in this component.

In the participation of each M1 component, it is observed that checking account deposits is the most relevant component with an average participation of 55% in the period 2008 -2016. This is followed by sight deposits and savings, different from CuentaRut and currency, with participations between 20 and 25%. Finally, CuentaRut has gone from 2 to 5% of M1 in the period, making it the component that has grown the most at the expense of currency and other sight deposits (Figure 11).

Figure 11. Participation of M1 components in the total



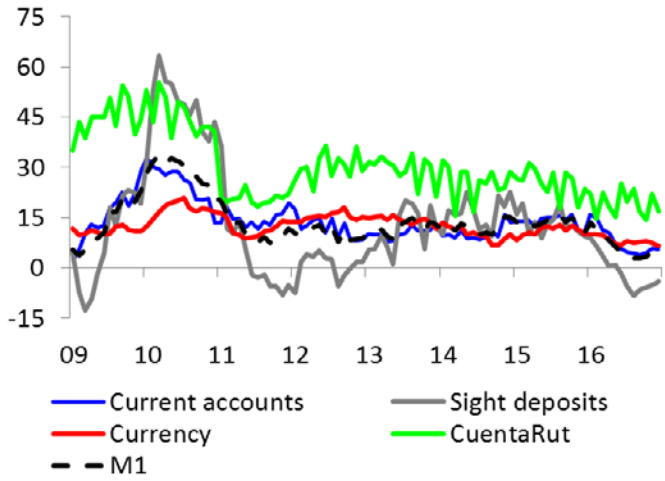
Source: Prepared by the authors based on information from Central Bank of Chile and BancoEstado.

[4] Transferrable deposits comprise all deposits that are exchangeable, without penalty or restriction, on demand at face value, and directly usable for making third-party payments by check, draft, giro order, or other direct payment facility (Arraño 2006).

[5] IMF 2016.

The important growth of CuentaRut stands out, with annual changes of around 45% in the 2009 and 2010 period (initial stage of the product). It has later sustained annual growths of between 15 to 30%, which is well beyond the M1 growth and the rest of its components (Figure 12).

Figure 12. Nominal annual change of M1 and its components (percent)



Source: Prepared by the authors based on information from Central Bank of Chile and BancoEstado.

The latter is in line with the greater penetration this product has had among the population, as it was described in the previous section.

A traditional money demand equation is estimated to evaluate the impact CuentaRut has had in the M1 monetary aggregate and its components, in which traditional money depends positively on GDP and negatively on interest rate. Debit cards are added to the equation as an explanatory variable, this means of payment has become massive thanks to CuentaRut. The model is based on the works of Rinaldi (2001), Tehranchian, et al (2012) and Arraño and Cova (2017). An Auto-regressive Vector Model (VAR) in reduced form is estimated to quantify the impact, with all the variables defined as endogenous and specified as:

$$X_t = A(L, m)X_{t-1} + U_t$$

$$X_t \equiv [m_t, y_t, i_t, deb_t]$$

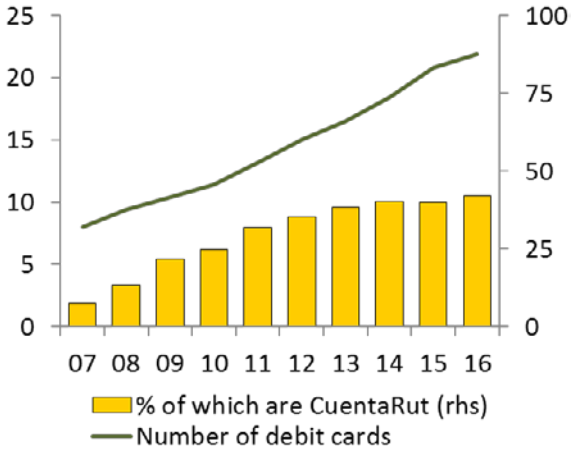
m Corresponds to the definition of money (M1 and components) in real terms[6]; y corresponds to the real GDP[7]; i corresponds to the nominal deposit interest rate from 30 to 89 days; deb corresponds to the number of debit cards per 1000 inhabitants; and U is defined as the error vector.

Due to availability of information, the model cannot be estimated using the number of CuentaRut directly, launched in 2007. This exercise uses quarterly data, from the first quarter of the year 2000 to the fourth quarter of 2016 (2000q1 – 2016q4). The results of debit cards are extrapolated to CuentaRut, in a context in which the cards associated to this product reach a maximum 42% share of all the debit cards in the period (Figure 13).

6 In order to express the series in real terms, they are deflated by the Consumer Price Index.

7 Chained volume at previous year prices GDP is used.

Figure 13. Numbers of debit cards (Millions of cards; percent)



Source: Prepared by the authors based on information from SBIF and BancoEstado.

To determine the impact debit cards and, consequently, CuentaRut have had on money, orthogonalized impulse response functions are generated. As orthogonalization implies doing a Choleski decomposition of the variance covariance matrix, the following order of variables is established, from the most exogenous to the most endogenous[8]: y, i, deb, m

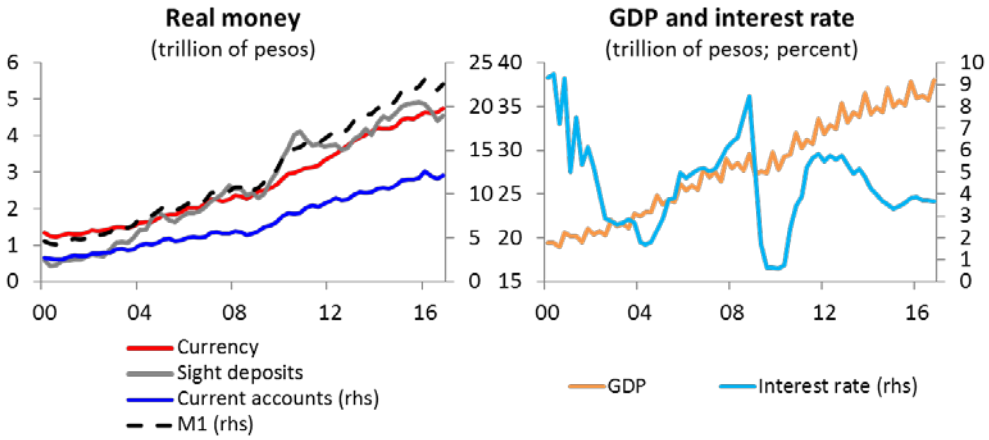
An impulse in the GDP (y) is expected to positively impact money or its components (m), and interest rate (i) is expected to do so in a negative manner. Likewise, an increase in the number of debit cards (deb) is expected to negatively impact currency, reflecting the substitution effect in both means of payment. The opposite is anticipated about checking accounts and sight deposit and savings, since they are considered complementary because they are required to obtain a debit card.

In order for the model to be well specified, the variables are required to be stationary, that is to say, that they do not present unit root to estimate the VAR. With the exception of the interest rate, all of the variables present clear tendencies (Figure 13 and 14), which is confirmed with the augmented Dickey-Fuller, where just the null hypothesis of the presence of unit root for the interest rate is rejected (i)[9]. Consequently, VAR is estimated with the variables expressed in first differences, except the interest rate.

[8] Robustness tests are carried out changing the order of variables in VAR where results are unaltered.

[9] The test results are shown on a table in the Appendix.

Figure 14. Real money, GDP and interest rate



Source: Prepared by the authors based on information from Central Bank of Chile.

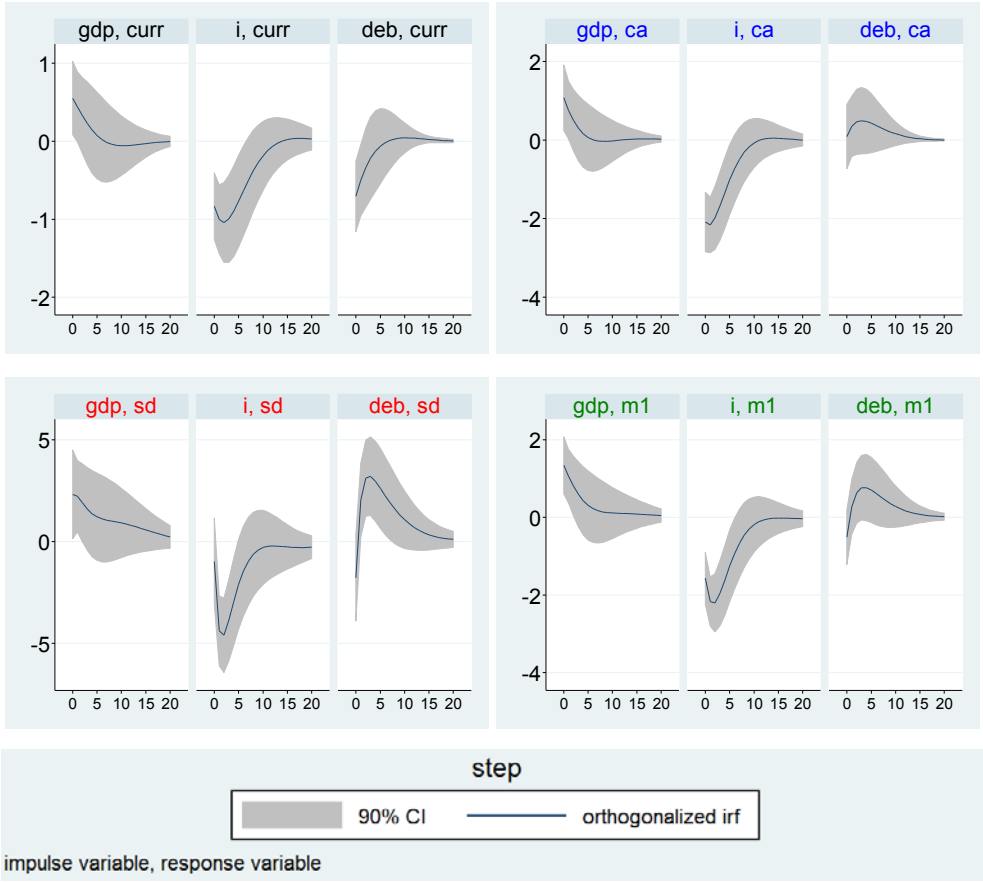
On the other hand, information criteria, in particular the Bayesian of Schwartz (SBIC), indicate that one is the optimal number of lags for M1 and its components[10]. The latter is reinforced due to the reduced degrees of liberty, given the number of observations available for analysis.

From the implementation of VAR and the impulse-response exercises, as it was expected, we have that a positive GDP shock generates an impact on money in the same direction. As for interest rates, the impulse-response function is also as expected, since an increase in rate impacts money negatively (Figure 15). As far as the shock associated to the increase in the number of debit cards, currency responds in a negative manner; checking accounts and sight deposit and savings does so positively; and M1 initially negatively, but it transits to a positive reaction since the fourth quarter, synthesizing the impact in each one of the components. The results are also as expected.

[10] The test results are shown on a table in the Appendix.

Figure 15. Impulse response functions (*)

GDP (y); Interest rate (i); Debit cards (deb) over Money (m)



(*) "curr" corresponds to Currency; "ca" to Checking accounts; and "sd" to Sight deposits.

Source: Prepared by the authors.

As it was stated, the constrained availability of information about CuentaRut does not permit a concluding estimation of its effect on money, this effect is inferred from another variable, namely the number of debit cards. When extrapolating the effect of the number of debit cards on M1 money and its components to that of CuentaRut, it is possible to conclude that this product has probably encouraged the substitution of currency with sight deposits.

4. Conclusion

In the last decade, Chile has experienced a sustained increase in the number of debit cards per inhabitant, bridging gaps with developed economies and placing itself in a privileged position in the Latin American region. All of this has been made possible by a particular financial inclusion phenomenon, implemented by the state-owned bank (BancoEstado). This phenomenon is CuentaRut, a universal access sight deposit account, available to any citizen who holds a Chilean identification card (Rut), whether the person is Chilean or foreign, it does not require a minimum income or banking history, neither does it have opening or maintenance costs.

The lack of requirements for its opening and maintenance has provided access to the banking system to people whose credit history or social/economic situation would have been a limitation to opt for products like a checking account or loan. In fact, according to data from June 2016, 22% of the users do have higher education, and around 3.6 million people have a monthly income below the minimum wage (390 USD). As far as geographical distribution, CuentaRut has a marked presence in rural or secluded areas. Likewise, this sight deposit account has permitted thousands of immigrants to obtain a safe banking product that allows them to manage their money in the country. Beyond the indicators obtained by issuance and holding of CuentaRut, Google Trends statistics indicate that the search for this instrument has tended to increase through time, surpassing searches for other banking products. Also, when contrasting the searches per region with poverty indicators in them, a positive correlation is observed.

The dynamism of CuentaRut has an impact on money, this can be measured indirectly through a VAR, and, with this, it is possible to conclude that CuentaRut have probably encouraged the substitution of currency with sight deposits, in a context where this component is the one that has increased its participation the most over narrow money, M1.

A transaction or deposit bank account can be the platform to a full financial inclusion because it offers an entrance to a wider variety of financial services provided by diverse and soundness institutions. There is increasing evidence that access to financial services through formal accounts allow individuals to normalize consumption, manage risks and invest on education and business venture that is why it promotes the development of nations.

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Appendix

Table 1. Unit root ADF test

Variable	ADF
Currency	4.344
Checking accounts	1.950
Sight deposits	0.787
M1	2.483
Debit cards	4.434
GDP	-0.629
Interest rate	-2.695
Critial values at 1%	-3.555
Critial values at 5%	-2.916
Critial values at 10%	-2.593

Source: Prepared by the authors.

Table 2. Optimal lag quantity analysis for VAR (*)

	Currency			Checking accounts		
Lags	AIC	HQIC	SBIC	AIC	HQIC	SBIC
0	37.2776	37.3552	37.4734	38.0498	38.1274	38.2457
1	31.2757	31.8189*	32.6466*	32.3023	32.8455	33.6732*
2	30.8278*	31.8366	33.3737	31.7413	32.7501*	34.2872
3	31.1464	32.6208	34.8674	31.8115	33.2859	35.5324
4	30.9366	32.8765	35.8326	31.6065*	33.5464	36.5024

	Sight deposits			M1		
Lags	AIC	HQIC	SBIC	AIC	HQIC	SBIC
0	40.3178	40.3954	40.5137	37.9806	38.0582	38.1764
1	34.4900	35.0332	35.8609*	32.1292	32.6724	33.5001*
2	33.8800*	34.8888*	36.4260	31.3684*	32.3772*	33.9143
3	34.2391	35.7134	37.9600	31.5837	33.0581	35.3047
4	34.0473	35.9872	38.9433	31.6253	33.5653	36.5213

(*) The information criteria acronyms are as follows: Akaike (AIC), Hannan y Quinn (HQIC), and Bayesian of Schwartz (SBIC).

Source: Prepared by the authors.

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

The Chilean experience of a universal access debit card[1]

Erika Arraño and Juan Pablo Cova,
Central Bank of Chile

[1] This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

The Chilean experience of a universal access debit card

Juan Pablo Cova – Erika Arraño

CENTRAL BANK OF CHILE

JULY 2017

Overview

- Motivation and objective
- A universal access debit card: “CuentaRut”
  - International comparison
  - Who are the holders?
- Summary

Motivation and objective

- Chile has exhibited significant progress on financial inclusion in recent decades. In fact, nowadays, 98% of Chilean inhabitants over 15 years old have at least one financial product to manage cash, save money or get credit.

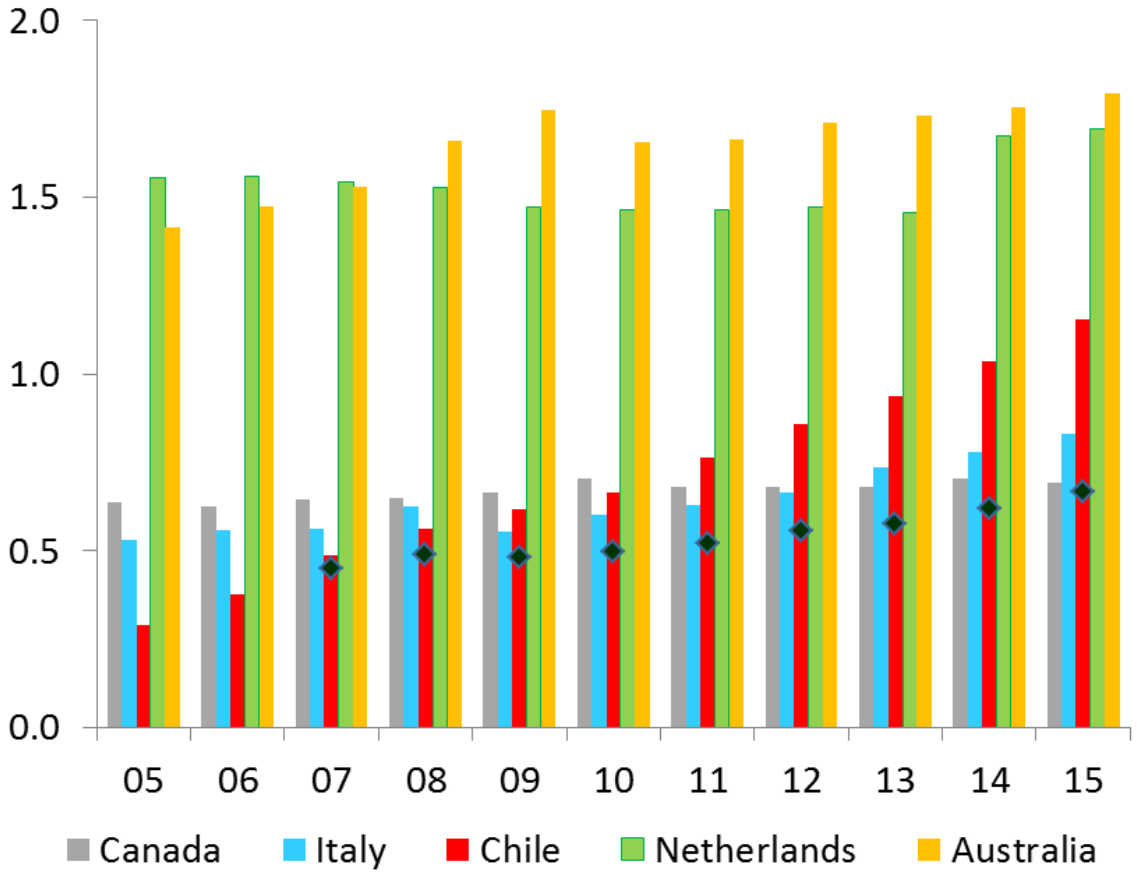
- Among these products, one of the most relevant is debit card, with 21 million of cards issued until December 2016, mainly associated to sight deposit account.

- A relevant actor behind this figure (42% share) is BancoEstado, a state owned bank, which considers social inclusion in its mission, with the aim of providing universal access to those with low income or living far from the cities, through a sight deposit account named “CuentaRut”.

- The objective of this presentation is to describe the advances in the access the population has to banking products through CuentaRut.

In the last decade Chile has presented a remarkable growth in the number of per capita debit cards, which can be explained by the creation of the CuentaRut product. This has allowed to shorten gaps with developed economies.

Number of debit cards per inhabitant

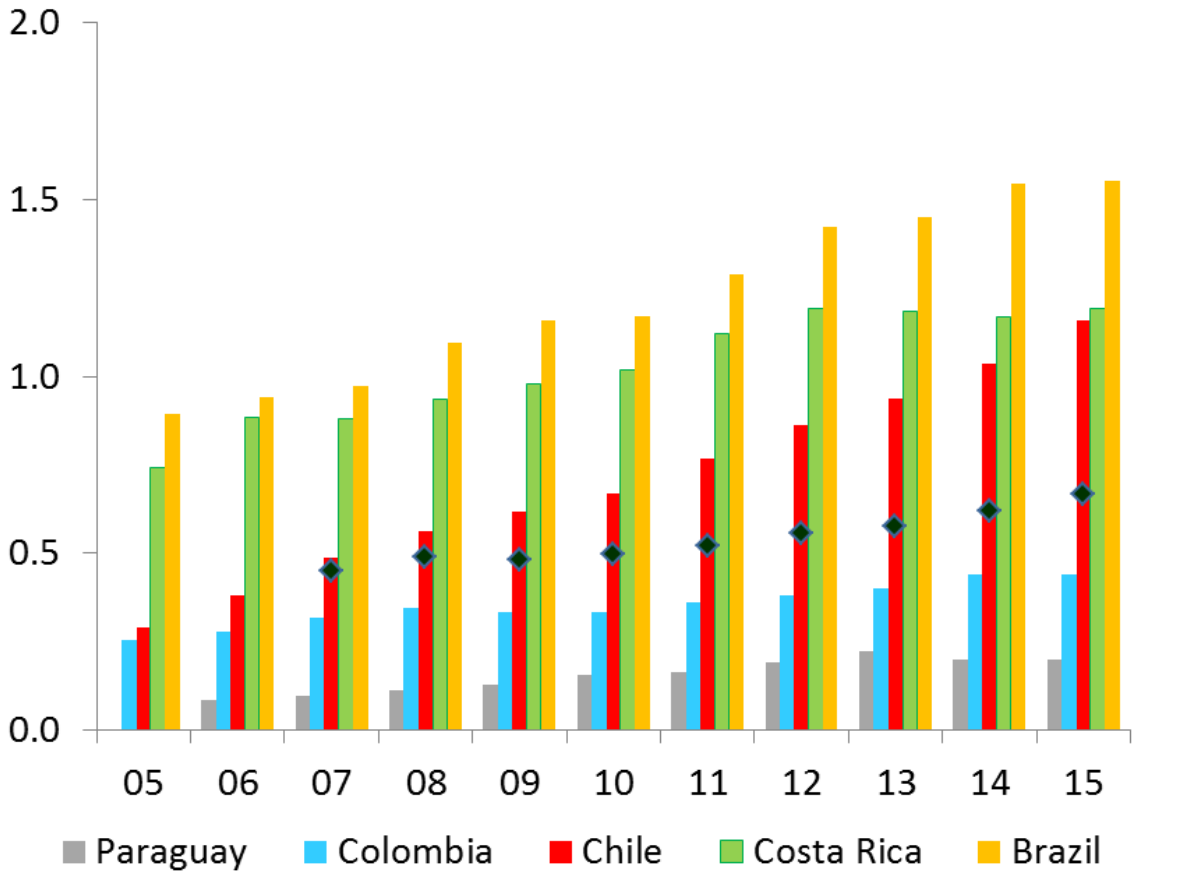


Note: (*) Chile without CuentaRut

Source: BIS/CPSS –"Red Book"–, Superintendency of Bank and Financial Institutions (SBIF) and BancoEstado.

At the same time it places Chile in a privileged position compared to its peers in the region.

Number of debit cards per inhabitant

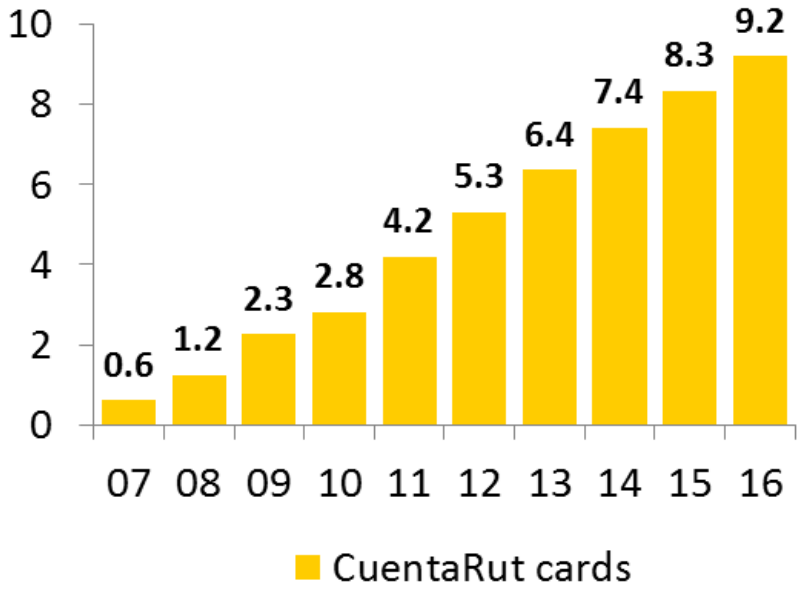


Note: (*) Chile without CuentaRut

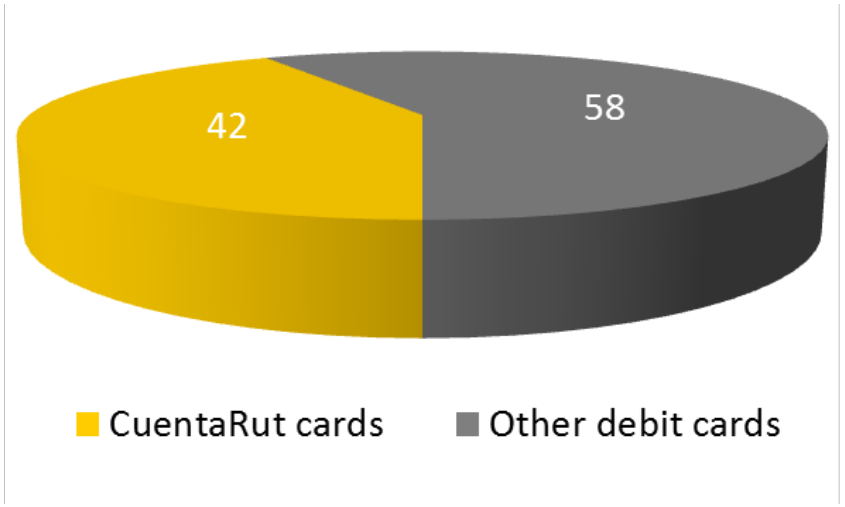
Source: CEMLA/World Bank –"Yellow Book"–, SBIF and BancoEstado.

The number of CuentaRut debit cards has grown from 0.6 million in 2007 to 9.2 million in 2016, reaching a 42% share.

Number of CuentaRut cards
(millions of cards)



Market share on 2016
(percent)



Source: BancoEstado and SBIF.

What is CuentaRut?

- CuentaRut is a sight deposit account developed by the state owned bank BancoEstado, aimed for natural persons, launched in 2007.

- Its main characteristic is its widespread presence because the only requirement to get it is to have an Identity Card (ID or Rut in Chile), whether the holder is Chilean or foreign, issued by the Civil Registry and Identification Service of Chile.

- It is available for every woman over 12 years old or men over 14 years old without requiring a minimum income or commercial background. The latter are mandatory to apply for any other banking account.

- It is used to receive wages, pensions, tax returns, social grants, and benefits coming from disaster relief programs. It also allows the payment of services and taxes, shopping using POS, electronic transfers and cash withdrawals.

- Even though it does not have fees or maintenance costs, it has a transactional costs mainly related to cash withdrawal from ATM.

BancoEstado is present in every place in Chile through the CuentaRut, even though Chile is a long and centralized country.

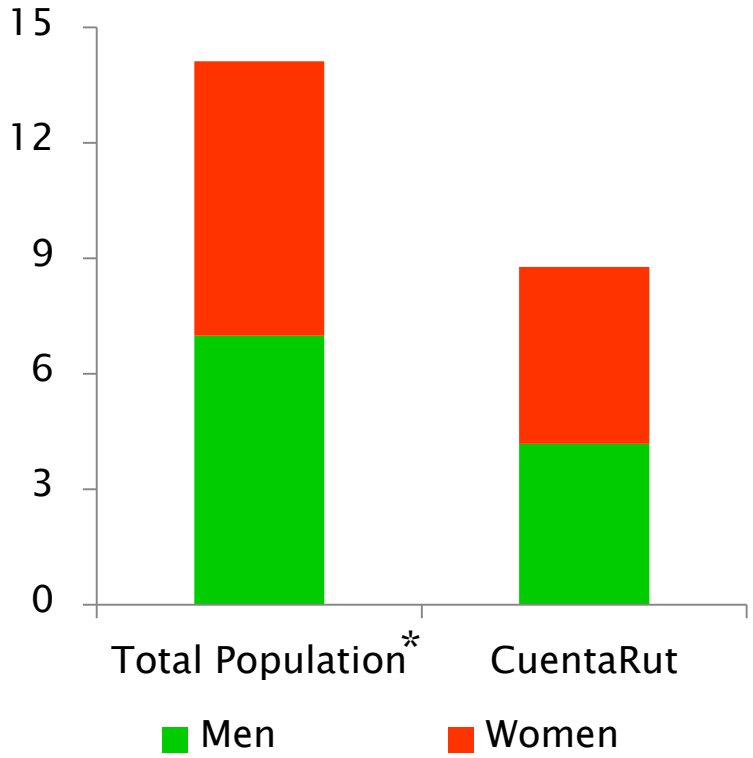
Putre:
Coverage 77%

Region:	Number of CuentaRUT:	Population coverage:
XV: Arica	115,473	63%
I: Tarapacá	162,518	64%
II: Antofagasta	304,938	64%
III: Atacama	161,233	68%
IV: Coquimbo	389,917	65%
V: Valparaíso	920,782	64%
RM: Metropolitana	3,505,508	61%
VI: O'Higgins	451,016	63%
VII: Maule	505,310	62%
VIII: Bío-Bío	1,028,279	62%
IX: Araucanía	484,112	63%
XIV: Los Ríos	195,966	62%
X: Los Lagos	410,334	63%
XI Aysén	56,292	68%
XII: Magallanes	82,709	64%
Whole Country	8,774,388	62%

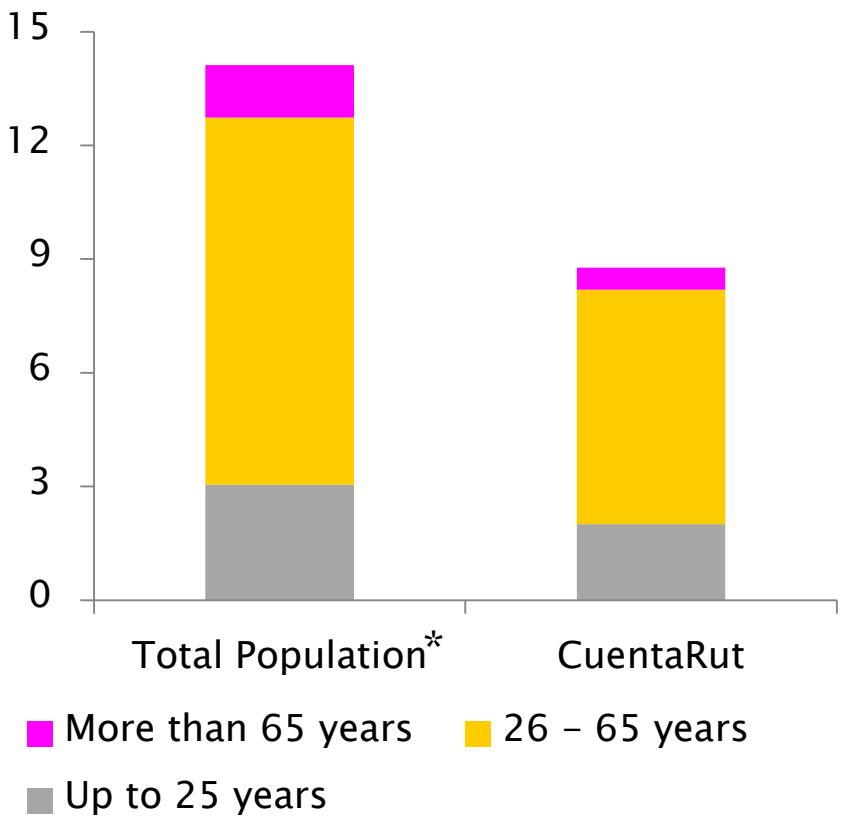
 Source: BancoEstado and National Statistics Institute. Data of June 2016.

Who are CuentaRut holders?

By gender
(millions)



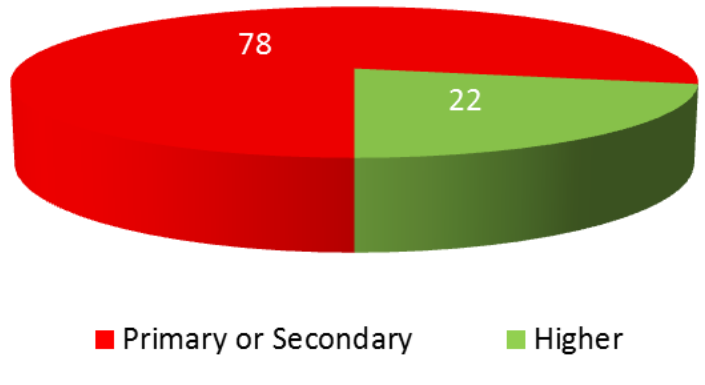
By age
(millions)



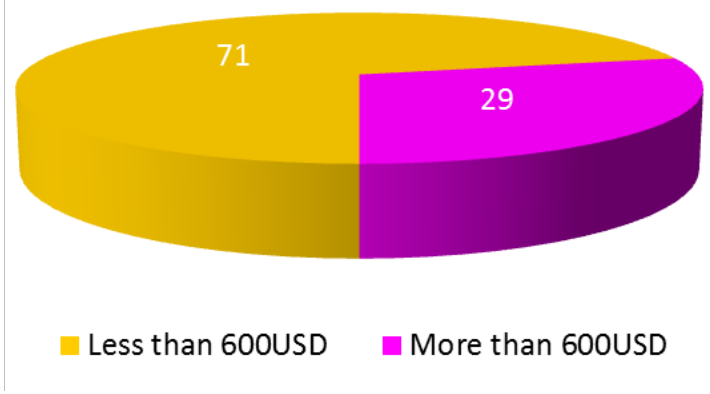
(*) It corresponds to women over 12 years old and men over 14 years old.
Source: BancoEstado and National Statistics Institute. Data of June 2016.

Who are CuentaRut holders?

By educational level
(percent)



By income level
(percent)

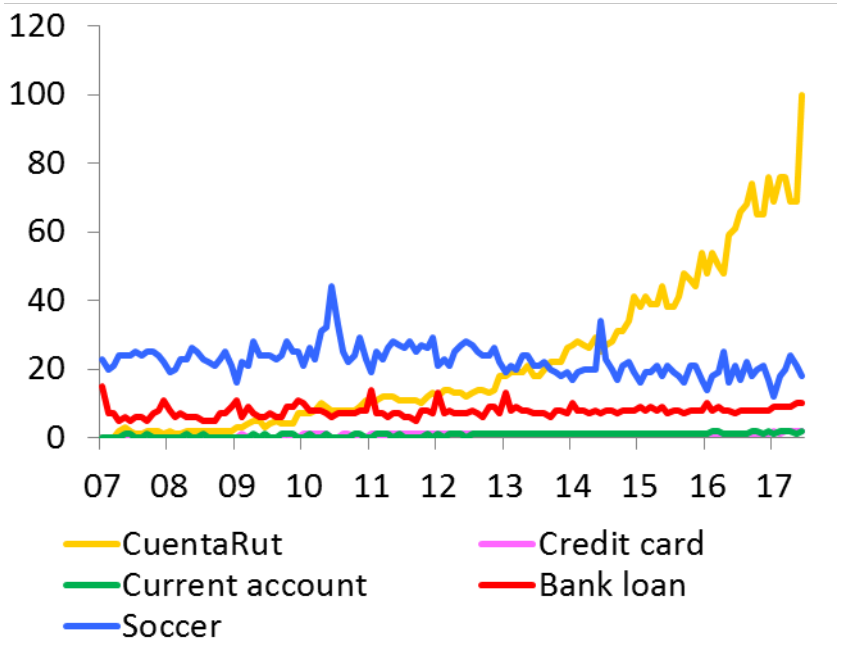


Source: BancoEstado. Data of June 2016.

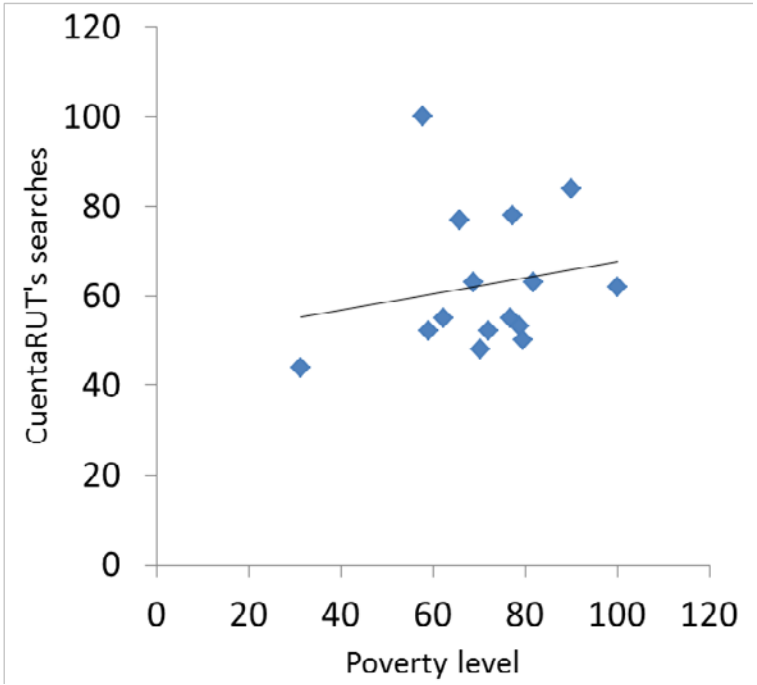
- Immigrant population in Chile has been increasing in recent years. The most efficient and applicable way to access the banking system, is utilizing this product. In fact, almost 60% of foreigners have a CuentaRut on June 2016.

The information from Google Trends shows a growing interest in CuentaRut, greater than other banking products or popular searches like "soccer". There is a positive correlation between searches and the poorest locations.

Google searches
(index June 2017 CuentaRut = 100)



CuentaRut's searches and poverty level by region
(region with more searches or poorer = 100)



Source: Google Trends and Social-Economic Characterization Survey 2015 (Casen in Spanish).

Summary

- In the last decade, CuentaRut has generated a sustained increase in the number of debit cards in Chile, allowing to exceed the performance of its peers in the region, as well as a number of developed economies.

- Nowadays, more than 9 millions of Chileans have a CuentaRut. The holders are distributed homogeneously throughout the territory, even though Chile is a long and centralized country.

- Behind this phenomenon is BancoEstado, a state owned bank, which has the mission of promoting financial inclusion.

- The absence of requirements to get this product has given access to the financial system to individuals that probably were marginalized before because of their income restriction or an inadequate or incomplete commercial background.

- The access to the financial system allows individuals to normalize consumption, manage risks and invest in education or new business and, therefore, promote the development of nations.

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BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

Moroccan micro, small and medium-sized enterprises observatory (MSMEO)[1]

Jilali Rahali,
Moroccan Observatory of MSME

[1] This presentation was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Moroccan Micro, Small and Medium enterprises observatory (MSMEO)

BANK AL-MAGHRIB-IFC SATELLITE SEMINAR ON
FINANCIAL INCLUSION
MOROCCO, MARRAKECH, 14 JULY 2017

Content

1. Context
2. Moroccan Micro, Small and Medium enterprises observatory (MSMEO)
3. Main objectives
4. Cooperation framework
5. Data sources
6. Challenges

1. Context

- Micro, Small and Medium-sized Enterprises (MSMEs) represent the most essential component of the Moroccan national productive tissue.

- Nearly 98% of all businesses consists of SMEs (less than 10 employees), employing almost 65% of the working population (Economic census 2001/2002, High Commission of Planning).

2. Moroccan Micro, Small And Medium Enterprises Observatory (MSMEO) (1/2)

- Considering the fact that MSMEs form the backbone of the Moroccan economy, and the vital source of its economic growth and social inclusion, Bank Al-Maghrib, in partnership with many private and public organizations including:

- Ministry of Economy and Finance
- Ministry of Industry, Trade, Investment and Digital Economy
- Ministry of General Affairs and Governance
- High commission of planning
- Moroccan Office of Industrial and Commercial Property(OMPIC)

2. Moroccan Micro, Small And Medium Enterprises Observatory (MSMEO) (2/2)

- National Social Security office (CNSS)
- Central Guarantee Fund (CCG)
- Morocco SMEs (Maroc PME)
- General Confederation of Enterprises in Morocco (CGEM)
- Moroccan Banking association (GPBM)

Created, in 2013, the Moroccan Micro, Small and Medium enterprises observatory (MSMEO) as a non-profit institution (NPI), and its headquarters are at the BAM branch in Casablanca.

3. Main Objectifs (1/2)

- MSMEO's main aim is to foster and develop the role of MSMEs in the economy, by setting up an exhaustive and structured database which will provide the necessary information required to identify the MSMEs population and to make efforts to:

- conduct MSMEs surveys;
- provide private and public sector with MSMEs statistical indicators;
- organize seminars, workshops and training programs for this segment of enterprises;

3. Main Objectifs (2/2)

- take part in the development of MSMEs professional associations ;
- improve the collaboration between the public and the private sector to provide the adequate climate for an effective development of MSMEs' business;
- get involved in the formulation of policies triggering the growth and the prosperity of MSMEs;
- to facilitate the MSMEs financial inclusion, etc.

4. Cooperation Framework

- To reach these objectives, it is a good practice to set up an institutional framework of cooperation between MSMEO and administrative data sources authorities and Statistical sources bodies.
- Establishing and maintaining good relationships and cooperation with data sources providers is vital in the long run for MSMEO; in order to ensure continuous supply and easy linkage of data from multiple sources to MSMEO's data base; through a common identification system. This will allow to cross-check and reduce errors due to duplication or omission.

5. Data Sources (1/3)

- Administrative records are data collected by organizations and government agencies for the purpose of tax administration, license business and social contribution. The main bodies in this field are:

- General management of taxes
- Moroccan Office of Industrial and Commercial Property(OMPIC)
- National Social Security office (CNSS)

5. Data Sources (2/3)

- Statistical sources refer to data collected by statistical processes carried out by government agencies like High Commission of Planning (HCP), and other producers of statistics within the national statistical system as:
- Bank Al Maghrib
- Ministry of Industry, Trade, Investment and Digital Economy
- Ministry of Agriculture, etc.
- Other sources are data owned by companies that collect data and maintain databases that they provide to their customers for commercial purposes as KOMPASS, KIREX, etc.

6. Challenges (1/2)

- At the present time, we have set up partnership agreements with the three main sources of information on companies, namely the Moroccan Office of Commercial and Industrial Property, the Directorate General of Taxation, the National Social Security Fund To transmit data files to the observatory.
- Due to the fact that these files were not designed for statistical purposes, work is in progress to adapt these data to the current nomenclatures.

6. Challenges (2/2)

- The finalization of qualification of the administrative data files, which is a complex operation, is planned for next year. Which will allow us to dispose of an exhaustive database that will enable us:
- to identify the population of Micro, Small and Medium-sized Enterprises (MSMEs)
- to produce performance and demographic indicators
- to realize different thematic studies as the financial inclusion for example.

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

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Financial inclusion in Nigeria: the challenges of banks and mobile money operators (MMOs)[1]

Oluwaseun Odunayo Adesanya,
SystemSpecs Limited

[1] This paper was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Financial inclusion in Nigeria: the challenges of banks & mobile money operators (MMOs)

Oluwaseun Odunayo Adesanya[1]

Abstract

Financial inclusion has been a great challenge across the world, especially in Africa with great opportunities for financial services on the micro level. And to translate those opportunities into reality, there is need to create a realistic framework through regulations; an innovative approach that meets and surpassed market's expectation; and remuneration that encourage all stakeholders.

The greatest challenge starts with the definition that gives the wrong perspective on the un(der)banked population as if they are currently financial handicap. The trust is that everyone is currently undergoing financial transactions (in one way or the other) but the difference is that the recognized people (banked population – financially included) are only those who have relationship with the regulated financial players (such as the commercial banks, microfinance banks and mobile money operators).

Using Nigeria as a case study, this article is to highlight the critical areas that could facilitate the increase in financial inclusion to all stakeholders and to present the Importance and the implications of promoting financial inclusion for monetary policy and financial stability in terms of regulation of banking industry and payment systems.

[1] Oluwaseun Odunayo Adesanya, adesanya@systemspecs.com.ng, is a financial inclusion and Strategy expert. He currently works with the Corporate Strategy & Performance Management team of the leading Software company in Africa, SystemSpecs.

The organisation (SystemSpecs) is a software house with a focus on providing the most qualitative Human Capital Management and Financial software solutions. Founded in 1991, SystemSpecs has since emerged as a leading pan-Africa provider of e-Payment, Financial, and Human Capital Software Solutions for the Nigerian and African countries with over 250 people serving its clients across several countries including Benin, Ghana, Rwanda and Zimbabwe.

Remita, developed by SystemSpecs, is an e-Payments and e-Collections solution on a single multi-bank platform with an optional Payroll and HR solution for full integrated processing. It has significantly assisted to revolutionize the e-payment industry in Nigeria and process over US$10 Billion worth of transactions on a monthly basis for Federal Government of Nigeria Single Treasury Account (TSA) and other clients.

Contents

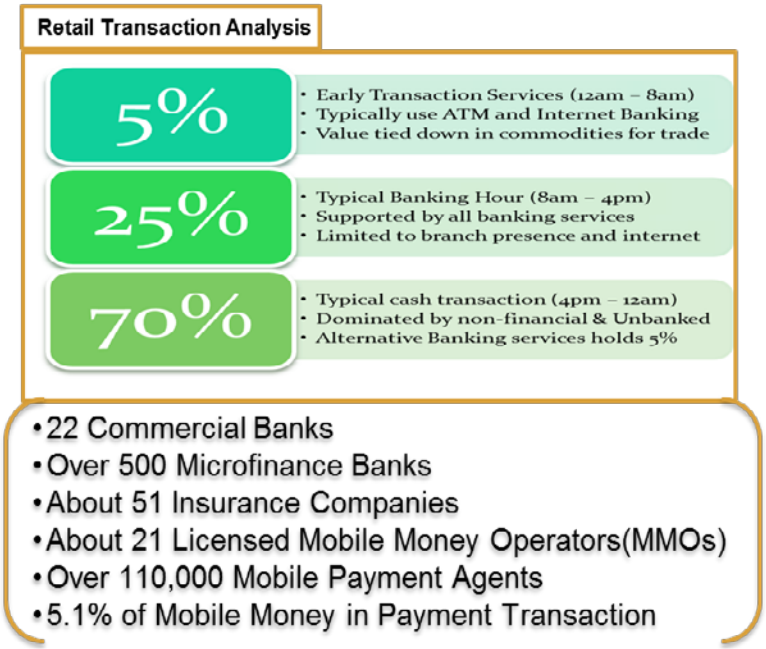
Nigeria Demographic

Nigeria prides itself as the most populated and economic giant of the African continent with over 176million people yet 64% (of the adult population) currently un(der)banked! The financial sector also boasts of 22 commercial banks, over 400 microfinance banks and above 23 Mobile Money Operators who over the years, have been trying to tap into the market potential of the large un(der)banked population in the economy.

From findings, the current un(der)banked population control over 75% of daily retail transaction and it will surprise you that even the banked population are encouraging them through cash transactions because the economy has not transited from her traditional cash-based. The result is the increasing number of informal financial operators whose activities are not regulated but control high volume of liquidity which could have been used to create economic opportunities if it were in the hands of the formal financial institutions.

Population Distribution – Key Statistics	% of Total
Population, Total	162 million
Population ages 0-14 (% of total)	44.22%
Population ages 15-64 (% of total)	53.05%
Population ages 65 and above (% of total)	2.73%
Population, female (% of total)	49.1%
Population, Male (% of total)	50.9%
Population, Urban (% of total)	50.3%
Population, Rural (% of total)	49.7%
Financially Excluded Population	41.6%

Sources: United Nations, EFInA, World Bank



Effort of Central Bank of Nigeria

The CBN in her regulatory capacity introduced several measures through policies, guidelines, licensing and facilitating workshops, researchers, and support towards bringing the un(der)banked into the mainstream. The activities of the regulator opened up opportunities for all the financial institutions to replicate the same success of stories across the world (such as Grameen Bank in Bangladesh and M-Pesa in Kenya) but it only resulted into the current situation of 64% un(der)banked population! Definitely, something is missing!

The various efforts (with even EFInA giving grants to those who can provide a solution to the problem) tell of the significant contribution such a population can generate in this economy that is greatly affected by global oil price which has impacted negatively on the financial sectors.

With the current macroeconomic challenges and uncertain outlook, the Retail space in Nigeria has great potential for deposit mobilization, engaging the underbanked, converting the unbanked, creating liquidity, driving cashless policy and promoting economic growth.

Challenges to the Success of Financial Inclusion in Nigeria

There are several challenges identified that have created the gap and pose as unsurmountable mountain to financial inclusion in Nigeria. They include:

- Misconception: Generally, there is a believe that once it works anywhere else (including Kenya), it can work in Nigeria. But the reality is that the culture and economy ideology defer because Nigeria is still predominately cash based. Second, there is another believe that the rate of mobile users should directly result to mobile money subscriber but this, is another mistake because most of the people under the un(der) population are hostile to the wave of electronic financial transaction platform and still believe the "do-it-for-me" service! That is why the "esusu" and "ajoo" (informal financial providers) are strongly trusted and established!
- Channel: From the first point (above), it is clear that the prefer channel is not the corporate sit and take coffee approach but rugged style. The reality is similar to gold diggers and commodity trader, while the former dig to extract gold, the former only trade the available gold in the market without even touching it. The most appropriate channel for the un(der)banked is the combination of their trusted traditional method and technology!
- Framework: The Mobile Money Operations render financial services through their agents who currently sees such partnership as hindrance to its primary business, while on the commercial banks side, they use contract staffs (called Direct Sales Agent/Executives) to chase customers for deposits with possibility of great risks to bank and lack of comfort by the customers.
- Compensation Model: Most of the agent under the Mobile Money Operators and Direct Sales Agent/Executives of the commercial banks complained bitterly on the unattractive incentives from rending such service. Targets that are not backed with market intelligence and strategy for successful implementation!
- Market Intelligence: The situation in Nigeria is like asking the sight challenged person (such a blind man) to just run without any direction, assistance or guide! It may shock you that many of the financial institutions (including the Mobile Money Operators) do not even have sufficient market intelligence that can create access to the un(der)banked population. For Instance, in Lagos, many of them don't even know that there are 442 registered markets with potential of mobilizing over #30Billion deposit (turnover) within 9months!

Moment of Truth

The above points are inconclusive of the current challenges to financial inclusion in Nigeria and your doubt can be cleared if any of the banks and Mobile Money Operators, who claimed to be the pacesetter in financial inclusion can provide analysis of active subscribers, volume and value of transaction, agency spread and profitability! (Trust me, it is just like the empty barrel that makes the loudest noise).

In conclusion, the solution is not far-fetched when the above challenges are thoroughly considered and experts' advice are consulted for success implementation to increase the percentage of financial inclusion in Nigeria within the next possible time!

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Financial Inclusion in Nigeria:

The Challenges of Banks & Mobile Money Operators (MMOs)

OLUWASEUN ADESANYA
SYSTEMSPEC LIMITED
NIGERIA

Introduction

Financial inclusion has been a great challenge across the world especially in Africa with great opportunities for financial services on the micro level.

To translate those opportunities to reality, there is need to create a realistic framework through regulations; innovative approach that meet and surpassed market's expectation; and remuneration that encourage all stakeholders.

Objective

Session:

To present the Importance and the implications of promoting financial inclusion for monetary policy and financial stability in terms of regulation of banking industry and payment systems.

Presentation:

To highlight critical areas that could facilitate increase in financial inclusion to all stakeholders

Nigeria as Case Study

Population Distribution – Key Statistics	% of Total
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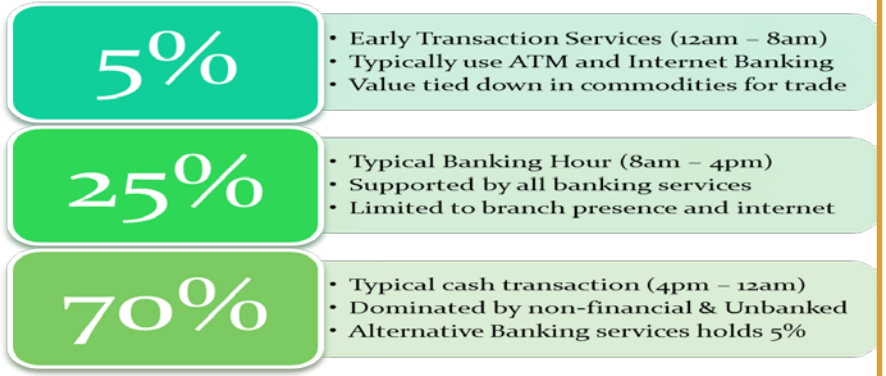
Sources: United Nations, EFInA, World Bank

Retail Transaction Analysis



- 22 Commercial Banks
- Over 500 Microfinance Banks
- About 51 Insurance Companies
- About 21 Licensed Mobile Money Operators(MMOs)
- Over 110,000 Mobile Payment Agents
- 5.1% of Mobile Money in Payment Transaction

PainPoints

- **Misconception:** Generally, there is a believe that once it works anywhere else (including Kenya), it can work in Nigeria. But the reality is that the culture and economy ideology defer because Nigeria is still predominately cash based.
- **Channel:** The prefer channel is not the corporate sit and take coffee approach but rugged style. The most appropriate channel for the un(der)banked is the combination of their trusted traditional method and technology!
- **Framework:** MMOs render financial services through their agents who currently sees such partnership as hindrance to its primary business, while on the commercial banks side, they use contract staffs (called Direct Sales Agent/ Executives) to chase customers for deposits
- **Compensation Model**: Most of the agent under the Mobile Money Operators and Direct Sales Agent/ Executives of the commercial banks complained bitterly on the unattractive incentives from rending such service.
- **Market Intelligence**: The situation in Nigeria is like asking the sight challenged person (such a blind man) to just run without any direction, assistance or guide!

Moment of Truth

The pain points are inconclusive of the current challenges to financial inclusion in Nigeria and your doubt can be cleared if any of the banks and Mobile Money Operators, who claimed to be the pacesetter in financial inclusion can provide analysis of active subscribers, volume and value of transaction, agency spread and profitability! (Trust me, it is just like the empty barrel that makes the loudest noise)

Conclusion

In conclusion, the solution is not far-fetched when the above challenges are thoroughly considered and experts' advice are consulted for success implementation to increase the percentage of financial inclusion in not just in Nigeria but anywhere in the world!

THANKS!

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*
Marrakech, Morocco, 14 July 2017

The role of payment systems and services in financial inclusion – the Latin American and Caribbean perspective[1]

Raúl Morales Resendiz,
Center for Latin American Monetary Studies (CEMLA)

[1] This paper was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

The Role of Payment Systems and Services in Financial Inclusion

Latin American and Caribbean Perspective

Raúl Morales Resendiz

Abstract

Retail payment systems and services consist of different systems and platforms, payment products and services that allow firms, individuals, government and other economic agents to transfer money on a daily basis without having to use cash.

Retail payments are becoming increasingly more prevalent in today's economy, thanks to the dynamism digital innovation has brought with new mobile and online payment solutions and products. Meanwhile, international efforts continue to appear for promoting universal access to and use of financial services in an attempt to reduce poverty and improve opportunities and living standards for people that do not use such services.

As a result of this interaction between an intensive agenda focused on promoting financial inclusion and the greater presence and participation of retail payments in economic activity, the latter represent a highly potential instrument for fostering financial inclusion as individuals and firms interact in the economy via the payments they make to each other through different instruments and channels.

This paper explores the various interactions and dimensions of digital retail payment systems and services that play an important role in the financial inclusion agenda of Latin American and Caribbean countries.

Keywords: digital payments, mobile payments, e-money, financial inclusion.

JEL classification:

Contents

Executive summary[1]

Retail payments, in particular those that have been digitized, are becoming increasingly more prevalent in today's economy, thanks to the dynamism digital innovation has brought with new mobile and online payment solutions and products. Meanwhile, international efforts continue to appear for promoting universal access to and use of financial services in an attempt to reduce poverty and improve opportunities and living standards for people that do not use such services.

As a result of this interaction between an intensive agenda focused on promoting financial inclusion and the greater presence and participation of digital payments (DP) in economic activity, the latter represent a highly potential instrument for fostering financial inclusion as individuals and firms interact in the economy via the payments they make to each other through different instruments and channels.

Latin American and Caribbean countries are at a particularly important situation in this matter. On the one hand, the degree of bankarization still needs to deepen in most countries. On the other, payment systems and services infrastructure has made significant progress, posing different questions as regards how to move forward with financial inclusion through payments.

Central banks have an important role to play in this area given their responsibility to preserve the smooth functioning of payment systems and, more recently, to support efforts for achieving greater financial inclusion.

This paper contributes with a multidimensional perspective on different DP interactions with financial inclusion in Latin American and Caribbean countries. The conclusions offer a set of observations and possible actions central banks could adopt as a basis for moving forward with national and regional agendas on digital retail payments for promoting financial inclusion and access.

1. Introduction

International efforts, especially those launched by the G20 in 2009, to formally established a commitment to improving access to financial services for the unbanked population.[2] This therefore recognized the important role the population excluded from the financial sector could play in poverty reduction and more balanced economic growth.

