

# Home Durables and Access to Credit

Among the Low-Income in  
Latin America and the Caribbean:

## Trends and Challenges

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# Home Durables and Access to Credit among the Low-Income in Latin America and the Caribbean: Trends and Challenges

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## Abstract

Countries in Latin America and the Caribbean (LAC) still exhibit lower adoption rates of time-saving home durables than developed economies. This may delay the attainment of further increases in women's labor participation, as well as other positive impacts on household welfare that have been well documented in developed countries. Access to credit may play a key role in bridging the access gap. This paper uses descriptive statistics of market data and a literature review to describe the adoption trends of home durables in LAC, their documented impacts on household welfare and the different types of financing used for acquiring them: traditional credit, microcredit, retail store credit and government aid. This analysis is complemented by a case study on Paraguay. Four main findings come off from this paper. First, the household appliance revolution hasn't reached LAC region in a uniform manner. Significant differences in adoption rates are observed across and within LAC countries. Second, access to credit has contributed to bridge the access gap of home durables. However, access to and the use of credit from financial institutions remains dismally low in the region, despite improvements in other financial inclusion indicators such as account ownership. In this context, alternative sources of credit for the acquisition of home durables among the low-income have mushroomed, such as credit from non-financial institutions, public utilities' companies and governments. Finally, further research is needed to understand the overall effects on welfare of home durables' acquisition through microcredit, and credit in general. Despite the benefits that these alternative sources of credit may have on increasing diffusion rates and closing adoption gaps of home durables, more research and attention is needed with regards to their terms and conditions. High interest rates and over-indebtedness may reduce the benefits derived from these credit lines. Hence, it is important for policy makers and other stakeholders to regulate this market and push for educational programs on financial literacy to prevent the financial abuse of low-income families and protect costumers.

**JEL Codes:** D14, E51, G23, I30, J22, L68, O54.

**Keywords:** Home Durables, Alternative Credit Sources, Microcredit, Financial Inclusion, Economic Development, Latin America and Caribbean.

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# 1. Introduction

The introduction and massive diffusion of home appliances, a sub-group of durables, in the 20th century has had a significant effect on individuals' use of time as well as the overall welfare of households across the world. Empirical evidence in both developed and developing countries shows that the adoption of time-saving technologies has a very positive impact on female labor participation – and in the long run, perceptions regarding gender roles and female empowerment – which may change the health, stress, and education outcomes of women and their children (Cavalcanti and Tavares, 2008; Coen-Pirani et al., 2010; García-Jimeno and Peña, 2017; Greenwood et al., 2005).

Similarly, the adoption was found to impact household welfare more broadly: decreasing time devoted to home production activities, increasing the time devoted by parents to their children, increasing school involvement by kids, increasing calorie intake and potentially<sup>5</sup> reducing the exposure to harmful gases from operating outdated appliances/methods for home production (Chen et al., 2015; García-Jimeno and Peña, 2017; Hanna et al., 2016).

In this context, this paper uses descriptive statistics of market data and a literature review to describe the adoption trends of home durables in Latin America and the Caribbean (LAC)<sup>6</sup>, their documented impacts on household welfare and the different types of financing used for acquiring them: traditional credit, microcredit, retail store credit and government aid. This analysis is complemented by a case study on Paraguay where we collected survey data among 2,925 middle and middle-low income individuals on possession of home durables and their financing.

Four main findings come off from this paper. First, the home appliance revolution hasn't reached LAC region in a uniform manner. For example, while the possession rate of washing machines is over 90% in Chile and Costa Rica (a rate like that of developed countries such as France, 97%, and the United Kingdom -UK-, 96.2%) in Guatemala, Peru, and Bolivia, it is below 30%. Possession heterogeneity is also observed within countries. While high-income segments exhibit possession rates that are close to those of developed countries, low-income segments have considerably lower rates. In Ecuador, for example, 100% of households in the 5<sup>th</sup> income decile has a washing machine, compared to only 6% of households in the 1<sup>st</sup> income decile.

Second, access to credit may play an important role in bridging the access gap of home durables. However, access to and the use of credit from financial institutions is dismally low in the region, despite substantial improvements in other financial inclusion indicators such as account ownership. In 2017, while around 54% of adults in LAC had a bank account, which includes 42% of the poorest, only 19% of adults owned a credit card, and 10% of the poorest 40% did so.

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<sup>5</sup> If properly operated and maintained.

<sup>6</sup> We use the definition of Latin America and the Caribbean employed by the World Bank Group (WBG), which specifies it as the entire continent of South America in addition to Mexico, Central America, and the islands of the Caribbean.

Third, given the challenges of access to finance, alternative sources of credit for home durables have emerged, such as credit from non-financial institutions. These institutions are more likely than traditional banks to approve credit applications from high-risk individuals. Although the growth of retail store credit has stagnated and even slightly decreased in some countries in the last years, its penetration is considerable: in Brazil, for example, a country with over ~146 million adults aged between 15 and 64, there were over 131 million store cards and total transactions with store cards amounted around US\$9 billion in 2017. Specific data collected from middle-income Paraguayans reinforce these findings: over 80% of surveyed individuals reported purchasing home durables with savings, disposable income or through credit provided by retailers (with a higher proportion of individuals resorting to retail store credit versus savings/disposable income for the purchase of more expensive durables).

Other sources of funding for home durables include microcredit from non-governmental organizations (NGOs) and commercial banks, that although focused towards entrepreneurial activities, is often used for consumption and associated with increased spending on home goods (Johnston and Morduch, 2008; Banerjee et al., 2015). Similarly, different governments across the region have implemented credit programs to help the poor and vulnerable acquire home durables: examples include the Argentinian *Ahora 12* program launched in 2014, and the Venezuelan *Mi Casa Bien Equipada* program launched in 2010.

