A Practitioner's Guide to Efficiency and Competition Policies in Banking
Based on Argentina's experience 2015-2019

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Abstract

Between 2015-2019 Argentina implemented a series of innovations in the functioning of its banking sector. It also implemented significant reforms in its payment system and in the use of cash. Based on the lessons learnt from this experience, this paper aims at providing a practitioners guide for those looking at promoting a banking through cost efficiencies, increased competition and the phasing out of cash.

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1 Introduction

Between 2015 and 2019, Argentina climbed from position 44 to 7 in the ranking of the "Global Microscope: the enabling environment for Financial Inclusion" report released by the Economist Intelligence Unit (EIU), the biggest climb, in such a short period, in the history of this ranking[1]. Deposits increased more than 25% as a share of GDP (from 13 to about 16.5%), individual investment accounts increased from 300,000 to more than 1,500,000, digital banks and fintechs were opening accounts in the millions, and the amount of cash in real terms fell by 30%. These were just some of the changes that resulted from a significant competitive boost and deregulation effort in Argentina's financial sector. These changes resulted from reducing barriers to financial inclusion and business development, but also by the explicit undoing of market structures that had erected important barriers to innovation and entry.

The objective of this paper is, first of all, to document these changes, but at the same time to describe their motivation and results. Not a minor part of the description will be to understand the resistance to some of deregulation efforts.

No reader will be interested in all these changes at the same time, but we believe this essay can be of help to practitioners interested in understanding the effects of specific policy actions they may be considering or evaluating in their own financial sectors. Thus, to make the text useful the table of contents provides an easy guide for the reader to find the specific point of interest and just move to the discussion of that issue.

Having said that, this essay proceeds as follows. Even though economic theory provides plenty of justifications for regulation, in Section 2 we discuss potential reasons for "excessive regulation", a term we use to refer to regulation originating in interests and objectives other than those that would be

[1]The report is a benchmarking index that assesses enabling environment for financial access as well as underscores the evolving landscape of financial inclusion in selected countries. The 2019 report was the 12th edition. The 2019 report can be found at https://digital-iadb.lpages.co/idb-invest-global-microscope-2019/

suggested by a utility maximizing central planner. This does not pretend to be a novel concept. The issue of regulatory capture has been pervasive in the literature and is well understood. Here we will just illustrate versions of our encounter with these pressures and they ways we found to fight them motivated by our own personal experience at the helm of Argentina's Central Bank. Understanding the different motives why regulation is "demanded" will help, in turn, explain the challenges and benefits associated with their removal.

In section 3 we discuss the nature of the financial sector in Argentina, with an emphasis on the role of inflation in pushing banks into a defensive strategy resulting in one of the smallest financial sectors in the world. This section can be skipped by those not interested in the specifics of the Argentine financial sector. Sections, 4, 5 and 6 detail the the reforms implemented during this period. Section 4 deals with price liberalization, Section 5 with cost reduction initiatives and Section 6 on transparency and competition. Section 7 discusses the payment system and the reforms implemented to make it more open. Section 8 dwells in the market for credit cards, that had serious competitive issues, and required a change in market rules, ownership and regulation. We provide here a theoretical framework as well as a description of how these distortions were tackled. Section 9 looks into the question of whether the Fintech industry should be regulated and why the Central Bank of Argentina decided explicitly *not* to regulate it. Section 10 describes an attempt to make the financial sector a viable option for domestic savings, particularly discussing the experience with the UVAs, an indexed unit of account that led to positive real rates on deposits allowing a significant increase in mortgages in 2016 and 2017.

2 Excessive regulation

Economic theory provides ample reasons for market regulations: monopolistic or oligopolistic market power, price discrimination, externalities, public goods, asymmetric information, among many more. In all these cases, there is scope for regulation to be welfare enhancing, even when it typically affects income distribution across groups.

However, regulation may arise from other motivations, in particular, from the action of interest groups. According to Olson (1965) *The theory of collective action*, the biggest challenge in public policy is the struggle between concentrated interest groups and the public at large. According to Olson, concentrated interest groups have a much easier task at coordinating their collective action (they are fewer players and have much at stake) vs the general populace that on each specific policy issue have much less at stake (benefits and costs are more broadly disseminated) and require coordinating among a larger population. In this fight, according to Olson, concentrated interest groups have the upper hand and typically carry the day.

As a result, the logic of collective action that places concentrated interest groups against the population, can only be broken by effective government action aimed at this purpose. Acemoglu and Robinson (2012) called this the building of "inclusive economic institutions". The key point is that if regulations are "interest group motivated" then it is their demise what is welfare enhancing. We call these regulations "excessive regulation".

There are four sources of this excessive regulation each differing on the specific interest group that pushes for regulation. A first obvious one is the pressure of private sector interest groups, of which we will provide many examples below. Second, the pressure of bureaucrats themselves. At some junctures, a specific regulation may appear suitable, but when the conditions that justified their implementation change or disappear there seems to be resistance to eliminate the restrictions, sometimes because in the meantime a bureaucracy in charge of authorization and supervision has been created

which lobbies for the continuation of the policy. The third source of excessive regulation is corruption. Every rule is an opportunity for corruption, and interested parties become strong advocates. The fourth reason is ideology. How does ideology foster regulation? One example is when it is believed that entrepreneurs are evil and that when markets are not regulated mischief will occur (customer abuse, exploitation of monopoly or oligopoly rents, etc). Under this view, regulation is justified out of a belief that the market outcome can be improved upon. While this is not strictly interest group motivated, there is a vicious circle in this dynamic. The more regulated an industry the less competitive it becomes. The less competitive it becomes the more it naturally deviates from a competitive behavior justifying yet more protection.

In this paper we will see many examples of all of these motives for "excessive regulation". As an example of interest group driven cases we will mention banks' requests of fintech regulation, how established companies in the money transportation industry were scared of the authorization of new technologies. Money market funds complained when banks were allowed to pay interest on checking corporate accounts (something they had managed to forbid, forcing firms to transfer their money to money market vehicles), truck drivers opposed allowing information to be sent digitally to clients, and so on.

There are many examples of bureaucratic defense of regulations. Attempts to loosen regulation to open branches, FX offices, security requirements, and so on, met stiff resistance from the bureaucracy. Something that came as a surprise to us, was that bureaucracies also grow within the private sector. At one point the lifting of capital controls, a key institutional change that would lead to an expansion of the financial sector, met stiff resistance from the COMEX divisions within commercial banks (these were the areas that were responsible for checking those exchange rate regulations).

In some cases the bureaucratic resistance led to inertia, even when nobody could explain what the purpose of a specific regulation was. One relatively amusing case illustrates the point. Firms that needed a loan had to pre-register in the National Industrial Registry (NIR). This registration process

took about 8 months, and had substantial costs. Yet nobody knew what purpose this registry served. A little research uncovered the fact that the NIR had been created in 1972 during the presidency of military dictator Lanusse, when a war with Chile was anticipated and the military needed information about supply chains in Argentina. In order to have some bite the law conditioned access to the financial sector to being properly registered. Almost half a century later, the local IRS had much better information than this registry could provide (in addition to the fact that its purpose had been obsolete for decades). Yet in 2016 it still employed about 100 people in the Production Ministry producing this useless information.[2]

Corruption and political pressure have also been present. Exchange rate controls were fertile ground for corruption and favoritism.[3] Branch authorizations were used as a coercive power on banks (one of the authors of this paper suffered, as President of the state owned Banco Ciudad, belonging to a jurisdiction whose authorities opposed the national government, a Central Bank that in a sort of political vendetta would not allow his bank to open any branch).

In short, while there are sound reasons for regulation, there are a number of motivations for regulation that do not arise from the optimal choice of a utility maximizing central planner, but from the pressure of specific interest groups. The purpose of this paper is to share a policy experience that focused on reverting this excessive regulation.

The undoing of excessive regulation and, when needed, replacing it by better regulation is a difficult job. Sometimes, for example to break an existing monopoly, regulators need to move beyond the existing framework in order to allow the development of new financial products that did not exist before. In order to do that, they need to provide a framework that catalyze these new endeavours.

[2]Given that the NIR had been established by a presidential decree during a military government, it had the stature of law and had to be repealed by another law. This implied that it took the new authorities about a year to get rid of this instrument.

[3]One form of coercion was to run FX inquiries ("sumarios") for violations of the exchange rate trading rules. At the time we arrived at the Central Bank these inquiries added to about 800.000, an astoundingly high number. Between 2015 and 2019 as exchange controls were lifted the outstanding stock of prosecutions and inquiries fell from around 800.000 to around 800!

There are some examples of those cases in this paper as well.

One of the most difficult tasks in removing "excessive regulation", even though this may sound funny, is in identifying the particular pieces of regulation that may be excessive. It is easy with some salient regulations such as capital controls or caps on interest rates. But most financial regulation is very specific, counter-intuitive and not obvious. Language, most of the time is unintelligible, and the application of the rules is often based on ancestral interpretations given by authorities no longer in office. And many times, nobody tells you about them. In the example of the NIR that we mentioned above, we never imagined anything like this could exist, so we were not actively looking for it. It was only a casual inquiry from a third party that allowed us to identify the process. Thus, a first important lesson, for any prospective regulator is to just review all the regulation from scratch. Just doing so will allow to cut a lot of dead wood.

During the process described in this paper, dialogue was the essential tool for identifying excessive regulation. First of all dialogue with the bureaucracy of the Bank itself. But Central Bank authorities also held periodic meetings with high and middle level bank officials in order to identify problematic regulations and cost reduction opportunities.These meetings were done on a quarterly basis, with each of the associations representing different bank clusters.[4] The mechanics were that in one meeting the Central Bank team presented progress, in the next meeting the Central Bank listened. The rules had to abide by a single *golden rule*: no tax changes (typically reductions) could be proposed, as this would be equivalent to just transferring resources from other groups to this one. The purpose of the meetings was to improve efficiency and not squander resources from other sectors of the economy. This rule was strictly enforced and while the initial meetings focused on requests of tax reductions, eventually the message sunk in and banks started bringing to the table specific issues that improved efficiency. After a few meetings, they became extremely useful.

[4]From the Central Bank side these meetings were attended not only by the highest political authorities, but also by the more stable staff. This was important to dispel any doubts that the authorities may work to favor any particular interest group helping to smooth the dialogue and build mutual trust and confidence within the Central Bank team.

Authorities also met with other actors of the financial ecosystem, such as mutual fund companies, fintechs, credit card processing entities and acquirers, collection agencies, money transfer companies and commercial companies of all sorts, as well as with other government agencies. Such meetings were also an essential part of the process and provided unique, and otherwise unavailable, information, particularly because it gave a view that was different from that of banks. Eventually, the informal meetings led to the creation of an innovation hub at the Central Bank that was baptized as *Mesa de Innovación Financiera*. Initially, when the new authorities landed on the Central Bank in December, 2015, as it happens every time authorities change, lots of individual meetings were requested: every actor in the financial industry wanted to meet the new officials and share with them their particular view and diagnosis of the situation. This is the usual dynamic of interest groups, as we explained above. Authorities had to filter the information that was shared with them in each meeting trying to separate useful information from traditional lobby. A simpler way to do that was to group different actors in the same meeting. It saved time (individual meetings demand lots of time, which did not abound) and it was useful to filter information, since actors tend to restrain deceitful information if they know that there is someone else in the room that can unmask them. Blatant lobby was easily identified by other players, and thus more difficult.

As the environment that authorities presented was relaxed and allowed for some brainstorming, meetings soon became very useful. By 2017, they were held once a month, and the number of participants grew steadily. Finally, by February 2019, the Mesa de Innovación Financiera was formalized by the board of the Central Bank[5]. It became a financial innovation hub, very similar to others in different jurisdictions.

Lots of innovations described in this paper came from this innovation hub, such as the interoperability between virtual and bank accounts, the interoperable QR code, different implementations of digital onboarding and the improvement in the quality and the display of individual credit information.

[5]See http://www.bcra.gov.ar/Noticias/Mesa-innovacion-financiera.asp.

The deregulations described in this paper was also part of government wide effort to streamline and eliminate excessive regulation. In 2018, an Office of Simplification (OS) was created, with the purpose of simplifying processes and de-bureaucratize public administration [6]. The OS provided assistance to any regulator that intended to eliminate “excessive regulation” and supported bills sent to Congress when the enactment of a new law was necessary[7]. In this paper, however, we will focus only on the reforms that affected the financial sector and were mostly related to regulations issued by the Central Bank.

We will discuss three main areas that will go by the headings of "price liberalization", basically the removal of price and exchange rate controls. We will then switch to the issue of "cost reductions" and finally move to the issue of "transparency and competition".

We hope this paper can help other policy makers identify excessive regulation and pursue a similar process of deregulation and simplification. In our understanding, the goal of financial inclusion depends on it.

[6] Decree No. 174/20018, 03/02/2018.

[7] Three very important bills were passed as a result of the efforts of the OS: Law No. 27.444 of simplification for productive development, Law No. 27.445 of simplification for infrastructure development, and Law No. 27.446 of simplification of the public administration.

3 The Banking Sector in Argentina

Before we start our discussion of excessive regulation we discuss some specific issues regarding the financial sector in Argentina. These however do not have a direct bearing on the discussion of excessive regulation below and can be skipped by the reader that is only interested in financial sector regulation.

The financial sector in Argentina is, on all dimensions, surprisingly small. In Figure 1 the shaded countries are those that have a financial sector equal or smaller to that of Argentina. As can be seen, Argentina has a financial sector that has the size of a poor African country. What is the reason for this apparently anomalous behavior?

The situation of Argentina is so unique that the explanation has to be equally unique. A possible suspect is inflation. But not because inflation reduces productivity or increases the noise in the price system and makes the financial sector work less efficiently [8], which is also true, but for a more basic reason: inflation increases the return banks can obtain from transactional deposits (those that will be held regardless of the rate paid because they are needed for transactions purposes). As we will show, if inflation is sufficiently high banks may find it optimal to just operate with these deposits.

3.1 A simple model of banking and inflation

Consider a profit function of a bank[9].

$$\pi(L,D) = r_L(L)L + rM - r_D(D)(D - D_T) - C(D,L)$$

where L stands for loans, D for total deposits, C for costs and M is the net position in the interbank market. r_L , r_D and r represent the loan, deposit and interbank market rates. D_T stands for transactional deposits. Customers do not demand retribution for holding these deposits, which they

[8] See De Gregorio and Sturzenegger (1997) or Neumeyer (1998)

[9] A classical analysis of this traditional setup can be found in (Freixas and Rochet, 2008, chapter 3)

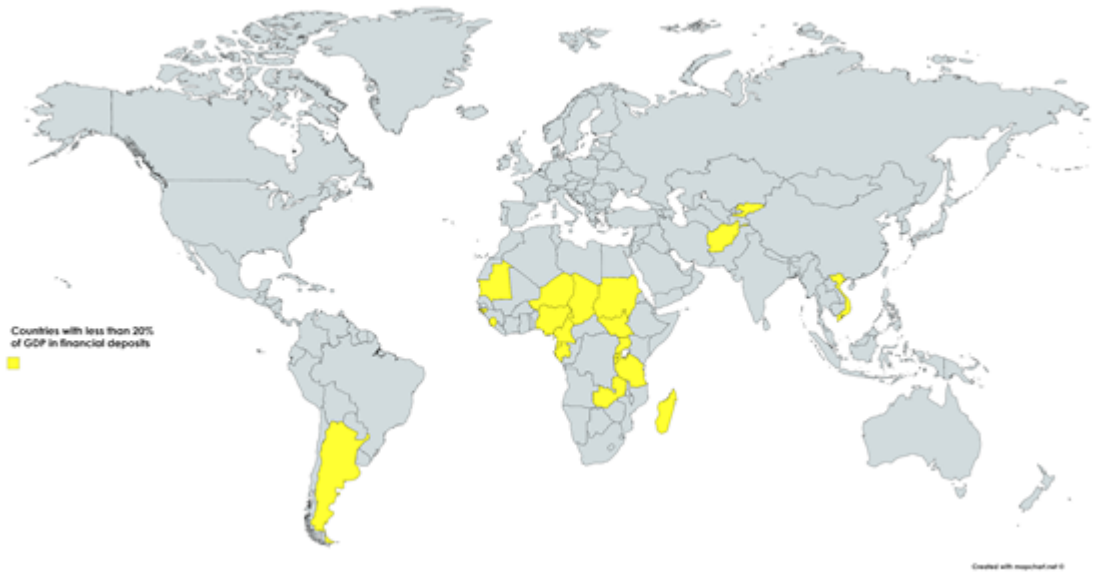

Figure 1: Countries with less than 20% of GDP at financial deposits

use for transaction purposes. Implicit in this formulation is the assumption that banks can discriminate transactional deposits from the rest, an assumption that we find plausible.[10] The more efficient the banks in payments and transactions the larger these transactional deposits.

The position of the bank in the interbank market is

$$M = (1 - \alpha)D - L$$

where α is the reserve requirement. Replacing this in the profit function we have

$$\pi(L, D) = (r_L(L) - r)L - r_D(D)(D - D_T) + r(1 - \alpha)D_T - C(D, L)$$

,

profits are a function of the intermediation margins on loans and deposits, net of costs. It can be shown that the first order conditions for this problem entail that,

[10]For example by offering a savings account without return while other deposits are channeled into interest bearing CDs.

$$\frac{r_L^* - r - C_L}{r_L^*} = \frac{1}{\epsilon(r_L^*)}$$

,

and

$$\frac{r(1-\alpha) - r_D^* - C_D}{r_D^*} = \frac{1}{\epsilon(r_D^*)}$$

,

which basically states that the markup over cost is a function of the elasticities of loans and deposits. The case when $D = D_T$ is trivial, the rate on loans is unchanged but the rate on deposits becomes zero.

Let's analyze now what happens when this system has to operate with inflation. In order to isolate the effects of inflation let's assume that both loans and deposits remain invariant. In so, the profit function can be modified to

$$\pi(L,D) = (r_L(L) - r)L + (r(1-\alpha) - r_D(D))(D - D_T) + r(1-\alpha)D_T - C(D,L) - \alpha\varphi D + \varphi D_T$$

,

where φ represents the inflation rate. The last two terms indicate how inflation affects the profits for banks. The term $\alpha\varphi D$ indicates the cost for banks of reserve requirements: as inflation and interest rates rise, the fact that banks have to fulfill reserve requirements entails a cost. The last term indicates that as inflation increases the return on transactional deposits increase. This last term indicates that banks share in government's seigniorage.

The first order condition for deposits is now

$$\frac{\partial \pi}{\partial D} = r_D(D) + r(1-\alpha) - r_D - C_D - \alpha\varphi$$

,

from which it is easy to establish that the optimal size of deposits and profits fall with the inflation rate. Deposits fall until they reach the transactional amount, at which point the interest rate falls to zero and deposits fall no further.[11]

As inflation increases, banks offer lower rates, and deposits fall. In some sense they rely on the (increasing) spread on transactional deposits. Thus, high inflation pushes banks to an equilibrium where the financial sector uses only transactional accounts. It can be shown that profits decrease with inflation, until deposits match these transactional accounts. Once deposits have fallen to this level profits increase with inflation. Figure 2 shows these results.

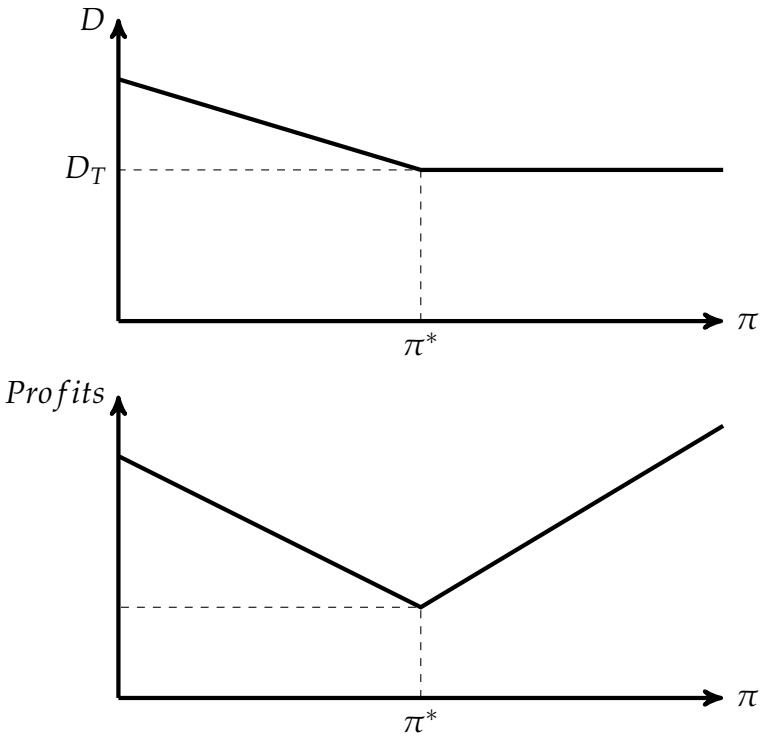

Figure 2: Deposits and Profis and Inflation

[11] Of course the size of D_T can be endogenized.

3.2 The evidence

What is the empirical support for such model? We already showed that the financial sector was very small. Figure 3 shows that it also paid extremely low real rates. One peso invested in the financial sector since 1980 until today would have delivered 1,5 cents in real terms 35 years later. Thus, the system never made an attempt to capture deposits corresponding to household or firm savings.

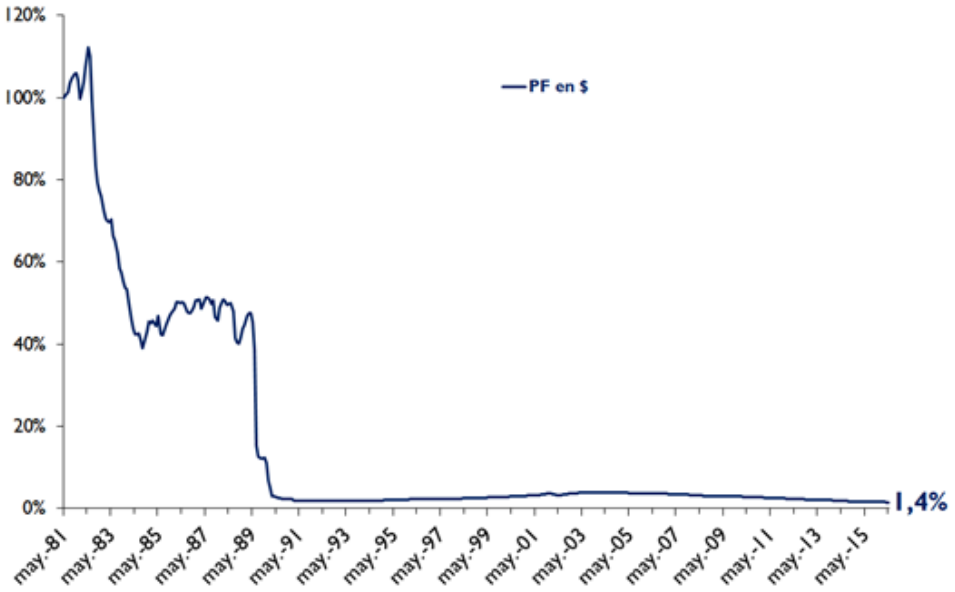

Figure 3: Real Purchasing power of short term deposits in $

It is easy to show that banks have an incentive to try to increase the amount of transactional deposits. They will also attempt to extract as many fees on transactional accounts as possible. In Argentina this occurred through the development of wage accounts together with a concentrated credit card market that secured high earning clients. In fact Argentina has an unusually high number of credit cards per person as shown in Figure 4.

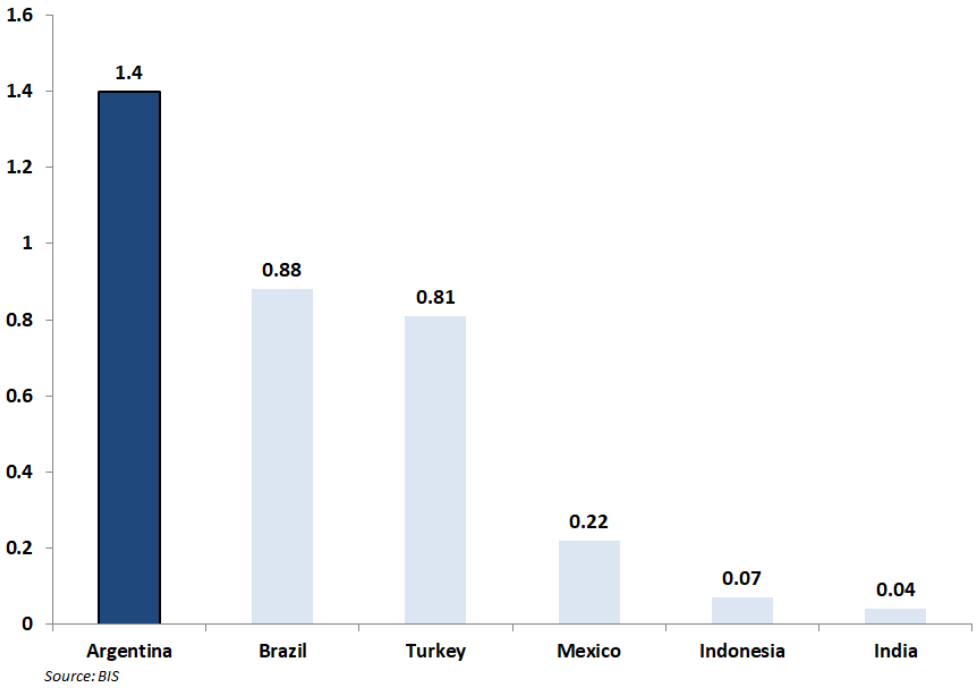

Figure 4: Credit Cards per inhabitant (2018)

Figure 5 shows the relationship between bank accounts and the size of deposits. Far out in the lower right quadrant Argentina appears as a financial system focused on transactional accounts, with a large amount of accounts which hold a small amount of deposits.

Figure 5: An outlier in deposits/client ratio

Transactional deposits grow with a cheaper, simpler, competitive and more efficient payment system which allows for more financial inclusion. Thus, it is profitable for the banks to allow competition in payments, bringing more players into the system (at the end of the day all deposits reside in the financial sector), to the extent that they do not reduce their ability to extract fees from their clients. Thus there is a tradeoff between fees and the value of transactional deposit. In 2016, 2017 as inflation came down, banks clinged to their objective of collecting fees by fighting against attempts at financial deregulation, particularly in the payment system.

Another possible explanation of the resistance of the banks to allow new players in the payment ecosystem, may be an agency problem. The fight against opening the payment system was spearheaded by Prisma, the monopolistic provider of Visa, in turn owned by the banks. Prisma had a direct interest in sustaining this monopoly power, and seems to have dragged the banks in this quest without banks, apparently, being able to see the larger picture.

4 Price liberalization

By late 2015, the Argentine financial system had capital and foreign exchange controls, caps on active interest rates and minimum passive rates. Changes in fees needed to be approved by the Central Bank. In this framework, competition was almost impossible, market shares were static, and innovation unrewarding. A first wave of innovations focused in eliminating all of these in one big scoop.

Capital controls did not allow depositors to purchase dollars thus bulging the demand of pesos. The relaxation of capital controls was viewed not only as a matter of economic freedom, but also a necessary condition for efficiency and growth. Attracting foreign investment or stimulating domestic savings is more difficult if there are capital controls. In addition lifting capital controls, specifically the obligation to convert export earning to pesos in just a few days, opened up new possibilities in terms of trade relationships, particularly for industrial producers: once controls were lifted exporters would not be forced to request an immediate payment from their clients abroad, thus being able to offer them credit.

It was decided that capital controls would not be lifted as a "Big Bang", but gradually. Two main reasons supported the view that a gradual relaxation should be undertaken. First, there was no clear idea of how money demand would react after four years of capital controls and forced peso savings. Secondly, there was, allegedly, a large stock of pending import payments and dividend distributions to be made. Nobody was sure to what extent this was true or not, or how real these requests were, but they were a latent risk. So the opening proceeded as follows: all commercial flows were freed immediately, and no authorization would be required to buy FX for up to 2 million US dollars per month. But, requests to pay for "previous" imports would be authorized only gradually, and were queued according to the original request day. The freeing of the demand for this purpose was expected

to be fully completed by mid-year though it eventually occurred earlier than that.[12][13]

Until the end of 2015, the financial system operated with maximum lending rates and minimum deposit rates. The cap on active rates had pushed down the deposit rate which in turn had forced the imposition of a floor on passive rates. While these attempted to squeeze profits from banks, the result was that banks rejected deposits and the system shrank. Communication A 5853, issued on December 17th, 2015, removed all restrictions on interest rates. As of such date, interest on deposits and credits could be freely agreed upon between banks and its customers.

Capital controls had forced savings in peso, thus reducing the cost of deposits for banks. So it was to be seen how their removal could affect deposits, interest rates, and bank profitability. The result was relatively smooth in terms of quantities: both deposits in pesos and dollar remained mostly stable (see Figure 6). The black market premia collapsed on impact and remained zero for the next four years (see Figure 7). As expected passive rates jumped upwards, as depositors were now free to purchase dollars (see Figure 8), and even though lending rates also increased, bank profitability fell from 32% in 2015 (seven points higher than inflation) to 30% (6 points lower than inflation) before further decreasing the following year to 23% (more or less in line with inflation). These numbers suggest that capital controls were a strong instrument of financial repression, of which banks were important beneficiaries.

[12] There were several specific issues to be dealt with. In the past capital inflows were subject to a 4 month holding period and a reserve requirement. The reserve requirement had already been moved to zero, but the holding period stayed and was only eliminated in January of 2017. Only after this move could restrictions be eliminated in earnest, as prior to that bank had to "register" the flows for the purpose of timing the four month stay period.

[13] See Sturzenegger (2019) for a description of this process.

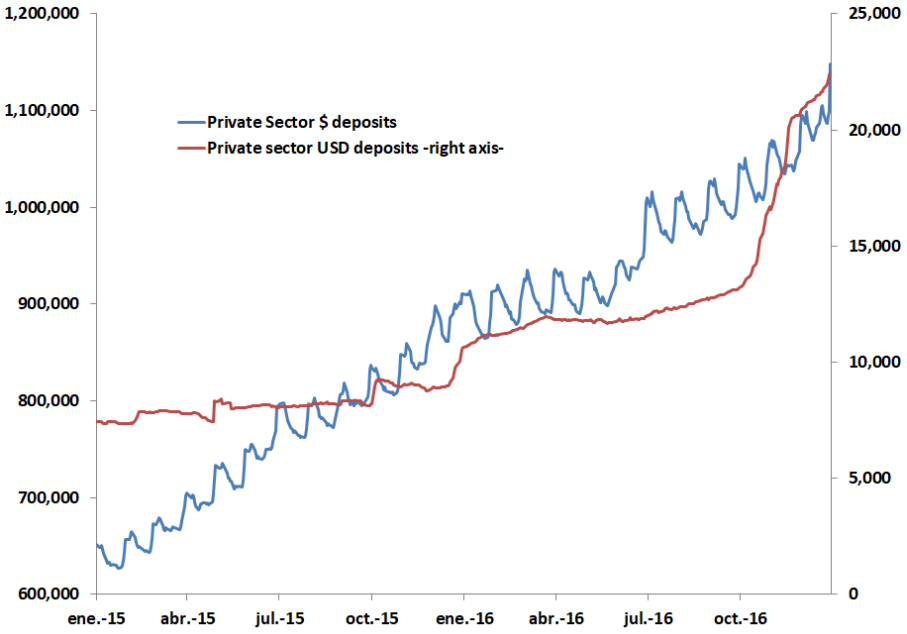

Figure 6: Private Sector Deposits (in Bn)

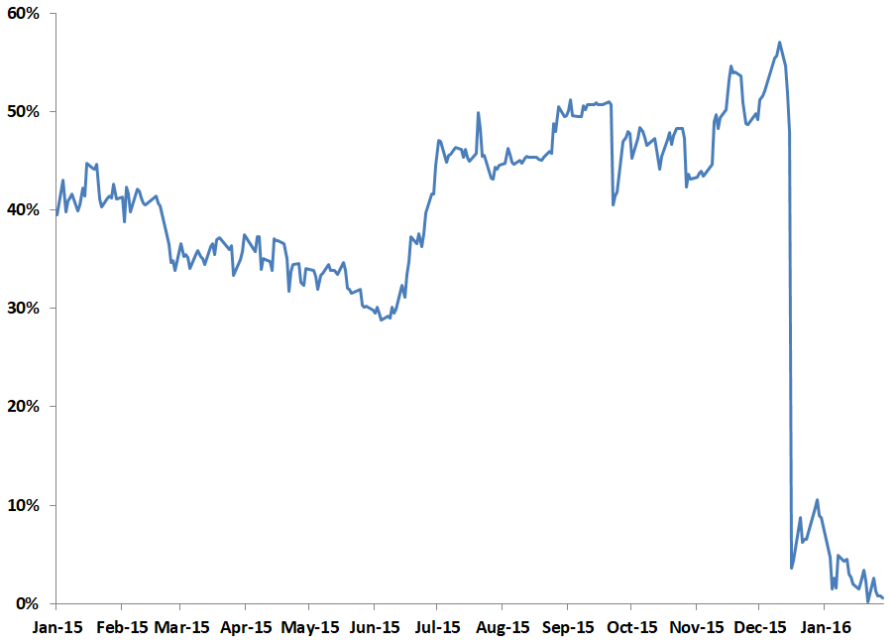

Figure 7: Gap between official and unofficial exchange rate

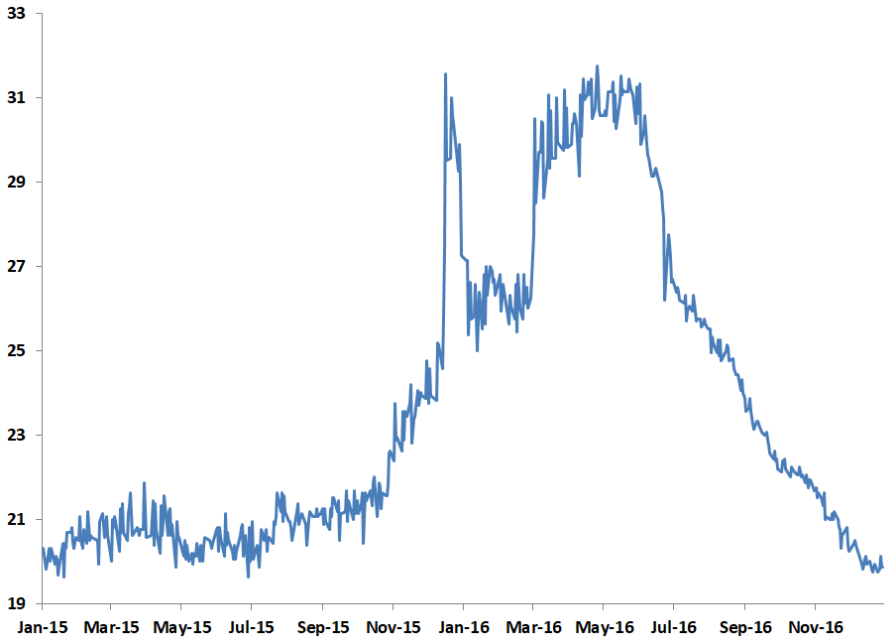

Figure 8: Badlar (Passive rate) (as %)

As mentioned, the system operated with fees that required previous authorization to be changed[14]. These restrictions were also eliminated allowing banks to charge freely the fees they believed were most suitable.[15]

One exception to this liberalization was that banks were required to offer savings accounts free of charge, thus strongly expanding on previous initiatives of limited free basic accounts that the Central Bank had pushed. The idea of allowing everybody to access a regular savings account for free sought to facilitate access to financial services. We will expand on this later in section 6.1.