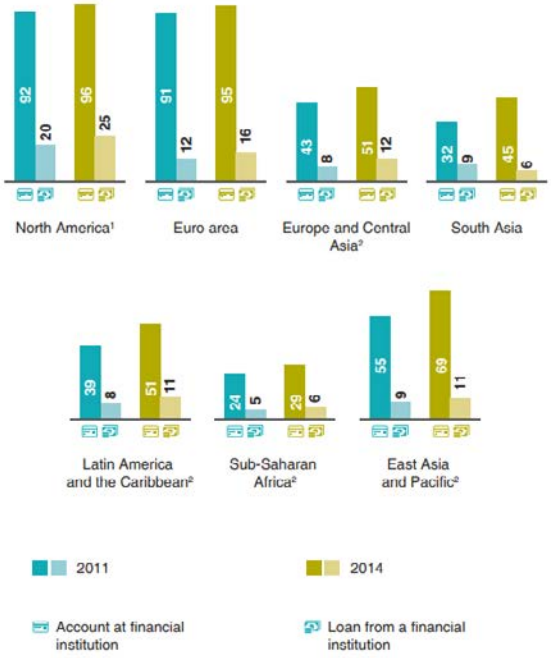
[1] This paper is an adapted version of a report resulting from a joint effort led by the Secretariat and members of the Latin American and Caribbean payments committee of CEMLA (namely the Working Group on Payment System Issues of Latin America and the Caribbean – WGPS-LAC) to take stock of the interplay of retail and digital payment systems and financial inclusion in the region. Further information of the original report can be found at: http://cemla.org/PDF/forodepagos-TheRolePaymentSystems.pdf.

[2] Refers to the population without access to an account in a formal financial institution or payment services provider that allows them to save money or receive or make payments (Global Findex database, 2014). According to recent calculations, two billion people do not have access to a financial bank services.

From 2011 to 2014, the number of people in the world excluded from the financial system was reduced by 20%. Particular progress was made in Latin America and the Caribbean, where the percentage of the adult population (over 15 years of age) with accounts in financial institutions increased from 39% to 51% in said period. Nonetheless, it is also important to recognize the need to delve deeper into the use of these accounts and other financial services. For instance, access to credit rose from 8% to 11% during the same period.

FIGURE 1

WORLD: ACCESS TO FINANCIAL SERVICES, 2011 AND 2014
(percentages)



¹ United States of America and Canada. ² Only developed countries.
Source: Authors' elaboration from Global Findex, 2014, database.

The importance of developing and using DP as a mechanism for promoting financial inclusion is related to the following aspects:

- DP allow an economic agent (payee) to use different methods to meet their obligations with another (beneficiary) without the need to do so in person, which reduces transaction costs and thereby improves the dynamism of economic activity.
- Incorporation of advances in information and communications technologies (ICT) have converted DP into ideal channels for promoting financial inclusion as the electronic and digital means available at present have eliminated barriers limiting the unbanked population's access to payment services.
- DP offer the possibility for people to reduce the costs and risks implicit in using cash, thanks to the fact that they are available instantaneously anywhere. This makes them more convenient and easier to use for

carrying out transactions on a daily basis, generating incentives to adopt them for various transactions that are generally made in cash.

- Greater use of DP by the population would lay the foundations for the adoption of new infrastructures, instruments and channels that would favor more efficient and secure payments, leading to economies of scale that would reduce the average costs of payment services.

These specific aspects of DP have increasingly greater influence on the formulation and implementation of national financial inclusion strategies (NFIS), while at the same time favor progress in the payment services industry. Said influence is observed in aspects related to the legal and regulatory framework, payment and settlement infrastructures and platforms, new operational arrangements and new participants (payment service providers), as well as changes in dynamics and market forces.

The above highlights how this is a decisive moment for central banks and other relevant financial authorities in the field of DP, given that the responsibilities of most of the region's central banks include guaranteeing the secure and efficient functioning of payment and settlement systems. Moreover, in light of the importance of promoting financial inclusion, central banks have directly participated in planning and overseeing NFIS. This has led to them acquiring new responsibilities associated with boosting access to and use of DP, in some cases along with financial education and consumer protection.

This paper provides an overview of DP in the region and their role in financial inclusion based on information provided by Latin American and Caribbean central banks. In this regard, the majority of such institutions stated that DP have an important role to play in accelerating access and usage of financial services. They also consider innovation as a key factor in aspects such as electronic money, prepaid cards, mobile phones and the participation of nonfinancial institutions.

2. Dimensions and Key Concepts in DP and Financial Inclusion

Unlike large-value payment systems focused on meeting the needs of financial institutions and large corporations in different financial markets, retail payment systems focus on the needs of each individual for making and receiving payments. However, this difference has been reduced by technological advances, meaning that in the current scenario it is more relevant to refer to whether payments can be digital or not, or more particularly non-cash based.[3]

The significance of digital retail payments for promoting financial inclusion lies in, among other factors, the fact that the arrival and rapid penetration of ICT in the financial industry, particularly for providing payments services, has led to the emergence of products and services that have adapted more conveniently to the

[3] For instance, different large and retail payment systems and platforms, products and services, facilitate the daily transactions of the population (individuals, firms and government), urgent or not, and regardless of their size. All of the aforementioned can be considered part of the electronic payments universe

current needs of the population for exchanging value. Among the new ways adopted by DP are the use of mobile phones as a device and access channel for making and receiving payments (mobile payments), use of internet on different devices for making purchases (internet payments), use of payment cards in ATM and POS networks and with contactless technology (card payments) and electronic billing (Morales, 2014; CPMI, 2012), as well as the use of systems and platforms, which although planned for making other types of operations, also allow retail payments to be made, such as using RTGS systems for making instant payments.

Although cash has performed a significant role in the modern economy, because it provides a measure of value and means of payment for performing economic activity, nowadays it has become impractical (and even costly) to use it for different transactions, which because of their nature, size or urgency require more flexible methods (in terms of speed, practicality, mobility and ubiquity). Thus, development of DP, along with the use and application of ICT, has focused on overcoming the limitations of cash in certain types of transactions, while allowing significant progress to be made in the speed, immediacy, security, ubiquity and convenience demanded by economic activity. Moreover, DP have become a bridge towards financial inclusion, providing access to the population generally excluded from financial services, thanks to services that allow people to save value, and make and receive payments under more favorable and accessible conditions and requirements.

In this scenario it is also important to underline that although digital retail payment systems and services have traditionally been generated by banks and other financial institutions, spaces are increasingly being opened for new participants, above all nonbank or nonfinancial institutions acting as operators of platforms for payment system[4] or as payment service providers (PSP). Thus, DP benefit the population in terms of financial inclusion, while fostering progress in the economy's financial sector.

Notwithstanding the above, there have been no radical change of trends in global cash usage, except in some economies such as India or Sweden, where its use is being discouraged on purpose. The fact that in Latin America and the Caribbean cash continues to be people's preferred means of payment for certain types of purchases and payments is a matter beyond the scope of this paper. However, it can be pointed out that an analysis of this phenomenon involves the overall conditions in the economies –including levels of informal labor, depth of the financial sector, etcetera–, education and the population's payment habits, as well as other idiosyncratic factors –such as people's perception that cash is a very convenient means of payment–, among other factors. It is worth mentioning that electronic retail payment services are superior to cash from the point of view of the safety and efficiency they offer users. Nevertheless, cash continues to be very convenient for users in certain types of retail daily transactions, such as for using public transport, purchasing food in a grocery stores, etcetera. This experience is in addition to the lack of favorable conditions for accessing and using DP –such as a broad, functional and

[4] For instance, besides favoring the entrance of new payment service providers, digital currencies have also led to the appearance of new electronic platforms that have arrangements for clearing and, in some cases, settlement. The same has occurred with electronic money that, besides constituting a payment service, has also involved the establishment and setting in motion of specialized platforms for processing it.

interoperable physical and telecommunications infrastructure– that contribute to the continued perception of cash as an ideal payment method for this type of disbursements, hindering any likely transition towards and adoption of electronic payment. Given this, the set of innovations in DP that have been applied internationally could help to change the tendency to use cash for certain types of very small value transactions, as long as the population's perception is changed by a more comfortable and convenient experience with more reliable and easy to use payment instruments.

The above is of utmost significance when taking into account that financial access is just as important for achieving effective financial inclusion as making recurrent and periodic use of financial services. In this way, simple and accessible payment services appropriately meeting users' needs have the potential to achieve such inclusion.

Financial access

Access to financial services implies the supply of such services meets the minimum conditions to address the needs of households and firms for managing their expenditures and income. Such services should also enable households and firms to face unexpected financial shocks (World Bank Development Research Group et al., 2014).

The fact that there are agents (individuals and firms) without access to financial services is the result of market failures (barriers) such as: 1) lack (or asymmetry) of information for assessing the financial capacity of potential users; 2) little or no attention from service providers to certain market niches; and 3) the oligopolistic structure of the market that generates distortions in the coverage and prices of financial services.

The reasons why people are excluded from the financial system[5] should also be considered, including socioeconomic (low or irregular income, lack of economic and financial education, ethnic-racial discrimination, etc.) or geographic (living in rural zones or outside urban centers) traits, which are by themselves sources of exclusion from financial services.

DP are instruments with great potential for reducing the referred failures or barriers affecting financial inclusion given that electronic and digital methods considerably reduce transaction and information costs for payment service providers and users. All of this represents a driver for progress in the industry. Users can also perceive greater advantages and comfort in cash alternatives, which in the end become options for transforming, or beginning, their financial life. For instance, with the introduction of new channels (e.g. bank agents), services (e.g. payment accounts or electronic money) and types of payment (e.g. wage and social benefit payments, and government payments in general) options for bringing payment services to the generally excluded population have growth, either by democratizing access

[5] Exclusion of an individual or firm might be due to exogenous or personal factors (the latter is known as self-exclusion). This study does not cover the phenomenon of self-exclusion among the population that could be based on high levels of informality, distrust in the financial sector and religious factors, among others.

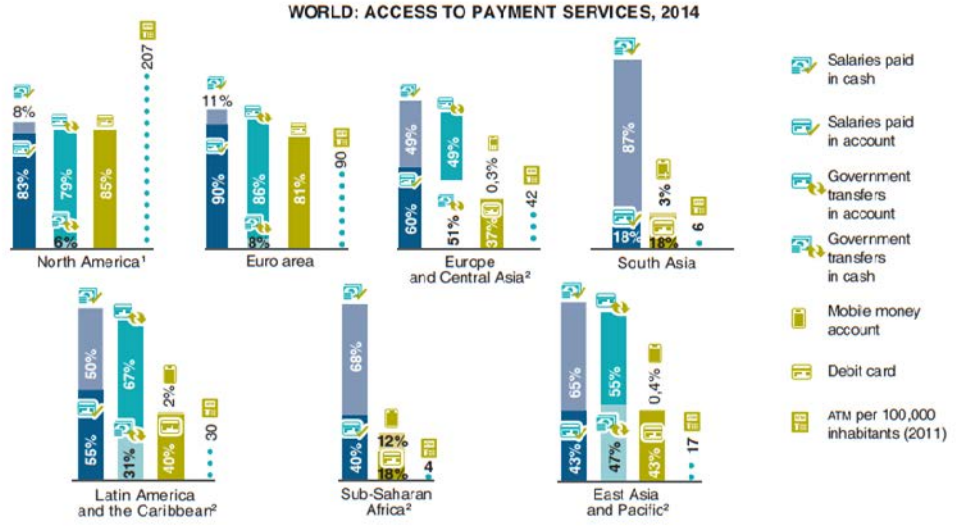
regardless of gender or other ethnic-social traits, by reducing transaction costs, excessive procedures, long distances to arrive at a service point, etcetera.

It is worth mentioning how promoting financial access through NFIS is closely related to the status of DP in each country. This implies that the degree and depth of technology use in electronic and digital payments depends on the infrastructure and platforms available, the structure of the national market and the relation between possible innovations and the regulatory framework in force.

According to Global Findex, in 2014 the percentage of people in Latin America and the Caribbean with debit cards was 40%, while 2% had mobile money accounts, figure similar to that of the East Asia and Pacific region (excluding Japan and Australia), where it was 43% and 0.4%, respectively. Meanwhile, in Sub-Saharan Africa only 18% of people have a debit card and 12% a mobile money account. It should be pointed out that, in Latin America and the Caribbean, out of the total population receiving benefits or social supports, 67% state receiving such transfers through an account, figure slightly above the world average (61%). With respect to wages, 55% of salaried individuals are paid through an account as compared with a worldwide figure of 54 percent.

FIGURE 2

WORLD: ACCESS TO PAYMENT SERVICES, 2014



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Source: Authors' elaboration from Global Findex, 2014, database.

Another indicator on access to payment services is the number of automated teller machines (ATM) per 100,000 inhabitants, which was 31 globally in 2011. This indicator varies across regions: for instance, North America, 207 ATM; the Euro area, 90; Eastern Europe and Central Asia, 42, and Latin America and the Caribbean, 30; all these figures are higher than those for Sub-Saharan Africa (four ATM).

Despite progress made in modernizing and improving the region's DP, data from Global Findex shows low levels of access to DP in Latin America and the Caribbean. In other words, it represents opportunities and considerable gaps for the development of DP over the following years.

Use of payment services

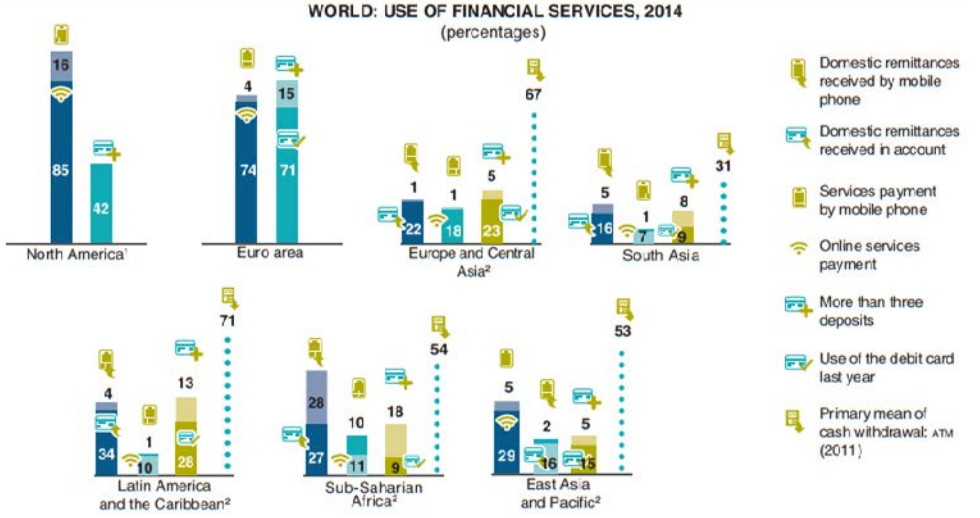
The second dimension of financial inclusion is the usage of services. The factors that influence the decision, adoption and use of a financial service include: 1) individual habits and preferences, 2) frictions between supply and demand due to the speed with which new financial products are generated and adopted, and 3) the degree of adoption and knowledge of DP among the population, allowing them to get used to and benefit from the services offered by the market.

The frequency and regularity of use of financial services is the most important dimension of financial inclusion because it requires appropriate levels of access and financial education, i.e., access does not fully guarantee usage. To use the financial services for which access is available, several favorable conditions must be met; among these, that people: have information and learn to use financial services responsibly, i.e., that there is a minimum level of financial education; have a positive perception or, at least, willing to use them; trust the smooth functioning of these services and are familiar with consumer protection legislation; find a match between their needs and the characteristics of available services; can value the convenience and affordability of each service; have transparent access to the costs of the services they require; have several alternative services and financial service providers.

Data from Global Findex 2014 (see Figure 3) show that 17% of people worldwide paid for services online, while only 2% used mobile phones in 2014. In Latin America and the Caribbean, payment of services via internet or mobile phone is below the world average, at 10% and 1% respectively. A different panorama is observed for the use of traditional services, which have greater presence (for instance, debit cards and account deposits, with 28% and 13%, respectively).

FIGURE 3

WORLD: USE OF FINANCIAL SERVICES, 2014
(percentages)



¹ United States of America and Canada. ² Only developed countries.
Source: Authors' elaboration from Global Findex, 2014, database.

Opportunities therefore exist for improving the use of payment services in the region by, for instance, applying innovations that exploit infrastructures in other sectors regarded as nonfinancial. Such is the case of electronic money linked to high and low-end mobile phones that favors financial inclusion because the majority of

the population have such mobile devices even in zones far away from urban centers where there are currently no financial offerings, meaning it has great potential for bringing closer and facilitating the use of financial services.

3. The Role of DP in FI in Latin America and the Caribbean

NFIS are by nature public policy instruments requiring a multidimensional approach and multiple lines of action including: financial education, innovation in financial services, reducing cash usage and promoting electronic payments, among others. Moreover, the improved design, functioning and innovation of DP has an important place in the agenda of central banks given that they are a fundamental pillar for promoting the public's trust in the financial system and, as has been seen, an instrument with great potential for encouraging access to and use of financial services. In that vein, central banks have participated in elaborating and implementing the strategies, ensuring the efficiency and safety of payment systems and services, as well as their access and use.

Key DP Aspects for NFIS in Latin America and the Caribbean

In Latin America and the Caribbean, 82% of countries have a NFIS, the most recent of which are Peru and El Salvador.[6] Thus, demonstrating their commitment to performing a series of actions within a determined period to promote access to and use of financial services among the population.

NFIS may be linked with the development and modernization of DP to various extents. Said linkages varies according to the objectives and priorities each government has for planning their respective financial inclusion strategy.[7]

Thus, as can be seen in Figure 4, the opening of transaction accounts[8] and access for new payment service providers have been pointed out by the majority of central banks as very important for implementing their NFIS (100% and 91% of these, respectively). Central banks consider bank agents, payment cards and electronic money as very important payment channels and instruments for access to and use of

6 In Peru, the Supreme Decree establishing the National Financial Inclusion Strategy (NFIS) was signed in July 2015. In El Salvador on August 2015, a law was passed for facilitating financial inclusion through services such as mobile money (and its providers) and simplified procedure savings accounts.

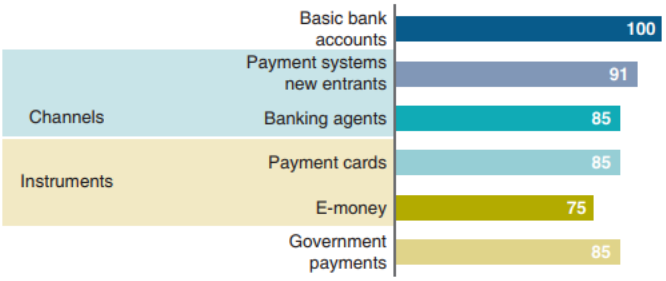
7 It is important to highlight that even in the 18% of countries which do not have a NFIS, the DP is used implicitly as a path towards financial inclusion. The following sections therefore present information for both groups of countries

8 Transaction accounts are generally characterized by having limited functions as compared to traditional deposit accounts. With respect to the opening of transaction accounts as one of the main components of NFIS in the region, further study is necessary to ascertain whether their importance only corresponds to the act of opening an account for an individual who did not previously have access to the financial system or whether this type of account is actually the one most used after they have been opened. In India for instance, the government decreed the opening of 500 million basic accounts in the financial system, leading to an improvement in financial inclusion indicators (on the system access side), but it is still not known whether the incentives for using the account as a platform towards other services really functions or not.

payment services among the population. Likewise, the region shown the very significant role government payments play in the inclusion process.

FIGURE 4

ERPS RELEVANT ASPECTS OF THE PLANNING OF THE NFIS
(response percentage)



Source: Author's elaboration based on The Role of Payment Systems and Services in Financial Inclusion in Latin America and the Caribbean survey information.

Taking the above items into account, certain aspects of DP may have great potential for making an effective contribution to financial inclusion. For this reason, it will be necessary to bolster the strategies in order to deepen progress made over recent years in countries of the region where regulation has allowed the development of transaction accounts, bank agents and electronic money to expand the use of DP, mainly among people who can most benefit from new payment channels and instruments by eliminating barriers to access and usage they face at present.

Provision and use of DP

The previous section mentioned, in light of the multiple dimensions involved in financial inclusion, the way in which strategies associated to DP are implemented can vary considerably from one country to another. One immediate explanation for this is linked to the degree of progress in electronic payments in each of them.

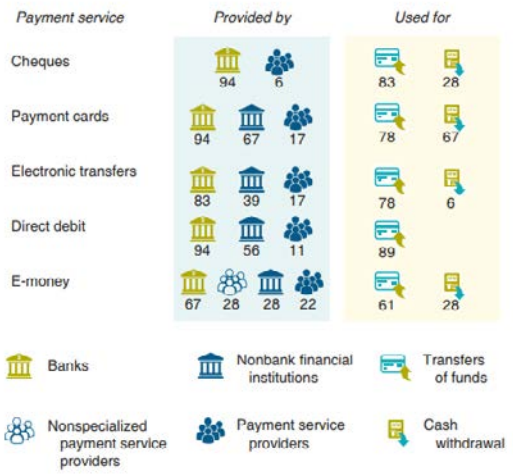
Financial inclusion strategy that depends to a greater or lesser extent on DP should be drawn up with a long-term vision that promotes its gradual and realistic development, seeking to foster financial inclusion. For this it is necessary to create an ecosystem where payment service providers (PSP), economic agents and government can benefit from making their payments electronically and using as less cash as possible. Otherwise, it is possible that the potential of DP as a bridge for accessing other financial services might be limited. For instance, it is necessary to avoid that social benefit transfers via prepaid cards become an instrument for simply withdrawing cash, and encourage increasing acceptance of electronic money among all types of businesses and services and not just in large establishments or e-commerce.

To illustrate part of the above, Figure 5 shows how people use payment services and who provides them. Banks are the main providers of digital retail payment services in the region. Nonbank financial institutions (NBFI) play an important role in

providing payment cards and direct debits. As regards electronic money, it shows how banks participate more than in other services, while that of NBFI and PSP (specialized and nonspecialized) is similar. The latter reflects the presence of telecommunications companies (telcos) in the provision of e-money.

FIGURE 5

PROVISION AND USE OF RETAIL PAYMENT SERVICES
(response percentage)



Source: Author's elaboration based on The Role of Payment Systems and Services in Financial Inclusion in Latin America and the Caribbean survey information.

In addition, it can be seen how people use payment cards a lot for withdrawing cash, while e-money is used more as a means for transferring funds electronically. The population also makes little use of electronic transfers and direct debits for withdrawing cash.

It is therefore evident that banks, as a traditional PSP, continue performing an important role in supplying DP to the population, while other less traditional providers, such as telcos, have greater presence in supplying innovative payment instruments such as e-money and others like mobile payments. It can also be seen how even well-established electronic payment instruments like cards are ultimately used to withdraw cash from an ATM.

The way in which the payment system of each country is organized or determined by greater or lesser participation of banks as payment service providers compared with other new PSP, as well as how the population uses each payment instrument, will be fundamental for authorities to adjust their strategies and policies aimed at ensuring DP are used effectively to achieve greater financial inclusion. Thus, these strategies more oriented towards the use of DP as a mechanism for accessing and using financial services should focus on creating the conditions necessary for the ecosystem, platforms, PSP and instruments promoting the goal of making payments digitally.

Regulatory Aspects

The legal and regulatory framework is a fundamental pillar for the smooth functioning of DP and effective implementation of a NFIS. Not having a solid, balanced and predictable legal framework (that provides certainty to digital and electronic transactions) can exacerbate or create unfavorable conditions for the development of some payment services or hamper actions that promote financial inclusion.

In this regard, adoption of numerous legal dispositions for DP, such as those related to access and user protection, has been encouraged by central banks and financial supervisory bodies. Nevertheless, regulatory components related to other authorities should also be considered. Finance ministries play a key role, for instance, in channeling and receiving government payments, which promote financial inclusion, through their Treasury offices. Moreover, authorities responsible for competition are influential, and should ensure equal conditions and competition in different areas of the payments system, in both the functioning of the platforms and payment systems and between final payment services providers.

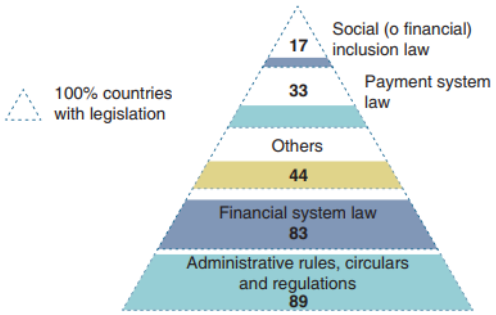
Although central banks perform an important role in generating an efficient and safe environment for the smooth functioning and development of DP, not all of them have explicit powers to intervene. Even central banks that do have a mandate may be limited because the powers conferred to them are not broad enough to accommodate innovations and keep pace with the development of the market (CPMI-WB, 2016).

The legal and regulatory framework that supports DP and NFIS in Latin American and the Caribbean is composed of different laws, regulations, standards and other instruments of different legal status. The most important law is that regulating the overall functioning of the financial system and commonly addresses issues related to the authorization and control of different types of financial institutions regulated by the authorities. There are also direct laws and regulations for payment clearing and settlement systems encompassing general rules for participants, mechanisms, agreements, payment services and systems. Laws for social and financial inclusion issued by some countries have also been added recently to said standards.

Figure 6 shows the legal and regulatory framework currently in force in Latin America and the Caribbean with regards to the role of DP in the agenda for financial inclusion. It can be seen in the region how low ranking legal standards (e.g., administrative rules, circulars and regulations) are the tools most used for defining the regulatory framework for payment systems and financial inclusion. Moreover, it is evident that not all countries have a body of high-ranking legislation (i.e., laws) covering said aspects.

FIGURE 6

LEGAL FRAMEWORK FOR RETAIL SYSTEMS AND ELECTRONIC PAYMENT SERVICES AND NATIONAL FINANCIAL INCLUSION STRATEGIES
(response percentage)



Source: Author's elaboration based on The Role of Payment Systems and Services in Financial Inclusion in Latin America and the Caribbean survey information.

It is worth mentioning that, although transaction accounts, access of new PSP to payments systems and government payments are important components of DP for promoting financial inclusion, a majority of countries have still not implemented a regulatory framework for them. The situation is different for traditional payment services such as cheques, debit and credit cards, and electronic transfers, for which a large number of countries have a general legal framework, even including specific regulations for some of them.

The above reveals an opportunity for countries of the region to elaborate, and in some cases strengthen, a complete legal and regulatory framework that facilitates actions aimed at promoting the use of DP. The challenge is to generate appropriate legislation that improves safety and efficiency, and guarantees consumer protection, without restricting innovation and the emergence of new services.

The organic law of a central bank is the legal basis for its different responsibilities as regards the regulation, promotion, oversight and operation of DP. In the case of financial inclusion, the powers conferred by the organic law to a central bank in this area might, in general, be limited considering the active role of such institutions in the different dimensions of inclusion, such as consumer protection, financial education and the smooth functioning of payment systems and services. For this reason, up until now they continue to work with regulations below the legal status of a law, above all in countries that do not have specific legislation for social and financial inclusion.[9]

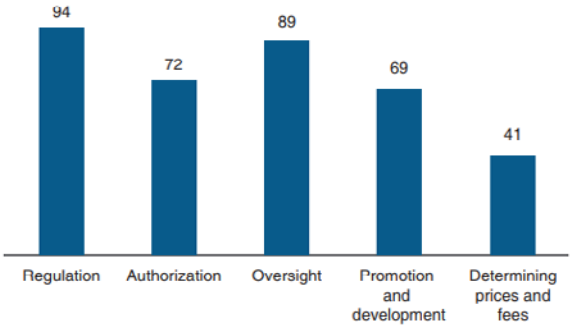
According to Figure 7, 94% of central banks have powers for regulating DP. They also have powers for authorizing payment service providers and payment system administrators22 (72%), oversight (89%), and promotion and development (69%), the latter including financial education topics. It is important to emphasize the role central banks have in determining prices and fees in DP, which in the case of the region record a percentage of 41%. This could be a key factor for expanding the use of these

[9] As would be expected, central banks have adopted a much more active posture in DP and financial inclusion

payment services among the population excluded by current prices. Central banks also state that their powers in financial inclusion topics are narrower than those related to DP, reflecting the multiple dimensions of NFIS.

FIGURE 7

POWERS OF CENTRAL BANKS ON RETAIL ELECTRONIC PAYMENT SYSTEMS AND SERVICES
(response percentages)



Source: Author's elaboration based on The Role of Payment Systems and Services in Financial Inclusion in Latin America and the Caribbean survey information.

To establish a solid, predictable and balanced legal framework that favors competition, innovation, safety and efficiency in DP, communication and cooperation among the authorities and main private sector players is essential. A legal and regulatory approach that encourages dialogue and coordination with all interested parties can solve the absence or ambiguity of powers for the relevant authorities in the functioning of DP and the implementation of NFIS. Thus, setting up bodies, such as payment committees or other multidisciplinary or interinstitutional entities can drive better cooperation in retail payment system matters aimed at promoting access and financial inclusion. Multisector bodies have been set up in 56% of Latin American and the Caribbean countries. These bodies are responsible for working on retail payments or financial inclusion with the participation (in 100% of cases) of the central bank and financial supervisory body. It is important to mention that the Ministry of Finance or the banking sector do not participate in every case. Nevertheless, other types of participants, such as bank associations and payment system administrators, together with PSP and other members of the industry form an important part of the process of dialogue and cooperation for developing DP over the long-term.

The more representative participation on such committees becomes, the better regulation and oversight powers of central banks and other authorities regarding aspects of DP and NFIS will be fulfilled. The latter might also benefit from improved conditions for proposing and adopting changes necessary in the industry for strengthening safety, efficiency, competition and innovation.

Risk Management

While risks in large-value payment systems are mainly systemic, in the case of retail payments the sources of risks are predominantly operational. Nevertheless,

poor risk management could affect participants and their customers.[10] It is therefore important to have a solid legal framework for properly managing each risk in order to ensure, for instance, that actions aimed at promoting financial inclusion do not affect the safety and efficiency of payment systems and overall financial stability.

Given the organization and dynamics of the DP industry, there is a delicate balance between the degree of innovation and competition, and the legal framework for risk management that PSP, payment system administrators and other industry participants must comply with. On the one hand, the authorities should ensure safety and efficiency in the development and functioning of payment systems and services. On the other, an excessive amount of controls and requirements by the authorities can impede competition or discourage innovation, thereby hindering progress in the digital retail payments market.

Actions geared towards promoting financial inclusion, such as the entrance of new PSP and products to DP, can lead to new risks, representing a challenge for maintaining the referred balance. This requires establishing an appropriate framework for promoting proper risk management, which takes into account the nature of payment services and also encourages the correct behavior of PSP, in order to fully protect users of the financial system. This protection becomes more important considering the fact that inclusion efforts are aimed at people generally lacking financial experience and knowledge.

In the following years central banks of the region could face different challenges when attempting to ensure the promotion of financial inclusion does not affect risk management in DP and PSP or safety and efficiency in the provision of payment services.

With respect to the regulatory framework associated to risk management of instruments and access channels in the region, Figure 8 shows that not all payment instruments have a regulatory framework covering financial risks (credit and liquidity). In this regard, cheques obtained the largest number of answers, while payment cards received the lowest.

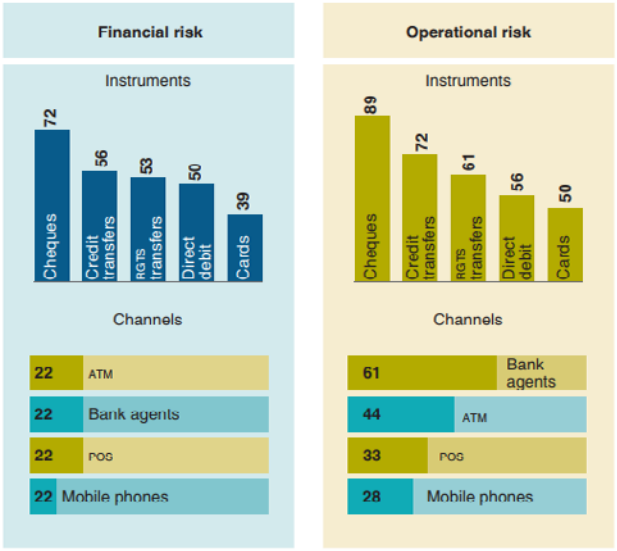
As for access channels, regulations on operational risk management have progressed more in the region, as in the case of the bank agents model, than those related to financial risks, although both are scarce.

Regarding payment systems and platforms for processing payments, it is important to point out that the majority of countries have a financial and operational risk management scheme for RTGS and ACH systems, while still only a few countries have them for other platforms (such as card switches and e-money processing systems).

[10] As retail payment systems become more important in an economy (as in the case of Latin American and Caribbean countries), poor risk management could lead to systemic risk.

FIGURE 8

REGULATORY FRAMEWORK FOR MANAGING RISK IN ERPS
(response percentage)



Source: Author's elaboration based on The Role of Payment Systems and Services in Financial Inclusion in Latin America and the Caribbean survey information.

Although the majority of countries in the region have the foundations for largely managing risks associated to DP, for actions included in NFIS it is advantageous to strengthen and complement DP components that ensure they operate safely and efficiently for participating institutions and end users, above all when innovations such as e-money or mobile payments are introduced.

Platforms and infrastructures for DP

Payment systems contribute to economic activity by providing methods for transferring funds that facilitate transactions between economic agents. This role can be performed thanks to the leverage and use of information and communications technologies, making the smooth functioning of the it and physical infrastructures backing up payment systems and platforms very important. Payment systems can also become more efficient and safe if they have standards and levels of interoperability[11] that foster economies of scale and scope.[12]

Among key payment systems and platforms for promoting financial inclusion are interbank systems for electronic retail fund transfers, including automated clearing houses (ACH) and electronic money systems (EMS), platforms for processing payment

11 This is a multidimensional concept, but mainly refers to the fact that payment orders can be processed independently from the PSP, Telco or platform used.

12 Economies of scale refer to the fact that the average cost of a good or service decreases as its volume of output increases. Economies of scope consist of the average cost decreasing as the production of goods and services becomes more diversified.

cards (also known as card switches), access and service point networks, such as automated teller machines (ATM) and points of sale (POS) networks, as well as the real time gross settlement systems (RTGS), managed by central banks.

Having this type of systems and platforms is essential for the smooth functioning of DP, but it is equally important for there to be a high degree of interoperability and standardization in and amongst them, especially when they are used as a mechanism for promoting financial inclusion. Nevertheless, it is necessary that these are framed by broad and organized access for PSPs and are continuously modernized in order to properly handle constant innovation within the industry.

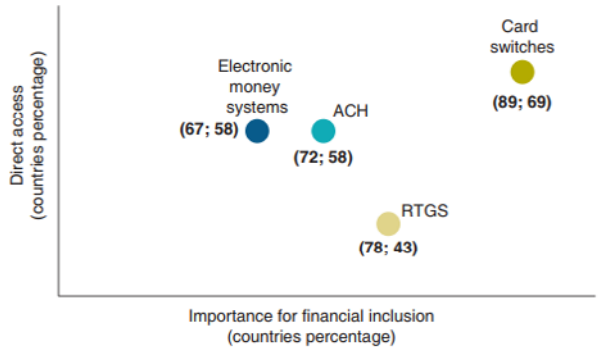
Importance of PSP Access to Platforms and Payment Systems

In terms of financial inclusion efforts, digital retail payment platforms and systems (ACH, EMS, ATM, POS and card switches) acquire a more important role than other systems or platforms (as compared to a cheque clearing house, for instance).

Figure 9 illustrates the importance given to payment platforms and systems in financial inclusion in Latin America and the Caribbean, showing whether PSP have direct access or not. Card switches (89%) are the platform considered most important for fostering financial inclusion, followed by RTGS (78%), ACH (72%) and EMS (67%).

FIGURE 9

PAYMENT PLATFORMS AND SYSTEMS: DIRECT ACCESS AND IMPORTANCE FOR FINANCIAL INCLUSION[1]



[1] The first figure is the percentage of importance placed on financial inclusion to each platform and operating system of payment in Latin America and the Caribbean; the second indicates which percentage of countries have PSP direct access without intermediaries.
Source: Author's elaboration based on The Role of Payment Systems and Services in Financial Inclusion in Latin America and the Caribbean survey information.

It should be emphasized that the type of access (direct or indirect) PSP have to platforms and systems can boost or reduce coverage and accessibility of DP for end users, as well as interoperability between PSP. In this context, it is worth mentioning that in only 43% of cases do PSP have access to RTGS systems. Payment card switches have direct access in 69% of the countries, while DPPS and ACH direct access is guaranteed for PSP in 58% of the countries. In this regard, the authorities should assess the type of access for different PSP, keeping in mind the importance of not compromising safetey and the smooth functioning of payment platforms and

systems. This poses challenges in both regulatory and corporate governance spheres of such platforms and systems.[13]

Greater access for PSP to RTGS systems can lead to increased financial inclusion because these large-value systems form the backbone of the financial system. Moreover, said systems can become the sole platform for government payments (as issuer and receiver), making such operations more efficient (payments to providers, tax collection and social transfers).

Interoperability and Standardization

The deepening of digital retail payment services in Latin America and the Caribbean has increased the need to have interoperable systems and platforms that function under reliable and robust standards. This responds to the fact that interoperability is an essential requirement to ensure safe and efficient fund transfers between platforms processing similar services and those that clear or settle those services.

In addition, interoperability is an important factor for promoting competition among PSP by eliminating the barriers between them. This therefore fosters price competition, while achieving economies of scale due to the larger number of transactions that will lead to lower costs for systems and providers. The latter demonstrates the importance of interoperability in promoting financial inclusion, because gains in safety and efficiency can facilitate access to and use of payment services for end users. Interoperability inside DP also allows for expanding the geographical reach of PSP and payment services without the need for increasing physical infrastructure. For instance, an interoperable e-money model composed of different issuers can help other issuers reach geographic areas serviced by just one issuer, which thereby increases the opportunities for accessing such services and generates competition among PSP.

It is extremely complex to address interoperability issues in the region due to the diversity in the composition and advancement of payment systems, market structure and other institutional and regulatory aspects in each country.

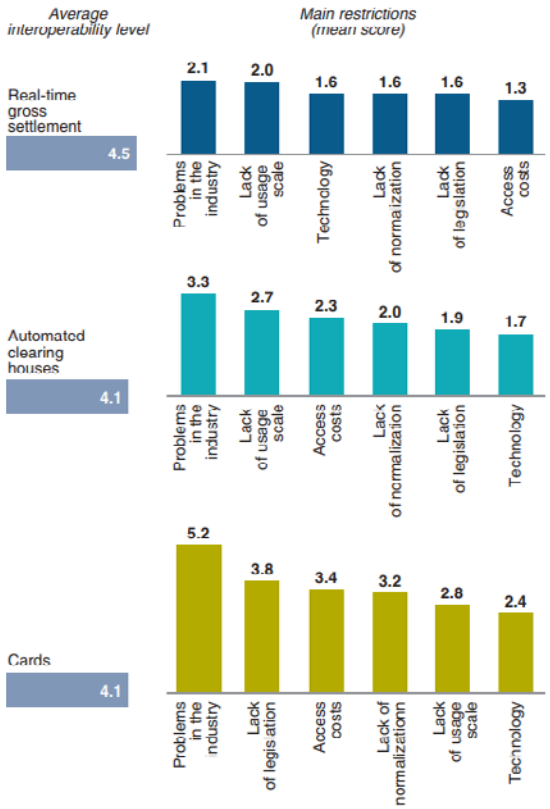
Thus, as can be seen in Figure 10, RTGS systems have the highest degree of interoperability in Latin America and the Caribbean, followed by ACH and payment card switches. With respect to the main restrictions for achieving greater interoperability, those related to problems in the industry (fees, exclusivity, among others) and the lack of a usage scale in the cases of RTGS and ACH.

In addition to systems and platforms being interoperable, another topic of utmost importance for the development of DP is a proper set of operating rules and standards for their functioning. Standardization, technological innovation and, particularly, the establishment of technical and business continuity standards are very important for improving operation processing, while they also facilitate interoperability among PSP and payment systems.

[13] Access to RTGS systems is generally conditional upon certain minimum requirements such as holding a current account at the central bank, which can imply significant costs for different PSP (nonbank nonfinancial) that promote financial inclusion.

FIGURE 10

INTEROPERABILITY IN PAYMENT SYSTEMS AND SERVICES IN LATIN AMERICA AND THE CARIBBEAN: LEVEL AND RESTRICTIONS



Score: Level of interoperability from 0 to 5; restrictions from 0 to 6.
Source: Author's elaboration based on The Role of Payment Systems and Services in Financial Inclusion in Latin America and the Caribbean survey information.

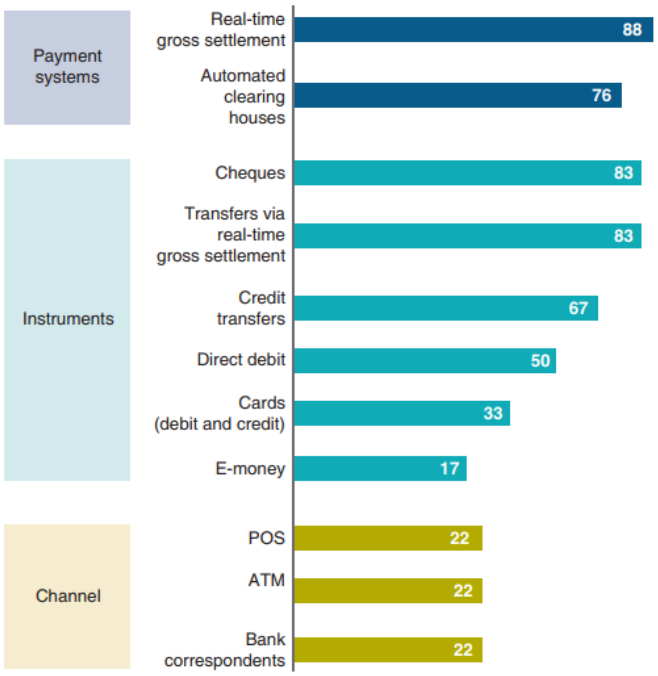
In the case of payment products and services offered by PSP to end users, standardization can help improve their operation, acceptance and gradual adoption, as well as foster more open competition among the different PSP. It is therefore essential to encourage collaboration and communication between authorities, industry and end-user representatives in the definition and general adoption of all these standards.

Figure 11 shows information on whether current standards oblige some type of standardization from systems, instruments and access channels in Latin American and Caribbean countries. In this regard, legislation in force in countries of the region mostly demands standardization from RTGS systems (in 88% of cases) and from ACH (76% of cases). As for instruments, standardization demands mostly apply to cheques and fund transfers channeled through the RTGS. Less requirements are imposed on other instruments. As for access channels, 22% of countries have a legal framework for standardizing service point and operation networks (ATM, POS or agent banking model).

It is important to highlight that there are no standardized rules for the operation of mobile phones as a channel for accessing DP, even though this is currently considered very important for promoting financial access.

FIGURE 11

CASES WHERE REGULATION REQUIRES SOME LEVEL OF STANDARDIZATION
(response percentages)



Source: Author's elaboration based on The Role of Payment Systems and Services in Financial Inclusion in Latin America and the Caribbean survey information.

The above show many areas for improving the standardization of DP components in the region, which would foster their development and financial inclusion. When constructing a long-term strategy aimed at the deepening and adoption of electronic payment services, lack of proper standardization could considerably affect the positive impact and viability of new products. It might even imply highly significant economic costs for PSP, systems and platforms, and the industry in general, and therefore for end-users, particularly when the innovations must be generally accepted and adopted by the target population it is desired to include in the financial system.

Finally, in the same way as the interoperability of DP, standardization requires that the legal framework and the authorities in charge of their regulation and oversight take into account innovations and developments in the payments industry, for instance in the cases of e-money and access channels that are directly related to mobile phones. Nevertheless, for such cases it is essential to work jointly with many different types of payment industry authorities and participants such as, for instance, telecommunication services authorities.

Competition and User Protection

Some issues of competition and user protection that are relevant of DP for financial inclusion purposes are: 1) inappropriate behavior by PSP, payment system administrators and platforms; 2) low levels of financial education in end-users and consequent inappropriate use of the services; 3) lack of transparency regarding fees and commissions of instruments and services, or 4) a poor institutional framework that lacks mechanisms for protection and handling complaints. Considering that the target population for financial inclusion strategies generally tends to be the most vulnerable to this type of problems due to their lack of knowledge, inexperience or lack of familiarity with financial products, the authorities and industry itself face a significant challenge for ensuring they provide the minimum conditions for correcting deficiencies that can lead users to make inappropriate decisions or become the victims of abuse.

User Protection

A core aspect in the functioning of the financial sector is microprudential regulation aimed at fostering appropriate behavior by institutions providing financial services, as well as user protection. The latter provides safety and generates certainty by handling complaints and conflicts related to the use of said services.

If a user does not know about the characteristics, obligations and functioning of payments services, or has little information or knowledge on how to use them, they might be exposed to conflicts, which, at worse, might lead them to stop using such services. It is therefore necessary to have a regulatory framework that promotes user protection while being oriented towards strengthening and encouraging continuous access to and use of financial services.

It is important to take into account that the appearance of new payment services, participation of new PSP or frequent changes in the way services are delivered could affect construction of a legal framework oriented towards protecting users, particularly those who are just starting to use payment services.

A financial inclusion strategy based on DP should include some minimum user protection components: 1) a legal and institutional framework for protecting users and efficiently handling conflict resolution; 2) measures promoting transparency of information from PSP on prices and commissions related to each payment service; 3) strategies for increasing financial education among the population, and 4) arrangements and rules for ensuring the protection of users' personal data.

Thus, for central banks and other authorities responsible for ensuring the smooth functioning of DP, the presence of the aforementioned items (or at least some of them) can be of vital importance for promoting financial inclusion.

The three main requirements for a proper framework for protecting users of payment services in the region are: 1) transparency of information related to the functioning of payment services, 2) the soundness of laws and regulations focused on improving user protection, and 3) appropriate levels of financial education among the population. Other important aspects are oversight and supervision, adequate competition in the provision of payment services and having specialized institutions that support users of financial services, for instance, an ombudsman for financial consumers. It is evident that the priority of each of these requirements can vary across

countries in accordance with the current status of their legal and institutional framework, as well as the main problems identified by the authorities, industry and other players involved, and the effectiveness of actions that promote financial inclusion through electronic retail payments systems. The authorities should therefore either pay more attention to the components of DP that, as part of a financial inclusion strategy, require a sound consumer protection framework, or harmonize the development of DP taking end-users more into account.

Market Competition

Economic theory indicates that an environment of free competition with appropriate regulation favors the reduction of prices (allocative efficiency), increases efficiency among providers (productive efficiency), fosters innovation in markets (dynamic efficiency), and, among other possible effects, guarantees better quality in the services offered.

In digital retail payment systems, economies of scale and scope, along with network externalities, can generate less than optimal conditions for competition.[14] Said factors can lead to providers or payment platforms and systems gaining market power. For instance, in any structure it is best for society to have just one supplier of a service or set of payments services (natural monopoly), as in the case of a single ACH.

The competitive conditions faced by PSP, systems and platforms in providing payment systems directly influence end-users' access to them, and therefore financial inclusion. Thus, it is of utmost importance to have an environment that favors equal conditions and fair competition.

In the new landscape for DP in Latin America and the Caribbean, services and providers increasingly appear and con tribute to financial inclusion, such as bank agents or e-money systems. Given this new scenario, the need to establish and safeguard competitive conditions that take such changes into account without compromising levels of safety and efficiency in DP is unquestionable.

In this regard, central banks of the region consider very influential in achieving an appropriate competitive environment: 1)preserving equal conditions of access to the different systems and platforms, 2) having a transparent pricing policy, and3) eliminating exclusivity agreements for PSP or the systems themselves, and inappropriate clauses in contracts forming part of product or payment service design. It is important to mention that moving forward with different financial inclusion

[14] Given the nature of payment systems (a market with two demands: payment platforms and payment services), they are generally modelled in the literature as two-sided markets (Rochet and Tirole, 2003, 2004; Armstrong, 2006; Evans, 2002; Guthrie and Wright, 2007; Economides, 2008). Being the vehicles for transferring value, payment services use a specific platform for making said transfer between users. This platform is key to the behavior of these markets and a defining factor for analysing them through the network theory given that it fosters externalities on both sides of demand. The presence of economies of scale (Kemppainen, 2003) and economies of scope (Rochet and Tirole, 2003) are the externalities on the supply side of payment systems (e.g., by establishing standards). The main consequence of these externalities is the possible merging of these providers. In this context, it can be seen how in this type of markets there is an interconnection between competition and cooperation, which produces the need for a third agent that establishes appropriate regulation, i.e., that allows system providers to use externalities without detriment to a competitive market. Thus, the interconnection of demands (system and service providers) becomes significant because proper regulation in payment systems can lead to a more competitive market.

actions may require analyzing aspects related to conditions of competition in the payments market.

In addition to the competitive environment that must be guaranteed for DP, it is necessary to promote access to and usage of them. In this regard, the region's countries confirm that the following are important dimensions for access and usage of payment services: 1) geographic coverage of PSP, 2) the supply and variety of payment products and services, and 3) their ease of use.

The majority of countries in the region evidence that commercial banks have an important role to play in achieving access in rural and poor zones, as well as facilitating the use of payment services. Microfinance institutions are important for providing a variety of payment products and services.

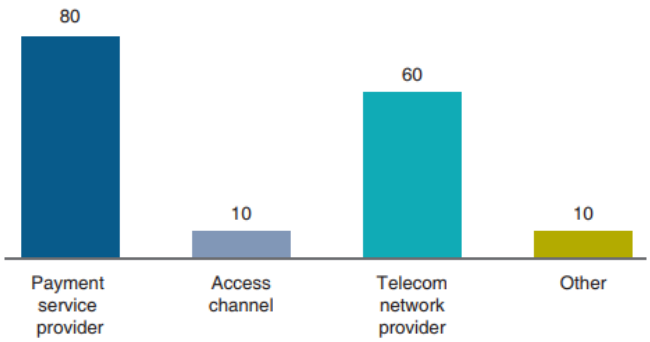
As for access channels, it can be seen how the use of the agent banking model is very significant in those three dimensions of access and usage in countries of the region, while POS networks contribute slightly to geographic coverage and the supply of new products. It is worth pointing out that the agent banking model is also important to support other access channels (e.g., mobile telephony) for fund deposit and withdrawal operations, thereby increasing its relevance in inclusion strategies.

Role of new Payment Service Providers (PSP)

Throughout this study it has been found that new PSP often bring with them new questions for the authorities concerning the impact they might have on the safety and efficiency of electronic payment systems and services. In this regard, telecommunications companies (telcos) and electronic money providers (EMP) provide payment services focused on the unbanked population.

FIGURE 13

INVOLVEMENT AND ROLE OF TELECOMMUNICATIONS COMPANIES IN ERPS
(percentage of countries where Telcos are involved in payment services)



Source: Author's elaboration based on The Role of Payment Systems and Services in Financial Inclusion in Latin America and the Caribbean survey information.

Telecommunications companies have recently adopted the figure of PSP getting a closer relationship with end users, even managing their funds without holding the position of financial intermediary or actually performing any investment operations

(see Figure 13).[15] Moreover, telcos and EMP have entered niches generally neglected by traditional PSP (e.g., banks), mainly as a result of their comparative advantage (e.g., coverage or geographic reach).

The direct involvement of nonfinancial PSP in providing payment services poses considerable challenges for the regulation and oversight of DP, and consequently, for central banks, which to address them must coordinate with other authorities and stakeholders linked to such companies in order to continue ensuring the safety and efficiency of payment services and proper protection for users and their funds.

In the majority of cases a procedure for the authorization and operation of telcos and PSP is neither planned nor pending legislation. Moreover, in cases where it is planned, it is the responsibility of the telecommunications authority, while central banks and financial supervisory bodies have a less important role, reinforcing the need for greater interinstitutional cooperation in order to ensure these firms fulfill their function inside the DP.

Meanwhile, granting operating licenses for EMP is a task mainly assigned to central banks and financial supervisory bodies. The criteria for said authorizations mainly concern security, operation and technology.

Although the regulatory and oversight framework for telcos operating as PSP is very complex, in some cases there are no dispositions for preserving the efficiency and safety of their operation. As for e-money systems (ems) in the region, there is a better defined regulatory environment given that central banks and financial supervisory bodies are very involved in regulating, authorizing and overseeing electronic money issuing firms. Moreover, during the authorization process the authorities assess issues related to the operation of such firms.

However, it is important to point out that traditional PSP have still not incorporated the needs of the people outside the system into their financial products, which has led to the emergence of new players in DP. Thus, in this new environment it will be desirable for the authorities to acquire institutional capacities al- lowing them to ensure proper growth of this new niche in DP, which, as has been seen in this paper, influences the promotion of access to and use of financial services.

4. Central banks potential actions to enable DP as gateway for FI

In this paper, it has been shown how a large number of Latin American and Caribbean countries have defined financial inclusion strategies where DP play a dominant role. Under this framework, central banks participate in bodies or interdisciplinary commissions established through high-level legal standards (known as financial inclusion strategies) that are aimed at defining and implementing actions oriented towards the population having access to and making intensive use of quality financial services. Such participation is of crucial importance given that central banks

[15] The natural role for telecommunications companies in providing different communication services (fiber optic cable, mobile telephony, etcetera) is essential for the functioning of systems, platforms, access channels and payment services in general.

are generally responsible for guaranteeing the efficient and safe operation of retail payment systems and services.

This paper confirms that although there is a high level of homogeneity between the different payment systems –such as for instance in real time gross settlement systems (or RTGS) as a result of applying international principles and standards–, there is a large degree of diversity in the development, regulation and interoperability of most other systems, platforms and services. Nevertheless, central banks coincide on pointing at the importance of certain electronic payment systems and access channels in financial inclusion. In this regard, they also mention the role of microfinance firms and even telecommunications companies (in e-money, for instance) in achieving greater scope for facilitating access in remote areas or those neglected by the traditional financial system.

Most central banks also agree that financial inclusion strategies should be mainly oriented towards facilitating people's access to bank or transaction accounts (including e-money accounts). This represents the first step in the effective use of DP such as e-payments, debit cards, among others.

In addition, given the diversity of approaches and strategies, the authorities and most important players can benefit from adopting a strategy within an environment of dialogue and cooperation. The latter implies, for instance, making efforts so EMP and telcos develop in close coordination with the authorities responsible for their authorization, regulation, operation and oversight, as well as with the industry. In sum, interinstitutional bodies and forums should be established as a vehicle for co-ordinating and implementing new measures that allow DP to drive financial inclusion. The aforementioned will constitute an extremely important asset going forward.

It is important to highlight that efforts for promoting financial inclusion have taken place in the absence of rules or guidelines for the effective participation of DP in financial inclusion, a gap that the framework of reference recently proposed by the Committee on Payments and Market Infrastructures (CPMI) of the Bank for International Settlements (BIS) and the World Bank seeks to fill through guiding principles and key actions to advance access to and promote the use of payment services adapted to the needs of the population.[16]

Said framework of reference can serve as a basis for the central bank and other authorities, and important players in this field. To achieve this, it will be essential to follow the referred guidelines in order to leverage available resources and efforts already made, as well as, very importantly, to address the real needs of the population. Moreover, it will be important to share criteria and experiences inside the region, defining concepts and establishing common conceptual frameworks for the development of electronic payments.

This paper reflects an effort to measure and approach the interplay of digital retail payment services and systems with financial inclusion, and has benefited from the CPMI-WB PAFI framework. One key conclusion of the report is that in addition to actions central banks have adopted for reducing the cost of transactions between

[16] In April 2016, the CPMI-WB Task Force on Payment Aspects for Financial Inclusion (PAFI framework) published a report containing a working framework proposing actions and principles for ensuring financial inclusion benefits from the operation and use of electronic payment systems and services

economic agents, for instance, by promoting digital retail payments and reducing the use of cash with transaction accounts, agent banking model and the so-called e-money and mobile payment solutions, significant room is available for improvement in areas such as interoperability and standardization.

For the above reasons, this paper represents a contribution to the type of orientation required for focusing the actions of central banks seeking to support financial inclusion strategies with payment systems and services.