Finally, further research is needed to understand the overall effects on welfare of home durables' acquisition through microcredit, and credit in general. In fact, there is some evidence that negative effects may occur from excessive interest rates and over indebtedness derived from poorer screening methods and monitoring mechanisms. This especially occurs when non-financial institutions are often subject to less regulation.

The rest of the paper is organized as follows. Section 2 details the adoption trends of home durables in LAC, especially home appliances and their documented impacts on household and individual welfare. Section 3 explores the different alternatives used for financing home durables: credit from financial institutions, microfinance, non-financial alternatives, and government aid. This section also includes a case study on Paraguay. Section 4 concludes.

## **2. Home Durables and the Lagged Appliance Revolution in LAC**

### **2.1 Adoption Trends and Challenges**

Durable goods include a wide range of items that mainly allow consumers to produce different services such as laundry, entertainment, or transportation, among others. These goods maintain their economic value for considerably longer periods of time than consumable goods such as food, personal care items, etc. Other definitions state that a durable good is one that may be used repeatedly or continuously for

more than a year (Jalava & Kavonius, 2007). Some examples of durable goods include household appliances, home or office furniture, motor vehicles, and consumer electronics. The acquisition of durable goods may also have other utility functions, depending on their characteristics and use.

For instance, durable goods may be used as an investment for households and individuals, given the value of the services they provide and the income they yield to their owners (Landefeld & McCulla, 2000; Katz, 1983). Durable goods may also be employed by individuals, especially those on a low income, as a risk-coping mechanism to offset violent fluctuations in their income (Sugiyanto et al., 2012). For example, Heltber et al. (2013) found that female-headed households in Afghanistan sold their home durables in response to external shocks that affected their income. In Kenya, during the 2007 election crisis, households were more likely to sell their animals and home durables compared to the year before (Dupas & Robinson, 2012).

However, the value of the services they produce is not included in the national accounts, since most of these services are household work and are not market oriented. The US Bureau of Economic Analysis treats consumer durables as fixed assets in their capital stock calculations but does not include the services of these durables in gross domestic product (GDP) estimations (Jalava & Kavonius, 2007).

The introduction and massive diffusion of home appliances, a sub-group of durables, in the 20th century has had a significant effect on individuals' use of time as well as the overall welfare of households. Appliances can be categorized in two main groups: time-saving goods and time-using equipment. Time-saving appliances reduce the time required for household chores, while time-using goods, like radio or television, require the use of individuals' discretionary or free time to produce utility (Bowden & Offer, 1994).

Appliances may also be considered an input for household production. According to Becker (1965), households combine time and market goods to produce more basic commodities that directly enter their utility functions. One such commodity is seeing a play on television (TV), which depends on the TV and time, another is meals, which depend on the input of a stove, and time. Since there is limited time, households must decide how to allocate time between housework and market work. The allocation of this time depends on the marginal productivity of the household and the market sectors. In equilibrium, the marginal utility of work at home (including leisure) must be equal to that produced by market work (Bowden & Offer, 1994; Chiappori & Lewbel, 2015).

Because the coverage rate of household services has substantially increased in LAC in the last few decades, the household appliance revolution is now more likely to take place, as it did in developed countries in previous decades. However, there is considerable heterogeneity in the adoption of time-saving appliances between developed and less developed countries. For instance, in the United States (US), France, and the UK, more than 85% of households own a washing machine, compared to a 62.5% average possession rate in the countries of LAC countries with available information (Table 1). Yet there is relative homogeneity in the adoption of

time-using equipment: nearly 91.6% of households in LAC have a TV set, while in France, US, and the UK the diffusion rate of this appliance is above 98%.

There is also a great divergence in the possession of different household appliances across the region, which is largely correlated with the countries' income levels. For example, over 90% of households in Chile and Costa Rica have washing machines, a figure similar to that of developed countries, while in Guatemala, Peru, and Bolivia, it is below 35%.

**Table 1. Household Appliance Possession Rate, 2018 (%)**

Country	TV set	Stove	Dishwasher	DVD player	Stereo	Vacuum	Washing machine
Argentina	98.1	96.5	3.2	58.4	60.2	25.2	91.8
Bolivia	86.4	75.6	9.3	43.8	34.5	11.8	6.7
Brazil	98.1	99.1	13.6	59	69.1	26	64.5
Chile	83.7	94.6	4.5	55.8	76.2	58.2	93.2
Colombia	94.8	93.5	0.7	27.3	49.7	7.7	64.9
Costa Rica	97.7	93.7	13.8	66.4	68.4	23.9	95.5
Dominican Republic	86.9	90.6	10.8	10.8	14.7	14.4	79.5
Ecuador	91.6	92.1	13.3	48.3	51.7	16.9	36.7
Guatemala	76.7	85.6	10.9	54.8	62.8	14.9	15.9
Mexico	94.7	90.4	13.5	34.5	39	8.4	69.4
Peru	86.1	97.7	11.8	48.6	42.9	15.7	31.6
Uruguay	98.5	94.9	4.6	37.4	63.8	44.1	87.1
Venezuela	97.9	93.9	8.5	42.9	35.8	11.1	75.8
United States	99.1	98.9	73.1	54.1	22.4	99.1	85.6
France	97	98.8	63	61.1	48	92.9	96.8
United Kingdom	99.5	98.3	49.1	72	88.2	98.8	97

Source: Euromonitor International (2019).

Heterogeneity in household durables' ownership is also present within countries. High-income segments typically have possession rates of time-saving appliances that are close to those of developed countries, while low-income segments have much lower rates. For example, in Brazil, 100% of high-income households have a washing machine, compared to only 18.4% of households in the 1<sup>st</sup> income decile (Table 2). The possession gap between the lower and upper deciles is smaller for time-using durables such as TVs. In Brazil, for example, the difference in possession rates of TVs is only 11.8 percentage points between the 1<sup>st</sup> and 10<sup>th</sup> income deciles, compared to 81.6 percentage points for washing machines (Table 3).