[14]The Central Bank had established that any fee increase had to be previously authorized, on a case by case basis. See Communication A 5604, section 5.5.2., issued on June 11th, 2014.

[15]See Communication A 5928, section 3. All cited Central Bank rules can be found at http://www.bcra.gov.ar/SistemasFinancierosYdePagos/Buscador_de_comunicaciones.asp

5 Cost Reductions

In this section we will discuss a number of initiatives aimed at reducing hidden costs embedded in the regulatory framework. Some of these costs served no purpose, were the result of inertia or the product of the lobby of specific interest groups. Of course this does not mean, at all, that the approach aimed a deregulating senselessly; each regulation was discussed, and an attempt was made to understand its purpose, its objective and the economic distortion it aimed to correct. It was only when we found that there was no justification that we proceeded in the disarming.

When analyzing the specifics of any industry, a good rule of thumb to uncover "excessive regulation" is to look at the date on which regulations were issued. Older regulations have a higher chance of being excessive, sometimes because the problem it was supposed to address was solved or disappeared, sometimes because new technology provided better ways to solve the issue, sometimes because culture and habits change and societies evolve. In what follows we will find examples of all of this.

5.1 Branches

5.1.1 Scrapping restrictions to open branches

An early discussion had to do with authorization to open branches. The process was two tiered. The banks had to submit the request with a business plan for each bank branch. After authorization, the Central Bank conducted an on-site inspection on security measures prior to opening the branch.

The Central Bank wanted to stimulate banks to deploy branches in underpopulated areas, so it assigned points to branches according to different geographical regions. In order to open a branch in a profitable location, banks had to do their share in unprofitable locations, and so on[16].

One additional restriction was related to prior sanctions that banks may have received from any

[16] See Communication A 5351, issued on September 5h, 2012 , and Communication A 5355, issued on September 20th, 2012.

governmental authorities; if the bank had received a sanction it was not authorized to open a branch. This was seen, mostly as a way of punishing banks if they did not abide with exchange rate rules. This magnified the sanctions (which already had consequences in terms of fines, suspensions or other) but in a way that negatively affected the public, because it restricted access to financial services.[17]

The question is whether there is any reason to restrict the opening of branches, or, in other words, if there is a benefit obtained by such restriction. One of the arguments used by those that defended the need for the procedure, was that it was necessary for the Central Bank to assess the amount of immobilized capital in bank branches. We believer this is a weak argument considering the share of assets in branches is small, that liquidity ratios were closely monitored, and that it was not totally clear that immobilized assets were such a bad option in a distress situation.

Even if considering that the objective of geographical diversification was correct, what was the rationale of tying this to other branch locations? Geographical dispersion can be subsidized or not, but it appears to be inefficient to tie this subsidy to other branch locations, particularly when banks specialize geographically or by types of loans, for which geographical dispersion may or may not be convenient.

Lacking a solid reason for bank branch authorization all restrictions associated with the initial authorization process were simply wiped out: banks could open branches where and when they found fit, and only a requirement of letting the Central Bank know was kept[18]. The security measures checklist was not removed, even though the bank could present a legally binding self-check and start operations, while the Central Bank on site inspection could be done at a later date (the idea was not to constraint the deployment of the branch to the bureaucratic timing of the Central Bank). The new rule also fostered the installation of mobile branches, which up to such date were only allowed for state

[17] This latter restriction was imposed by Communication A 5803, issued on September 14th, 2015.

[18] See Communication A 5983, issued on June 3rd, 2016. The restriction on prior sanctions was lifted by Communication A 5882, issued on January 14th, 2016.

owned banks. This change was done with no consequence in terms of financial or operational risks.[19]

Finally, the new rules also created a new fully automated type of branch, that did not have tellers, and all cash transactions could be performed through ATMs or other types of terminals)[20]. Such types could also be opened in third party locations. The increase in digitalization, which reduced the use of cash, plus an increase in the products sold by banks made it attractive to have the possibility of opening simplified branches with third party services such as coffee stores or retailers. In addition, allowing a bank to operate with a third party also further reduced the costs of deployment of the branch structure.

5.1.2 More flexibility in construction requirements

As a result of some very public events of insecurity, Congress and the Central Bank had decided in previous years on a significant tightening of security restrictions in bank branches[21]. At the time there was no evidence on the effectiveness of any of the specific measures required by the law, so the methodology had been somehow a "whatever it takes" blanket approach with the aim at reducing episodes regardless of the costs.

Among these costs, the most costly (and irrelevant as we will see), was the technical specifications for installing vaults. These were required to be made of concrete with a required strength and thickness[22]. Furthermore, they required an empty space on all six faces, and the placement of sensor movements in that empty space. This requirement increased the costs of branches significantly, not only due to the costs of the vault itself, but also because it required a sufficiently large premise to be able to accommodate such vaults. In terms of safety this was mostly useless, at least in terms of protection of clients, as these are disconnected from robberies in vaults. In fact, it is difficult if not

[19] Similar restrictions could be found for ATM installations.

[20] See Communication A 6457, issued on February 23rd, 2018.

[21] Among these, one of the most dramatic cases entailed the persecution of Carolina Piparo, a mother carrying child, which ended violently leading to miscarriage. After that event, the Central Bank stepped up security measures with the enactment of Law No. 26.637 (also known as "Piparo Act" or "Milman Act", in honor of the author of the bill).

[22] See Communication A 5308, section 2.3., issued on January 24th, 2011, which established these requirements.

impossible to associate the robberies in vaults with insecurity *inside* the branches, particularly considering that vaults remain open during hours of operation. These measures were useful, if at all, as a protection for events when the branch was closed. If they are not related to the public's safety, the only beneficiary was the bank itself. But with no visible externality on public's safety, it is best to leave the decision on the characteristics of the vaults to the banks.

Thus, while not totally eliminated, and still compliant with the requirements of Law No. 26637, vault requirements were substantially reduced, particularly by allowing mobile treasuries (large safe boxes), that not only were less costly and used less space, but could be translated and re-used in other branches[23].

5.1.3 Allowing remote control of branches

The increase in security measures had gone beyond vault requirements.[24] For example, it was required that tellers' positions should not be visible for other customers (the idea was not to allow anybody to see if someone was withdrawing cash), which required building a visual barrier. This measure had no significant costs, beyond a deterioration in the quality of the environment for the cashier and marginally longer queuing times (the process of moving to the teller is slower when there is a physical, and visual, barrier between client and teller).

An additional requirement was having the glasses that separated cashiers from clients go all the way to the ceiling. This was more costly, particularly because it required a re-engineering of ventilation systems in the branches. Other measures included the prohibition to use the cellphones within the branch.

Within this group of norms, two apparently counter-intuitive measures were implemented. One

[23] See Communication A 6272, sections 2.4. and 2.5. of the Annex to section 1, issued on July 11th, 2017.

[24] Law No. 26.637 had established three new compulsory security measures: (i) that tellers and ATMs must have visual blocking protection; (ii) that vaults must be armored; and (iii) that bank branches must have signal scramblers to prevent the use of cell phones. Additionally, the Central Bank had to issue additional security measures in cash intensive branches, which was done through Communication A 5175, issued on January 24th, 2011.

was the removal of the obligation to connect an alarm from vaults to the police department. The other one removed the obligation to have a protected bulletproof space for a security supervisor.

The reason for eliminating the obligation of the alarm was that the vault alarm delivers a very high number of false positives. A report prepared by the Central Bank stated that:

> *"Every time a bank alarm is set off, it does not mean necessarily that an assault is happening, as most of the time the set offs are the result of procedural errors, such as opening the treasury without deactivating the alarms. This leads to the arrival of police personnel to the branch when there is no incident.*
>
> *It is worth noting that during 2016 there were 21.488 alarm warnings registered by the Alarm Division of the Federal Police, but of these, only 6 were real security events.*
>
> *As a result of this state of events, security forces use a sizable amount of resources to the attention of human mistakes and/or technical failures (70% are estimated to be technical failures and 30% human errors).*
>
> *Furthermore, and not a minor point, is that in none of the actual security events did the police arrive when the robbery was still in place. On the contrary, the response time seems to be substantially higher than that associated with security breaches in bank branches"*.

Thus, the obligation of having these alarms connected generated a negative externality on the effectiveness of the system, and an extraordinary waste of police resources. And the fact that the police did not arrive on time, is the result of the overwhelming probability that it does not indicate a real event, something that over time naturally softens the police response. The removal of the obligation aimed at restricting this connection to the cases when the bank considered it made sense, or allow it to be replaced by other more effective channels. We believed this would have a positive externality on security.[25]

The other measure modified the obligation to have a secured bulletproof space within the branch

[25] See Communication A 6142, issued on January 5th, 2017.

so that a security supervisor could activate alarms upon a security breach. Yet, the fact that a single person had that power to see everything that was going on in the branch while not being monitored himself, also entailed a risk. What precluded that agent from reporting movements to those who are planning a robbery? Thus, a more efficient solution in terms of security and cost, was to have remote monitoring where several agents monitor several branches *jointly*. Even if in such a remote monitoring center, someone is assigned to a specific branch, she would be monitored by her peers -located on the same monitoring site-, precluding the possibility of relaying information that could be useful for a security breach. Therefore, it was established that banks could request the replacement of the armored castle or armoured enclosure by a remote video surveillance system. Banks should file the request 30 days before the installation of the new device, informing the address where the monitoring center will be located, among other points[26].

Finally, it was established that banks should apply a risk based approach to determine the most effective security measures for each particular branch, in order to avoid a general rule based approach that was not effective in some branches and over expensive in others[27]. This created some turmoil among security managers in bank's as they became responsible for the security breaches in their own branches (as opposed to the simpler "I follow the Central Bank rules").

5.2 Introducing Correspondent Banking

A long standing discussion in Argentina was on the use of third party front line services, also known as correspondent banking. Union demands limited the use of third party resources for banking services. Significant union distress had already focused on the status of call center workers which were not unionized, leading to continuous conflict. The union had promised unheard of conflict if banks were authorized to use third parties to conduct front line services.

While not widespread, some third parties were used for different bank activities on an informal

[26] Id.

[27] See Communication A 6272, issued on July 10th, 2017.

basis. Yet, because of the prohibition, they could provide only an incomplete service. For example, loans for car purchases were typically agreed in the car dealership, but rather than finalizing the paperwork, it had to be sent to the banks for final approval. If car dealerships became bank correspondents, the whole process could be finalized there.

In 2018, the Central Bank authorized correspondent banking[28], a project that had been on the shelf for quite a while. In addition to union opposition, the project had also been lobbied against by Banco Nación, the largest financial institution, and a state owned bank with significant predicament with Central Bank authorities. The argument of Banco Nación was that it had already deployed significant capital in the form of branches in remote areas, capital that could become obsolete if correspondent banking would be authorized. The case is a clear example of excessive regulation where interest groups block the adoption of new technology. Surprisingly, or maybe not, many private banks also opposed the measure, particularly those that had some territorial advantage in terms of branches.

The new rule followed the international standard. For a long time, correspondent banking has been a very useful tool in terms of financial inclusion. Kumar et al. (2006), Assunção (2013), Leonardi et al. (2016) and Duarte (2018) explore the Brazilian case; Peña and Vázquez (2012) and Carabarín et al. (2018) the Mexican one. Table 1 shows the impact in a number of countries showing the dramatic improvement in geographical reach allowed by correspondent banking.[29] In fact, any network of branches, and become automatically a point of entry to the financial sector.

[28] See Communication A 6603, approved on November 28th, 2018

[29] Taken from Armijo de Vega et al. (2013).

Country	Date	# per 1000 Km2 (2012)		# per 100.000 adults (2012)		% of municipalities with correspndents (2012)	
		Banks	Correspondents	Banks	Correspondents	Banks	Correspondents
BRASIL	1973	3	42	11	182	66	100
MEXICO	2008	6	12	11	20	38	61
COLOMBIA	2006	5	25	11	61	75	88
PERÚ	2008	3	11	6	45	10	35
ECUADOR	2008	4	12	8	23	56	87
GUATEMALA	2010	29	37	22	26	ND	ND
CHILE	2010	3	15	13	65	65	100

Table 1: Geographical Coverage of Correspondent Banking

As a matter of fact, the adoption of this rule was celebrated by the United Nations Secretary-General's Special Advocate for Inclusive Finance for Development (UNSGSA) during the G20 meetings celebrated in Buenos Aires[30].

Among other points, the rule established that either local individuals or legal entities could act as complementary agencies and operate in one or more premises. They could perform, by delegation, all active, passive and service transaction that banks usually carry out with their clients, such as opening, operating and closing accounts; cash deposits and withdrawals; collections of loan installments granted by the entity, credit cards, services, taxes, fees, contributions and other similar transactions; payment of social security benefits and benefits; and buying and selling of foreign currency.

Besides the performance of banking services, agencies should have a primary commercial activity, such as gas stations, supermarkets, post offices or pharmacies.

The establishment of the complementary agencies does nor require a special authorization, banks must only report certain information to the Banking Superintendency (such as the name of the corresponding complementary agency and the location of each one of the agency's premises). A restatement was issued a month later, containing the details of the required information regime[31].

Shortly after the approval, the largest private bank announced that it would start using Rapipago,

[30] See https://www.telam.com.ar/notas/201812/311238-la-reina-maxima-de-holanda-apoya-la-decision-de-abrir-corresponsalias-de-bancos.html

[31] See Communication A 6612, issued on December 14th, 2018.

a cash delivery and payments service company, as an extension of its branches.

5.3 Freedom in ATM installation

The rigidity in branch authorization had perhaps its more absurd example in the ATM market. Treated as if they were a source of risk, ATMs also required significant security measures, such as an independent space, provided with alarms, armored glass, etc. Paradoxically these security measures made these ATM less secure. For example, a bank could not install an ATM in a publicly protected area (shopping mall, hospital, etc.), thus requiring to bring the ATM to an outside independent space, which was more difficult to clean, but, most importantly, more difficult to keep safe. Furthermore, ATMs had to be bolted to the floor, thus impeding the possibility of providing a flexible offer of ATMs at special events. All these restrictions were eliminated[32].

Also on the basis of security concerns, it had been required that ATMs be charged only through the rear and out of sight in a closed cubicle. This required expensive re-engineering at bank branches. This restriction was removed. Both of these moves allowed for some growth in the number of ATMs as shown in 9.

An even bolder move was to allow ATMs located in third party locations to be filled up by personnel of that third party itself. Prior to this, cash from the third party had to be picked up by a money transportation company, taken to a central location, sorted out and counted, then fit into ATM bins, and brought back to the same location it had started from. By allowing third parties to fill up themselves the ATM bins, this double cost was eliminated. In fact the costs savings were not only associated to money transportation, but also because typically it required personnel from the third party to make extra time, so that the money transportation company could come (which had to be done at the end of the business day as the store closed), also adding to cost. Immediately after the launch of this possibility, many service stations and supermarkets started filling up their ATMs themselves[33].

[32] See Communication 6182, issued on February 10th, 2017.

[33] See Communication A 5983, issued on June 3rd, 2016, and Communication A 6219, issued on April 11th, 2017.

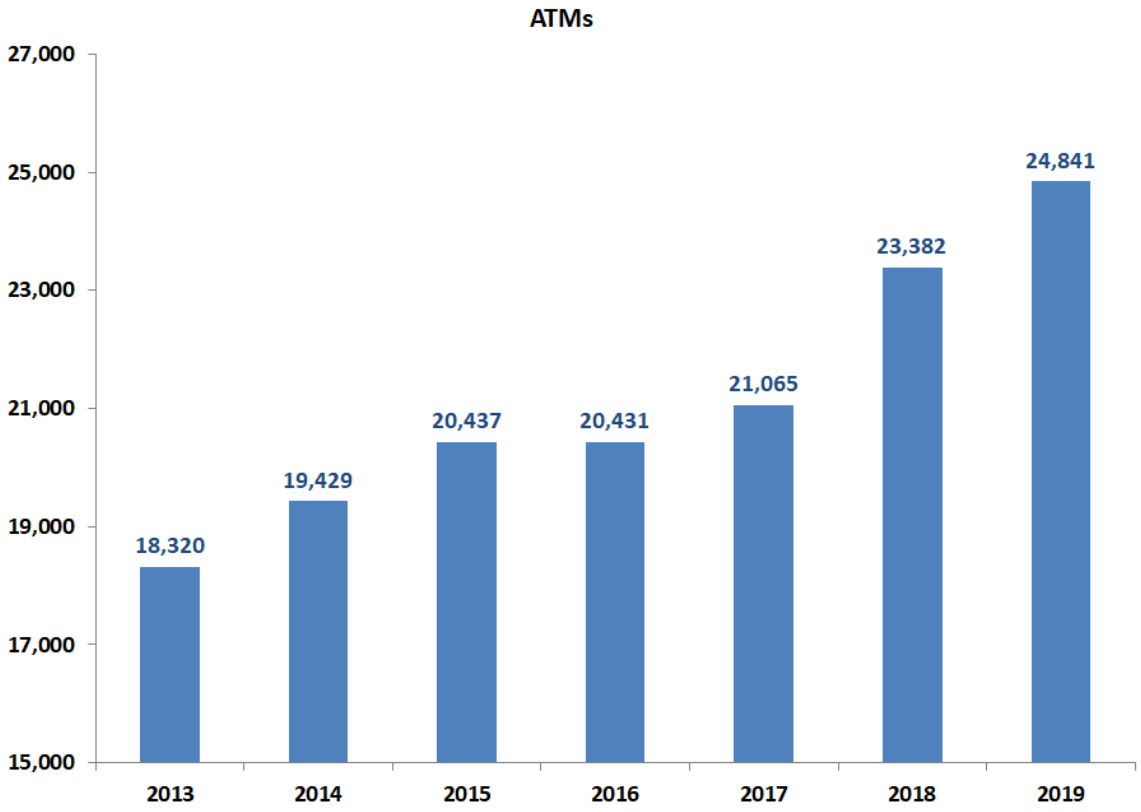

Figure 9: Number of ATMs

Finally, the Central Bank tackled the main issue that had limited the amount of ATMs: the fact that banks could not charge for cash extractions done from wage or social security accounts. As these comprised the majority of ATM transactions, ATMs were a money losing proposition. Furthermore, this right (which originated from the right to obtain fully your wage) was enshrined by law and off limits to Central Bank regulation[34]. Thus, the Central Bank allowed the operation of ATMs run by institutions that were not banks. As these would provide a voluntary service, they would be allowed to charge on these devices (though it required posting a sign with the cost and the warning that this may be a free transaction in a financial institution). It also forbid any financial institution to be part of these companies, to avoid circumventing the law. Shortly after this regulation several non banks entered the market[35].

5.4 Simplification of authorization procedures

Uncertainty is a big deterrent to investment. Of course, some uncertainty is unavoidable, but is fairly safe to say that any marginal action taken in favor of removing uncertainties will promote investment. As it happened with the authorization to open branches, which were described on section 5.1.1, banks were not able to know, in advance, if a new shareholder, a new board member or new high-rank management would be approved by the Central Bank or, maybe more importantly, when it would be approved. Mergers, acquisition or hiring decisions are very important for the business plans of any company.

The worst problems were related to the approval of new authorities (including both board members and the management team). The established proceedings were vague and not transparent. Sometimes, candidates had to wait for years before being approved. The exception were the authorities of

[34] This restriction was a consequence of section 124 of Law No. 20744, which regulates labor. All wage accounts have to allow free and unlimited cash withdrawals by any means in the whole banking system. Such regulation is another clear example of excessive regulation. It seems to be granting a benefit for employees, but by crushing the incentives to ATM provision, it ended up harming employees with a poorer service.

[35] See Communication A 6236, issued on May 4th, 2017 and Communication A 6483, issued on April 10th, 2018.

state-owned banks, which could start acting before the authorization was granted, because they were designated by public acts[36].

In 2017, the whole procedure was refurbished[37]. The requirements were essentially the same, but much more transparent and less discretionary as the process had been used for political purposes.

For example, the evaluation criteria was made more objective, removing phrases which required the analysis of "*the level of probity and moral integrity*" or "*the participation in events that may have affected the economic order*"[38].

The most thorny point related to applicants that had ongoing "judicial procedures". This was a thorny issue because (embarrassing as it may be to mention this) the previous government had had the practice of making up accusations. Should anybody be rejected by the Central Bank on the basis of an accusation? If so, the potential for blackmailing increased. After much discussion, and not without controversy, it was decided that such tasks correspond to the judiciary, which has proceedings that assure that any such determination be done without discrimination, respecting constitutional rights and in accordance with applicable law. If no judge had not condemned the candidate on any of such counts, Central Bank authorities could not impose a *de facto* sanction that impedes candidates to perform a licit activity. However, in order to increase transparency and allow public control, banks were required to publish an updated curriculum vitae of its authorities on its webpage[39].

On a related note, the new rules also established a clear and transparent proceeding to revoke authorizations[40]. In the past, certain authorizations were revoked (impeding the related parties to continue performing their jobs) based on diffuse criteria, such as moral standards or presumed partic-

[36]This led to the most ridiculous rules. For example, sometimes state-owned bank authorities that would have not been originally approved for lack of previous banking experience were approved two years later because they had gotten the required experience while waiting for approval. This did not happen with privately owned banks.

[37]See Communication A 6304, issued on August 23rd, 2017.

[38]See Communication A 6111, section 2.2.4., issued on December 7th, 2016, which contained the previous restatements.

[39]See sections 3.1.5 and 3.6 of the rules of "Financial entities authorities", as amended by Communication A 6304.

[40]See section 3.5 of the rules of "Financial entities authorities", as amended by Communication A 6304.

ipation in unclear events.

Additionally, the evaluation criteria was dispensed for authorities that had been approved by the Central Bank within the previous three years, in order to avoid unnecessary red tape[41].

Finally, the whole procedure was digitized, allowing banks to present the requests using a template that could be filed electronically[42]. The proceedings for the authorization of new shareholders were also simplified.[43]

In all, the response times were substantially diminished. Upon taking office there were authorization processes that had been dormant for years. Two years later at some point, the total amount of pending cases had been brought down to zero.

5.5 Making the opening of accounts easier

What information does the bank need to open an account? From the credit perspective, for savings accounts this information should be virtually nil, as savings accounts do not provide access to credit, and there is no risk, neither for the bank nor for the system, rather the contrary: having people operate through the financial sector should be better than having them operate outside of the financial sector. In fact, social security accounts, accounts for paying social programs, wage accounts, etc. are opened just with the identification information, and have never been a source of concern (truly enough, the main source of funds is either public or an correctly identified employer).

This was pretty much already contained in the procedures, though many banks still asked for proof of residency and additional information even for the simplest accounts. However, the main restriction facing the streamlining of the bank account opening procedures had mostly to do with Anti Money Laundering (AML) concerns. It provided a very easy excuse for banks to resist opening free savings accounts.

[41] See section 3.1.2 of the rules of "Financial entities authorities", as amended by Communication A 6304.
[42] See section 3.1.3 of the rules of "Financial entities authorities", as amended by Communication A 6304.
[43] See Communication A 6304, section 3.

But AML risk is not equal in every case. Once the client is identified through Know Your Client (KYC) procedures, the bank can determine the risk associated with such client and establish certain parameters within which the transactions of the account would be considered to be safe. Unfortunately, by 2017 the AML regulations were rule based (as opposed to risk based), and provided little space for innovation.

Rule based regulations are more static, they provide fixed procedures with checklists and leave little room for exceptions. The burden of the effectiveness is on the regulators. If the rules are well designed, they prevent risks at the cost of limiting as little business as possible. If they are not, they constrain the development of businesses and prevent little risk.

As AML regulations act across numerous different businesses, rule based approaches usually fail to consider each specific case and apply broad spectrum recipes uniformly. That has proven inefficient to identify and mitigate risk, and very costly for business. AML regulators worldwide have moved towards risk based regulations, which place the burden of effectiveness on the regulated agents. They have to identify risks and design a procedure to mitigate them.

In 2016, the Argentine AML regulator, Unidad de Información Financiera (UIF), started an across the board reform of its regulations in order to adopt a risk based approach. However, the amendment of the AML regulations of the financial sector (which allowed the digital onboarding for all bank accounts, as described on section 5.7) took place in mid-2017[44].

Thus, in order to expedite the opening of low risk savings accounts, UIF produced a special regulation (halfway through to a risk based approach) by which certain simplified procedures could be performed to open a new account[45]. Accounts with a balance below a certain level, and with move-

[44] See Unidad de Información Financiera, Resolution No. 30/2017, dated June, 21st, 2017.
[45] See Unidad de Información Financiera, Resolution No. 94/2016, dated August 11th, 2016.

ments below a certain threshold, could be opened only with an identification[46]. The Central Bank later issued a mirror regulation[47]. This, as we will see, opened the door for full digital onboarding.

5.6 Allowing full digitalization of banking records

The reform of the Civil and Commercial Code in 2015 had allowed to have the whole bank-client relationship fully digitalized[48]. In the case of digital banks, this is simply the way everything is done.

In more traditional banks, some processes were fully digital. For example, clients could take a loan in the ATM without signing any paper. This was common practice and banks assumed there was a legal risk that they just tolerated. The rise of digital banks convinced the rest of the banks that many of their relationships could be fully digitalized.

The mentioned reform of the Civil and Commercial Code allowed the Central Bank to ease certain back office documentation requirements, which were very costly in terms of processing and storage. Documentation of electronic or similar characteristics was admitted to the extent that the documents are unalterable and that expert verification could be carried out to prove their authorship and authenticity[49]. Electronic media was not allowed in cases where legislation and/or regulations require a specific form of instrumentation, which were the cases of credit card contracts, cheques and promissory notes, which were later modified in order to adopt electronic form, as explained in section 5.7. This, of course, reduced the need to store thousand of boxes in warehouses, which was not a minor cost.

In the cases in which banks requested holographic signatures, such signatures were admitted even if they were performed not on paper, but on an electronic document or any other technology that

[46] The requirements for simplified onboarding were: (i) the client should have no other bank account; (ii) the client could not be a Politically Exposed Person; (ii) the account balance could not exceed the equivalent of twenty-five minimum wages; and (iv) monthly cash transactions could not exceed four minimum wages. The required identification procedure included the presentation of a valid ID and the verification of the client in the lists of Politically Exposed Persons and terrorist organizations.

[47] See Communication A 6050, issued on August 26th, 2016.

[48] See Código Civil y Comercial de la Nación, section 286.

[49] See Communication A 6068, issued on September 16th, 2016.

allowed the verification of its authenticity.

5.7 Allowing digital onboarding of clients

One of the biggest changes in the banking sector is the possibility of accessing financial services without ever going to the bank. However, when most of the regulations were first enacted, that possibility was simply a matter of science fiction. Hence, most of the rules that regulated how banks formalized their relationship with its clients had become outdated. Again, technology obliged regulators to move forward and embrace innovation.

Smartphones and the internet make all sorts of things possible today, but only if regulation allows them. And because savings accounts do not represent a problem nor a risk, there is no reason why this should not occur. However, to make this possible it requires some special legal support. The first step, as explained in the previous section, was to allow banks to hold digital records. Once the paperwork issue was solved, the next step was to modernize the method for executing agreements and the input channels of clients' information.

Fortunately, Argentina's new Civil and Commercial Code, enacted in August, 2015, provided a helping hand. Contracts have two basic requirements: consent and support (which, at the end of the day, is fundamental for proof of consent). Consent is generally ruled by Article 971, which states that a contract can be executed by any act of the parties that is sufficient to demonstrate the existence of an agreement. Regarding support, the general rule is on Article 286, that establishes that written expression can be performed on any kind of support, even if it requires the use of electronic devices to be read. So, as a general rule, the format of the contract can be freely agreed between the parties, thus allowing for a full digital support (in Chile, for example, eventually "something has to be signed in paper").

However, in certain cases, a special type of consent and support can be required by the law for a contact to be considered valid. For example, real estate transactions require the special support of

a public deed, which, in turn, requires the special form of consent of a certified signature. Likewise with credit card contracts, cheques and promissory notes, which are required to use a "signature" as a special method of showing consent[50]. The Civil and Commercial Code provided several innovations, but it fell short when regulating signature requirements. Article 288 establishes that if a signature (i.e. a special type of consent) is required, and the support of the document is electronic, the only way to fulfill the requirement is through a regulated form of consent called "digital signature". The digital signature, created by Law No. 25.506 in 2001 is a clear example of excessive regulation. It establishes standards and requirements based on a 20-year old technology, based on a vertical and closed verification process in the era of open ledger technology. We will explain further in the section related to electronic cheques[51]. For the issue at hand, which are the agreements to open a savings account, the general rules of the new Civil Code apply, and the form of the contract can be fully digital (and therefore a signature is not required).

With the contract in place, the critical feature was identification. But the industry of digital identification has boomed in recent years[52], making identification much sounder than what could be achieved in a physical branch[53]. The procedure typically requires submitting a photo of an identity card (software validates the authenticity of the document) and then the client is requested to do a specific photo or video to match the person on the other end with the documentation presented. Having cleared both steps, the account is automatically opened.

The last obstacle were the Anti Money Laundering (AML) regulations. As explained on section

[50] See Law No. 25.065, section 6(k), Law No. 24.452, section 2(6) and Decree No. 5965/63, section 1(8) and related sections.

[51] See section 5.15 for details on the implementation of electronic cheques.

[52] Several companies have devoted themselves to digital identification. One of them is the most recent success story in the Argentine market. Auth0 has become the fifth Argentine company to have a market value of over 1 billion dollars, https://www.lanacion.com.ar/economia/quinto-unicornio-otra-empresa-argentina-vale-mas-nid2249727.

[53] Moreover, the national agency of public records (Registro Nacional de las Personas), has developed a remote identification process that can be used, for a small fee, by private companies. See https://www.argentina.gob.ar/sid-sistema-de-identidad-digital.

5.5, the AML agency had issued a regulation in August, 2016, in order to allow a simplified identification procedure. Later in 2017, a new regulation was issued, specifically incorporating digital remote onboarding procedures[54].