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BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

The role of payment systems and services in financial inclusion – the Latin American and Caribbean perspective[1]

Raúl Morales Resendiz,
Center for Latin American Monetary Studies (CEMLA)

[1] This presentation was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

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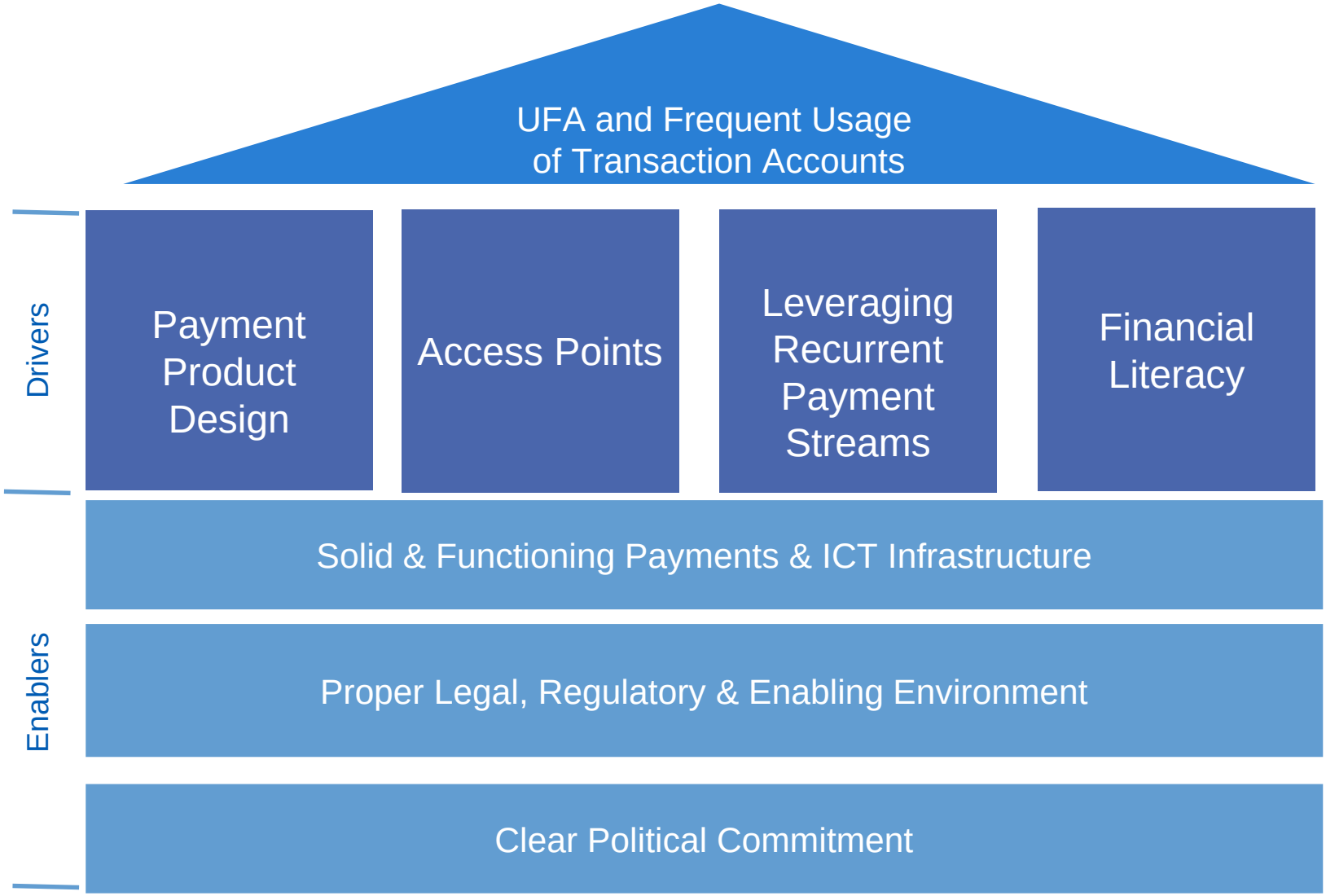
Payment Aspects of Financial Inclusion in Latin America and the Caribbean

IFC / Bank Al-Maghrib / CEMLA Satellite Seminar on Financial Inclusion"
Marrakech, 14 July 2017

PAFI in LAC



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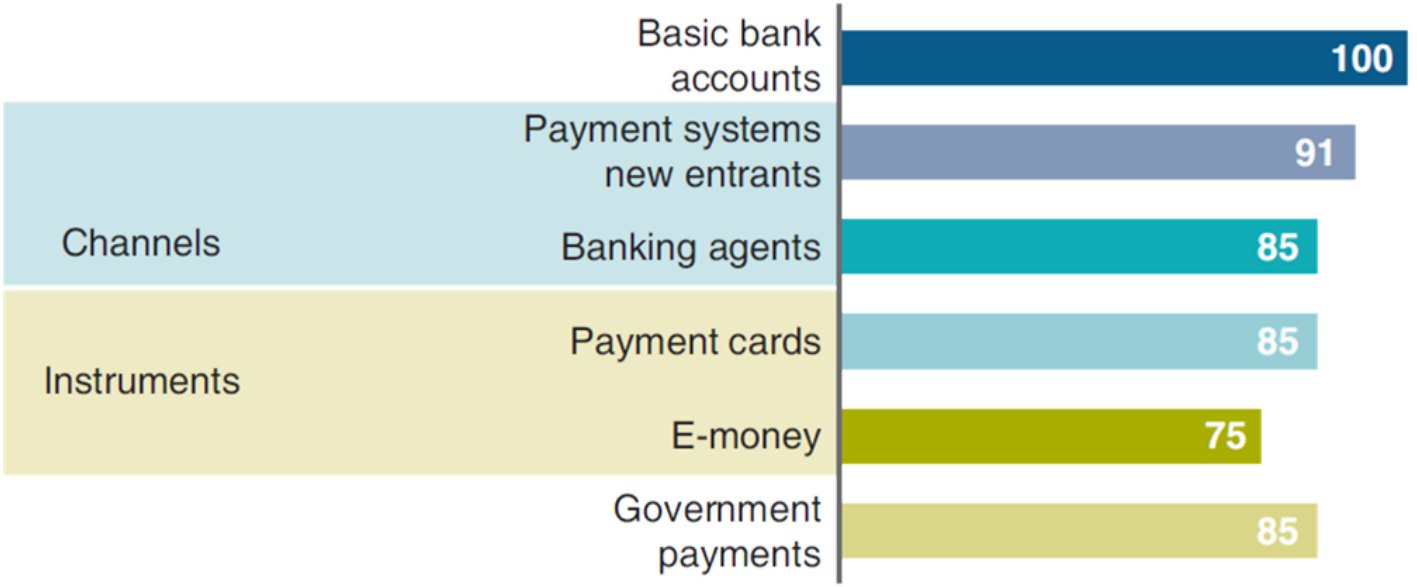
Key findings (I)

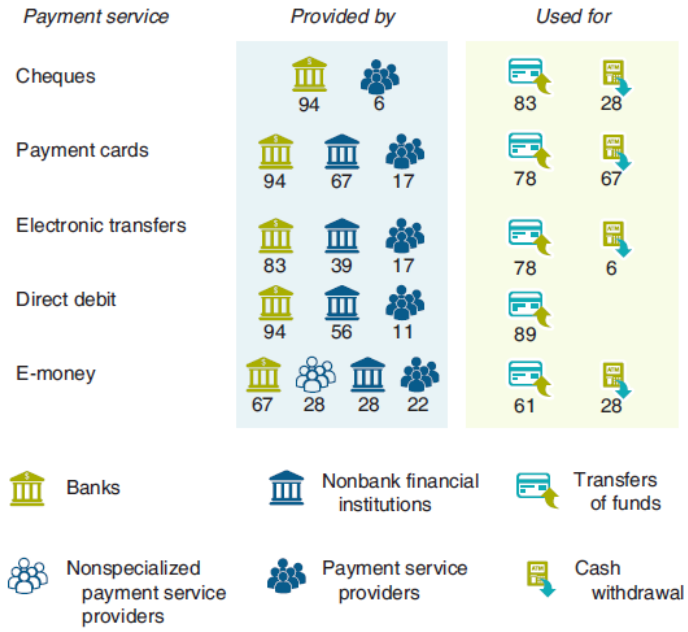
- Transaction accounts is the more relevant payment aspect for FI strategies.
- New PSP accessing PS (e.g. RTGS) is becoming more relevant
- E-money and mobile phone seems less relevant than agent banking, g-payments and payment cards for FI.

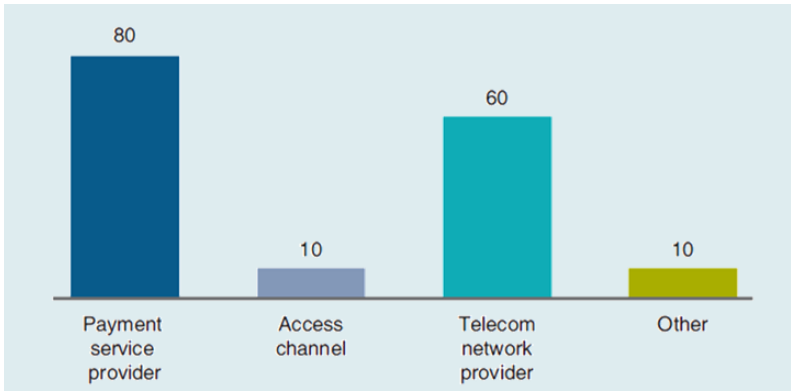
Relevance of payment aspects for financial inclusion



Source, CEMLA (2016).

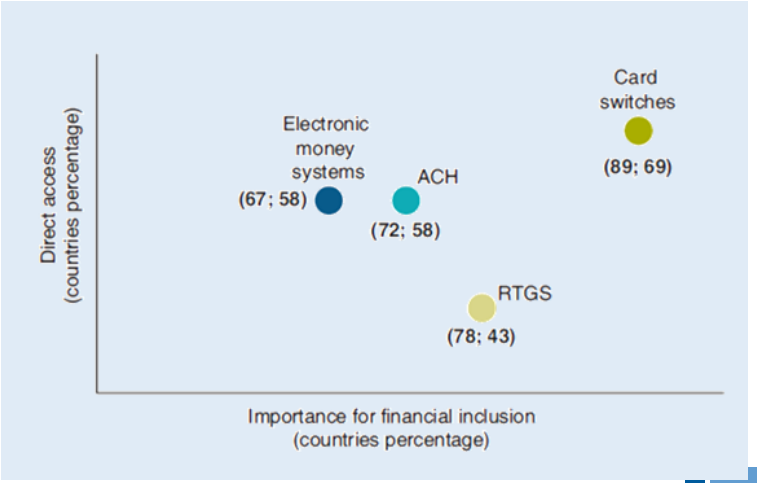
Key findings (II)





- Despite fairy tales, banks remain strong.
- New PSP gaining space in digital services.
- Telcos act as PSP in 56% of countries, but they meet less requirements.
- Platforms like card switches and RTGS are more relevant than e-money, but direct access is not equal, nor considered.

Payments ecosystem: different views



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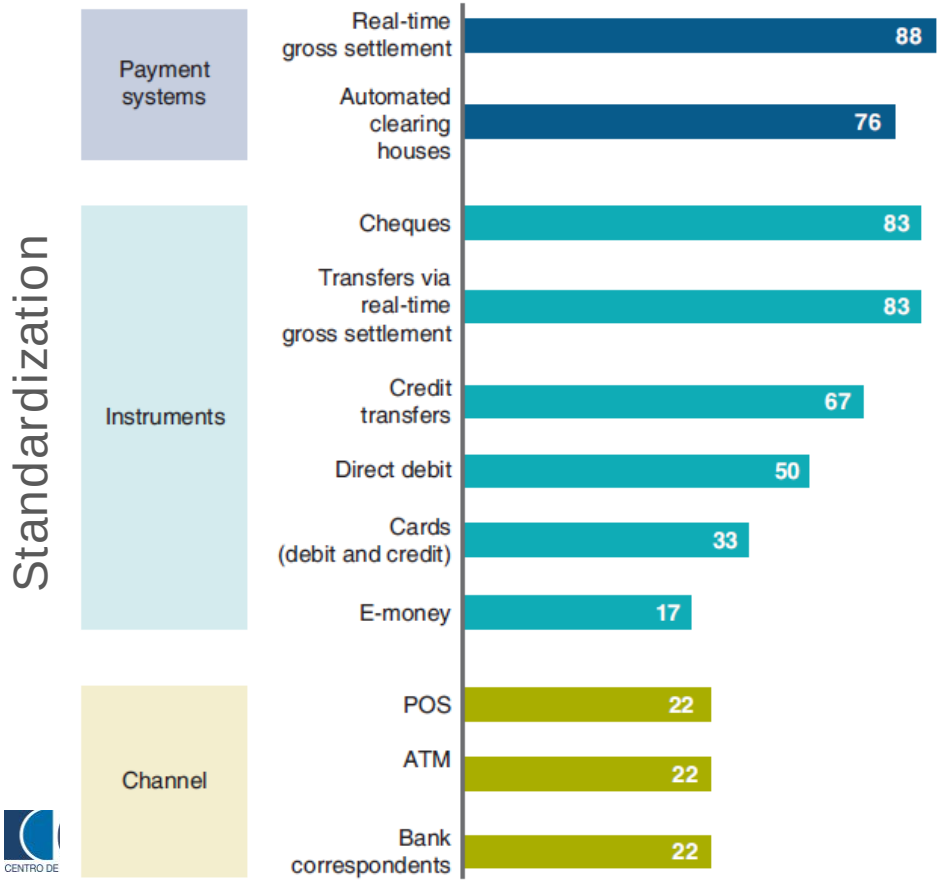
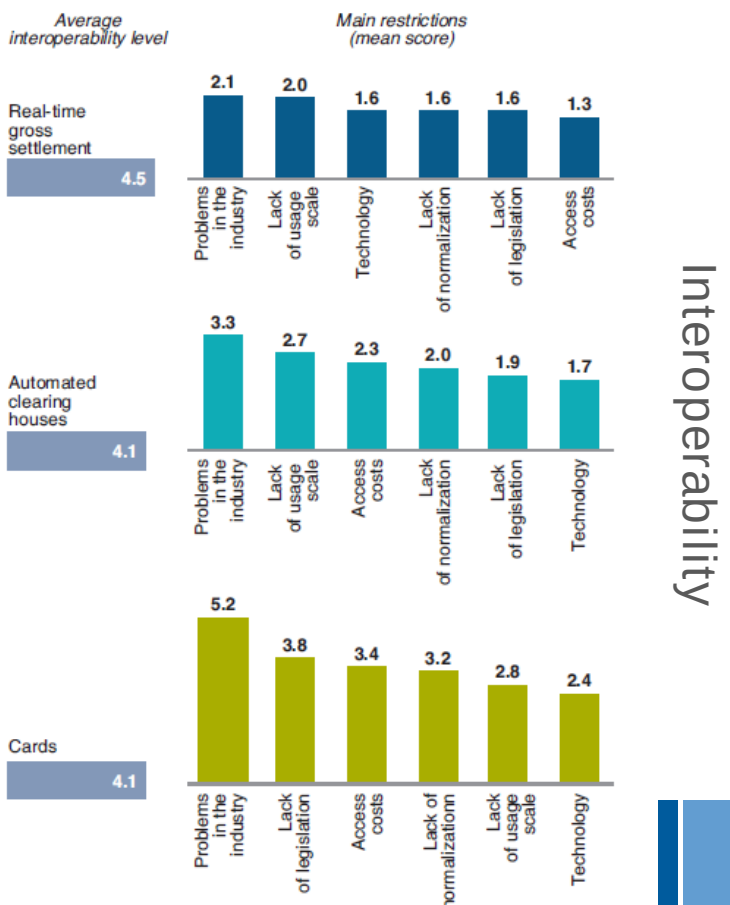
Interoperability and standardization

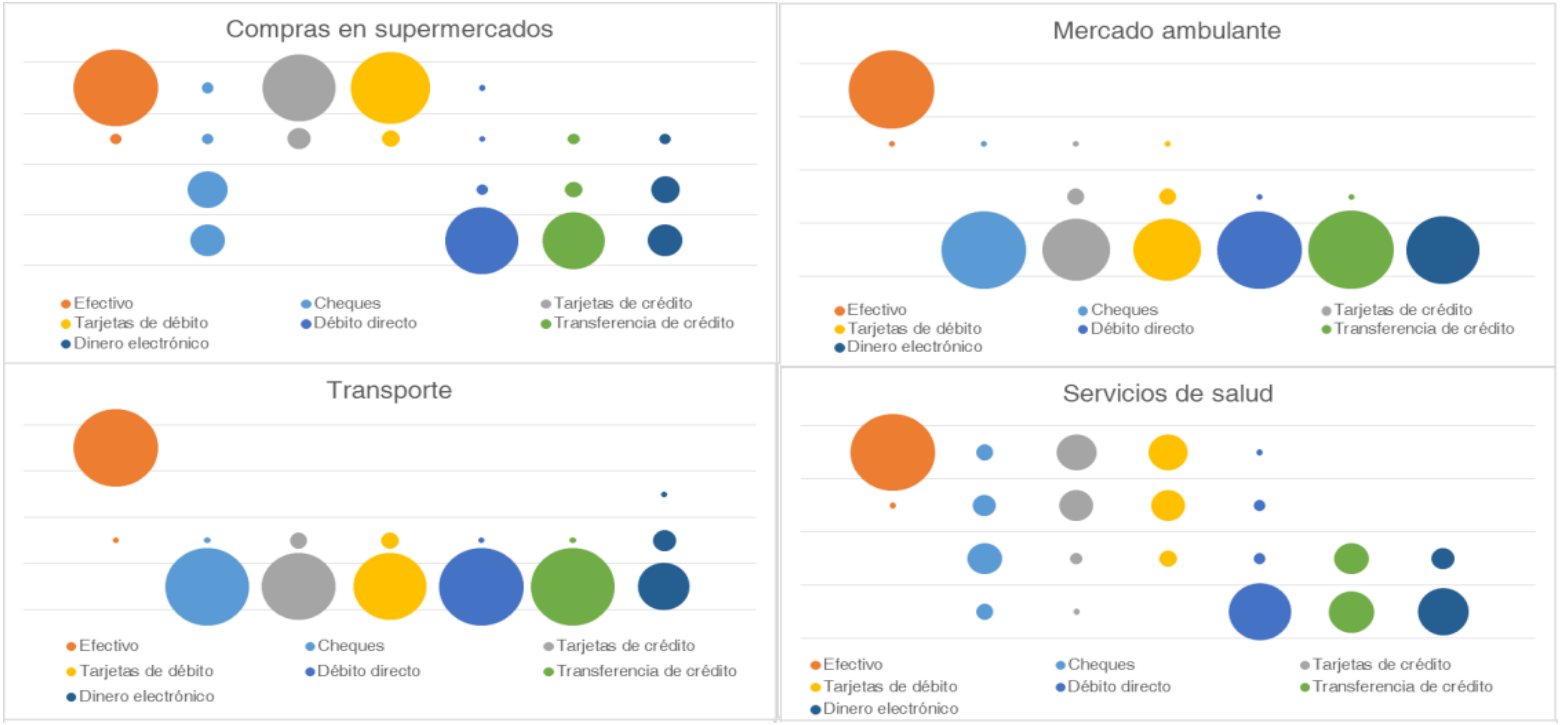
- More interoperable platforms: RTGS, followed by ACH, card switches and e-money systems. Market structure is the barrier to tackle.
- ECT and faster payments reported to be reasonably standardized, but cards (processing+physical infr.), agent banking and e-money lack of.





Access points & infrastructure

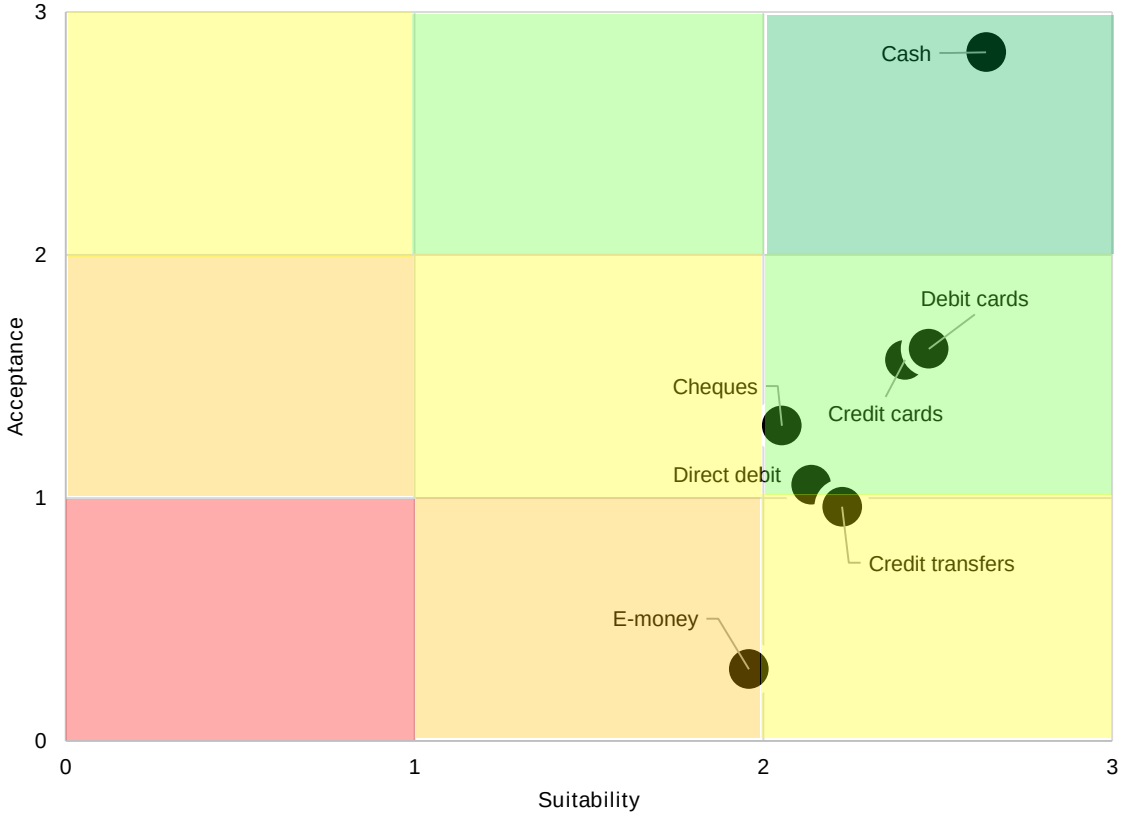
- Informality in the economy is critical so merchants cannot serves as access points.
- Accessible points face high fees or a fragmented pricing policy.
- G-payments and transportation need to be exploited.



Source, CEMLA (2016).

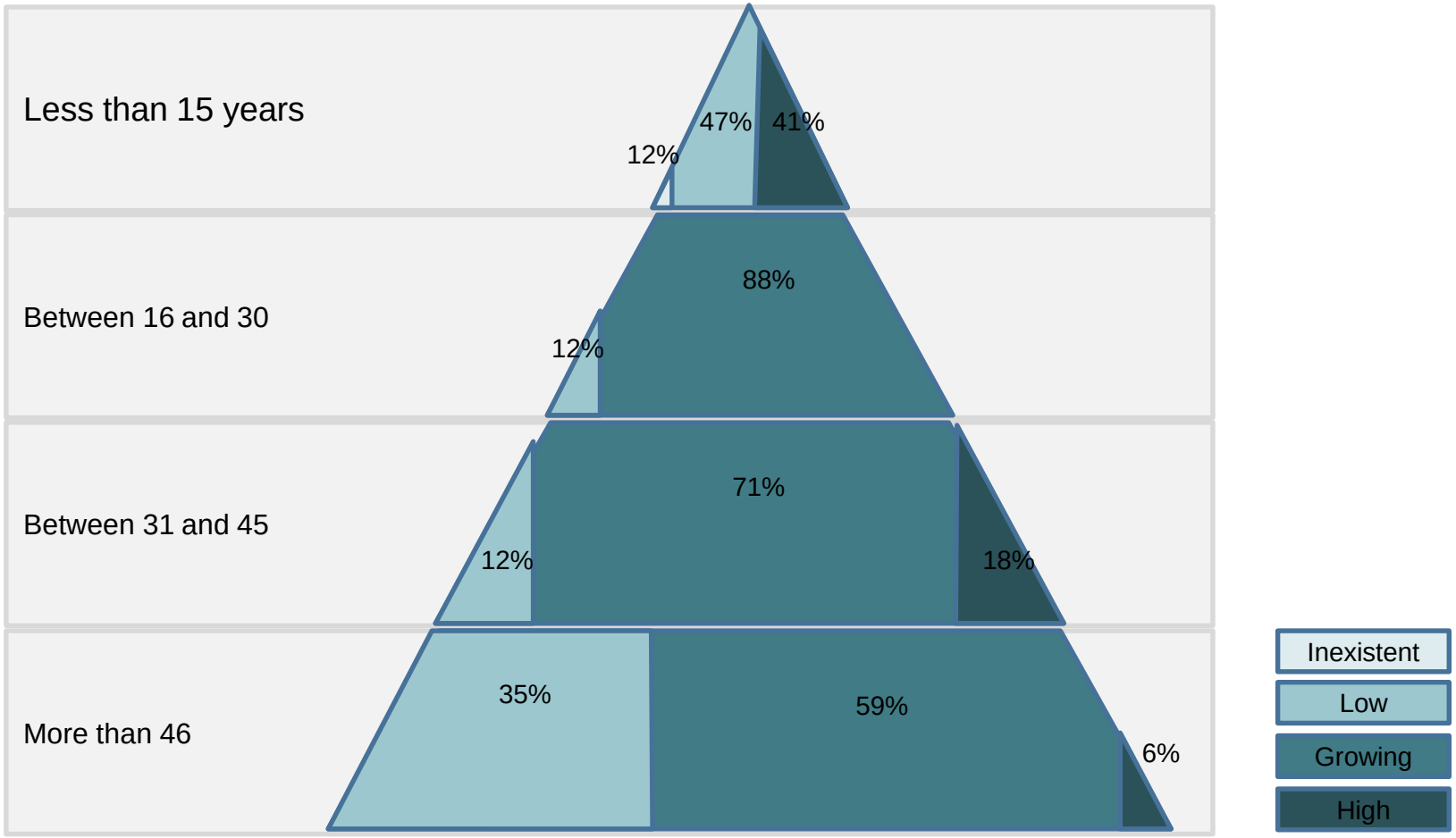
Payments product design

- Users perception is critical: convenience and friendliness.
- Frictionless & well-established products are the most accepted.
- Despite good suitability, digital payments remain low.
- The more contactless, the least accepted.



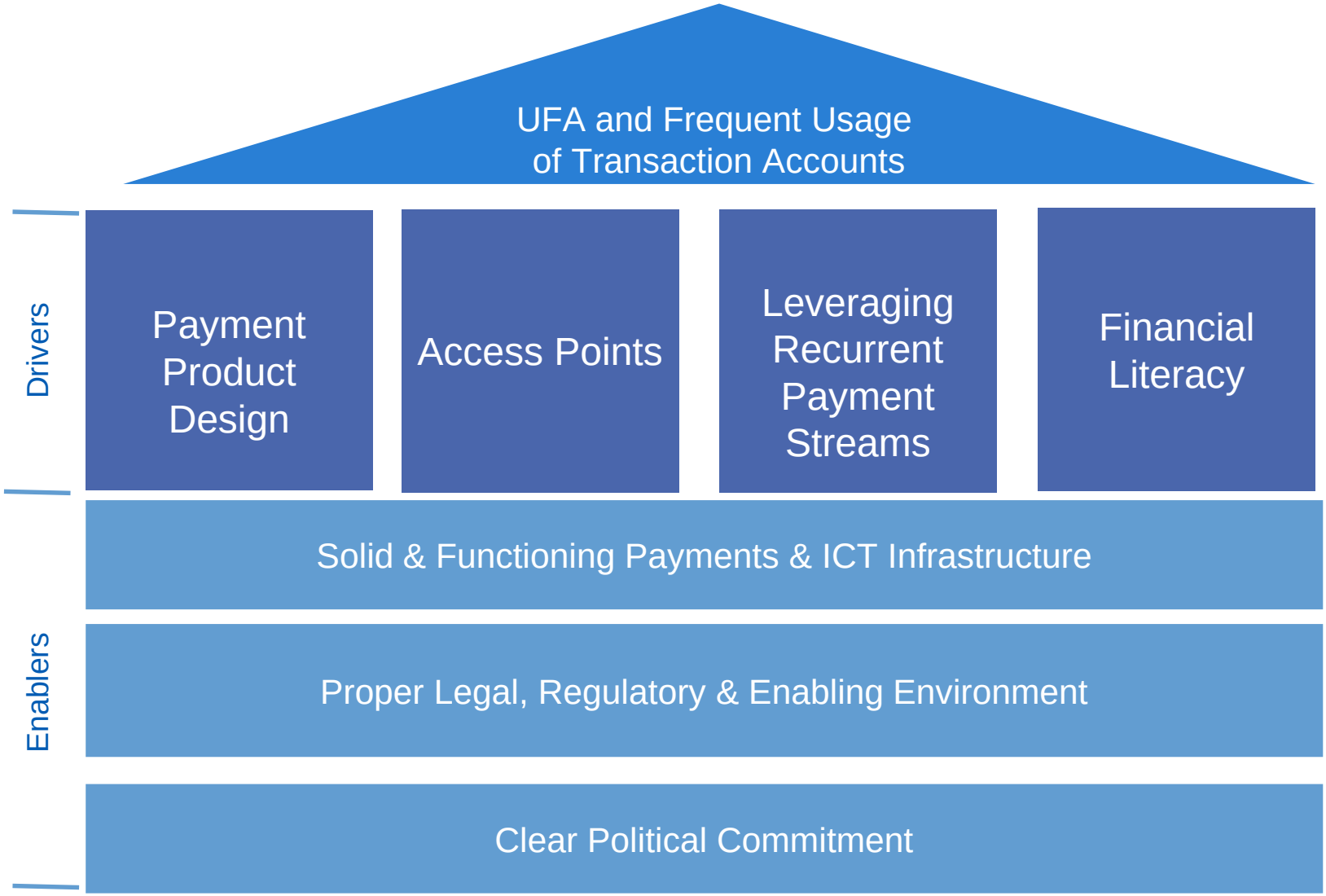
Source, CEMLA (2016).

Financial education



Source, CEMLA (2016).

PAFI in LAC



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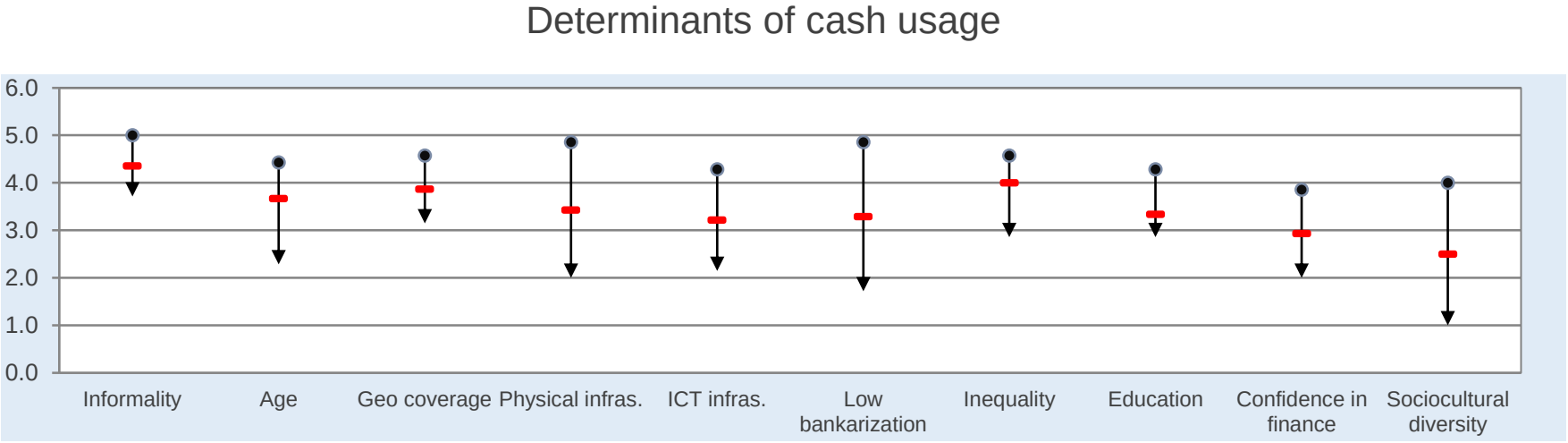
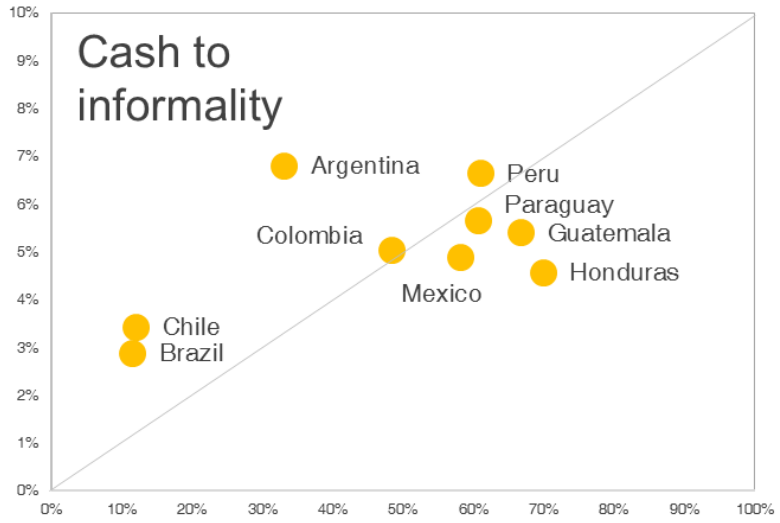
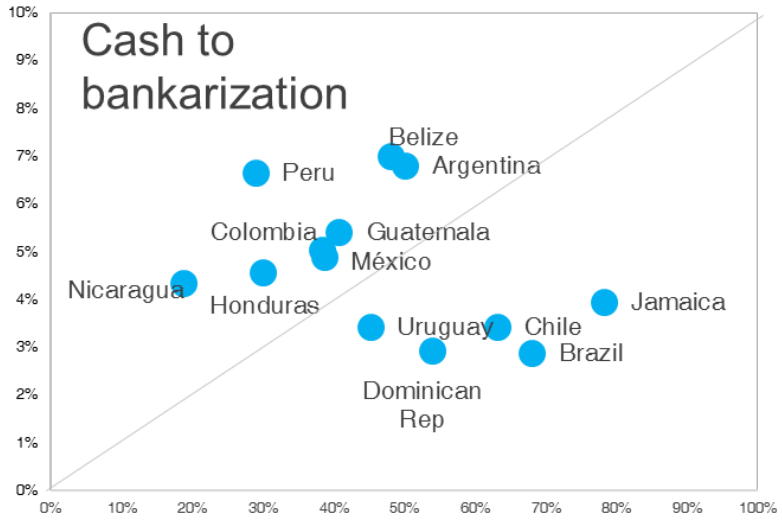
Further work: cash and digital payments in LAC

Why cash is still king in LAC?







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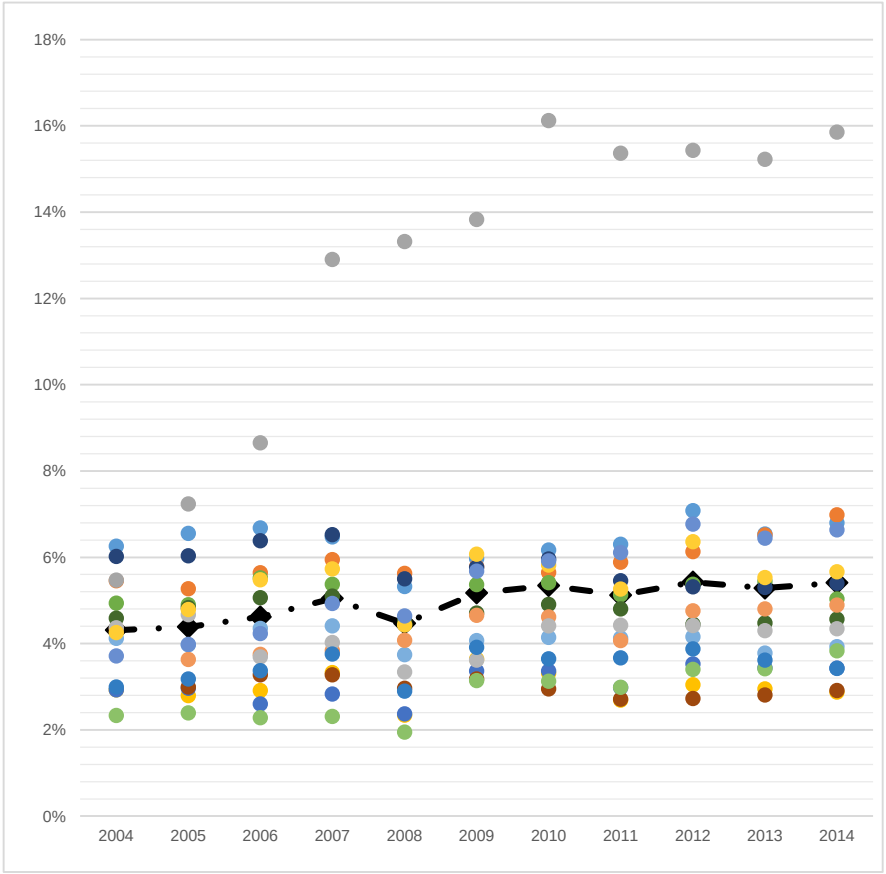
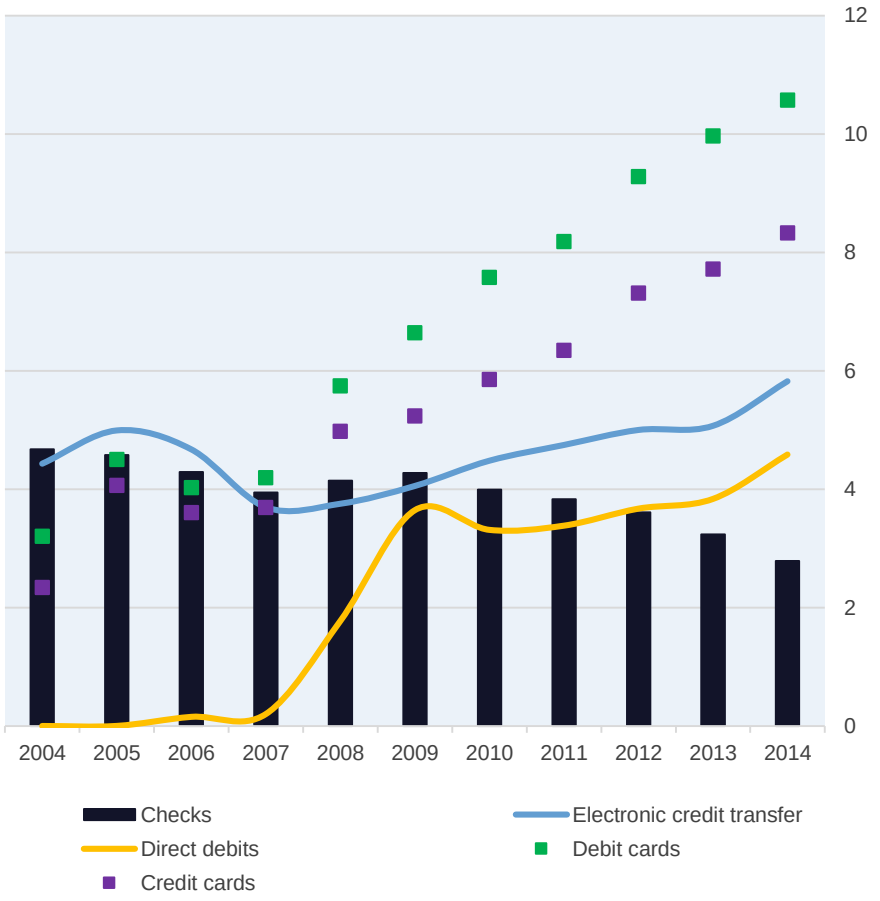
Source, CEMLA (2016).

Recent trends

M0/PIB



Noncash payments per capita



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Source, CEMLA (2016).

Discussing points

- Informality and inequality, low bankarization, and financial education (age gap) drive payment habits towards cash.
- E-payments display a low rate of acceptability for various daily transactions, while cash is acceptable anywhere and anytime.
- People appeal to hold cash in pocket for unexpected outlays.
- Innovation in ICT and physical infrastructure, (e.g. mobile phone and internet), are key disruptive factors in financial and payment services:
  - tackling access barriers and enhancing the value chain, but
  - posing regulatory and oversight challenges.
- Financial inclusion efforts w/focus in payments are gaining space in the region.
- Better harmonized data about payment habits would facilitate the work of central banks to analyze this phenomenon.

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BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*
Marrakech, Morocco, 14 July 2017

Adapting monetary policy to increasing financial inclusion[1]

James Yetman,
Bank for International Settlements

[1] This paper was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Adapting monetary policy to increasing financial inclusion

By James Yetman[1]

Abstract

This paper summarises the literature on how an increase in the level of financial inclusion might influence monetary policy choices, highlighting three main ways. First, the central bank may wish to place a higher weight on core inflation in place of headline inflation in its policy decisions. Second, interest rate tools are likely to become more effective vis-à-vis quantities (such as the money supply). Third, central banks may need to adjust their interest rate rule in order to ensure determinacy and policy optimality. Optimal policy is likely to require a greater focus on inflation stabilisation relative to output stabilisation the higher is the level of financial inclusion.

Keywords: financial inclusion; optimal monetary policy; determinacy

JEL classifications: E52, O23.

Contents

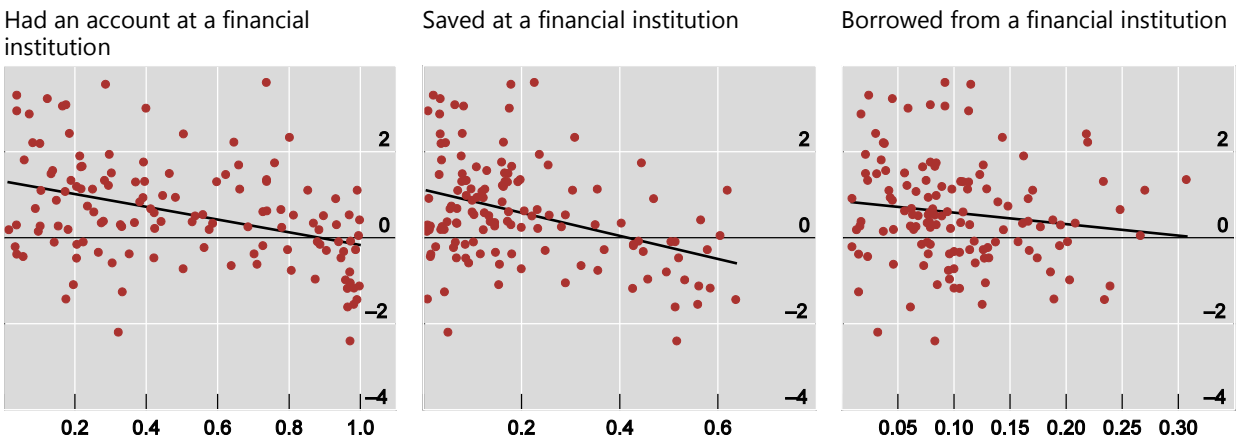
[1] James Yetman is Principal Economist at the Bank for International Settlements. E-mail: james.yetman@bis.org. The views expressed here are the responsibility of the author and are not necessarily shared by the Bank for International Settlements. This paper is based on a presentation given at the Bank Al-Maghrib – CEMLA – IFC Satellite Seminar on Financial Inclusion in Marrakesh, Morocco, 14 July 2017. The paper draws heavily on previously published work, especially Mehrotra and Yetman (2014, 2015). I thank, without implication, Aaron Mehrotra and Madhu Mohanty for helpful comments.

1. Introduction

A change in the level of financial inclusion influences the trade-offs faced by monetary policy makers. One key reason for this is because of the effect that financial inclusion has on consumer behaviour. Graph 1 below displays the relationship between the level of financial inclusion (based on three different measures) and the ratio of the volatility of consumption to the volatility of output for a broad cross section of countries, taken from Mehrotra and Yetman (2014). What is clear in the graph is the negative relationship between the variables: consumption volatility is lower, relative to output volatility, the higher is the level of financial inclusion. This is because financially included consumers are able to smooth their consumption in response to shocks more effectively than those that are financially excluded.

Ratio of consumption variance: output variance and financial inclusion, alternative measures

Graph 1



Note: The vertical axes show the ratio of consumption gap volatility to output gap volatility during 2000–12, in logarithms. The horizontal axes show the share of adults that had an account at a formal financial institution in 2011 (left panel), the share of adults who saved money (middle panel) or share of adults who borrowed money (right panel) at a formal financial institution during the preceding 12 months. Republic of Congo and Zambia, two outliers, are excluded.

Sources: IMF, *World Economic Outlook*; World Bank, *Global Financial Inclusion Database*. Taken from Mehrotra and Yetman (2014).

The ability included consumers to smooth consumption is important for central banks because monetary policy choices reflect a trade-off between different objectives, and changes in the behaviour of consumers generally influence the costs and benefits that society faces from policy decisions. In addition, central banks set policy interest rates that in turn are reflected in the costs of borrowing and the returns to saving in society, and the level of inclusion therefore affects the reach of those policy rates.

In this paper, we outline the different ways in which an increase in the level of financial inclusion influences monetary policy. Section 2 discusses the effect of financial inclusion on the choice of the price level to target. Section 3 discusses the link between inclusion and interest rate effectiveness. Section 4 summarises how the monetary policy rule could be affected: first, how it might need to change in order to ensure determinacy, and second how it should change in order for monetary policy to be optimal. Section 5 then concludes.

2. Financial inclusion and the choice of price level to target

One way in which a change in financial inclusion should be reflected in monetary policy is in terms of the choice of the price stability target. Central banks typically consider a range of different objectives when setting policy. New Keynesian frameworks, for example, are generally interpreted as indicating that the central bank should target the volatility of inflation and the volatility of the output gap (see, for example, Clarida, et al (1999)). More recently, more explicit attention has been paid to how indicators of risks to financial stability should also be included (see Borio (2006) and Gourio et al (2017)). One common element in nearly all frameworks is some measure of inflation, the volatility of which is interpreted as a measure of price stability. This is generally true whether the economy has an explicit inflation target or not.

The question is: which measure of inflation should serve this purpose for monetary policy? In advanced economies, for example, there has been considerable discussion over the years regarding whether the growth rate of the overall CPI index is the best measure, or whether the central bank should instead focus on some measure of "core" inflation, that excludes some of the more volatile (and perhaps mean-reverting) categories of goods from the assessment (eg Bodenstein et al (2008)). Categories of goods that are commonly excluded from core inflation in practice are food and energy.

Anand et al (2015) argue that focusing on core inflation could be an especially poor route to take for an economy that has a low level of financial inclusion. They model the economy as consisting of three sectors: one where prices are flexible (and are therefore likely to be volatile), another where prices are sticky (and relatively stable in response to shocks), and a third sector that is open to international trade. The flexible price sector can be thought of as including agriculture, and the sticky price sector manufacturing.

They suggest that financially excluded consumers differ from included ones in two important respects. First, the excluded consumers are likely to be disproportionately employed in the flexible-price sector. Second, excluded consumers are likely to disproportionately consume goods produced by the flexible-price sector: consumers from both the flexible and sticky price sectors consume a mixture of outputs from each sector, but there is a minimum subsistence level of flex-price sector output that all households must consume, which constitutes a larger share of the total basket for lower-earning, flex-sector employed, workers. These assumptions seem plausible, in light of the prevalence of agriculture and very small enterprises as sources of employment and in the composition of the consumption basket of consumers with low levels of income, who are also likely to be financially excluded (Allen et al (2012)).

In their model, Anand et al (2015) show that optimal monetary policy entails the central bank placing more weight on the behaviour of headline inflation the lower is the level of financial inclusion. In contrast, the higher is the level of financial inclusion, the greater is the weight that the central bank should place on just the relatively stable prices from the sticky price sector. At an intuitive level, this seems reasonable. Taking an extreme example, in an economy with very low levels of inclusion, volatile price goods are likely to constitute a very large share – perhaps even a majority – of the total consumption bundle for the average consumer. Focusing on core inflation in such an environment would imply placing a very low weight on prices of the greatest relevance for the majority of the population.

The take-away here is that, in an economy with a low level of financial inclusion, headline inflation is likely to be the most relevant for the conduct of monetary policy. But, as more consumers enter the financially included sectors in the economy, central banks may be able to improve welfare outcomes by focusing more on core inflation, which is buffeted less by short-term shocks.

3. Financial inclusion and interest rate effectiveness

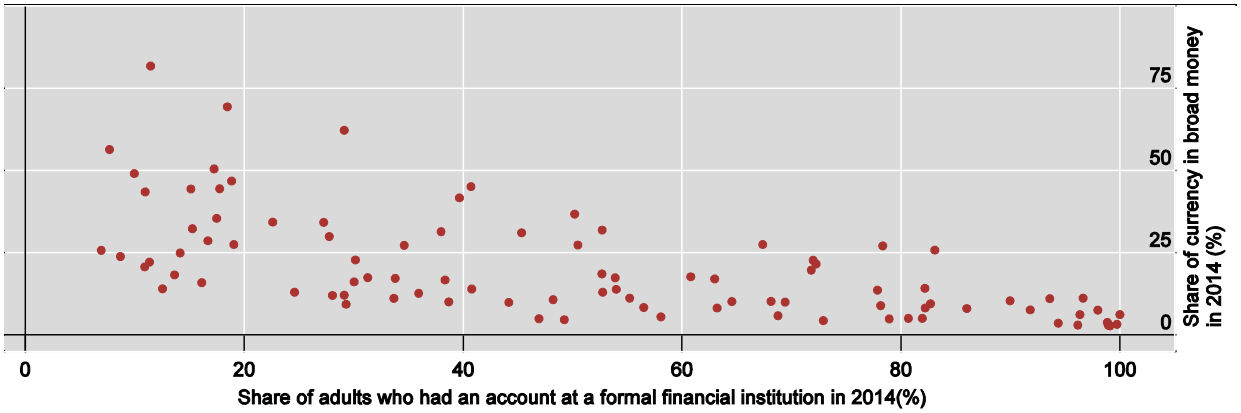
A second way in which the level of financial inclusion may influence monetary policy is in terms of the effectiveness of different policy tools. Loosely speaking, monetary policy tools can be thought of as either price-based (mainly interest rates of various types) or quantity-based (for example, the level of the money supply, or the quantity of credit) (Poole (1970)). Increased financial inclusion is likely to lead to an increase in the potency of interest rate rules at the expense of quantity-based rules, as alluded to in speeches by senior central bankers (see, for example, Khan (2011) and Tombini (2012)).

There are multiple channels by which interest rates may be expected to become more effective policy tools as financial inclusion increases. First, one dimension of financial inclusion is access to credit, the cost of which is an interest rate that is likely to be affected by movements in the policy rate. A decline in the policy rate reduces the cost of credit and so stimulates demand via increased borrowing. In addition, financial inclusion provides a means for business owners to fund investments out of sources other than retained earnings, so changes in interest rates may become a more potent driver of investment, which is itself an important component of aggregate demand.

Second, financially included households may be expected to deposit at least some of their income into interest-bearing bank accounts, again with the interest rate influenced by the policy rate. One simple way to illustrate the effectiveness of this is to look at the share of broad money – that is, the stock of wealth that can be readily used for transacting – that is in the form of currency, as a function of financial inclusion. Graph 2 illustrates this relationship for a broad set of countries, based on data for 2014. There is a clear negative correlation between the two series: high levels of financial inclusion and relatively low levels of currency in circulation seem to go together in this cross-sectional data. Where a larger share of wealth held in a form that is accessible for transacting is affected policy rates, those policy rates are likely to have more leverage in influencing the economy.

Financial inclusion and the money stock

Account ownership and share of currency in broad money[1] Graph 2



[1] Share of currency in broad money is defined as $Currency\ in\ circulation/Broad\ money$.

Sources: IMF, *International Financial Statistics*; World Bank, *Global Financial Inclusion Database*; BIS calculations.

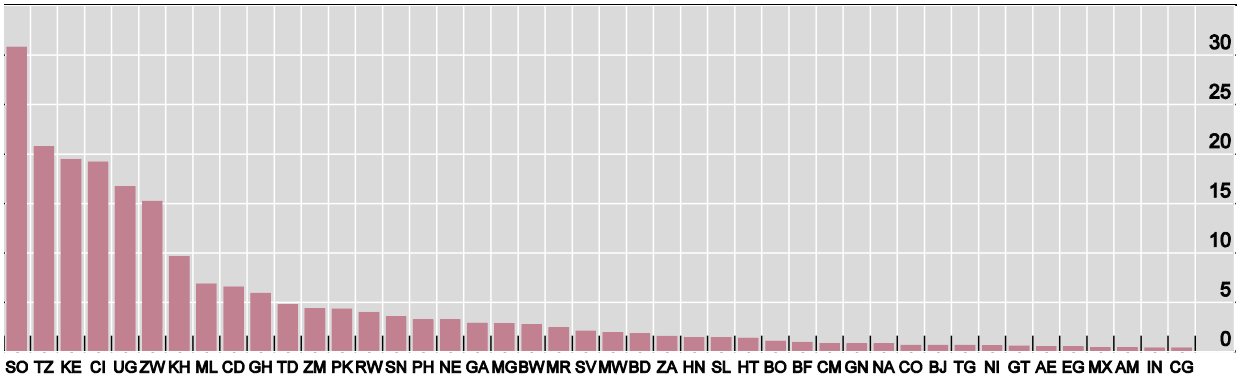
In principle, it is possible that increased inclusion could lead to a reduction in interest rate (and more broadly central bank) effectiveness if that increase in financial access occurred outside of the parts of the financial system that the central bank has direct influence. By this, I mean various forms of mobile money, especially if interest is not paid on the associated deposits, and even alt-currencies like Bitcoin. To date, however, the size of these currencies has been small relative to the total volume of transactions in the economy. For example, M-PESA is commonly used in Kenya in place of conventional money, but total use constituted only 6.6% of total transactions value in 2014.[2]

A related concern is that a large number of households might use alternative currencies only, and so move beyond the influence of monetary policy tools. Again, the evidence is encouraging (see Graph 3). Even in Kenya, around 20% of adults report only having a mobile money account, and Kenya is in the upper tail of the distribution across a broad sample of emerging and developing countries, with the third highest level. Even then, consumption of excluded consumers is likely to be very sensitive to their income. As long as monetary policy has an effect on excluded consumers' income, this indirect channel will help to support monetary policy effectiveness, as we will discuss in the next section.

[2] http://www.cgap.org/blog/10-myths-about-m-pesa-2014-update

Mobile money service

Share of adults having mobile money account only, in per cent — Graph 3



SO=Somalia; TZ=Tanzania; KE=Kenya; CI=Cote d'Ivoire; UG=Uganda; ZW=Zimbabwe; KH=Cambodia; ML=Mali; CD= Democratic Republic of Congo; GH=Ghana; TD=Chad; ZM=Zambia; PK=Pakistan; RW=Rwanda; SN=Senegal; PH=Philippines; NE=Niger; GA=Gabon; MG=Madagascar; BW=Botswana; MR=Mauritania; SV=El Salvador; MW=Malawi; BD=Bangladesh; ZA=South Africa; HN=Honduras; SL=Seirra Leone; HT=Taiti; BO=Bolivia; BF=Burkina Faso; CM=Cameroon; GN=Guinea; NA=Namibia; CO=Colombia; BJ=Benin; TG=Togo; NI=Nicaragua; GT=Guatemala; AE=United Arab Emirates; EG=Egypt; MX=Mexico; AM=Armenia; IN=India; CG=Republic of Congo.

Sources: World Bank, *Global Financial Inclusion Database*; BIS calculations.

4. Financial inclusion and the monetary policy rule

Finally, an increase in the level of financial inclusion is likely to influence the reaction function, or monetary policy rule, that the central bank wishes to pursue. There are two complementary ways in which this questions has been addressed in the academic literature: i) that the monetary policy rule needs to change in order to ensure determinacy; and ii) that the monetary policy rule should change in order to ensure optimality.[3] We address each of these in turn.

4.1 How the monetary policy rule might need to change to ensure determinacy

One important criterion for an effective monetary policy rule is that it does not create instability in the economy. Clear examples of unstable monetary policy rules in the real world are rare, perhaps with the exception of hyperinflations. This could be because central banks are able to observe the consequences of their policy choices in a timely enough manner that they can adjust their course of action if the outcomes are undesirable.

[3] Note also that, since monetary policy works primarily by incentivising consumers to move their consumption inter-temporally, and excluded consumers are less affected by this mechanism, a higher fraction of financially excluded consumers may lead to monetary policy being less desirable relative to fiscal policy.

Within a modelling environment, central banks are often assumed to follow a particular monetary policy rule, regardless of the shocks that the economy faces. In such an environment, a minimal requirement for a desirable rule is that the model remains deterministic, so that the economy moves back towards the equilibrium after being subjected to a shock. Within a very simple New Keynesian model where prices are set in part based on expected future inflation, a common requirement for determinism is that the monetary policy rule satisfies what has become known as the "Taylor Principle", which is the idea that nominal policy rates rise at least one-for-one with inflation so that real interest rates are increasing in the inflation rate (Taylor (1999)). In the original formulation of the Taylor Rule, for example, the coefficient on inflation was around 1.5. Since real interest rates are a key driver of aggregate demand, the Taylor Principle ensures that the policy response to overheating economy helps to slow aggregate demand, and also that expansionary policy in response to a slowdown is sufficient to stimulate demand.

In most such models, the (sometimes implicit) assumption is that all agents and firms are financially included. A number of authors have addressed how the requirement for determinacy varies with the level of financial inclusion. Is the required response stronger, or weaker?

A common framework used to address this issue is Galí et al (2004). In this model, the economy consists of some conventional agents, who have access to financial markets, and others (labelled "rule-of-thumb" consumers), who neither save nor borrow but instead simply consume their full labour income.[4] The authors solve for the range of parameter values for a Taylor-type rule that yield dynamic stability and uniqueness, and show that this depends critically on the share of households with access to financial markets. If the policy rule responds to contemporaneous values of output and inflation, then a greater response to inflation is required in order to generate a unique solution the smaller is the portion of financially included households. And if the policy rule is forward looking, a sufficiently large share of hand-to-mouth consumers may result in no locally unique equilibrium at all.