**Table 2. Washing Machine Possession Rate by Income Decile (% Households, 2018)**

Country	1st Decile	5th Decile	10th Decile	Total
Argentina	80.6	93.3	96.4	91.8
Bolivia	1.2	3.8	23	6.7
Brazil	18.4	58.5	100	64.5
Chile	80.2	94.8	97.8	93.2
Colombia	24.6	53.2	100	64.9
Costa Rica	70	100	100	95.5
Dominican Republic	41.7	81.6	100	79.5
Ecuador	5.9	20.1	99.3	36.7
Guatemala	7	13.9	28.2	15.9
Mexico	37.5	67	95.9	69.4
Peru	4.7	16.1	100	31.6
Uruguay	70.1	88.8	94.8	87.1
Venezuela	39	73.9	100	75.8

Source: Euromonitor International (2019).

The different diffusion rates of time-saving and time-using durables is a phenomenon that has also happened in developed countries such as the U.S and the U.K, where time-using durables have diffused much faster and more widely than time-saving durables.<sup>7</sup> According to Bowden and Offer (1994) these different diffusion rates are the result of the effect of appliances on the value of discretionary time – n the supply of discretionary time, on its cost, and on the satisfactions it can provide. Inspired by Becker (1965)'s home economics theory<sup>8</sup>, the authors argue that within the household, individuals will consume discretionary time (related to time-using durables) until its marginal utility is the same as that derived from housework (related to time-saving durables). Given this theory and the observed diffusion rates, the authors argue that consumers have apparently given greater priority to enhancing the quality of discretionary time than to increasing its quantity. Other explanations given by the authors are related to marketing, consumer behavior, and preferences for time-consuming appliances, like stereos or TVs, that provide social status or a social advantage.

Another factor that may explain the differences in the diffusion rates is their price. Bowden and Offer (1994) argue that for the case of US and UK, the prices of time-using appliances fell steeply, which may have some explanatory power in diffusion. However, they also note that high-penetrating appliances such as time-using seem to be less sensitive to price (constant, declining or zero price-elasticities). This gives more validity to the theory that diffusion rates are more likely to be explained by the assigned value of discretionary time.

<sup>7</sup> Wireless radio, for example, could be found in about three-quarters of American homes within about a decade of its introduction. Black and white television had been acquired by about 80 percent of American homes within 10 years of its reintroduction after the Second World War and took only slightly longer to reach the same level of acceptance in England and Wales. In contrast, washing machines, available more than three decades before television, had not achieved this level of diffusion by 1970 (Bowden & Offer, 1994).

<sup>8</sup> Becker's model states that the distribution of time between the labor market and household work time is determined by the marginal productivity of these two sectors. In equilibrium, the marginal utility of work at home, which includes leisure, must be the same as the marginal income from the labor market.

In Colombia, the average price of a new automatic washing machine in 2018 was US\$625 (Euromonitor International, 2018), while the monthly minimum wage for that year was approximately US\$265.<sup>9</sup> In Mexico, the monthly minimum wage was about US\$139<sup>10</sup> in 2018, while the average price of a new washing machine was approximately US\$577. However, in both countries the average price of a new television is US\$619 and US\$460, respectively, which suggests price is not driving the differences in adoption rates.

Another potential explanation are life cycles. Since shorter life cycles are associated with faster price drops, it is plausible that data on prices of appliances sold last year does not reflect the prices paid by low-income consumers, as they may access these goods (including relatively newer models) at cheaper prices from second-hand markets. Given that the replacement cycles for major appliances, like washing machines, are considerably larger than for consumer electronics, like TV sets, it is plausible to assume that it is easier for low-income consumers to acquire the latter.<sup>11</sup>

**Table 3. Color TV Set Possession by Income (% Households, 2017)**

Country	1st Decile	5th Decile	10th Decile	Total
Argentina	91.7	99.1	100	98.1
Bolivia	38	100	100	86.4
Brazil	88.2	100	100	98.1
Chile	78.5	84.8	85.1	83.7
Colombia	69.5	100	100	94.8
Costa Rica	82.5	100	100	97.7
Dominican Republic	77.5	87.9	90.9	86.9
Ecuador	62.2	99.8	100	91.6
Guatemala	65.2	77.9	81.5	76.7
Mexico	81.8	96.1	100	94.7
Peru	41.9	99	100	86.1
Uruguay	90.8	100	100	98.5
Venezuela	91.4	99.1	100	97.9

Source: Euromonitor International (2019).

## 2.2 Acquiring home durables and household appliances: Why does it matter?

Household appliances and technology for home production have changed the lifestyles of millions of families around the world. Since the beginning of the 20th century, the introduction and diffusion of time-saving and time-using appliances has had a significant effect on the way individuals allocate time among home production,

<sup>9</sup> The average exchange rate for 2018 was COP 2,956 per dollar. Information retrieved January 18, 2019 from Colombia's Central Bank's website: <http://www.banrep.gov.co/es/tasa-cambio-del-peso-colombiano-trm>

<sup>10</sup> The average exchange rate was for 2018 MXN 19.23 per dollar. Information retrieved January 18, 2019 from [Banco de Mexico's website](#).

<sup>11</sup> The replacement cycle for TVs is approximately 6 years, while the expected lifespan of a washing machine is about 10 years according to the National Association of Home Builders.

market work, and leisure activities. For example, appliances like vacuums, dishwashers, and microwaves have automated domestic chores and reduced the time devoted to home production. The use of television sets, radios, and computers has increased the number of hours people spend each week on leisure and sedentary activities.