Having all that in mind, in April, 2017, authorities enacted Communication A 6223. It established that accounts could be opened remotely using electronic means if: (i) they provided sufficient information to comply with AML regulations[55]; and (ii) the procedures, technologies and controls used for the remote onboarding ensured compliance with the provisions on electronic channels and those related to the conservation, integrity, authenticity and confidentiality of the information and documents used, with the purpose of protecting them against their alteration or destruction, as well as of improper access or use. Moreover, it provided that companies could also open accounts remotely if they provided sufficient information by electronic means or if the Public Registries of Commerce opened their databases to banks, which happened in the City of Buenos Aires and the Buenos Aires province by the end of 2017 for simplified corporations known as SAS (*Sociedad por Acciones Simplificadas*).

By the end of 2017, one could open a bank account in minutes or in days, depending if the account was individual or for a company, respectively. This represented a huge cost reduction for both banks and customers, but above all increased the scope of access, as only a cell phone was required. Bank accounts under this format were being opened by the hundred of thousands, by late 2020, and in fintechs by the millions. Figure 10 shows the experience of one digital bank in Argentina which has seen exponential growth.

[54] See Unidad de Información Financiera, Resolution No. 30/2017, section 26.

[55] As explained, AML requirements had been simplified for the procedures explained on section 5.5 above, so most of the work had already been done. Later that same year, UIF enacted Resolution No. 30/2017, which recepted most of the changes and enabled new technologies to provide a safer, cheaper and more efficient identification process.

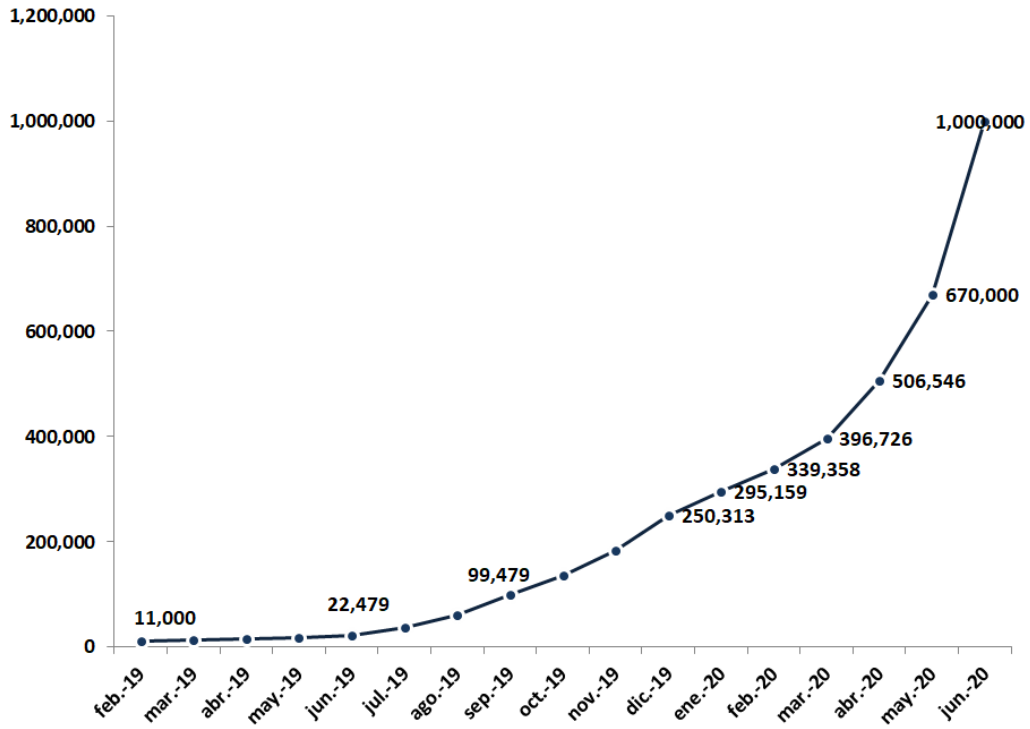

Figure 10: Number of accounts in Brubank

5.8 No restrictions to Cloud Processing

One innovative change was the authorization for banks to process on the cloud, rather than using on premise facilities. This change had dramatic benefits in terms of costs and security of operations.

In terms of costs it allows the banks to avoid dealing with complex hardware, which in turn quickly became obsolete, requiring a permanent expense in updating. In fact, it had become increasingly common to process with a domestic service provider. So while the cloud itself was not used as a processing host, the idea of outsourcing technology was an idea that was fairly advanced in banking practices. The queries regarding going to the cloud, had to do with security and data access. Chile, for example, allows processing abroad, but to the extent that there is a local replica which allows access to the data within the geography of Chile.

Security is, of course, a source of concern, but one that also applies to in-house solutions. In fact it

could be argued that in-house security concerns may be bigger and more difficult to monitor relative to those associated to a company that specializes in data processing and provision. In fact, a very important service provided by banks, credit card processing, for years has been unrestricted in terms of where and how it is done, with no particular security concerns. This change basically took this concept and moved it one step further.

The rule included a provision that stated that financial institutions and their third party providers have to allow access to their premises to the inspectors from the Superintendency of Bank Supervision, if such access is required during the supervisory process. Additionally, the rule required a "point of access" located in Argentina from where all the activity could be monitored and analyzed[56].

These "on premise" requirement later on became a source of trouble. Amazon Web Services does not provide this authorization and several banks had to choose an alternative provider. With the benefit of hindsight we believe today that such authorization request may be redundant.

One of the unexpected benefits of cloud processing was that the use of a third party service provider was key in reducing the complexities associated to *contingency requirements*. Typically banks using in-house software are requested to have a contingency site, which not only has to be separated geographically, but also needs to be operated, regularly. This is a source of endless problems and risks for bank operations. However, once processing is done by third party sources, the contingencies facilities are automatically eliminated as the bank typically runs simultaneously in two different sites. Brubank a local digital bank was the first to execute this solution, with no security or operational issues.

Finally, cloud processing allows for stronger competition in a cut throat processing market therefore further reducing costs.

[56] See Communication A 6354, sections 2.2.5. and 7.3.2.2, issued on November 3rd, 2017.

5.9 Eliminating paper statements

One of the first conflicts that the new administration faced was associated with the removal of the obligation that bank statements had to be printed on paper and distributed by mail. Removing this obligation not only had an environmental objective but also a cost reduction objective.

There is ample literature on default options. It has been found that people tend to stick to their default options as presented. Imagine organizing the task of allocating yellow and red mugs to a group of people. If you ask people what color they would like their mugs you get a uniform distribution across colors, say 50% choose yellow and 50% choose red. Now allocate the mugs randomly and let people exchange their mugs. The number of exchanges is surprisingly low, the received mug has become a reference point which delivers utility per se. This type of reference point explains why agents tend to stick to their defaults. Choi et al. (2004) has shown that when a 3% savings contribution was imposed as default, six months later 86% of the workers have a savings plan, relative to 49% if no plan was included, and 65% stuck to the 3% contribution vs only 4% when such percentage was not established. (In fact, they show that the effect of defaults are much stronger than providing economic incentives for savings, and much cheaper!).

In a previous experience as President of a commercial bank, one of the authors had switched 500.000 clients to an electronic statement. Of the 500.000, only 15 later on requested the paper statement (i.e. .003%).

Thus, shortly after taking office, through Communication A 5886[57] the Central Bank ¡allowed banks to choose the default. In short, it allowed banks to switch their clients from paper statements to electronic communications, with 60 days of prior notice. If clients wanted to continue receiving paper statements, they had to expressly state so to the bank[58]. There was another nudge, that would later unravel a legislative soap opera: electronic communications had to be provided free of charge[59].

[57] Communication "A" 5886, issued on Jan 16th, 2016.
[58] Communication "A" 5886, section 1.2.2, second paragraph.
[59] Communication "A" 5886, section 1.3.

Nothing was said of paper statements.

Shortly after, the truck union (also owner of the postal service) staged important protests against the change. While the Central Bank did not revert the change, it did negotiate a voluntary gradual implementation over the following year[60]. For the Central Bank this was a significant triumph, as it had anticipated substantial lobby against the move, so that securing implementation, though with a few months delay was considered a reasonable outcome. However, the truck union advertised it as a complete reversal, and even when this was not so, imposed a very significant credibility cost to the Central Bank.

However, this was not the end of the story. An additional lobbying interest came to play: the paper producers. These lobbied directly to Congress that, in May, 2016, approved Law No. 27.250, which in its only article stated that information to consumers had to be provided free of charge and on physical support (which many interpreted as meaning paper). Moreover, it stated that physical support may only be switched if the consumer expressly chose to use any other alternative means of communication that the provider of services may offer. The excuse was to eliminate the costs of paper statements for consumers, but the most significant change was, again, the inversion of the default option.

This was interpreted as a reaffirmation of the need to send paper statements and, after the enactment of law 27.250, all postal firms sued the Central Bank asking to repeal Communication A 5886. However, in parliamentary debates Senator Juan Mario Pais, from the province of Chubut, had argued that physical support could not mean paper statements, as communication may need other formats (such as audios or videos). Using this interpretation, the Central Bank secured a report from a local university that affirmed that electronic statements were included in the definition of a physical support. Thus, it was allowed to hold the ground.

[60] See Press Release 1/2016 of the Argentine Central Bank, dated February 15th, 2016. In the statement, the Central Bank states that authorities had agreed with the general secretary of the Truck Union to delay the application of Communication A 5886 to January, 2017, and proceed to a gradual implementation until October of that same year. However, the Central Bank never formally suspended the provision.

A new chapter of the feud began in 2018, when the President issued Decree No. 27/2018, removing an enormous amount of excessive regulation across the board[61]. Within those regulations, and because other industries had not endorsed the interpretation of the Central Bank on physical statements, article 169 modified, again, the default option. It established that information had to be provided on electronic support, unless consumers specifically opted for physical support. While it changed the default back to the one the Central Bank initially wanted, it weakened the interpretation that stated that electronic support was included in the definition of physical support (because it mentioned both, and made a distinction between them).

But that was not the end to it. One month later, Congress enacted Law No. 27.444, which endorsed and ratified most of the amendments established by Decree No. 27/2018, but not the article on physical statements. So, the original wording established in May, 2016, was reinstated. Default went back to physical statements. However, there was a silver lining. During the month in which Decree No. 27/2018 remained in force, any switch from paper to electronic was considered valid. And while all this went back and forth, the main postal company (owned by the truck union) had initiated bankruptcy proceedings (not related to the issue of the paper statements). By the time digital banks started operations, the issue had faded into oblivion.

To the date of this paper, the rule of the Central Bank stating the default for electronic communications remains in place and paper statements have mostly been phased out. [62]

[61] See Decree No. 27/2018, published on January 11th, 2018. It included 22 chapters modifying 64 different regulations, including laws and decrees. The decree was issued using the special powers that article 99, subsection 3, of the Argentine Constitution grants the executive power in times of urgency and need. It caused great disturbance on Congress, which claimed that there was no urgency and that the amendment of such a great number of rules should always pass through Congress. The result was the enactment of Laws No. 27.444, 27.445 and 27.446, which endorsed the great majority of the changes. The physical support question was one of the few reforms that was repealed.

[62] See Communication A 6110, issued on December 6th, 2016, which published the restatement of the rules on electronic communications.

5.10 New technologies for money transportation

An additional source of conflict was deregulation in the industry of money transportation a highly concentrated industry. Legislation required the use of fully armored vehicles, the use of specific military equipment as well as the use of military planes for transportation between cities[63]. Regulation imposed substantial administrative burdens in terms of information, and required endowing storage facilities with the same safety requirements as those requested from banks. The result was a burdensome regulatory framework that increased costs and made entry difficult. Furthermore, the leading firm in the market, Prosegur, owned the sole company that constructed armored vehicles, thus further controlling entry.

An anecdote explains the difficulties of entering this market. In the mid 2000's, the Swedish company Loomis decided to compete aggressively in the Argentine market by transferring to Argentina its entire fleet of armored vehicles from France, which was being replaced. However, when they asked for authorization to import the vehicles, the government blocked the import of those armored vehicles thus aborting the competitive effort[64].

The reason the industry was ripe for change was several fold. First, the restrictions had been conceived during a military regime, and to some extent provided "demand" for military services. This could be seen most evidently in the obligation to transport cash in military planes. In fact, the option to use civilian aircraft was allowed if the military could not satisfy the request, and as military planes typically were out of order, most of the cash circulated in commercial airlines. These movements had never suffered any inconveniences, suggesting that there was no real justification for the obligation to use military aircraft.[65]

[63] See Decrees No. 2625/73 and No. 1832/77.

[64] This was mentioned by company officials to one of the authors of this paper when he served as Governor of the Central Bank. We have not been able to identify the corresponding administrative resolution, but this may be difficult because it may refer to a specific trade position which is easy to hide in a more general resolution.

[65] Because using civilian aircraft was much cheaper, the Central Bank usually presented to the military very inconvenient timetables, so that the military planes would not be available, thus freeing the possibility of using this cheaper alternative.

In some cases regulation was outdated, for example, by limiting the amount of cash that could be transported in each vehicle. This amount, over time, was diluted with inflation and trucks would be loaded with a small amount of cash, so that transports usually carried significant excess capacity. However, as these restrictions had been established by decrees from the Executive Branch, they were out of the scope of the Central Bank.

Furthermore, security issues are defined by what is known as the "weakest link". That is, security is as strong as your weakest link. In the case of money transportation for banks, the weakest link is the "sidewalk risk" (i.e., the journey from the truck into the branch, when money has to be downloaded and carried inside by security guards in bags). In fact, most of the security events occurred then. Thus, improving security in that lapse, is tantamount to improving security of the whole process.

Technology in the industry had changed with the introduction of dying mechanisms. This technology basically entails a container for cash provided with a GPS and a dying liquid. If the container deviates from its expected position (equivalently, a cash bin removed in an unexpected manner from an ATM) the dying liquid is released and the bills made useless. This technology solves the "weakest link" issue, thus improving overall security. But also implies that transportation can be done without the need of armored vehicles, as cash becomes virtually unstealable. Such a technology is particularly useful for small amounts and in remote regions where money transportation entails long distances and relatively small volumes. Forcing the same technology as in the financial district of Buenos Aires, biases costs against remote regions.

The Central Bank regulated the use of dying technology in 2017, setting the ground for alternatives to money transportation[66]. The practice of "anti-theft devices" is well established in many jurisdictions. The European Central Bank regulated the recovery procedures for ink-stained bills in

[66] See Communication A 6230, issued on April 26th, 2017.

2013[67]. These mechanisms were later on introduced in other countries with great success.

However, because these changes required a change in an Executive Decree, before moving ahead it required a year long process of consultations with several ministries that implied several back and forth. Finally, the industry was deregulated by means of two decrees that delegated to the Central Bank the authority to regulate money transportation[68].

Briefly after, the Central Bank deregulated the industry and allowed flexibility in the transportation technology. The new rules resolved the issues related to the limited amount for transportation and the military planes. Also, lots of unnecessary information requirements were removed and freedom in the technology to be used was allowed. A risk based approach was established, requiring banks to draft a manual with the risk assessment for money transportation and the measures adopted to mitigate such risks, specially in relation to the safety of the individuals involved in the transportation of money. It also established that armoured trucks would be optional, including certain recommendations for its use[69]. A later regulation established that, in order to exercise such an option, banks have to show that sufficient mitigating measures were adopted.[70]

5.11 Removing the need for mortgage appraisals

As will be explained in section 10 below, the Central Bank implemented a series of measures that provided the means for a large surge in the mortgage market which was virtually nonexistent at the time. However, the increase was hindered by requirements built by the regulation itself. Among these was the request for an appraisal. With the experience of the Great Financial Crisis, it may sound odd and unsound to reduce the restrictions on the quality of the underlying mortgages, if mortgages become one of the most important assets of banks, shouldn't the Central Bank be concerned with the

[67] See https://www.ecb.europa.eu/euro/banknotes/ink-stained/html/index.en.html as well as in Decision No.2013/211/EU at https://www.ecb.europa.eu/ecb/legal/pdf/l_11820130430en00370042.pdf

[68] See Decrees No. 415/18 and 416/18, issued on May 8th, 2018.

[69] See Communication A 6525, issued on June 14th, 2018.

[70] See Communication A 6540, issued on July 19th, 2018.

quality of such assets?

However, the risks of the mortgage market were small in this case for three main reasons. First, because the size of mortgages in the financial sector were very small (4% of deposits at the end of 2015). Second, because banks were constrained to lend a value that had to be smaller than the value of the property. Finally, because Argentina did not allow the slicing of risks that had characterized the great financial crisis. This was done by requesting capital requirements corresponding to the whole loan portfolio even if part of this loan portfolio was sold in the market, under the presumption that by holding the junior tranches, the bank concentrates the risk of the entire portfolio.

With these risks contained the Central Bank focused on streamlining the approval process for mortgages and as such eliminated the obligation of doing an appraisal, allowing banks to use the value declared in the public deed that transferred the property or the fiscal appraisal[71]. Appraisals in Argentina were relevant because typically both the deed amount or the fiscally declared value of the property deviated from the actual transaction price. However, this deviation decreased over time as fiscal appraisals converged to market values. And, more importantly, the deviation implied an underestimation of the value of the real estate (the declared value was always less than the actual value, because the incentive was to evade taxes), which implied that the declared value was always a very conservative estimate of the actual value of the assets backing the banks' loans.

Banks, however, were slow to implement the change. But, for example, many mortgages that were used for upgrade purchases (families moving from a smaller property to a larger one), entailed loans that were clearly below the market value of the property (as clients only took a loan on the upgrade). In those cases, the banks stopped doing an appraisal and used the value of the amount in the public deed. This accelerated the authorization process significantly.

[71] See Communication A 6239, issued on May 12th, 2017.

5.12 New set of guarantees for construction and housing loans

In Argentina, the transfer of real estate and the granting of a mortgage require the execution of a public deed[72]. In order to be able to do so, the property needs to be incorporated before the corresponding local Registry of Property. For new constructions, such incorporation requires a considerable amount of bureaucracy and a lot of time. All this implies that the financing of new constructions cannot be guaranteed by a mortgage (because the property does not have the needed formalities). And, most of the time, this happens for as long as ten years after the construction has ended and the new building is habitable. In a country with a huge housing deficit, it was urgent to provide a new set of guarantees to allow credit to fund the expansion of new housing.

The 2015 reform of the Civil and Commercial Code, again, played a hand. New section 1170 established that private contracts that granted options to purchase property (these are customarily signed before the actual purchase because the execution of a public deed takes a certain amount of time) could be defended before the seller's creditors (i.e. that the rights granted by such contracts were enforceable) if: (i) at least 25% of the total price had already been paid; (ii) the private contract had a proven date; and (iii) the buyer had taken possession of the property or the contract had been incorporated in the corresponding property registry.

In June, 2017, the Central Bank included these new contracts within the admitted guarantees for loans[73]. As a consequence, banks could lend against the pledge of the rights granted by the private contracts in the cases in which the requirements listed above were met.

The first set of beneficiaries were the new owners of habitable properties, because they could fulfill the last requirement just by moving in. The financing of future constructions required that the local registries of property establish the procedure for the incorporation of private contracts. The

[72] See Argentine Civil and Commercial Code, section 1017.

[73] See Communication A 6250, issued on June 2nd, 2017. Later, Communication A 6297, issued on August 11th, 2017, included the new property right also created in the reform of the Civil and Commercial Code, called *"derecho de superficie"*.

city of Buenos Aires did so in 2018[74], allowing the Central Bank to include the new feature in the restatements.[75]

5.13 Automatic licences for foreign exchange agencies

In Argentina foreign exchange (FX) agencies are firms allowed to exchange physical bills. They are an important service provider for some industries, most notably tourism, but also a vehicle through which Argentinians accessed foreign currency. Five years of strict exchange rate controls had seen a progressive exit from the industry. By the end of 2015, less than 20 exchange rate agencies remained, and, with a black market premium larger than 50%, they implemented few operations. During the capital control period the authorities believed that these agencies operated in the black market, and thus stepped up the pressure (inspections, administrative procedures) accelerating the exit from the business. Buenos Aires and other major cities were swarmed by illegal FX changing stations that hired personnel that enticed tourists and locals to exchange by shouting "dollars! dollars!" in the street. These agents were dubbed "arbolitos" (little trees), as they usually stood in a single spot and sold "green" dollars.

With exchange rate controls gone, and the black market premia wiped out, the authorities set the objective of eliminating this modus operandi. As a result they simplified to the limits the authorization process for changing currency and for setting FX agencies. The authorities had failed in their attempts to repeal the "Foreign Exchange Criminal Act" which basically argued that changing currency by non-authorized parties was illegal, imposing sanctions for trespassers that go from simple fines to prison time. Given that this law was not being changed, the strategy of the authorities was to authorize everybody, thus, eventually generating a consensus for the repeal of the law.

As such the Central Bank changed the procedure to just a simple mail notification. Anybody willing to exchange currency could start doing it with the only prerequisite of notifying the Central

[74] See Decree No. 962/2018, issued on October 29th, 2018.
[75] See Communication A 6605, issued on November 29th, 2018.

Bank in an email[76]. This allowed anybody to set up an FX exchange operation, and the objective of the Central Bank was that all retail stores, kiosks, supermarkets and hotels, etc. could provide this service to their clients. This led to a timid response at first, but then to a sizable increase in the number of players in this market. At some point, the Central also decided to tackle the *arbolito* question directly and allowed FX agencies to hire personnel that could also take the streets.

The reform was very successful, and soon enough a number of FX agencies started propping up in major cities, however the reform was unable to permeate into other businesses (hotels, for example). The main reason for this was that FX agencies remained institutions obliged to comply with AML regulation. Thus, many organizations did not want to get broiled down in this regulation.

Finally, a more complex institution called "casas de cambio" (these could also do wire transfers were more heavily regulated), were allowed to do FX operations related to trade. This was to step up competition with COMEX areas in banks, that were known for their slowness, and was considered important to reduce foreign trade costs.[77].

5.14 Wider scope for screening and scoring

One of the most interesting revolutions caused by technology is in the field of credit scoring. Tons of additional information, new data processing models and artificial intelligence have provided very efficient and more precise ways to evaluate the repayment capacity and the behaviour of borrowers.

Before the revolution, in order to protect depositants and assure a safe allocation of credit, twentieth century banking rules had understandably established certain fixed variables to evaluate credit capacity and establish limits, principally based on financial statements, for companies, and salary receipts, for people. However, principally due to the use of credit cards[78], for retail customers, they had

[76] See Communication A 6443, issued on January 26th, 2018.

[77] Id., section 1.2.2.

[78] Credit cards pioneered in establishing credit limits based on the customer's behaviour using more sophisticated methods than the ones established on banking rules.

gradually incorporated “screening” and “credit scoring” methods[79].

“Screening" systems are defined as the set of steps and decision rules that collect the accumulated experience in granting loans, monitoring their subsequent behavior and the bank’s credit policy. This method is to be applied in a systematic way and updated periodically, in order to draw conclusions regarding the granting of credits and allocate financing margins. On the other hand, "credit scoring" models are mathematical or statistical-econometric methods used to measure the risk and probability of default of credit applicants. Both techniques should be based on the variables that financial institutions consider relevant to measure the risk of bad debt associated with each debtor and class of credit.

These methodologies can be used by banks to substitute the specific documentation otherwise required as proof of income. It is an alternative method, less rigid and more in line with current technology and access to information that can provide a very good proxy to repayment capacity and credit behavior. Of course, these methodologies evolve constantly. And the rules require them to do so. They establish that the predictions made must be compared with the actual credit behavior later observed, in order to adopt the necessary adjustments[80]. These methods allow banks to lend more, at more efficient prices, with less risk and at a lower cost, but, more importantly, they allow the inclusion of credit subjects that otherwise would most probably end up in informal markets.

In line with the debureaucratization of the financial system and the impulse of financial inclusion, in 2016 the Central Bank started to gradually expand the use of “screening” and “credit scoring” methods. Since 2006, those methods could only be used on the retail market and had fixed credit limits[81]. The first approach, in June, 2016, was to change the fixed amounts to a percentage of

[79]The Argentine Central Bank had allowed methods of “screening” and “credit scoring” for retail customers. See Communication A 4558, issue on August 17th, 2006.

[80]Id.

[81]The limits were 200,000 pesos for mortgage loans and 15,000 pesos for personal loans. At the time the rule was issued, they represented 66.667 and 5,000 US dollars, respectively.

debt/income, using all the registered debt and the income determined through the new methods[82]. Later, in April, 2017, the Central Bank expanded that limit and included small companies as eligible credit subjects for the use of "screening" and "credit scoring", with an individual limit equal to 15% of the revenues cap established by tax authorities to be considered a small company and an aggregate limit for all credits granted under this system equivalent to 20% of the bank's net worth[83].

In 2018, the trend continued. A new rule expanded the application of the new methods to every company and increased the individual limit to 50% of the established revenues for small companies and the aggregate limit to 40% of the bank's net worth[84]. Finally, in 2020, new authorities continued the expansion and increased the individual limit to 100%.[85]

These reforms allowed banks to have the flexibility required to offer new products and compete in new markets with other less regulated credit institutions, such as fintechs.

5.15 E-cheques

When a new technology arrives, regulators tend to believe they should regulate every aspect of it in order to prevent abuses and preserve the general public's security. More so, they typically want new technology to replicate *all* aspects of previous mechanisms. Thus, as technologies change, and they do each time more rapidly, regulation becomes obsolete and blocks innovation. That is what happened with electronic cheques.

As we will explain below, cheques were a central piece of the financial sector in Argentina. They typically were issued with a future due date, and were thus transformed, automatically, into instruments of credit. Their sound institutional framework, in particular the fact that they could be claimed in a court of law expeditiously, made them a formidable instrument, which was therefore used massively.

[82] See Communication A 5998, section 4, issued on June 24th, 2016.
[83] See Communication A 6221, section 3, issued on April 17th, 2017.
[84] See Communication A 6558, section 2, issued on September 4th, 2018.
[85] See Communication A 6938, section 9, issued on March 19th, 2020.

Two key issues with cheques were its paper support and the signature requirement. Actually, paper support has been so inherently linked with cheques and other stand-alone documents that, in Spanish, they are sometimes called "*documentos cartulares*" (the translation would be something like "cardboard documents"). Paper has been, for centuries, a great technology for credit documents and money (we will discuss the issues of bill denominations and cash later on in section 7.2). Documents would be written down on paper with special formulas, previously agreed upon, and signed by the issuer or the transmitter. Signatures and graphology have also been a great technology to prove authenticity.

The cheque system worked perfectly well: a printed template of a cheque would be signed on paper by the issuer and handed to the creditor, who could transfer the document using the same method. At the end of the journey, the holder of the cheque could cash it on any bank of the system by handing it to the bank teller. Later that night, at the Clearing House, banks would compensate for the payments made. Then, the paying bank would send the cheque back to the issuing bank, that at some point in time would destroy it. Note, however, how many times the cheque goes back and forth.

When the geographical scope expands and scales explode, and millions and millions of documents are issued and traded every day throughout the world, paper technology is simply not efficient. Imagine if every single transaction had to be made in paper. Costs of supplies (such as paper and ink) and transportation would be unmanageable, and it would certainly not be friendly to the environment. For a long time now, there has been a tendency to eliminate paper from economic transactions.

In Argentina, the first innovations were related to capital markets. In 1983, Law No. 22,903 modified article 208 of the Argentine Corporations Act and established a registry system for the issuance and transfer of stocks. Later, Laws No. 23,576 and 24,083 established similar rules for debt instruments and mutual funds, respectively[86].

Regarding cheques, in 1995 Congress passed Law No. 24,452, which updated the previous regu-

[86] See Santiago Mora, "*Letras de Cambio, pagarés y cheques no cartulares, electrónicos o digitales. La evolución de su situación en Argentina*", Fintech: Aspectos Legales, Tomo I, 192 (2019).

lations from the 60s and included a new feature that intended to reduce costs: the signature required to issue a cheque could be made through electronic systems or methods of reproduction authorized by the Central Bank. However, it did not contemplate the transmission nor the deposit of cheques, so the result was that cheques still needed to be issued on paper (the innovation was that the signature of the issuer could be printed by the bank, for example, with a printer). The costs related to signing were reduced but supplies and transportation remained basically the same. More than a decade later, in 2006, the Central Bank allowed banks to compensate cheques without having to actually transport the cheques from the paying bank back to the issuing bank at the end of the process[87]. The trick was to allow paying banks to act as custody holders of the cheques for issuing banks. If any issuing bank wanted the cheque back, it could ask for it.

In 2016, the first attempt of the new authorities was to allow the electronic deposit of cheques[88]. The holder of the cheque no longer needed to go to the branch and hand it to the bank teller in order to cash it. She could electronically send a digital picture of the cheque to the paying bank and receive the electronic deposit on her account[89]. Similarly to the 2006 improvement, the recipient of the cheque became the custody holder for the issuing bank. This new feature significantly reduced costs of transportation and bank teller transactions. However, it did not eliminate paper.

The obstacle was the signature. Regrettably, Law No. 25,506 and, later, Law No. 26,994, which reformed the Civil and Commercial Codes, established digital signature as the only possibility in the

[87] See Communication "A" 4596, issued on November 11th, 2006.

[88] See Communication "A" 6071, issued on September 22nd, 2016.

[89] Communication "A" 6071 requires digital pictures of both front and back of the cheque, with the inscription "electronically presented for collection" on both sides.

digital world that satisfies the requirement of a person's signature, when required by law[90]. Any non-paper signature that does not comply with the specifics of digital signature is considered an "electronic signature", and not enough to satisfy the signature requirements.

In December 2001, in the middle of the economic crisis, Law No. 25,506 created the concept of "digital signature"[91]. The element that defines the digital signature is the existence of a digital certificate issued by a certifier licensed by a Licensing Entity. Thus, the concept adopted was one of a vertical system, in which there is one Licensing Entity which holds the root certificate and grants licenses to specific persons that can issue certificates that can be used by people to digitally sign documents. In order to obtain a certificate (that, up until 2018, were held on pen drives) a person had to physically go to a certifier and sign, on paper, the requirement. Again, this was a very good technology twenty years ago, before blockchain and the rise of open distributed ledger.

Of course not every document needs to be signed, and many methods of proof can be used to infer a person's consent and execute an agreement[92]. Most bank contracts are only required to be in writing (not in paper) and can be signed through any form of "electronic signature". However, cheques were required, by law, to have a *signature*, which, as we explained, could only be made either in paper or as

[90] Article 288 of the Civil and Commercial Code establishes that "*in instruments generated by electronic means, the requirement of a person's signature is satisfied if a digital signature is used, which undoubtedly ensures the authorship and integrity of the instrument*". There was ample debate over this. Previously, article 3 of Law No. 25,506 established that "*when the law requires a handwritten signature, that requirement is also satisfied by a digital signature*" and allowed an interpretation that "electronic signature" was also permitted. After the enactment of the new Civil and Commercial Code, in 2015, and specifically because of the wording of article 288, authors agreed upon the opposite interpretation: only digital signatures were allowed. On this respect, see Granero, Horacio R., "*Validez -o no- de los documentos electrónicos sin firma digital en el Código Civil y Comercial de la Nación*", ElDial, 9/9/2015.

[91] See Law No. 25,506, issued on December 14th, 2001. Law No. 25.506 defines the digital signature as "*the result of applying to a digital document a mathematical procedure that requires information of exclusive knowledge of the signer, being this under its absolute control", which must "be subject to verification by third parties, such that said verification simultaneously identifies the signer and detects any alteration of the digital document after its signature* ".

[92] See article 284, Civil and Commercial Code of Argentina, that establishes that "*if the law has not determined a specific method for the expression of the parties will, parties can use whatever form they deem appropriate*". Similarly, article 1019, Civil and Commercial Code of Argentina, establishes that "*contracts can be proved by all means capable of reaching a reasonable conviction according to the rules of sound criticism, and in accordance with the provisions of the procedural laws, except legal provision that establishes a special means*".

Law No. 25,506's digital signature[93]. As a consequence, the Central Bank could not solve, by itself, the problem of paper cheques. A law reform was needed. That was when government cooperation played a hand.

In January 2018, the Executive Branch issued Decree No. 27/2018, which modified a great number of legal provisions in order to simplify and de-bureaucratize processes and legal requirements[94]. Within those reforms were the amendments to Law No. 24,452. In every article that established the requirement of a signature, the reform added "*if the instrument were generated by electronic means, the signature requirement will be satisfied by any method that undoubtedly ensures the externalization of the will of the parties and the integrity of the instrument*". Thus, electronic signatures were allowed not only for the issuance of cheques, but also for the transmission, guarantees and any other related actions. Also, the reform stated that "*the Central Bank of the Argentine Republic will regulate the issuance of a certification that will allow the exercise of civil actions in the case of checks generated or transmitted by electronic means*"[95]. Obstacles for the creation of electronic cheques were removed.