Many subsequent papers build on Galí et al (2004), and demonstrate directions along which these results are sensitive. One key reason why monetary policy rules may become destabilising as the level of financial inclusion falls is that excluded consumers are not directly affected by interest rates, rendering monetary policy less effective (as discussed in Section 3 above). However, Di Bartolomeo and Rossi (2007) argue that a low level of financial inclusion does not reduce monetary policy effectiveness by as much as one might expect since consumption demand is more income-sensitive for excluded households than included households. Monetary policy affects the consumption of included households, and hence the incomes of excluded households, creating an indirect policy channel that increases policy effectiveness. Such an effect is at work in Bilbiie (2008). In his model, if the portion of financially excluded households is sufficiently high then the "Taylor principle" may even become inverted. In such a case, optimal policy entails a passive monetary policy rule.

Other papers also focus on the implications of financially excluded households for model stability. Ascari et al (2011) and Colciago (2011) show that the presence of

[4] In reality, financially excluded consumers may use informal credit markets in place of banks, which would tend to lessen the difference that the level of financial inclusion has on macroeconomic relationships, and hence monetary policy.

sticky wages helps to restore the Taylor principle as a key factor of determinacy, instead of requiring either a stronger monetary response to inflation (Galí et al, 2004) or a weaker one (Bilbiie, 2008). Finally, Motta and Tirelli (2010) show that Bilbiie's inverted Taylor principle argument returns if habit persistence is included in the utility function, even in the presence of sticky wages. Taken as a whole, this literature demonstrates that there's no simple answer to the question posed earlier: "is the required response stronger, or weaker?" Instead, it depends on a combination of factors.

4.2 How the monetary policy rule should change to ensure optimality

Another way to think about how the monetary policy rule should change with a change in the level of financial inclusion is to focus on optimality. The approach we discuss here is to do welfare analysis within a theoretical model and see how the monetary policy response to variables should change with the level of financial inclusion in order for welfare to be maximised. The discussion below is based on Mehrotra and Yetman (2014); see, also, Bilbiie (2008) for related arguments.

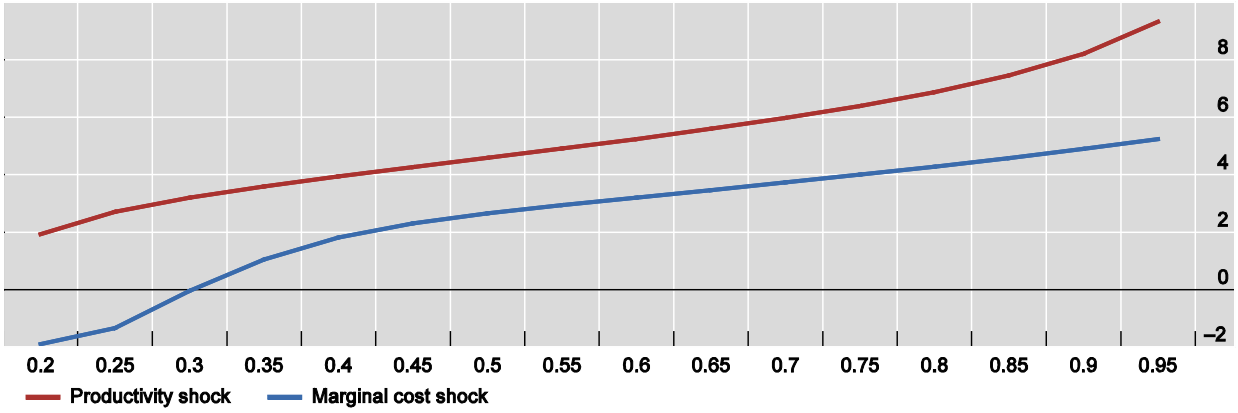
Mehrotra and Yetman (2014) build on the Galí et al (2004) model, in which financial excluded consumers are assumed to simply consume all their income each period, while included consumers have access to financial markets. From a policy perspective, the key difference between the two is that included consumers can smooth their consumption in response to shocks that hit the economy, while excluded consumers cannot. The central bank sets interest rates to maximise the weighted sum of the welfare enjoyed by both included and excluded consumers, with the weight on each depending on their respective share in the population as a whole.

The authors examine the effects of two different kinds of shocks to the economy: a (real) productivity shock, and a (nominal) price shock. Based on a calibration of their model, they are able to show that, in response to either shock, optimal monetary policy implies that there should be a positive relationship between the level of financial inclusion and the ratio of output volatility to inflation volatility, as illustrated in Graph 4 below.

A natural question to ask is: what is driving this relationship? The authors address this by comparing what the relationship between financial inclusion and the same ratio would look like if the central bank followed a simple monetary policy rule instead. The answer, illustrated in Graph 5, is that the lines would be slightly downward sloped instead. So the reason for the upward-sloped lines in Graph 4 is the response of monetary policy.

Optimal ratio of output variance: inflation variance

Graph 4



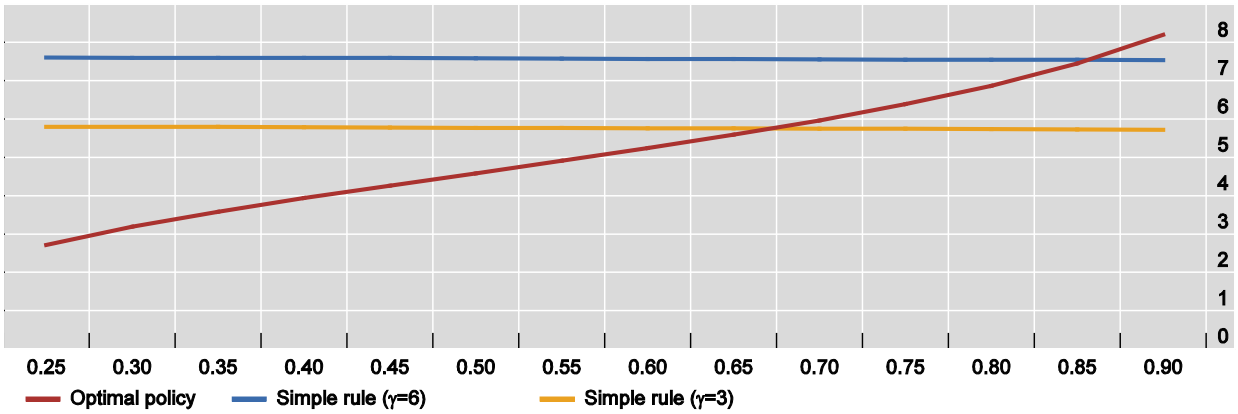
Note: The vertical axis displays the ratio of output volatility to inflation volatility, in logarithms. The horizontal axis displays the share of consumers who are financially included (1-λ).

Source: Mehrotra and Yetman (2014).

Ratio of output variance: inflation variance

Optimal policy vs simple rule

Graph 5



Note: The vertical axis displays the ratio of output volatility to inflation volatility, in logarithms. The horizontal axis displays the share of consumers who are financially included (1-λ).

Source: Mehrotra and Yetman (2014).

There are two complementary reasons why we might expect optimal monetary policy to vary as the share of consumers who are financially included increases. First, this change influences the structure of the economy. More included consumers implies larger changes in investment (which is effectively what adjusts when included consumers adjust their savings in response to shocks), and hence output.

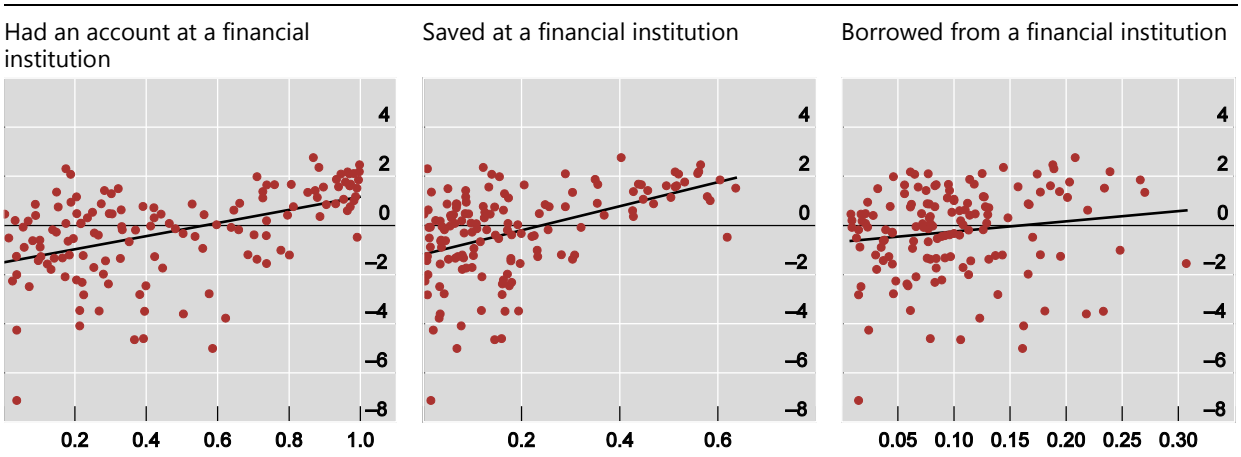
Second, welfare in these models can be thought of as depending on the volatility of both consumption and inflation. For excluded consumers, consumption volatility and output volatility co-move strongly, so reducing consumption volatility requires reducing output volatility. For included consumers, the link between the two is much

weaker, since included consumers can use their access to financial markets to adjust consumption levels relative to income levels. But for all consumers, inflation volatility is costly. Clearly, in such a model, the greater is the share of included consumers, who are able to stabilise their consumption even if output is volatile, the less need there is for the central bank to stabilise output to achieve optimal outcomes. Thus the central bank will adjust its policy rule to increase the stability of inflation, even if it comes at the expense of somewhat higher output volatility.

Mehrotra and Yetman (2014) check to see if the main prediction of their model is reflected in real world data. They consider all economies where annual data on consumption and real GDP are available from 2000 onwards and for which data on financial inclusion are available in the World Bank's Global Findex database (Demirguc-Kunt and Klapper (2012)).

Ratio of output variance: inflation variance and financial inclusion, alternative measures

Graph 6



Note: The vertical axes show the ratio of output gap volatility to inflation volatility during 2000–12, in logarithms. The horizontal axes show the share of adults that had an account at a formal financial institution in 2011 (left panel), the share of adults who saved money (middle panel) or share of adults who borrowed money (right panel) at a formal financial institution during the preceding 12 months. Greece, an outlier, is excluded.

Sources: World Bank, *Global Financial Inclusion Database*. Taken from Mehrotra and Yetman (2014).

Measuring the output gap as the difference between output and HP-filtered output, they construct the ratio of output gap to inflation volatility for the 2000-12 period. The relationship between this ratio and financial inclusion, defined in three different ways, is given in Graph 6. Consistent with their theoretical results, there is a clear upward relationship: an increase in the level of financial inclusion is associated with an increase in output volatility relative to inflation volatility. Further, when they examine the data more closely using regression analysis, they find that this result is largely due to the relatively independent central banks in their sample, who might be expected to have the freedom to set interest rates more optimally as a function of the level of financial inclusion.

The takeaway from this is that the data suggests that an increase in the level of financial inclusion is associated with an increase in the level of output volatility relative to inflation volatility, and the model suggests that, qualitatively at least, this is consistent with what optimal policy would entail.

One implication of this work is that, as government agencies pursue policies intended to enhance increased financial inclusion, and the share of included consumers rises, optimal policy may entail an increasing focus on inflation stabilisation relative to output stabilisation.

5. Conclusions

In this paper, we have focused on the implications of financial inclusion for monetary policy, and have highlighted three ways in which an increase in the level of financial inclusion might influence monetary policy choices.

First, a higher level of financial inclusion might lead to a stronger focus by the central bank on measures of core inflation, that discount prices of goods from sectors that are relatively volatile, instead of headline inflation. If excluded consumers disproportionately work in, and consume the output of, flexible price sectors, then optimal monetary policy will entail an increased focus on headline inflation the larger is the share of excluded consumers in society.

Second, an increase in the level of financial inclusion is likely to increase the effectiveness of interest rate tools relative to quantity-based tools. Financially included consumers are directly affected by changes in interest rates, as they are reflected in their costs of borrowing and returns to savings, so the larger is the share of included consumers, the more potent interest rate tools become.

Third, central banks may wish to adjust their interest rate rule, for one of two reasons. The first reason is that the domain of the parameter space over which the interest rate rule results in deterministic outcomes is sensitive to the level of financial inclusion, although the exact direction of these changes depends on assumptions about the structure of the economy – for example, if the central bank follows a forward-looking or contemporaneous rule, and how sticky wages are. The second reason is that optimal policy is likely to change. Financially included consumers are able to use their access to financial markets to smooth their level of consumption, vis-à-vis their level of income, more effectively than excluded consumers. For a central bank setting interest rates with a view to maximising societal welfare, the desirability of helping consumers smooth their consumption by smoothing output therefore weakens as the share of financially excluded consumers fall. Thus optimal policy will be characterised increasingly by price stability, even at the expense of slightly higher levels of output volatility, the higher is the level of financial inclusion.

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Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

Adapting monetary policy to increasing financial inclusion[1]

James Yetman,
Bank for International Settlements

[1] This presentation was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

BANK FOR INTERNATIONAL SETTLEMENTS

Adapting monetary policy to increasing financial inclusion

James Yetman

Bank Al-Maghrib – CEMLA – IFC Satellite Seminar on Financial Inclusion

14 July 2017

Financial inclusion and monetary policy

- **Choice of price index to target may change**
  - Excluded consumer tend to earn and consume in flex price sector (eg agriculture)
  - Central bank should put more weight on flexible prices (that affect excluded consumers) the more excluded consumers there are
  - As inclusion increases, weight on core inflation increases and weight on headline inflation falls

Anand, Prasad and Zhang (2015)

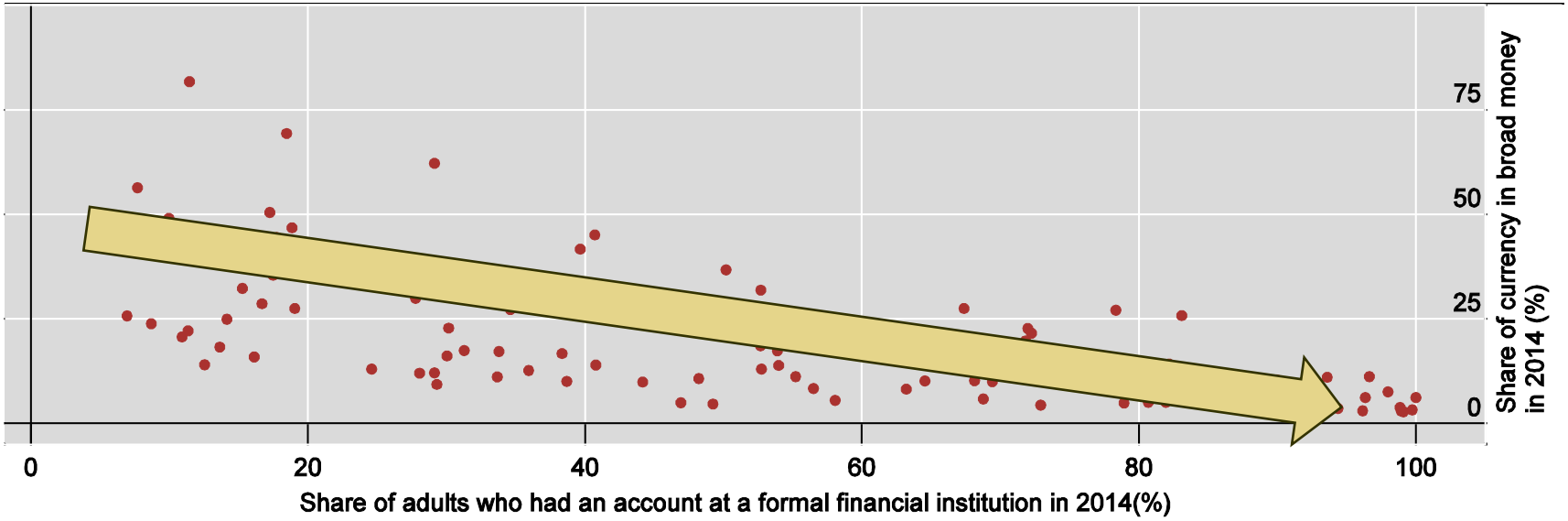
Financial inclusion and monetary policy

- Choice of price index to target may change
- **Interest rate effectiveness increases**
  - Khan (2011); Tombini (2012)

Financial inclusion and interest rate effectiveness

Financial inclusion and the money stock

Account ownership and share of currency in broad money[1] Graph 6



[1] Share of currency in broad money is defined as $Currency\ in\ circulation/Broad\ money$.

Sources: IMF, *International Financial Statistics*; World Bank, *Global Financial Inclusion Database*; BIS calculations.

Could growth of mobile money lead to loss of monetary policy effectiveness?

- **Inclusion can happen outside of the formal financial system**
- **Similarities with "free-banking" era?**
  - Procyclical money supply (Goodhart 1988)
  - Risks of shock to confidence of electronic money
- **Natural limits to size?**
  - M-PESA (Kenya): 6.6% of total payments*

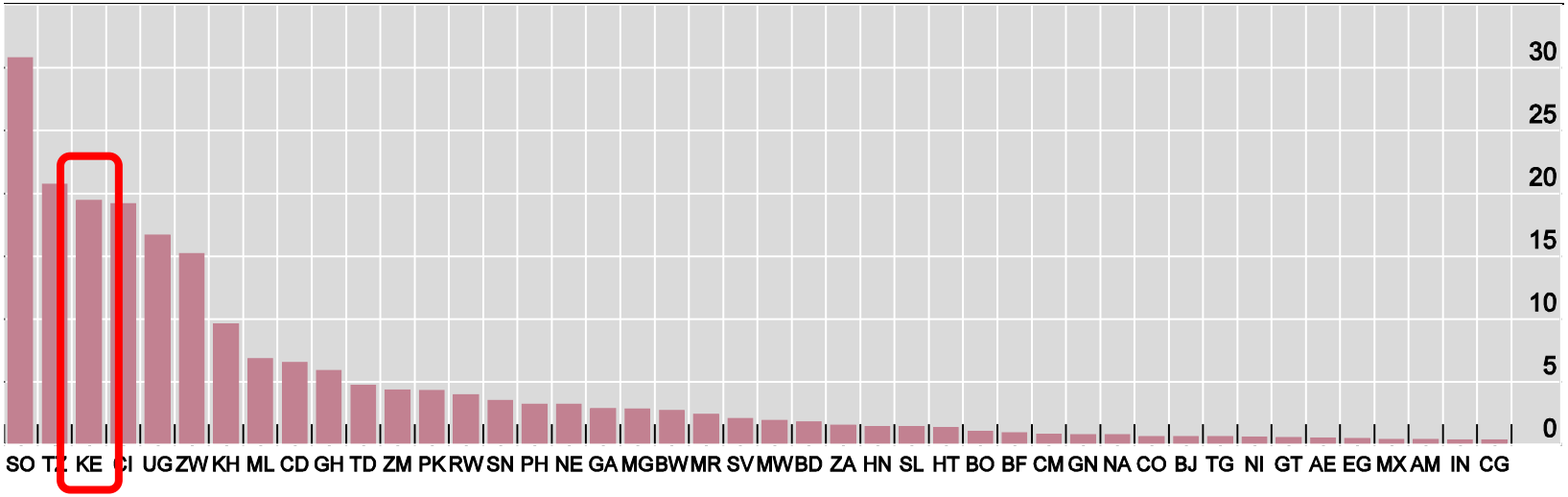
* http://www.cgap.org/blog/10-myths-about-m-pesa-2014-update

Could growth of mobile money lead to loss of monetary policy effectiveness?

Mobile money service

Share of adults having mobile money account only, in per cent

Graph 7



SO=Somalia; TZ=Tanzania; KE=Kenya; CI=Cote d'Ivoire; UG=Uganda; ZW=Zimbabwe; KH=Cambodia; ML=Mali; CD= Democratic Republic of Congo; GH=Ghana; TD=Chad; ZM=Zambia; PK=Pakistan; RW=Rwanda; SN=Senegal; PH=Philippines; NE=Niger; GA=Gabon; MG=Madagascar; BW=Botswana; MR=Mauritania; SV=El Salvador; MW=Malawi; BD=Bangladesh; ZA=South Africa; HN=Honduras; SL=Seirra Leone; HT=Taiti; BO=Bolivia; BF=Burkina Faso; CM=Cameroon; GN=Guinea; NA=Namibia; CO=Colombia; BJ=Benin; TG=Togo; NI=Nicaragua; GT=Guatemala; AE=United Arab Emirates; EG=Egypt; MX=Mexico; AM=Armenia; IN=India; CG=Republic of Congo.

Sources: World Bank, *Global Financial Inclusion Database*; BIS calculations.

Financial inclusion and monetary policy

- Choice of price index to target may change
- Interest rate effectiveness increases
- **The policy rule needs to change (for determinacy)**
  - Does the Taylor Principle hold?
  - Should the response be stronger? Weaker?
  - Answer: it depends:
    - Policy rule forward looking or contemporaneous?
    - Wages sticky or flexible?
  - Galí et al (2004); Di Bartolomeo and Rossi (2007); Bilbiie (2008); Ascari et al (2011); Colciago (2011); Motta and Tirelli (2010)

Financial inclusion and monetary policy

- Choice of price index to target may change
- Interest rate effectiveness increases
- The policy rule needs to change (for determinacy)
- **The policy rule should change (for optimality)**

What does the theory say?

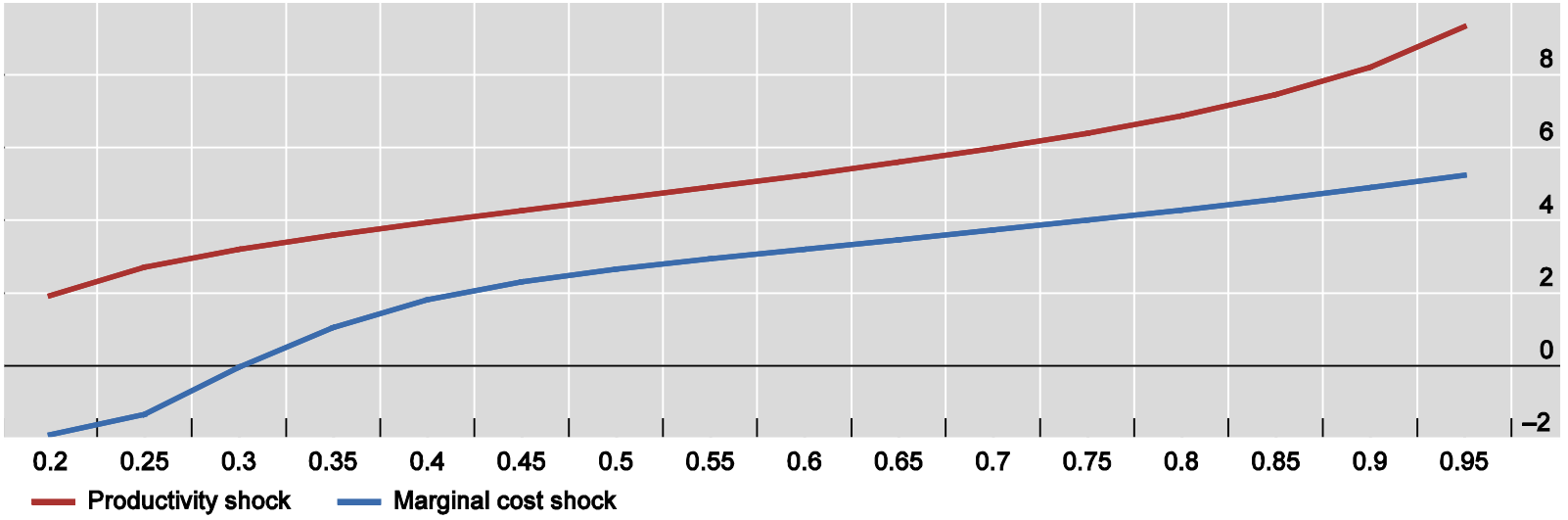
- Included consumers can smooth their consumption on their own in response to economic shocks
- Excluded consumers cannot
- Thus optimal policy SHOULD look different depending on the degree of inclusion

Mehrotra and Yetman (2014)

Optimal output: inflation variance ratios

Optimal ratio of output: inflation variances

Graph 3



Note: The vertical axis displays the ratio of output volatility to inflation volatility, in logarithms. The horizontal axis displays the share of consumers who are financially included (1-λ).

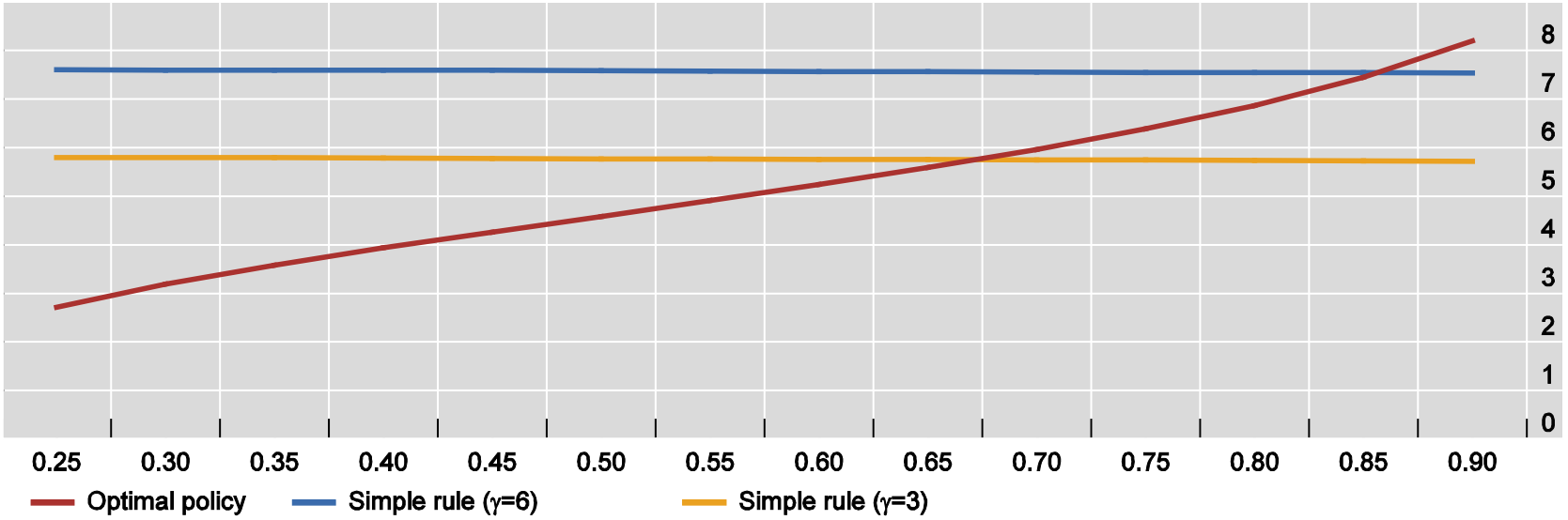
Source: Authors' calculations.

What if monetary policy didn't change?

Ratio of output : inflation variances

Optimal policy vs simple rule

Figure 4



Note: The vertical axis displays the ratio of output volatility to inflation volatility, in logarithms. The horizontal axis displays the share of consumers who are financially included (1-λ).

Source: Authors' calculations.

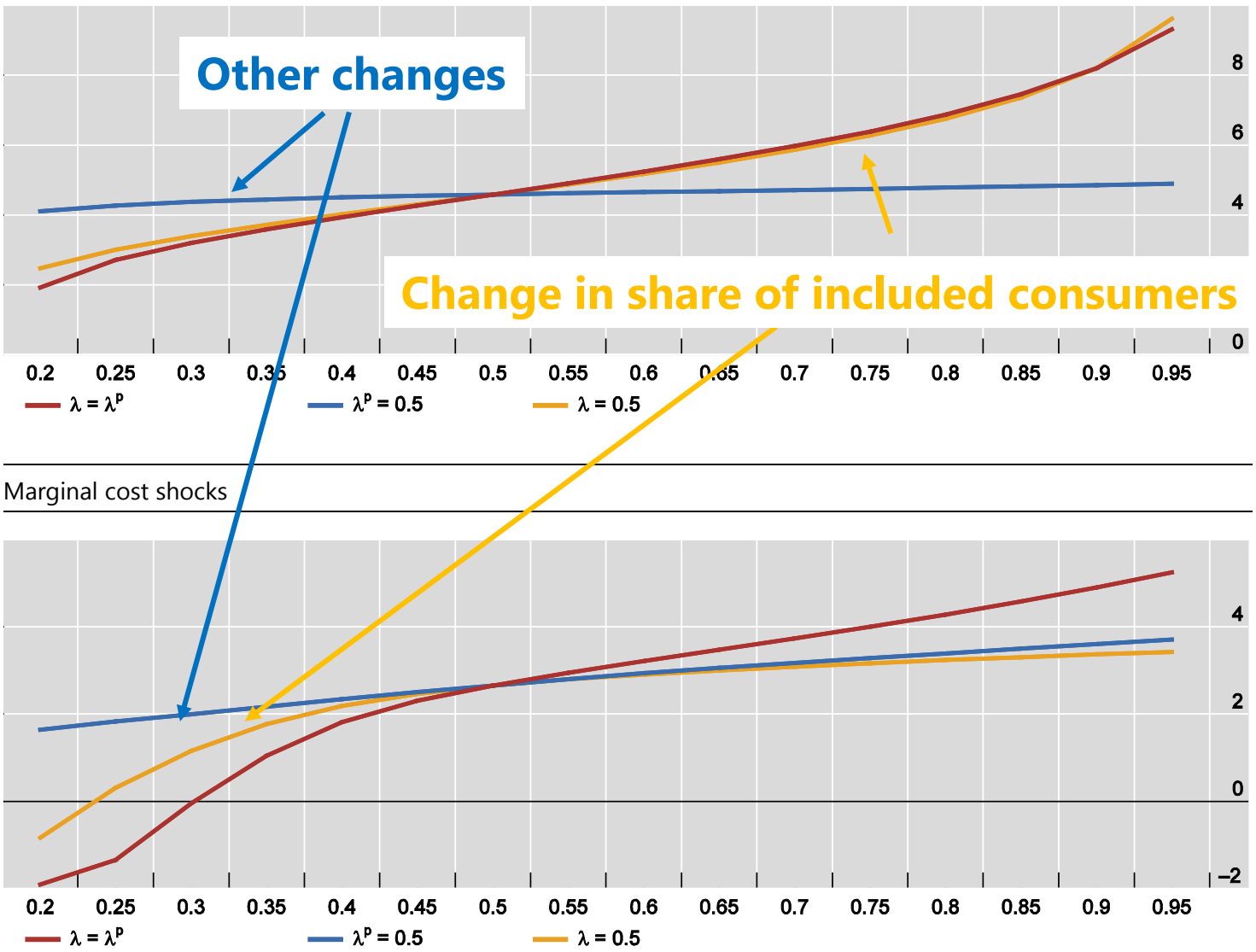
Why does optimal monetary policy change with more financially included consumers?

Three reasons:

- **Welfare depends on consumption and inflation volatility**
  - For excluded consumers, V(output) ⇔ V(consumption)
  - For included consumers, V(output) ≠ V(consumption)
  - For all consumers, V(inflation) is costly
- **The structure of the economy is different**
  - More included consumers implies larger changes in investment and therefore output
- **The relative weight on included consumers is higher**
  - More included consumers implies a higher weight in the welfare function

Decomposition of change in variance ratio

Graph 4



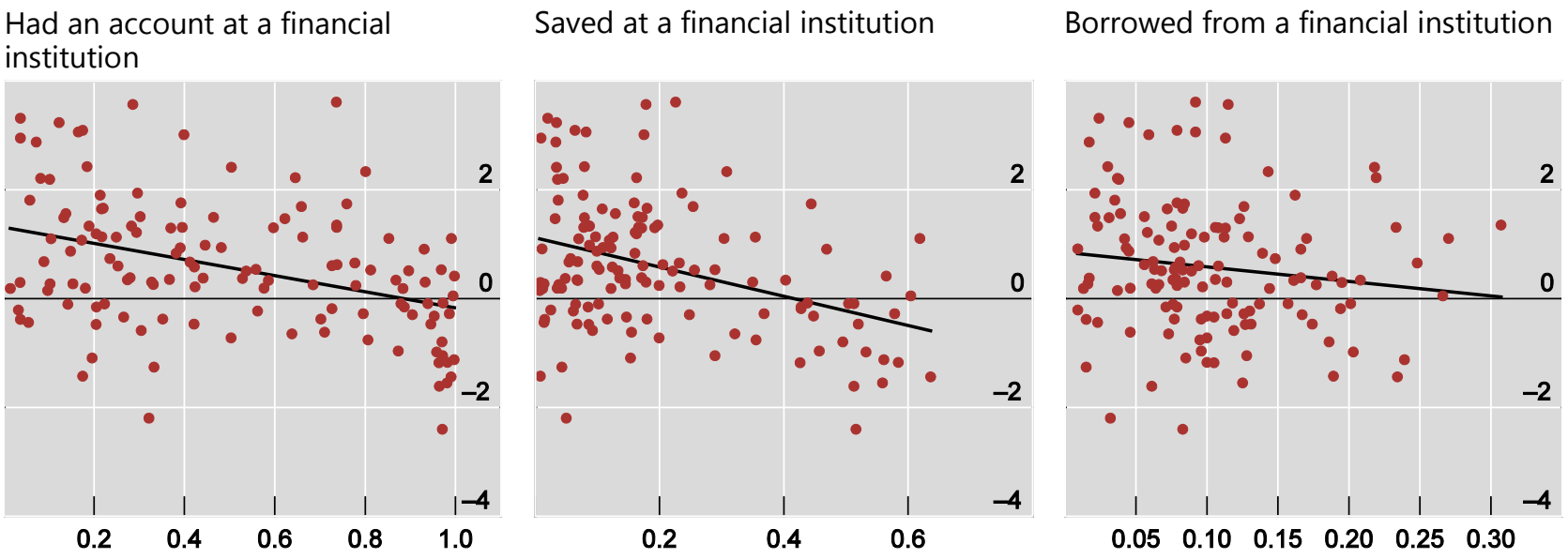
What does the data say?

- Is consumption volatility lower in economies with more inclusion?
- Is ratio of output to inflation volatility higher in economies with more inclusion?

Financially included smooth consumption

Ratio of consumption–output variances and financial inclusion, alternative measures

Figure 7



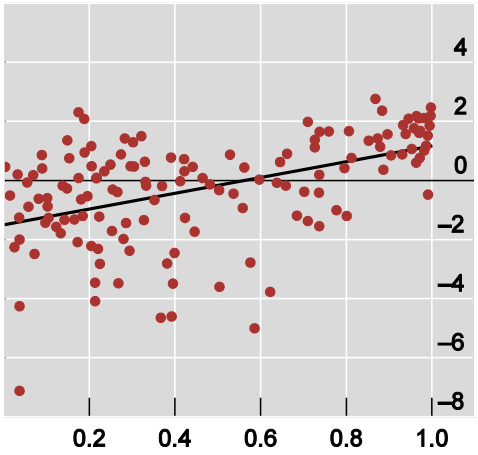
Note: The vertical axes show the ratio of consumption gap volatility to output gap volatility during 2000–12, in logarithms. The horizontal axes show the share of adults that had an account at a formal financial institution in 2011 (left panel), the share of adults who saved money (middle panel) or share of adults who borrowed money (right panel) at a formal financial institution during the preceding 12 months. Republic of Congo and Zambia, two outliers, are excluded.

Sources: IMF, *World Economic Outlook*; World Bank, *Global Financial Inclusion Database*; Authors' calculations.

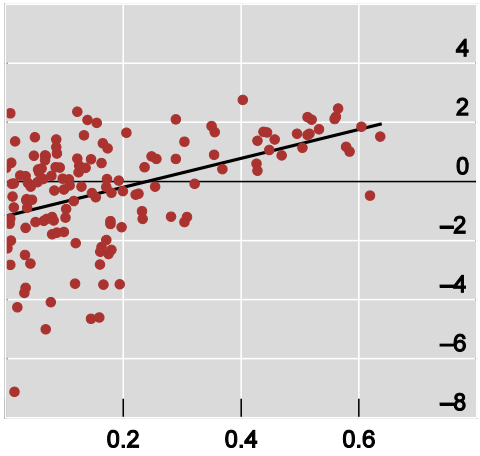
Empirical evidence, variance ratio and inclusion

Ratio of output–inflation variances and financial inclusion, alternative measures Graph 6

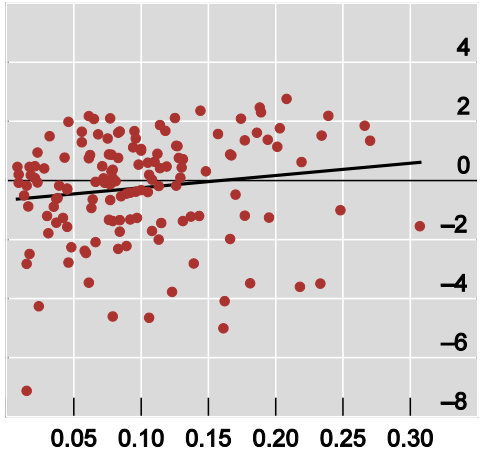
Had an account at a financial institution



Saved at a financial institution



Borrowed from a financial institution



Note: The vertical axes show the ratio of output gap volatility to inflation volatility during 2000–12, in logarithms. The horizontal axes show the share of adults that had an account at a formal financial institution in 2011 (left panel), the share of adults who saved money (middle panel) or share of adults who borrowed money (right panel) at a formal financial institution during the preceding 12 months. Greece, an outlier, is excluded.

Sources: World Bank, *Global Financial Inclusion Database*; Authors' calculations.

Summary: optimal monetary policy and financial inclusion

- **Model results: more inclusion implies greater focus on price stability relative to output stability**
- **Strong empirical support for the model's prediction in the cross-sectional dimension:**
  - Ratio of consumption to output volatility falls as the degree of financial inclusion increases
  - Ratio of output to inflation volatility rises as the degree of financial inclusion increases
- **As developing economies are pursuing policies to enhance inclusion, the weight on inflation stabilisation should increase over time:**
  - Consistent with moves towards inflation targeting as financial inclusion increases

Appendix slides

Estimation results, cross section

Table 2

Dependent variable is log of variance ratio

	(1)	(2)	(3)	(4)	(5)
Financial inclusion variable	Account ownership	Savings in past year	Loans in past year	Account ownership, more autonomous central banks	Account ownership, less autonomous central banks
Coefficient on financial inclusion	2.679***	4.901***	4.160*	2.771***	0.549
	(0.419)	(0.784)	(2.371)	(0.431)	(1.523)
Adj R squared	0.224	0.214	0.015	0.341	–0.043
N	139	142	141	79	22

Source: The table shows the β_1 coefficients of cross-sectional regressions of the type: Log(Variance ratio) = β_1 * financial inclusion+c. *, ** and *** denote statistical significance at 10%, 5% and 1% levels respectively. Standard errors are in parentheses. Intercepts are not shown. Greece, an outlier, is excluded. The variance ratio is computed as the ratio of the variance of the output gap to the variance of inflation over 2000–12. The variables for financial inclusion are from the Global Findex Database. The degree of autonomy of central banks is from Siklos, P L (2008): "No single definition of central bank independence is right for all countries", *European Journal of Political Economy* 24(4), 802–816. "More autonomous" is defined as central banks with values of 0.75 or 1 in the "AUT" category that measures independence/autonomy in making day-to-day monetary policy decisions; "less autonomous" 0.5 or 0 in the same category.

Estimation results, account ownership

Table 3

	(6)	(7)	(8)	(9)	(10)
	Dependent variable is log of variance ratio				
Account ownership	3.480***	3.667***	3.505***	3.780***	2.987**
	(0.537)	(1.192)	(0.540)	(1.232)	(1.129)
Credit-to-GDP		-0.001		-0.002	0.001
		(0.005)		(0.005)	(0.005)
Energy imports, share of GDP			-0.021	-0.020	-0.036
			(0.032)	(0.035)	(0.032)
Adjustment for crises	No	No	No	No	Excluding only crisis years from variance ratio
Adj R squared	0.318	0.268	0.311	0.253	0.345
N	79	76	79	76	76

Source: All estimations are two stage least squares estimations, where regulatory quality is used to instrument for the financial inclusion variable. Other right-hand side variables are used as their own instruments. Only more autonomous central banks are included (see note to Table 2). *, ** and *** denote statistical significance at 10%, 5% and 1% levels respectively. Standard errors are in parentheses. Intercepts are not shown. Greece, an outlier, is excluded. The variance ratio is computed as the ratio of the variance of the output gap to the variance of inflation over 2000–12. The variables for financial inclusion are from the Global Findex Database.

Optimal policy and redistribution

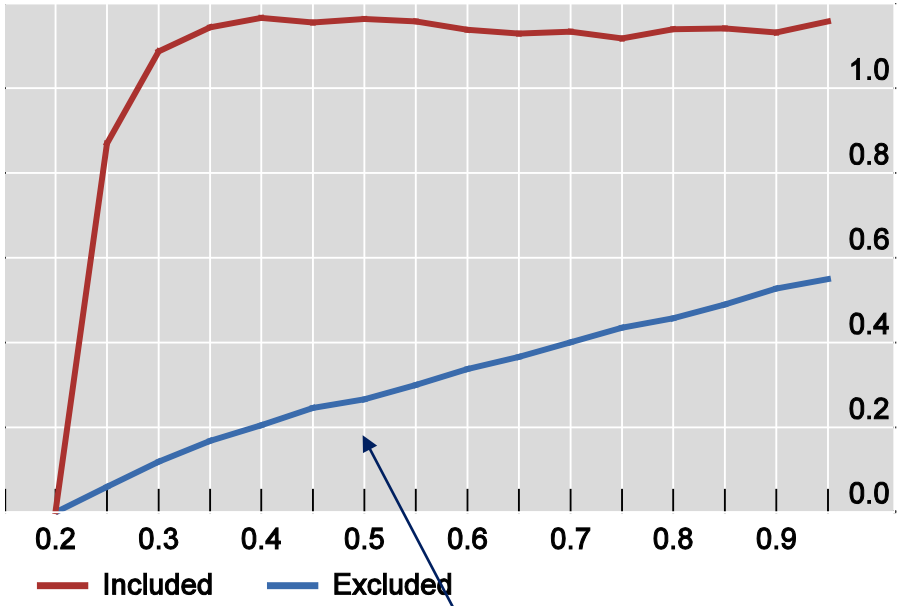
- **Does optimal policy exacerbate inequality?**
- **An example:**
  - What share of their consumption would *excluded consumers be willing to pay* in order for the central bank not to update its objective function relative to optimal policy with 20% financial inclusion?
  - What share of their consumption would *included consumers need to be paid* if the central bank did not update its objective function relative to optimal policy with 20% financial inclusion?

Benefit to included consumers from adjusting monetary policy optimally

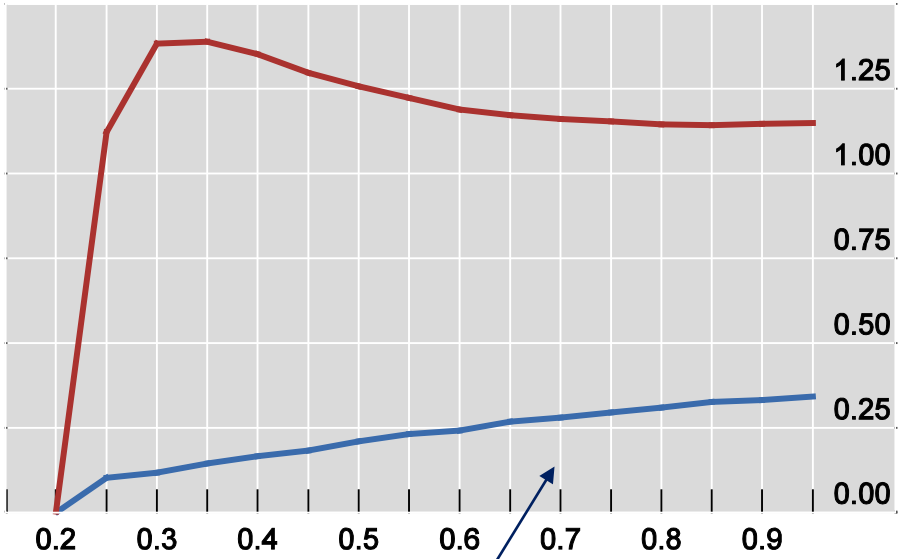
Costs/benefits of not updating objective as a function of financial inclusion

As a percentage of steady state consumption

Real shocks



Nominal shocks



The graph displays the cost (benefit) of the central bank objective function not changing when the share of included consumers increases from 20% for excluded (included) consumers, as a percent of steady state consumption.

Cost to excluded consumers from adjusting monetary policy optimally

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

Financial Access Survey (FAS): the IMF's financial inclusion data[1]

Peter van Oudheusden,

International Monetary Fund (IMF)

[1] This presentation was prepared for the meeting. The views expressed are those of the author and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Financial Institutions Division
IMF Statistics Department

Financial Access Survey (FAS):
The IMF's Financial Inclusion Data

Marrakech, July 14
Bank Al-Maghrib – CEMLA – IFC Satellite Seminar on Financial Inclusion

By Peter van Oudheusden, IMF

Financial Access Survey in a Nutshell (I)

financial inclusion is a multidimensional concept

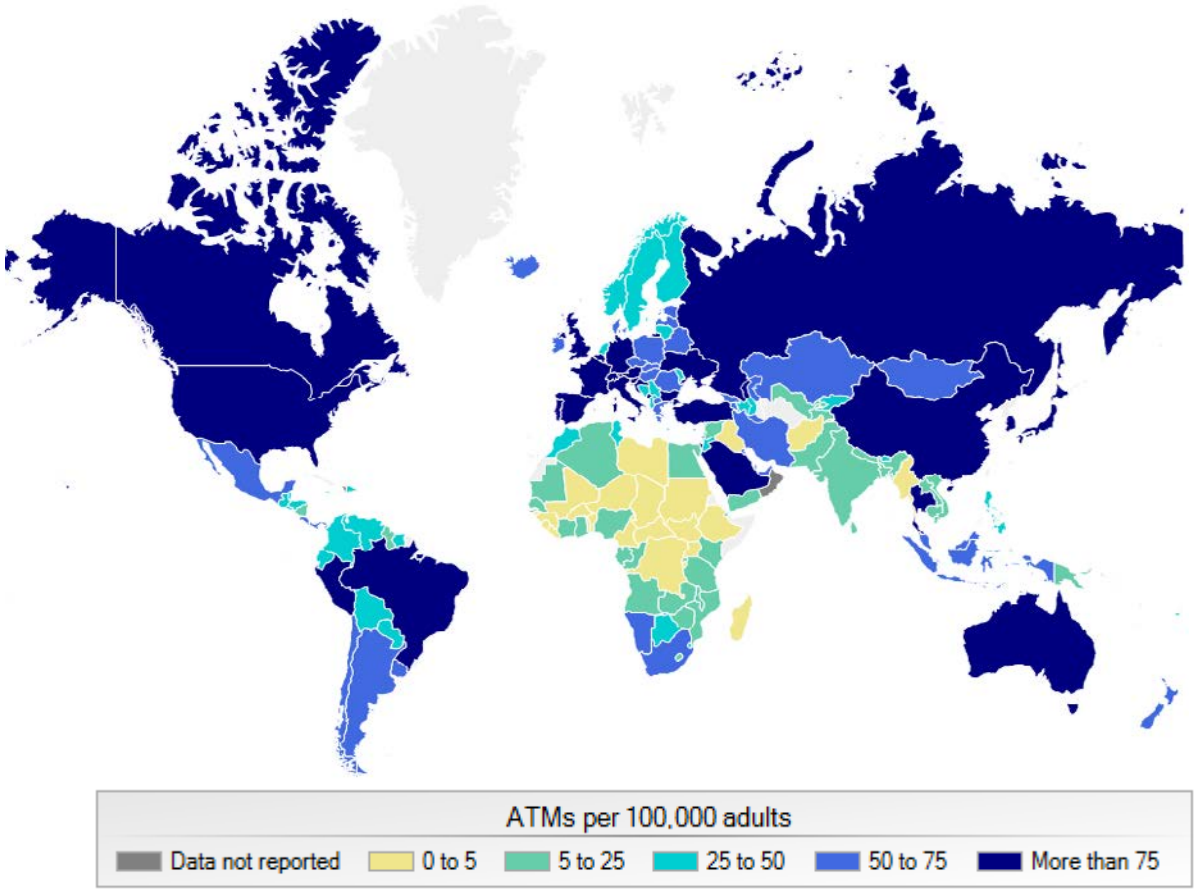
- No single, commonly accepted definition of financial inclusion

- Definitions usually cover several dimensions
  - Access
  - Use
  - Quality

- IMF's Financial Access Survey (FAS) provides data on ***access*** to and ***use*** of basic financial services by individuals and firms

Financial Access Survey in a Nutshell (II)

the FAS is a database on financial inclusion with close-to-universal geographical coverage, which provides a strong monitoring basis



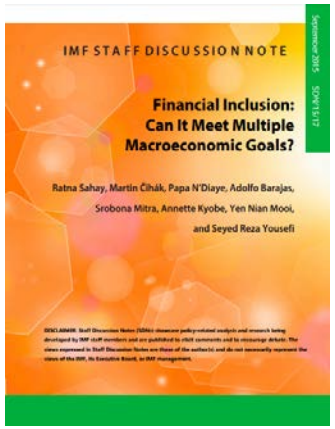
Source: FAS and IMF staff calculations. 2015 or most recent available data.

FAS data are used to track developments in financial inclusion …

SUSTAINABLE DEVELOPMENT GOALS

GPFI Global Partnership for Financial Inclusion

and they help provide policy insights.



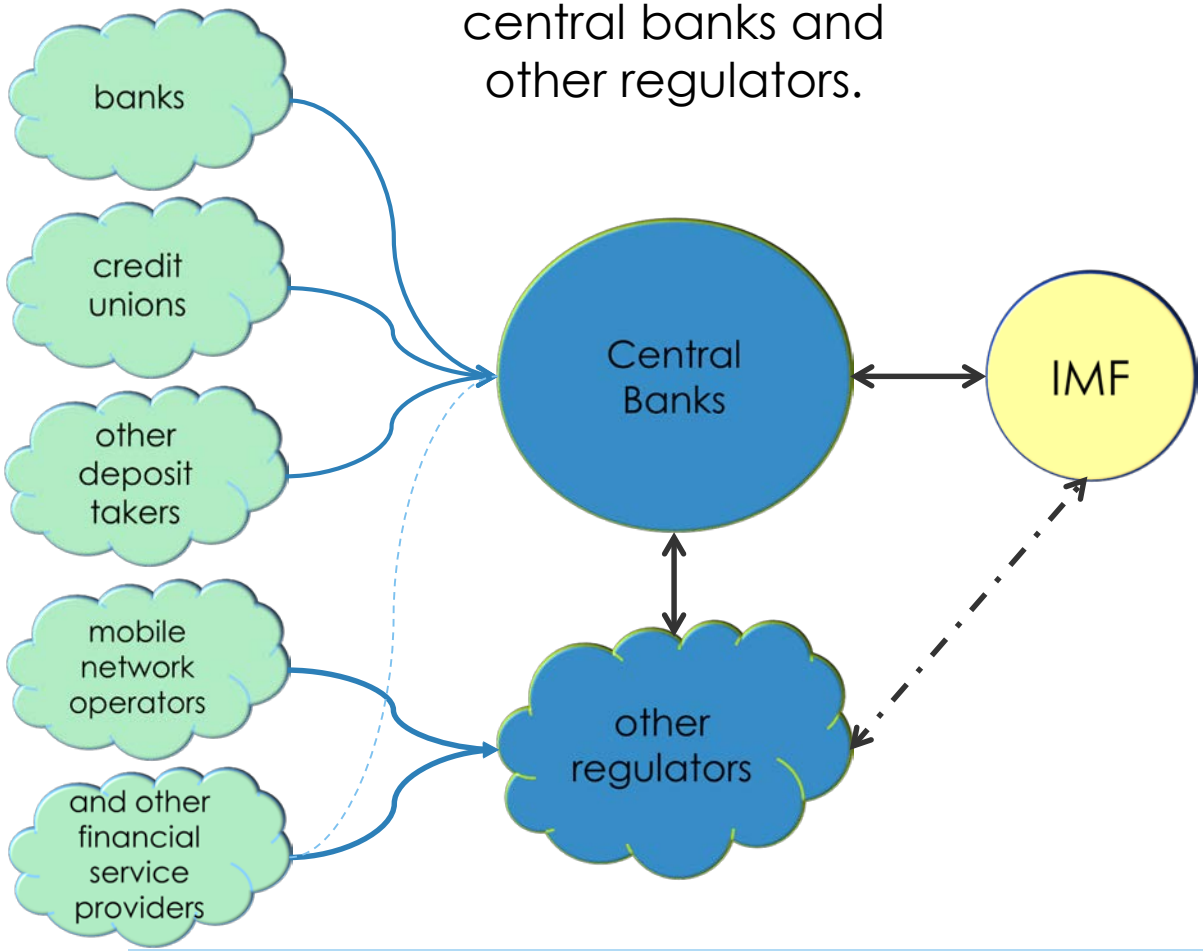
Financial Access Survey in a Nutshell (III)

the FAS is a supply-side database and data are collected annually

Administrative data

… compiled by central banks and other regulators.

FAS methodology fosters international comparability of data.



IMF staff

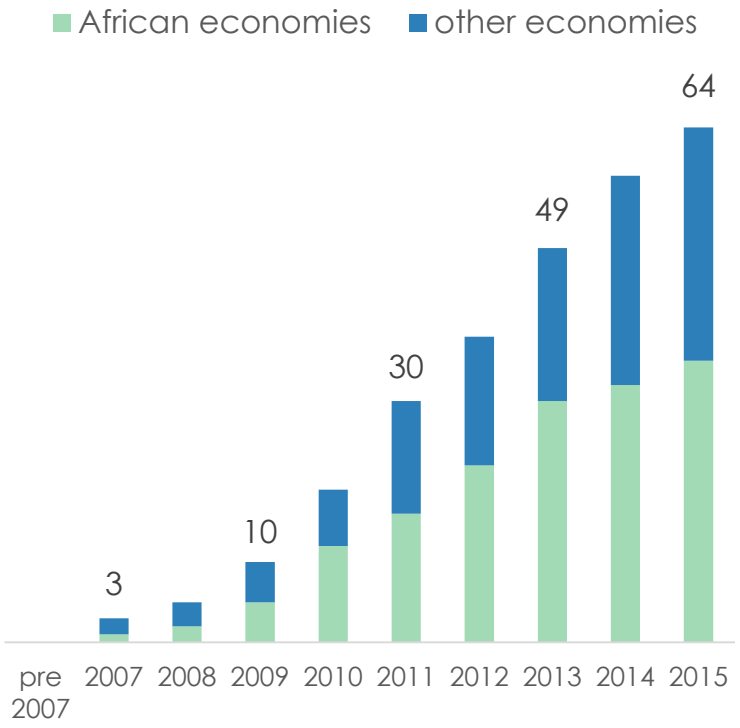
1. Collect
2. validate,
3. verify, and
4. disseminate data.

Metadata capture country specific cases.

Use of Data: Mobile Money Developments (I)

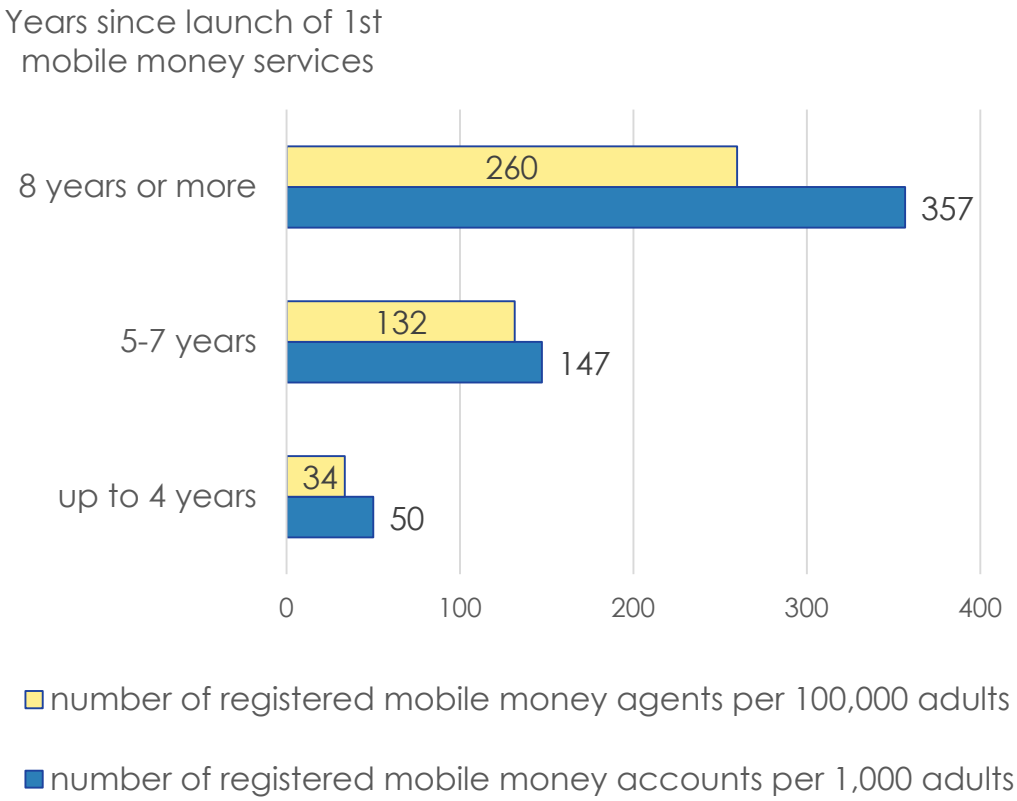
FAS data capture the growing importance of mobile money services

These services are increasingly becoming available …



cumulative number of economies that report mobile money data to FAS

and gained significant traction when they are more established.