The theoretical and empirical literature on this subject has mainly focused on the effect of household technology on women's welfare and time use given their traditional role with regards to domestic work. However, some studies have also analyzed the impact on household and individual welfare (consumption, obesity, childcare time, and gender roles' perceptions). In what follows, the current literature on the subject is analyzed in three thematic groups. The first group is composed of papers that analyze the effect of the diffusion of household appliances in developed countries, while the second examines the same but in developing countries. The third group explores the effect of house utilities, which are crucial for the use and adoption of household appliances.

Within the first group of papers, Greenwood et al. (2005) developed a household production model based on the work of Becker (1965) using a dynamic stochastic general equilibrium (DSGE) approach to assess the impact of time-saving technologies on the female labor supply in the United States. They use historical evidence of the decline in the prices of washing machines, dryers, vacuums, and other household appliances that reduce the time required for household chores. They found that ownership of time-saving appliances explained more than half of the growth of female labor force participation, and that the time spent on housework declined over time. Finally, the authors point out that rich households are the first to adopt new technologies.

Albanesi and Olivetti (2007) developed a similar DSGE model as the one used by Greenwood et al. (2005). Their results suggest that the advancements in medical technologies that reduced the time cost of pregnancy, childbirth and recovery were key for explaining the rise in labor force participation of young women with children between 1920 and 1960. Additionally, they also find that the introduction and improvement in home appliances accounts for a significant fraction of the rise in female labor force participation between 1950 and 1970.

Other studies have tested the results from Greenwood et al. (2005), using empirical data in different contexts. Cavalcanti and Tavares (2008), for example, evaluated the impact of the price of home appliances on female labor force supply using macro-level data for OECD countries, including the United States and the largest European economies, between 1975 and 1999. To reduce the bias caused by endogeneity, the authors used the relative manufacturing price index and the terms of trade as instruments for the price index of household appliances. They find a negative relationship between the price of household appliances and female labor participation. They conclude that the broader availability and lower costs of these technologies facilitated women's participation in the workforce by significantly reducing the time spent on domestic chores.

Coen-Pirani et al. (2010) used panel household-level data from the United States between 1960 and 1970 to evaluate the effect of acquiring washing machines, dryers, and refrigerators on married women's labor participation. To address endogeneity concerns, they instrumented married women's possession of household appliances with the average possession of such devices among single women. They found that ownership of these three appliances explained 40% of the increase in married women's labor force participation rates during the 1960s. Ownership of non-productive apparatus, like televisions or radios, had no effect on female participation.

Similarly, Cardia (2008) studied the impact of the diffusion of plumbing facilities and refrigerators on female labor supply using a two-stage least squares (2SLS) framework and US county-level census information for 1940 and 1950. Cardia uses plumbing facilities, like bathtubs and showers, to proxy for toilets and other indoor bathroom amenities. Since the variables related to plumbing facilities and refrigerators are endogenous and may bias the results, Cardia uses indicators of the feasibility<sup>12</sup> of adopting these technologies as instruments. The author finds a positive correlation between the adoption of these facilities and female labor force participation. Domestic chores were found to take longer without bathroom facilities: the presence of indoor piped running water reduced the time devoted to this task. However, the introduction of modern refrigerators was not found to influence female labor force decisions, since, according to the author, substitutes were available such as canned food, ice boxes, and daily milk delivery.

In addition to increasing women's labor supply by freeing up time that was previously devoted to household chores, improvements in household technology have also affected female labor supply through other mechanisms. Bailey and Collins (2011) studied the relationship between home production technology and fertility during the 1960s baby boom in the United States. Using a linear regression framework with county- and individual-level information, the authors evaluated the impact of the diffusion of home appliances and electricity on the fertility rate.<sup>13</sup> The authors controlled for economic and demographic variables such as median years of schooling, median family income, property value, the county's racial composition, and the opportunity cost of childrearing. To eliminate unobserved time-invariant effects that may bias the results, the authors also estimated a time-differenced regression. They found that the diffusion of home appliances was negatively correlated with fertility.

The findings in developing countries are generally consistent with the evidence found in the United States and other high-income regions. A study conducted in Nigeria by Omotoso and Obembe (2016) examined the effects that the possession of a washing machine and a power generator had on women's labor force supply. The authors employed a logistic regression using data obtained through questionnaires administered to 400 randomly selected adult women who were working or looking for job opportunities in Nigeria. Their results suggest that there is a positive and

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<sup>12</sup> The instruments used were the percentage of rural farms with electricity and water, the number of dwellings owned, the ratio of farms with a radio, the percentage of urban population, and the percentage of men employed as craftsmen.

<sup>13</sup> The fertility rate measured as the number of infants under one year old per 1,000 women of childbearing age.

significant correlation between the acquisition of washing machines and female labor force supply.

Ejaz (2011) studied the determinants of female labor force participation in Pakistan between 2005 and 2006 using individual cross-sectional information. The author used an instrumental variable (IV) approach to evaluate the effects of possessing household appliances on the female labor force participation. The average number of time-saving appliances owned in the locality was used to instrument for the possession of household devices in order to reduce bias caused by endogeneity. The study found that time-saving technologies have a U-shaped impact on labor force participation: if households owned more than seven home appliances, women were more likely to enter the labor force.

Most of the research on household technology has focused on the impact on female labor force participation. However, other studies examine the effect of these appliances on individual welfare, health, energy consumption, and gender roles. Hanna et al. (2016) studied the relationship between human behavior, well-being, and greenhouse gas emissions in Orissa, India. In this state, an NGO randomly distributed, through periodic lotteries, improved stoves to poor households. The authors found that the long-term effects of these stoves were limited: there was a reduction in exposure to smoke during the first year, but there were no discernible long-term effects on various health variables. This result was attributed to household behavior: households did not correctly use the stove, nor did they perform regular maintenance. Therefore, many stoves stopped working and were put aside, and households reverted to the use of traditional cooking technologies.