In October 2018, the Central Bank issued Communication A 6578, creating eCheqs. The features that allowed the creation of this new instrument were: (i) the establishment of a single registry, that would record the issuance, transfers and deposit of every electronic cheque; and (ii) the obligation of every bank that provides checking account services to accept the deposit of electronic cheques[96]. Electronic cheques not only represent a huge reduction of costs for both banks and its clients. They provide an unprecedented innovative service that has the following highlights: (i) a simpler, fully dig-

[93]The exact same thing happened with promissory notes and credit card contracts, as regulated by Decree No. 5,965/1963 and Law No. 25,065, respectively. Another legal obstacle for electronic cheques and promissory notes was the notion that those documents needed to be *unique*. As digital documents can be copied, there was a long debate over the ability of digital documents to comply with that legal requirement. The discussion was solved by article 1836 of the new Civil and Commercial Code of Argentina, which enables documents to be fully digital if there is a registry involved. For details on this matter, see Santiago Mora, supra note 10, 209.

[94]Decree No. 27/2018 was later ratified by Law No. 27.444 on the amendments related to Laws No. 24,452 and 25,065, and Decree No. 5,965/1963.

[95]See articles 178 to 183 of Decree No. 27/2018 and articles 122 to 127 of Law No. 27,444.

[96]The regulations of the system were complemented by Communications A 6725, 6726 and 6727, issued on June, 28th, 2019.

ital, interface that allows the remote issuance, transfer and deposit of cheques (geographical distance is now irrelevant); (ii) the complete elimination of falsified, defective, lost or stolen cheques, which were the cause of enormous costs and headaches; (iii) the absolute trackability of cheque transactions, since all transfers (which are unlimited), are recorded; (iv) better credit analysis, since every single cheque can be scored before its issuance; and (v) partial assignment, which allows the holder to discount a portion of the cheque at a determined rate and keep the rest at face value. Of course, electronic cheques also retain the legal benefits of paper cheques.

By July 1st, 2019, the system was up and running. To the date of this paper, 1,500 electronic cheques for an average aggregate amount of ARS 945,000,000 are issued every week. Those amounts have tripled every month during 2020. The Covid-19 pandemia in 2020, further accelerated the process. At the time of writing the physical cheques were on their way out.

6 Competition and transparency

In the previous section we saw several measures aimed at reducing costs. But cost reductions will benefit the consumer if there is a vibrant competitive market, which, in turn works with high level of transparency. In this section we discuss policy decisions that aimed at increasing both transparency and competition.

6.1 Making savings accounts free

Throughout the years, different administrations had attempted to increase access to bank accounts by creating different types of accounts which were either cost free or had certain free features. Regulation piled up. By 2015, there were at least four types of these accounts: wage accounts, social services accounts, "basic" accounts and "free universal" accounts.

Their features were similar but not identical and they had different opening requirements (not everyone could apply for either one)[97]. As a result, there was a great amount of red tape and confusion, even within bank employees, and the objective was not fulfilled: access to bank accounts remained difficult. Banks did not promote these types of accounts (actually, they buried them in paperwork) and there was no demand from consumers.

By 2016, it was clear that there should be at least one free banking account to foster financial inclusion and provide for the expansion of the financial sector. But experience had proven that any

[97] Wage and Social Security accounts involved a third party, either the employer or the Social Security Agency, which would open the respective accounts in the name of the employees or the beneficiaries of social aid. Therefore, banking customers had no say in the election of the bank and, as a result, competition diminished. Moreover, such accounts had limitations to receive loans and perform certain transactions (we will provide more details on Section 6.2 below).

"Basic" accounts were created in 2008 by means of Communication "A" 4809 and were only available in pesos. Banks were obliged to offer a "basic" account to any customer who applied for a savings account. There were no special requirements to be eligible for a "basic" account. They had the following free features: (i) transactions on ATMs owned by the issuing bank; (ii) debits on point of sale; (iii) debits on electronic transfers; (iv) automatic debits authorized by client; (v) bank teller transactions; (vi) three (3) ATM transactions on a different bank that belongs to the same ATM network; and (vii) one (1) ATM transaction on a different bank that belongs to a different ATM network. However, banks could charge fees for account maintenance and any other concept other than the ones established as free transactions. One special downside of "basic" accounts was that they were only allowed to be used for the transactions specifically listed on the regulations, making them too rigid for banking innovation and financial inclusion.

account that had special requirements resulted in either banks discouraging its use or in customer distrust (there were plenty of cases in which customers ended up paying charges that they did not understand or had not foreseen)[98]. Transparency needed to be a pillar of the new regulation.

On the other hand, there were three important factors to consider. First, the financial system was extremely small and needed a shock to boost expansion. Second, technology had significantly reduced the costs of opening and maintaining accounts for banks. And third, inflation had provided a very high return on the balances of savings accounts[99]. In that scenario, authorities could promote the standardization of savings accounts with free maintenance costs and some free features as the steppingstone of a process that would allow for the expansion of the system and the promotion of innovation and financial inclusion. If the aggregate balance of the savings accounts expanded, the return on the accounts -even on a low and constant inflation scenario- could be even higher than the one they had averaged in 2015.

Banks offer a wide array of products, from the simplest savings accounts (checking accounts are not very popular among individuals), to more sophisticated accounts offering checking (thus credit), credit cards, investment accounts, COMEX, etc. The view of the authorities was that a large fraction of the consumer surplus derived from savings accounts that allow to receive income and transfers and

"Free universal" accounts were created in 2010 by Communication "A" 5127. They were also only available in pesos. "Free universal" accounts could only be opened by customers who did not have any other type of banking account (even another "free universal" account) on any banking institution. They were maintenance free and had the following free features: (i) transactions on ATMs owned by the issuing bank; (ii) debits on point of sale; (iii) debits on electronic transfers; and (iv) automatic debits authorized by client. Banks could charge for any other transaction. As "basic" accounts, "free universal" accounts were only allowed to perform the transaction specifically listed on the regulations. But the main downside of "free basic" accounts was that their balance could never exceed an amount equivalent to four (4) minimum wages. If such a thing happened, the account would be immediately closed by the bank, the balance would be frozen, and the customer would not be allowed to open a new "free universal" account for a six-month period. This last provision was particularly inconvenient and the result of cognitive deceit: it was supposed to protect banks from wealthy people that would use these accounts to avoid service fees, when, as a matter of fact, a greater balance would have allowed banks to recover the costs of providing free accounts.

[98] Unforeseen service charges were the main drawback for consumers when considering to open a new bank account.

[99] In Argentina, as in most economies, banks charged a monthly service fee for savings accounts and paid no interest on their balance. But, different to other economies, (see Section 3 for more details) in Argentina inflation has averaged 60% in the last 70 years. That means that savings accounts had charged a yearly negative interest rate average of 6.000 bps! Plus the service charge!

make payments and purchases electronically or with a debit card. However, in spite of the simplicity of the product, consumers do not see savings accounts offered by different banks as perfect substitutes (for example due to location, though this is changing with digital banks), so banks face a downward sloping demand curve.

Price regulation could be rationalized as the regulation of a monopolist facing zero (or minimal) marginal cost. Thus, like any regulation of a monopolist, price caps ensure that the competitive equilibrium is replicated. The potential welfare gains of such change can be estimated with the demand curve for savings accounts. Of course, this number will depend on the environment. For example, the demand curve will be dampened if free savings accounts are already available, and if wage accounts are paid in free savings accounts. For countries where these vehicles are not available, the demand curve shifts upwards.

Without pretense of being precise, but in order to assess potential gains, let's consider a back of the envelope calculation for Argentina. Today a typical package account costs about 10.000 pesos a year (approximately 160 dollars). Assuming that the amount of accounts is 5 million (about half the families in Argentina are aware they have a bank account) and arbitrarily assuming that potentially this number could go up to 8MM, assuming a linear demand function in which all accounts are opened at zero price, we have a total consumer surplus gain of 240 million USD (equivalent to 0,05% of GDP). This number falls to 87 million USD if we assume a constant elasticity demand. See Figure 11 for a graphical representation.

So, in March, 2016, Central Bank issued Communication "A" 5928[100]. It standardized all savings accounts and eliminated service charges. As of April 1st, 2016, all savings accounts would provide a cost-free debit card and have no costs for onboarding, maintenance or renovation of cards. There would be no special opening requirements and no limits on the accounts balance. Additionally, the following services would have to be provided free of charge: (i) transactions on ATMs owned by the

[100] See Communication "A" 5928, 03/21/2016.

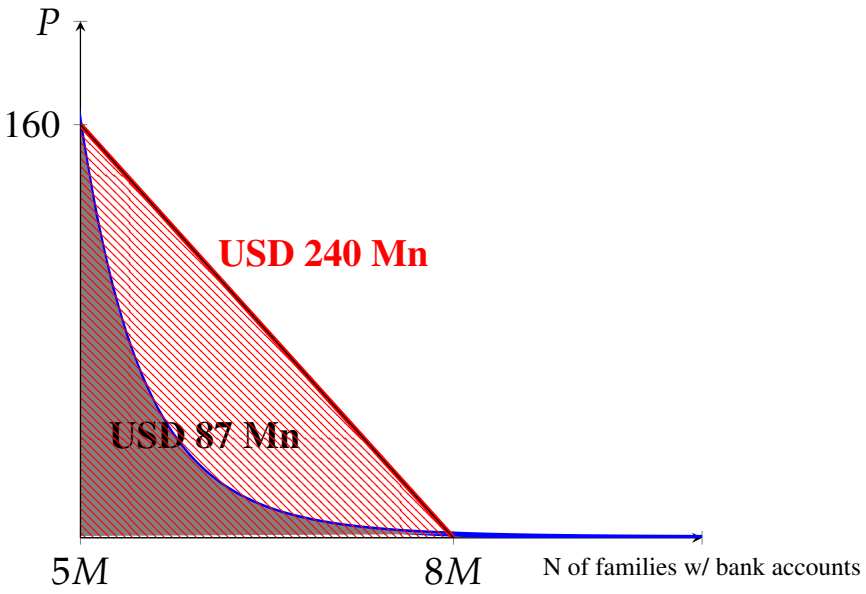

Figure 11: Theoretical consumer surplus

issuing bank; (ii) provision of "home banking"; and (iii) bank teller transactions. And on top of that, there would be no charges for debits on point of sale[101] and money transfers for consumers are free of charge[102], as will be explained in detail in section 6.4 below. "Basic" and "free universal" accounts were converted into standard savings accounts. This regulation, at the same time, eliminated Central Bank authorization prior to any increase on the remaining fees, as explained above in section 4.

As a result of these new regulations there could be no mischief by banks trying to hide free accounts, since all savings accounts were free. And the revenue incentives for the accounts were aligned with the growth of the system (i.e. in order to profit from savings accounts, banks could no longer squeeze the transactional system, they would need to promote the use of electronic payments and provide incentives for savings in pesos in order to increase the average balance of savings accounts). Transparency and competition were improved.

Of course, the issue of the fixed cost of the banks was disregarded, assuming it would be compen-

[101] See Law No. 25.065, article 37(c).
[102] See Communication "A" 5927, 03/21/2016.

sated by other businesses (such as lending, etc.). As mentioned, it was believed that the net income of these accounts for the banks would be positive -not negative- from the free balances that they would hold. But this was not viewed equally by the banks. So, while it was common practice to offer free (or even negative priced) savings accounts with free credit cards and investment accounts for wage accounts which guaranteed a minimum deposit, banks resisted offering free savings accounts when these regular deposit flows were not guaranteed. As the marginal cost of providing these low activity accounts may have not been zero or small (actually, the new saving accounts had to provide free bank teller transactions, which have a high marginal cost), banks engaged in the strategy of "tying" the savings accounts with other products in order to continue to appropriate this consumer surplus while "hiding" the fact that a stand alone free savings account was a possibility. The Central Bank had issued certain restrictions in that respect: (i) the opening of a savings accounts could not be conditioned to the acquisition of any other product or be a part of any multi product package[103]; (ii) banks had to notify holders of multi product packages that they could request the closure of the package and maintain the savings account free of charge[104]; and (iii) banks had five months to split savings accounts from the outstanding multi product packages[105]. Nevertheless, this led to constant tension between the authorities and the banks in the following years.

Even when these policies take time to flourish, there are some results to show. The number of savings accounts increased 39% from December 2015 to march 2019[106] and electronic transfers per

[103] See Communication A 5928, section 5, issued on March, 21st, 2016.

[104] Id., section 6.

[105] Id.

[106] See Informe de Inclusión Financiera, november 2019, page 24, published by the BCRA at: http://www.bcra.gov.ar/Noticias/Inf-inclusion-financiera-201901.asp. The total amount of savings accounts increased from 11.826 in Dec-15 to 16.417 in Mar-2019. Savings accounts in pesos increased 23% and the number of savings accounts in dollars increased 265%. This last item is very interesting, because banks were not obliged to offer free of charge savings accounts in dollars, but they did anyways and the number of accounts increased dramatically. It might be evidence that the coordination tool in favor of transparency and competition was beneficial for both banks and consumers.

adult tripled during the same period[107]. Figure 12, also shows how the fraction of "money" held in bank accounts started increasing steadily throughout this period.

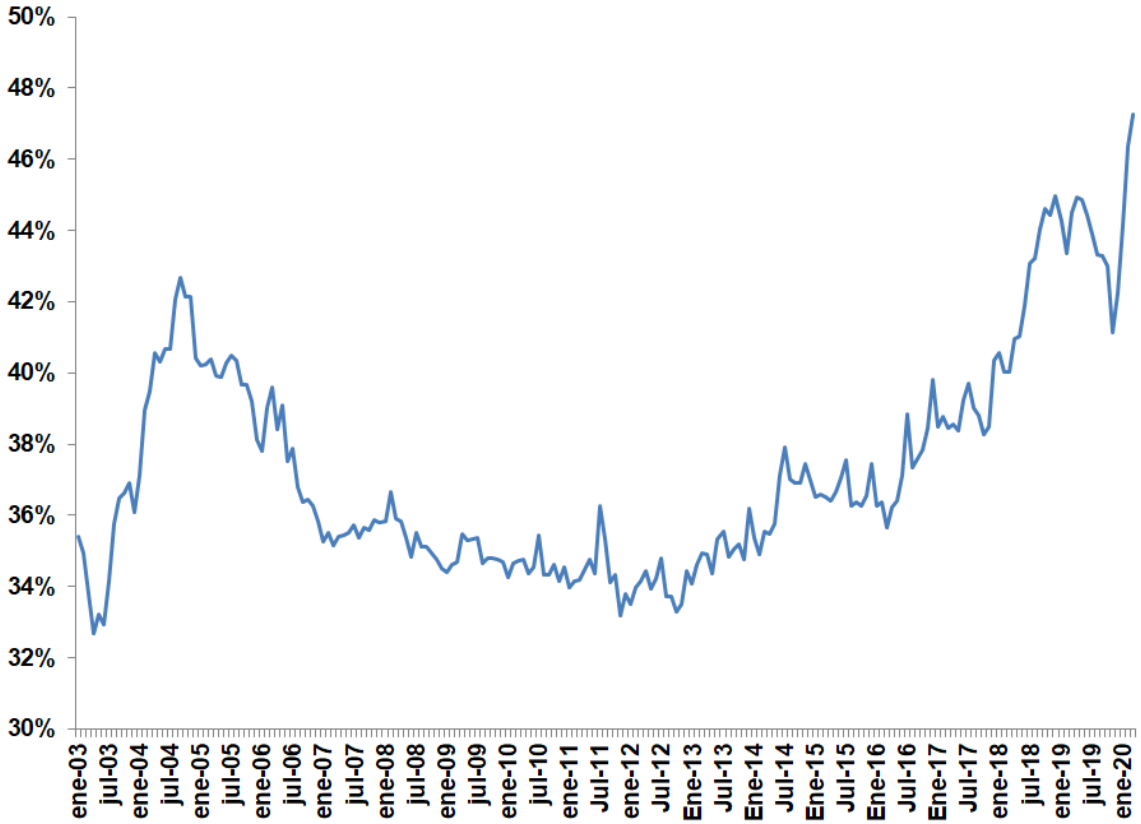

Figure 12: Saving deposits (As % of (saving deposits+cash))

Strategies to overcome these same problems have been explored elsewhere. In Chile, for example, the RUT account was an account issued by the Banco De Estado, which associated each identity number (RUT, "registro unico tributario") with a bank account. The idea was to make it very visible that a free savings account was available, as then it would be more difficult for other banks to engage in tying strategies. Yet the RUT account was operationally a significant liability for Banco de Estado, and was not copied by other banks. In Argentina, a similar account was created by one of the large

[107] See Presentation of Consejo de Coordinación de Inclusión Financiera, December 2019, at: https://www.argentina.gob.ar/sites/default/files/11282019_ccif.pdf.

public banks, but with a concentrated geographical reach, and relatively poor service, did not take off.

More recently, some fintechs and digital banks with low operating costs, started offering free accounts (fintechs) and free savings accounts (digital banks), with substantial success. One fintech quickly piled 2.1 million accounts though it was difficult to assess how many of those accounts were active, and as we saw, one digital bank topped 1 million accounts in little more than a year, with a high fraction of those being active.

6.2 Making social security accounts fully operational

As we said in the introduction, financial regulation is very tricky. Sometimes the details are so deep that a subsection, a chart, or an appendix remains unnoticed by regulators, even if it has a strong effect on the general public. That is what happened with social security accounts.

When explaining the different types of accounts, we said that the basic account and the free universal account were converted into common savings accounts, since all fees from savings accounts were eliminated. However, two other types of accounts remained: wage accounts (with which we will deal next) and social security accounts. The reason these accounts remained was because they needed some special treatment. Since most of those accounts were opened directly by the governmental agency in charge of pension funds (in Argentina is called ANSES) and due to their limited capability to track movements their operation was limited, the most relevant limitation was that these types of accounts could not receive any deposits other than the ones the governmental agencies made.[108]

The first approach of authorities regarding social security accounts was to widen their scope of allowed transactions. So, in March, 2018, the Central Bank allowed these accounts to receive deposits from any source for up to the equivalent of two minimum wages per month and established a new notification service that would inform each beneficiary of the next payment date (as to avoid crowding ATMs on dates prior to the payment date)[109]. And that is all they did. At the time, authorities thought

[108] See Communication A 5231, section 5.7.3, issued on October, 20th, 2011.
[109] See Communication A 6462, sections 3.5.3 and 3.5.4, issued on March 1st, 2018.

it was enough.

Some time later, during the discussions of the Coordination Committee for Financial Inclusion[110], there was a specific analysis of social security accounts and why they had not shown an increase in the use of digital services, such as money transfers and the ability to check the account balance online. Financial education campaigns and other stimulus had not had any effect on that target population, unlike what had happened with other users. An investigation was run and a member of the Financial Entities Superintendency found out the answer from a private bank official. The regulations of social security accounts had not included "home banking" as one of the services for such accounts, and banks had interpreted that, then, it was not allowed (the rule in social security accounts was that anything that was not specifically provided for was not allowed, even the basic and obvious). As a consequence, banks had not turned on the keys that generated the user and password needed to log in to mobile and "homebanking", and beneficiaries did not have access to digital services. That was the reason they did not use them: they could not. That specific piece of regulation had passed below the radar of Central Bank authorities, although it was a well known fact among bank officials. Dialogue, again, was essential.

As a response, the Central Bank modified the rule for social security accounts, included "home-banking" as a required service and increased the allowed deposits to an amount equivalent to five minimum wages[111].

[110]The Committee was created by Resolution No. 121/2017 of the Ministry of Finance, later amended by Resolution 948/2018 of the Ministry of the Treasury.

[111]See Communication A 6610, sections 3.5.3 and 3.5.4, issued on February 2nd, 2019.

6.3 Allowing workers to choose their bank

Initially, as almost every other transaction, salaries were paid in cash. At some point in time, the applicable law even made cash payments compulsory[112]. As the banking industry grew and electronic payments advanced, Congress understood that bank account payments would be at least as efficient as cash payments and allowed bank wires as an authorized method. The discussion at the time circled around the cost of those banking services. Even when, at the end of the line, the cost would fall -directly or indirectly- over salaries, the initial payment of the banking costs was heavily discussed. The established solution was that the employees would bear no costs whatsoever for the opening, maintenance and cash handling of the wage accounts[113]. Thus, the distribution of costs had to be agreed upon between banks and employers. In that scenario, it seemed natural for regulators -though it was not- to establish that employers, and not employees, would handle the relationship with banks. Though based on an economic principle -employees had a benefit that employers had to bear-, it was rather paternalistic. If an employee wanted to change banks, she had to request the change to her employer, that could decide whether to accept or reject such a request. The bottom line was that the users of the banking services had no say in the election of the banks that would provide them, which resulted in less competition and, as a consequence, poor quality of services. Also, as wage accounts resulted in a profitable business for banks, as they provided significant balances in savings accounts, firms started charging banks for depositing their payroll at a specific institution.

In August, 2016, considering that free savings accounts were established -thus solving the issue between employers and banks over the direct banking costs of wage accounts-, Communication A

[112] Law No. 20.744, in its original section 116, limited the payment of salaries in species to 20%. The remaining amounts had to be paid in cash. The idea behind this was that employers had incentives to take advantage of their strength position and force employees to accept payments in goods or services, thus reducing the real value of salaries. Of course, in terms of that particular objective, cash was equivalent to any other electronic method of payment. Employees wanted money, in any form. But, by that time, electronic payments were not as available as they are nowadays. Later, in 1997, Decree No. 847/1997 and Resolution No. 644/1997 established the payment of salaries in bank accounts, making it compulsory for companies with more than 100 employees.

[113] As stated in article 124 of Law No. 20.774, as modified in 2010 by Law No. 26.590.

6042 established that banks could open wage accounts at the request of workers, not requiring the intervention of the employer in the opening process. The employers that were informed of the change by their employees had to take note and modify the records to include the new bank account to the payroll. This was believed would provide more competition and give more leverage to employees relative to employers.

6.4 Making transfers free between banks

Regarding money transfers, authorities adopted the same approach as with savings accounts: with the objective of increasing the aggregate average balance amount of the system, through Communication "A" 5927 the Central Bank established that consumers were not to be charged for money transfers. Authorities understood that if that friction was removed, more money would flow within the system and less out to cash withdrawals. In some cases, fees for transferring money were so high as to induce customers to withdraw cash from the teller and transport it themselves, physically, to the recipient. This, not only reduced the average balances in the system, but also generated unnecessary transport costs and security problems. Making transfers free was also an important part of a larger scheme that would put bank transfers in the center of a new payment system as we will explain later on, in section 7.

Communication "A" 5927, published on March, 2016, established that, as from April 1st, 2016, banks could not charge fees to individual customers for sending or receiving money transfers, with no limit amount. Companies and the rest of commercial customers could not be charged for transfers either for transfers of up to 250.000 pesos, if made by electronic means[114].

This was not the first approach to stimulate money transfers. Previously, Communication "A" 5212, published in August 2011, established maximum amounts for fees for money transfers, according to the amount of the transfer and depending if they are made electronically or through the bank

[114]This was to disincentivize commercial customers from approaching bank branches to order money transfers through the bank teller, which generated large costs for banks and unnecessarily crowded branches.

teller. Transfers for up to $50,000 had a cap of $5, transfers greater than $50,000 and up to $300,000 had a cap of $10 and those over $300,000 had a cap of 300 pesos. If made by electronic means, those caps were reduced by 50%. Later, in 2015, those amounts were raised in 2015 and charges were removed for transfers for less than 50.000 pesos[115]. Although focused on the right direction, those approaches lacked transparency, generated certain confusion among consumers and had not provided significant results.

The bottom line is that the number of bank transfers and homebanking transactions steadily increased as shown in Figures 13 and 14.

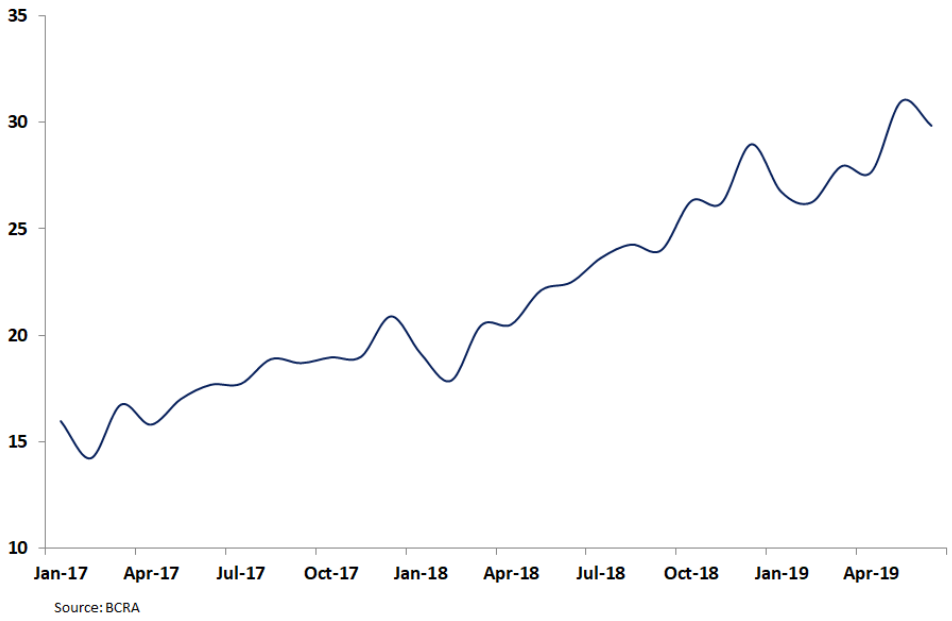

Figure 13: Bank Transfers (# in Mn)

[115] See Communication "A" 5778, published on July 17th, 2015.

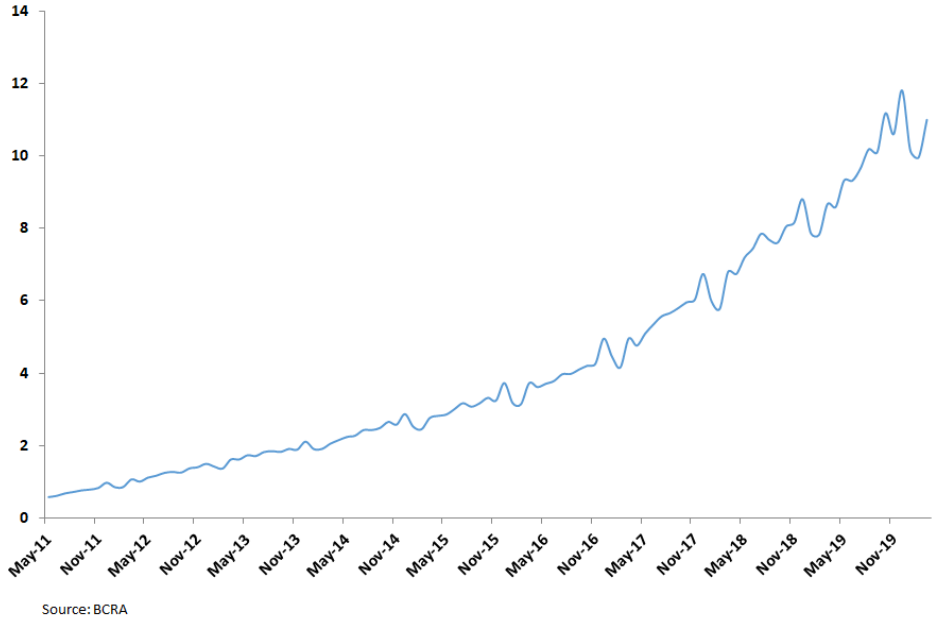

Figure 14: Number of transactions with Home Banking (# in Mn)

6.5 Price transparency

Price transparency is typically centerfold to a well functioning market. A good example is provided by the market in personal loans and credit card lending.

6.5.1 Eliminating hidden markups

In both these markets, interest rates were split between the actual interest rate and other fees and costs, the latter including a "life insurance" policy that the Central Bank requested banks to hold for each loan. This insurance was, if at all, of dubious usefulness, as loan portfolios were made of thousands and thousands of cases themselves diversifying the risk, more so when death contingencies do not suffer from moral hazard. Yet, what happened was that banks charged hefty fees for this service (up to twenty times the cost) which enabled them to advertise a low interest rate, in spite of a very high

total financing cost[116].

The Central Bank decided two things regarding this point: first it was required that the price that had to be shown was the total financial cost (see below), thus thwarting the possibility of advertising a rate below the true rate, and second, it removed the obligation to purchase this insurance [117] and established that consumers were no to be charged any fee or commission related to life insurance for the loan. Therefore, any cost related to that hedge had to be included in the interest rate itself.[118]

Shortly thereafter, most banks discontinued buying this insurance and just assumed the cost which led to substantial complaints from the insurance companies[119].

6.5.2 Improving price displays

Through time, interest rates in advertisements for loans or other financial products had become very hard to find (and, if found, to understand). Some banks added costs and fees that were not included in the interest rate, thus inducing consumers to believe that their overall price was lower than their competition, when in fact the only difference was the split between interest rates and other fees and charges (as explained above in relation to life insurance fees). Central Bank had created the concept of CFT (acronym for "total financial cost" in Spanish), which included all costs related to the loan, but it was often hidden within loads of fine print at the bottom of publicity pieces.

On their first days in office, recalling a previous case that the Central Bank chairman had to face when he was in charge of a commercial bank, the new authorities issued Communication "A"

[116]This caused litigation that turned into a feud that still continues. Consumer associations sued banks alleging they forced consumers into purchasing life insurance with high costs using mechanisms that were abusive and deceitful, in violation of the Consumer Protection Act No. 24.240. See Leandro M. Castelli and Pablo S. Cereijido, "*Class Actions – Justice Modifies Ex Officio a Court-Approved Settlement Agreement*" at https://www.marval.com/publicacion/acciones-de-clase-la-justicia-modifica-de-oficio-acuerdo-homologado-5974&lang=en.

[117]Banks could choose to either hire an insurance company to cover the risk or to assume the risk themselves and make the corresponding provision. See Communication "A" 5928, section 2.3.11.1.

[118]Communication "A" 5928

[119]Insurance companies argued that allowing banks to diversify risk by themselves was having banks take an insurer role precluded by law. The Central Bank answered that this is what every person does when deciding to cross the street.

5853 establishing that the CFT had to be displayed on all advertisements in a font with a different highlighted color and five times greater than the one used for the interest rate.[120] The following weekend, advertisements appeared with a very thin and unreadable CFT, five times *taller* than interest rates, as shown in Figure 15.

Immediately after, the Central Bank amended the rule and issued Communication "A" 5887, which established that CFT had to be displayed in a font five times greater, *maintaining all proportions, thickness, height and width*. Lastly, this rule obtained the desired effect as shown in Figure 14. At this point, it became impossible to disguise the real cost of the financial products.

Later on, this principle was expanded. Through Communication A 5905 the same rule was also applied to advertisements within bank branches. It was also established that, on TV ads, CFT had to be displayed at the same time and next to the interest rate. Finally, Communication A 6474 established the same rule for all banking documents.

[120] Communication "A" 5853, Section 4, issued on December 17th, 2015.

Figure 15: Before

Figure 16: After

6.5.3 Reporting the competitor's price

But how could transparency be improved beyond the information about specific rates? A possible solution was to specify the main fees that banks charged, and force them to keep them updated and public. To that purpose the Central Bank regularly published these comparative statements on the web. This led to some backfiring. When the Central Bank published the initial set of fees, many of them were met with outrage in the press. But these fees had not changed and had always been there, except that nobody knew about them! The Central Bank had a problem arguing that what it was doing was making these costs more transparent, rather than endorsing those fees.

In an additional bold move, the Central Bank decided that the comparison of fees had to be in-

cluded in the bank statements[121]. According to sections 11 to 13 of Communication A 5928, whenever a bank decided to change its fees, it had to reproduce for clients a series of tables published by the Central Bank stating the fees for that products charged by the leading banks offering that product. For example, if a bank wanted to change the renewal fee for its credit cards, it had to deliver to the client, the renewal fees of the 5 most active banks in credit cards, stating their names and their fees. The objective was to increase comparison under the motto "freedom to set prices but full transparency in the market".

6.6 Making closing accounts easy

When thinking about competition, one instinctively thinks about barriers of entry. In some cases, the way to keep competitors out is to trap consumers in. We can call these barriers to exit. That is the case with bank accounts. Even when lured by a better offer of services of greater quality and lower price, a bank customer cannot quickly decide to leave her bank and take the offer. There is bureaucracy involved. Which, of course, is in no way eased by the original bank.

Over the past few years, the concept of bank account portability has been developed, a concept taken from the cell phone industry. A customer who wants to change companies can go to the new carrier, accept the offer, and leave the bureaucracy to the interested party while keeping the same number. It does not work as swiftly with banks.

In Argentina, opening new accounts became easier with the innovations described in sections 5.5 and 5.7. Moreover, with the introduction of ALIAS, as described in detail in section 7.1.4, bank clients could transfer the identification of their accounts, thus avoiding the costs of having to notify their customers of their new payment instructions, thus in practice generation portability. However, closing their previous accounts remained difficult.