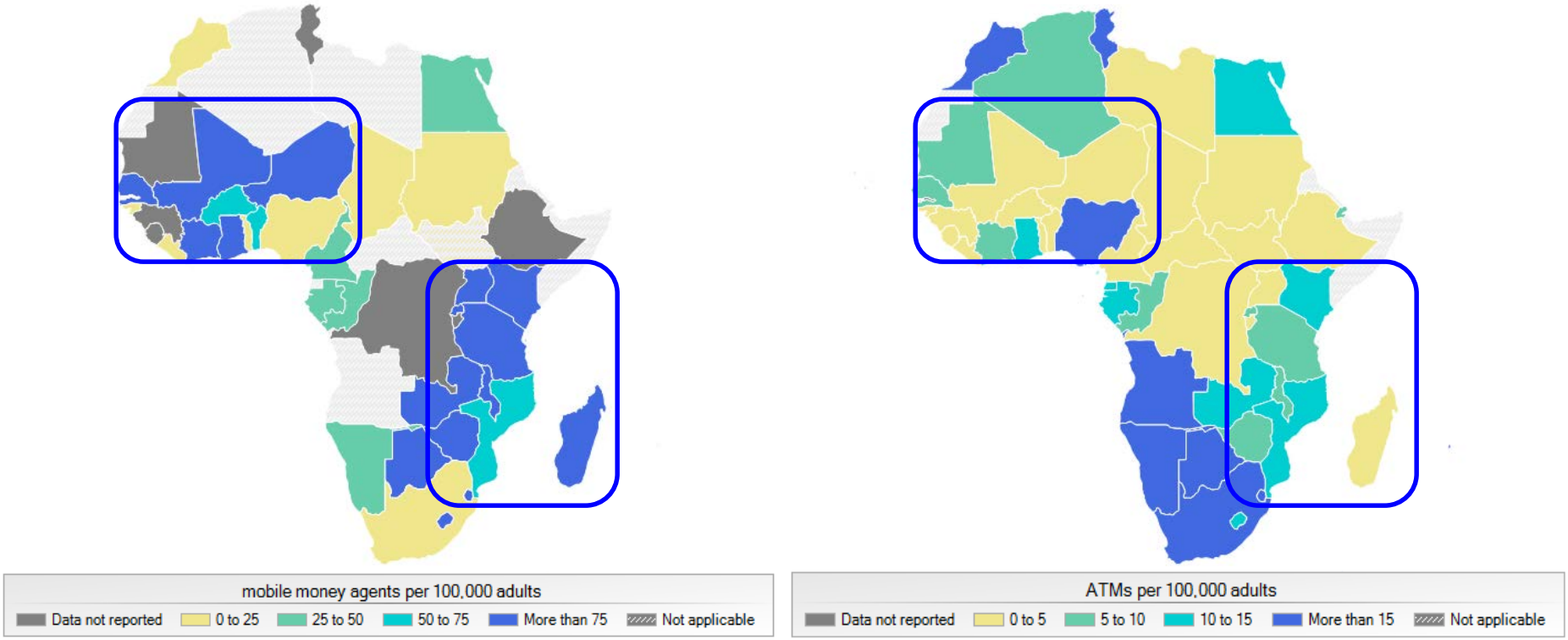


Source: FAS, GSMA (duration of mobile money services), and IMF staff calculations.

Use of Data: Mobile Money Developments (II)

mobile money services often complement traditional financial services

Presence of mobile money agents is especially pronounced in economies where traditional financial access points, like ATMS, are relatively scarce.

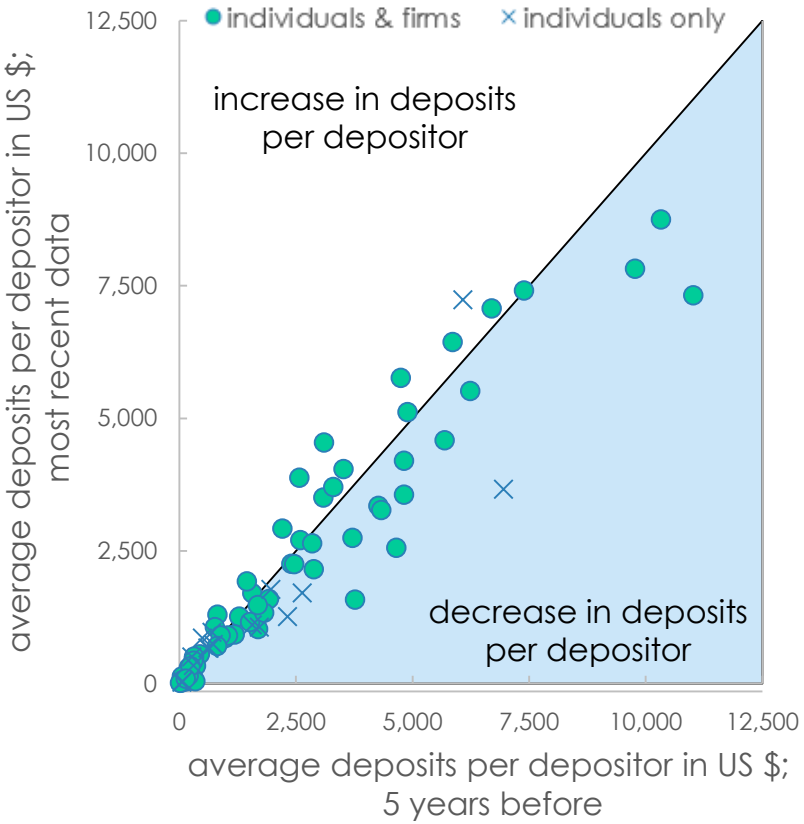


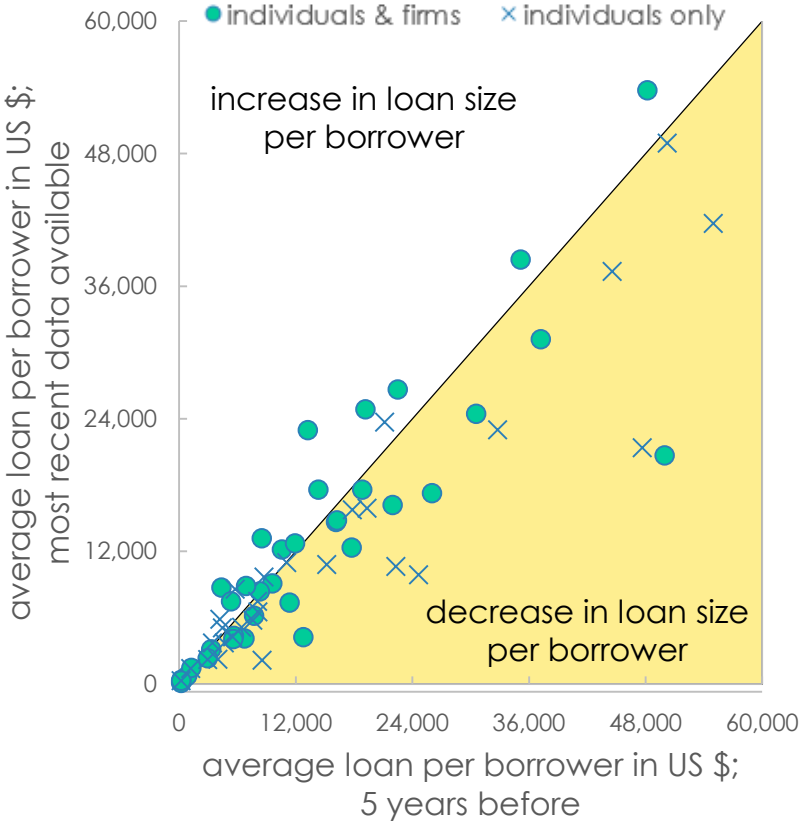
Source: FAS, GSMA (existence of mobile money services), and IMF staff calculations.

Use of Data: The Link With Central Bank Objectives (I)

deposit and credit developments could be used to analyze the interplay between financial inclusion and financial stability

Changes in deposit balances and loan sizes are non-uniform, potentially reflecting a deeper and more diversified financial system.



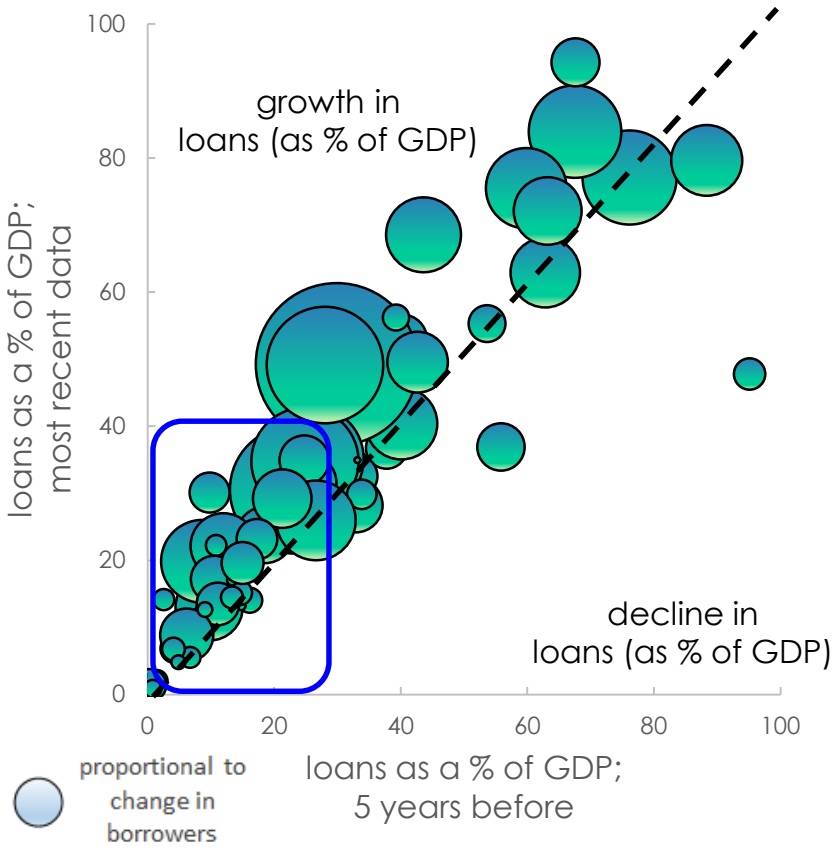


Source: FAS, IFS (exchange rate information), and IMF staff calculations.

Use of Data: The Link With Central Bank Objectives (II)

the FAS links monetary and financial statistics with changes in the underlying customers base

It is "easier" to expand credit when initial credit depth is low.

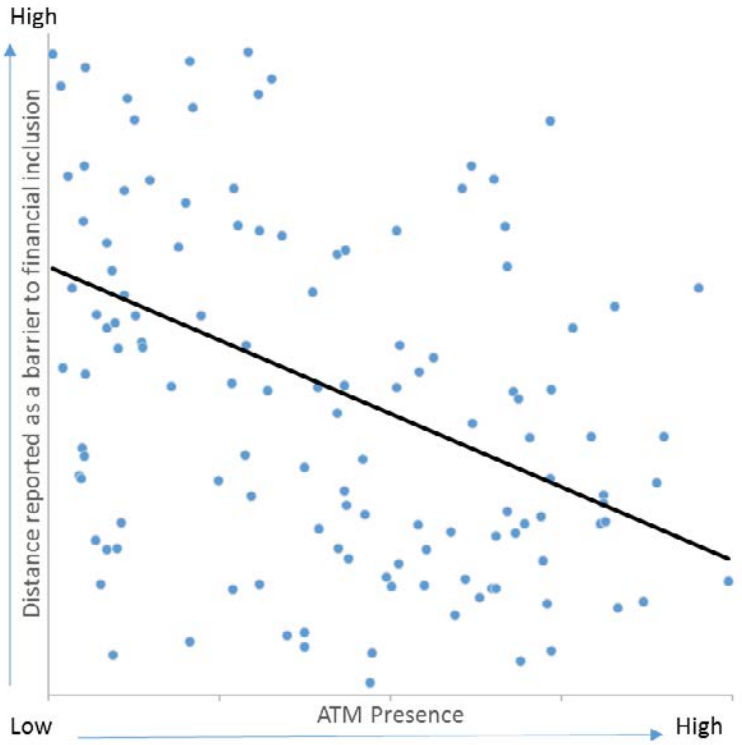


Source: FAS, IFS (exchange rate information), and IMF staff calculations.

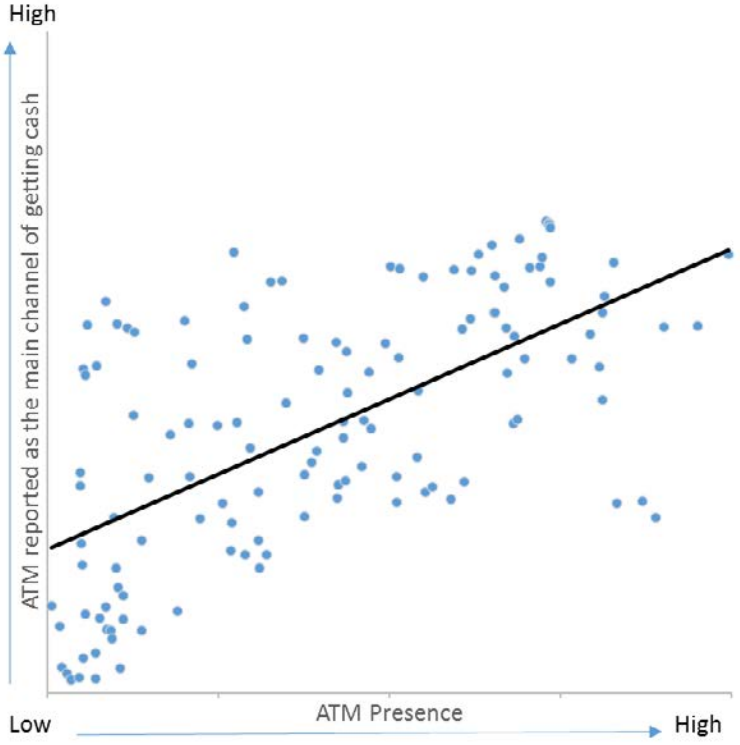
Use of Data: Complementarity with Other Databases

FAS data can provide additional insights when combined with complementary data collection initiatives

High ATM presence is associated with lower barriers to account ownership …



and with higher use among account owners.

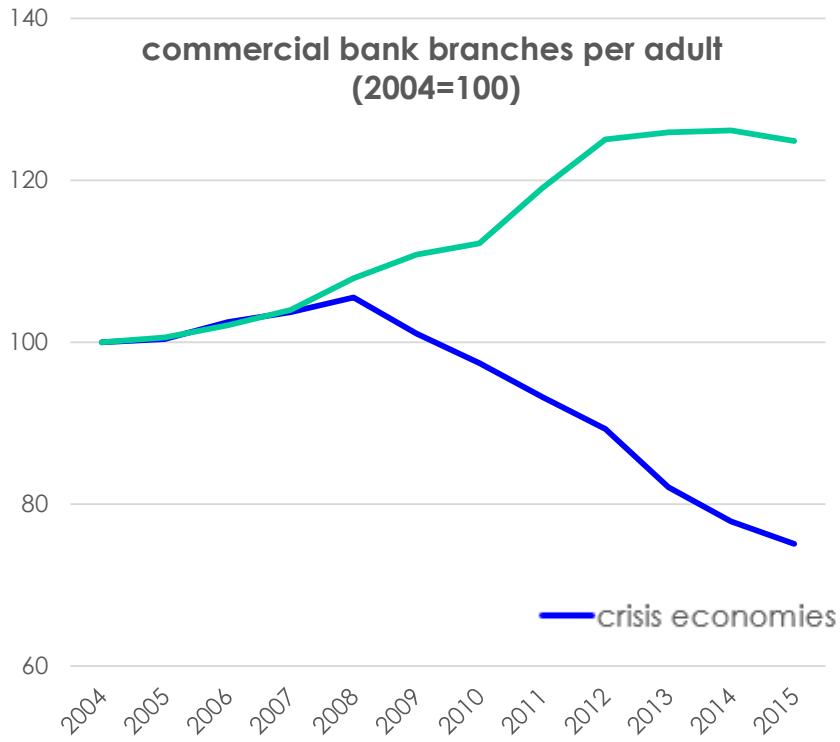


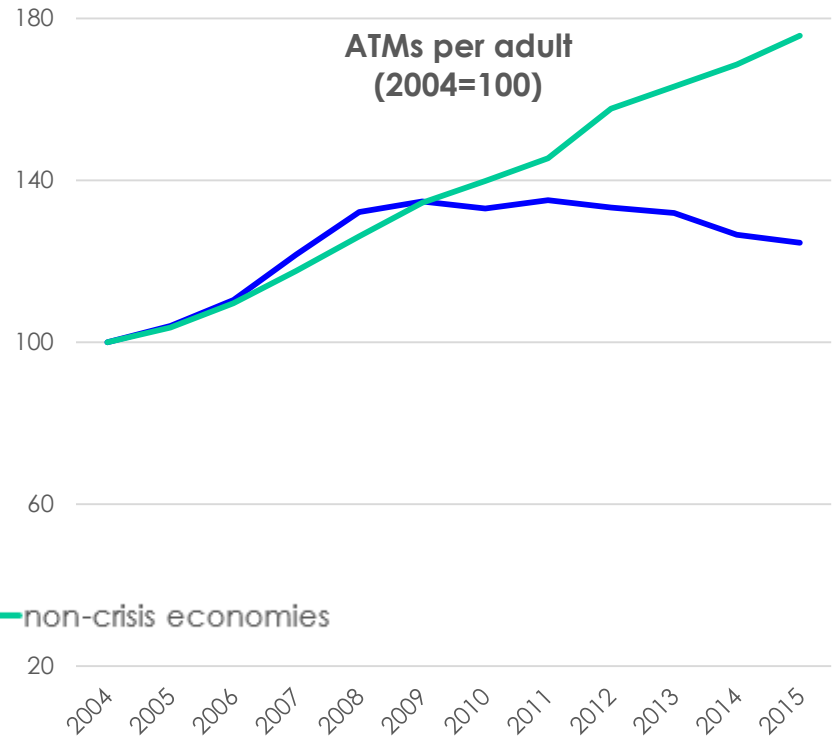
Source: FAS, Demirguc-Kunt et al. (2015) (Global Findex), and IMF staff calculations.

Use of Data: Time Dimension

historical data provide insights into availability of access points over time

Economies that experienced the 2008-2009 crisis saw a reduction in access points in the post crisis-period.



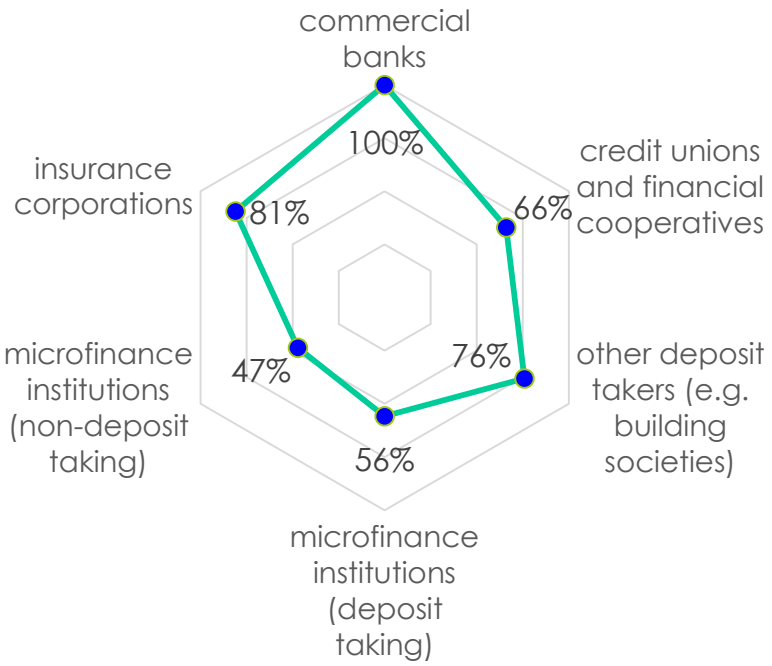


Source: FAS, Laeven and Valencia (2015; for definition of crisis economies), and IMF staff calculations.

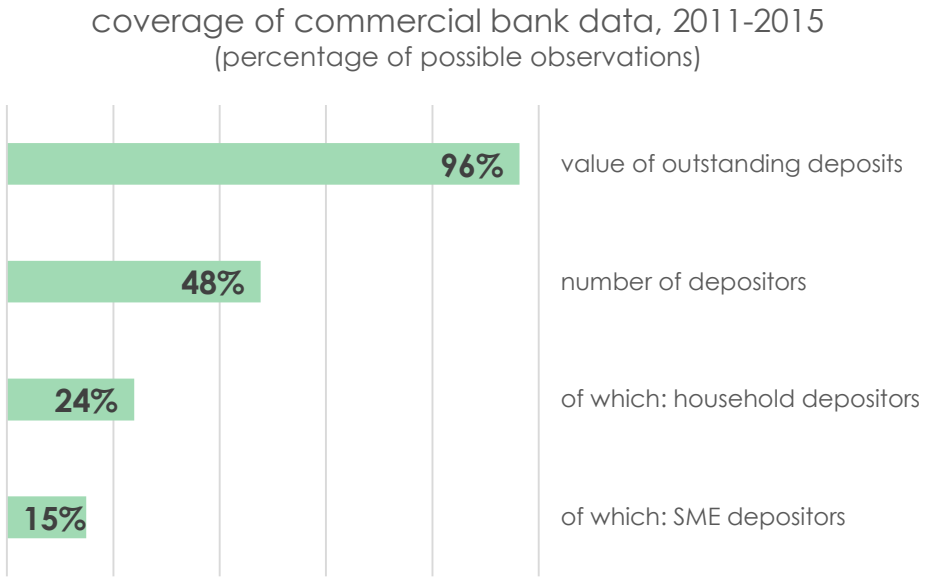
Challenges: Data Gaps

FAS database shows global data gaps in supply-side financial inclusion data

Good coverage of basic information for the main financial service providers …



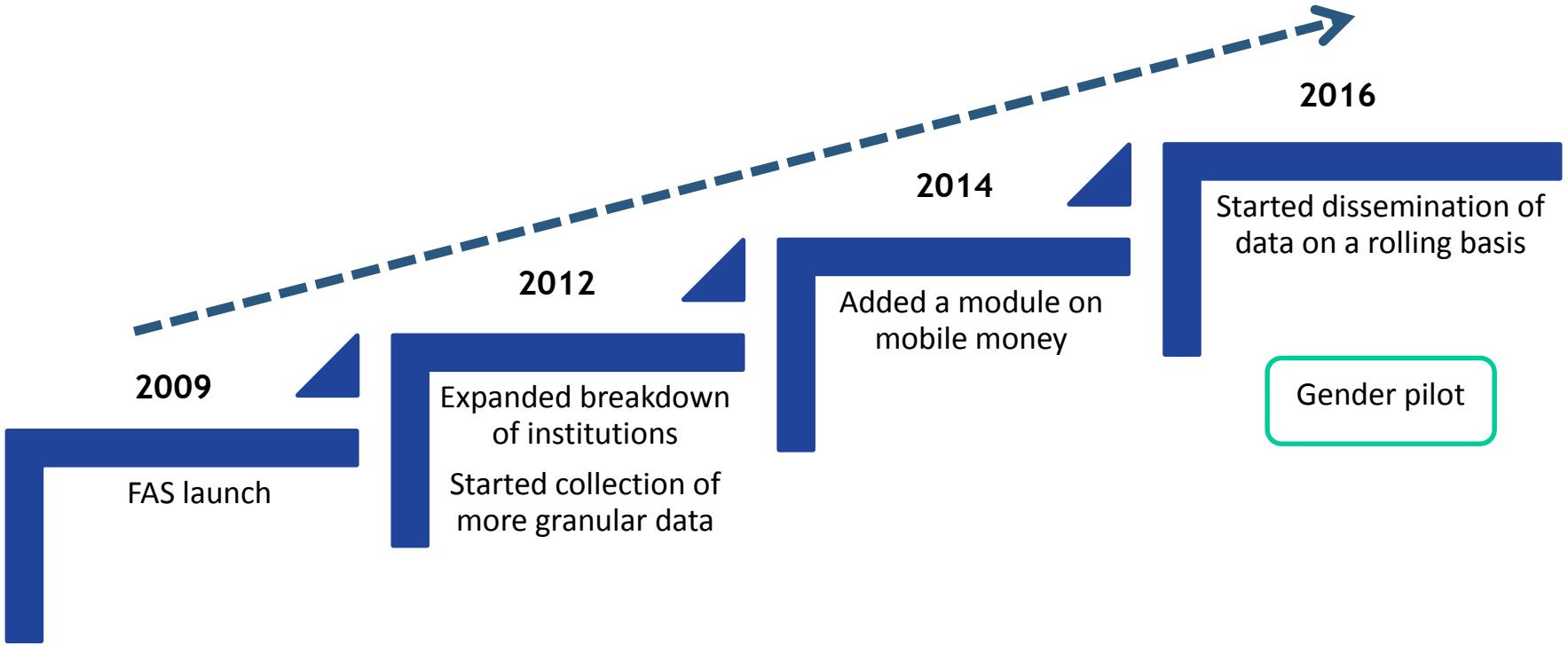
but coverage is lower for more granular data.



Source: FAS and IMF staff calculations.

Challenges: Changes in User Needs (I)

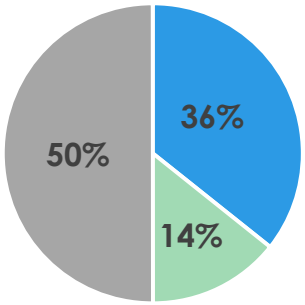
the FAS continuously evolves to capture developments in financial services delivery and to address user needs



Challenges: Changes in User Needs (II)

the FAS conducted a gender pilot in response to user needs

Availability of gender-disaggregated data
Example: depositors

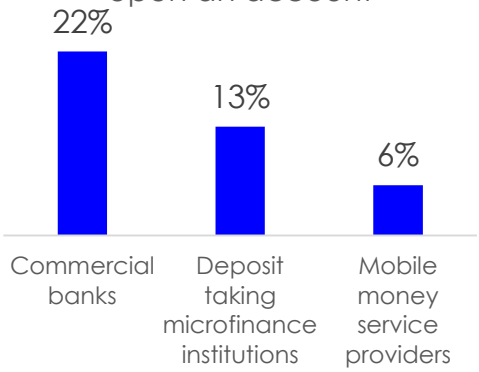


In around half of the 28 participating economies, gender-disaggregated data was available.

Time and effort are needed to start collecting this type of data.

- Economies where no gender breakdown is available
- Economies where a gender breakdown is available at individual financial service providers only
- Economies where a gender breakdown is available at individual financial service providers and to FAS reporters

cases where more than 4 documents are required to open an account



Pilot outcomes show a significant gender gap; around 40 percent of financial instruments are owned by women.

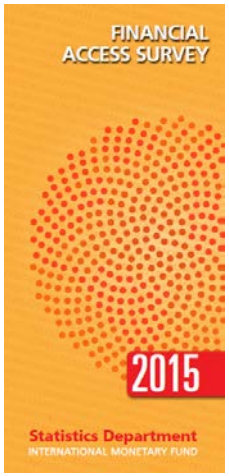
Documentation requirements could contribute to this gap.

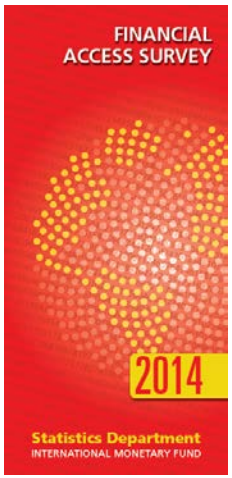
Source: FAS Pilot and IMF staff calculations.

Thank You

Questions?

Please visit http://imf.org/FAS for more information

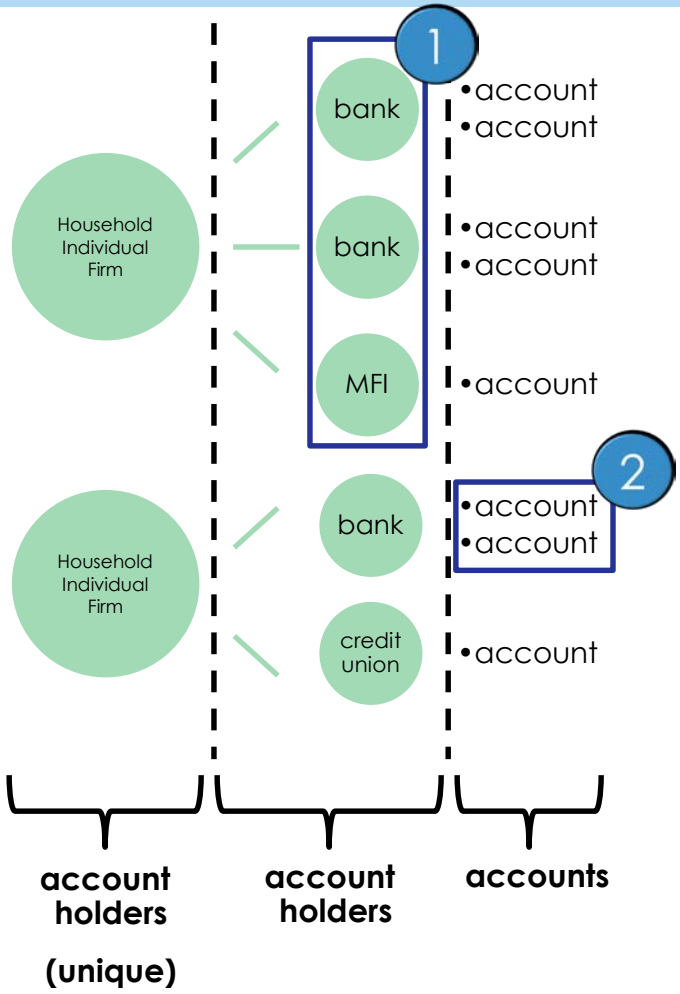




Contact: stafas@imf.org

Annex: features of administrative data (I)

systems usually track products, not (unique) customers



1. Across institutions

(e.g. lack of common identifier)

2. Within institutions

(e.g. systems are product based)

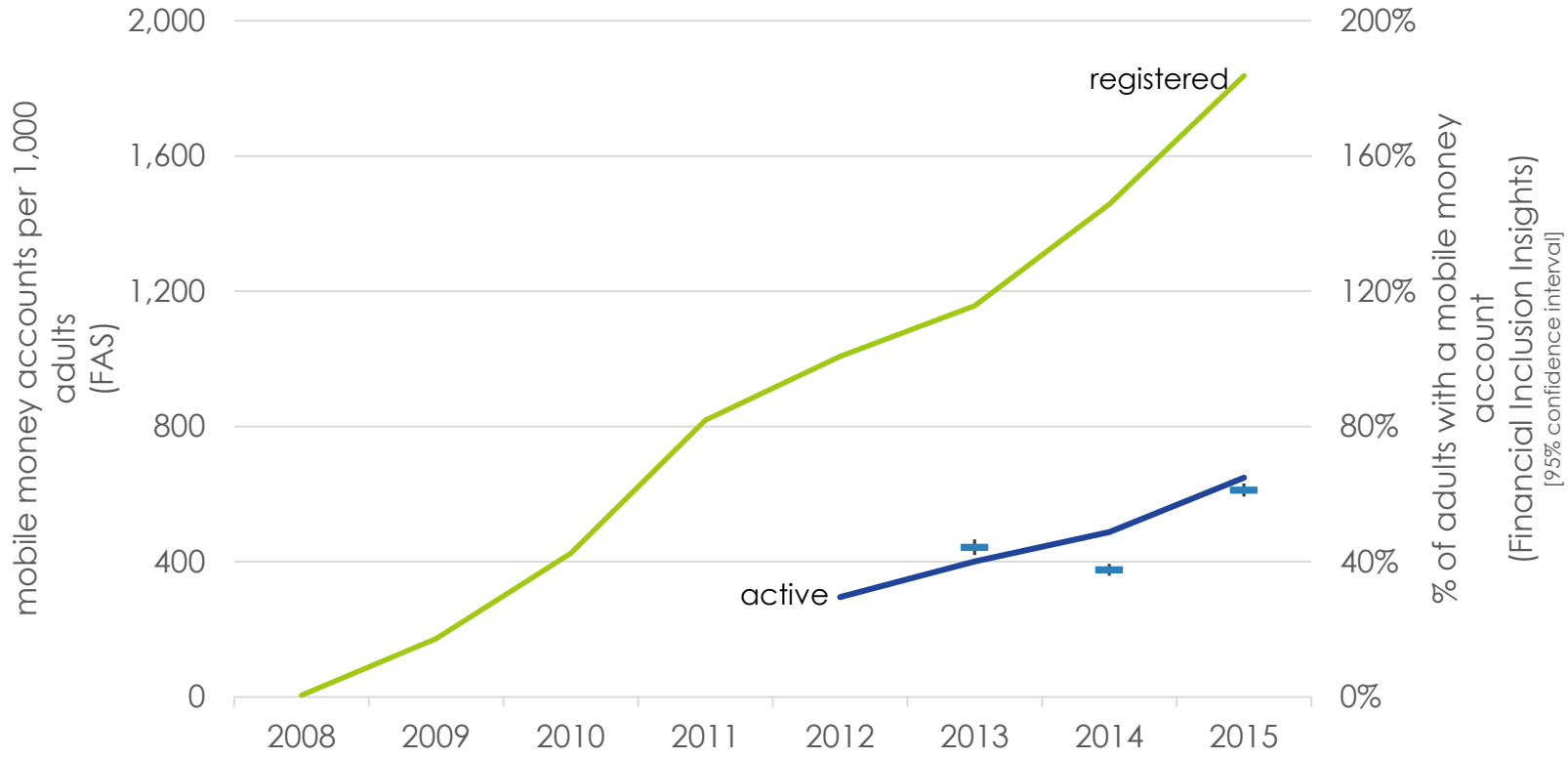
Other factors of relevance:

- non-residents
  - captured in metadata
- non-financial corporations (firms)
  - data for households separately

Annex: features of administrative data (II)

product data often capture market conditions

In Tanzania, users of mobile money services have multiple accounts at different service providers due to lack of interoperability.



Source: FAS and IMF staff calculations.

Irving Fisher Committee on
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BANK FOR INTERNATIONAL SETTLEMENTS

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Marrakech, Morocco, 14 July 2017

The role of demand-side data – measuring financial inclusion from the perspective of users of financial services[1]

Leora Klapper and Dorothe Singer,
World Bank

[1] This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting. The paper's findings, interpretations, and conclusions are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

The Role of Demand-Side Data

Measuring Financial Inclusion from the Perspective of Users of Financial Services

Leora Klapper[1] and Dorothe Singer[2]

Abstract

This paper provides an overview of sources of financial inclusion indicators and highlights the importance of collecting measures of financial inclusion from the perspective of users of financial services – also known as demand-side data. The paper illustrates the important role of collecting demand-side data on financial inclusion by providing insights from the 2014 Global Findex database on borrowing. Developing more inclusive financial systems remains a key issue on policy agendas around the world. Measurement is key to understanding financial inclusion and identifying opportunities to remove barriers that may be preventing people from using financial services. The Global Findex database, launched in 2011 by the World Bank, has made it possible for the first time to measure financial inclusion in a systemic and comparable way for adults around the world from the perspective of the users of financial services.

Keywords: Consumer Finance; Financial Inclusion; Financial Institutions; Government Policy and Regulation

JEL classification: D14, G02, G28

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Contents

1. Introduction

Financial inclusion means that households have access to and can effectively use appropriate financial services. Such services must be provided responsibly and sustainably in a well-regulated environment. Studies show that when people participate in the financial system, they are better able to start and expand businesses, invest in education, manage risk and absorb financial shocks.[3]

The rise of financial inclusion as an important policy goal is due in part to mounting evidence that access to financial products can make a positive difference in the lives of the poor. Field evidence shows that when financial services are available to poor households, the poor are eager to both access services and to maintain access by frequent repayments. The results of the worldwide Financial Diaries Project[4] show how dependent the poor are on various financial instruments, both informal and formal, to manage what little money they have on a day-to-day basis. Furthermore, an increasing number of academic studies show that granting the poor access to financial services can make a difference in their lives in various ways. There is also a clear understanding that for poor households, credit is not the only –or in many cases, the principal – financial service they need: good savings, payments services and insurance may rank higher (World Bank, 2008).

Measurement is key to understanding financial inclusion and identifying opportunities to remove barriers that may be preventing people from using financial services. The Global Findex database, launched in 2011 by the World Bank, has made it possible for the first time to measure financial inclusion in a systemic and comparable way for adults around the world from the perspective of the users of financial services.

This paper provides an overview of sources of financial inclusion indicators and highlights the importance of collecting measures of financial inclusion from the perspective of users of financial services – also known as demand-side data. The paper illustrates the important role of collecting demand-side data on financial inclusion by providing insights from the 2014 Global Findex database on borrowing.

The remainder of this paper is organized as follows. Section 2 provides the motivation to collect global demand-side indicators of financial inclusion. Section 3 discusses the Global Findex database in more detail, including its uses and methodology. Section 4 presents insights from the 2014 Global Findex database on borrowing, highlighting the detailed information demand-side data on financial inclusion can provide. Section 5 concludes.

[3] See, for example, Aportela (1999); Ashraf, Karlan, and Yin (2010); Beck, Demirguc-Kunt, and Martinez Peria (2007); Bruhn and Love (2014); Burgess and Pande (2005); Dupas and Robinson (2013a, 2013b); Prina (2012); and Ruiz (2013). See also World Bank (2014a) and Karlan and Morduch (2010) Cull, Ehrbeck, and Holle (2014), and Demirguc-Kunt, Klapper and Singer (2017) for an overview of the literature on financial inclusion.

[4] For more information see "Portfolios of the Poor". by Collins, et al., (2009).

2. Motivation to collect global demand-side indicators of financial inclusion

Developing more inclusive financial systems remains a key issue on policy agendas around the world. Yet the access dimension of financial development has often been overlooked, mostly because of serious data gaps on who has access to which financial services, and a lack of systematic information on the barriers to broader access. Although large, cross-country, comparable data sets are collected annually on the supply-side, i.e. from the point of view of institutions, the data collection efforts for the demand side, i.e. from the point of view of the household or individual, are limited and generally uncoordinated. However, individual-level surveys are necessary to collect data on the demographic characteristics of financial services users to identify segments of the population with the greatest barriers to access to finance, such as women, rural residents and the poor. In 2011 the World Bank launched the Global Findex database to fill this data gap. Updated and expanded in 2014 (and forthcoming in 2017), it is the first global, comparable, demand-side set of indicators of financial inclusion, which is of value to policymakers, researchers, donors and practitioners.

As summarized in Table 1, there have been numerous previous efforts to collect both supply-side and demand-side indicators of financial access. On the supply-side, indicators of financial outreach, such as number of bank branches and ATMs per capita and per square kilometer as well as the number of loan and deposit accounts per capita, were collected from 99 country regulators for the first time in 2004 (see Beck, Demirgüç-Kunt, and Martinez-Peria, 2007). This data and analysis was prominently featured in the World Bank (2008) Policy Research Report, "Finance For All?", which discussed policies to expand financial access and emphasized the need for more comprehensive and consistent data to measure it. Currently, the IMF collects the annual Financial Access Survey data directly from over 170 financial regulators and providers of digital financial services globally. Descriptive information is also collected through voluntary reporting of microfinance institutions (Mix Market and Microcredit Summit Report) and savings banks (World Savings and Retail Banking Institute (WSBI)). These supply-side datasets are successful in captivating the attention of policymakers, researchers and donors by highlighting the importance of measuring and tracking financial inclusion.

Yet, while these datasets are important sources of basic cross-country indicators at a relatively low cost, supply-side indicators have many important limitations. First, data collected by the IMF is only collected from regulated financial and telecommunication institutions and hence provides a fragmented view of financial access. Second, and most importantly, this approach does not allow disaggregation of financial service users by income or other characteristics; hence, policymakers are unable to identify segments of the population with the greatest barriers to access to finance, such as woman or youth.

On the demand-side, however, survey-based data are quite limited, both in terms of the number of countries that are covered, and the amount of information collected about respondents. In addition, the data are often not comparable across countries because the surveys use different definitions. For instance, only a handful of the World Bank Living Standard Measurement Surveys (LSMS) ask questions on the use of financial services, and even these provide limited financial information. An ambitious multi-country effort to measure access of individuals to a wide range of financial services was launched by Finmark Trust in South Africa and four neighbouring

countries in 2002 and has since been extended to several other African and Asian countries, yet this is limited to these regions. In this way, the lack of cross-country comparability between survey instruments prevents drawing conclusions that are robust across countries and regions.

Table 1: Review of supply-side and demand-side financial inclusion indicators

	Supply-side		Demand-side	
	Emphasis	Data sources	Emphasis	Data sources
In-depth data, but less coverage	- Information gathered from multiple stakeholders - Large, targeted sample sizes	- MixMarket - Microcredit Summit data - Various institution-specific administrative data	- Sizable, focused samples to analyze sub-national relationships - Broad questionnaires to finely capture nuanced issues	- FinScope - EFiNA - Finclusion (Intermedia) - LSMS financial access modules - Other country-specific surveys
Limited headline numbers, but broader coverage	- Cross-country comparisons - Annual surveys	- IMF Financial Access Surveys - GSMA - WB Global Payment Systems Survey	- Cross-country comparisons - The potential for repeat surveys - Enough covariates to segment	- **Global Findex**

It is important to note another challenge in comparing data from different demand-side surveys: surveys of individuals cannot easily be compared directly with surveys of households. The use of financial services can differ considerably between different household members, and it would be a mistake to assume that one randomly selected household member's use is representative of the access and behavior of the other members.

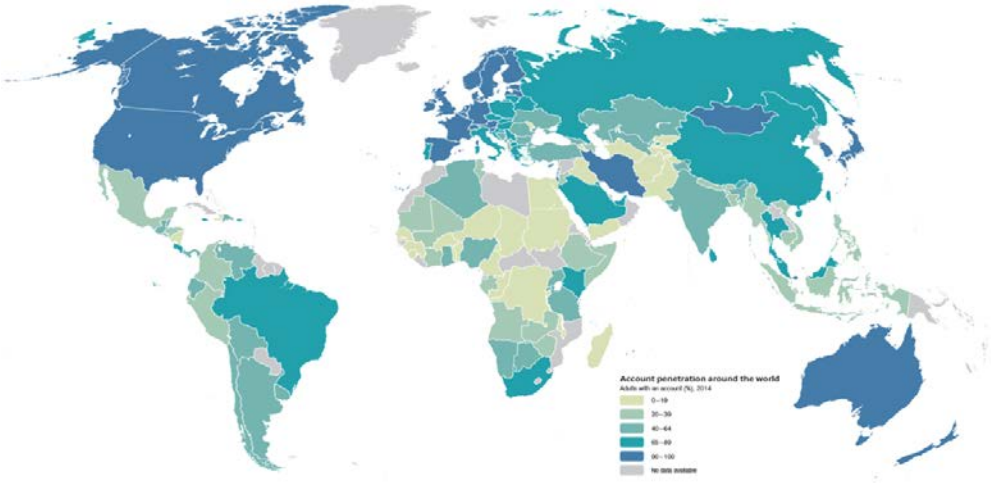
3. The Global Findex database

The Global Findex database (Demirguc-Kunt et al., 2015) is the first global, comparable database of financial inclusion indicators: how adults around the world save, borrow, make payments and manage risk. The database complements existing supply-side data by providing individual-level survey data on the demographic characteristics of users of financial services. The Global Findex data are based on interviews with about 150,000 adults in over 140 developing and high-income countries around the world. First launched in 2011 by the World Bank, the database was updated in 2014 and provides more than 100 indicators on financial inclusion, including by gender, age group, and household income.

The database's headline indicator measuring financial inclusion reveals that between 2011 and 2014, 700 million adults worldwide became account holders. The

number of adults without an account—the unbanked—dropped by 20 percent to 2 billion.

Map 1: Account ownership around the world



Source: Global Findex (2014); https://www.worldbank.org/globalfindex

Globally, 62 percent of adults reported having an account in 2014, up from 51 percent in 2011. The share of adults with an account increased in nearly every country. Not surprisingly, however, the extent of account ownership continues to vary widely around the world. In high-income OECD countries, account ownership is almost universal: 94 percent of adults reported having an account in 2014. In developing countries, only 54 percent did. There are also enormous disparities among developing countries within regions, where account penetration ranges from 14 percent in the Middle East to 69 percent in East Asia and the Pacific.

Uses of the Global Findex database

The Global Findex database of financial inclusion indicators is used by a wide range of users for many purposes. The list includes:

1. *Benchmarking and motivating policy-makers to expand financial inclusion*: Spotlighting the global and country-level financial access situation helps policymakers assess their relative performance (e.g. to their region and income-group), and has encouraged greater action to increase access. Policymakers are motivated to engage in deeper data gathering activities (such as finance modules introduced by LSMS and Finscope) to diagnose problems identified in the aggregate.
2. *Tracking progress*: The data is used to track the effectiveness of reforms to close the gap in financial access and monitor if reforms improve financial inclusion for some but not others (e.g. women, youth)
3. *Identifying priorities*: The Global Findex data has helped development organizations and donors identify countries and population segments within countries. For example, the World Bank 2020 Universal Financial Access goal targets the 25 countries with the highest levels of unbanked adults.

4. *Providing a baseline for researchers*: The data can identify who are the unbanked, and how they differ from the banked. The cross-sectional panel database has been used to study the relationship between financial access, growth, inequality and poverty.

Table 2 outlines some of the potential uses of the Global Findex database across for different potential categories of users.

Global Findex methodology

The key characteristic of a dataset used for measurement, benchmarking, and tracking of financial inclusion around the world is cross-country comparability to show the relative dimensions of financial access across geographical regions and national income levels. Moreover, an important role that these datasets play is helping users understand which parts of the population financial services reach. Therefore, to build a profile of inclusion and to set policy priorities, the database must include demographic covariates, such as gender, income, age, and level of education. Lastly, being able to have regular measurement across the entire set of countries over identical time periods is useful not only to track progress, but also to distinguish the impact of global trends on different countries.

It is also important that the data be collected from a wide range of countries to show how financial access indicators compare across different geographic regions and national income levels. Although the focus is to collect data from a broad sample of low- and middle-income countries, it is important to add a sample of developed countries, across regions, cultures, and legal origins, for countries to benchmark their development and set goals. Furthermore, including a comparative set of developed countries has increased the value and use of the data by researchers, the robustness of the empirical analysis, and the credibility and visibility of the final dataset and Flagship Report.

Table 2: Potential uses of the Global Findex database

Category of user	Questions they may ask of the data	Decisions they may take, based on the data
International users		
Multilateral agencies/ donor agencies	- Within this group of countries, or region, what accounts for observed differences? - Which countries need additional survey work the most?	- Prioritization (or de-prioritization) of new initiatives - Evaluations of inclusion initiatives - Whether or not to undertake detailed survey or country diagnostics
International Researchers	- What appears to guide cross-country differences in financial access over time?	- Which country-level data sets and variables might usefully yield new insights
Multinational financial service providers	- Where are conditions most similar? - Which markets are most ripe to be served?	- Prioritization of market entry, based on opportunity and cost
Domestic users		
Policy makers	- How does financial access in my country compare to what I consider to be my peer group? (regionally or level of income) - Which segments of my population are most at risk, compared to my peers? - What targets should I set for access which I can measure credibly?	- Whether further resources are needed to promote increased financial access - Prioritization of populations and financial service types to be promoted - Choice of financial inclusion targets
Domestic researchers	- What questions are most relevant to study for my country?	- What questions are most relevant to study for my country?
Domestic financial service providers	- How large is the un-served market? - What are the individual demographic and income characteristics of the unbanked?	- Business case justifying opportunity among unserved

An important explanation for the limited availability of comprehensive demand-side surveys is that household level surveys of financial inclusion are very costly. The Global Findex database is an alternative approach to collecting comparable, cross-country, indicators. The data is collected by Gallup, Inc. in conjunction with the Gallup World Poll Survey, which since 2006 has interviewed adults in up to 160 countries over the calendar year. All survey instruments and translations, sampling and data quality control are centralized.

Surveys are conducted face-to-face in countries where telephone coverage reaches less than 80 percent of the population. In most countries, the fieldwork is completed in two to four weeks. In economies where face-to-face surveys are conducted, the first stage of sampling is the identification of primary sampling units.

These units are stratified by population size, geography, or both, and clustering is achieved through one or more stages of sampling. Where population information is available, sample selection is based on probabilities proportional to population size. Otherwise, simple random sampling is used. Random route procedures are used to select sampled households. Unless an outright refusal occurs, interviewers make up to three attempts to survey the sampled household. To increase the probability of contact and completion, attempts are made at different times of the day and, where possible, on different days. If an interview cannot be completed at the initial sampled household, a simple substitution method is used. Respondents are randomly selected within the selected households by means of the Kish grid. In economies where cultural restrictions dictate gender matching, respondents are randomly selected through the Kish grid from among all eligible adults of the interviewer's gender.

In economies where telephone interviewing is employed, random digit dialing or a nationally representative list of phone numbers is used. In most economies where cell phone penetration is high, a dual sampling frame is used. Random selection of respondents is achieved by using either the latest birthday or Kish grid method. At least three attempts are made to reach a person in each household, spread over different days and times of day.

Data weighting is used to ensure a nationally representative sample for each economy. Final weights consist of the base sampling weight, which corrects for unequal probability of selection based on household size, and the poststratification weight, which corrects for sampling and nonresponse error. Poststratification weights use economy-level population statistics on gender and age and, where reliable data are available, education or socioeconomic status. More information on the data collection period, number of interviews, approximate design effect, and margin of error, as well as sampling details for each economy, can be found in Demirguc-Kunt et al. (2015).

4. Insights from the 2014 Global Findex on borrowing

The Global Findex database provides in-depth data showing how people save, borrow, make payments and manage risks. This section, however, will focus on a slice of the data: how and why adults borrow. This analysis highlights the role of demand-side data on credit and the importance of complementing data on bank borrowing with data on informal sources of credit, its use in conjunction with other financial products, reasons for borrowing and the financial literacy of borrowers.

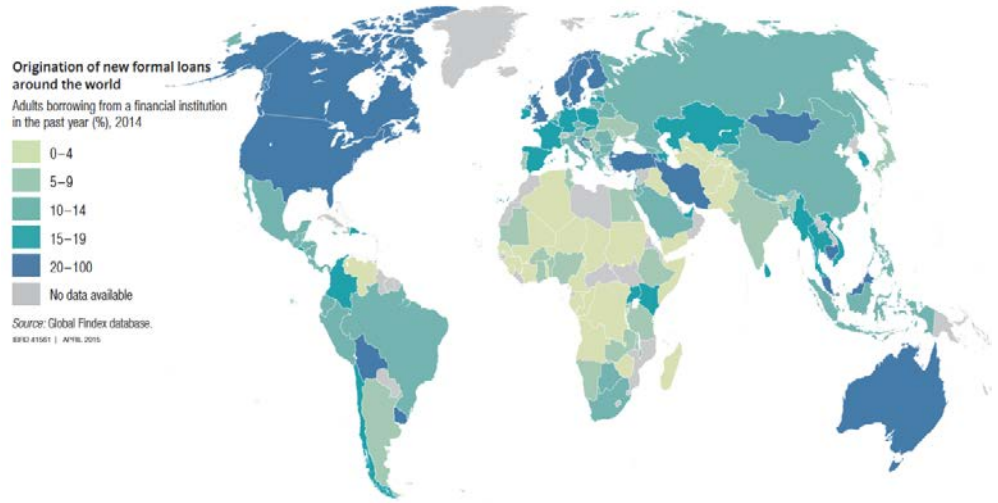
How and why people borrow

Globally, 42 percent of adults reported having borrowed money in the past 12 months. The overall share of adults with a new loan—formal or informal—was fairly consistent across regions and economies, with Latin America and the Caribbean at the low-end with 33 percent, and Sub-Saharan Africa at the high-end with 54 percent. However, the sources of new loans varied widely across regions.

In high-income OECD economies a financial institution was the most frequently reported source of new loans, with 18 percent of adults reporting that they had borrowed from one in the past 12 months (map 3). In all other regions, family and

friends were the most common source of new loans. Overall in developing economies, 29 percent of adults reported borrowing from family or friends, while only 9 percent reported borrowing from a financial institution. In several regions, more people reported borrowing from a store (using installment credit or buying on credit) than reported borrowing from a financial institution. Less than 5 percent of adults around the world reported borrowing from a private informal lender. Between 2011 and 2014, the share of adults with a new loan from a financial institution remained relatively steady around the world.

Map 2: Origination of new formal loans around the world



Source: Global Findex (2014); https://www.worldbank.org/globalfindex

What is the role of credit cards?

Credit cards are a payment instrument. They also serve as a source of short-term credit when credit card holders do not pay off their balance in full each statement cycle. As a result, their introduction may have affected the demand for and use of short-term formal credit.

In high-income OECD economies, 53 percent of adults reported owning a credit card in 2014. In developing economies, despite recent growth in credit card ownership, only 10 percent on average reported owning one. Just two developing regions, Latin America and the Caribbean and Europe and Central Asia, have a rate of credit card ownership exceeding 15 percent.

In high-income OECD economies the high rate of credit card ownership may help explain why the share of adults with a new loan from a financial institution is not particularly high. Indeed, if adults who reported having used a credit card in the past 12 months are included with those who originated a new loan from a financial institution, this would increase the share with a new formal loan by up to 35 percentage points. Many people use credit cards as a payment instrument and carry no credit balances, however, so this measure overstates the use of credit cards as a source of credit.

Among developing economies, three stand out for their relatively high credit card use: Argentina, Brazil, and Turkey, where more than 20 percent of adults reported having used a credit card in the past 12 months. Including these adults with those

who originated a new loan from a financial institution would increase the share with a new formal loan in these three countries by between 16 and 22 percentage points. By comparison, the increase in other developing economies would typically be less than 10 percentage points.

What are the main purposes for borrowing?

For what purposes are people most likely to borrow? One common reason is to buy land or a home, the largest financial investment that many people make in their life. In 2014, 26 percent of adults in high-income OECD economies reported having outstanding formal housing finance from a bank or another type of financial institution. In contrast, the share was less than 10 percent in all developing regions. Even among high-income OECD economies, there is much variation in the share of adults with a formal housing financing from a financial institution. While half of adults in Norway reported having one, for example, less than 15 percent did in Italy, Greece, and Poland (map 3.3).

Such differences may in part reflect differences in housing finance systems across economies, including differences in types of lenders, housing finance funding, and the degree of government participation, all of which have been shown to affect the availability of loans to individuals.[5] Collateral and bankruptcy laws that define legal rights of borrowers and lenders have also been shown to affect housing finance.[6] To develop in the first place, a housing finance market requires formal property rights and an efficient framework to record ownership of property.[7] As noted, family and friends are the most common source of new loans across all developing regions, and they are likely an informal source of credit for buying land or a home for many people in developing economies.

Survey respondents were also asked whether they had borrowed in the past 12 months for any of three other reasons—for health or medical purposes, for education or school fees, or to start, operate, or expand a business.[8]

In developing economies, 14 percent of adults reported borrowing for health or medical purposes. 17 percent of adults in the poorest 40 percent of households reported borrowing for this reason, compared with 12 percent in the richest 60 percent. The gap was largest in East Asia and the Pacific, where those in the poorer group were twice as likely to borrow for this reason, but absent in Latin America and the Caribbean. Borrowing for education and borrowing to start, operate, or expand a business were each reported by 8 percent of adults in developing economies. In high-income OECD economies, about 5 percent or fewer adults reported having borrowed in the past 12 months for health, for education, or to start, operate, or expand a business.

5 IMF 2011.

6 Warnock and Warnock 2008.

7 De Soto 2000.

8 Borrowing for a business also includes borrowing to start, operate, or expand a farm.

Saving or borrowing for business?

When people make investments, they have two basic ways to finance them: they can save the money up front, or they can borrow the money and then make periodic payments to pay off their credit. Data from the 2014 Global Findex survey shed some light on how people around the world finance investments in business.