Chen et al. (2015) analyzed the impact of a Chinese government program that stimulated the consumption of consumer home durables in rural areas on health and weight outcomes such as body mass index and obesity. Between 2007 and 2008, the program was implemented in 13 provinces and one city. In 2009, the program was extended to the rest of the country. Individuals received a 13% subsidy to buy products such as televisions, refrigerators, washing machines, and cell phones. To evaluate this plan, the authors used difference-in-differences (DID) techniques and an IV estimate. For the DID approach, the authors used rural areas as the treatment group and urban zones as the control group. Since the acquisition of different home durables may be considered endogenous, Chen et al. (2015) use the subsidy eligibility to instrument for the possession of specific household appliances.

The authors established that the purchase of home durables made possible by this policy increased the body mass index of women in rural areas, and therefore increased the probability of being overweight or obese. The authors also found a growth in calorie intake for both males and females. They argue that women affected by the program were less likely to undertake physical activities during their leisure time and allocated more time to sedentary activities. Nonetheless, the authors also concluded that this policy had a positive impact on female labor force participation and school involvement for kids between 6 and 18 years. Before the program, school participation in rural areas was about 2% less than the rate registered for urban zones. After its implementation, the rates were similar across the country.

In order to assess the impact of time-saving technologies on time use, welfare, and gender roles in low-income households, García-Jimeno and Peña (2017) designed and implemented an intervention in low-income neighborhoods in Bogotá and Soacha (Colombia) from September to October 2015. In this experiment, the authors raffled<sup>14</sup> 132 washing machines off to 262 households across eight different neighborhoods. The winning families received a short training session on the adequate use of the machine and tips on how to save water by recycling it. The training session was designed to incentivize men to use the machine in order to influence household members' views regarding gender roles.

After six months, García-Jimeno and Peña (2017) found that the introduction of the washing machines in the treated households had positive effects on different outcomes. First, the average weekly time spent doing laundry fell by 2.5 hours, from 5.5 to 3 hours. Women used the time freed to increase the hours in childcare activities. Second, the authors found that fathers increased childcare activities and reduced their leisure time, which was *ex ante* disproportionately low for females. Third, there was a positive change in mothers' perceptions of fairness in relation to domestic work even though overall beliefs about gender roles had not changed. The authors mentioned that these results were conservative given that their sample size was small, impacts were measured in the short term (6 months after the intervention), and the inference results are based on exact randomization tests. Additionally, authors mentioned that further impacts on children's development and labor market outcomes would be examined later using the results of an 18-month follow-up.

The third group of papers details how increases in the coverage of household utilities, like electricity, running water, or natural gas, in developing countries has changed the allocation of time between men and women, possibly allowing them to work more and increase their income. Dinkelman (2011) examines the effects of a large-scale electrification process in South Africa during the 1990s on the rural labor market. The author shows that electrification had a positive effect on female employment: in areas that became connected to the electrical grid, the female employment rate grew by nearly 9.5 percentage points. This process was mainly due to the change in technologies used in domestic work. Dinkelman points out an increase in the use of electricity for cooking instead of wood and other fuels. Similarly, Grogan and Sadanand (2013) find that rural electrification in Nicaragua had a positive effect on the labor supply. They conclude that the presence of electricity increased the probability of female employment by 23 percentage points. The authors argue that electrification permits households to allocate their time differently, which enables women to enter the labor market. Therefore, Grogan and Sadanand (2013) suggest that electricity raises household income, which in turn allows them to access other services that increase welfare.

In Bangladesh, the electrification process implemented by developing solar home systems had positive effects on households' consumption expenditure and children's studying time (Khandker et al., 2013). Other impacts of the adoption of solar power

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<sup>14</sup> The households that won the raffle had to pay a token amount for the washing machine. The money raised by the sale of the washers was given to a foundation in each neighborhood for its functioning or for the development of different activities.

systems included the empowerment of women through the acquisition of television sets. Khandker et al. (2013) argued that these appliances promote women's decision making inside the household and information sharing. Finally, the presence of electricity in the household was found to reduce women's and children's morbidity related to respiratory diseases with a decrease in the use of kerosene and other fossil fuels for cooking.

### **3. Financing the Acquisition of Home durables**

#### **3.1 Traditional Credit**

Credit seems to be important in the diffusion rates of home-durables. In the U.S., for example, where the appliances' revolution happened decades ago, by the end of the 1920s, 90 percent of home durables purchased in the country were purchased with credit (Bowden & Offer, 1994). There is reason to believe that this could be replicated in LAC: year after year reports show improvements in financial inclusion, which theoretically implies making financial services accessible at affordable costs to all individuals and businesses, irrespective of net worth and size. According to the WBG (2018), for example, a historic record of 3.8 billion people worldwide now have an account at a bank or mobile money provider. Unfortunately, as financial inclusion is generally proxied by account ownership, these improvements don't necessarily translate into more access to credit, especially for the low-income. This in turn can produce a challenging scenario for the acquisition of home durables, particularly time-saving ones, given their relatively high price and longer life cycles.

Data from the Global Findex Database 2017 produced by the WBG (2017), shows that 39.4% of adults in LAC<sup>15</sup> had an account at a financial institution in 2011, and an increase in this percentage to 54.2% by 2017 (Table 4 and Figure 1). The growth in this indicator among the poorest 40% is even higher: 24.1% of the poorest 40% adults in LAC had an account in a financial institution in 2011, and this percentage increased to 41.9% in 2017. These figures are still far below the world average of 67% for all adults and 59% among the poorest 40%.<sup>16</sup>

The country-by-country analysis follows the same pattern: in nearly half of the countries in the region with data availability for both, 2011 and 2017, the percentage of adults with accounts at a financial institution increased by at least 50% between 2011 and 2017. In El Salvador, Honduras, Peru, Uruguay the percentage more than doubled. The growth among the poorest 40% is even more remarkable: in 17 of the 18 listed economies with data for 2011 and 2017, the percentage increased more than 50%, while in 10 countries it more than doubled, and in 6 it more than tripled.