[121] Brazil has a similar policy requesting that credit card statements specify the ranking in the distribution of costs of your bank. For example the bank had to provide information if their rates were among the 10% highest, the 20% highest and so on.

In August 2016, the new authorities took a first approach to facilitate the closing of accounts. It seemed rather simple: the procedure to close an account had to be available online[122]. In the case of checking accounts, the rule stated that banks had to provide consumers certain electronic mechanisms to carry out the closing of the accounts, such as e-mail, phone, home banking, ATMs or self-service terminals. If there were any remaining funds, and the client still wanted to carry on with the closing of the account, the account would be closed and the funds would be retained by the bank in an internal account in the benefit of the client (which meant that the bank could no longer charge any fees for the closed account).[123] Somewhat more complex was the case when the account holder that owed the bank money, in these cases the banks argued that closing the account made the debt more difficult to collect, so these cases were left in a gray area.

However, the rule did not have much effect. In fact, almost nothing changed. Most banks resisted the measure in many ways, but principally what they did was to establish burdensome procedures for the closing of accounts, even if they were online. And in the cases in which the clients actually went to the branch to close an account, some banks had established a rule that stated that the client could only close the account in the branch in which the account was located, which sometimes did not have any relation with the branch in which the client customarily transacted. To be clear: most if not all transactions could be made on any branch, except the closing of the account.

As in many of the examples described on this paper, the Central Bank had to amend the initial rule in order to accomplish its objective. The new rule established a principle, which sometimes is very useful for enforcement. If regulation is too detailed, most of the time it leaves loopholes that allows to comply with the details of the rule even when refraining from complying with the objective the rule pursued. If the principle is clearly stated, regulators can more easily enforce the rule by proving that the subject had knowingly departed from the clearly stated objective. In this case, the principle

[122] See Communication A 6042, section 10. It stated that if banks offered home banking services, the interface had to include the mechanisms for opening and closing accounts.

[123] See Communication A 6042, section 7.

stated that banks had to facilitate the closing of accounts in an efficient way for their clients. Then, the rule, which was enacted in February, 2018, stated that banks had to allow the closing of the accounts on any branch, and that the online procedures had to be simple, effective and immediate, and had to execute the closing of the account in a single step.[124]

6.7 Increasing and facilitating access to debtor information

In order to increase transparency in the financial sector, the Central Bank used to collect a database of debtors that was accessible for consultation at the Central Bank's website on a case by case basis. The Central Bank fed this database from data provided by the banks.

But while it was feasible to do individual queries, the underlying databases were not available. And, additionally, the information provided was only related to the behaviour of the client in the banking system. It provided the scoring of the client - in Argentina the score goes from 1 "normal" to 6 "unrecoverable.[125] Central Bank scoring categories are too broad and do not provide for a more targeted risk allocation (for example, a client in situation 2 "with special attention" could be someone whose revenues had fallen below the usual average, but still maintains a good economic situation, or someone who has defaulted payments for up to 90 days and might be on the verge of Chapter 11). More information and greater processing was needed in order to better assess credit.

A market had developed through two main firms that did have access through the banks to the equivalent of the Central Bank's database. They processed the information and provided their own, more detailed, scoring. But because the database was not itself publicly available, this reduced the scope for competition, at a time that new available information (such as data from utilities payments or social network activity) and new technology (for example, artificial intelligence) were becoming increasingly available, and when, as explained on section 5.14, banks were being allowed greater flexibility in using alternative credit scoring methods.

[124] See Communication A 6448, issued on February 2nd, 2018.
[125] See Circular LISOL, Section VIII, Annex I "Rules for the classification of debtors".

In Argentina, there is a specific carve out in data privacy regulations in relation to consent for the use of credit information. While the processing of personal information requires the explicit consent of the subject, credit information does not, if: (i) it relates to personal data of a patrimonial nature relating to economic solvency and credit; (ii) it is provided by the creditor; and (iii) it does not exceed the period of 2 years for performing credits and 5 years for non-performing.[126]

Internationally, the data privacy principles are, basically, five.[127] The first one is governance: credit information should be stored in credit registers and subject to a governance body to ensure due process and the respect of principles based on agreed policy objectives, consumer protection, and fairness. In Argentina, all databases need to be registered before the Data Protection Agency.[128]

The purpose of such registration is to ensure the following principles: that the data will be used for the declared purpose; that the consumers have access to the data, in order to avoid asymmetries; that consumers have the right to correct any incorrect data in the database without delay; and that consumers have the right to redress in case of damage cause by incorrect information.

In Argentina, the limitations on access to consumers and on the ability to correct credit information held by private credit bureaus were significant. Those asymmetries could be corrected, or at least reduced, by increasing the quantity and the quality of the information to be collected and distributed broadly and without discrimination by the Central Bank.

So, the Central Bank did two things: (i) first, it increased the amount of the information provided on it databases to the fullest extent allowed by the applicable law, including all credit activity of the clients during the past 24 months and, for clients in situation 1 "normal", the original date in which the client was categorized as such;[129] and (ii) it allowed the release of the whole database in a workable format. This allowed for a substantial increase in transparency, access to information and

[126] See Law No. 25.326, section 26.
[127] See Federico Ferretti, The Never-Ending European Credit Data Mess, The European Consumer Organization (2017).
[128] See Law No. 25.326, section 21.
[129] See http://www.bcra.gov.ar/Noticias/Central_de_deudores_mas_info.asp.

led to several companies engaging in competition with existing credit scoring providers.

6.8 Allowing accounts for kids

A discussion also occurred regarding the possibility of opening bank accounts for kids. The Central Bank authorities wanted these accounts to be available to kids of any age, since this is a magnificent tool for financial education, for generating the habit of savings, while fostering financial inclusion and reducing cash use and therefore improving security.[130] But this faced the restrictions stated in the law. Argentina follows the Roman law civilist tradition, in which persons are awarded the capacity to act after a certain age (which is now set at 18 years). Non- adults are not capable under Argentine law, and, as such, they do not have the ability to execute contracts on their own. However, they can act through their legal representatives, which in most cases are their parents.

This means that parents were able to open accounts for their children. They could act as representatives, execute the corresponding agreements and open the account directly in the name of the kids. However, this implied a lot of bureaucracy, involving paperwork and a notary public. Moreover, Central Bank's internal counsels thought that the authorization for the opening of the account was not enough, and that the representatives had to act and authorize every single transaction. As it was, it was a lost cause.

Considering all that, in November, 2016, after a long debate, the Central Bank issued a rule that allowed to include a minor of any age as an authorized person in an adult's account.[131] It seemed rather simple and it followed after what already happened with additional cardholders of credit cards. In these new accounts, the minor could have a debit card in his name and be authorized to withdraw

[130] Other jurisdictions are also studying this possibility. However, most face the restrictions of the law or design devices that excessively limit the functionalities of the accounts. As an example, on March 27th, 2020, the government of Mexico issued a decree authorizing the opening of bank accounts to minors of 15 years of age and older. Such accounts are not allowed to receive deposits in cash, which seems reasonable given the Anti Money Laundering regulations. But the decree also limits electronic deposits exclusively to salaries and governmental aid. The latter forbids parents from transferring allowances to their children, which would have been extremely useful to digitalize payments and reduce cash. Since most children do not have salaries nor receive subsidies, the success of such a measure is doubtful.

[131] See Communication A 6103, issued on November 25th, 2016.

cash from ATMs, buy in stores and make transfers or payments through any electronic means (home-banking, ATMs, mobile app, etc.). The owner of the account, however, would be the father, mother or legal representative, who may decide a maximum daily limit of debits. Only one minor could be authorized per account. Finally, it was further established that once the minor turned 18 years old, the savings account would become a conventional account and the owner may be the minor, the representative or both.

The results of that decision had not much visible effect. So, to move things forward, the Central Bank pushed for another innovation. The reform of the Civil and Commercial Code of 2015 had introduced the category of "adolescents", which includes child from thirteen to eighteen years old[132], awarding them a broader capacity of action. Additionally, the Code stated that the contracts of small amounts which are customary for everyday life, are presumed to have been performed with the parents' approval[133]. These elements backed the original thesis that stated that if a transaction could be performed by kids in cash, it should also be allowed to be performed by electronic means. As simple as that. So, for example, if a minor could run errands for her mother, go to a grocery store and pay up in cash (a small-amount customary transaction of everyday life), that same transaction should be allowed to be performed with a debit card or a QR code.

Based on such concepts, the Central Bank issued a new rule in May, 2019. Banks were allowed to offer adolescents (as from 13 years of age)[134] a savings account directly, without the need to be accompanied by legal representatives for their opening. The account holder would be the minor, with no additional authorization needed. From these accounts, minors could invest in fixed-term deposits in pesos or in inflation adjusted units (called UVA, which will be explained later in section 10), which provided them a very useful long term saving instrument. Inflows to the accounts, both in cash or electronically, were limited to the equivalent of a minimum wage per month, in order to assure the

[132] See Código Civil y Comercial de la Nación, article 25.
[133] See Código Civil y Comercial de la Nación, article 684.
[134] *See* Civil and Commercial Code of Argentina, section 25.

"small-amount daily transaction" concept. The limit could be increased by the express authorization of the legal representatives of the minor and, in all cases, all restrictions would be automatically released on the date of the 18th birthday of the account holder[135].

6.9 Allowing banks to offer interest earning checking accounts

Regulating complex economic systems is very difficult. There are thousands of details and each one of them provides different incentives, that sometimes just cannot be known beforehand. Thus, forecasting the consequences of economic decisions sometimes is even more puzzling[136]. Sometimes, as explained in the introduction, regulators believe the interpretations of concentrated interest groups. And sometimes the economic analysis behind a decision is just wrong. It can happen, and it's not the end of the world. The important thing is to be able to detect the error, acknowledge it and correct it.

In 2010, the Central Bank forbade the payment of interest on checking accounts[137]. The bold move, unprecedented worldwide and presumably pushed by bank lobbyists, was intended to extend the term of banks liabilities. As the rule came into force, the only way in which businesses could obtain a return on the balances of their liquidity was through time deposits, which have a minimum term of 30 days. So, regulators believed, the average term of bank liabilities would be extended since clients were disincentivized to keep sight deposits. Of course, this did not happen. What actually happened was that banks obtained better returns for transactional deposits (which, as explained in section 3, represent most of Argentina's banking system liabilities). And, in order to provide more efficient liquidity administration for businesses, money market mutual funds flourished, concentrating competition among a few players.

In this case, the solution was simple. The 2010 rule had not worked and it had to be revoked. And so it was done[138].

[135] See Communication A 6700, issued on May 16th, 2019.
[136] On this topic, see Merton (1936)
[137] See Communication A 5068, issued on April, 19th, 2010.
[138] See Communication A 6148, issued on January 6th, 2017.

7 The payment system and the war on cash

The payments system has two big families: physical and electronic. Physical payments need bills, which have to be printed, distributed and destroyed, a task that is done exclusively by the Central Bank[139]. Moreover, regulations on transportation of bills and coins also depend, mostly, on the Central Bank, as explained in section 5.10 above. On this turf, the goal of the new regulations was to improve the structure of bill denominations in order to reduce the costs of printing, to ease the rules and mechanisms for transportation of bills, and to increase the availability of points of access to cash with the aim of reducing transaction costs and the amount of bills in circulation. In particular a market for bills was created which allowed banks to directly exchange bills among themselves.

Electronic payments are a little bit more complicated because of the number of players, and the diversity of ways of accessing it (see Carstens (2020) for a recent review and references). The whole setup can be better understood with the help of Figure 17.[140]

The system has a core that is the MEP ("Medio electronico de pagos", in English "electronic payments mecahanism"), where banks hold accounts and where the automated clearing house (ACH) clears payments across the system. The banks operate through two channels: branches and networks. Branches are self explanatory and receive most transactions directly into the core systems of the bank. The networks provide the interface with other mechanisms through which clients connect with banks. These network provide the support for transactions done through interfaces such as ATMs, homebanking, POS and so on. And these in turn are accessed from the client side also with a wealth of mechanisms, though mostly through some type of card. To understand the difference, consider that if a client walks into a bank and deposits money with the teller, it will be accounted directly through the banks software into the client's account. But if she deposits at an ATM, the transaction will go through the network that runs the ATM.

[139] Law No. 24.144, sections 14, 17 and 30.
[140] For more details, see Ríos Benso (2019)

The graph also shows the role of a more recent set of players called PSP ("proveedores de servicio de pagos", in English "payment service providers") which emerged in recent years, and became an alternative interface between clients. But for them to be part of the system, it needs access to the networks and to bank accounts, something that was not going to occur voluntarily. Most of the regulatory debates, had to do with granting permissions and defining the conditions under which these new players could operate.

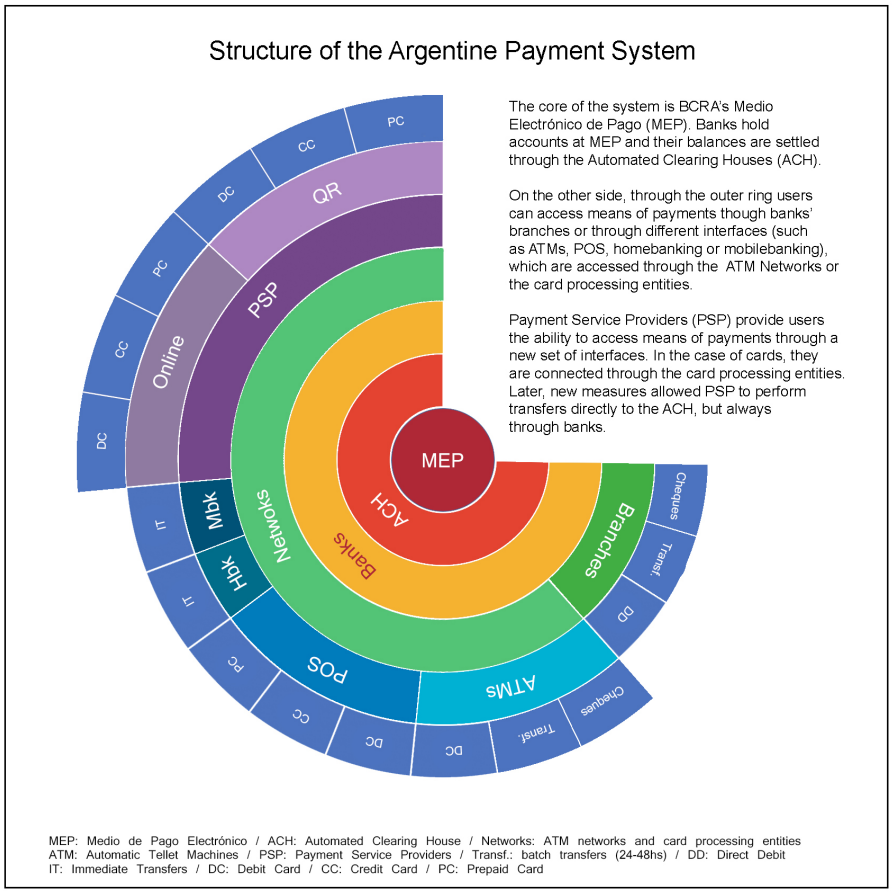

Figure 17: The Structure of the Payments system

By 2015, Argentina was far behind the region on infrastructure, access and use of electronic pay-

ments[141]. Authorities had identified two basic problems: the lack of competition in the credit card market, which had deterred entry, and the fact that over the years the national and state government had attached tax withholdings to all electronic transactions. While this was an efficient tax collection mechanism, and for firms represented just the financial cost of anticipating taxes, it generated a general resistance to moving to electronic payments. When a shop carried out some of its transactions in the informal economy, whenever the share of formal transactions raised above its expected limit it either hid the electronic point of sales, argued it was not working, or provided discounts for paying in cash. At any rate, this created a headwind against change, that makes the progress of the following years more remarkable.

The main vehicles of the electronic payments were debit cards, credit cards and ATMs, as show in Figure 18. Throughout the reform process transactions continued to grow, in spite of increased competition from other sources.

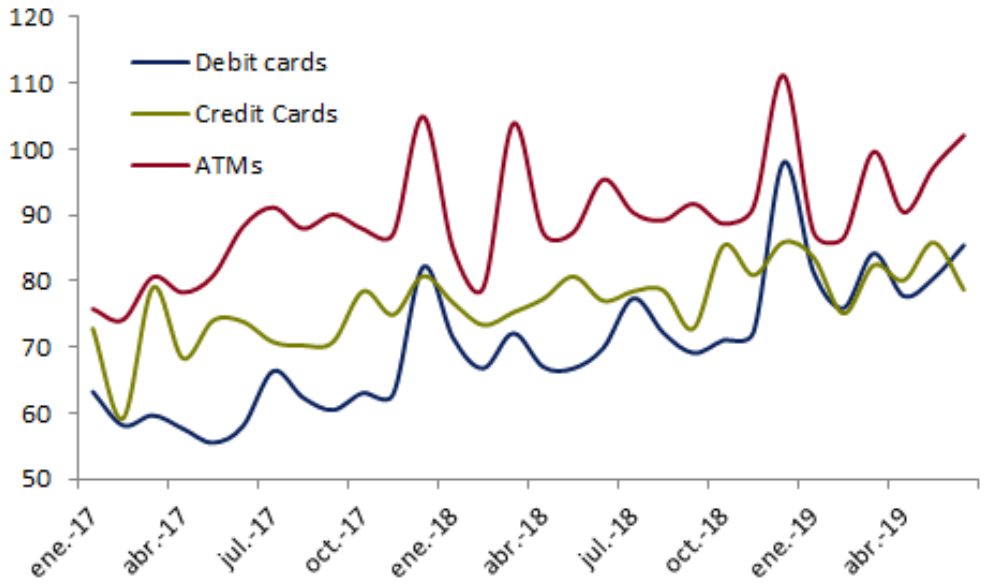

Figure 18: Traditional Payments (# in Mn)

[141] See Central Bank report, supra note [69], and The National Financial Inclusion Strategy, approved by Resolution No. 17/2019 of the Secretary of Finance at http://servicios.infoleg.gob.ar/infolegInternet/anexos/325000-329999/327485/res17.pdf.

The increasing role of PSP can be seen in Figure 19 which shows how they replaced other sources of payment mechanisms such as checks (which were increasingly restricting its use to that of a credit instrument).

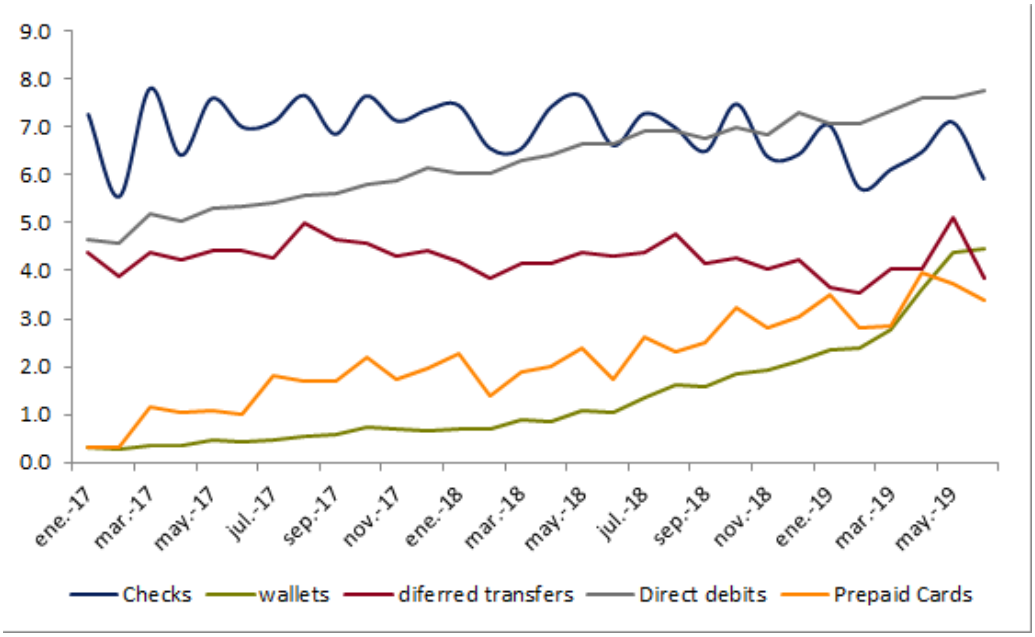

Figure 19: New payments (# in Mn)

In this section, we will explain the different measures taken in the payments sector. We will split the discussion in two. The first subsection will refer to the electronic payments system and the second to the physical bills payment system. We will defer to the next section the situation of the credit card market which requires a different analysis of market dynamics.

7.1 The electronic payments system

7.1.1 Access rules

In payments, as in other aspects, the Central Bank is the bank of banks. Thus, it holds accounts in the name of banks, which are called MEP accounts (the acronym stands for *Medio Electronico de Pago*). Their balances are used to comply with liquidity requirements and to transfer money to and from

the Central Bank (as, for example, it happens when banks invest in Central Bank‘s debt). However, when banks need to transfer money from one another, they have to use the services of the Automated Clearing House. The details of those transfers and their effect in retail payments is described in the next section. The important thing to remember at this point is that, as banks are the only players allowed to hold accounts at the Central Bank, any participant of the payment system has to go through banks in order to initiate, receive or settle any kind of payments.

In recent times, prior to 2015, the Federal Pension Agency had obtained an account at the Central Bank in order to settle payments to millions of beneficiaries faster, more efficiently and, more importantly, without the intervention of any bank. As this had worked reasonably well, a debate arose over the convenience to allow more players in the payment system to hold accounts at the Central Bank.

There were two main issues to consider. First, the risks and their possible mitigants. As MEP is a closed system in which all the participants are heavily regulated institutions, it allows a huge flexibility in terms of prudential measures. Since banks hold sufficient liquidity (at least up to the regulatory level), there is a very high level of certainty that, if any transaction has to be, for any reason, reversed, there would be enough money in the other account to allow it. If new players were to be introduced to this system, the reasonable consequence would be to establish some sort of licensing process with a set of requirements in terms of guarantees, liquidity, minimum capital and security measures. Those requirements would be specially burdensome for payment service providers, since they could not be compensated through other activities as banks do (the licensing and liquidity requirements that allow banks to operate freely in the payment system also allow them to perform other banking activities that partially compensate their cost). As the new electronic payment system was only starting to develop, it was not clear if any participant could (or would be willing to) jump through those hoops. Moreover, nobody had asked for it, probably because of the other issue, to which we now turn.

The second issue was the relevance of the benefits to be obtained by operating as a stand alone in the MEP. The Argentine payment system has around 70 banks. Some are state owned (federal,

provincial or municipal), and others are private. There are large retail banks and small niche banks that specialize only in certain particular activities. All of them have a MEP account and comply with the requirements to operate with the Automated Clearing Houses. Moreover, over sixty of them already operate with at least one ATM network and a card processing entity (*i.e.* are already wired to perform retail payments). It was reasonable to think that, if a payment system provider wanted to initiate, receive or settle payments, it would find a bank willing to provide the service at a reasonable cost (banks have the incentive to do so, since they have sunk costs and this would provide a way to obtain some additional revenues). It was more important to foster competition than to open the access to MEP accounts.

This had two advantages, first if a process for authorization was to be implemented, it would mean that the world of payment service providers would fall under the regulation of the Central Bank, which is something the authorities wanted to avoid (see Section 9 below). A new supervisory group and techniques would have to be developed, the first and no-return path to excessive regulation down the road. Second, using the banks as a stepping stone meant that their liquidity buffers were at stake, and this in turn provided the incentives for banks to appropriately select sound project to come into the payment system. The drawback, of course, is that banks would block entry thus thwarting an increase in competition. The bet was that the number of players was so large that there would be sufficiently small banks that would benefit from breaking any collusive agreement.

At any rate, the Central Bank decided this was the path to take, at least as a first step. The results were promising: certain banks specialized in this new business, granting access to new players in the payment system and allowing for a huge amount of innovation without needing additional regulation.

7.1.2 Unlimited 24/7 money transfers

Already by 2015, almost 80% of the Argentine adult population had a bank account[142]. This was mainly because all wages, public and private, and practically all federal pensions and social plans were (and still are) paid through bank accounts. However, when asked if they had a bank account, 50% of the adult population responded negatively[143]. A huge amount of people believed that what they had was a cash card, which only allowed them to withdraw cash from an ATM. And that is exactly what they did: they withdrew all their funds on the first three days of the month[144]. It was a shame. Huge efforts had been done in order to open an enormous number of accounts and provide them an interconnection infrastructure, which had been constructed and developed and was exceedingly underused[145].

The new authorities understood that transfers through those accounts could represent a pillar of the new payment system. Electronic transfers had to be simple, easy to use and available at all times. They had to build up to be a new payment system that could be used as an alternative to cash and to cards. So the task was to break a cultural barrier towards using bank transfers as opposed to cash.

As we briefly mentioned at the beginning of this section, since 1997, the transfer system in Argentina, is built over the MEP, administered by the Central Bank. All Argentine banks, the automated

[142] [Data in the Financial Inclusion report of the Central Bank, 2019.

[143] The World Bank research stated that 47.9% of the adult population had a bank account in Argentina by 2017 (see https://databank.worldbank.org). However, later that same year, when the Central Bank authorities conducted a specific research by crossing its own database of registered accounts with the database of the Persons Registry confirmed that approximately 80% of the adult population had at least one bank account. We presume that the difference relies on the fact that a huge amount of bank accounts are opened by government agencies in order to pay public subsidies through ATM cards, and that beneficiaries are not aware that they have a bank account opened in their names.

[144] The average aggregate term for those accounts was of three days.

[145] At the time, much was mentioned about Kenya, the star of electronic payments, where an electronic payment system that ran on GSM technology and allowed payments through SMS had been developed. It had been a great success and similar methods had been implemented in other countries of the region, as in Paraguay. However, those systems had been implemented without any prior financial infrastructure. They took advantage of the cell phone network and developed an entirely new payment system that did not involve bank accounts, nor banks. For more details, see Lal et al. (2016). In Argentina, the situation was completely different. The infrastructure already existed and was underused.

clearing houses[146] and other entities (such as the Argentine pension agency) hold accounts on the Central Bank's MEP. The system provides direct bank-to-Central Bank transfers, and bank-to-bank transfers through compensations mediated by the automated clearing houses[147]. Since MEP is publicly administered, it does not evolve as fast as technologies require. Moreover, for many years prior to 2015, it had not evolved at all. Any new functionality that was added to the system -as for example, instant payments in 2012- was made available through patches and add-ons provided by private entities that connected to the MEP through the clearing houses[148]. In 2015, the new authorities understood that, in order to catch up with the evolution of electronic payments all over the world, some technologies would have to be updated. Clearing houses, for example, had to start working online (they were using a batch system). But as the adoption of these changes would take time, some intermediate measures had to be taken in order to start moving forward.

The first step in that direction was Communication "A" 5927, published on March 21st, 2016. The Central Bank established that, as from the 1st of April of 2016, online immediate money transfers had to be available during the 24 hours of the day, every day of the week.

Additionally, banks could not impose a limit amount for transfers lower than 100,000 pesos per day, per account. This measure, adopted in the first months of the new administration, was essential for the development that came later on[149]. By that time, online transfers were become a payment mechanism as powerful as the other main sources of transactions.

[146] The automated clearing houses connected to the MEP are Compensadora Electrónica SA (COELSA) and Interbanking SA.

[147] The settlement of the clearing houses is made via MEP through the participant's accounts in the BCRA. The balances are settled by the clearing houses and the participants. Banks with debit balances transfer funds to the accounts of the clearing houses and these, in turn, transfer the funds to banks with net credit positions.

[148] Since MEP is not online, instant payments had to be provided by the ATM networks -Banelco and Link- through a patch that creates a mask of instant payments during the day and only impacts the banks core system at 8 p.m. every night.

[149] Such amount was raised to 250,000 pesos by Communication A 6679, issued on April 17th, 2019.

7.1.3 Allowing mobile transfers

One of the central pillars of the new administration was to promote the use of mobile devices for financial transactions[150]. Yet, even when transfers had been made available at all times, mobile transfers did not grow. At some point, authorities consulted an officer of a private company that provided payments services for banks. They wanted to know why mobile transfers had not started. "Well", answered the man, "it's because they are forbidden".

In effect, Communication A 5374, which established the technical requirements for every data processing transaction of banks, had not included "Mobile banking" among the options for immediate transactions[151]. This is another example of hyperregulation of technology and how it becomes excessive regulation very quickly when technologies change.

The issue was solved through Communication A 6017, issued in July 2016. Immediate mobile transfers were made available. Soon enough, they started to grow exponentially as shown in Figure 20.

[150] See Opening remarks of Federico Sturzenegger as chairman of the Central Bank of Argentina at http://www.bcra.gov.ar/Noticias/Discurso_inicio_lineamientos_gestion.asp.

[151] See Communication A 5374, issued on December 12th, 2012, section 6.5.

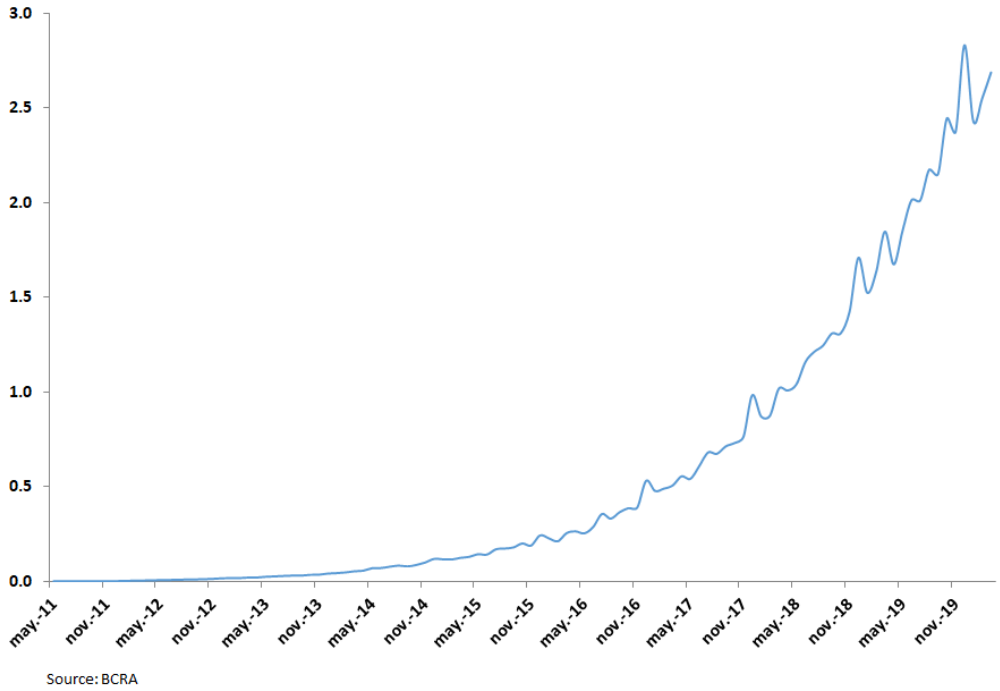

Figure 20: Number of transactions with MB (# in Mn)

7.1.4 Giving a name (*Alias*) to all accounts

The following step was to simplify the interface for immediate transfers. Authorities found that the identification of accounts made bank transfers very difficult to accomplish. Bank accounts are identified through a 22-digit code called Uniform Banking Key (CBU, for its acronym in Spanish). Although the system was very efficient for corporate transfers, which are often made in offices where people have the CBU at hand, it was very unfriendly for mobile transfers. Moreover, ATM transfers require a person to enter the 22 digits in less than 30 seconds (almost impossible without lots of practice!). Most people do not know the CBU and, even if they do, they do not remember it by heart. So, authorities thought that a good solution would be to create a mask that could route transfers using a unique 20-digit alphanumeric key that people could create by themselves, as it happens with emails or social network accounts. The key was called ALIAS.

ALIAS was first created by Communication A 6044 in August 2016. It can be used to order immediate transfers on all platforms. It also offers an interesting feature that promotes portability. An ALIAS can be transferred from one account to another by the holder. Thus, if a person changes banks, she could maintain the ALIAS and avoid having to update her collection instructions to her clients and providers.

Originally, ALIAS was an option. An account would not have an ALIAS if the account holder did not create one, and consistent with the default inertia literature, it did not expand as authorities had thought it could. A little nudge was needed. As explained on section 5.9 above, most people tend to stick to their default options. So, authorities changed the default. As from June 1st, 2017, every bank account would have an ALIAS by default, that could be changed by the holder of the account at any time. The assigned ALIASes would be a random combination of three short words with clear and distinctive spelling in Spanish[152], such as CASA.ARBOL.BANCO.

By the end of 2019, the use of ALIAS had become extremely popular. Currently, there are over 100 million ALIAS assigned and, during the month of may 2020, it had been used 3,700,000 times.

7.1.5 Setting an account-to-account payment system (PEI)

Following similar examples in Canada and Australia, the Central Bank of Argentina created, in 2016, a local transfer system to be used for retail commercial transactions, ie. a system that allows a commercial transaction to be debited and credited from two different accounts.