Globally, 17 percent of adults around the world reported having either saved or borrowed in the past 12 months to start, operate or expand a business. And of those who did, the overwhelming majority reported that they had saved: 79 percent saved—with 59 percent only saving and 20 percent both saving and borrowing—and only 21 percent borrowed.

Business owners were more likely than the general population to report having saved or borrowed for business purposes—almost half reported doing so. But again across all regions, even the majority of this group reported that they had saved: 82 percent saved—with 54 percent only saving and 28 percent both saving and borrowing—and 18 percent only borrowed. This result is in line with research findings that in the United States entrepreneurs have a higher savings rate than the general population, contrary to the expectation that they would be likely to take financial risks and pay more for credit. In part, these numbers might also reflect people who save for many years in anticipation of starting a business, then borrow only once the business is established.

Financial literacy and borrowing

In 2014, four questions were added to the Global Findex questionnaire to assess basic knowledge of four fundamental concepts in financial decision-making: knowledge of interest rates, interest compounding, inflation and risk diversification (for additional information see Klapper, et al., 2015). "Financially literate" adults were identified as those answering three out of four question correctly. Worldwide, only one in three adults were financially literate. Not only is financial illiteracy widespread, but there were big variations among countries and demographic groups. Not surprisingly, financial literacy differed enormously between major advanced and emerging economies in the world. On average 55 percent of adults in major advanced economies[9] were financially literate compared to only 28 percent of adults in major emerging economies[10]. In terms of demographic groups, women, the poor, and lower-educated respondents were more likely to suffer from gaps in financial knowledge. This was true not only in developing economies, but also in countries with well-developed financial markets.

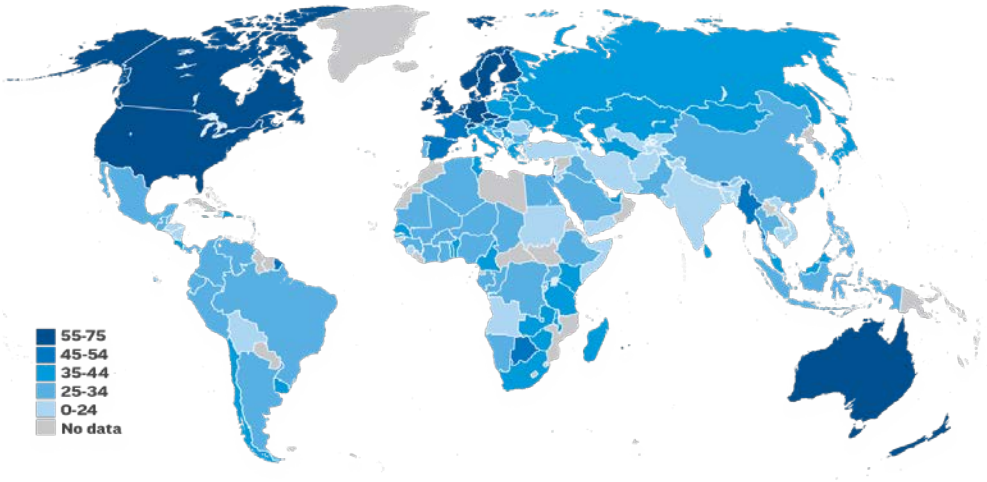
How financially literate are users of formal credit? As documented above, access to formal credit in the form of borrowing from a financial institution or using a credit card is common in high-income economies but limited in developing economies. But credit cards are gaining popularity in some emerging countries, although knowledge of related financial concepts is not always keeping up. Indeed, many short-term credit users did not fully understand the speed at which interest compounding can inflate total amounts owed. For instance, 32 percent of adults in Brazil had a credit card, yet

[9] Canada, France, Germany, Italy, Japan, United Kingdom, and United States.

[10] Brazil, Russian Federation, India, China, and South Africa -- the so-called BRICS countries

only 40 percent of them were financially literate and only half correctly answered the compound interest question. In Turkey, 33 percent of adults had a credit card, yet just 29 percent of these users were financially literate and only half understood compound interest. In comparison, in major advanced economies, where 53 percent of adults reported owning a credit card, 6 out of 10 credit card users understood compound interest.

Map 3: Financial literacy around the world



Source: Klapper, et al. (2015).

Note: This map shows the percentage of adults who answered correctly three out of four questions on financial literacy.

The financial literacy rate among adults with a housing loan was at a similar level in major advanced economies. In these economies, 26 percent of adults had an outstanding loan at a financial institution to purchase a home or an apartment. Since paying for a home requires complex calculations, one would expect homeowners to have stronger financial skills than the average person. This was, indeed, the case. Nevertheless, some homeowners still suffered from gaps in financial knowledge and may not have understood how quickly their debt can accumulate. For example, in the United States, almost a third of adults had an outstanding housing loan, and 70 percent of them were financially literate and correctly answered the compound interest topic. Put differently, three in ten adults with a housing loan were unable to perform basic interest calculations on their loan payments. Since the global financial crisis was triggered in part by mortgage defaults in the United States, this should concern policymakers, not just homeowners. This is not a problem just for the United States. In Japan, nearly one fifth of adults had an outstanding housing loan, but only half of them were financially literate, and just 37 percent of them correctly answered the compound interest question.

5. Conclusion

Developing more inclusive financial systems remains a key issue on policy agendas around the world. Yet the access dimension of financial development has often been overlooked, mostly because of serious data gaps on who has access to which financial services, and a lack of systematic information on the barriers to broader access. In 2011 the World Bank launched the Global Findex database to fill this data gap: it is the first global, comparable, demand-side set of indicators of financial inclusion, which is of value to policymakers, researchers, donors and practitioners.

The database complements existing supply-side data by providing individual-level survey data on the demographic characteristics of users of financial services. Insights from the 2014 Global Findex database on borrowing illustrate the importance of collecting demand-side data to understand how people borrow beyond their use of loans from banks or other regulated financial institutions, including informal sources of credit, its use in conjunction with other financial products, reasons for borrowing and the financial literacy of borrowers.

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BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

The role of demand-side data – measuring financial inclusion from the perspective of users of financial services[1]

Leora Klapper and Dorothe Singer,
World Bank

[1] This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting. The paper's findings, interpretations, and conclusions are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

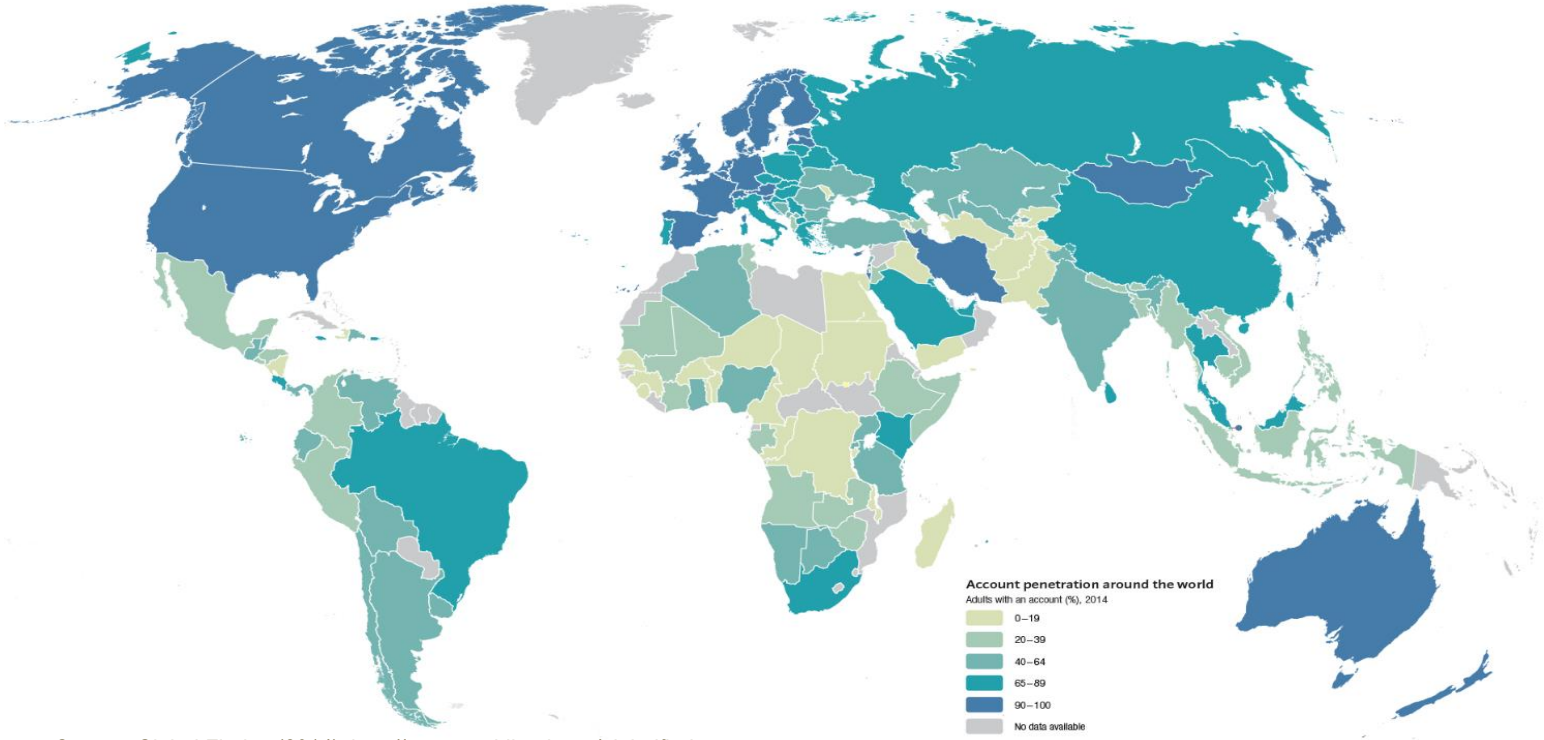
Measuring Financial Inclusion: The Global Findex Dataset

Leora Klapper

Lead Economist
Development Research Group
World Bank

The World Bank's Global Findex Database

54% of adults in developing economies had an account in 2014, up from 41% in 2011 – but 2 billion adults remain unbanked



Source: Global Findex (2014); http://www.worldbank.org/globalfindex

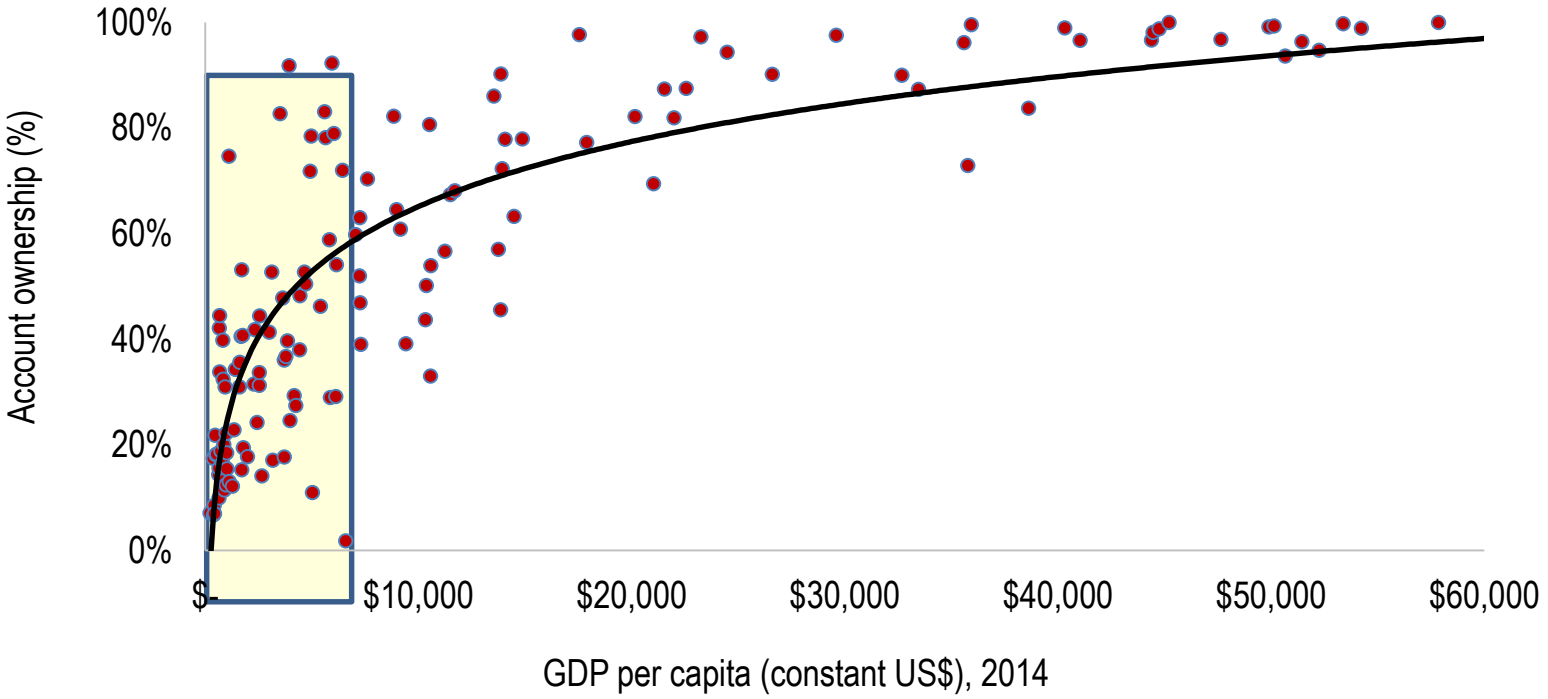
In 2014, the World Bank – with funding from the Bill & Melinda Gates Foundation and in partnership with Gallup, Inc. – updated and expanded the Global Findex dataset, an unprecedented study of financial inclusion based on interviews with almost 150,000 adults in over 140 economies worldwide.

How Can Financial Inclusion Increase Financial Resilience?

- Financial inclusion can increase resilience in two ways:
  - Helping poor adults climb out of poverty by making it possible to invest in education and business—and small enterprises pursue promising growth opportunities
  - Providing ways to survive economic disasters like unemployment, drought/floods, or the loss of a breadwinner, financial inclusion also prevents people from falling into poverty in the first place
- *For example,*
  - In India, an effort to set up accounts for rural farmers **reduced the rate of rural poverty** between 14-17 percentage points
  - In Kenya, merchants who received a basic account **invested more in their businesses**
  - Access to insurance helped farmers in Burkina Faso and Senegal **increase yields and better manage food security**
  - In Niger, digital payments for agricultural wages resulted in time savings that were equivalent to a cash amount large enough **to feed a family of five** for a day
  - In Kenya, adults that use mobile money receive **greater financial support** in emergencies

Economic Activity and Financial Inclusion

Account Ownership and GDP Per Capita



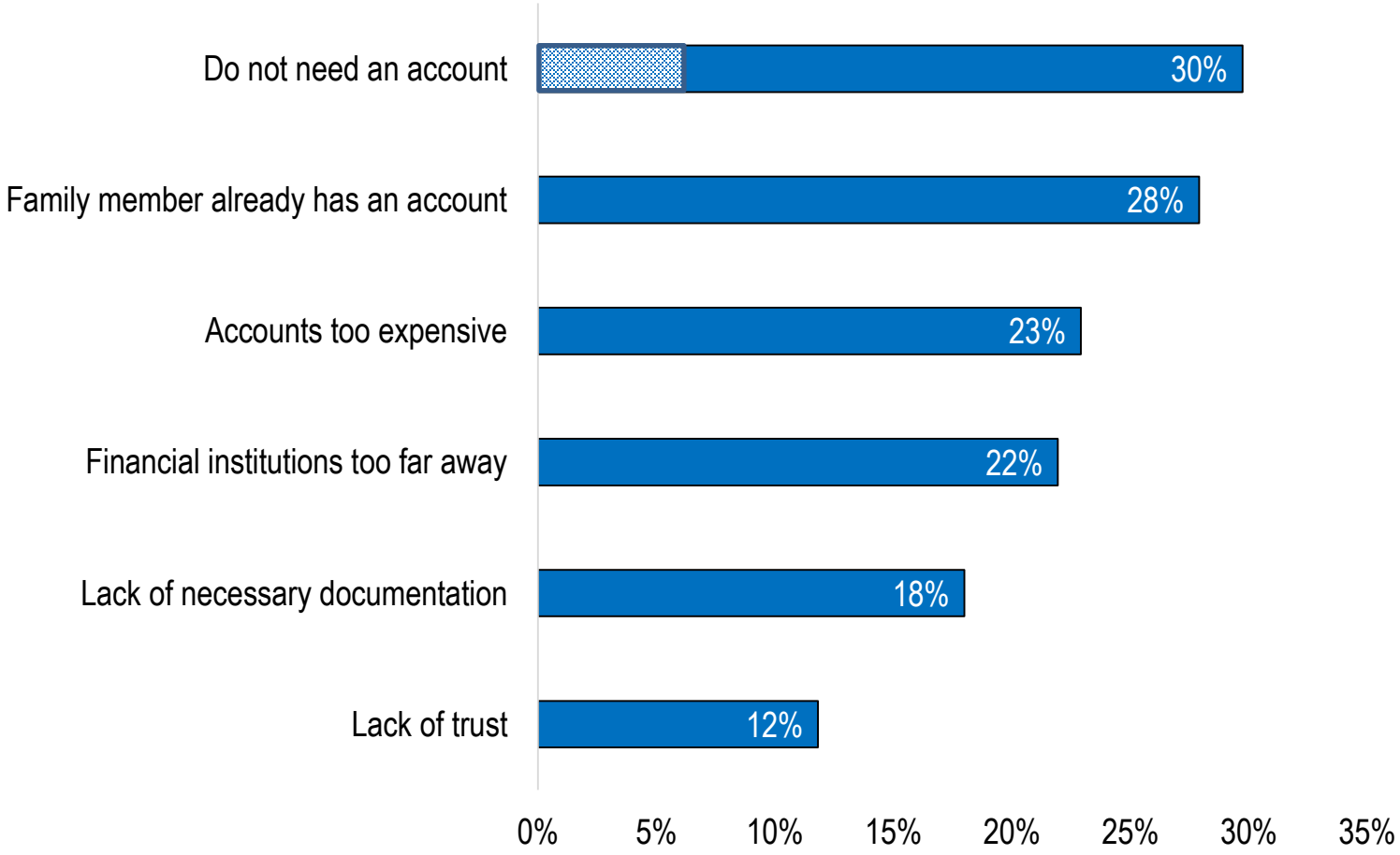
Source: Global Findex (2014); http://www.worldbank.org/globalfindex

- What country-level factors explain the wide variations in account ownership across emerging economies?
  - *Differences in the legal, regulatory, and tax environment {financial & telecom}*
- Impact of reforms, such as new laws/regulations permitting agents, mobile money accounts (/technology), and tiered KYC

Barriers to Account Ownership Around the World

Barriers to Account Ownership

Total Percentage of Adults

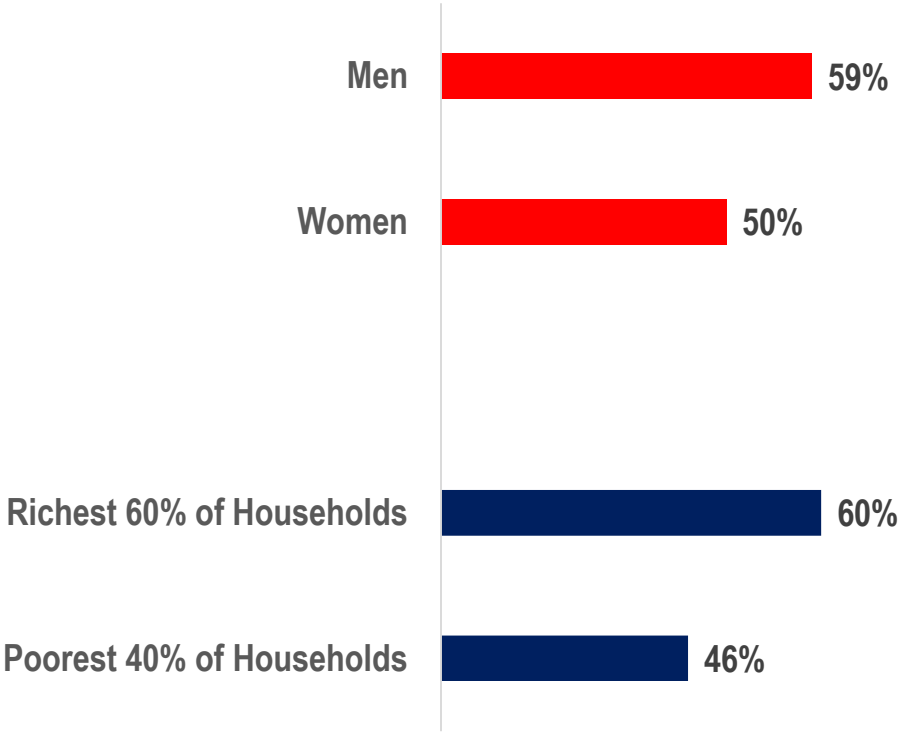


Source: Global Findex (2014); http://www.worldbank.org/globalfindex

Challenges: Inequality in Access

Financial Inclusion in Developing Countries

Total Percentage of Adults, 2014



Source: Global Findex (2014); http://www.worldbank.org/globalfindex

The percent of unbanked adults in the poorest 40% of households dropped by 17 percentage points – but more than half in developing countries are still without accounts

In India, men are more than 20 percentage points more likely than women to have an account

In the Middle East older adults are twice as likely as younger adults to have an account

234 million adults in China remain unbanked and 71% of them live in rural areas

The Benefits and Risks of Digital Financial Services

Over half of all account owners in Latin America use their debit card to make direct payments

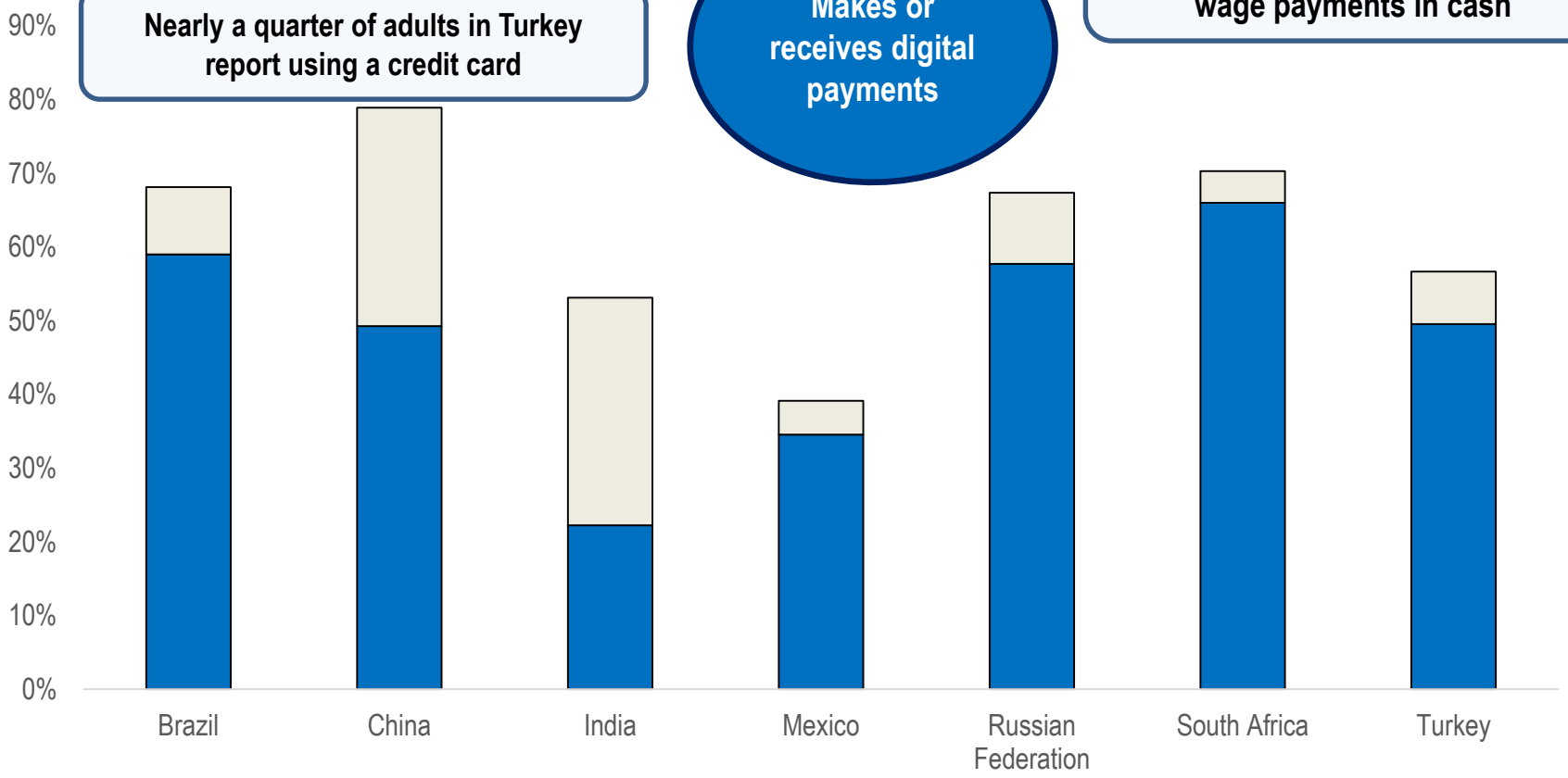
About 9 in 10 government payment recipients in Brazil and South Africa are paid into an account

30% of adults in china make payments from their account using their mobile phone

Over 400 million unbanked adults receive government transfer or wage payments in cash

Nearly a quarter of adults in Turkey report using a credit card

Makes or receives digital payments



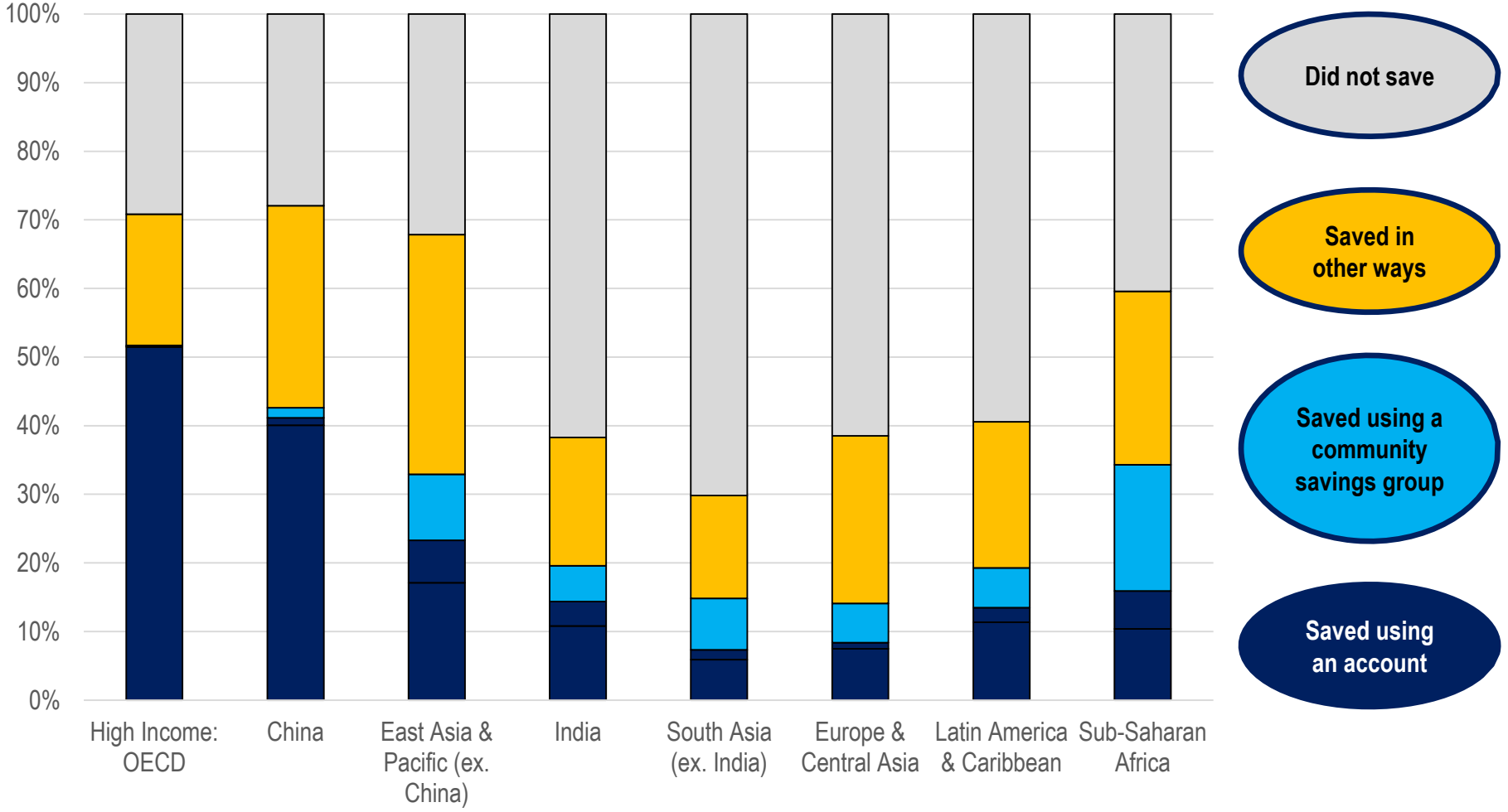
Source: Global Findex (2014); http://www.worldbank.org/globalfindex

Note: The height of the bar is the percentage of adults with an account.

Savings

Savings behavior

Total Percentage of Adults

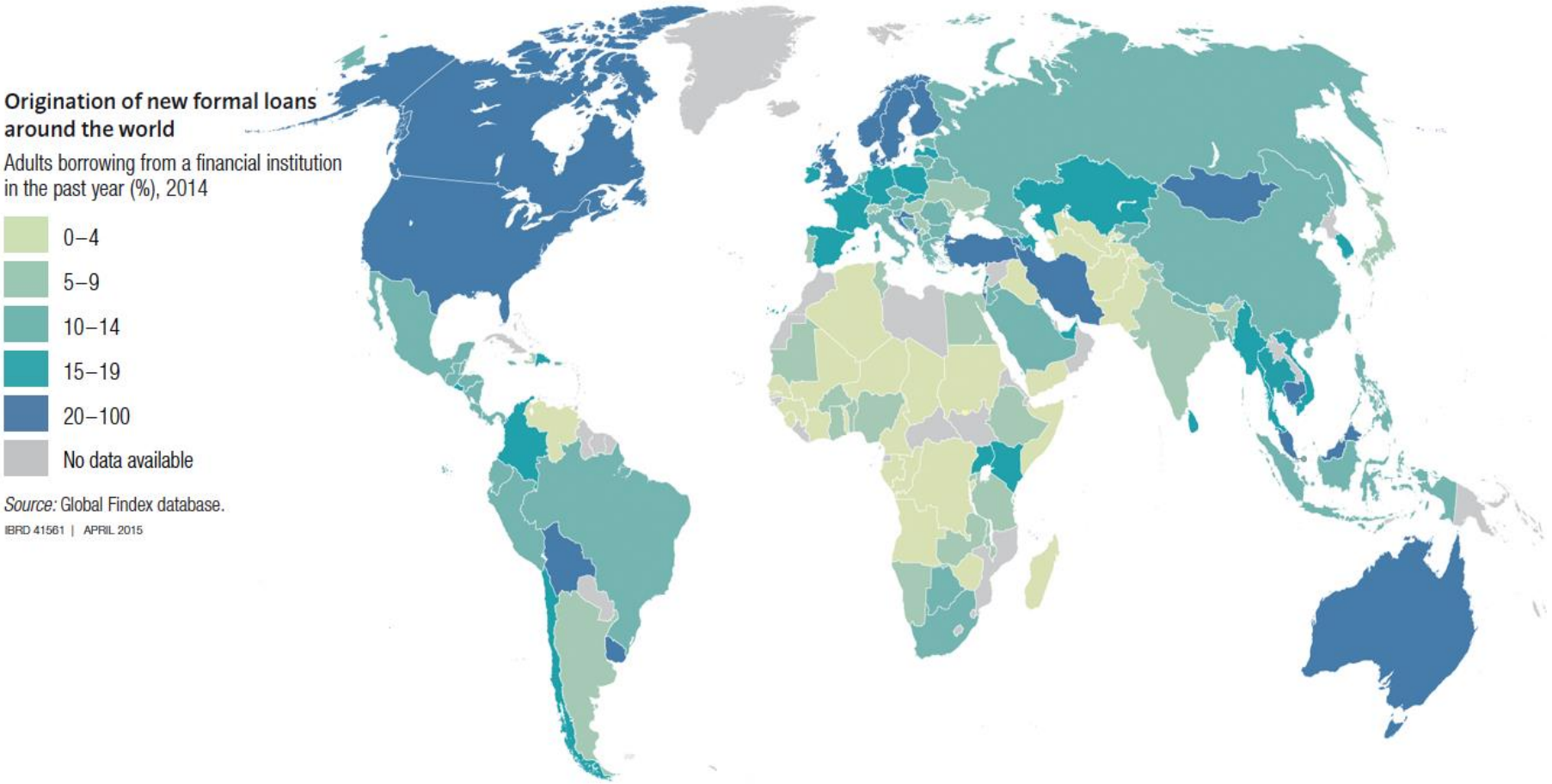


Source: Global Findex (2014); http://www.worldbank.org/globalfindex

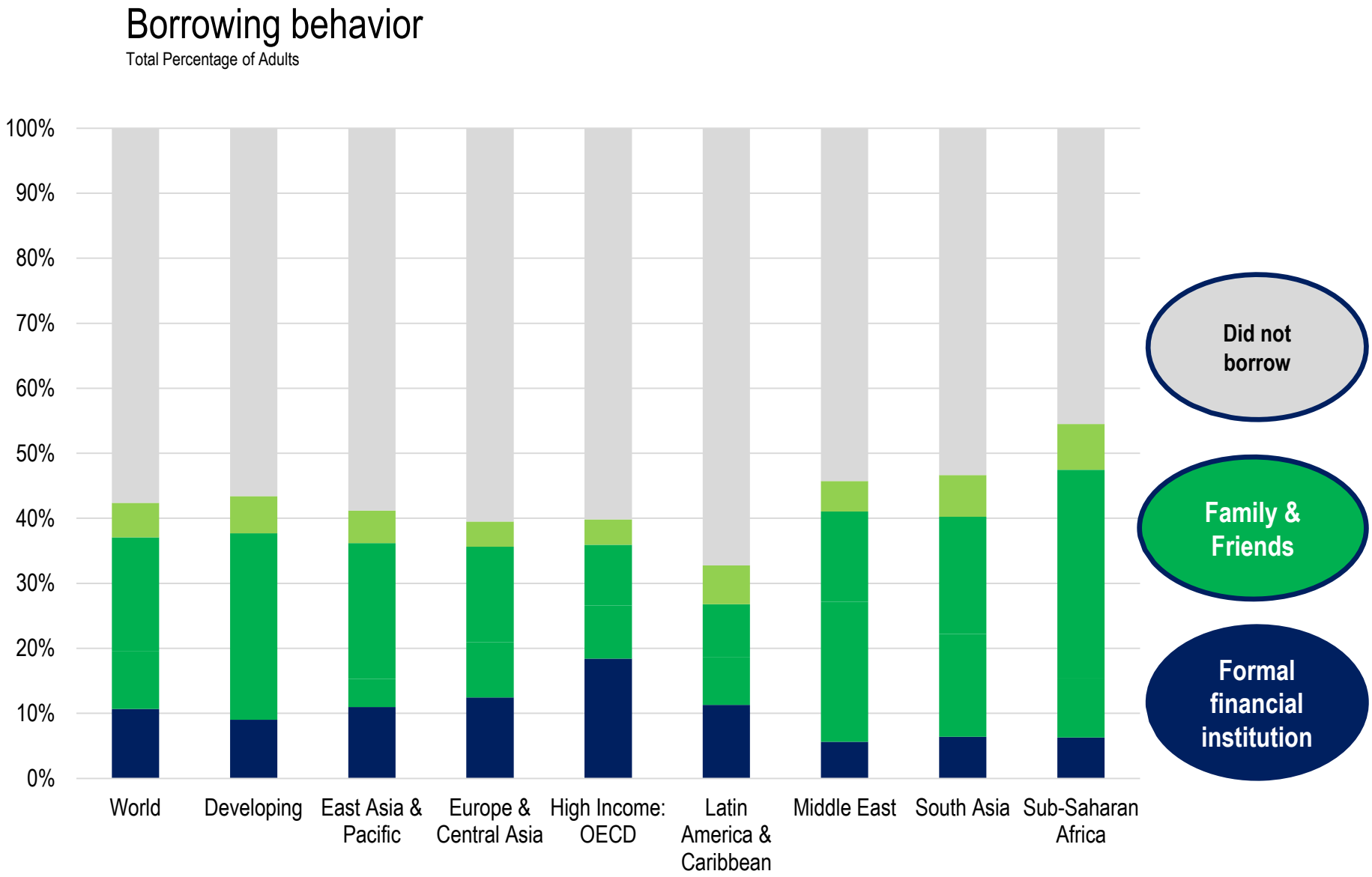
Access to Credit

Formal Credit

Total Percentage of Adults



Access to Credit

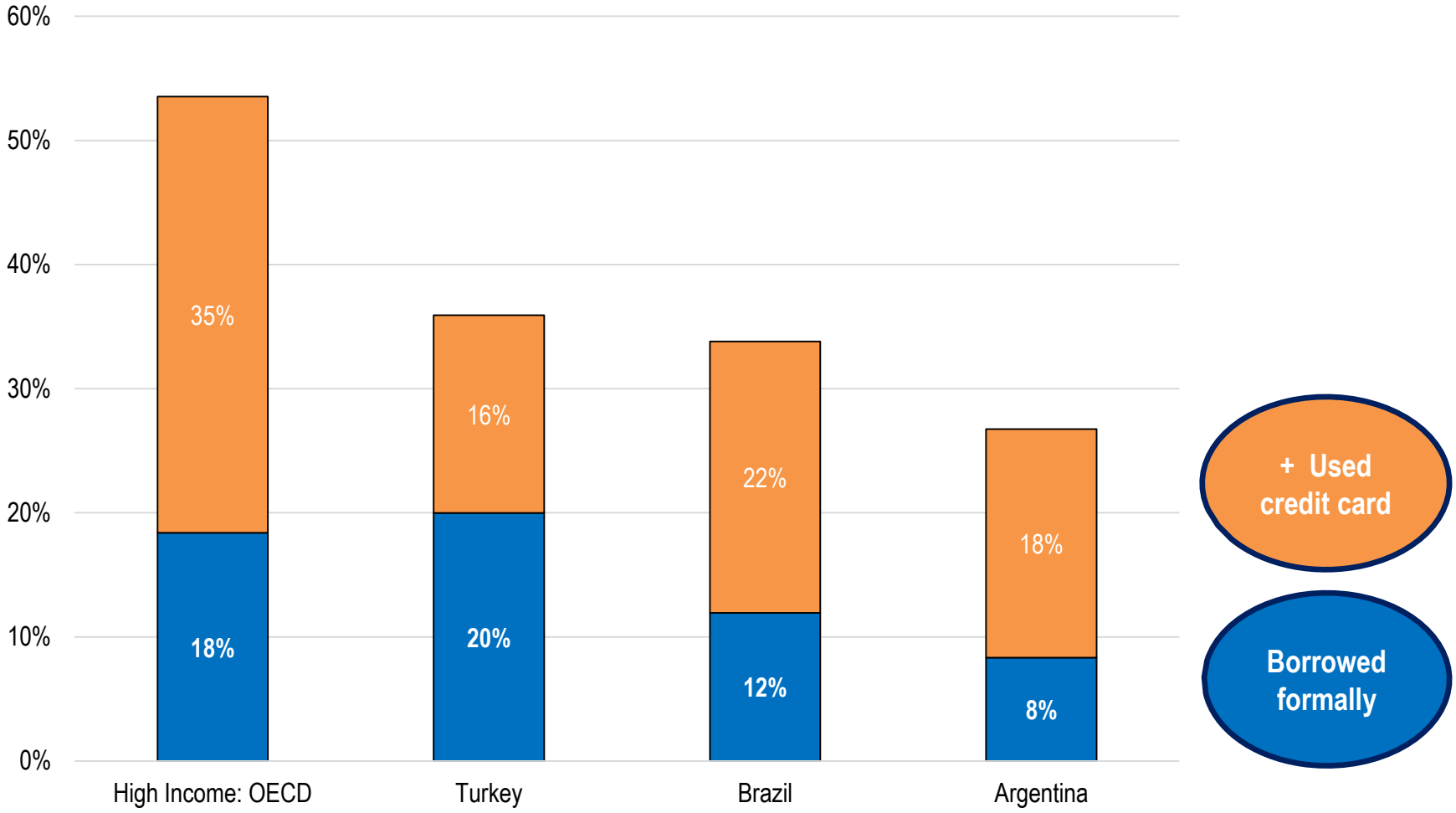


Source: Global Findex (2014); http://www.worldbank.org/globalfindex

Access to Credit

Borrowing behavior, including credit card payments

Total Percentage of Adults

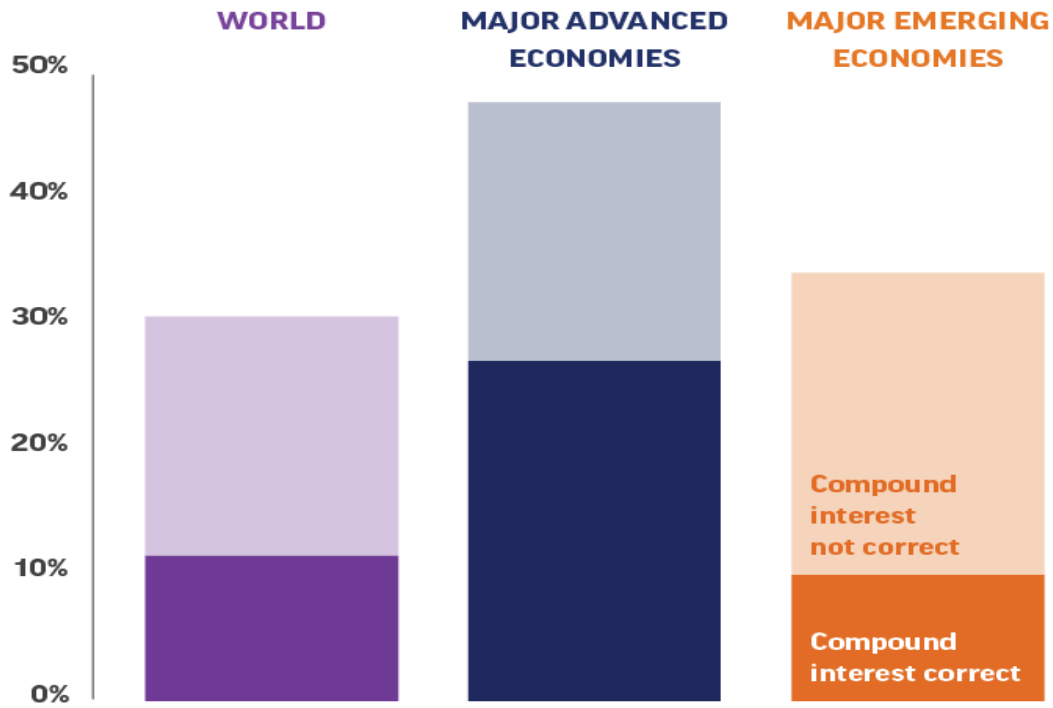


Source: Global Findex (2014); http://www.worldbank.org/globalfindex

Challenges to Financial Stability : Financial Literacy and Use of Formal Credit

Financial Literacy

Total Percentage of Adults who used a credit card or borrowed from a financial institution in the past year



Credit card ownership has doubled in China since 2011 – to 16%. Yet only 58% percent of credit card owners understand interest compounding.

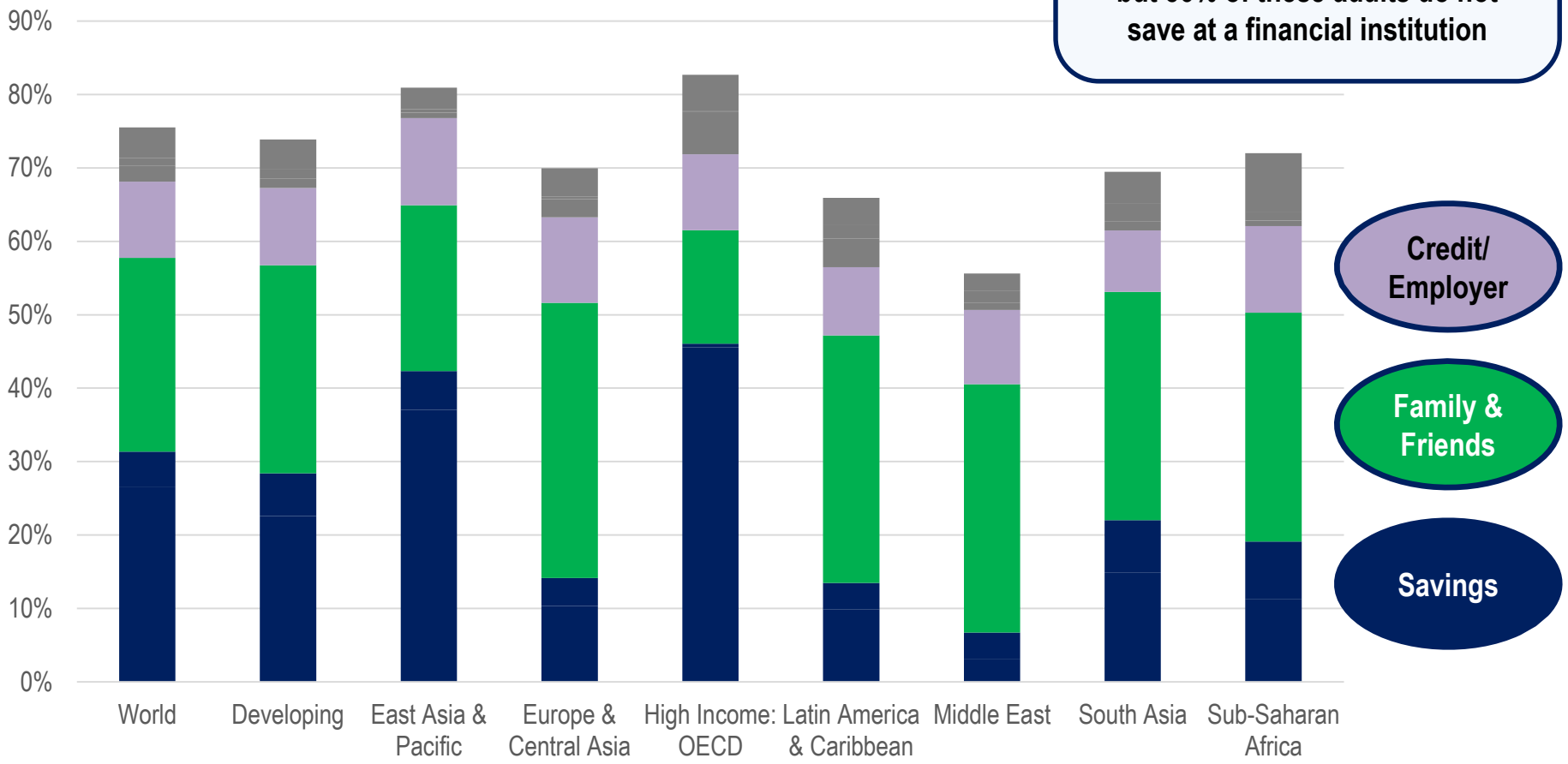
Source: S&P Global FinLit Survey and Global Findex database
Note:
The height of the bars is the percentage of adults that used a credit card or borrowed from a bank
Major advanced economies include: Canada, France, Germany, Italy, Japan, United Kingdom, United States
Major emerging economies include: Brazil, China, India, Russian Federation, South Africa

Measuring Financial Resilience

Financial Resilience: Source of emergency funds

Total Percentage of Adults

1.2 billion adults in developing countries say they would use savings in case of an emergency—but 56% of these adults do not save at a financial institution



Source: Global Findex (2014); http://www.worldbank.org/globalfindex

Note: the height of the bar is the percentage of adults that report being able to come up the equivalent of 1/20th of GNI in a month.

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BANK FOR INTERNATIONAL SETTLEMENTS

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Measuring financial inclusion: a multidimensional index[1]

Noelia Cámara, BBVA Research,
and David Tuesta, CAF- Bank of Development for Latin America

[1] This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Measuring financial inclusion: a multidimensional index

Noelia Cámara[1] and David Tuesta[2]

Abstract

We use demand and supply-side information to create a composite index that measures the extent of financial inclusion at country level, for 137 developed and less-developed countries. We postulate that the degree of financial inclusion is determined by three dimensions: usage, barriers and access to the financial system. Let assume that a latent structure exists behind the covariation of a set of correlated indicators associated to the financial inclusion concept. It allows estimating a comprehensive measure of the degree of financial inclusion by assigning weights endogenously, with a two-stage Principal Component Analysis. Our composite index is easy to interpret and compute.

Keywords: net financial inclusion, underlying structure, inclusion barriers

JEL classification: C43, G21, O16

Contents

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1. Introduction

Issues relating to financial inclusion are a subject of growing interest and one of the major socioeconomic challenges on the agendas of international institutions, policymakers, central banks, financial institutions and governments. The United Nations' declared objective of achieving universal financial access by 2020 is another example of financial inclusion being recognized as fundamental for economic growth and poverty alleviation. [3] The World Bank's latest estimates state that nearly half of the adult population in the world does not have a bank account in a formal financial institution. However, the concept of financial inclusion goes beyond single indicators, such as percentage of bank accounts and loans or number of automated teller machines (ATMs) and bank branches. In the literature, the attempts to measure financial inclusion through multidimensional indices are scarce and incomplete. To the best of our knowledge, literature lacks a comprehensive indicator that can bring together information on financial inclusion by using a statistically sound weighting methodology and takes into account both demand and supply-side information. Our study aims to fill this gap.

The major contribution of this paper is the construction of a multidimensional financial inclusion index covering 138 countries for the periods 2011 and 2014. The weights of the index are obtained from a two-stage Principal Component Analysis (PCA) for the estimation of a latent variable. First, we apply PCA to estimate the group of three sub-indices (i.e. dimensions) representative of financial inclusion. Second, we apply again PCA to estimate the overall financial inclusion index by using the previous sub-indices as causal variables. Our index improves existing financial inclusion indices in several ways. First, we use a parametric method that avoids the problem of weighting assignment. Second, we offer a harmonized measure of financial inclusion for a larger set of countries, 137 developed and less-developed countries, that allows comparisons across countries and over time. Finally, we provide a comprehensive definition of financial inclusion combining information from 20 indicators from both demand and supply-side data sets, and from two perspectives: banked and unbanked population. It is the first time that a composite index uses a demand-side data set at individual level to measure the level of financial inclusion across countries. We identify two problems in the current financial inclusion indices. First, existing attempts to build financial inclusion indices rely only on supply-side country level data and come up with inaccurate readings of financial inclusion due to bias generated by the existence of measurement errors in the usage indicators. Supply-side indicators, particularly the number of accounts or loans, can overestimate the inclusiveness of financial systems since one person can have more than one account or loan. It is a very common practice in developed countries. Second, assigning exogenous weights to indicators is often criticized for lack of scientific rigor because exogenous information is imposed.

The lack of a harmonized measure that includes multidimensional information to define financial inclusion is a pitfall that confounds the understanding of several related problems. The multidimensional measurement of financial inclusion is important in several aspects. First, a measure that aggregates several indicators into a single index aids in summarizing the complex nature of financial inclusion and helps to monitor its evolution. A good index is better at extracting information. Second, a better measure of financial inclusion may allow us to study the link between financial

[3] The Global Financial Development report for 2014, by the World Bank (2013), is the second report that focuses on the relevance of financial inclusion. It offers an overview of financial inclusion status and problems based on new evidence about financial sector policy. The Maya Declaration is another example that evidences the importance of financial inclusion. It consists of a set of measurable commitments by developing countries' governments to enhance financial inclusion. There are more than 90 countries in the agreement and they represent more than 75 per cent of the unbanked population. Finally, the G20 also express its interest in promoting financial inclusion in non-G20 countries through the Global Partnership for Financial Inclusion (GPFI). This platform, officially launched in Seoul in 2010, recognizes financial inclusion as one of the main pillars of the global development agenda endorsed in its Financial Inclusion Action Plan.

inclusion and other macroeconomic variables of interest (i.e. economic growth, financial stability, etc.). Third, information by dimension helps to better understand the problem of financial inclusion. It can be a useful tool for policy making and policy evaluation.

There are two commonly used approaches to constructing composite indices: non-parametric and parametric methods. The first ones assign the importance of indicators by choosing the weighs exogenously, based on researchers' intuition. There is evidence that indices are sensitive to subjective weight assignment, since a slight change in weights can alter the results dramatically (Lockwood, 2004). [4] Sarma (2008, 2012) and Chakravarty and Pal (2010) are examples of financial inclusion indices that apply this methodology to usage and access indicators from supply-side country level data sets. In contrast, parametric methods assign the importance of indicators (weights) in the overall index endogenously, based on the information structure of sample indicators. Specifically, through the covariation between the indicators related to the common structure. There are two parametric analyses commonly used for indexing: PCA and Common Factor Analysis. Amidzic *et al.* (2014) proposes a measure of financial inclusion based on a Common Factor Analysis. However, the indicators used to define financial inclusion only include limited supply-side information at country level. From an empirical point of view, PCA is preferred over Common Factor Analysis as an indexing strategy because it is not necessary to make assumptions on the raw data, such as selecting the underlying number of common factors (Steiger, 1979). This paper offers a multidimensional financial inclusion index with endogenous weights estimated by Principal Componets.

The rest of the paper is organized as follows. In section 2, we describe the data and the rationale for our chosen indicators as well as for the use of sub-indices that measure financial inclusion dimensions. Section 3 describes the methodology for constructing our composite index from multi-dimensional data. Section 4 discusses the results of the sub-indices as well as the composite financial inclusion index. Finally, Section 5 concludes.

2. Financial Inclusion Dimensions and Data Sources

How to measure financial inclusion is a topic of concern among researchers, governments and policy makers. To date, financial inclusion measurement has been mainly approached by the usage and access to the formal financial services by using supply-side aggregate data (e.g. Honohan (2007); Sarma (2008, 2012); Chakravarty and Pal (2010) and Amidzic *et al.* (2014)). However, the way supply-side information is collected is not precise to capture the extent of financial inclusion since it does not inform on the real population that is covered by access to the formal financial system or using financial services. In terms of access, a broad availability (i.e. more ATMs and bank branches) does not mean necessarily that a system is inclusive per se since the geo-location of points of service is unknown. In terms of usage, figures such as number of deposits are overestimated, especially in developed countries. These pitfalls should be solved by using additional information from the demand side when it comes to usage. There are only two studies that rely on demand-side data. The first one, developed by Demirgüç-Kunt and Klapper (2013 and 2015), focus on several financial inclusion-related indicators individually. [5] However, monitoring different indicators individually, although useful, does not offer a comprehensive understanding of the level of financial inclusion across countries. In the second study, Dabla-Norris *et al.* (2015) focuses on the Latin America and the Caribbean countries and builds on a previous version of our financial inclusion index by including a similar index for SMEs.

[4] There is also a problem with weight reassignment when new indicators are included into an existing index.

[5] Didier and Schmuckler (2014) analyses individual indicators of the Enterprise Survey but they do not explore a composite indicator.

In brief, the few attempts to measure financial inclusion through composite indices are either limited in terms of countries or incomplete in terms of information and subject to methodological problems. In addition, current attempts also lack information on financial exclusion

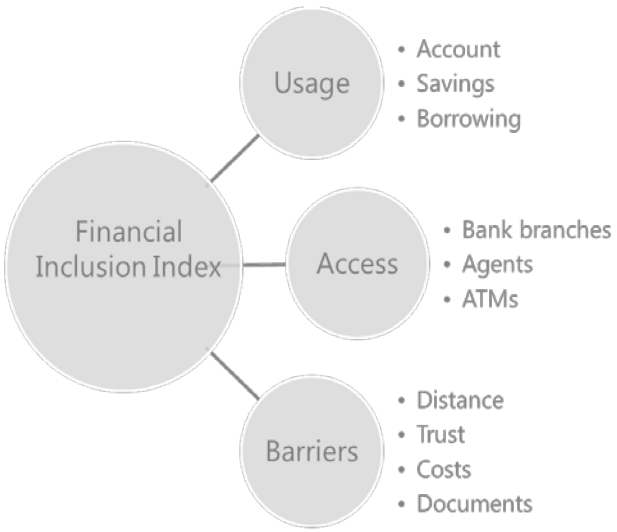
We collate nine definitions for financial inclusion to stablish the dimension structure of our index. Accordingly, we define an inclusive financial system as one that maximizes usage and access, while minimizing involuntary financial exclusion. [6] Involuntary financial exclusion is measured by a set of barriers perceived by those individuals who do not participate in the formal financial system. It includes the barriers to financial inclusion through the obstacles perceived by people prevented from using formal financial services and it is considered a proxy for the quality of financial inclusion. Thus, we postulate that the degree of financial inclusion is determined by three dimensions: usage, barriers (i.e. quality) and access (Figure 1). These dimensions are, at the same time, determined by a set of 20 indicators including demand-side individual level indicators for the cases of usage and barriers, and supply-side country level indicators for access.