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<sup>15</sup> As mentioned in previous sections, we use the definition of Latin America and the Caribbean employed by the WBG, which specifies it as the entire continent of South America in addition to Mexico, Central America, and the islands of the Caribbean. However, due to the unavailability of information, only 23 of the 43 countries in the list is analyzed. From the final list of 23, 20 countries have information for 2011 and 2017.

<sup>16</sup>Account ownership at a financial institution has historically been used to proxy for financial inclusion. However, the newest definition incorporates the usage of mobile money services (individuals who report personally using services included in the GSM Association's Mobile Money for the Unbanked -GSMA MMU- database to pay bills or to send or receive money. However, mobile money service providers contribute less than 1 percentage point to what is defined as financial inclusion if we consider that 54.2% of all adults had an account at a financial institution only as described in the main text.

**Table 4. Account Ownership at a Financial Institution in Latin America**

Country	2011		2014		2017	
	40% Poorest	Total	40% Poorest	Total	40% Poorest	Total
Argentina	19.7	33.1	44.6	50.2	37.4	47.9
Belize	-	-	37.4	48.2	-	-
Bolivia	14.3	28.0	25.2	40.7	38.2	51.2
Brazil	37.5	55.9	57.2	68.1	56.6	70.0
Chile	30.4	42.2	53.8	63.2	66.7	73.8
Colombia	13.8	30.4	23.1	38.4	33.7	44.9
Costa Rica	35.5	50.4	56.7	64.6	58.0	67.8
Dominican Republic	21.7	38.2	41.3	54.0	40.1	54.8
Ecuador	22.8	36.7	31.0	46.2	33.4	50.9
El Salvador	5.1	13.8	19.3	34.6	18.0	29.3
Guatemala	11.7	22.3	28.6	40.8	30.0	43.5
Haiti	-	22.0	12.4	17.5	14.8	28.2
Honduras	8.1	20.5	19.5	30.0	31.4	42.9
Jamaica	62.0	71.0	68.9	78.3	-	-
Mexico	13.4	27.4	28.7	38.7	24.6	35.4
Nicaragua	5.2	14.2	8.7	18.9	17.7	28.4
Panama	18.0	24.9	31.5	43.4	32.5	45.8
Paraguay	5.6	21.7	-	-	22.6	31.1
Peru	5.1	20.5	15.7	29.0	26.5	42.2
Puerto Rico	-	-	56.0	69.7	-	-
Trinidad and Tobago	-	75.9	-	-	77.1	80.8
Uruguay	8.8	23.5	33.2	45.4	48.6	63.9
Venezuela, RB	30.7	44.1	48.0	56.9	59.5	73.2
<b>Latin America &amp; Caribbean</b>	<b>24.1</b>	<b>39.4</b>	<b>40.8</b>	<b>51.6</b>	<b>41.9</b>	<b>54.2</b>

Note: Table depicts percent of the population aged 15 and over.

Source: WBG (2017).

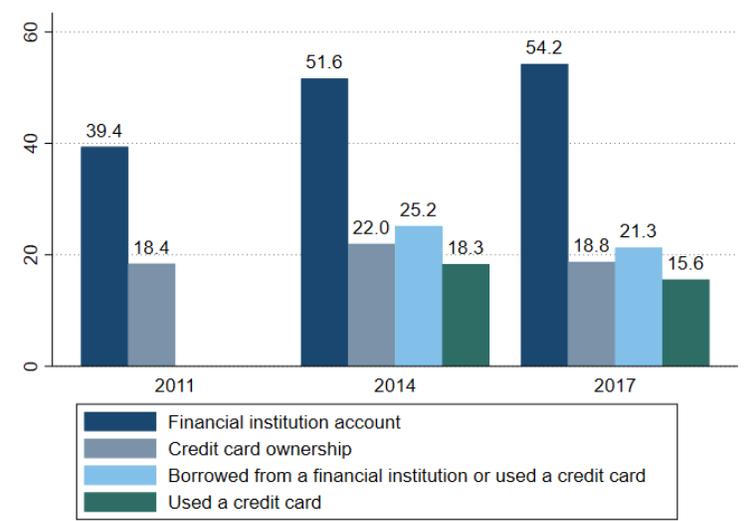
When using other measures of financial inclusion, such as access to credit,<sup>17</sup> the statistics are less optimistic. In 2017, while 54.2% of adults in LAC had a bank account, which includes 41.9% of the poorest, only 19% of adults owned a credit card, and 10% of the poorest 40% did so. (Figures 1 and 2). Credit card ownership in the region is therefore around the world's average of 18% with regards to all adults, below the world's average of 12% with regards to the poorest 40%, and far below the rates of the Organization for Economic Cooperation and Development (OECD) countries (57% among all adults, and 44% among the poorest 40%).

In contrast to the significant increase in account ownership from 2011–2017, the growth in access to credit in LAC has been modest at best: while 18% of adults owned a credit card in 2011 (9% of the poorest 40%), 19% of adults (10% of the poorest 40%) did so in 2017. Yet some countries have experienced significant progress: in Bolivia, Dominican Republic, Nicaragua, Peru, and Venezuela, the percentage of low-income individuals with a credit card more than doubled between

<sup>17</sup> We measure access to credit using credit card ownership because, whereas card ownership is a proxy for credit availability that individuals may or may not use, the availability of credit through loans or lines of credit from financial institutions is typically only observed once it is realized (i.e., when the individual uses it).