Both Canada and Australia have local payment systems based on bank transfers which in turn are initiated via cards. The card sends the order to debit a specific bank account and the reader of the card indicates the account to be credited. (Notice that this transaction does not require intervention by card networks). The Canadian system is called Interac, the Australian is EFTPOS. Later, in 2017, India launched a very similar system called UPI. It has been quite a success in the last three years.

[152] See Communication A 6214, issued on April 3rd, 2017.

Transactions based on UPI already represent one quarter of India's payment system volume and are, by far, the most used type of transaction. See Figure 21 for a perusal of the quick expansion in India.

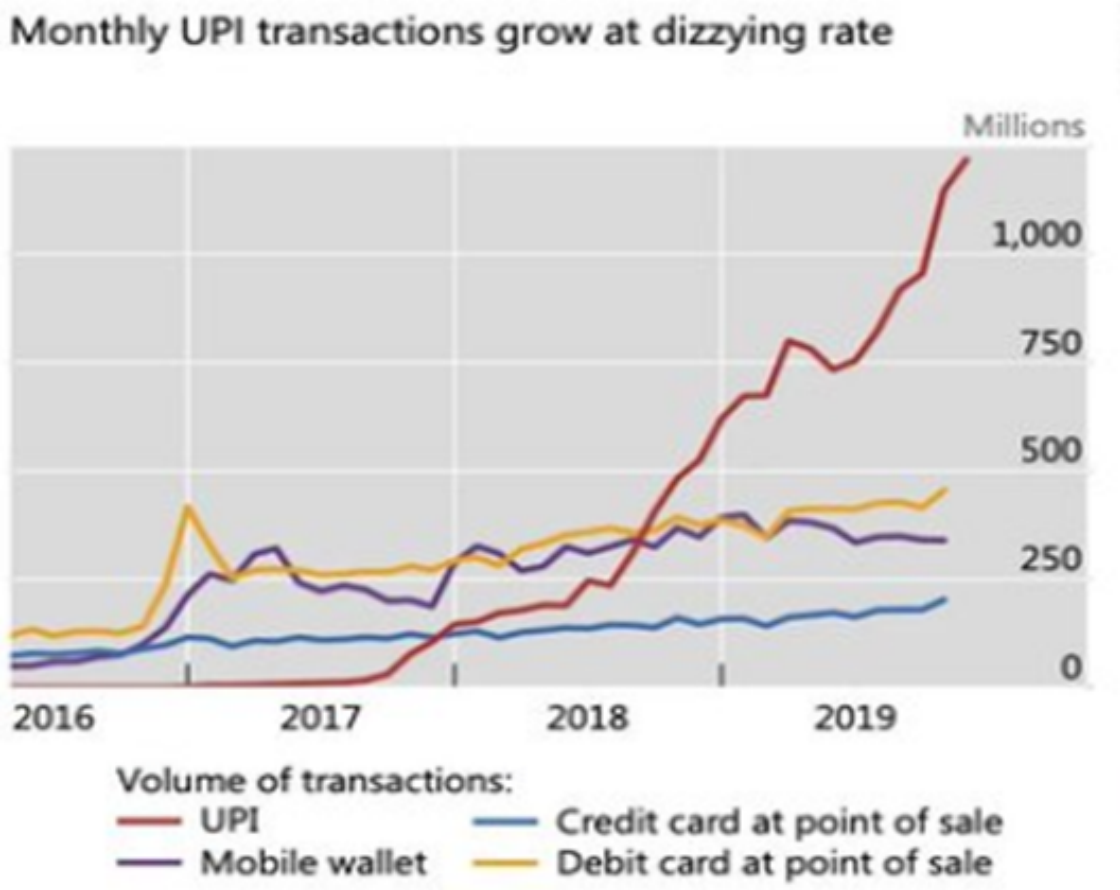

Figure 21: UPI India

In Argentina it was called Plataforma de Pagos Móviles (PPM). The system would provide customers the ability to generate a direct transfer from their bank account to the account of the merchant. The available interfaces would be (i) electronic wallets -for mobile payments-; (ii) online payments -for eCommerce-; and (iii) transfer cards -for in store retail transactions-[153]. Payments made through this system would be called Pagos Electrónicos Inmediatos (PEI). The transactions would be conducted through the local networks that had provided in the past the solution for immediate transfers.

[153] See Communication A 5982, issued on June 3rd, 2016.

It was the next best solution, until the ACH was able to process online transactions.

The rule stated that banks had to offer their clients the ability to collect payments through these new methods. So, merchants could go to any bank and obtain a cheap and simple solution to electronically collect payments (both when the client was physically present or when he connected remotely), bypassing the way in which it was done until then, through Visa or Mastercard. As there are around 70 banks in Argentina, this was a good way to promote competition in the acquiring market as any bank could provide this "transactions' technology. (As we will see in section 8 below, the lack of incentives for acquiring was one of the main problem with the card system). For retail customers, it would be almost imperceptible.

Initially, the most disruptive feature was the transfer card. The new rule stated that all banks that had to offer their clients an access card to their bank accounts that could be used to initiate electronic transfers[154]. To a distracted citizen, this sounds very much like a debit card. In fact, banks ended up complying with the rule through the debit cards they had already distributed to their clients. The difference, imperceptible to the bank customer, is essential to merchants and the participants of the payment system. Debit cards are a part of an international private payment system that is ruled by the provisions established by the credit card brands, such as VISA and Mastercard. They require licenses to issue cards and to acquire merchants. We will explain the details of the credit card system in section 8 below, but, for the purpose of this section, the important thing to remember is that the debit card system is expensive. Financial inclusion and the expansion of electronic payments needed a less costly system. The "new" card for direct transfers was sort of a low-cost debit card. To make this viable, non essential features were discarded, thus PEI cards work only for local payments and have lower transfer limits that allow for a cheaper fraud prevention apparel. To merchants, they provide true instant payment (debit cards usually take 48 hours) and with less and more competitive

[154] See Communication A 5982, Section 2.

intermediaries they have lower fees[155].

This new feature was initially thought for long tail merchants, but was enthusiastically pursued by large retail stores. An unexpected success was the adoption of PEI cards by cash collection agencies (in Argentina, most utilities are paid in cash in small stores). As cash transportation and storage became more expensive, most banks had started to collect "deposit fees" to their clients. Thus, cash collection agencies had suffered a steep increase in their costs, forcing them to pursue new ways to provide collection services in order to maintain profitability. Agencies had observed that a large portion of their clients first went to an ATM to get cash in order to go to the agency to pay utilities[156]. So, initially, they got hold of some ATMs and installed them inside their stores. Clients went into the agency, stood in line to get cash from the ATM, and then stood in line to pay utilities with that same cash. Then, the agency's clerks would refill the ATMs (as explained on section 5.3 this local refilling of the ATMs had been authorized in 2017 by Communication A 6182). It was an inefficient fountain of cash, but it was still cheaper than pure cash transactions. In 2017, the cost efficiency of PEI cards allowed them to install PINPAD card readers on their counters and start collecting payments electronically. Cash handling was no longer an unavoidable cost. By the end of 2019, PEI cards represented [20%] of utilities collections at agencies.

But, as in any new payment scheme, there were some glitches and bugs that were discovered after its initial use. One good example was the information included on the customer's account statements. As PEI payments were made through the local transfer system, the customer statement informed the date of the transaction, the amount, and that it was a "bank transfer". This led to confusion and caused some complaints both with banks and retail stores, because customers did not recognize the transactions (to what they knew, they had not made a bank transfer and did not understand why the

[155] Initially, PEI transactions had no interchange fees and had a merchant discount of 0.6% when debit card transactions were 1.5%. The interchange fee of PEI was later raised to 0.3% in order to smooth bank's resistance, as explained later on.

[156] As explained on section 6.1 above, in Argentina, 80% of the adult population holds a debit card.

statement said so). Another problem were the chargebacks. As PEI transactions were immediate and money instantly flew instantly from one account to the other, in cases in which there was any problem with the purchase (because of error, fraud or any other reason), the reversal of the transactions was more complicated than in the card system[157]. Most of these issues were fixed through Communication A 6669, issued on April, 2019.

At any rate, in practice, PEI had the potential to virtually collapse the income of banks from debit and credit card transaction to close to 1/10th. Thus, the change met silent resistance. Banks would come to the meetings and allegedly support the system, but then would make them mostly unavailable to their clients, particularly merchants. This is not surprising, so the system evolved in an increasingly bitter process between banks and the Central Bank. Eventually, the Central Bank authorized an interchange of .3% (which compared to 1.3% for debit cards and 2.8% for credit cards)[158] to lower resistance.

Even after the change, the loss of income was still very steep. It can be best shown by an example of the extent to which banks were willing to go to resist PEI. Initially, the tax collection agency decided not to impose tax prepayments on PEI transactions in order to promote the digitization of payments, an issue critical in Argentina because all formal payments are typically subject to a number of pre-payment of taxes. So banks had the option to migrate to a system where no taxes were imposed (which potentially could dramatically increase the use of electronic payments) or to lobby to impose taxes on PEI, in an attempt to limit the growth of this new channel and protect the traditional market of debit and credit transactions. For this purpose, they hired local lobbyists, finally moving the government into imposing tax pre payments on PEI[159].

[157] On card transactions, there are specific rules for chargebacks and this is in part the reason transactions are paid to merchants 48 hours, for debit cards, and 10 business days, for credit cards, after the purchase takes place.

[158] As will be explained in detail in section [*], the different measures that enhanced competition on the card market, including the creation of PEI, resulted in the lowering of interchange fees to 0.6% for debit cards and 1.3% for credit cards, as established on Communication A 6212. This reduction translated to a lower merchant discount.

[159] See for example Fiel (2019)

In spite of all the resistance PEI started to grow (see also 13), pushed by supermarkets and collection agencies. By June 2019 less than three years after its creation it was running close to 4 million operations, which compared with 8 million transactions done between firms, or the 11 million transactions done by individuals. These transactions however, were mostly new transactions (that previously were done in cash) and substitution of former transactions in debit cards. Figure 22 shows these shares.

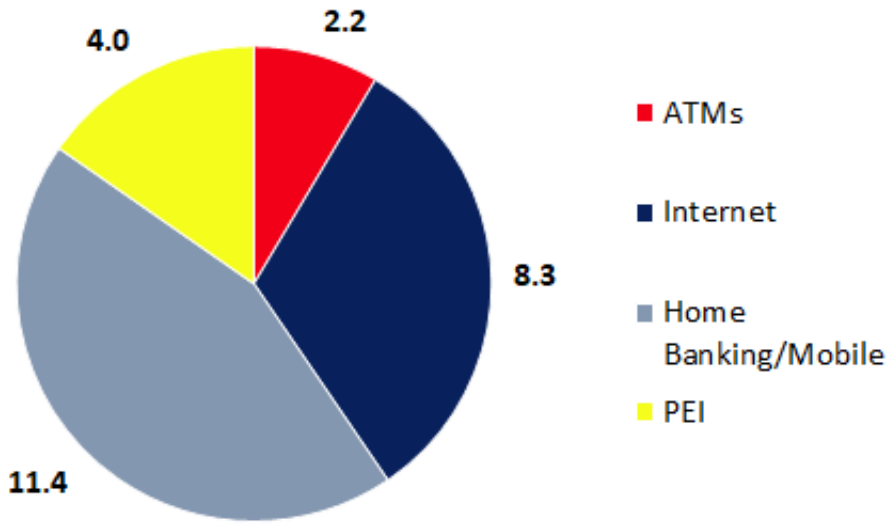

Figure 22: Online transfers channel (# in Mn)

7.1.6 Allowing authorization to debit accounts (DEBIN)

DEBIN was the first project that required the ACH to go online. Up to that point, all ACH transactions were batch based, which means that bank accounts compensated only once or twice a day. Retail transactions were mounted by the ATM networks as a mask over the ACH system and simulated

immediateness through their user interfaces, with large guarantees at the back end[160].

The idea to deploy DEBIN as the first true online ACH transactional product originally came from the Innovation Hub at the Central Bank. Dialogue and interaction with innovators posed the question, but only if technology evolved (and for that to happen, the Central Bank had to push for it), the new regulation could see that light. Sometimes regulators need to take action in order to move forward.

DEBIN (which stands for "*Débito Inmediato*") is an online payment scheme with a digital interface that allows financial institutions and new players in the payment industry to debit funds from clients' bank accounts, with their prior digital authorization (which can be granted individually for spot transactions of generally for recurrent ones). Unlike other means of payment, DEBIN is an immediate online transfer in which the collector initiates the process and the payer's interaction is only to accept it[161]. It can be thought of as a spin off from the Open Banking philosophy. The premise behind Open Banking is to enable retail customers and small businesses to share their banking information securely with different financial service providers. The idea later developed into open transactionality.[162] DEBIN falls within this second category.

Initially, it was designed to make payments, but it actually allows a digital and remote connection of a person's bank account to any service provider for any purpose. It is a feature that is included in most Open Banking initiatives and is designed to give more control of their accounts to bank clients and, thus, multiply its uses. Once bank clients have complete control over their accounts and its functionalities, the possibilities are endless. As explained in many sections of this paper, banks had little incentive to provide clients with an efficient, digital, easy-to-use interface to use the money

[160] If Richard, who has an account at Bank A, sends money to Tom's account at Bank B, the ATM networks will instantly show the debit on Richard's homebanking and the credit on Tom's. But Bank A and Bank B would only compensate their respective accounts at the Central Bank at the end of the day (that is what "batch" means). In the meantime, Bank A has to maintain a guarantee available to reduce Bank B's flight risk (Tom already "has" the money, but his bank does not). Such guarantees are calculated as established on Communication A 4247 (issued on November 26th, 2004) and have been very useful for a long time, but are very inefficient and if the system goes online are no longer needed.

[161] DEBIN was created by Communication A 6099, issued on November 14th, 2016.

[162] See https://www.openbanking.org.uk/customers/what-is-open-banking/

deposited on their accounts. However, if the *status quo* continued, cash would remain the rule in payments.

A previous scheme called *"Débito Directo"*, which still functions, provides a similar debit service in an analog form. A bank client can sign a piece of paper authorizing any commercial provider to periodically debit funds from their accounts[163]. It is still broadly used for recurrent payments, such as utility bills, tax payments, private health care, insurance premiums or club membership fees, among many others. However, its analog form prevents it from growing outside of its current scope. *Débito Directo* payments have a 48 hours delay, cannot be set up remotely and require a special agreement between the collector and the bank that initiates the debits. So, the scheme cannot be used at point of sale nor for online commerce, and it's very hard to scale.

DEBIN was conceived as a digital upgrade of *Débito Directo*, available to all. Hence, the rule obliges banks to include a "DEBIN Payments" menu on their home banking and mobile platforms. Through such a menu, the user can generate payment requests (if a collector) and also view the list of requests received to accept or reject them (if a payer). It followed the fundamentals of open banking precedents of other jurisdictions, such as the Payment Service Directive (PSD2) of the European Union[164]. Perhaps the best way to see the utility of DEBIN is to see the analogy with credit card usage. Many times we register our credit card with a provider, and then occasionally do purchases. When the purchase occurs, the seller has already authorization to charge the credit card. What has happened is that the customer gave a "DEBIN" to the credit card, an authorization to use it. Of course, this authorization is built on the trust with the provider (I may allow Paypal to access my credit card, but be reluctant to input my credit card number in an unspecified webpage), but within that circle of trust it eases transaction considerably.

[163] The *débito directo* feature exists from the very beginning of the payment system created in 1997. See Communication A 2559, issued on July 4th, 1997. Currently, *débito directo* is ruled by Chapter V of the SINAP Section of the restatements of the BCRA.

[164] PSD2 can be found at https://ec.europa.eu/info/law/payment-services-psd-2-directive-eu-2015-2366_en

DEBIN admits payments in pesos or dollars, between accounts of the same currency. Unlike common transfers, the other party must not be previously incorporated and it is enough to ask for their account name (ALIAS or CBU), without adding other information such as the federal ID or the tax identification key. It also allows scheduling, for recurring charges, the automatic acceptance of future orders made from certain accounts, with fixed dates and caps.

The Central Bank designated the Low Value ACH (COELSA), which is under its direct regulation, as administrator of these operations. This institutional design serves as a guarantee for competition within the industry.

Regrettably, the first iteration of DEBIN did not have much impact. As what happened with PEI, banks also resisted DEBIN for its potential to reduce transactional fees but, moreover, for its potential to boost competition. A new regulation was issued a few months later, clarifying some points and fixing some bugs, but it followed the same fate[165].

After much analysis, authorities concluded that, in order to work, DEBIN rules had to be assimilated as much as possible to those of *Débito Directo*. The key issue was the interaction with the bank's client. More specifically, the process to obtain the client's authorization. DEBIN was originally designed with a double authorization: first the client had to sign up for the debit on the commercial provider (say, Netflix) and then it had to confirm its authorization on the "DEBIN Payment" menu on the bank's platforms[166].

Client's authorization on *Débito Directo* is executed on paper, only once. There is no confirmation needed. But, since it has very little control, the rules establish that after the first debit, the receiving entity may reverse it, at the customer's request, within the following 30 days. If the first debit order is not reversed within said term, this and subsequent debits will be considered to have been duly

[165] See Communication A 6285, issued on July 24th, 2017.

[166] The exact same issue arises out of every similar open banking initiative. See Brazil's Resolução Conjunta No. 1, issued by Banco Central do Brasil, on May 4th, 2020, and PSD2 from the EU.

accepted by the debited clients[167]. This transparent and easy procedure was not replicated in the initial rules of DEBIN, where the complicated digital double acceptance procedure that was set up made it very difficult to use.

This issue was resolved in a later regulation[168]. This new iteration, called DEBIN 3, only requires the customer to sign up to the debit for the recurring payment of a specific product or service on a digital and remote form, without having to confirm the authorization on their banks. The same *Débito Directo* 30-day reversion rule was applied and certain transparency rules were included in order to improve customer experience. It also incorporated a cap on the internal fees charged by banks to accept debits in order to prevent a price collusion from debited banks, which could block the initiative. Finally, new risk policies were adopted, so that fraud issues could be identified and resolved. These mechanisms provided security and access to a wide range of online debit and credit operations that contribute to a more efficient payment system. The success of Debin is still to be established, but almost unexpectedly it opened up an amazing opportunity. This this we now turn.

7.1.7 Making the CD market perfectly competitive

One of the most difficult issues in banking competition is how to increase competition in bank products when clients are sticky. Debin provides a unique opportunity to create a competitive market in banking products.

Thus, almost simultaneously to DEBIN 3, the Central Bank issued Communication A 6667[169]. In order to stimulate savings in pesos, the Central Bank relaxed some rules that govern the constitution of time deposits and established the guidelines that must be implemented for web placements. Through this, it offered the possibility to the clients of a financial entity to make a time deposit in another financial entity that offered better conditions, without having to open a new account. This mechanism

[167] See Section 3.1.2.i. of the SINAP Section of the Central Bank restatements.
[168] See Communication A 6698, issued on May 10th, 2019.
[169] See Communication A 6667, issued on April 5th, 2019.

used the DEBIN platform to allow clients to use their money deposited in a certain bank to make a time deposit on another bank. The "receiving" bank would sign up new time deposit clients on a digital platform, and later perform the debit on the client's account on the "debited" bank and the respective credit at the end of the term. This was a specific and creative use case for DEBIN that had a huge beneficial effect on competition.

7.1.8 Developing an Interoperable Quick Response (QR) Code

At the end of 2017, QR payments were a trending topic in every digital payment forum. They had grown at surprising rates and had rapidly become part of everyday life in China and India. Authorities quickly understood that the features of QR payments were specially suitable for the Argentine payment system. As explained above, one of the main problems for the digitization of payments in Argentina was the availability of commercial stores that accepted digital payments. Card payments (remember, they were the only digital payment method available in Argentina as of 2015) required merchants to rent a POS gadget, which implied fixed costs, and pay a high merchant discount for every transaction. It is true the the Central Bank had authorized M-Pos (for mobile point of sales) which could be attached to a cell phone with a small hardware device called dongle, this had reduced costs sensibly, but while convenient for on the road sellers it was not quick enough for typical retail stores. Additionally, the economic incentives to incorporate new merchants were very low, as will be explained in section 8.

QR payments provide a simple and cheap way to incorporate new merchants to the system. But the most important thing is that they have no opportunity cost. A merchant can start to accept QR payments in a few seconds, by signing up digitally to any provider and printing the code.

The experiences in China had been within the framework of closed networks. Both merchant and payer had to sign up to the same provider in order to transact. So merchants that wanted to attract more payers had to sign up to multiple providers, thus printing more than one code. It was common

to see stores in China with two, three or four QR codes on the counter. Closed networks compete with each other in order to achieve the network effect, and even though such competition promotes efficiency, it can slow down the growth of the system. Open interoperable networks would provide for a quicker expansion and adoption. However, they would not naturally happen without some kind of regulation.

Having that experience in mind and with the intention to boost the expansion of an interoperable QR payment system, the Innovation Hub at the Central Bank proposed the adoption of an interoperable QR code standard. Shortly after, the Central Bank issued a rule accordingly adopting the standard of EMVA QR Code Specification for Payment Systems (EMV QRCPS) Version 1.0.[170] QR codes were adopted by a large online retailer (Mercado Libre) and by late 2019 accounted already for 2% of all card transactions as shown in Figure 23.

[170] See Communication A 6425, issued on January 10th, 2018. It was amended by Communication A 6668, issued on April 9th, 2019, in order to incorporate into the QR code the information of the new CVU created to identify virtual accounts.

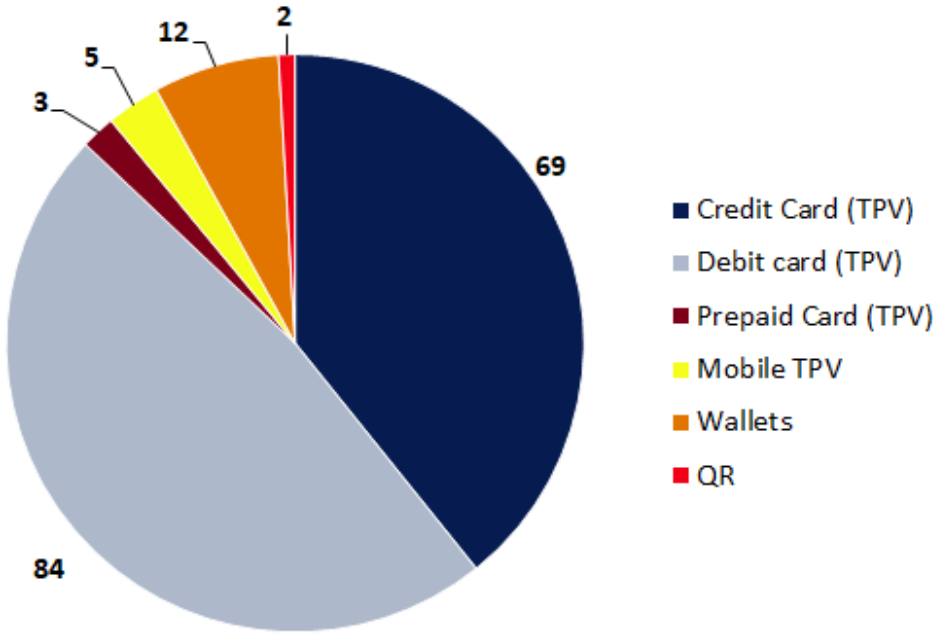

Figure 23: Cards channel (# in Mn)

7.1.9 Solving the high amount transfers issue

In Argentina, regular real estate transactions, such as the purchase of a family house or apartment, are made in cash. The standard procedure involves a notary public and a bag full of bills. Both parties meet up in an agreed upon meeting room, count the bills and sign the public deed[171]. The seller enters empty handed and leaves with the bag. The buyer leaves with a public deed and a lot less weight. As shocking as it sounds, this happens many times a day on a regular business day.

And it happened primarily because all real estate transactions, from the smallest to biggest project finance, are denominated in US dollars. Common people do not have access to sophisticated account management, as it is the case for companies that pursue project finance, and, as a consequence, they

[171] Argentina still maintains the latin notary tradition, and real estate transfers require the registration of a public deed before the Real Estate Registry of each jurisdiction. The public deed needs to be drafted by and signed before a licensed notary public.

did not have the ability to transfer US dollars instantly (such transfers had delays of up to 48 hours). As explained above, if the seller does not receive the money, she will not sign the deed and the transaction would fail.

As can be imagined, this procedure has lots of disadvantages. First of all, it is very dangerous. For common sense safety reasons, it is not recommended to run around with bags full of cash. Second, it is very expensive. Usually the parties meet in the buyer's bank, but if they do not have the same bank, one or both parties have to pay for the delivery arrangements (money transportation, as explained in section 5.10, has to be made on armoured trucks, which are very expensive). Moreover, the buyer's bank has to provide the bills, which in turn have to be imported from the Federal Reserve by an authorized agent. And third, cash payments have very low traceability and are frowned upon by AML regulators and tax authorities.

As explained above in section 7.1.2, as from April, 2016, instant transfers had to be available during the 24 hours of the day, every day of the week. Once that was achieved, the first reaction of Central Bank authorities was to allow the electronic transfer of any amount, both in pesos and in US dollars. But security experts advised against it. Even when normal transactions had sufficient security precautions, if the amount of the transfers were unlimited, the incentives to hack the system would be bigger and security measures may not suffice.

So, for higher amounts, the solution was to preset the details of the transaction using more robust security requirements. The Central Bank issued a rule which stated that banks had to provide its clients the ability to schedule high amount transactions, which can take place only on business days from 9 a.m. to 6 p.m[172]. Once registered, the transfer can be performed and the amounts are credited instantly. Even when the whole procedure may take more than a day (some banks, for security reasons, take up to two days to pre register high amount money transfers) it solves the issue of real estate purchases and other high value transactions, since at closing the money is credited instantly and the

[172] See Communication A 6235, issued on May 4th, 2017.

papers, then, can be signed. Moreover, those types of transactions are usually scheduled days in advance, giving enough time to pre register a money transfer. It has worked very well and reduced costs for both parties and their banks.

7.2 The physical bills payment system

Traditionally payment systems operate with cash. While more and more transactions are moved to electronic channels, a large fraction of transactions will remain in cash. This requires streamlining and reducing the costs of operating the system. In Section 5.10 above we already discussed technological changes that allowed money transportation to be done more efficiently. Here we will discuss the issue of bill denominations, and the circulation of bills within the economy.

7.2.1 Optimal bill denominations

There is an ample literature on the optimal denomination of currency. Two important principles for bill denomination are the “minimum effort approach”, which states that denomination should be chosen in a way to allow payments to be made using the minimum amount of bills; and the problem of Bachet, which assimilates the choice of denominations to that of choosing the optimal amounts of weights in a two plated scale (see, for example, Hove (2001). Again what would be the optimal weights needed to reach any value? The first approach suggests denominations in the power of 2, the second approach in the power of 3. This latter approach seems to find validity in the data[173]. This optimal sequence of bills is dubbed the "monetary cone".

Another issue has to do with the updating of the denominations in a high inflation economy. In Argentina during the period 2011-2015 the value of the highest denomination bill fell steadily. See figure 24, that shows its real value.

This evolution would have been to the delight of those who argue that high denomination bills are

[173] It is surprising that bills in practice seem to follow the Bachet problem solution, because the choice of scales allows only one weight per value, something that clearly does not occur with bills.

mostly used for illegal activities (Rogoff, 2017). For Argentina this argument was made by Sturzenegger (2015), yet in this case the real value of the highest denomination bill was already relatively low) by 2015 the highest denomination bill was worth somewhat less than 10 US dollars.

While reducing the maximum denomination bill may have the benefit of making cash more cumbersome, and therefore less attractive, is has another implication: you have to print a lot of it. Ardiles, Arregui and Tazzi (2017) do the following exercise. They estimate the printing cost savings if the maximum bill is capped at 35 USD or below (3USD was the value of the highest denomination bill in 2008 when they start the study). According to this, a 200 peso bill should have been issued in 2012, a 500 peso bill in 2015 and a 1,000 peso bill in 2017. They then assume that the total amount of observed pesos in circulation was satisfied with these denominations, assuming a smooth entry of each new denomination. The result is shown in Figure 25, the overall savings during this period would have amounted to 643 million dollars, this is equivalent to 0.14% of GDP and not small.

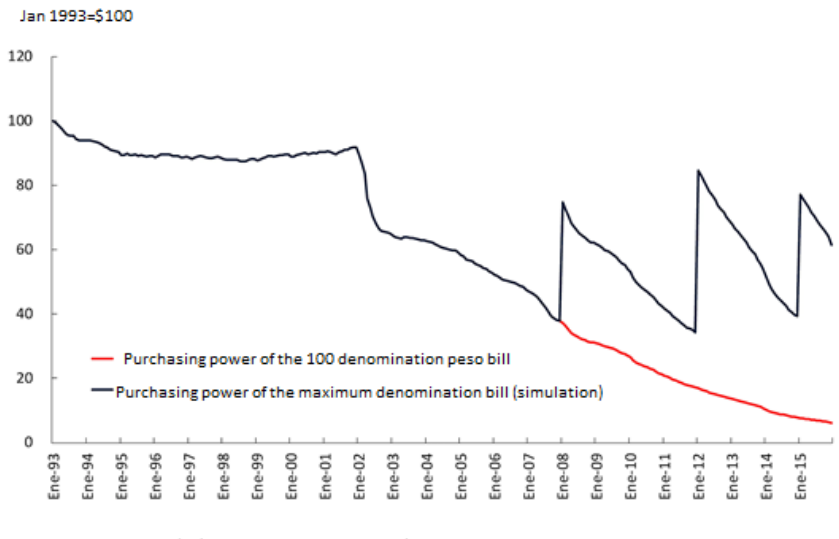

Figure 24: Domestic purchasing power (100$ and maximum (simulated) bill denomination)

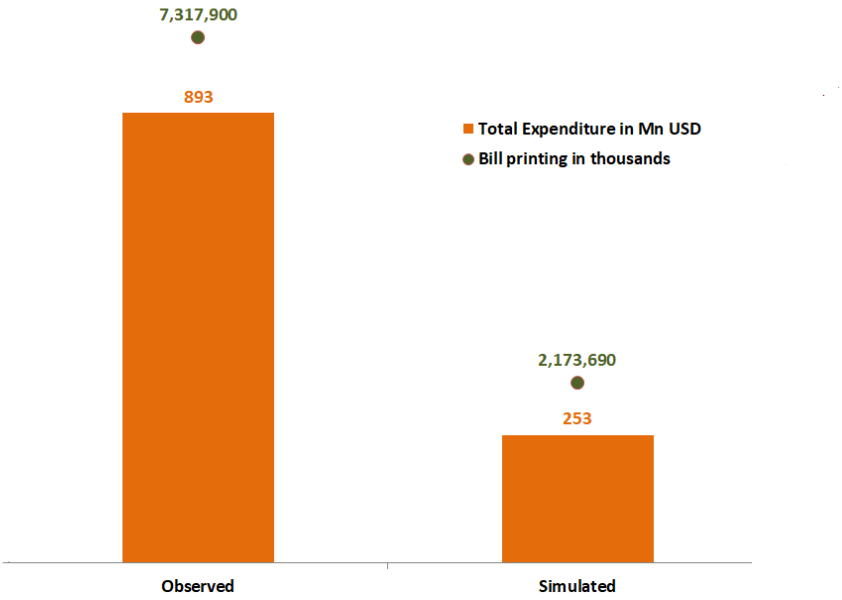

Figure 25: Bill printing costs

In 2015, Argentina had a very bad distribution of bill denomination. The higher bill denomination was of 100 pesos, approximately 10 dollars at the official rate and 6.6 at the informal rate, which caused that approximately 90% of the circulation were 100 peso bills. The costs of printing, transportation and destruction had increased exponentially. The volumes were unmanageable. At the same time, physical payments suffered, because lots of bills were needed to make everyday payments and change was impossible to resolve. As a result the Central Bank introduced the 500 note in 2016, the 200 note in 2017 and the 1,000 note in 2018.

7.2.2 Developing a "market for bills"

In the Argentine economy physical cash follows a very well defined itinerary. Money flow into individual bank accounts primarily from large banks that pay wages and pensions. We call these the “paying banks”. Throughout the month the cash gets disseminated in the system, usually collected by large retail stores that deposit that cash in what we could call “receiving banks”. Thus there was

a rhythm by which receiving banks typically brought this excess cash to the Central Bank throughout the month, and then the Central Bank recirculated it to the paying banks towards the end of the month. As Figure 26 shows this entailed a two part movement, in which the Central Bank just operated as an intermediary. Why not connect directly the paying banks with the receiving banks as shown in figure 27 ?