Combining information on the three dimensions is important since having access does not implies a straightforward usage as it is conditioned by other socio-economic factors such as income, regulatory framework or cultural habits that make individuals use these kinds of services in a particular manner. Access can be considered a necessary but not sufficient condition for measuring the inclusiveness of a financial system. Likewise, we consider the use of formal financial services as an output of financial inclusion rather than a comprehensive measure of the inclusiveness of a financial system in itself. Our hypothesis is that focusing only on usage and access leads to limited measurement of financial inclusion because we do not have information about the quality conditions of the financial inclusion process or the number of financially excluded people. In this context, demand-side individual surveys that gather information on the perceived reasons why people fail to use formal financial services add significant information about the degree of inclusiveness of a financial system. Adding this information on the unbanked aims to assess financial inclusion by introducing the concept of "net financial inclusion". It approaches financial inclusion measurement from a double perspective. From the banked side, by measuring the actual use of formal financial services, namely, inclusion output of financial systems. And, from the unbanked, by incorporating the extent of excluded population in the financial inclusion assessment.

[6] For the CGAP financial inclusion means that all working age adults have effective access to credit, savings, payments and insurance from formal service providers. Effective access involves convenient and responsible service delivery, at a cost affordable to the customer and sustainable for the provider with the result that financially excluded customers use formal financial services rather than existing informal options.

Multidimensional Financial Inclusion Index

Figure1



Source: Own elaboration

To compute the index, we take advantage of the largest demand-side harmonized dataset at individual level, the World Bank's Global Findex (2011 ad 2014). It offers a homogeneous measure of indicators for individuals' use of financial products across economies. This survey collects information about 150,000 nationally representative and randomly selected adults from 140 countries in 2011 and 137 in 2014, around the world. Data available at individual, rather than household, level is also an advantage that improves accuracy and comparability of the analyses. This database fills an important gap in the financial inclusion data landscape. We also use supply-side aggregate data on access from the International Monetary Fund's Financial Access Survey (2015). This is a source of supply-side data that offers information on an unbalanced panel of 189 countries, covering the period 2004-2015.

2.1 Usage

To assess the extent of usage of the formal financial services by individuals, we try to proxy the utility derived of using such services by considering the use of different products: holding at least one active financial product that allows making and receive payments and storage money, having a savings account and having a loan in a formal financial institution. Taking advantage of the information in the Global Findex data set, we can measure the usage dimension of formal financial services.

We built the indicator to account for people using at least one formal financial service that allows making and receive payments and storage money by adding information from several questions in the Global Findex. We consider as formal financial service users for this indicator the percentage of respondents who report having an account (by themselves or together with someone else) at a bank or another type of financial institution. Account at a financial institution includes respondents who report having an account at a bank or at another type of financial institution, such as a credit union, microfinance institution, cooperative, or the post office (if applicable), or having a debit card in their own name. It includes an additional 2.77 percent and 2.04, for 2014 and 2011 respectively, of respondents who report not having any of the previous products but receive wages, government

transfers, or payments for agricultural products into an account at a financial institution in the past 12 months; pay utility bills or school fees from an account at a financial institution in the past 12 months; or receive wages or government transfers into a card in the past 12 months. Often, these individuals are not aware that they have a bank account. [7] In addition, we consider as banked those individuals who reported not having a bank account because someone else in the family already has one. They are contemplated as indirect users of formal financial services. [8] Finally, in order to account only for active financial products, we define dormant accounts and subtract them from the usage indicator by removing the percentage of respondents with an account at a bank or another type of financial institution who report neither a deposit into nor a withdrawal from their account in the past 12 months. The savings and loan indicators represent the percentage of adult population that saves and has a loan in a formal financial institution respectively. The upper panel in Table 1 shows descriptive statistics of the indicators that we use to measure usage dimension, for 2014. For all the demand-side indicators, data is aggregated at country level by computing the proportion of individuals in each category and then applying the weighting scheme corresponding to the sample in each country.

2.2 Barriers

The barriers to financial inclusion, perceived by unbanked individuals, provide information about the obstacles that prevent them from using formal financial services. This information offers an additional angle to assess the extent of financial inclusion since it offers the number of financially excluded individuals and the reasons perceived by these individuals for being excluded from the formal financial system. There are two types of financial exclusion: voluntary or self-exclusion and involuntary. If we treat financial inclusion as a behavioral issue, individuals need to decide whether to participate in the formal financial system given their budget constraints and utility function. One possibility is that some individuals do not have a demand for formal financial services, leading them to self- exclusion because of cultural reasons, lack of money or just because they are not aware of the benefits of these types of services. This choice can be shaped by imperfect information about the utility of financial services for managing risk, savings for the future and affordability of different investments such as education or buying a house. However, exclusion can also be due to other market imperfections such as the lack of access to financial services or an inappropriate product range that does not satisfy people's needs. The latter obstacles that hinder financial inclusion may be associated with the category of involuntary exclusion so that people cannot satisfy their demand.

In order to measure the degree of inclusiveness of financial systems, from the unbanked perspective, we take into account only the information about barriers that represent involuntary exclusion such as distance, lack of the necessary documentation, affordability and lack of trust in the formal financial system. The question about perceived barriers is formulated in the Global Findex questionnaire in such a way that individuals can choose multiple reasons for their not having a bank account.

According to the Global Findex data set, almost 20 percent and 16, for 2011 and 2014 respectively, of the unbanked population cites distance as one of the reasons that prevents them from having an account. This reason is observed more frequently in developing countries where access points are remote. Documentation requirements are also cited as a perceived barrier for financial inclusion by almost 20 percent of the unbanked in 2011 and 19 percent in 2014. Affordability is the second most

[7] Since we want to compute and index including both developed and less-developed countries we cannot take into account the usage of financial services for enterprises due to the lack of harmonized information for developed countries. This information is only available for less-developed countries in the World Bank's Enterprise Survey.

[8] We do not consider people with insurance since this information is only available for less-developed countries.

cited obstacle for financial inclusion, after only lack of money, and prevented 25 percent of the unbanked from using formal financial services in 2011 (same figure for 2014). Finally, the lack of trust in the financial system is cited by 13 percent of adults in 2011 and 10 percent in 2014. All these variables are introduced in our analysis in their negative form so that the fewer people reporting the barrier, the greater the inclusiveness of the financial system.

2.3 Access

Access to formal financial services represents the possibility for individuals to use them. However, greater access does not necessarily imply a higher level of financial inclusion. There is a threshold for access since, when it reaches a certain level, a marginal increase does not necessarily generate a financial inclusion increase. It may enhance frequency in the use of financial services, by improving intensive margin of usage but does not necessarily increase extensive margin, in terms of higher percentages of accounts held or any other financial service. However, greater access is expected to foster financial inclusion when access levels are below the threshold, via greater availability, if financial services meet the needs of the population. Also, when increasing access is generated from different financial companies, more intense competition may increase the consumption of financial services via prices too, even above the threshold.

We construct the access dimension with supply-side data at country level from three basic indicators: automated teller machines (ATMs) (per 100,000 adults), commercial bank branches (per 100,000 adults) and banking agents (per 100,000 adults). Banking agents, also known as banking correspondents, are non-financial commercial establishments that offer basic financial services under the name of a financial services provider, facilitating access points to the formal financial system. The establishments are spread across diverse sectors (grocery shops, gas stations, postal services, pharmacies, etc.), as long as they are brick-and-mortar stores whose core business involves managing cash. In its most basic form, banking correspondents carry out only transactional operations (cash in, cash out) and payments but, in many cases, they have evolved as a distribution channel for the banks 'credit, saving and insurance products Cámara et al. (2015). [9]

This three indicators account for the physical points of services offered by the institutions belonging the formal financial system such as commercial banks, credit unions, saving and credit cooperatives, deposit-taking microfinance and other deposit takers (savings and loan associations, building societies, rural banks and agricultural banks, post office giro institutions, post office savings banks, savings banks, and money market funds). Information on ATMs and bank branches is collected by financial services providers though the International Monetary Fund's Financial Access Survey (FAS). Data on banking agents are gathered by Cámara et al. (2015). [10]

Since banking agents do not exist in all the countries, we add up banking agents to the number of bank branches in order to not to bias the analysis. Thus, we use a single indicator which contains information of the number of bank branches and banking agents together. Although banking agents play an important role in enhancing access, distance is still one of the reasons why people do not participate in the formal financial system. In 2014 perceived distance as a barrier for financial inclusion

[9] The key difference with respect to other financial channels such as in-store branches or kiosks is that, in the banking correspondent business model, financial services are provided by the employees of the commercial establishment itself, not by the bank´s employees or machines. This outsourcing strategy leads to an improvement in efficiency for banks that makes it sustainable to focus on low-income clients with costly efficient access channels.

[10] Data on adult population come from the World Development Indicators provided by the World Bank.

decreased by 5 percent on average but it decreases for the group of developed countries. [11] Both technology and regulation are contributing greatly to extend availability of access points. However, these advances might not be perceived with the same intensity by financially excluded people in the developing world yet.

Descriptive Statistics

Table 1

Variable	Obs.	Mean	Std. Dev	Min	Max
Usage					
Account	137	61.00	27.00	8.00	100
Loan	137	11.60	5.15	1.31	26.43
Savings	137	24.46	16.85	0.90	68.84
Access					
ATMs/100,000 pop.	137	56.18	52.46	0.49	270.13
Branches and agents /100,000 pop.	137	20.82	17.91	0.66	89.73
Barriers					
Distance	137	17.06	11.65	0.00	49.16
Affordability	137	26.32	14.59	0.00	59.81
Documentation	137	18.60	11.98	0.00	49.47
Lack of trust	137	18.83	12.10	0.00	57.45

Source: Own elaboration

3. Principal Component Analysis as an Indexing Strategy

Financial inclusion is an unobservable concept which cannot be measured quantitatively in a straightforward way. However this variable is supposed to be determined by the interaction of a number of causal variables. We assume that behind a set of correlated variables we can find an underlying latent structure that can be identified with a latent variable as is the case of financial inclusion. Two important issues arise in the estimate of any latent variable: the selection of relevant causal variables and the estimation of parameters (weights). Regarding the first issue, it is not possible to apply standard reduction of information criterion approaches for the selection of variables. For the second, since financial inclusion is unobserved, standard regression techniques are also unfeasible to estimate the parameters. The weight assignment to the indicators or sub-indices is critical to maximize the information from a data set included in an index. A good composite index should comprise important information from all the indicators, but not be strongly biased towards one or more of these indicators. Thus, we seek to determine the best weighted combination of indicators that define our underlying structure by applying two-stage principal components methodology to estimate the degree of financial inclusion as an indexing strategy.

[11] Distance is a problem that affects mainly less-developed countries. In developed countries, the proportion of the unbanked who perceive distance as a problem is only 10 per cent.

Our dataset contains causal variables which summarize the information for the degree of financial inclusion. As explained in the previous section, each causal variable relates to different dimensions that define financial inclusion. The purpose of dividing the overall set of indicators into three sub-indices is twofold. On the one hand, the three sub-indices have a meaning so, we get additional disaggregated information that is also useful for policy making. On the other hand, for methodological purposes, since the sub-indices contain highly correlated indicators within dimension, we estimate the sub-indices first, rather than estimating the overall index directly by picking all the indicators at the same time. This is a preferred strategy because it avoids weight's biases towards indicators which exhibit the highest correlation (Mishra, 2007). We minimize this problem by applying two-stage PCA (Nagar and Basu, 2004). In the first stage, we estimate the three sub-indices: usage, barriers and access, which defined financial inclusion. In the second stage, we estimate the weights for each dimension and the overall financial inclusion index by using the dimensions as explanatory variables. Regarding the number of variables included in our index, PCA is robust to redundant information.

Let consider that the latent variable financial inclusion is linearly determined as follows:

$$FI_i = \omega_1 Y_i^u + \omega_2 Y_i^b + \omega_3 Y_i^a + e_i \qquad (1)$$

where subscript i denotes the country, and $\left(\mathrm{Y_i^u}, \mathrm{Y_i^b}, \mathrm{Y_i^a}\right)$ capture the usage, barriers and access dimension respectively. Thus, the total variation in financial inclusion is represented by two orthogonal parts: variation due to causal variables and variation due to error term (e_i). If the model is well specified, including an adequate number of explanatory variables, $E(e) = 0$ and the variance of the error term should be relatively small compared to the variance of the latent variable, financial inclusion. Thus, we can reasonably assume that the total variation in financial inclusion can be largely explained by the variation in the causal variables.

3.1 First Stage PCA

The first stage estimates the dimensions, that is, the three unobserved endogenous variables $\mathrm{Y_i^u}, \mathrm{Y_i^b}, \mathrm{Y_i^a}$ and the parameters in the following equation system:

$$Y_i^u = \beta_1 account_i + \beta_2 savings_i + \beta_3 loan_i + u_i \qquad (2)$$

$$Y_i^b = \theta_1 distance_i + \theta_2 affordability_i + \theta_3 documents_i + \theta_4 trust_i + \epsilon_i \qquad (3)$$

$$Y_i^a = \gamma_1 ATM_{popi} + \gamma_2 branch_{popi} + v_i \qquad (4)$$

where account is a variable that represents the individuals who have at least one of the financial products described in section 2.1, and savings and loan represent individuals who save and have a loan in the formal financial system. Hence, the three dimensions are also indices that we estimate by principal components as linear functions of the explanatory variables described in Table 1. Note that the endogenous variables are unobserved so we need to estimate them jointly with the unknown parameters: β, θ and γ. Let Rp, (pxp) be the correlation matrix of the p standardize indicators for each dimension. We denote $\lambda j (j = 1, \ldots, p)$ as the $j-th$ eigenvalue, subscript j refers to the number of principal components that also coincides with the number of indicators or sub-indices, p. $\varphi j (px1)$ is the eigenvector of the correlation matrix. We assume that $\lambda 1 > \lambda 2 > \ldots > \lambda p$ and denote $P_k (k = 1, \ldots, p)$ as the $k-th$ principal component. We get the corresponding estimator of each dimension according to the following weighted averages:

$$Y_i^u = \frac{\sum_{j,k=1}^{p} \lambda_j^u P_{ki}^u}{\sum_{j=1}^{p} \lambda_j^u} \quad (5)$$

$$Y_i^b = \frac{\sum_{j,k=1}^{p} \lambda_j^b P_{ki}^b}{\sum_{j=1}^{p} \lambda_j^b} \quad (6)$$

$$Y_i^a = \frac{\sum_{j,k=1}^{p} \lambda_j^a P_{ki}^a}{\sum_{j=1}^{p} \lambda_j^a} \quad (7)$$

where $P_k = X\lambda_j \lambda_j$ represents the variance of the $k-th$ principal component (weights) and X is the indicators matrix. The weights given to each component are decreasing, so that the larger proportion of the variation in each dimension is explained by the first principal component and so on. Following this order, the $p-th$ principal component is a linear combination of the indicators that accounts for the smallest variance. In brief, this method represents a p-dimensional dataset of correlated variables by p orthogonal principal components, with the first principal component explaining the largest amount of information from the initial data. One issue using principal component analysis is to decide how many components to retain. Although a common practice is to replace the whole set of causal variables by only the first few principal components, which account for a substantial proportion of the total variation in all the sample variables, we consider as many components as the number of explanatory variables. Our concern is to estimate accurately financial inclusion rather than reducing the data dimensionality so, we avoid discarding information that could affect our estimates.

3.2 Second Stage PCA

The second stage of the principal component analysis computes the overall financial inclusion index by replacing $Y_i^u, Y_i^b \; and \; Y_i^a$ in $Eq.(1)$ and applying a similar procedure to that described in the first stage (to estimate the vectors of parameters λ). This produces the following estimator of the financial inclusion index:

$$FI_i = \frac{\sum_{j,k=1}^{p} \lambda_j \, P_{ki}}{\sum_{j=1}^{p} \lambda_j} \quad (8)$$

The highest weight, λ_1, is attached to the first principal component because it accounts for the largest proportion of the total variation in all causal variables. Similarly, the second highest weight, λ_2, is attached to the second principal component and so on. After some straightforward algebra, we can write each component, Pk of (8) as a linear combination of the three sub-indices $(p = 3)$ and the eigenvectors of the respective correlation matrices represented by φ:

$$P_{1i} = \varphi_{11} Y_i^u + \varphi_{12} Y_i^b + \varphi_{13} Y_i^a \quad (9)$$

$$P_{2i} = \varphi_{21} Y_i^u + \varphi_{22} Y_i^b + \varphi_{23} Y_i^a \quad (10)$$

$$P_{3i} = \varphi_{31} Y_i^u + \varphi_{32} Y_i^b + \varphi_{33} Y_i^a \quad (11)$$

so that the financial inclusion index can be expressed as:

$$FI_i = \frac{\sum_{j=1}^{3} \lambda_j \left(\varphi_{j1} Y_i^u + \varphi_{j2} Y_i^b + \varphi_{j3} Y_i^a\right)}{\sum_{j=1}^{3} \lambda_j} \qquad (12)$$

Rearranging terms, we can express the overall financial inclusion index as a weighted average of the dimensions as in Eq. (1). The parameters ω_k are the relative weights (importance) of each dimension in the final index, which are computed as: [12]

$$\omega_i = \frac{\sum_{j=1}^{3} \lambda_j \, \varphi_{jk}}{\sum_{j=1}^{3} \lambda_j}, k = 1, 2, 3. \qquad (13)$$

4. Results

In this section, we present the estimated financial inclusion indices for 137 developed and less-developed countries (see Table A1 in the appendix) by two-stage PCA for the years 2011 and 2014. The correlation matrix for the causal variables used to measure financial inclusion is reported in Table 2.

4.1 Financial Inclusion Dimensions

In the first stage, we compute the weights for the causal variables for each sub-index and estimate the latent variables: usage, barriers and access that represent the dimensions of the financial inclusion index. Since we construct the sub-indices as weighted averages of the principal components, it is possible to gather the coefficients for each causal variable. These weights are derived by $\text{Eqs.}\,(2-4)$ and normalized such that their sum is 1.

[12] In general the sum of the weights expressed by the formula above does not necessarily have to equal 1 due to the fact that principal component methodology normalizes the mode of each eigenvector to 1. The weights therefore could be very close to but not always equal to 1.

Correlation Matrix

Table 2

Variables	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
Account	1	-	-	-	-	-	-	-	-	-	-
Loan	0.53	1	-	-	-	-	-	-	-	-	-
Savings	0.81	0.57	1	-	-	-	-	-	-	-	-
ATMs/100,000 pop.	0.68	0.33	0.54	1	-	-	-	-	-	-	-
Branches/100,000 pop.	0.55	0.25	0.31	0.56	1	-	-	-	-	-	-
ATMs/1,000 Km2	0.35	0.11	0.34	0.60	0.20	1	-	-	-	-	-
Branches/1,000 Km2	0.44	0.00	0.35	0.45	0.56	0.64	1	-	-	-	-
Distance	-0.45	-0.25	-0.27	-0.39	-0.43	-0.21	-0.40	1	-	-	-
High cost	-0.43	-0.29	-0.28	-0.34	-0.26	-0.26	-0.30	0.55	1	-	-
Documentation	-0.31	-0.23	-0.16	-0.31	-0.28	-0.05	-0.13	0.49	0.39	1	-
Lack of trust	-0.18	-0.05	-0.30	0.01	0.08	-0.21	-0.26	0.03	0.31	-0.07	1

Source: Own elaboration

Notes: Total Pearson correlations for 2014 data

With regard to the weighting scheme, we observe that the contributions of the different indicators barely change over time. For simplicity we only refer to the weights for 2014. For the usage dimension, the indicator for loans has the highest weight (0.40), followed by having an account (0.33) and savings (0.27) (see upper panel of Table 3). It is important to notice that although the weights are not evenly distributed, none of the indicators is dominant; this is a desirable condition for an index. For the access dimension, the ratios of ATMs have higher weight (0.61) than the bank branches and agents (0.39, see middle panel of Table 3). It is because ATMs are highly present in more mature markets so differences across countries are larger. [13] Finally, the lower panel of Table 3 shows the weights for the indicators in the barriers dimension. For the first three indicators (distance, affordability and documentation), the weights are also very similar, at 0.21, 0.25 and 0.25 respectively, and there only very small changes over time. Lack of trust is the most important indicator in defining the barriers dimension, with a weight close to 0.30.

Principal Components Estimates

Table 3

Usage		Usage			
Variable	P C1	P C2	P C3	P C4	norm. weight
Account	0.5968	-0.4551	0.6608	-	0.33
Loan	0.5126	0.8499	0.1223	-	0.40
Savings	0.6172	-0.2658	-0.7041	-	0.27
Eigenvalues	2.2617	0.5579	0.1804	-	
Access					
Variable	P C1	P C2	P C3	P C4	norm. weight
ATMs per 100,000 pop.	0.5204	0.0368	0.7283	-0.4443	0.61
Branches per 100,000 pop.	0.4546	0.7461	-0.0687	0.4816	0.39
Eigenvalues	2.5050	0.8044	0.5530	0.1377	
Barriers					
Variable	P C1	P C2	P C3	P C4	norm. weight
Distance	0.5198	-0.3481	-0.2594	0.7358	0.21
Affordability	0.5357	-0.0126	-0.5986	-0.5955	0.25
Documentation	0.5184	-0.3407	0.7373	-0.2676	0.25
Trust	0.4172	0.8733	0.1757	0.1803	0.29
Eigenvalues	3.1286	0.5854	0.1501	0.1358	

Source: Own elaboration.

Notes: The weights are normalized to sum 1. Figures refer to 2014 data

[13] For a robustness check, we also include branches and ATMs ratios per square kilometre. However, similar access indicators related to population are more powerful in measuring access since correlation with the rest of the indicators is much higher.

Since weights are obtained from the information in the principal components and the corresponding eigenvalues, it is worth studying the composition of these components to understand the structure of our estimated indices. Table 4 shows, in a cumulative way and by dimensions, the amount of the total variance explained by the different components. For the usage dimension, we observe that the first component, which contains 75% of the total information in this dimension (see Table 4) has an even contribution of the three indicators: account, loan and savings. This suggests that these three indicators measure the same latent structure. However, only the indicator referring to loans adds extra information through the second component. It might indicate that having a loan also represents a stage of greater financial inclusion since most people who have a loan already have another financial product, such as a bank account or pay-roll account. [14] As a result, having a loan may be an accurate indicator to identify more consolidated stages of financial inclusion. When defining the access dimension, as shown in the middle panel of Table 3, we again find an even contribution of the two indicators to the first principal component since the coefficients in the eigenvector for this component are similar. Finally, for the barriers dimension, we also find that the four indicators contribute evenly to the first component, which accounts for almost 80 per cent of the total variation in the data. Distance, affordability and documentation have their highest loadings in the first component. Although lack of trust contributes to the first component, it has its highest weight in the second component, which indicates that this variable also adds extra information, in a different structure, from the first component. Lack of trust is a structural variable that can be related to not only idiosyncratic financial system issues (efficiency of financial institutions, financial stability, episodes of bank failures, etc.) but also to broader issues beyond the financial markets, such as governance, cultural norms, economic crises or macroeconomic variables such as inflation.

Cumulative Variance Explained by Components

Table 4

Components	Cumulative Variance
Usage	
P C1	0.7539
P C2	0.9399
P C3	1
Access	
P C1	0.6262
P C2	0.8273
P C3	0.9656
P C4	1
Barriers	
P C1	0.7822
P C2	0.9285
P C3	0.9660
P C4	1

Source: Own elaboration

Notes: Figures refer to 2014 data

[14] People who start to use formal financial services by having a loan, although they might exist, should be a very small minority.

Table 5 shows the list of countries ranked by the degree of usage, access and barriers. [15] For a more intuitive interpretation, the sub-indices are normalized to be between 0 and 1, where 1 indicates the best relative position in the dimension related to financial inclusion and 0 the worse. The computation of the sub-indices to estimate the dimensions can be useful information for policy-makers and governments when designing financial inclusion strategies. The idea is that policy-makers can obtain useful information to design interventions by using the information provided by weights in such a way that optimize financial inclusion strategies.

4.2 Multidimensional Financial Inclusion Index

In the second stage, we apply PCA on the three sub-indices (usage, access and barriers) to compute their weights in the overall index. Table 6 presents the composition of the principal components and the normalized weights for each dimension or sub-index, for 2014. Results are similar for 2011. The last column shows that PCA assigns the highest weight to access (0.42), followed by usage with a weight of 0.30 and barriers at 0.28. Thus, this information reveals that access is the most important dimension for explaining the degree of financial inclusion. Supply of formal financial services contributes more than number of users to explain the latent structure behind our pool of indicators, i.e. the degree of financial inclusion. It can be explained because access represents a necessary, but not sufficient condition, for using formal financial services.

In terms of the principal component structure, we observe that the first and most important component, accounting for 76 per cent of the total variation in the data (see Table 7), has an even contribution of the three dimensions. As explained previously, this has to hold to ensure that the three dimensions measure the same latent structure which is interpreted as the degree of financial inclusion. [16] Moreover, unlike usage and barriers, access allocates part of its information in the second component, so this dimension not only contributes to the overall index through the first principal component, but also adds extra information through the second component and gains importance in explaining the overall index.

The first column of Table 8 shows the ranking position of countries according to their scores in the financial inclusion index in 2014, from the highest to the lowest score. The third column represents the ranking variations, from 2011 to 2014. As expected, developed countries have the most inclusive financial systems. The first quarter of the ranking (positions 1 to 40) corresponds to developed countries with few exceptions such as Brazil (4), Mongolia (20), Bangladesh (22), Colombia (36) and Thailand (39). This group of low-income countries outperforms other middle income countries and even some high-income countries. Brazil exhibits one of the best performances in the table. A factor that contributes to this success is related to the important role that the public sector takes in the financial system. The existence of social support programs, sponsored by the government through the formal financial system, generates usage of formal financial services for a vulnerable part of the population.

[15] Using two-stage PCA, we can compute indices by countries as well as aggregated by regions. Due to space limitations, we report the county-based analysis only.

[16] Tables 4 and 7 show that, in most of the cases, only the first component explains more than 75 per cent of the causal variables' total variation (except for the access dimension that explains 62 per cent). Thus, the strategy of taking only the first principal component may be a good approximation for estimating the dimensions and the degree of financial inclusion as well.

Ranking of Countries by Dimension

Table 5

Usage		Access		Barriers	
Country	rank	Country	rank	Country	rank
Israel	1	Bangladesh	1	Norway	1
Sweden	2	Brazil	2	Sweden	2
Norway	3	Korea, Rep.	3	United Kingdom	3
Singapore	4	Colombia	4	Denmark	4
New Zealand	5	Peru	5	Netherlands	5
Mauritius	6	Russian Federation	6	Australia	6
Japan	7	Canada	7	France	7
France	8	Portugal	8	Japan	8
Luxembourg	9	United States	9	New Zealand	9
Denmark	10	Australia	10	Canada	10
United Kingdom	11	Chile	11	Finland	11
Finland	12	Spain	12	Belgium	12
Canada	13	Luxembourg	13	Switzerland	13
Australia	14	United Kingdom	14	Austria	14
Germany	15	Croatia	15	Singapore	15
Netherlands	16	Japan	16	Spain	16
Belgium	17	Costa Rica	17	Estonia	17
Mongolia	18	Austria	18	Malta	18
Austria	19	Slovenia	19	Ireland	19
United States	20	Israel	20	Germany	20
Ireland	21	Italy	21	Mongolia	21
Hong Kong SAR, China	22	Bulgaria	22	Korea, Rep.	22
Korea, Rep.	23	France	23	Luxembourg	23
Sri Lanka	24	Switzerland	24	Mauritius	24
Switzerland	25	Mongolia	25	Sri Lanka	25
Chile	26	Germany	26	Slovenia	26
Spain	27	Ireland	27	Greece	27
Slovak Republic	28	Belgium	28	Hong Kong SAR, China	28
Malta	29	Thailand	29	Latvia	29
Estonia	30	Estonia	30	Jordan	30
Latvia	31	New Zealand	31	Israel	31
Uruguay	32	Latvia	32	Croatia	32
Poland	33	Slovak Republic	33	Serbia	33
Slovenia	34	Ecuador	34	United States	34
Czech Republic	35	Poland	35	Lebanon	35
Croatia	36	Montenegro	36	China	36
Brazil	37	Lithuania	37	Thailand	37
Italy	38	Turkey	38	Cyprus	38
Bosnia and Herzegovina	39	Czech Republic	39	Ethiopia	39
Greece	40	China	40	United Arab Emirates	40
Cyprus	41	Hungary	41	Italy	41
Ecuador	42	Kazakhstan	42	Portugal	42
Portugal	43	Ukraine	43	Algeria	43
United Arab Emirates	44	South Africa	44	Kuwait	44
Lithuania	45	Greece	45	Venezuela, RB	45
China	46	Guatemala	46	Bosnia and Herzegovina	46
Thailand	47	Mexico	47	Brazil	47
Hungary	48	Romania	48	Vietnam	48
Bulgaria	49	Serbia	49	Poland	49
Kuwait	50	Pakistan	50	Macedonia, FYR	50
Malaysia	51	Malta	51	Belarus	51
Costa Rica	52	Cyprus	52	Czech Republic	52
Montenegro	53	Belarus	53	Tunisia	53
Macedonia, FYR	54	Saudi Arabia	54	Slovak Republic	54
Lebanon	55	Georgia	55	Costa Rica	55
Serbia	56	Panama	56	Lithuania	56

Ranking of Countries by Dimension

Table 5 cont

Usage		Access		Barriers	
Country	rank	Country	rank	Country	rank
Russian Federation	57	Denmark	57	Bhutan	57
Bolivia	58	Armenia	58	Saudi Arabia	58
Argentina	59	Bosnia and Herzegovina	59	Malaysia	59
Jamaica	60	Malaysia	60	Dominican Republic	60
Bhutan	61	Macedonia, FYR	61	Montenegro	61
Saudi Arabia	62	Kuwait	62	Hungary	62
Belarus	63	United Arab Emirates	63	Rwanda	63
South Africa	64	Argentina	64	Russian Federation	64
Dominican Republic	65	Lebanon	65	Myanmar	65
Turkey	66	Hong Kong SAR, China	66	Georgia	66
Namibia	67	Venezuela, RB	67	Jamaica	67
Romania	68	Singapore	68	Bulgaria	68
Venezuela, RB	69	Mauritius	69	Romania	69
Kazakhstan	70	Namibia	70	South Africa	70
Georgia	71	Netherlands	71	Kazakhstan	71
El Salvador	72	Belize	72	Uruguay	72
Colombia	73	Uruguay	73	India	73
Botswana	74	Gabon	74	Namibia	74
Ukraine	75	Indonesia	75	Kosovo	75
Kosovo	76	Sweden	76	Argentina	76
Kenya	77	Norway	77	West Bank and Gaza	77
Peru	78	Azerbaijan	78	Belize	78
Belize	79	Kosovo	79	Sudan	79
Rwanda	80	Albania	80	Nigeria	80
Panama	81	Honduras	81	Ecuador	81
Nigeria	82	Egypt, Arab Rep.	82	Yemen, Rep.	82
Guatemala	83	Dominican Republic	83	Colombia	83
Azerbaijan	84	India	84	Nepal	84
Indonesia	85	Jordan	85	Chile	85
Vietnam	86	Bolivia	86	Ghana	86
Algeria	87	Moldova	87	Bangladesh	87
India	88	Finland	88	Indonesia	88
Mexico	89	Botswana	89	Kenya	89
Honduras	90	El Salvador	90	Panama	90
Jordan	91	Philippines	91	Burundi	91
Nepal	92	Jamaica	92	Egypt, Arab Rep.	92
Ghana	93	Nicaragua	93	Zambia	93
Myanmar	94	Uzbekistan	94	Uzbekistan	94
Armenia	95	Tunisia	95	Albania	95
Nicaragua	96	Kenya	96	Mali	96
Bangladesh	97	Bhutan	97	Cote d'Ivoire	97
Gabon	98	Rwanda	98	Botswana	98
Tunisia	99	Angola	99	Azerbaijan	99
Albania	100	Sri Lanka	100	Zimbabwe	100
Angola	101	Kyrgyz Republic	101	Mauritania	101
Uganda	102	Zimbabwe	102	Pakistan	102
Philippines	103	West Bank and Gaza	103	Kyrgyz Republic	103
Cambodia	104	Vietnam	104	Burkina Faso	104
Kyrgyz Republic	105	Nigeria	105	Gabon	105
Mauritania	106	Cambodia	106	Bolivia	106
Zambia	107	Algeria	107	Ukraine	107
Ethiopia	108	Nepal	108	Benin	108
Uzbekistan	109	Tajikistan	109	Armenia	109
West Bank and Gaza	110	Zambia	110	Malawi	110
Moldova	111	Ghana	111	Moldova	111
Benin	112	Mauritania	112	Madagascar	112
Egypt, Arab Rep.	113	Sudan	113	Honduras	113

Ranking of Countries by Dimension

Table 5 cont

Usage		Access		Barriers	
Country	rank	Country	rank	Country	rank
Egypt, Arab Rep.	113	Sudan	113	Honduras	113
Togo	114	Cote d'Ivoire	114	Haiti	114
Congo, Rep.	115	Tanzania	115	Mexico	115
Tanzania	116	Mali	116	Cameroon	116
Sudan	117	Togo	117	Turkey	117
Malawi	118	Malawi	118	El Salvador	118
Burkina Faso	119	Senegal	119	Guatemala	119
Haiti	120	Benin	120	Congo, Rep.	120
Zimbabwe	121	Congo, Rep.	121	Angola	121
Cote d'Ivoire	122	Uganda	122	Uganda	122
Tajikistan	123	Iraq	123	Togo	123
Sierra Leone	124	Yemen, Rep.	124	Chad	124
Senegal	125	Burundi	125	Guinea	125
Cameroon	126	Cameroon	126	Sierra Leone	126
Afghanistan	127	Burkina Faso	127	Tajikistan	127
Congo, Dem. Rep.	128	Myanmar	128	Nicaragua	128
Mali	129	Madagascar	129	Peru	129
Iraq	130	Haiti	130	Senegal	130
Chad	131	Guinea	131	Tanzania	131
Pakistan	132	Ethiopia	132	Philippines	132
Burundi	133	Afghanistan	133	Iraq	133
Guinea	134	Sierra Leone	134	Congo, Dem. Rep.	134
Madagascar	135	Niger	135	Afghanistan	135
Yemen, Rep.	136	Congo, Dem. Rep.	136	Niger	136
Niger	137	Chad	137	Cambodia	137

Source: Own elaboration

Notes: Rankings are assigned according to the scores in each dimension of the financial inclusion index for 2014 data. Ranking for 2011 is available upon request.

Such way of facilitating money transfers is running in Brazil, Bangladesh, Mongolia and Thailand. [17] Most importantly, Brazil has a huge banking agent network, pioneering in Latin America. The same also happens with Bangladesh. Finally the role of state-owned banks, with the mandate of fostering financial inclusion, is also an important driver. The second quarter of the ranking, down to the position 40 to 80 is made up mostly of the Eastern European middle-income countries and some Asian (Sri Lanka, China, United Arab Emirates, etc.) and fewer Latin American countries (Costa Rica, Ecuador, Venezuela, Peru and Argentina, most of them below the 60th position).

The remaining positions after these two groups (81 to 137, less than the second half of the ranking) consist of a heterogeneous group that includes countries from Latin America, Asia and all the African countries in the sample except South Africa (63). The last ten countries, at the bottom of the ranking, are low-income African countries. Most African countries in our sample perform poorly in financial inclusion terms, with the only exceptions being South Africa, Nigeria (85) and Kenia (89). Given the relevance of the access dimension in the financial inclusion index, the low levels of financial

[17] Moreover, for Mongolia, the high level of financial inclusion may be due in large part to universal cash hand-outs from the government's Human Development Fund as well as pensions, health insurance and student tuition payments. Around 50% of all bank account holders over the age of 15 cite receiving government payments as the most common use for a bank account, according to the Global Findex database.

inclusion in some African countries should improve by including data on e-money outlets, belonging telecommunication companies, since this business model is widespread in the region. This argument does not apply to Latin American countries since e-money is provided by companies that belong the formal financial system.

Principal Component Estimates

Financial Inclusion Index

Table 6

Variable	P C1	P C2	P C3	norm. weight
Usage	0.5775	-0.5758	0.5787	0.39
Access	0.5437	0.8001	0.2535	0.42
Barriers	0.609	-0.1682	-0.7752	0.28
Eigenvalues	2.2805	0.4855	0.2339	

Source: Own elaboration

Notes: The weights are normalized to sum 1. Figures refer to 2014 data

Cumulative Variance Explained by Components

Financial Inclusion Index

Table 7

Components	Cumulative variance
PC1	0.7602
PC2	0.9220
PC3	1

Source: Own elaboration

Notes: Figures refer to 2014 data.

5. Conclusions and Policy Recommendations

Financial inclusion is an essential ingredient of economic development and poverty reduction and it can also be a way of preventing social exclusion. A person's right to use formal financial services, to prevent exclusion, must be a priority. However, efforts to measure financial inclusion are scarce and incomplete. Financial inclusion is a multidimensional concept that cannot be captured accurately with single indicators, but is determined by a much larger set of indicators than the few considered in existing works. The nature of the financial systems is complex and heterogeneous. An inclusive financial system needs particularly to encourage usage of financial services on the part of society's most vulnerable groups; that is, those most affected by obstacles to financial inclusion.

Existing financial inclusion composite indices are questionable since they choose arbitrary weights. This paper proposes a two-stage PCA to measure the extent of financial inclusion for a country or region. This methodology is statistically sound for index construction and robust to high dimensional data. We measure financial inclusion through a composite index for 137 countries by using 20 causal

variables as financial inclusion determinants for 2011 and 2014. This index is comparable across countries and over time. Specifically, our index poses that the degree of financial inclusion is determined by the maximization of usage and access to formal financial services, as well as by the minimization of obstacles causing involuntary exclusion. Demand-side information to assess the usage and barriers dimensions is key in determining the degree of financial inclusion. The dimension of usage measures financial inclusion from the banked perspective, and barriers do so from the perspective of the unbanked. Including information of financially excluded people helps to reveal a comprehensive picture of the extent of financial system inclusiveness. Our major contribution is twofold. First, we use a parametric method, robust to redundant information, to determine the contribution of each indicator to our financial inclusion index. It has the advantage of not employing any exogenous, subjective information. Second, we build a comprehensive index that includes both demand- and supply-side information.

As shown by our estimates, access is the most important dimension for determining the level of financial inclusion. It represents a necessary but not sufficient condition for using formal financial services. However, due to data constraints, we are not able to measure access to the formal financial system in a comprehensive way. We only measure physical access. Although remarkable effort has been done in the last five years in terms of data production (i.e. availability and quality), there exist important limitations. For instance, the traditional indicators used to measure access are currently incomplete. New technology adopted by the financial sector goes beyond the traditional banking access measured by number of physical access points. New mobile banking developments and the use of financial services on the internet open up new channels for accessing formal financial services that, under certain circumstances, overcome the distance as a barrier for access. Measuring these new channels is not straightforward because of the lack of homogeneous measures for a wide range of countries. [18] Although we cannot get an accurate proxy to take into account the new access channels, we do include information on mobile and internet banking in the usage dimension. Efforts in such direction yield relevant improvements on the analysis of financial inclusion's causes and consequences.

Despite of this caveat, the creation of such an index is useful to shed some light on the determinants of financial inclusion as well as its contribution to economic growth and development. Our index is easy to interpret and compute. We believe that more granular information on the different dimensions, in the form of disaggregated data by product, usage frequency and geo-locate information on access points, world be useful for a more accurate assessment of financial inclusion that leads policy recommendations.

[18] The bias introduced for omitting this information might be different for developed countries and less-developed countries. We cannot quantify this bias but we have some intuitive information about its direction. Although the lack of data to measure financial service access via internet and smart phone underestimates access more for developed countries than for less-developed countries, the effect on financial inclusion may be larger for less-developed countries than for developed countries. The latter have greater access levels and, as such, increases in access may have a larger effect on less-developed countries that start from lower levels. Likewise, less-developed countries benefit more from banking correspondents as well as from basic mobile phones.

Financial Inclusion Index Country Ranking, 2014

Table 8

Rank/137	Country	Δ	Rank/137	Country	Δ	Rank/137	Country	Δ
1	Israel	32	47	Lithuania	-7	93	Nepal	-1
2	Korea, Rep	3	48	Bosnia and Herz.	3	94	Armenia	-6
3	Canada	5	49	Bulgaria	-4	95	Albania	-18
4	Brazil	17	50	Serbia	-4	96	Ghana	7
5	Japan	8	51	UAE	-1	97	Mexico	-6
6	Australia	-5	52	Lebanon	3	98	Guatemala	-26
7	United Kingdom	9	53	Montenegro	-4	99	Egypt, Arab Rep.	-18
8	Sweden	16	54	Kuwait	-20	100	Gabon	11
9	Luxembourg	-6	55	Hungary	-16	101	Sudan	24
10	Norway	N/A	56	Uruguay	2	102	Pakistan	-5
11	New Zealand	-1	57	Ecuador	4	103	Uzbekistan	-20
12	France	-7	58	Macedonia	-6	104	Zambia	10
13	Singapore	-10	59	Belarus	-3	105	El Salvador	-3
14	United States	1	60	Malaysia	-7	106	Honduras	-12
15	Spain	-7	61	Saudi Arabia	1	107	Yemen, Rep	0
16	Germany	2	62	Venezuela	4	108	Kyrgyz Rep.	8
17	Austria	3	63	South Africa	5	109	Moldova	-3
18	Belgium	1	64	Kazakhstan	-1	110	Zimbabwe	-11
19	Mauritius	13	65	Romania	-6	111	Mauritania	N/A
20	Mongolia	11	66	Georgia	5	112	Côte d'Ivoire	N/A
21	Denmark	0	67	Jordan	6	113	Burundi	1
22	Bangladesh	42	68	Peru	11	114	Mali	6
23	Ireland	-12	69	Bhutan	N/A	115	Benin	11
24	Switzerland	N/A	70	Argentina	5	116	Angola	-16
25	Portugal	-17	71	Dominican Rep.	0	117	Burkina Faso	0
26	Finland	-1	72	Jamaica	-7	118	Malawi	-11
27	Croatia	-3	73	Namibia	N/A	119	Nicaragua	-17
28	Netherlands	-1	74	Vietnam	10	120	Uganda	10
29	Slovenia	-12	75	Algeria	4	121	Madagascar	11
30	Estonia	-1	76	Kosovo	-5	122	Haiti	N/A
31	Chile	23	77	Belize	N/A	123	Congo, Rep	-11
32	Russia	11	78	Tunisia	9	124	Cameroon	-2
33	Latvia	-5	79	Rwanda	14	125	Philippines	-5
34	Hong Kong	8	80	India	-2	126	Togo	-1
35	Italy	-5	81	Panama	18	127	Tajikistan	-1
36	Colombia	21	82	Ethiopia	N/A	128	Sierra Leone	4
37	Malta	-23	83	Ukraine	1	129	Chad	6
38	Slovak Rep.	-1	84	Indonesia	28	130	Guinea	-6
39	Thailand	-8	85	Nigeria	24	131	Tanzania	-1
40	Poland	4	86	Turkey	-22	132	Senegal	-3
41	Sri Lanka	6	87	Myanmar	N/A	133	Iraq	-10
42	Greece	-6	88	Bolivia	5	134	Congo, Dem. Rep.	0
43	Costa Rica	-2	89	Kenya	7	135	Afghanistan	1
44	Czech Rep.	-6	90	Botswana	18	136	Niger	1
45	China	3	91	Azerbaijan	-1	137	Cambodia	-30
46	Cyprus	-33	92	W. Bank and Gaza	-6			

Source: Own elaboration

Notes: Positive (negative) numbers represents an improvement (deterioration) in financial inclusion's relative position between 2011 and 2140

Appendix

Countries

Table A1

Afghanistan	Gabon	New Zealand
Albania	Georgia	Nicaragua
Algeria	Germany	Niger
Angola	Ghana	Nigeria
Argentina	Greece	Norway
Armenia	Guatemala	Pakistan
Australia	Guinea	Panama
Austria	Haiti	Peru
Azerbaijan	Honduras	Philippines
Bangladesh	Hong Kong SAR, China	Poland
Belarus	Hungary	Portugal
Belgium	India	Romania
Belize	Indonesia	Russian Federation
Benin	Iraq	Rwanda
Bhutan	Ireland	Saudi Arabia
Bolivia	Israel	Senegal
Bosnia and Herzegovina	Italy	Serbia
Botswana	Jamaica	Sierra Leone
Brazil	Japan	Singapore
Bulgaria	Jordan	Slovak Republic
Burkina Faso	Kazakhstan	Slovenia
Burundi	Kenya	South Africa
Cambodia	Korea, Rep0.	Spain
Cameroon	Kosovo	Sri Lanka
Canada	Kuwait	Sudan
Chad	Kyrgyz Republic	Sweden
Chile	Latvia	Switzerland
China	Lebanon	Tajikistan
Colombia	Lithuania	Tanzania
Congo, Dem0. Rep0.	Luxembourg	Thailand
Congo, Rep0.	Macedonia, FYR	Togo
Costa Rica	Madagascar	Tunisia
Cte d'Ivoire	Malawi	Turkey
Croatia	Malaysia	Uganda
Cyprus	Mali	Ukraine
Czech Republic	Malta	United Arab Emirates
Denmark	Mauritania	United Kingdom
Dominican Republic	Mauritius	United States
Ecuador	Mexico	Uruguay
Egypt, Arab Rep0.	Moldova	Uzbekistan
El Salvador	Mongolia	Venezuela, RB
Estonia	Montenegro	Vietnam
Ethiopia	Myanmar	West Bank and Gaza
Finland	Namibia	Yemen, Rep0.
France	Nepal	Zambia
	Netherlands	Zimbabwe

Source: Own elaboration

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Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*

Marrakech, Morocco, 14 July 2017

Measuring financial inclusion: a multidimensional index[1]

Noelia Cámara, BBVA Research,
and David Tuesta, CAF- Bank of Development for Latin America

[1] This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Measuring Financial Inclusion: A Multidimensional Index

Noelia Camara(BBVA Research)
David Tuesta (CAF- Bank of Development for Latin America)
Bank Al-Maghrib – CEMLA – IFC Satellite Seminar
on Financial Inclusion
Morocco, July 2017

Outline

1. Motivation
2. Contribution
3. Data
4. Econometric Strategy
5. Empirical results
6. Financial inclusion and geography
7. Conclusions

1. Motivation: The challenge of measuring the unobserved

- The use of formal financial services enhances **economic growth** and welfare (Bencivenga y Smith, 1991 RES; Rajan y Zingales, 1998 AER; Beck *et al*., 2000 JoFE; Levine *et al*., 2000 JoME; Townsend and Ueda, 2006 RES; Ergungor, 2010 JoMCB)

- Financial inclusion as well as income, health or home is a **basic ingredient for individuals' welfare**

- While the importance of financial inclusion is well-established, there is **no formal consensus** on its measurement

1. Motivation

- **Individual indicators**: + demand-side data (Demirguç-Kunt and Klapper, 2013)

- **Composite indices**:
  - **Non-parametric** methods: +supply-side data (Sarma, 2008, 2012 and Chakravarty and Pal 2010). They assign the importance of indicators by choosing the **weighs exogenously**

  - **Parametric** methods (CFA): + supply-side data (Amidži´c *et al*., 2014). The importance of indicators (weights) in the overall index are determined **endogenously**

2. This paper

- We present a country-level **multidimensional index** to measure the degree of inclusiveness of financial systems. It is comparable across countries and over time

- Our index uses **demand and supply-side** information of **banked and unbanked**

- **Weights** are **endogenously** determined

- Access and barriers measure the **degree of readiness** for financial inclusion while usage is considered as the **output**

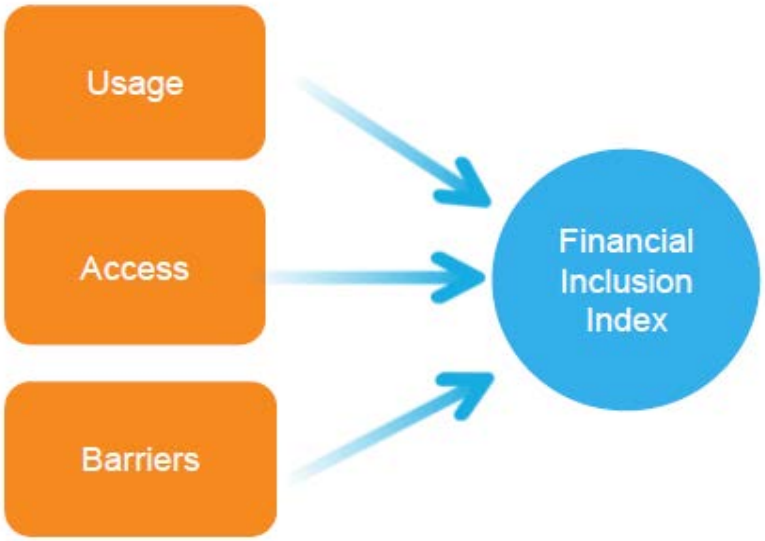
3. Data

- **Demand-side**: Usage and Barriers - Global Findex (2011 and 2014)
  - The survey collects information about 150,000 nationally representative and randomly selected adults from 148 countries
  - Harmonized micro-data set

- **Supply-side**: Access
  - Financial Access Survey (2011 and 2014): Annual data collected by country authorities
  - Data on banking correspondents : Camara *et al*., (2015)

3. Data: Index structure

- Our index covers 140 and 137 countries for 2011 and 2014, respectively
- It summarizes the information of **20 FI-related indicators** in an efficient way
- We define an inclusive financial system as one that maximizes usage and access, while minimizing involuntary financial exclusion



3. Data: Usage

- Account: adjusted number of account/card holders in a formal financial institution or post office over the total population: **corrected by dormant accounts/cards**

- **Savings**:

$$Saving_i = \frac{formal\ savings_i}{informal\ savings_i}$$

- **Loans**:

$$Loan_i = \frac{formal\ loans_i}{informal\ loans_i}$$

3. Data: barriers

- **Trust**: percentage of unbanked who do not have a bank account because they do not trust the formal financial system

- **Affordability**: percentage of unbanked who do not have a bank account because they perceive them to be too expensive

- **Distance**: percentage of unbanked who do not have a bank account because they perceive that access points are too far away

- **Documents**: percentage of unbanked who do not have a bank account because they perceive that lack the necessary documents

3. Data: access

- Access points:
  - **Access points with a human interaction**: Number of commercial bank branches and banking correspondents (per 100,000 adults)
  - **Access points with a machine interaction:** ATMs (per 100,000 adults)

4. Econometric strategy

- We assume that behind our set of correlated variables, we can find an **underlying structure** that can be identified with a latent variable that represents FI

- We need to estimate at the same time the parameters and the latent variable. **Standard regression techniques are unfeasible** for these purposes

- **Two-step PCA**

4. Econometric strategy

- **First step**: estimation of the three dimensions(usage, access and barriers)

$$Y_{ui} = \beta_1\, account_i + \beta_2 savings_i + \beta_3 loan_i + u_i$$

$$Y_{ai} = \gamma_1\, personal\ access\ point_i + \gamma_2 \mathrm{ATM}_i + v_i$$

$$Y_{bi} = \alpha_1 distance_i + \alpha_2 affordability_i + \alpha_3 documents_i + \alpha_4 trust_i + e_i$$

i: denotes the country, ($Y_u Y_a Y_b$) is the dimension's vector where the subscripts u, a and b denote the dimensions

4. Econometric strategy

- **Second step**: estimate of the dimension weights and the overall FI index (dimensions are the explanatory variables)

$$\boldsymbol{MIFI_i = \quad \theta_1 Y_{ui} + \theta_2 Y_{ai} + \theta_3 Y_{bi} + \tau_i}$$

5. Results: Financial inclusion growth 2011 - 2014

Rank	Country	Δ
1	Israel	+32
2	Korea, Rep.	+3
3	Canada	+5
4	Brazil	+17
5	Japan	+8
6	Australia	-5
7	United Kingdom	+9
8	Sweden	+16
9	Luxembourg	-6
10	Norway	N/A
11	New Zealand	-1
12	France	-7
13	Singapore	-10
14	United States	+1
15	Spain	-7
16	Germany	+2
17	Austria	+3
18	Belgium	+1
19	Mauritius	+13
20	Mongolia	+11
21	Denmark	0
22	Bangladesh	+42
23	Ireland	-12

Rank	Country	Δ
24	Switzerland	N/A
25	Portugal	-17
26	Finland	-1
27	Croatia	-3
28	Netherlands	-1
29	Slovenia	-12
30	Estonia	-1
31	Chile	+23
32	Russian Federation	+11
33	Latvia	-5
34	Hong Kong SAR, China	+8
35	Italy	-5
36	Colombia	+21
37	Malta	-23
38	Slovak Republic	-1
39	Thailand	-8
40	Poland	+4
41	Sri Lanka	+6
42	Greece	-6
43	Costa Rica	-2
44	Czech Republic	-6
45	China	+3
46	Cyprus	-33

Rank	Country	Δ
47	Lithuania	-7
48	Bosnia and Herzegovina	+3
49	Bulgaria	-4
50	Serbia	-4
51	United Arab Emirates	-1
52	Lebanon	+3
53	Montenegro	-4
54	Kuwait	-20
55	Hungary	-16
56	Uruguay	+2
57	Ecuador	+4
58	Macedonia, FYR	-6
59	Belarus	-3
60	Malaysia	-7
61	Saudi Arabia	+1
62	Venezuela, RB	+4
63	South Africa	+5
64	Kazakhstan	-1
65	Romania	-6
66	Georgia	+5
67	Jordan	+6
68	Peru	+11
69	Bhutan	N/A

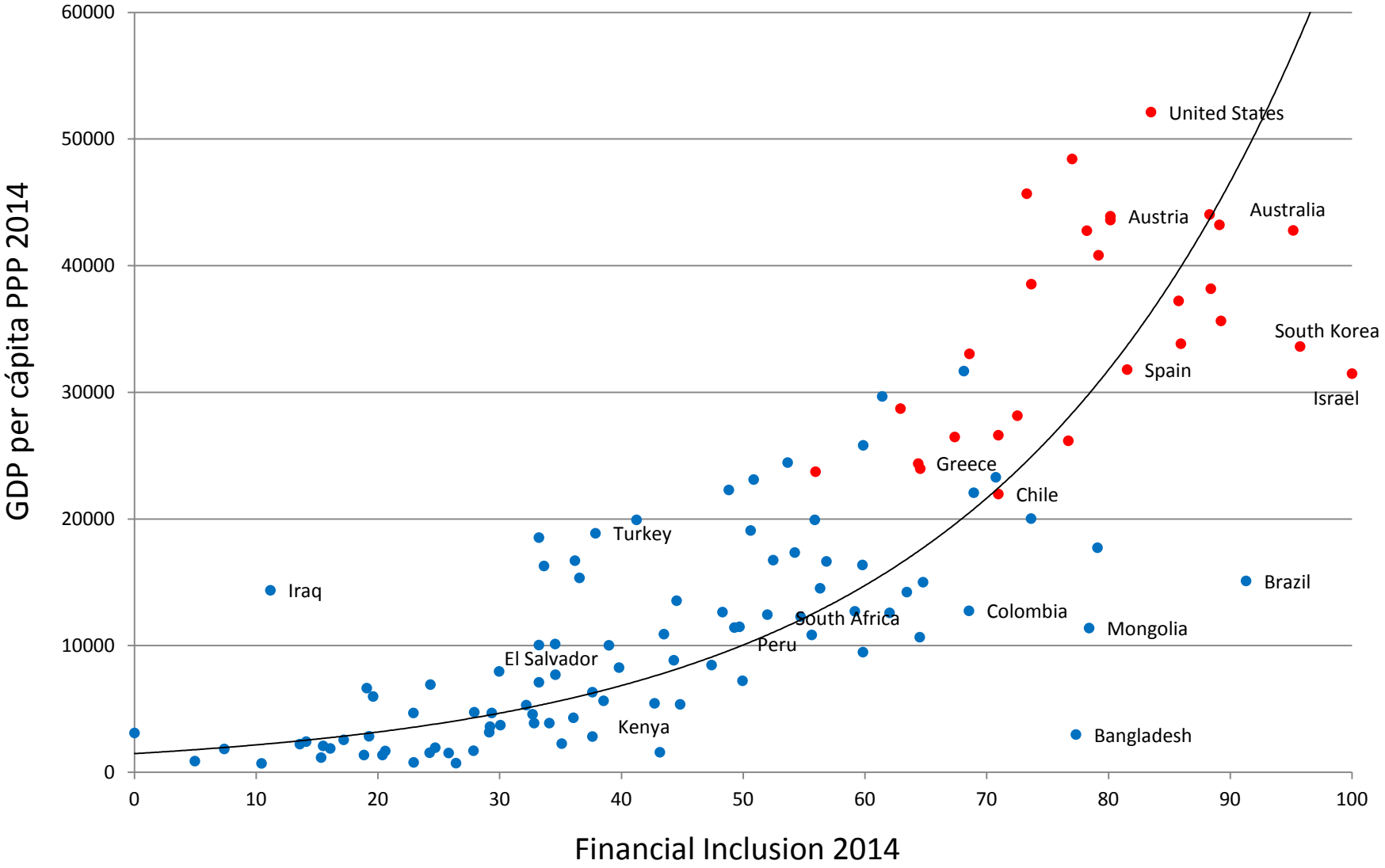
5. Results: Financial inclusion growth 2011 - 2014