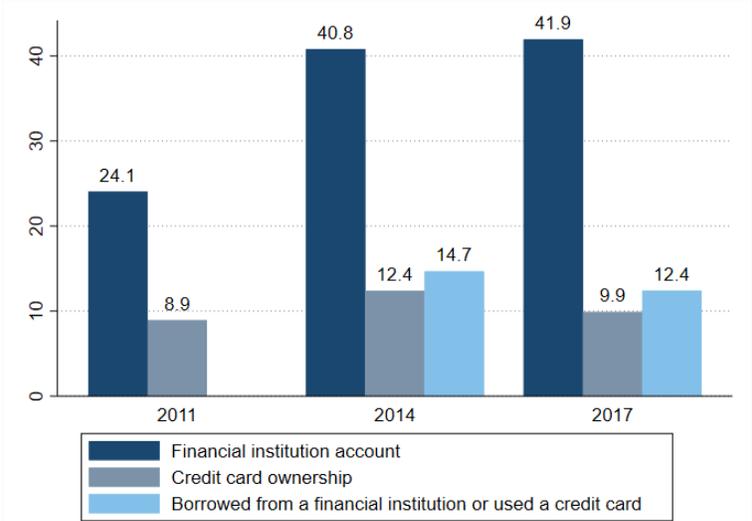
2011 and 2017 (Table 5a). In Nicaragua and Venezuela, it almost tripled. There are, however, significant divergences across LAC: for instance, in Chile and Uruguay it is over 20% among the poorest 40%, while in El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, and Paraguay it is less than 3%.

**Figure 1. Evolution of Financial Indicators in LAC (Total)**



*Note: Figure depicts the % of those aged 15 and over.  
Source: World Bank Group (2017).*

**Figure 2. Evolution of Financial Indicators in LAC (poorest 40%)<sup>18</sup>**



*Note: Figure depicts the % of those aged 15 and over.  
Source: World Bank Group (2017).*

The credit usage rate has declined slightly over time: while 25.2% of individuals in LAC used a credit card or borrowed from a financial institution as of 2014 (14.7% of the poorest 40%), 21.3% did so by 2017 (12.4% of the poorest 40%). Similarly, while

<sup>18</sup> The Global Findex Database 2017 lacks information on credit card usage among the poorest 40% of the population.

18.3% of adults used a credit card as of 2014, 15.6% did so in 2017 (Figures 1 and 2). Like credit card ownership, credit usage is heterogeneous throughout the region (Table 5b).

**Table 5a. Credit Card Ownership in LAC**

Country	2011		2014		2017	
	40% Poorest	Total	40% Poorest	Total	40% Poorest	Total
Argentina	9.9	21.9	14.0	26.6	14.2	24.0
Belize	-	-	8.7	10.7	-	-
Bolivia	1.7	4.1	2.7	6.2	4.9	7.2
Brazil	15.0	29.2	20.5	32.0	15.6	27.0
Chile	13.9	22.8	19.5	28.1	20.9	29.8
Colombia	4.3	10.2	6.2	13.7	4.8	13.9
Costa Rica	3.5	12.2	11.0	14.5	6.7	13.9
Dominican Republic	2.6	12.2	5.4	10.9	6.6	16.4
Ecuador	5.3	10.2	2.5	5.7	5.5	8.7
El Salvador	2.3	5.3	2.2	8.0	2.1	5.7
Guatemala	2.9	6.9	3.5	6.3	2.4	6.6
Haiti	-	1.8	1.8	3.8	2.3	6.9
Honduras	2.1	5.3	1.2	6.1	2.2	4.5
Jamaica	2.9	6.9	11.2	13.8	-	-
Mexico	5.8	13.0	7.7	17.8	2.6	9.5
Nicaragua	0.8	2.5	1.1	3.5	2.5	4.9
Panama	5.9	10.7	4.4	9.8	5.1	8.0
Paraguay	1.2	9.0	-	-	1.2	6.6
Peru	1.8	10.0	4.7	11.7	3.9	11.6
Puerto Rico	-	-	7.6	23.9	-	-
Trinidad and Tobago	-	15.3	-	-	13.6	16.0
Uruguay	15.7	27.1	24.2	39.8	24.0	40.6
Venezuela, RB	4.4	10.4	10.0	21.5	16.5	28.8
<b>Latin America &amp; Caribbean</b>	<b>8.9</b>	<b>18.4</b>	<b>12.4</b>	<b>22.0</b>	<b>9.9</b>	<b>18.8</b>

*Note: Table depicts percent of the population aged 15 and over.*

*Source: WBG (2017).*

### 3.1 Microfinance

The limitations of the traditional financial sector to provide financial services to the poor and vulnerable and their micro-enterprises, paved the way for microfinance to emerge in the 1970s. The focus of microfinance is low-income, self-employed or informally employed individuals, who are less likely to have formalized ownership titles on their assets, a steady flow of income, have complete formal identification papers, etc. Although microfinance is traditionally associated with modern microfinance institutions (MFIs), providers of microfinance comprise a varied array of institutions that include commercial banks trying to reach out to the low-end of the market with specialized programs, commercial microlenders, NGOs, cooperative banks, etc. (WBG, Independent Evaluation Group, 2015).