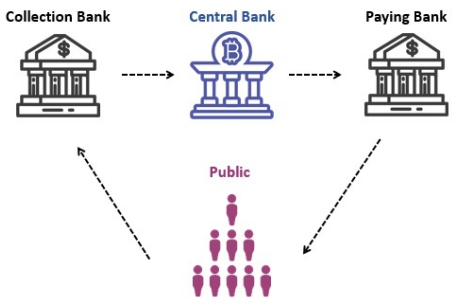

Figure 26: Before

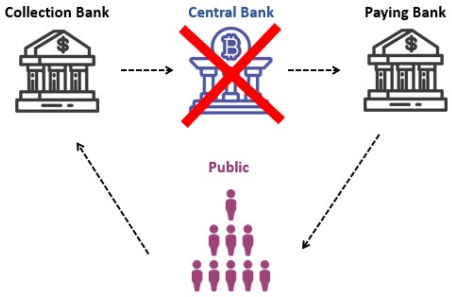

Figure 27: After

In order to solve this issue the Central Bank set a market for cash, ie. a marketplace where any bank could "auction off" its bills by denomination and by location. Thus, bills could be traded directly between supply and demand without a physical market clearing at the Central Bank. This innovation was expected to bring important savings in transportation, classification costs, and time lags for the process. In Argentina it was particularly suitable given its extensive geography (the system should be even more useful in geographics with important geographical accidents, for example, countries composed of many islands). The beneficiaries of the savings in transportation are primarily the banks who now need to split the costs of one single trip rather than having to do twice.

The result met fierce opposition from banks, particularly for three reasons. First, because the Central Bank used the policy to tax the use of bills. Thus, it charged a price higher than the nominal value for bills. The Central Bank argued it want to discourage the use of cash. Banks argued that they could not legally pay more than the face value (even so many banks operated normally in this market). The Central Bank counter-argued that money goes by face value, but if a bank wants bills

delivered at a certain location, in physical terms and with a specific denomination, it could charge for it. A second (perhaps more relevant reason) is that by eliminating the Central Bank from the chain, the receiving banks had to withhold the currency until they had demand from the paying banks. But the first received the cash distributed throughout the month while the latter needed the money only at the end of the month, thus, there were many days in which banks could not send the money to the Central Bank, losing the opportunity cost of these money during this period. Finally a third reason is that by taking the Central Bank out of the loop, the banks could not optimize in their deliveries to a single party (the aggregator) and maybe had to distribute the money to different destinations and with smaller volumes, thus increasing the costs.

Figure 28 shows a recent shot at the trading desk for bill, the upper panel shows the current offers and the lower panel shows closed offers. As can be seen the market operates with a price of one, thus currently working as a meeting place for transactions among local banks.

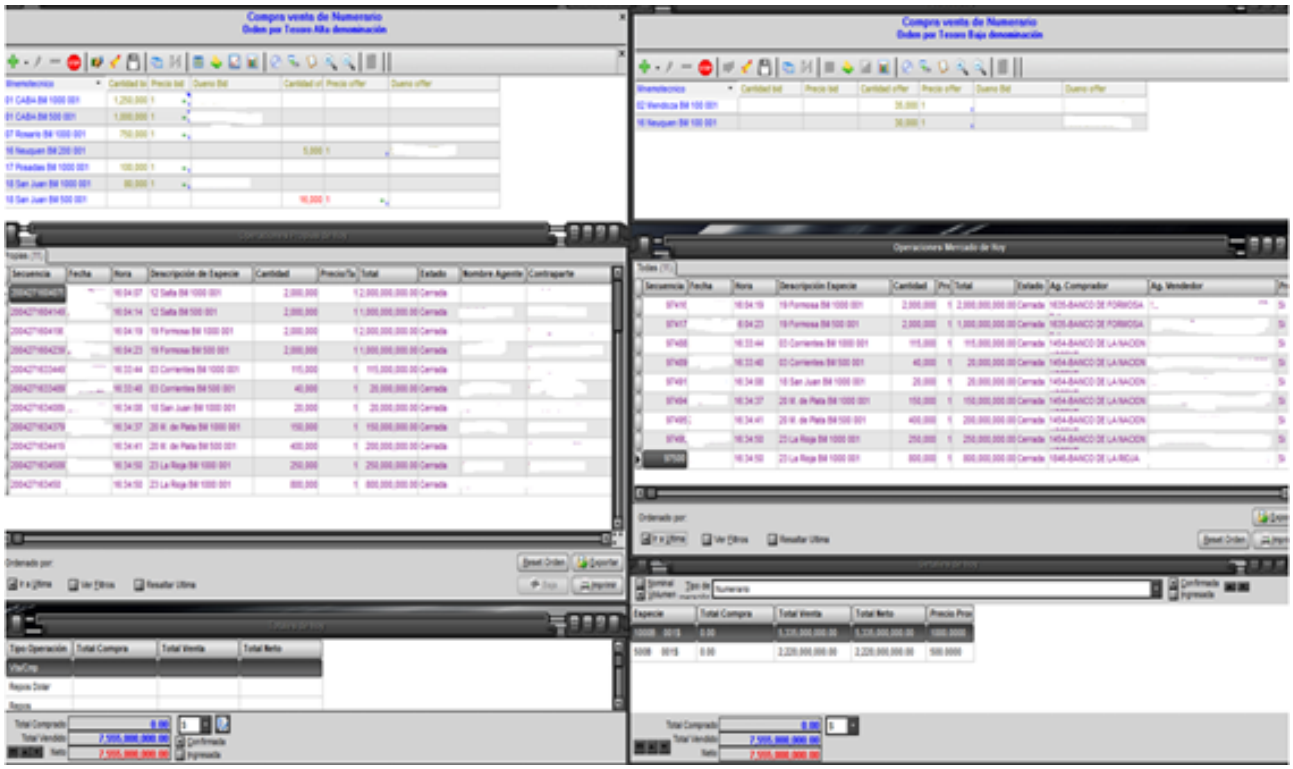

Figure 28: The market for bills

The takeaway of this experience is that this policy clearly improves welfare when introduced as an additional mechanism of transportation, but not necessarily as a required mechanism. If the Central bank wants to lead a war on cash, then it should use other mechanisms than disrupting this specific mechanism.

7.2.3 Using the retail network as ATMs

An example of how existing infrastructure can be used to reduce costs is illustrated by the experience of Extra Cash. Extra Cash is the possibility of credit card and debit card holders to obtain cash at specific points of sale. This possibility was a win-win situation, the shop got rid of the cash that was expensive to handle, and the customer spend no time to obtain cash. The system had been in place for a while, but gained prominence with several bankers strikes during long weekend holidays. The

strikes were aimed at disrupting the holidays, but banks and stores reacted by propping and advertising the system. This induced a cultural change that later stuck. This experience shows that sometimes a nudge can actually dramatically change people's behavior.

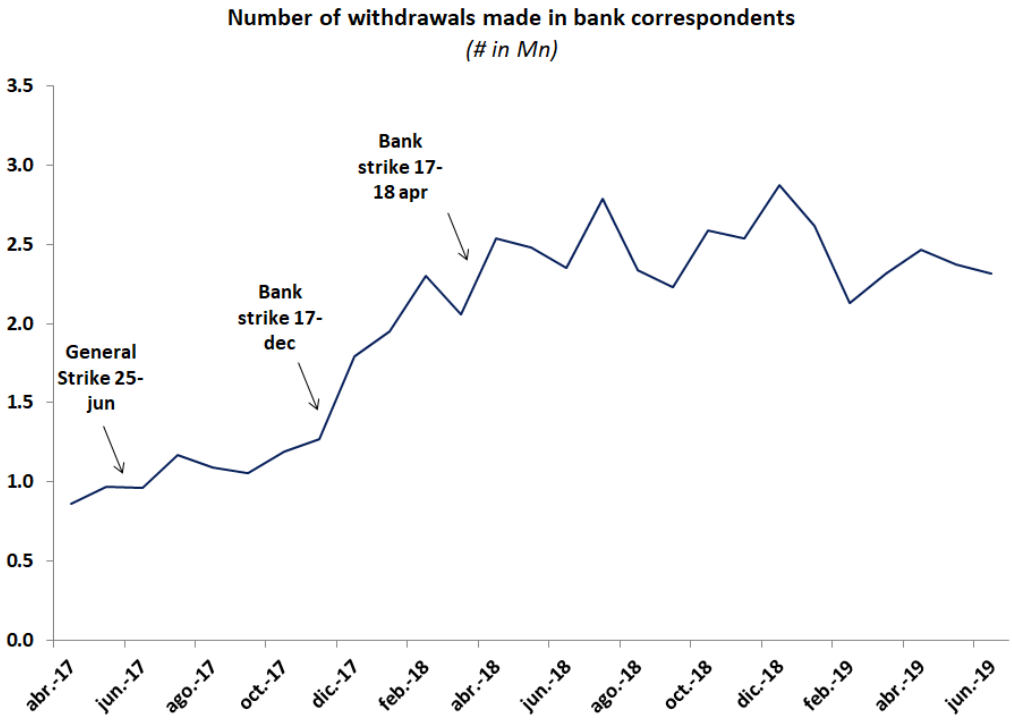

Figure 29: Number of withdrawals made in bank correspondents (# in Mn)

8 The credit card market

8.1 Monopolistic competition with price discrimination

The credit card market in Argentina is regulated by Law No. 25.065, issued in 1999. Although credit cards had been running around for years previous to its enactment, the wording of the law did not correctly reflect the functioning of the system at the time. It focused on specific concerns and addressed them poorly. The main issues were card fraud, interest rates and fees[174]. The dispositions of the law, all strongly lobbied by different interest groups, were specific security requirements (soon to become outdated by technology), caps on interest rates and caps of merchant discounts (MD). Thus, credit card law can be considered to be, at its birth, over-regulated.

But most of the problems derived from the fact that the law did not include the acquirer, a fundamental actor in the credit card market. Figure 30 describes the five actors in the system. The credit card users and the merchants are the end users and the ones that operate on the surface. Below, the issuing banks have the relationship with credit card users, and acquirers are the ones that have the relation with merchants. Finally, the credit card brands (such as VISA and MasterCard) are the ones that set up the rules of the system and provide international inter-operability.

[174] See parliamentary debate of Law No. 25.065.

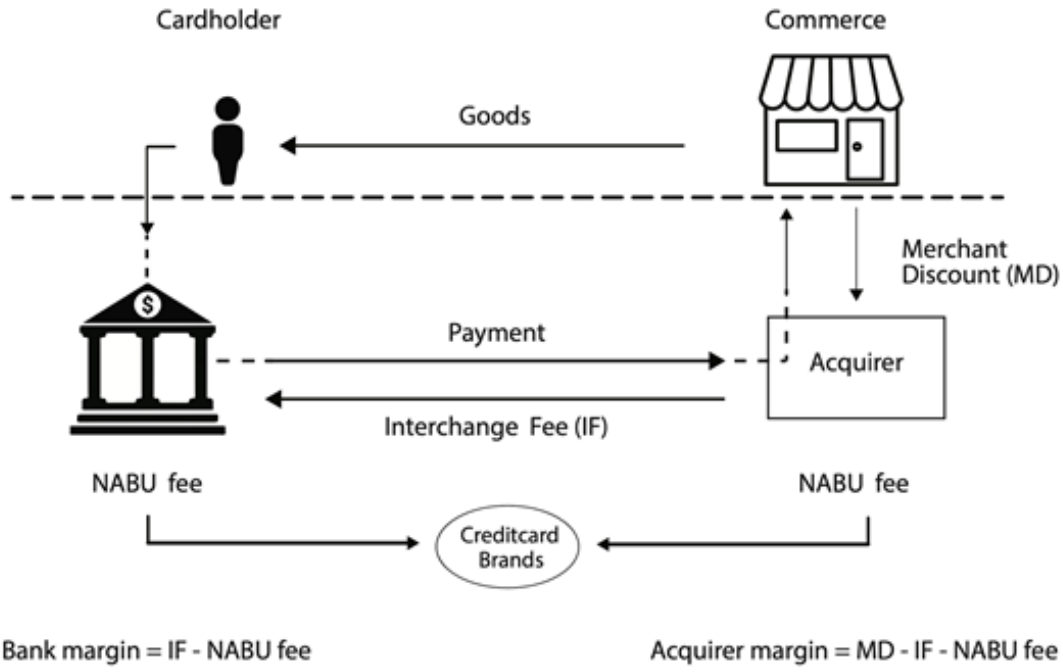

Figure 30: Players, flows and fees in the Credit Card Market

The economics of the system are also particular. The system runs on the merchant discount (MD), which is the fee that is retained from the merchants upon every payment received. MD is charged to merchants by the acquirer, who, in turn, has to pay issuing banks an interchange fee (IF) (the issuing bank is the bank that issued the credit card). Both the acquirer and the issuing banks pay the credit card brands a Network Access and Brand Usage (NABU) fee. So, the remuneration of the acquirer (RA) is equal to MD - IF - NABU, while the remuneration of issuing banks (RB), on the other hand, is equal to IF - NABU. The issuing banks also have the ability to charge its clients maintenance fees, but they represent a very small fraction of the system‘s revenues. Interest for financing is also part of the remuneration to banks, but it follows a different logic.

While MD are usually regulated by the market, IF are regulated by the credit card brands. The reasoning behind this is that credit card brands need to balance the incentives between issuing cards

and stimulating merchant acquisition. Credit cards operate in a double sided market, where the demand from one sector (payers) affects the demand of the other sector (merchants) and vice versa. If banks have bigger incentives to issue more cards by a greater IF, that will either increase the MD or reduce the remuneration to acquirers and, therefore, in any case, reduce the incentives to accepting card payments. If there is less acceptance, there is also less demand for users. A similar effect happens the other way around. In order to assure competition, all parties must have good incentives to grow and compete.

The credit card market in Argentina, however, had unique features. In particular, that the acquiring business was a monopoly with only one firm selling the VISA brand and another firm selling MasterCard. So, if a merchant wanted to accept VISA cards, it only had one option. The same happened with MasterCard. And if the merchant wanted to accept both brands, it had to have two different agreements with two different acquirers.

Furthermore, and this was the most interesting twist, the only seller of VISA was a firm owned by the banks themselves[175]. Smaller firms such as Cabal had not made a dent into this duopoly, and while Mastercard also allowed for other firms to do acquiring, no players had entered the market.

So, the credit card market in Argentina was vertically integrated. And, to make it even worse, Law 25.065 caps MD, and does not mention the acquirer at all. It assumes that the only player between clients and merchants are the issuing banks (which, in the case of vertical integration, is in part true). Therefore, by capping the MD, it strangled the remuneration of the acquirer (RA), which created a huge barrier of entry to the acquiring market. Moreover, even though it adopted some stringent measures limiting the parties liberty to agree upon the terms of service, it did not adopt a single measure to enhance competition.

Total merchant discounts (MD) were capped by law at 3% for credit cards and 1.5% for debit

[175] Argentina's 14 larger banks and VISA Inc. were the shareholders of PRISMA, the only VISA acquirer. This also happened in other jurisdictions, such as Brazil (prior to the 2013 reform) and Chile, where the situation remains unchanged.

cards[176]. And these were the fees that the market charged. The IF was 97%, which as we said was the fraction of the MD that accrued to the bank issuing the card used by the client, with only 3% going to the acquirer. This led to a market with cut-throat competition in the card issuing business, and little incentive for acquiring. In addition, the cut-throat competition in the business of issuing cards, took the form of discriminatory pricing with a proliferation of large rebates for big or special purchases.

What are the welfare implications of this arrangement? This is not a trivial matter, because several issues play at the same time. Price discrimination can increase or decrease welfare. For example a monopolist that engages in perfect price discrimination replicates the competitive equilibrium, though with the monopolist appropriating fully the consumer surplus. But this market was not a monopoly, but one of competition between banks selling differentiated products. Thus, a better framework to understand this market is that of monopolistic competition, where each bank faces a downward sloping demand curve (i.e. retains some degree of market power) and where profits are driven to zero by competition. In this case price differentiation does not necessarily improve welfare.

In what follows we rely on Katz (1984), which provides the canonical treatment of this type of markets to understand how the credit card market worked, and to understand Central Bank policies. Here we will state and use the results of Katz (1984), without proving them. Interested readers can go directly to the source.

Katz assumes a framework with two types of consumers. Informed consumers know where offers are (they know the price in each store) and consume a larger bundle of goods; and uninformed consumers purchase a lower quantity have a high reservation value but do not know the prices in the market. This framework is plausible, many clients with relatively minor purchasing power need credit cards to transact, whereas high income clients, consume a larger quantity and are therefore good candidates for price discrimination. In fact, price discrimination was in fact targeted to upscale clients.

[176]Initially, Law No. 25.065 had capped MD at 5% for both credit and debit cards, but was later modified in 2005 by Law No. 26.010.

With these simple assumptions Katz obtains a number of results. If price discrimination were not allowed (which would entail the apparently anti-consumer policy of forbidding bank discounts) the market equilibrium depends on the size of the uninformed group. If the uninformed group is large, banks would split in two. Some would charge the monopoly price, serving only the uninformed, while other banks would engage in competition for the informed clients. The latter group would charge the competitive price (notice that some uninformed will eventually buy there). If the informed consumers are a large group, then the optimum for all banks is to cater this group, but this leads to price competition leading to the competitive price. Figure 31 shows these two equilibria in its first panel.

In the case where price discrimination is allowed, Katz concludes that firms sell both to informed and uninformed clients (that is, firms do not specialize in one type of clients). In our case this would imply that banks have an incentive to split the market, offering discounts to informed consumers (such as restaurant discounts, airline programs, weekly discounts per type of stores, etc. all very common in Argentina), while charging a higher price to uninformed clients. They can perfectly segment the market by offering special deals that are attractive to the informed consumer but unfeasible or unattractive to the uninformed. The market operates then with all banks offering this dual combo (a situation very similar to the one observed in Argentina). Because this increases profits, there is entry into the market, until profits disappear. The equilibrium is shown in Figure 31 in its second panel. The firm charges a price below the competitive price to the informed group, and charges the reservation price to the uninformed. In the equilibrium the average cost equals the average price ($\bar{P}$) and profits are zero.[177]

[177] Katz shows that the optimal price for the informed group equals the marginal cost of providing the goods to this group.

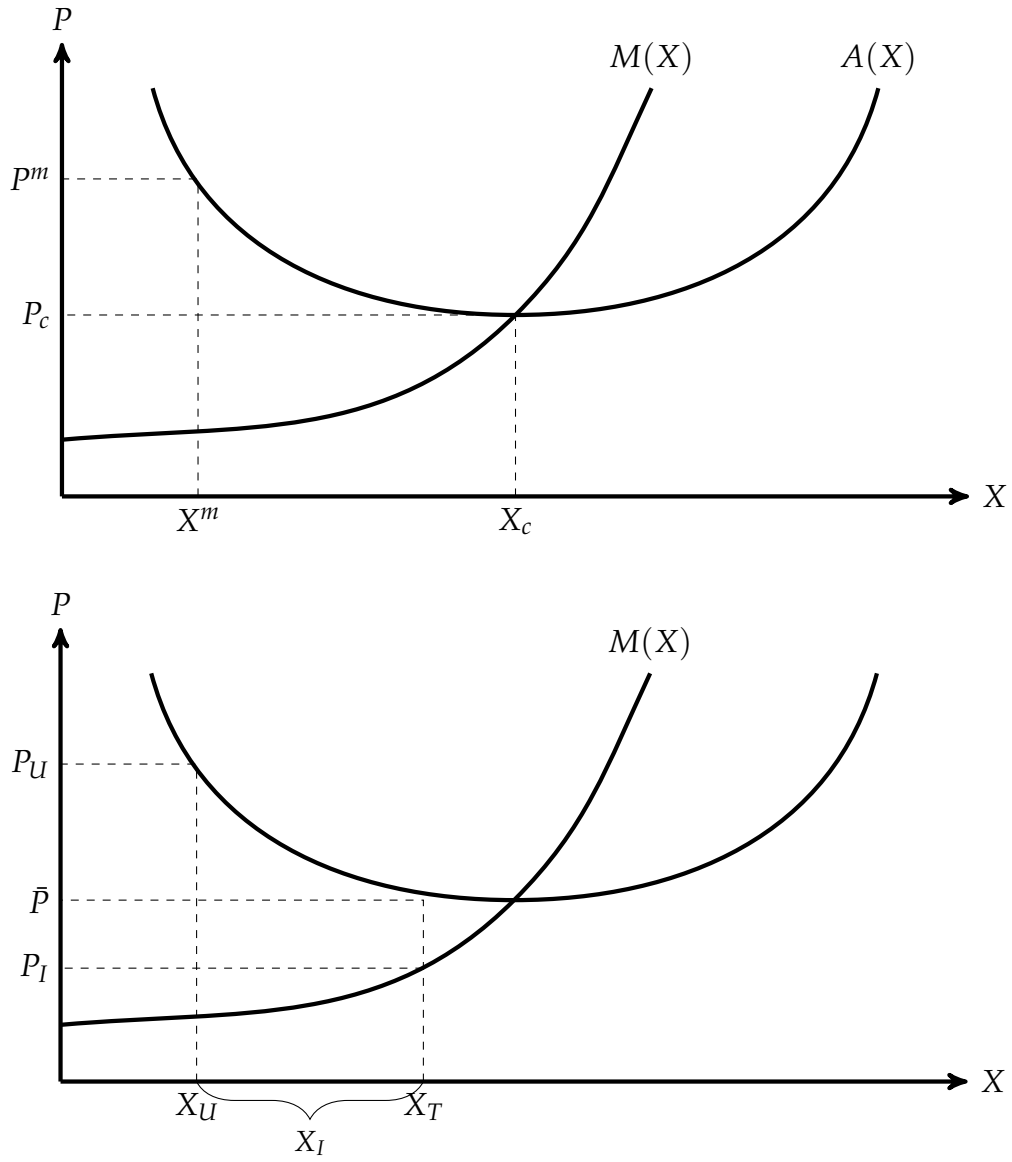

Figure 31: Equilibria with and without price discrimination

So, how does welfare change when comparing the equilibrium with price discrimination and the equilibrium with uniform prices? Well, it depends on two features: the size of the informed vs the uninformed group, and the reservation value of the uninformed.

The intuition behind this is as follows. When the size of the uninformed consumers is small,

the uniform price distribution entails charging the competitive price and the first best obtains. Under quantity discounting uninformed consumers pay a price greater than marginal costs, entry occurs until profits are dissipated and all firms operate at an inefficiently small scale. Figure 31 shows this, with production of all firms at X_T which is lower than in the competitive equilibrium. The equilibrium has a larger number of firms operating inefficiently.

However, this may not hold if the number of uninformed customers increases. If the proportion of uninformed clients is larger, the market with uniform prices splits in two, with some players tackling the informed and others the uninformed clients. Thus uniform pricing will then entail some stores operating at a scale that is even more inefficient than the one that obtains under quantity discounting (because they only serve the uninformed at their high reservation price).

When uninformed customers are sufficiently numerous or their reservation price very high, quantity discounting leads to a more efficient production than uniform pricing. Katz shows that the closer the reservation price of the uninformed is to the competitive price, the more likely the uniform pricing equilibrium would converge to the competitive equilibirium, and therefore is welfare enhancing.

For the Central Bank believed (though without much evidence) that there was a sufficient mass of informed clients so that uniform pricing was welfare enhancing.

Notice, that in addition to the efficiency effect, price discrimination also entails a redistribution from uninformed clients to informed clients. As informed clients tend to be richer clients, price discrimination is regressive. The Central Bank was concerned about both the efficiency as well as the distributive effect, and therefore wanted to reduce the impact of price discrimination.

One obvious way to do this is to push down the price paid by the uninformed customers. In that case the whole system is pushed towards the competitive equilibrium. In the graph if X_m approaches X_c (or equivalently if $p_m \rightarrow p_c$), the competitive equilibrium is more likely to be chosen. How can these reservation prices be reduced? One obvious way is to reduce the merchant discount fee, which is the value charged to the consumers (P^m). Another way to obtain the same result was to reduce the

interchange fees (this also reduces the returns from uninformed customers). A second way was to require that banks divest from the acquiring business again reducing their surplus from uninformed clients. Finally, a third option was to undercut this reservation price by offering an alternative payments technology at a lower price, this also reduces the benefits obtained from the uninformed and are equivalent to a reduction in the monopoly price. The Central Bank pursued the three avenues.

8.2 Undoing the monopoly

8.2.1 Cap on interchange fees and merchant discount price agreement

Remember that MD was already capped by Law 25.065. However, since then, technology had significantly reduced costs, thus making room for some price improvement. As an amendment to the law did not appear feasible, the clear alternative was to reduce IF. As explained before, IF represented 97% of the MD and was collected by issuing banks, which are subject to the Central Bank jurisdiction. A reduction of IF would serve two purposes: allow a better return to acquirers in order to enhance competition in the acquiring market and, if that was accomplished, reduce reservation prices. However, as competition in the acquirer market would take some time to operate, a coordinated government action was deployed in order to obtain immediate results.

In May, 2016, the Argentine Antitrust Agency (CNDC, for its anagram is Spanish) initiated a market investigation on the credit card market, which concluded that there was an antitrust risk in its configuration, and recommended the Central Bank to adopt measures to promote the entry of new player in the acquiring market[178]. Within such measures, the CNDC suggested the regulation of IF. The investigation also recommended the Secretary of Commerce to initiate proceedings against PRISMA, the only VISA acquirer, for presumed antitrust behaviour. We will come to that later.

[178]The market investigation resulted in the issuance of Resolution No. 17/2016 of the CNDC, available at http://cndc.produccion.gob.ar/node/2479. A very complete and clear explanation of the actions of the CNDC can be found in Esteban Greco and María Fernanda Vicecens, Innovación y disrupción digital en los mercados de medios de pago: *el caso de defensa de la competencia en Argentina*, (2019), at https://repositorio.udesa.edu.ar/jspui/handle/10908/16692.

The discussion on the divestment of PRISMA quickly heated up. As part of the conversations, at some point the banks offered a timetable for the reduction of total MD in both the credit and debit market. This agreement was implemented in March 2017, and entailed a relatively sharp and fast reduction of rates as shown in table 2.[179]

Year	MD for Credit Cards (%)	MD for Debit Cards (%)
Before	3.00	1.50
2017	2.50	1.20
2018	2.35	1.10
2019	2.15	1.00
2020	2.00	0.90
2021 and on	1.80	0.80

Table 2: Merchant Discount fees for Credit and Debit Cards

Of course, the reduction in the surplus would lead to fewer players in the market, and potentially to less price discrimination (a reduction in promotions). The Central Bank viewed these as positive developments.

Following the agreement, effective from April 1st, 2017, the Central Bank established caps on interchange fees. It defined a decreasing schedule from 1% for debit and 2% for credit in 2017 to 0.6% for debit and 1.3% for credit in 2021[180]. Table 3 and Figure 32 illustrates the IF reduction.

	Credit Cards		Debit Cards	
Year	MD (%)	IF (%)	MD (%)	IF (%)
Before	3.00	2.91	1.50	1.46
2017	2.50	2.00	1.20	1.00
2018	2.35	1.85	1.10	0.90
2019	2.15	1.65	1.00	0.80
2020	2.00	1.50	0.90	0.70
2021 and on	1.80	1.30	0.80	0.60

Table 3: Interchange Fees for Credit and Debit Cards

[179]The details of the agreement can be found at https://www.produccion.gob.ar/2017/03/17/cambia-el-mercado-de-tarjetas-bajan-aranceles-y-avanza-la-competencia-60744

[180]See Communication A 6212, issued on March 31st, 2017.

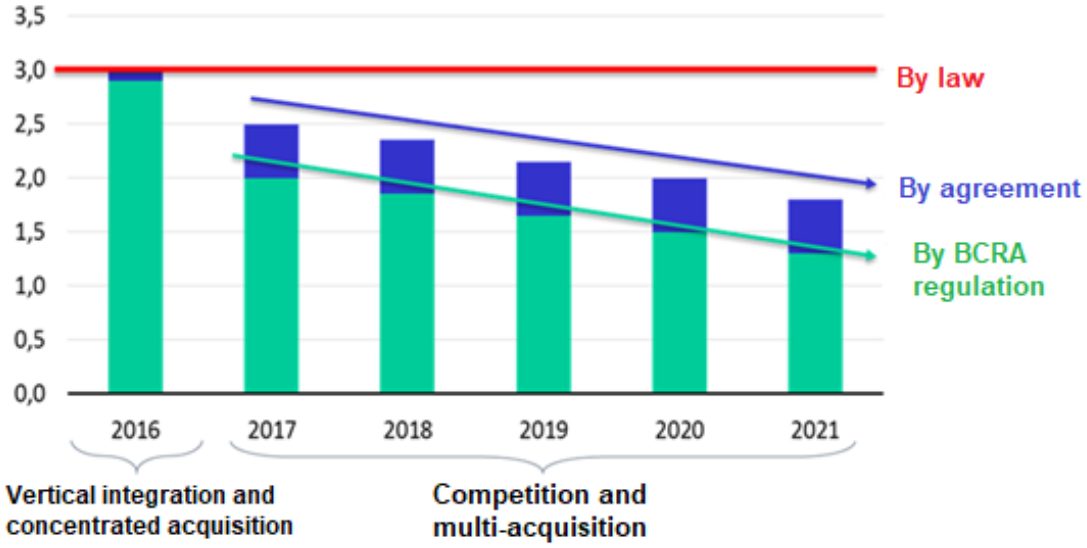

Figure 32: Service fees in the Credit Card market

The objective of the mandatory reduction was to generate incentives for new entrants to the acquiring business. As costs decreased, margins for acquirers, as explained above, became attractive, promoting investment. As a consequence of the agreement on MD and the mandatory reduction of IF, the remuneration for acquirers was established at a constant 0.5% for credit cards and 0.2% for debit cards. The new scheme would lead to greater competition in the industry and "multi-acquiring" companies (i.e. that the same acquirer offering merchants to several credit card brands simultaneously). This had not happened only in Argentina. Previously, interchange caps were imposed on the European Union, Australia, Canada and the United States.

The result was a clear path for the development of the credit card business. Since the reduction of interchange fees and the agreement on merchant discount caps, several companies have entered the acquiring business in Argentina (including some banks, which decided to pursue that business independently). Aggregators also proliferated. Aggregators are the companies which “aggregate” several

smaller merchants to an acquirer contract, simplifying procedures and offering extra services such as customer service and account reconciliations. The availability of electronic means of payments at competitive prices increased dramatically (including mobile POS devices and QR code processing).

8.2.2 Divestment of banks from the monopoly

Immediately following the market investigation on credit cards, the Antitrust Agency opened an investigation on Prisma for presumed anti competitive behaviour[181]. The Agency considered that, given the configuration of the market, Prisma could have abused its dominant position in the credit card market in order to exclude competitors in the acquiring business. This was so because Prisma and its related parties performed at least one fundamental role in every link of the chain: its shareholders were the issuing banks, Prisma was the principal issuing processor, the only VISA acquirer, the owner of one of the two POS providers and the owner of one of the four gateways (a technology provider to process online and mobile payments). Any new player had to deal with Prisma and agree to its terms to be fully operative. Special attention was brought to the fact that Prisma's vertical integration may have allowed the setting of high IF and the squeezing of the acquirer's margin[182]. The second concern was related to a possible collusion in the price of consumer interest rates.[183]

In March, 2017, Prisma and its shareholders presented a proposal to the Antitrust Agency to reach an agreement to close the proceedings. The proposal specifically stated that it could not be construed as a recognition of the alleged behaviour, but nonetheless it proposed the sale of Prisma's stock to an independent third party. The Agency requested the opinion of certain actors of the industry and, specifically, of the Central Bank. The opinions were heard, an audience was held, the proposal was

[181] On September 1st, 2016, Prisma was charged under section 29 of Law No. 25.156.

[182] Given its corporate structure, Prisma could afford higher IF and obtain a rebate in the form of capital contributions. See (Greco and Viecens, 2019), *supra* note [*], for more details. The exact same thing still occurs with Transbank, the dominant acquirer in the Chilean credit card market.

[183] In Argentina, it is very common to set the terms and conditions of consumer financing at the point of sale, usually in the form of fixed installments.

amended, and in September 2017, it was accepted by the Secretary of Commerce[184]. The agreement included the sale of 100% of Prisma's stock to either one bank or a third party (it expressly stated that two or more banks could not share stock) and certain contractual restrictions. Also, it had transitory provisions, being the most salient one the restriction to add an additional credit card brand license (i.e. Mastercard) until there was another VISA acquirer in the industry.

In the meantime, the Antitrust Agency had to rule on Prisma's purchase of Banelco, a local ATM network and money transfer processor, which had occurred in 2015[185]. The transaction did not represent, by itself, an antitrust risk, since the shareholders of both companies were practically the same. But the Agency took the opportunity to make four recommendations, which included the establishment of regulatory conditions to guarantee open access and no discrimination to third parties in the offering of the services rendered by Prisma. The Central Bank took note.