Rank	Country	Δ
70	Argentina	+5
71	Dominican Republic	0
72	Jamaica	-7
73	Namibia	N/A
74	Vietnam	+10
75	Algeria	+4
76	Kosovo	-5
77	Belize	N/A
78	Tunisia	+9
79	Rwanda	+14
80	India	-2
81	Panama	+18
82	Ethiopia	N/A
83	Ukraine	+1
84	Indonesia	+28
85	Nigeria	+24
86	Turkey	-22
87	Myanmar	N/A
88	Bolivia	+5
89	Kenya	+7
90	Botswana	+18
91	Azerbaijan	-1
92	West Bank and Gaza	-6

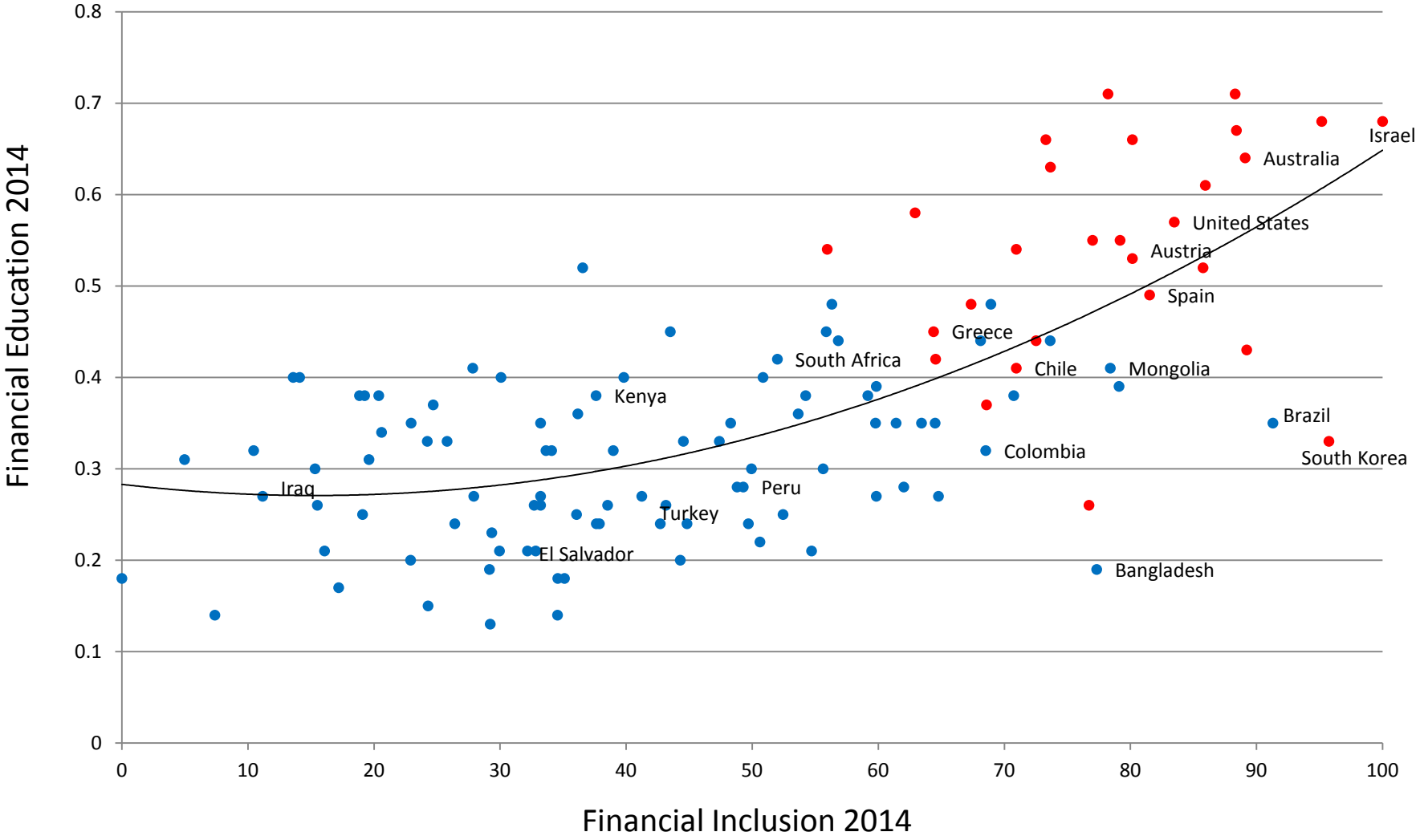
Rank	Country	Δ
93	Nepal	-1
94	Armenia	-6
95	Albania	-18
96	Ghana	+7
97	Mexico	-6
98	Guatemala	-26
99	Egypt, Arab Rep.	-18
100	Gabon	+11
101	Sudan	+24
102	Pakistan	-5
103	Uzbekistan	-20
104	Zambia	+10
105	El Salvador	-3
106	Honduras	-12
107	Yemen, Rep.	0
108	Kyrgyz Republic	+8
109	Moldova	-3
110	Zimbabwe	-11
111	Mauritania	N/A
112	Côte d'Ivoire	N/A
113	Burundi	+1
114	Mali	+6
115	Benin	+11

Rank	Country	Δ
116	Angola	-16
117	Burkina Faso	0
118	Malawi	-11
119	Nicaragua	-17
120	Uganda	+10
121	Madagascar	+11
122	Haiti	N/A
123	Congo, Rep.	-11
124	Cameroon	-2
125	Philippines	-5
126	Togo	-1
127	Tajikistan	-1
128	Sierra Leone	+4
129	Chad	+6
130	Guinea	-6
131	Tanzania	-1
132	Senegal	-3
133	Iraq	-10
134	Congo, Dem. Rep.	0
135	Afghanistan	+1
136	Niger	+1
137	Cambodia	-30

5. Empirical results



5. Empirical results



6. Geography and Financial Inclusion

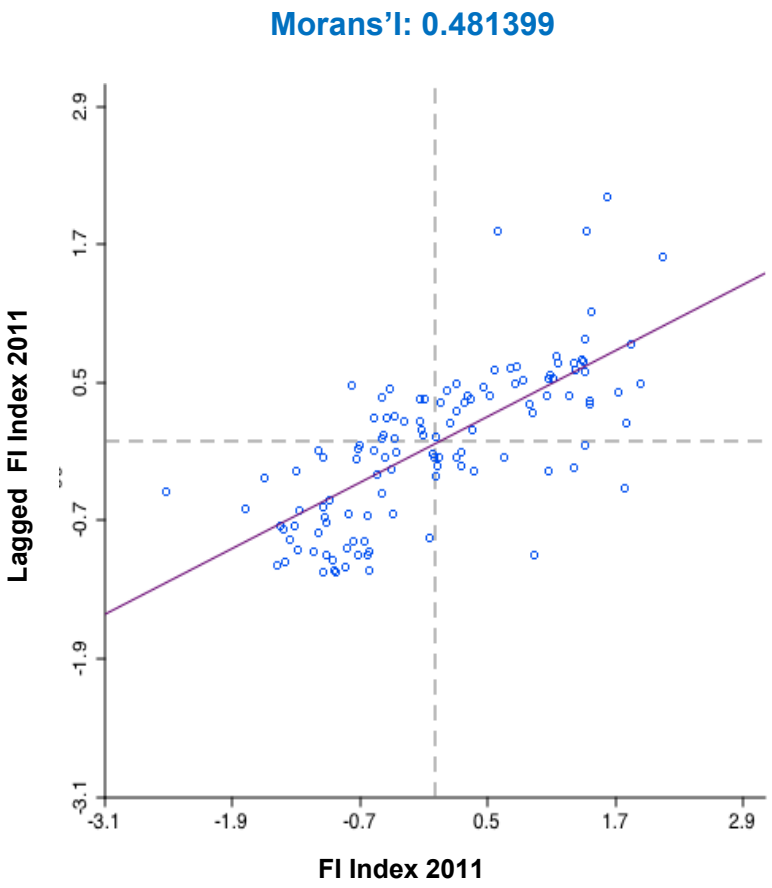
- ***Hypothesis*: There is spatial autocorrelation between the level of financial inclusion in the country *i* and its neighbors**

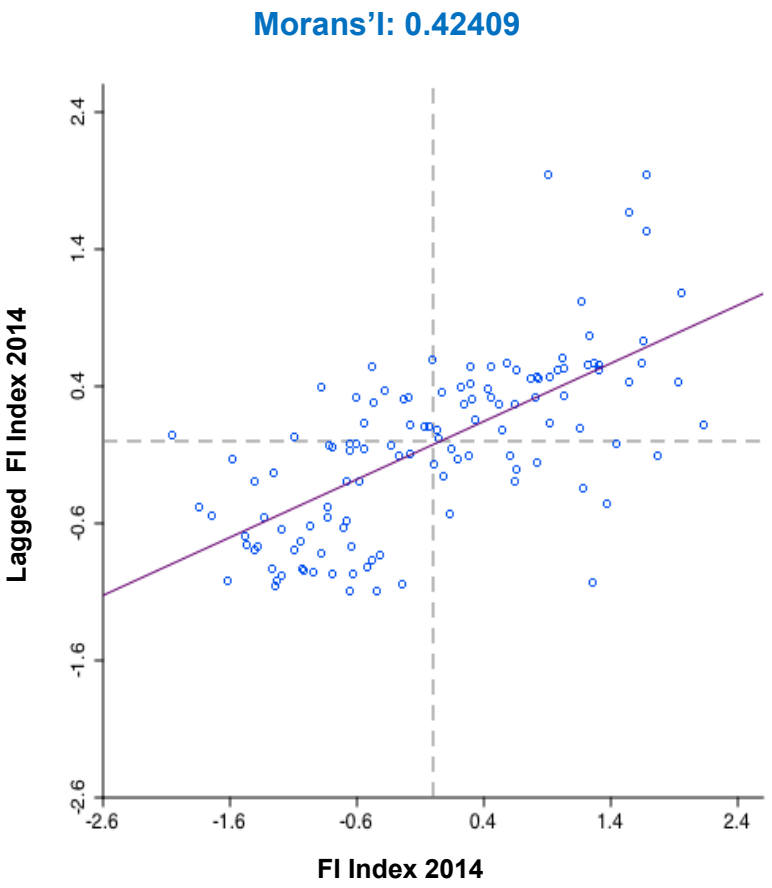
- We find evidence in favor of our hypothesis of spatial dependence

- We introduce a weighting mechanism based on geo-position to control for spatial dependence when calculating the financial inclusion index

6. Geography and Financial Inclusion

Spatial autocorrelation





6. Geography and Financial Inclusion

2011

```
SUMMARY OF OUTPUT: ORDINARY LEAST SQUARES ESTIMATION
Data set            :  F.I.INDEX
Dependent Variable  :     FI_2011  Number of Observations:  121
Mean dependent var  :      54.386  Number of Variables   :    2
S.D. dependent var  :     21.3322  Degrees of Freedom    :  119

R-squared           :    0.729789  F-statistic           :     321.397
Adjusted R-squared  :    0.727518  Prob(F-statistic)     : 1.30815e-35
Sum squared residual:     14878.5  Log likelihood        :    -462.811
Sigma-square        :      125.03  Akaike info criterion :     929.621
S.E. of regression  :     11.1817  Schwarz criterion     :     935.213
Sigma-square ML     :     122.963
S.E of regression ML:     11.0889
```

Variable	Coefficient	Std.Error	t-Statistic	Probability
CONSTANT	33.45656	1.547975	21.61311	0.00000
GDP_2011	0.001388721	7.746297e-05	17.92754	0.00000

```
DIAGNOSTICS FOR SPATIAL DEPENDENCE
FOR WEIGHT MATRIX : MATRIX WEIGHT.gwt
   (row-standardized weights)
TEST                           MI/DF        VALUE           PROB
Moran's I (error)              0.1293        3.6349         0.00028
Lagrange Multiplier (lag)           1       16.6609         0.00004
Robust LM (lag)                     1        8.0443         0.00456
Lagrange Multiplier (error)         1        9.7801         0.00176
Robust LM (error)                   1        1.1636         0.28072
Lagrange Multiplier (SARMA)         2       17.8245         0.00013
```

2014

```
SUMMARY OF OUTPUT: ORDINARY LEAST SQUARES ESTIMATION
Data set            :  F.I.INDEX
Dependent Variable  :     FI_2014  Number of Observations:  121
Mean dependent var  :      49.153  Number of Variables   :    2
S.D. dependent var  :     23.7076  Degrees of Freedom    :  119

R-squared           :    0.673984  F-statistic           :     246.012
Adjusted R-squared  :    0.671244  Prob(F-statistic)     : 9.65965e-31
Sum squared residual:     22171.8  Log likelihood        :    -486.944
Sigma-square        :     186.317  Akaike info criterion :     977.888
S.E. of regression  :     13.6498  Schwarz criterion     :      983.48
Sigma-square ML     :     183.238
S.E of regression ML:     13.5365
```

Variable	Coefficient	Std.Error	t-Statistic	Probability
CONSTANT	26.05823	1.925583	13.53264	0.00000
GDP_2014	0.001470589	9.375898e-05	15.68478	0.00000

```
DIAGNOSTICS FOR SPATIAL DEPENDENCE
FOR WEIGHT MATRIX : MATRIX WEIGHT.gwt
   (row-standardized weights)
TEST                           MI/DF        VALUE           PROB
Moran's I (error)              0.1088        3.1105         0.00187
Lagrange Multiplier (lag)           1        9.9491         0.00161
Robust LM (lag)                     1        3.9091         0.04803
Lagrange Multiplier (error)         1        6.9357         0.00845
Robust LM (error)                   1        0.8957         0.34395
Lagrange Multiplier (SARMA)         2       10.8447         0.00442
```

6. Geographical Proximity and Financial Inclusion

- A weighted method of principal component analysis (GWPCA) is computed to account for the proximity between countries

$$MIFI_i = \boldsymbol{\omega_1}\overline{Y}_{ij}^{u} + \boldsymbol{\omega_2}\overline{Y}_{ij}^{a} + \boldsymbol{\omega_3}\overline{Y}_{ij}^{b} + \boldsymbol{\epsilon_i}$$

- We use the Euclidean distance between the centroid of the countries and their geographic location. We obtain a value for each pair of coordinates

- Spatial weights are calibrated by introducing a specification of the distance that consider adjacent countries (located at 2,500 km)

6. Financial inclusion growth with spatial effects: 2011 - 2014

Rank	Country	Δ
1	Israel	+32
2	Korea, Rep.	+2
3	Canada	+5
4	Brazil	+14
5	Japan	+5
6	Sweden	+18
7	Norway	N/A
8	Australia	-6
9	United Kingdom	+7
10	Luxembourg	-6
11	Singapore	-8
12	New Zealand	-2
13	France	-7
14	United States	+6
15	Spain	-7
16	Germany	+2
17	Mauritius	+15
18	Austria	+3
19	Belgium	-2
20	Denmark	+2
21	Mongolia	+10
22	Ireland	-9
23	Switzerland	N/A

Rank	Country	Δ
24	Portugal	-16
25	Finland	0
26	Netherlands	+1
27	Chile	+26
28	Colombia	+23
29	Croatia	-5
30	Slovenia	-14
31	Estonia	-1
32	Hong Kong SAR, China	+10
33	Russian Federation	+11
34	Latvia	-6
35	Malta	-20
36	Italy	-5
37	Bangladesh	+28
38	Slovak Republic	-1
39	Sri Lanka	+9
40	Thailand	-11
41	Greece	-5
42	Poland	+1
43	Costa Rica	-3
44	Czech Republic	-6
45	China	+2
46	Cyprus	-33

Rank	Country	Δ
47	Bosnia and Herzegovina	+5
48	Lithuania	-7
49	United Arab Emirates	+1
50	Bulgaria	-5
51	Serbia	-5
52	Lebanon	+4
53	Kuwait	-19
54	Ecuador	+6
55	Montenegro	-6
56	Hungary	-17
57	Uruguay	+1
58	Macedonia, FYR	-4
59	Peru	+16
60	Belarus	-3
61	Malaysia	-6
62	Saudi Arabia	+1
63	Venezuela, RB	+4
64	South Africa	+4
65	Kazakhstan	-1
66	Romania	-7
67	Jordan	+5
68	Georgia	+3
69	Bhutan	N/A

6. Financial inclusion growth with spatial effects: 2011 - 2014

Rank	Country	Δ
70	Argentina	+5
71	Dominican Republic	0
72	Jamaica	-5
73	Namibia	N/A
74	Vietnam	+10
75	Algeria	+4
76	Kosovo	-5
77	Belize	N/A
78	Rwanda	+15
79	Tunisia	+9
80	India	+1
81	Ethiopia	N/A
82	Panama	+18
83	Ukraine	+1
84	Indonesia	+28
85	Nigeria	+24
86	Myanmar	N/A
87	Kenya	+9
88	Bolivia	+5
89	Turkey	-22
90	Botswana	+19
91	West Bank and Gaza	-5
92	Azerbaijan	-1

Rank	Country	Δ
93	Nepal	-1
94	Mexico	-6
95	Guatemala	-29
96	Albania	-18
97	Ghana	+6
98	Armenia	-9
99	Gabon	+13
100	Sudan	+25
101	Egypt, Arab Rep.	-20
102	Uzbekistan	-18
103	Pakistan	-6
104	Zambia	+10
105	Honduras	-11
106	El Salvador	-4
107	Yemen, Rep.	0
108	Kyrgyz Republic	+8
109	Zimbabwe	-10
110	Moldova	-4
111	Mauritania	N/A
112	Côte d'Ivoire	N/A
113	Burundi	0
114	Mali	+5
115	Benin	+11

Rank	Country	Δ
116	Burkina Faso	+1
117	Angola	-17
118	Nicaragua	-16
119	Malawi	-12
120	Uganda	+10
121	Madagascar	+11
122	Haiti	N/A
123	Congo, Rep.	-12
124	Cameroon	-3
125	Togo	0
126	Philippines	-4
127	Tajikistan	-1
128	Sierra Leone	+4
129	Guinea	-6
130	Chad	+5
131	Tanzania	-1
132	Senegal	-3
133	Iraq	-9
134	Congo, Dem. Rep.	0
135	Afghanistan	+1
136	Niger	+1
137	Cambodia	-30

5. PCA vs. GWPCA

Δ	Country
-15	Bangladesh
+9	Peru
+8	Colombia
-4	Armenia
+4	Chile
+3	Ecuador
+3	Guatemala
+3	Mexico
+3	Norway
-3	Turkey
-2	Australia
-2	Croatia
-2	Egypt, Arab Rep.
-2	Georgia
+2	Hong Kong SAR, China
+2	Kenya
+2	Malta
+2	Mauritius
-2	Montenegro
+2	Netherlands
-2	Poland
+2	Singapore
+2	Sri Lanka
+2	Sweden
+2	United Arab Emirates
-2	United Kingdom
-1	Albania
-1	Angola
-1	Austria
-1	Azerbaijan
-1	Belarus
-1	Belgium
+1	Bosnia and Herzegovina
-1	Bulgaria
+1	Burkina Faso

Δ	Country
-1	Chad
+1	Denmark
-1	El Salvador
-1	Estonia
+1	Ethiopia
+1	Finland
-1	France
+1	Gabon
-1	Ghana
+1	Greece
+1	Guinea
+1	Honduras
-1	Hungary
+1	Ireland
-1	Italy
-1	Kazakhstan
+1	Kuwait
-1	Latvia
-1	Lithuania
-1	Luxembourg
-1	Malawi
-1	Malaysia
-1	Moldova
-1	Mongolia
+1	Myanmar
-1	New Zealand
+1	Nicaragua
-1	Pakistan
-1	Panama
-1	Philippines
+1	Portugal
-1	Romania
-1	Russian Federation
+1	Rwanda
-1	Saudi Arabia

Δ	Country
-1	Serbia
-1	Slovenia
-1	South Africa
+1	Sudan
+1	Switzerland
-1	Thailand
+1	Togo
-1	Tunisia
-1	Uruguay
+1	Uzbekistan
-1	Venezuela, RB
+1	West Bank and Gaza
+1	Zimbabwe
0	Afghanistan
0	Algeria
0	Argentina
0	Belize
0	Benin
0	Bhutan
0	Bolivia
0	Botswana
0	Brazil
0	Burundi
0	Cambodia
0	Cameroon
0	Canada
0	China
0	Congo, Dem. Rep.
0	Congo, Rep.
0	Costa Rica
0	Côte d'Ivoire
0	Cyprus
0	Czech Republic
0	Dominican Republic
0	Germany

Δ	Country
0	Haiti
0	India
0	Indonesia
0	Iraq
0	Israel
0	Jamaica
0	Japan
0	Jordan
0	Korea, Rep.
0	Kosovo
0	Kyrgyz Republic
0	Lebanon
0	Macedonia, FYR
0	Madagascar
0	Mali
0	Mauritania
0	Namibia
0	Nepal
0	Niger
0	Nigeria
0	Senegal
0	Sierra Leone
0	Slovak Republic
0	Spain
0	Tajikistan
0	Tanzania
0	Uganda
0	Ukraine
0	United States
0	Vietnam
0	Yemen, Rep.
0	Zambia

7. Conclusions

- We propose a **parametric index** to measure the degree of financial systems' inclusiveness. It is **comparable across countries and over time**. It is **easy to interpret**

- **Demand and supply information** is considered

- Our index has **desirable properties**: It comprises information from all the indicators but it is not strongly biased towards one or more indicators

- It accounts for the **dependence between countries' geo-position and financial inclusion**

- This financial inclusion index may help in **advising policy makers** though the financial inclusion diagnosis and potential market failures

Thank you!

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Appendices

TABLE 1

DESCRIPTIVE STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
		Usage			
Account	137	61.00	27.00	8.00	100
Loan	137	11.60	5.15	1.31	26.43
Savings	137	24.46	16.85	0.90	68.84
		Access			
ATMs/100,000 pop.	137	56.18	52.46	0.49	270.13
Branches/100,000 pop.	137	20.82	17.91	0.66	89.73
		Barriers			
Distance	137	17.06	11.65	0.00	49.16
Affordability	137	26.32	14.59	0.00	59.81
Documentation	137	18.60	11.98	0.00	49.47
Lack of trust	137	18.83	12.10	0.00	57.45

TABLE 3

PRINCIPAL COMPONENTS ESTIMATES

Usage

Variable	PC_1	PC_2	PC_3	PC_4	norm. weight
Account	0.5968	-0.4551	0.6608	-	0.33
Loan	0.5126	0.8499	0.1223	-	0.40
Savings	0.6172	-0.2658	-0.7041	-	0.27
Eigenvalues	2.2617	0.5579	0.1804	-	

Access

Variable	PC_1	PC_2	PC_3	PC_4	norm. weight
ATMs per 100,000 pop.	0.5204	0.0368	0.7283	-0.4443	0.61
Branches per 100,000 pop.	0.4546	0.7461	-0.0687	0.4816	0.49
Eigenvalues	2.5050	0.8044	0.5530	0.1377	

Barriers

Variable	PC_1	PC_2	PC_3	PC_4	norm. weight
Distance	0.5198	-0.3481	-0.2594	0.7358	0.21
Affordability	0.5357	-0.0126	-0.5986	-0.5955	0.25
Documentation	0.5184	-0.3407	0.7373	-0.2676	0.25
Trust	0.4172	0.8733	0.1757	0.1803	0.29
Eigenvalues	3.12863	0.585401	0.150115	0.135852	

Notes: The weights are normalised add up to 1

TABLE 4

Cumulative Variance Explained by Components	
Components	*Cumulative variance*
Usage	
PC_1	0.7539
PC_2	0.9399
PC_3	1
Access	
PC_1	0.6262
PC_2	0.8273
PC_3	0.9656
PC_4	1
Barriers	
PC_1	0.7822
PC_2	0.9285
PC_3	0.9660
PC_4	1

TABLE 6

Principal Component Estimates				
Financial Inclusion Index				
Variable	PC_1	PC_2	PC_3	norm. weight
Usage	0.5775	-0.5758	0.5787	0.39
Access	0.5437	0.8001	0.2535	0.42
Barriers	0.609	-0.1682	-0.7752	0.28
Eigenvalues	2.28051	0.485501	0.233989	

Notes: The weights are normalised add up to 1

Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

Bank of Morocco – CEMLA – IFC Satellite Seminar at the ISI World Statistics Congress on *"Financial Inclusion"*
Marrakech, Morocco, 14 July 2017

Measures of financial inclusion - a central bank perspective[1]

Bruno Tissot and Blaise Gadanecz,
Bank for International Settlements

[1] This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

Measures of financial inclusion – a central bank perspective

Bruno Tissot and Blaise Gadanecz[1]

Abstract

Central banks' experience shows that better statistics can be instrumental to promote financial inclusion. Well-founded data frameworks are essential when developing financial services for the poor, in both formal and informal markets, and adequate indicators are a precondition for good policies. They ensure that financial inclusion is properly assessed and that measures aimed at developing it are adequately implemented, monitored and adjusted as required. Good statistics can also help to strike a proper balance between encouraging innovation and the growth of financial services on the one hand, and ensuring that financial stability is preserved on the other.

Keywords: financial services, financial stability, poverty, data measurement, public policy

JEL classification: E58, G18, G21, I22, I30, O16

Contents

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1. Introduction

Financial inclusion, broadly defined as the ability to access to financial services, is expanding globally but remains ***a key issue for policymakers*** worldwide. In particular, it is an important public policy goal that directly relates to central banks' key objectives and activities (Mehrotra and Yetman (2015)). Financial inclusion can contribute to sustaining economic welfare and to reducing poverty. It also supports economic, monetary and financial stability, by making saving and investment decisions more efficient, enhancing the transmission of monetary policy and facilitating the functioning of the economy. The international standard-setting bodies (SSBs), especially those hosted by the BIS, have been actively engaged with financial inclusion policies for more than a decade. From a payments perspective, the current focus is on facilitating financial inclusion and access through payment systems (CPMI (2016)). From a supervisory perspective, initial attention was devoted to the microfinance activities of banks and other deposit-taking institutions. Since then, the focus has been broadened to also cover the full range of financial products and services that low-income households should be able to access (BCBS (2015a)).

Central banks need to ***monitor the impact of financial inclusion policies***. Adequate indicators are a prerequisite for properly assessing the access to financial services, and for formulating, implementing and monitoring public policy designed to enhance it. Good statistics can also help to strike a balance between encouraging innovation and the growth of financial services on the one hand, and ensuring that financial stability is preserved on the other. A number of international initiatives, undertaken by various public and private sector organisations and SSBs, have helped to set up common frameworks for developing financial inclusion indicators and informing policymakers. But despite many and encouraging improvements, measurement of financial inclusion remains work in progress.

At the end of 2015 the Irving Fisher Committee on Central Bank Statistics (IFC) surveyed its member central banks on financial inclusion (IFC (2016)). The survey covered 47 countries, of which 30 emerging economies. Specifically, the objective of the survey was to compare financial inclusion policies and practices along four dimensions: definitions; central bank mandates, policies and governance; data types and sources; contributions to international initiatives and global forums.

Building on this work, this paper presents definitions of financial inclusion used by central banks and other policymakers (Section 2), and discusses how financial inclusion objectives have been incorporated into central bank mandates (Section 3). It then reviews how well currently available data allow to measure financial inclusion (Section 4), identifies data gaps and presents possible areas of international collaboration to address them (Section 5), before highlighting general policy implications and recommendations (Section 6).

2. Definitions of financial inclusion

Official definitions of financial inclusion are neither widespread nor harmonised across countries. A large majority of reporting central banks do not rely on an official definition. And when there is actually such a definition, in most cases it refers to ***access to financial services***. Access mainly relates to the ability of firms and households to use financial products and services, given in particular the constraints of time and distance. Relevant measures include the proximity of access points, the variety of access channels, as well as socio-economic barriers limiting use. In a broader sense, the pricing and other terms and conditions of financial products and services can limit marginalised groups' access. Another dimension widely referred to is the ***effective use of financial products and services***, eg whether deposit accounts, payment services, microcredit schemes and insurance products are actually used by the population. Measuring this concept is done by looking at the observed consumption of financial products, their usage patterns and customer behaviour, itself influenced by financial literacy (individual and SME customers' knowledge about financial concepts, inflation and investment risk, as well as their awareness about the availability of financial products and services).

Most definitions of financial inclusion consider both ***supply and quality indicators***. Supply (or availability) relates to the various types of financial products and services offered to potential customers. This comprises the (limited) number and type of savings products, credit, payment and insurance services offered by various providers to financially-excluded groups. Pricing and other terms and conditions are possible measures to complete this assessment, in particular to ascertain whether the targeted populations can afford the products on offer. Also monitored are the various constraints on the supply of financial products and services, which may include administrative/regulatory prescriptions, a lack of interest on the part of providers in serving certain customer segments, business models, unaffordable costs and inadequate product design. In this respect, the following key issues arise: Are financial services appropriate and suitable for users' needs? Is the pricing of financial products commensurate with risk? Do they offer sufficient convenience, security, an adequate customer relationship management and a sufficient degree of consumer protection? How widely is SME financing available?

In contrast, the adequacy of ***financial infrastructure*** is more rarely taken into consideration as a determinant of financial inclusion. This dimension relates to the various elements that support the functioning of the financial system. For instance, robust, safe, efficient and widely accessible information and communication technology infrastructure is a key factor underpinning the provision of transaction account services and broader financial products (CPMI (2016)). The quality of infrastructure depends on various logistical, geographical, political and environmental, as well as legal factors. Logistical factors would cover technical reliability, such as the error rate on executing payment orders, and how failed orders are handled or corrected. Geographical, environmental and political factors can also play an important role: for instance, national policies regarding regional autonomy may determine the extent to which far-flung regions of a country are within easy reach of telecommunications or other infrastructure networks. Lastly, the legal aspects of financial infrastructure relate to the ease with which financial claims can be enforced in court. In the area of payment services, a sound legal infrastructure should include a user-friendly and effective recourse and dispute resolution mechanism to address consumer claims and complaints.

3. Central bank mandates, governance structures, contributions and objectives in the financial inclusion area

More than half of central banks surveyed by the IFC in 2015 have some sort of ***mandate to focus on financial inclusion***. For those countries where there is no explicit national financial inclusion strategy, it is generally felt that there is a need to have one. Nevertheless, in practice central banks can intervene at various levels of the financial inclusion policy agenda. They can directly contribute to it in three major ways:

(i) By ***promoting financial education***: monetary authorities often have a mandate to promote financial education and literacy as well as consumer protection. They can, for instance, publish financial literacy standards, together with clear information that serves to protect consumers of financial services. That, in itself, is a key pillar supporting financial inclusion. As individuals increase their financial literacy, they gain knowledge of the benefits of adopting transaction accounts, using those accounts effectively for payments and storing value, and for accessing other financial services.

(ii) By ***acting as financial supervisors*** and overseers: central banks are often involved in the supervision and oversight of financial services, products, institutions and/or payment systems. This supervisory role can contribute to financial inclusion in general. Conduct supervision, in particular, can help minimise misconduct by market participants and favour adherence to ethical norms. It can thereby foster a clear framework for delivering financial services and ensuring sound market and financial intermediation practices (Anwar (2012)).[2] One example is the mobile payment system in Kenya, which can serve as a gateway to other financial services and enhance financial inclusion. Yet another illustration is the promotion by a number of central banks of innovative payment and remittance mechanisms; this is often seen as instrumental in facilitating access to, and reducing the costs of, payment and settlement services.

(iii) By supporting ad hoc ***initiatives targeted at financially-excluded population segments***: some central banks are themselves actively involved in facilitating the delivery of financial services to the population. For instance, they promote microfinance programmes and/or help provide subsidised funding to commercial banks to support their lending to priority borrower groups. Such activities are usually conducted with a view to fostering economic growth and reducing poverty more generally; they also contribute to reducing inequalities in accessing financial services as well.

In a more indirect way, many central banks see their ***financial stability role*** as their most important contribution to financial inclusion. This role often requires central banks to work on promoting sound and efficient payment systems, improving the functioning of the financial system and protecting consumers and users of financial services. Indeed, central bank efforts to safeguard financial stability can potentially contribute significantly to financial inclusion. A smoothly functioning, efficient and stable financial system is likelier to engage with financially-excluded households or firms than a system where financial instability or stress prevails.

[2] On the role of supervision in enhancing banking conduct and culture, see Caruana (2015) and Group of Thirty (2015).

Likewise, financially-excluded parties are likelier to access formal financial services when a minimum level of consumer protection is offered. In turn, a higher level of financial inclusion is beneficial not only for those directly affected, but also for the national payments infrastructure, the financial system and ultimately, the economy (CPMI (2016)). Thus, a virtuous circle can be created.

To be sure, a dilemma may exist between financial inclusion and financial stability (Khan (2011)). As stated above, a general view is that greater financial inclusion enhances financial stability. For instance, microfinance can offer banks a means of diversifying their loan portfolios, as well as a stable source of funding when retail and market sources are volatile. Another, opposite view, is that improving financial inclusion can be detrimental for financial stability if, say, expanding the pool of borrowers lowers lending standards. This dilemma figures prominently on the current work agenda of international SSBs (see, for instance, BCBS (2015b)). Interestingly, the 2015 IFC survey suggested that central banks see little or no conflict at all in reconciling their "traditional" policy objectives on the one hand, and promoting financial inclusion on the other.

Central banks can also contribute to financial inclusion by pursuing a ***traditional price stability objective***. Price stability is instrumental in anchoring inflation expectations, which in turn allows individuals to make better-informed saving and investment decisions. As such, that is likely to make households and SMEs avail themselves of financial services to a greater extent than they would otherwise do, alleviating financial exclusion. In turn, monetary policy tools can become more effective. For instance, when the saving, spending and investment decisions of households and firms are influenced by banks' interest rates, and no or few entities are excluded from this process, policy rates can be transmitted more broadly to the economy.

In working towards improving financial inclusion, what are central banks' ***operational objectives***? Interestingly, their primary focus is oftentimes on improving financial literacy, together with the broad demand- and supply-side aspects of financial inclusion.[3] Another important area for action is promoting the quality of financial services (appropriateness to customers' needs). That can be achieved by promoting the effective use of available financial services, and implementing proportionate risk-based regulation (Muhammad (2015) and FSI (2017)), a concept which calibrates the intensity of regulation and supervision to the risk profile and systemic importance of products, services, channels and/or institutions. The idea is to refine the regulatory approach so as to address the wide spectrum of institutions being supervised – say, by treating large internationally active banks differently from the small, non-complex deposit-taking institutions that are key to supporting financial inclusion.

A last operational consideration for public authorities is the host of international efforts related to anti-money laundering and terrorism financing and the potential impact on the cross-border provision of banking services (the "*correspondent banking*" issue; BCBS (2017)). In particular, the concern that the so-called "*Financing customer acceptance policy*" is not so restrictive that it results in a denial of access by the general public to banking services, especially for people who are financially or socially disadvantaged – see Financial Action Task Force (2013).

[3] Regarding the role of public policy in the area of financial education, see Buch (2017).

How do financial inclusion mandates translate into ***accountability and governance?*** The 2015 IFC survey revealed that most central banks perform some direct or indirect reporting of their financial inclusion activities (Gadanecz and Tissot (2015)). As regards the organisation of the central bank financial inclusion function itself, the survey showed that activities are often decentralised, ie distinct central bank departments and units deal with different aspects. Nevertheless, authorities try to ensure a certain degree of policy consistency even when various units are involved. Some countries have set up some sort of collegial structure, eg a formal committee in charge of financial inclusion issues located within the central bank, or a committee comprising representatives from the central bank and other institutions interested in financial inclusion. Not only can such a collegial structure serve as a useful coordination vehicle among the different internal entities working on financial inclusion, it can also help to provide the necessary impetus and buy-in from various stakeholders, including central banks' senior management.

4. How well do currently available data allow financial inclusion to be measured?

Data on financial inclusion are already widely collected (Tissot (2015)). In a majority of countries that collect such statistics, the central bank or the monetary authority is primarily responsible for this task. Data can also come from other sources, such as the supervisory authority, the statistical office, various ministries, or private organisations such as the Bill & Melinda Gates Foundation. Not surprisingly, the most widely available data are ***supply side indicators*** (eg availability and access to financial services), which are relatively well covered. Most of these data come from administrative, regulatory and supervisory sources. Typically, as part of their oversight mandates, central banks and supervisory authorities have access to information on financial institutions' supply of services to specific segments of the population. As overseers or operators of national payment systems, they often have payment data at their disposal, too. ***Demand side indicators*** are significantly less widely available, with surveys being the main data source. In this context, a major shortcoming is that the quality of micro data to assess the number of account holders is often compromised by double-counting. Indeed, it is common practice to count the number of accounts, rather than the number of (different) account holders. Moreover, the cost of demand-side surveys is often high, and response rates and/or response incentives can be low.

The main ***data gap*** pertains to the assessment of financial inclusion policy implementation, in particular to the measurement of ancillary welfare benefits. Existing data collection frameworks are rarely designed to directly assess whether policy targets in the area of financial inclusion are being met. Data are also scarce regarding the quality of financial services and of financial infrastructure. In any case, the availability of financial inclusion data differs for various segments of financial services and products. In general, the activities of commercial banks as suppliers of financial services are relatively well covered. Perhaps surprisingly, supply-side indicators related to state-owned banks, specialised financial institutions and even more so post offices are significantly less available. Information is even scarcer on alternative financial providers such as non-bank financial intermediaries, cooperative and charitable organisations, lending and savings associations and bureaux de

change. Lastly, data are very parsimonious on the supply of financial services by telecom firms. Existing data collection systems have proved ill-equipped to capture new non-bank financial intermediaries or to cope with alternative new data sources (eg big data) that are becoming available to measure financial inclusion.

The lack of ***granularity, low frequency*** and – to a lesser extent – ***confidentiality*** restrictions pose additional difficulties. As regards granularity, having more breakdowns of the data is an important objective, as it would allow central banks to conduct more detailed regional analysis and to better measure correlations between the various dimensions of financial inclusion. Meanwhile, financial inclusion data are often collected too infrequently to allow policymakers to make an adequate and timely assessment of the impact of their actions. Turning to the issue of confidentiality, it is particularly important to be able to guarantee to households and firms that respond to demand-side surveys that their answers will be protected and that surveying authorities will strictly adhere to their commitments. Confidentiality issues may also arise for the suppliers of services to the financially-excluded, when their (restricted) reported supervisory data are mobilised for financial inclusion policies.

A large number of central banks produce regional or sectoral ***aggregated indicators of financial inclusion***. There has been a public debate about whether countries should produce specific indices synthesising the various dimensions of financial inclusion, such as access and usage. Such indices do have analytical merits, for instance by providing a useful way of aggregating various aspects of the topic for analytical purposes. A single indicator capable of charting general trends and facilitating comparison between geographic units can prove very useful for mapping policy progress in the area of financial inclusion, by identifying advances and/or barriers. In some countries, a synthetic index may be used in the context of the national strategy for financial inclusion.

Though financial inclusion indices have merits, views on their genuine usefulness are mixed. While several aspects of financial inclusion (availability, access, usage) are usually incorporated into these indices, important dimensions are often missing, such as the quality of services, SME financing, financial literacy and the adequacy of financial infrastructures. Moreover, indices can be less meaningful than a dashboard of individual indicators, the latter being often easier to communicate to the public than a composite index. Lastly, indices may also suffer from poor cross-country and temporal comparability.

A final challenge is the lack of integration of the ***process for collecting data*** into national statistical frameworks. As discussed, there is a host of various financial inclusion indicators, and they are typically not collected by a single independent authority. Not having data collated in one place may be a corollary of the decentralised fashion in which most countries conduct financial inclusion work. But this may result in inefficient or incomplete data access and could limit the scope of any analytical work. This puts a premium on adequate data-sharing arrangements within countries. Other data collection challenges pertain to the cost and non-response aspects of demand-side surveys. Often, the survey population has insufficient incentives to respond, and data may suffer from double-counting. Conducting a cost-benefit analysis before launching such surveys was thus seen as important. Turning to supply side data, they fail to adequately cover alternative providers.

5. International collaboration

The general view is that important benefits can be derived from collaboration with international groupings in the area of measuring financial inclusion. A significant part of central banks already contribute to international data collection frameworks and initiatives, such as those of the World Bank (Global Findex Initiative), the OECD (International Network on Financial Education), the IMF (Financial Access Survey), the Alliance for Financial Inclusion, the Global Partnership for Financial Inclusion and the Consultative Group to Assist the Poor. In addition, they often participate in the financial inclusion-related activities of regional organisations.

The ***benefits*** of engaging with these international fora can be manifold. They include access to other countries' or cross-country data; sharing experiences in developing related methodologies, concepts and survey questionnaires; forming partnerships; as well as benefiting from capacity-building and technical assistance in the area of financial inclusion. International collaboration also provides exposure to benchmarks of best practices.

Sharing data on financial inclusion brings clear benefits in itself. When data is shared between different authorities of the same country, it can be leveraged to conduct financial inclusion policies, especially when those policies require a coordinated effort between different administrations. International data-sharing also allows the full benefits of international collaboration on financial inclusion to be reaped. In addition, internationally harmonised data on financial inclusion can be a key input for national policymakers when they benchmark themselves on measuring financial inclusion as well as on developing, designing, implementing and reviewing policies to improve it. Lastly, sharing cross-county data is essential to conduct meaningful analyses and to support global public and private organisations working on financial inclusion to better target their resources geographically.

Data sharing is a necessary, but not a sufficient condition for ***effective cross-country comparisons***, which also rely on definitions and measures of financial inclusion being sufficiently harmonised. Coming up with a uniform set of indicators across countries for the various dimensions of financial inclusion is still an area where progress has to be made. Yet, each country's experience with financial inclusion is determined by its own domestic circumstances. These include the level of economic development, the specificities of its financial system, the relative importance of the agricultural, manufacturing and service sectors that are the mainstays of the economy, economic inequalities, as well as social, demographic and cultural factors.

In view of the need to balance cross-country harmonisation with capturing national specificities, no "one size fits all" measure exists to gauge financial inclusion universally. In particular, the nature of financial exclusion issues faced by advanced economies may significantly differ from those experienced by emerging markets. The implication is that further harmonisation of definitions and measures of financial inclusion is warranted but should not happen at the expense of ***accounting for national specificities***. Dealing with this trade-off is certainly not an easy task. One way forward is to leverage existing international collaboration efforts to further coordinate the development of financial inclusion measures that are both comparable internationally and meaningful domestically. Of particular relevance is the work of the Alliance for Financial Inclusion, the Global Partnership for Financial Inclusion, the OECD/INFE project and the World Bank's Findex initiative. Central banks also see a need to deepen international outreach, technical assistance, knowledge-sharing,

financial support and capacity-building; this puts a premium on the work of international forums in general, and of the IFC in particular. In any case, and as acknowledged by the G20, international collaboration can serve as a useful impetus for the advancement of policy for financial inclusion.

6. Conclusion: six potential ways of further enhancing financial inclusion – an IFC perspective

The 2015 IFC survey highlighted six key messages related to financial inclusion assessment and policies. They offer potential avenues that policymakers could pursue for making further progress in this important field.

1. ***Definitions.*** There is no standard, universally accepted definition of financial inclusion. *Central banks that do not currently use an official definition of financial inclusion should consider the merits and drawbacks of having one.*

2. ***Central bank contributions.*** Most central banks have some form of direct or indirect remit to promote financial inclusion. But first and foremost, they make indirect contributions to financial inclusion by pursuing their traditional objectives of price and financial stability. *The central bank community could clarify and communicate more on their contributions to improving financial inclusion by pursuing their traditional policy objectives and should consider the pros and cons of having an explicit financial inclusion mandate from this perspective.*

3. ***Internal coordination.*** Although most central banks report formally or informally on their activities in the area of financial inclusion, operations in this domain are often decentralised. *Central banks should address logistical and organisational challenges to enhance the internal coordination of financial inclusion work.* This effort could cover the various functional areas in charge of monitoring and implementing financial inclusion policies, and in particular also data-gathering and analysis. Adequate governance structures may have to be put in place, especially when units are involved both within and outside the central bank.

4. ***Data collection.*** Although data on financial inclusion are widely collected, significant gaps still exist. *Work to improve data availability in the following areas would be desirable: (i) data on access, usage and quality of financial services and of financial infrastructure, on SME financing and on non-bank financial service providers; and (ii) data that allow policy implementation to be directly assessed.*

5. ***International cooperation.*** *Collaboration between central banks and interaction with international groupings should be further enhanced, especially in order to favour an effective exchange of views and best practices when defining, measuring and analysing financial inclusion.*

6. ***International data-sharing.*** *Ongoing efforts to internationally harmonise definitions and measurements relating to financial inclusion should be encouraged, not least to facilitate data-sharing. However, greater harmonisation should leave room for capturing country specificities and should primarily leverage existing international collaboration initiatives.*

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Measures of financial inclusion - a central bank perspective[1]

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BANK FOR INTERNATIONAL SETTLEMENTS

Measures of financial inclusion – a central bank perspective

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IFC Satellite Seminar on Financial Inclusion – Marrakech, 14 July 2017

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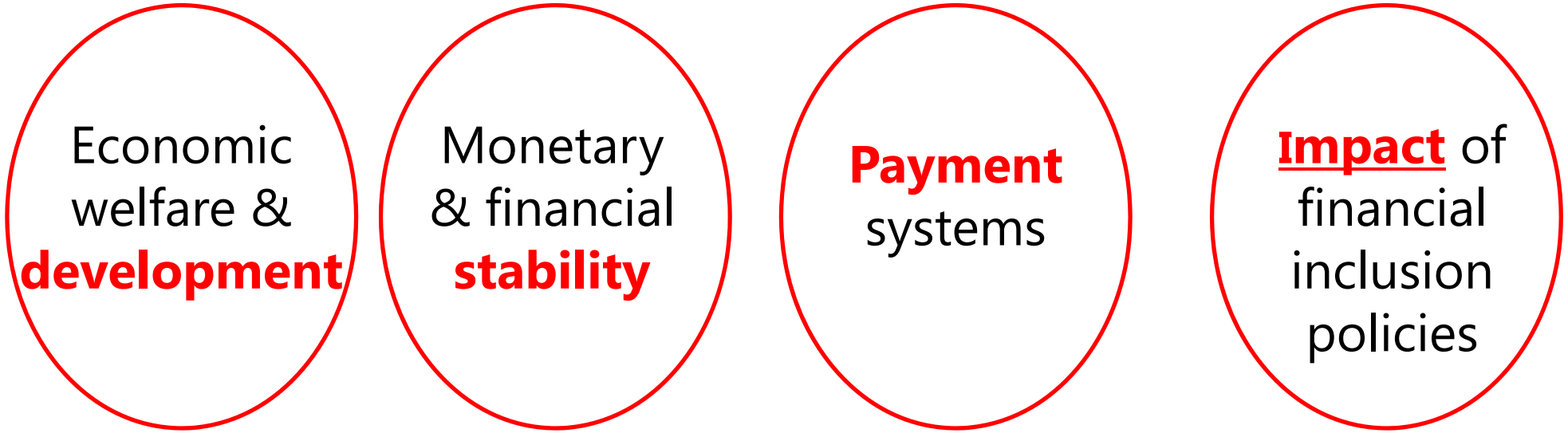
Financial inclusion and Central Banks (CBs) - Overview

1. Introduction
2. Definitions
3. Central banks' mandates
4. Central banks' objectives
5. Data issues
6. International collaboration
7. Recommendations

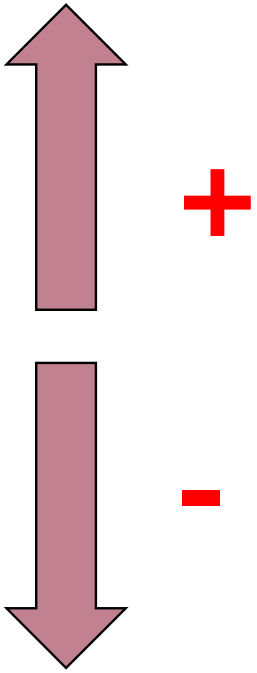
1. Introduction: CBs' interest in financial inclusion



- Irving Fisher Committee on Central Bank Statistics (IFC) survey of member central banks

see: http://www.bis.org/ifc/publ/ifc_finan_inclu.pdf

2. Financial inclusion definitions

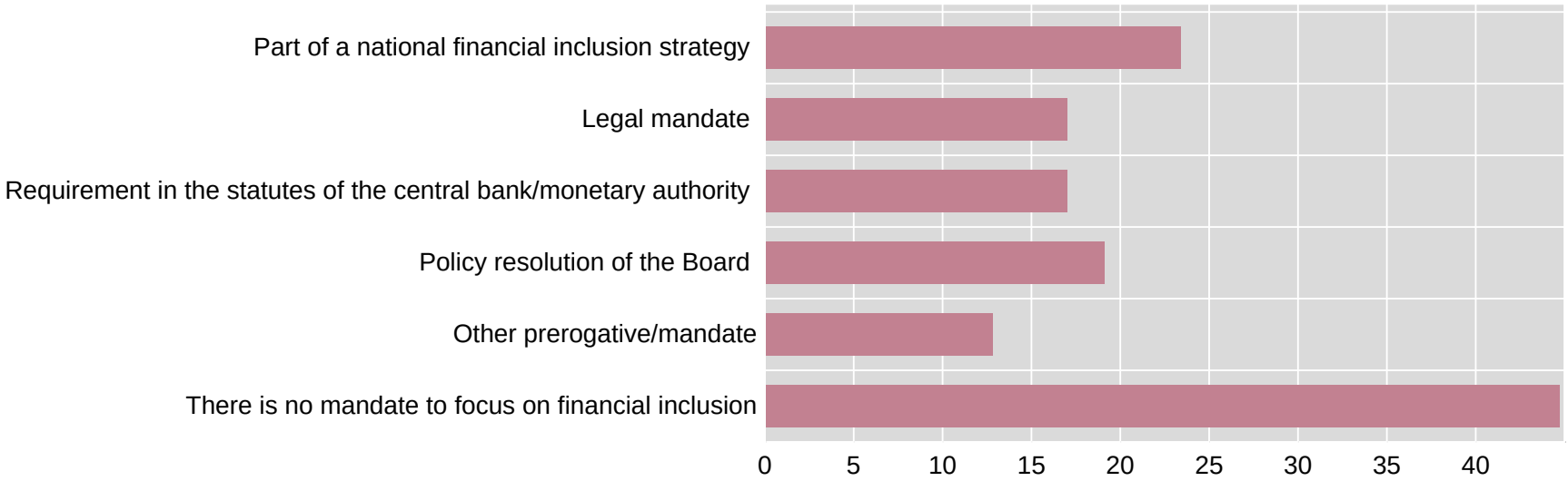


- Broadly defined as population's access to financial services
- Main current focus:
  - Supply and demand dimensions
  - Effective use & quality of financial services
- Lower focus on:
  - Financial literacy
  - SME financing
  - Quality of infrastructure (legal, financial, telecom etc.)

3. Half of CBs have no financial inclusion mandate

What type of mandate does your institution have to focus on financial inclusion?

Several answers possible



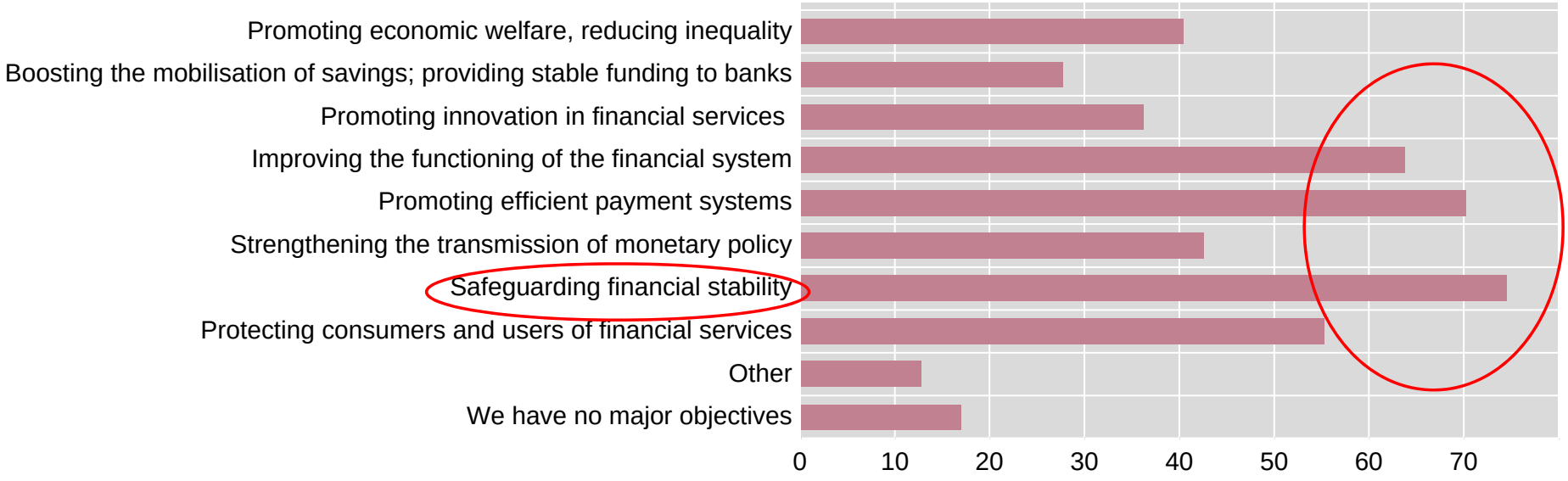
Source: IFC survey on financial inclusion, 2015.

4. Most CBs have objectives related to financial inclusion

Key is the safeguarding of financial stability…

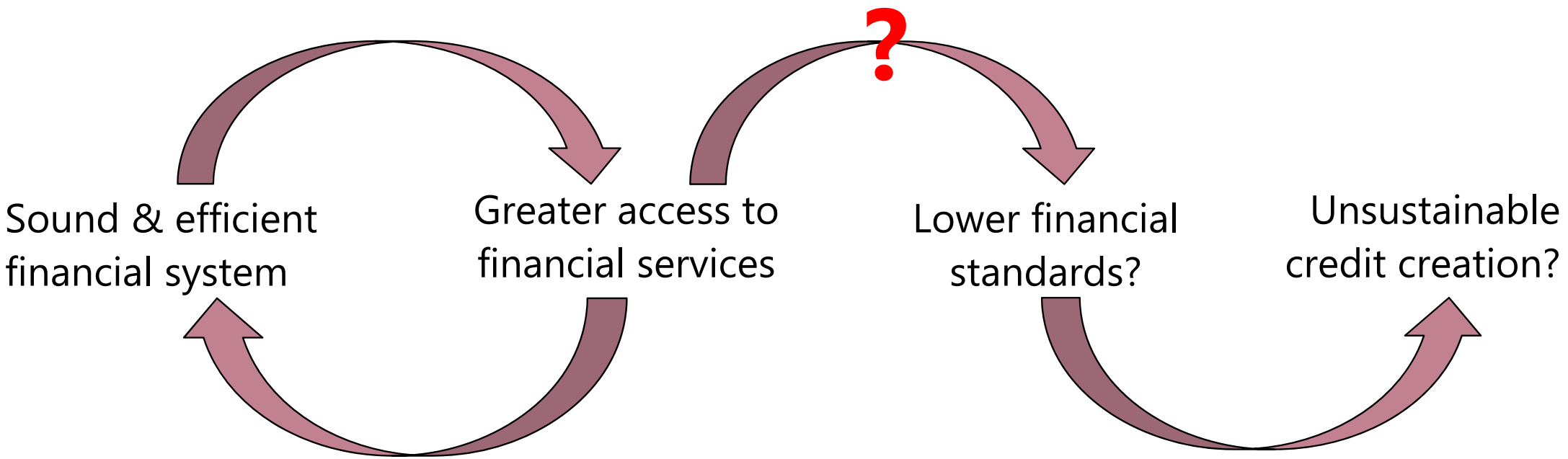
Major central bank objectives relating to financial inclusion

Several answers possible



Source: IFC survey on financial inclusion, 2015.

4. (cont'd) Financial inclusion / stability dilemma?



5. Data issues

- Central Banks are often primarily responsible for data collections
- Main gaps:
  - Quality of financial services
  - Selected supply-side indicators (eg non-bank providers)
  - Assessing policy implementation
- Synthetic indicator versus dashboard?

6. International collaboration

- Clear benefits:
  - Benchmarking
  - Best practices
  - Data-sharing
- Yet definitions and measures not fully harmonised…

… not least because of the need to capture local characteristics

7. Conclusion – IFC Report recommendations

1. No standard **definition** of financial inclusion
2. Importance of **central bank** contributions
3. Need for **coordination** of financial inclusion policies
4. There are remaining **data gaps** (access, usage, quality, SME financing, policy implementation)
5. Benefits of cross-country **cooperation**
6. Scope for international **data-sharing**

Thank you!!

Questions?

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IFC Report on "Measures of financial inclusion – a central bank perspective" (2016)