The agreement for Prisma's divestment granted the shareholders a certain amount of time to sell their stock, in order to assure an orderly process. However, by mid-2018, given Argentina economic volatility, the shareholders requested an extension, which was granted under the condition that Prisma did not apply for a Mastercard licence until another VISA acquirer started operations and that Prisma committed to the schedule for the opening of VISA acquiring, which was set for December 2018. Given these incentives, in January 2019, First Data started operating as a VISA acquirer and, in February, 51% of Prisma's stock was sold to Advent, an investment fund with interests in payments overseas[186].

Once this happened, other acquires requested VISA's licences and several banks started to move independently towards the acquiring business, prompting more competition in the market.

[184] See http://cndc.produccion.gob.ar/sites/default/files/cndcfiles/C-1613.pdf
[185] See http://cndc.produccion.gob.ar/node/2481
[186] See https://www.adventinternational.com/es/advent-international-adquiere-el-51-de-prisma-medios-de-pago-%20la-compania-lider-en-medios-de-pago-de-argentina/.

8.2.3 Increased Competition through PEI

In order to further dilute the market power of the credit card business, the Central Bank incorporated PEI, a new way of making payments that allowed to make debits from your bank account without using the debit card brand, as had been implemented in Australia and Canada. The cost and commission of this new system was significantly lower than that of debit and credit cards, forcing banks to compete in price and quality of service. PEI transactions were explained in detail in section 7.1.5 above. For the purpose of our discussion here, the relevant point is that PEI reduced potentially the rent on uninformed clients, thus making the competitive equilibrium more likely.

8.3 Capping up

Four years after the reform process started, the landscape of the credit card market has been radically changed. MD and IF have virtually halved, while the return to acquiring increased, thus providing an incentive to enlarge the system. Several firms jumped into the fray, upgrading the technology and products offered in the market. As prices decreased, so did the amount of price discrimination. Finally, several acquirers became multibrand, selling both Visa and Mastercard, and banks had sold their share in Prisma the monopolistic provider of Visa. If is difficult to think of a more succesful process in such short span of time.

9 A brief note on fintech regulation

Fintechs are companies of digital origin whose main activity is to provide financial services through the use of technology[187]. They provide services and offer products that, in some cases, compete with those offered by traditional banks. Other times, they provide complementary products (such as robo-advisory and stock management). And, finally, they provide services to banks, such as onbaording software, payment processing or cybersecurity. There is substantial literature about the impact of fintechs on the economy and financial inclusion. For example, you could see Milian et al. (2019), Philippon (2019), Board (2019), Dombret et al. (2016), Darolles et al. (2016), and Drasch et al. (2018), among others. In this section we will deal with two specific issues that came up in relation to the competition between banks and fintechs: leveling the playing field and smoothing the ability of fintechs to participate in the payment system.

In Argentina, the fintech industry flourished over the past five years. As of 2020, the fintech association of Argentina grouped over 190 companies that average three years since their creation[188]. They cover different markets, but are principally focused on lending, payments and B2B services. Figure 33 shows the Fintech Map and the areas covered: payments, scoring, crowdfunding, lending, insurance, etc.

[187] Such is the definition of the Cámara Argentina de Fintech, www.camarafintech.com.ar.
[188] See www.camarafintech.com.ar/socios-web.

Figure 33: Fintech Map for Argentina

Even before the growth of the fintech market accelerated, banks started complaining about the differences in their respective regulatory burden. The debate -ongoing in most jurisdictions- is usually simplified into a "level playing field" discussion. We believe that there are two very distinct aspects that should be analysed separately.

The first one is the basis of the regulation. Banks hold deposits, which they lend, and act as money multipliers. Thus, regulation has the main objectives to protect depositors from asymmetric information, provide transparency to the banking sector, insure liquidity to fend off the possibility of bank runs, and control the money supply. Hence a whole framework of prudential and monetary restrictions. Again, the counterpart of this regulation is the possibility of capturing deposits from the public.

In fact, regulations in many countries are very strict on the prohibition to unlicensed companies to perform financial intermediation[189], understanding intermediation as using deposits to lend. In this regard the regulatory framework helps the banks, by providing a sound and sizable source of re-

[189] In Argentina, Law No. 21.526, sections 1, 7 and 38, have a clear prohibition.

sources. Regulation on fintechs, on the other hand, is principally based on transparency and consumer protection. They don't use deposits, therefore are less regulated. In this aspect, the difference in their respective regulations is justified.

The second point is related to excessive regulation. Since banks have been functioning for centuries, their regulation is prone to drag excessive regulation. As we have seen in many examples in this paper, changes in technology, culture, bureaucracy and group interests have created a huge amount of excessive regulation over time. Fintech regulation, on the other hand, is recent, if it exists at all, and, thus, carries less excesses. Banks suffer this and fintechs do not. In Argentina, for example banks are requested to collect tax prepayments on electronic transactions, that PSP were not obliged to make.[190]

While this is an issue that should be attended, the position of the Central Bank was not that, as a result, fintechs had to be regulated, but pretty much the opposite: that excessive regulation had to be removed from the traditional banking institutions. The examples described in this paper show how excessive regulation can be removed, reducing costs and fostering competition and transparency.

This is not the position taken by most Central Banks. Apart from consumer transparency and anti money laundering prevention rules, which are consistently applied worldwide, there are three specific aspects in which financial regulators have set a footprint in the fintech world: (i) e-money regulations (*i.e.* what to do with the money they hold even if they are not to be considered deposits); (ii) payments (*i.e.* what are the minimum standards in order to participate in the payment system); and (iii) lending (*i.e.*under what conditions may a private lender lend).

Regarding e-money regulations, in addition to the prohibition to collect deposits (which is indisputably accepted), Central Banks often regulate what fintechs in the payments business can do with the money they hold in their clients' payment (transactional) accounts, specifically constraining the instruments they can invest the liquidity in. Most of the time, those restrictions intend to assure that

[190]This was modified by General Resolution No. 4622/2019, issued by the *Administración Federal de Ingresos Públicos* (the Argentine IRS) on October 29th, 2019, which established that PSP are also obliged to collect tax prepayments.

those funds are not used for lending activities, but they also carry the implied objective of treating the funds in payment accounts as deposits.[191] However, if these restrictions squeeze the profitability that fintechs can obtain from the liquidity of payment accounts, this may eventually discourage entry and competition. In the view of the Central Bank, at least until 2019, the benefits of generating a payment business were sufficient to insure responsible behaviour, but this is a point that is hotly debated.[192] At any rate, the Central Bank believed that this regulation, if at all, should be imposed only if the size of the funds actually became sizable, but to the extent they were not, deregulation should prevail, lest of all it would become an insurmountable entry barrier.[193]

Specific payment regulations, not related to payment accounts, can be found in some particular jurisdictions.[194] Independent private companies that intend to process payments or become card acquirers need to obtain a licence and comply with prudential and operational measures. This follows the same principle, if the payment market is not large enough, such regulations may impose an undesirable entry barrier.

Finally, some jurisdictions regulate the terms under which private lenders can use their own money to lend (apart from, of course, consumer transparency regulations), imposing in some cases the obligation to obtain a licence and comply with prudential regulations.[195] This idea is not, however, widely spread. Limitations that create additional costs to lending are usually understood as detrimental to the creation and expansion of credit.

The debate carried on. Paradoxically both banks and *fintechs* demanded regulations (the first to

[191] A good summary of those restrictions can be found at AFI's Policy Model for E-Money, www.afi-global.org.

[192] As a matter of fact, in January 2019 the Central Bank issued Communication A 6859, which established certain requirements for PSP, including the obligation to hold 100% of the liquidity produced by payment accounts in checking accounts at local banks.

[193] There is less regulation in the lending business, to the extent it is not done with deposits. Mexico, for example, has imposed tight limits to what fintechs can do with their balances, but credit activities are totally deregulated. In Argentina, Banks have to report if they lend to fintechs for lending, but the purpose of this regulation is to ensure the solvency of the bank, not to regulate the fintech.

[194] As, for example, in Brazil after the enactment of Lei No. 12.865 in 2013.

[195] In Brazil, for example, only financial institutions can lend to the public.

reduce competition, the second to secure a market niche as the threat of "future" regulation was always there). Argentina during this administration allowed free development of the industry, and no welfare cost (at least in terms of fraud and/or runs) seems to have been paid for this decision.

9.1 Banks authorized to own non-bank fintechs

Lending is one of the main activities of fintechs. While they potentially compete with banks, what actually happens is that they focus on different segments of the population. Banks target formal middle-wage-and-up clients and fintechs usually target the base of the pyramid. This difference is mostly due to their different structure: banks get cheaper funding[196], but have higher fixed costs and more rigid credit requirements.

In order to reduce the amount of excessive regulation and allow banks to target lower segment and informal clients, the Central Bank did two things. First, it expanded the use of “screening” and “credit scoring” methods, which allow a wider target (this is explained in more detail in section 5.14). Second, it allowed banks to invest in and even control fintech subsidiaries which provided lending or payment services.[197]

The other side of the prohibition to unlicensed companies to perform financial intermediation is the prohibition to licensed banks to have commercial activity. According to Argentine law, financial entities may not exploit commercial, industrial, agricultural or other businesses on their own account. However, it authorizes the Central Bank to grant exceptions to such rule, provided they are granted in a general manner and establish limits and conditions that guarantee that the solvency of the entities is not affected[198]. The Central Bank has granted a set of exceptions which are mostly related to financial activity. All exceptions are listed under a section of the restatements of the Central Bank

[196] In Argentina, due to the structure of the financial system, this is especially so. Remember that most Argie deposits are transactional and pay almost no interest.

[197] Banks argued that fintechs represented unfair competition for them. So the Central Bank responded, as will be explained in this section, by arguing that if a fintech was a more appropriate vehicle for lending, then the Central Bank would allow them to be a fintech, or eventually to transform themselves into a fintech.

[198] See Law No. 21.526, section 28.

called “Services complementary to financial activity and other permitted activities”. In some cases, banks can perform the activities directly, and in others they can do so through subsidiaries. When such subsidiaries allow an asset composition that is not aligned with the prudential regulation, their participation in such subsidiaries has to be deducted from the computation of capital requirements of banks.

Historically, the Central Bank had allowed banks to hold equity in companies that issue credit cards, debit cards and other similar products[199]. Banks could own credit card companies and, thus, grant loans to customers using different methods of credit analysis than the ones established for their own assets. However, credit card transactions did not give enough rope for banks to compete with fintechs on a level playing field. So banks interpreted that the “similar product” wording allowed them to grant personal loans through those subsidiaries. That went on until 2015, when the Central Bank limited the ability of banks’ subsidiaries to grant personal loans[200].

In 2017, the Central Bank revoked such limitation and expressly established that banks could own subsidiaries that provide credit. Moreover, the new rule included a new exception which allowed banks to own companies which develop and provide technology based financial services or payment services[201]. To put it bluntly, banks can own fintechs.

9.2 Allowing transfers from the banking to the fintech world (CVU)

Some fintechs provide a feature called “digital account”. It is basically an annotation in the name of a user of a certain amount of money that can be used for certain transactions. In the financial jargon, those annotations are called “electronic money”, and defined as “*an electronic store of monetary value on a technical device that may be widely used for making payments to entities other than the e-money*

[199] See Communication A 3086, section 2.2.6, issued on March 16th, 2000, which established the restatements up to such date.

[200] See Communication A 5700, issued on January 31st, 2016. It established a cap for personal loans to a share 25% of the total financing granted by the companies, and a cap to their interest rates.

[201] See Communication A 6277, issued on July 14th, 2017.

issuer"[202]. The device acts as a prepaid bearer instrument which does not necessarily involve bank accounts in transactions, hence the "digital account".

Digital accounts are a very powerful tool for financial inclusion. The services they provide allow the unbanked and underbanked population to access products they would otherwise never obtain. A very good example are digital services which need to be purchased online: an unbanked person cannot pay for, say, streaming service or digital storage. Distance is also resolved, since digital accounts allow money transfers at distance, even through different countries. They provide a quick, cheap and efficient solution to every day transactions that include a greater portion of the population, giving a huge impulse to commerce. In developing economies, this is crucial.

A common problem with digital accounts is their interoperability. They tend to form clusters that cannot connect with each other, nor with bank accounts. So, a user of a particular digital account can only perform the transactions that the administrator of such account has obtained through its commercial efforts. As the race for clients begins, a network effect may occur. The first digital account provider that gets the majority of the clients will have the power to establish the commercial rules and establish barriers of entry to competitors. And, during the race, the individual efforts of each additional provider do not increase welfare, since most of the time they just cancel each other out.

The discussions at the Central Bank's Innovation Hub during 2016 covered all these issues, and a solution was proposed. In Argentina, bank accounts are identified with a 22 digit key, called *Clave Bancaria Uniforme* (CBU). Such key is used to identify the accounts at the ACH, which enables it to transfer money from any account to another, regardless of the banks they are located at. The proposal was to implement a similar key for all digital accounts and make it interoperable between digital accounts and with bank accounts.

In May, 2018, the Central Bank created the Clave Virtual Uniforme (CVU), which had the exact

[202] See European Central Bank definition at https://www.ecb.europa.eu/stats/money_credit_banking/electronic_money/html/index.en.html.

same format as the CBU, and provided the identification of the administrator and the user of a digital account[203]. The ACH was commissioned to process money transfers using CVU information. Additionally, the CVU was granted the same ALIAS feature as bank accounts (explained in section 7.1.4), which created an unequivocal identification system (the same ALIAS could not be used for both a bank and a digital account). The result was that money could flow smoothly from bank accounts to digital accounts and vice versa. The idea behind this new feature was that any addition to the "account family" would instantly expand the system, and that interoperability would prevent the occurrence of a network effect.

However, the first reaction of most banks was to provide new, complicated and difficult-to-find interfaces to perform money transfers from bank accounts to digital accounts using CVU identification. If the interface did not work, the whole idea would be useless. So, in order to correct this, again, the Central Bank had to amend the original rule. One year later, it established that the interface for CVU transfers had to be the exact same as the one used to perform bank to bank transfers, and that the feature had to be available on mobile banking[204]. After this, transfers started to flow. It is interesting that, a short time later, Brazil adopted a similar idea.

[203] See Communication A 6510, issued on May 15th, 2018.
[204] See Communication A 6697, issued on May 10th, 2019.

10 Developing better savings instruments (UVAs)

As seen in section 3, the financial sector in Argentina has been unable and unwilling to produce a savings vehicle that protected the real value of savings. This led savers to divert to other assets that could protect the real value of their assets: mostly US dollars, both in and outside the financial sector and real estate. The dollar, in addition to liquidity, had the additional benefit that its return was not strongly correlated with income thus providing an extra hedging property. Table 4 shows the average return, volatility of the return and correlation with wages of for investment alternatives: Banking sector CDs, US dollars, real estate and UVA assets with 1% yearly yield. It shows that the dollar has been an attractive asset during the last 40 years, with a high return, and while somewhat volatile with little correlation with incomes, thus providing a good hedging instrument. (Real estate provides a higher return at the cost of a higher correlation of returns and income, while inflation indexed CDs, provide a lower return at the benefit of a lower correlation. All three investment opportunities dominate a peso denominated CD).

	Average Real Return (Monthly)	**Standard deviation**	**Correlation with Real Wages**
Short Term Interest Rate	-0.8%	4.6%	24%
Dollar	0.6%	12.2%	1%
Real Estate	1.0%	8.0%	4%
UVA + 1 p.p.	0.1%	0.0%	0%

Table 4: Avg return, standard deviation and correlation with wages, of asset returns 1980-2019

The beneficial properties of dollars as a savings asset for families, makes it a particular unsuitable currency for families liabilities (the real value increases in times of need). Thus the development of a financial sector which is dollar based was responsible for significant financial instability in periods of sharp real exchange rate depreciations. The reason for this instability was “currency mismatch” deposits that were denominated in dollars and assets that were denominated in dollar but whose underlying assets were not. This left the system exposed large non-performing loans when the real exchange rate jumped. In Argentina this was the case after the large devaluation of 2001 which left

most banks bankrupt.

As a result, since 2002 the Central Bank authorities limited the currency mismatch in the balance sheet of banks by forbidding the lending of dollars to non dollar earners (this means that the Central Bank not only worried about the exchange rate exposure of banks, but also that of those that were recipients of dollar loans). This had the side effect that banks had fewer applications for their dollars leading to extremely low real rates in dollars and relatively little lending beyond trade finance (see Figure 34)

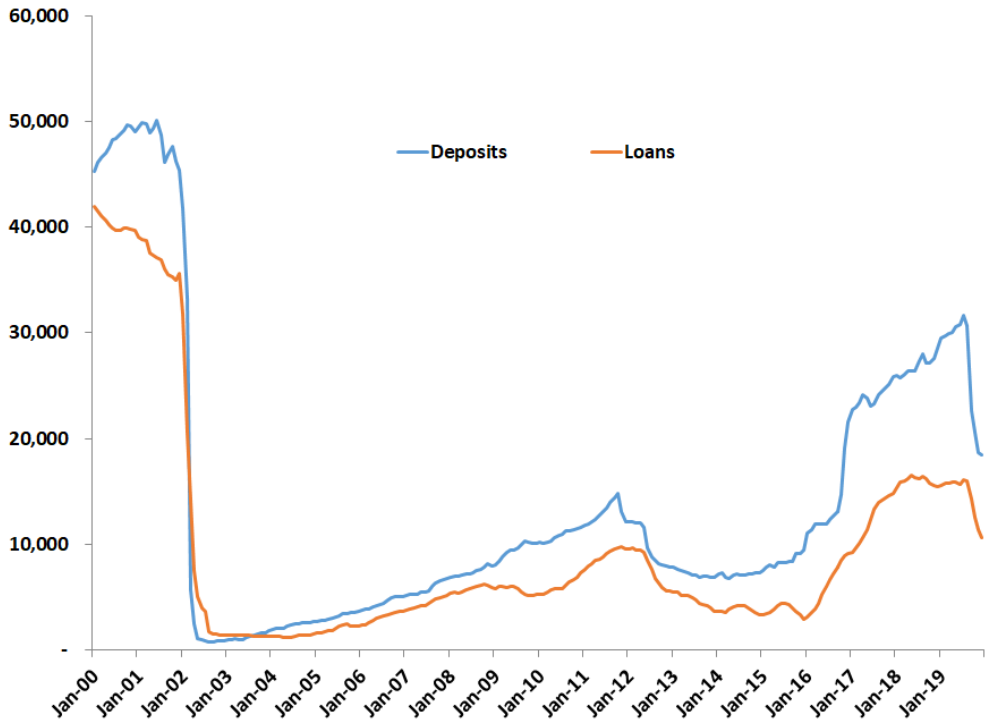

Figure 34: Deposits and Loans in USD (in Mn)

The advantage was a lower risk for the financial sector as shown by the fact that never again the financial sector had a problem redeeming its dollars, even in the 2018-2019 crisis where virtually half

of dollar deposits were withdrawn from the system[205].

In order to find a middle ground, that is, finding a suitable savings vehicle but which at the same time would be a manageable liability for families and firms, the Central Bank decided to copy Chile's experience with indexed assets and liabilities called UF (Unidades de Fomento) which in Argentina were denominated UVAs (Unidades de Valor Adquisitivo - which could be translated as units of purchasing power).[206] The UVA would move with the local price level, thus creating a better savings asset for families relative to traditional CDs or dollars. It was better because it guaranteed a positive return (which other investments could not guarantee), and had better hedging properties than the traditional CD though worse hedging properties than the US dollar (see Table 4).

The interesting aspect of the UVA was that because it moved quite in line with wages (see Figure 37) it was a reasonable unit for the asset side of banks.[207] Remember that we saw in section 3, that the Argentine financial sector had operated with negative real rates, and thus had never grown. The bet was now that banks could build an asset based in UVA assets that could support a deposit base in UVAs, allowing the system to to move quickly to an equilibrium with positive real rates, which maybe could provide a path for domestic savings intermediation and long term growth.

The impact was largest on long term loans where the impact on installments was dramatic. Consider as a an example a 1,000,000 loan. With a nominal rate of 25%, a 30 year loan requires an initial installment of 20,000 while the same mortgage with a 5% interest in UVAS the initial installment is 5,400. This, of course changed dramatically credit access. The result was a dramatic increase in loans, particularly mortgages as shown in Figure 36. However, while there was success on the asset side banks remained cautious on the deposit side, and remained defensive and paying low real interest rates.

[205] The other precautionary measure taken to insulate the banks from the domestic risks was to limit the exposure of banks to federal and provincial government debt instruments. This again was critical to ensure the soundness of the financial sector as Argentina tinkered with default in 2019/2020.

[206] See Alarcón et al. (2014) and Lorenzo and Osimani (2001) for the experiences of Chile and Uruguay, respectively.

[207] See Shiller (1998) and Shiller (1999) for a theoretical discussion about the indexed units of account.

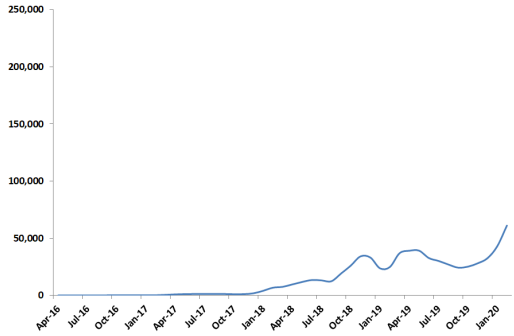

Figure 35: Deposits in UVA (in bn pesos)

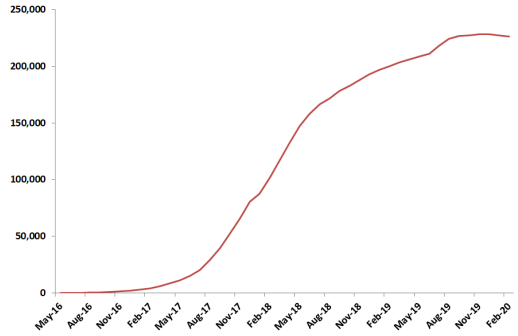

Figure 36: Loans in UVA (in bn pesos)

As inflation accelerated in 2018, 2019 banks increased interest rates on these loans, and property prices (indexed to the dollar) ended up out of range for most families, so the market dried up and the amount of loans dropped. Yet delinquency remained extraordinarily low, testifying to the good properties in terms of real value. This did not avoid a controversy on the loans[208]. Figure 37 computes the share of the installments as a percentage of incomes and how this ratio changed in 2018-2019 for different vintages of credits (one vintage corresponds to a credit starting in a particular month) assuming an initial ratio between installments and wages of 25%.

[208]The high inflation led to a pressure to freeze the capital appreciation, given the election year the benefits of such lobby increased. In spite of low delinquency the government caved into the demand and froze the installments (capital?) during the later part of 2019, generating uncertainty as to the system going forward.The new government, elected in 2019 amended this change in rules by establishing that the freeze would be recouped in 12 monthly installments.

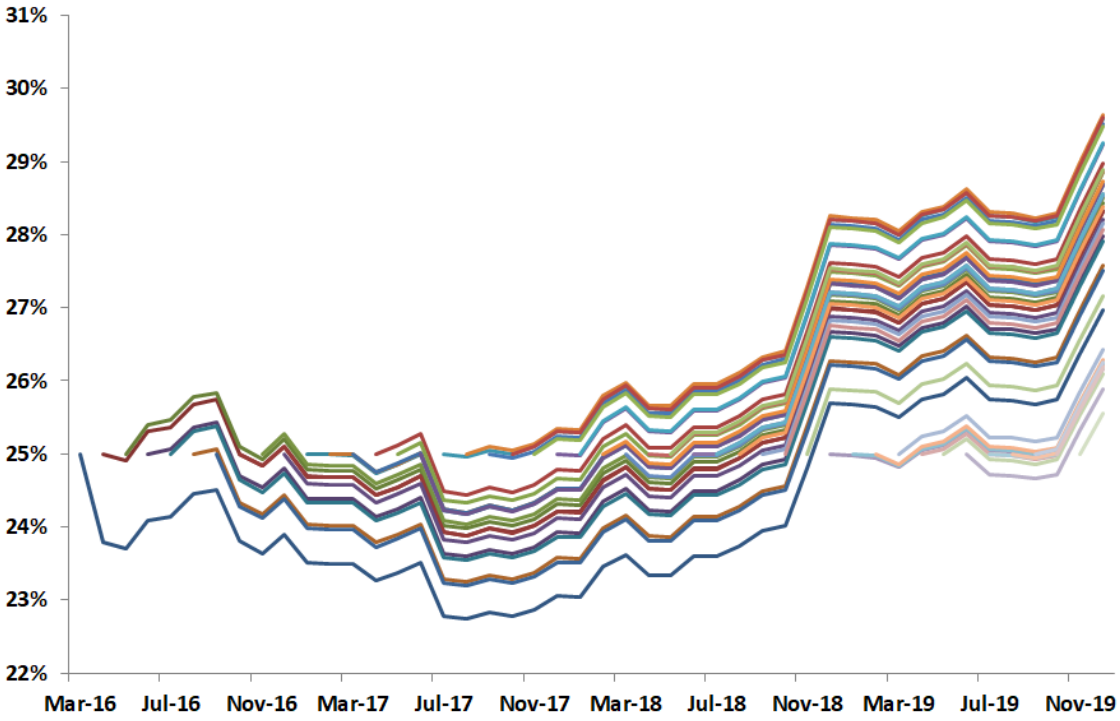

Figure 37: Installment-income Ratio. (UVA)

The figure shows that while the recession and drop in real wages of 2018 and 2019, contributed to an increase in the income shares of the UVA loans, the effect was not dramatic. This should be compared with the increases that would have occurred using dollar loans or where capital is indexed to short term interest rates, as shown in figures 38 and 39. In those graphs the dotted line shows the largest possible installment/income ratio under UVAs. The figure shows how dollar credit or interest indexed loans would have been much more difficult to manage when the real exchange rate depreciated. This explains why non-performing loans remained low on UVA loans, anticipating a re-kindling of the market, as soon as the economy stabilizes.

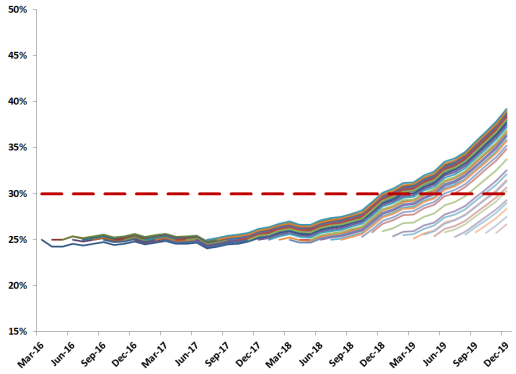

Figure 38: Installment-income ratio (adjusted by monetary policy rate)

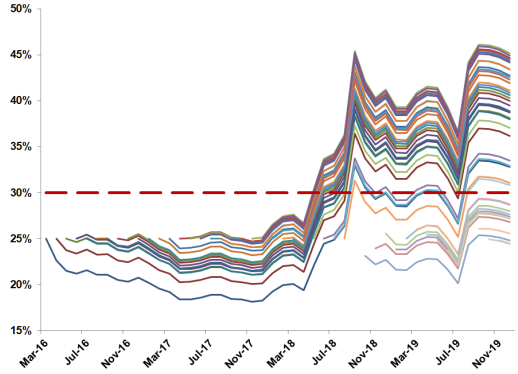

Figure 39: Installment-income ratio (adjusted by dollar depreciation)

11 Bibliography

References

Acemoglu, D. and Robinson, J. A. (2012). *Why Nations Fail: The Origins of Power, Prosperity and Poverty*. Crown, New York, 1st edition.

Alarcón, A., Demaestri, E., and Piedrabuena, B. (2014). Financiamiento de la vivienda en chile. *Inter-American Development Bank*.

Armijo de Vega, R., Reséndiz Carrillo, D., Ruiz Godínez, A., Vite García, A., and Apáez Flores, F. (2013). Banca corresponsal e inclusion financiera: Modelos de negocio en america latina. *Washington, DC, United States: Corporación Andino de Fomento, Fondo Multilateral de Inversiones and Programa de Technologías para la Inclusión Financiera*.

Assunção, J. (2013). Eliminating entry barriers for the provision of banking services: Evidence from 'banking correspondents' in brazil. *Journal of Banking & Finance*, 37(8):2806–2811.

Board, F. S. (2019). Fintech and market structure in financial services: Market developments and potential financial stability implications. *Financial Innovation Network, Financial Stability Board, Basel, Switzerland*.

Carabarín, M., de la Garza, A., González, J. P., Pompa, A., et al. (2018). Banking correspondents and financial inclusion in mexico. *Investigación Conjunta-Joint Research*, 1:389–427.

Carstens, A. (2020). Shaping the future of payments. *BIS Quarterly Review, March*.

Choi, J. J., Laibson, D., Madrian, B. C., and Metrick, A. (2004). For better or for worse: Default effects and 401 (k) savings behavior. In *Perspectives on the Economics of Aging*, pages 81–126. University of Chicago Press.

Darolles, S. et al. (2016). The rise of fintechs and their regulation. *Financial Stability Review*, (20):85–92.

De Gregorio, J. and Sturzenegger, F. (1997). Financial markets and inflation under imperfect information. *Journal of Development Economics*, 54(1):149–168.

Dombret, A. R. et al. (2016). Beyond technology–adequate regulation and oversight in the age of fintechs. *Financial Stability Review*, (20):77–83.

Drasch, B. J., Schweizer, A., and Urbach, N. (2018). Integrating the 'troublemakers': A taxonomy for cooperation between banks and fintechs. *Journal of Economics and Business*, 100:26–42.

Duarte, G. F. d. S. (2018). Banking regulation, innovation and real estate credit: the impact of brazilian banking correspondents.

Fiel (2019). Inclusion financiera en la argentina: Diagnóstico y propuestas de política. https://www.adeba.com.ar/iniciativa-adeba-para-la-bancarizacion-e-inclusion-financiera/.

Freixas, X. and Rochet, J.-C. (2008). *Microeconomics of banking*. MIT press.

Greco, E. and Viecens, M. F. (2019). Innovación y disrupción digital en los mercados de medios de pago: el caso de defensa de la competencia en argentina.

Hove, L. V. (2001). Optimal denominations for coins and bank notes: In defense of the principle of least effort. *Journal of Money, Credit and Banking*, 33(4):1015–1021.

Katz, M. L. (1984). Price discrimination and monopolistic competition. *Econometrica: Journal of the Econometric Society*, pages 1453–1471.

Kumar, A., Parsons, A., Urdapilleta, E., and Nair, A. (2006). *Expanding bank outreach through retail partnerships: correspondent banking in Brazil*. The World Bank.

Lal, R., Cox, L., and McAra, S. (2016). M-pesa: Financial inclusion in kenya. *Harvard Business School Case 516-011*. Available at *https://www.hbs.edu/faculty/Pages/item.aspx?num=50788*.

Leonardi, P. M., Bailey, D. E., Diniz, E. H., Sholler, D., and Nardi, B. A. (2016). Multiplex appropriation in complex systems implementation: The case of brazil's correspondent banking system. *MIS Q.*, 40(2):461–473.

Lorenzo, F. and Osimani, R. (2001). *Alternativas de política para fortalecer el ahorro de los hogares de menores ingresos: el caso de Uruguay*. CEPAL.

Merton, R. K. (1936). The unanticipated consequences of purposive social action. *American sociological review*, 1(6):894–904.

Milian, E. Z., Spinola, M. d. M., and de Carvalho, M. M. (2019). Fintechs: A literature review and research agenda. *Electronic Commerce Research and Applications*, 34:100833.

Neumeyer, P. A. (1998). Inflation-stabilization risk in economies with incomplete asset markets. *Journal of Economic Dynamics and Control*, 23(3):371–391.

Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups*. Harvard Univ. Press, Cambridge, Mass.

Peña, P. and Vázquez, A. (2012). The impact of bank correspondents on financial inclusion: A first evaluation. *Economic Studies*, pages 193–214.

Philippon, T. (2019). On fintech and financial inclusion. Technical report, National Bureau of Economic Research.

Ríos Benso, L. (2019). ¿ puede la regulación incentivar la innovación?: el caso del sistema nacional de pagos argentino 2016-2018. aportes para una agenda regulatoria de largo plazo.

Rogoff, K. S. (2017). *The curse of cash: How large-denomination bills aid crime and tax evasion and constrain monetary policy*. Princeton University Press.

Shiller, R. J. (1998). Indexed units of account: Theory and assessment of historical experience. Working Paper 6356, National Bureau of Economic Research.

Shiller, R. J. (1999). Designing indexed units of account. Working Paper 7160, National Bureau of Economic Research.

Sturzenegger, F. (2015). ¿un billete de 500? no, todo lo contrario: suprimamos el de 100. *La Nación*. available at *https://www.lanacion.com.ar/economia/un-billete-de-500-pesos-no-todo-lo-contrario-suprimamos-el-de-100-nid1782212*.

Sturzenegger, F. (2019). Macri's macro: The meandering road to stability and growth. bpea conference drafts, fall 2019. *Brookings Papers on Economic Activity, Washington, DC*.