**Table 5b. Borrowed from a Financial Institution or Used a Credit Card**

Country	2014		2017	
	40% Poorest	Total	40% Poorest	Total
Argentina	13.5	26.7	15.1	24.4
Belize	15.3	18.9	-	-
Bolivia	13.3	22.1	14.7	20.0
Brazil	20.9	33.8	15.9	26.3
Chile	24.4	31.3	24.4	30.9
Colombia	11.3	21.7	10.4	21.2
Costa Rica	15.5	20.4	11.1	21.2
Dominican Republic	15.4	24.0	15.4	30.3
Ecuador	12.6	16.7	12.5	16.7
El Salvador	14.9	20.5	7.5	11.5
Guatemala	7.8	15.1	7.1	12.7
Haiti	3.8	5.9	4.0	12.9
Honduras	7.3	13.4	7.5	14.2
Jamaica	13.8	18.3	-	-
Mexico	9.3	18.3	5.2	11.8
Nicaragua	10.1	15.5	11.0	13.4
Panama	10.8	17.5	7.7	13.3
Paraguay	-	-	10.7	15.4
Peru	8.6	18.0	8.5	19.1
Puerto Rico	12.1	27.1	-	-
Trinidad and Tobago	-	-	28.3	27.5
Uruguay	30.4	44.5	28.6	43.4
Venezuela, RB	8.2	20.0	17.0	27.7
<b>Latin America &amp; Caribbean</b>	<b>14.7</b>	<b>25.2</b>	<b>12.4</b>	<b>21.3</b>

Note: Table depicts percent of the population aged 15 and over. No information was available for 2011.

Source: WBG (2017).

LAC has always been an important bastion of microfinance. Brazil was the pioneer country in LAC to develop microfinance in the 1970s. Microfinance expanded throughout LAC countries from the 1980s onwards. The first strategies to target the low-income populations of the region were mainly developed by NGOs and remained outside the formal financial system. A notable exception was *BancoSol*, a Bolivian bank fully dedicated to microfinance, which began operations as early as 1992. Yet, for the most part of the 90s and the first decade of the 2000s, the most widely known and recognized MFIs in LAC were the NGOs such as *FINCA* (Foundation for International Community Assistance) which entered LAC between the late 80s and the early 90s (Ecuador in 1994, Guatemala in 1998, Haiti in 1989, Honduras in 1989, Nicaragua in 1992) and which have developed a very specific know-how on how to reach the low-end of the market (Latin America Bureau, 2012). Nevertheless, donor dependency and organizational restrictions placed limits on NGO's microfinance portfolio's growth (Poyo & Young, 1999).

The success of NGOs and grassroots organizations sparked the interest of commercial banks in microfinance, and this interest sustained in time: in 2017 more than half of microfinance credit was supplied by banks (51%), although they only accounted for 33% of global borrowers (Convergences, 2017). Other institutions also joined the wave: credit unions, foundations, state institutions and private business. In some countries, institutions without full banking license (non-banking

financial institutions) also flourished in the microfinance market (Latin America Bureau, 2012). These formalized credit issuers, as opposed to NGOs, had a larger spectrum of possible financing sources and had a higher chance of benefitting from having access to information from the financial regulator (Arriola, 2003).

An example of the formalization of microfinance institutions is the case of *Compartamos Banco* in Mexico. The bank began as an NGO in 1990, started by a Catholic social action group called *Gente Nueva*, whose inspiration was a visit by Mother Teresa to Mexico. To grow the fund, the institution was incorporated as a for-profit company in 2000, and a commercial banking license was obtained in 2006. The formalization was followed by controversy. A 2008 article from The New York Times described how the bank's good results did not translate to their customers as close to 24% of the bank's interest income went to profits. Similarly, and while the bank's return on average equity was more than triple the 15 percent average for Mexican commercial banks, borrowers faced average annual interest rates that were close to 90 percent. Furthermore, in 2007 *Compartamos'* owners sold 30% of their stock in an initial public offering which brought in \$458 million, from which private Mexican investors, including the bank's top executives pocketed \$150 million (Malkin, 2008).

Today, LAC represents a significant market for MFIs accounting for 23.2 million clients (the world total is 132 million) and 41.6% of the total amount loaned (the world total loan portfolio of US\$102 billion). This region is followed by South Asia with US\$23.5 billion in loans and about 78.3 million borrowers. The country with the largest loan portfolio in LAC is Peru with 10.8 billion, followed by Bolivia with 7.4 billion, and Colombia with 6.4 billion. The country with the largest number of borrowers in LAC is Mexico with 7 million, followed by Peru with 4.6 million and Colombia with 2.8 million.

Microfinance has traditionally been known for providing resources for low-income entrepreneurs to increase their productivity and income levels, and as such its relationship with the acquisition of home durables may be unclear. Yet data shows that households and individuals use a significant proportion of the microcredit issued to satisfy their consumption needs. For instance, data from Indonesia<sup>19</sup>, an important early site for microfinance, shows that households below the poverty line as well as those above it used nearly 50% of the amount of the loan they took to meet basic needs (home improvements, nonbusiness land or building purchase, school tuition, medical treatment, loan repayment, household goods) and the other half for business (Johnston and Morduch, 2008). Mosley (2001) suggests that very low-income clients of microfinance usually try to avoid exposing themselves to higher levels of risk. Therefore, when they have access to financial services, they seek to ensure their consumption and savings against decline as opposed to starting a new business.

Evidence of the impacts of microcredit on acquisition of home durables is scarce, as most of the microcredit literature has primarily focused on nondurable consumption, income, female empowerment and business profits. A couple of exceptions prevail:

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<sup>19</sup> Collected through surveys in six provinces and covering 1,438 households (Johnston and Murdoch, 2008).

in an experiment conducted in Morocco, Crepón et al. (2015) did not find an increase in the consumption of durables as a result of a microcredit program introduced in rural villages. Similarly, Attanasio et al. (2015) found no impact of the access to group credit on ownership of household goods in rural villages of Mongolia (although a positive impact on ownership of business assets was found).

Banerjee et al. (2015) performed a long-run evaluation of a local MFI program for female groups in Hyderabad, India, randomized at the neighborhood level. The authors found that for treated households the monthly spending per capita on home durables increased by around 20 Rupees (Rs), which represents a 17% increase relative to total spending on durables in comparison households. Because this figure averages over nonborrowers and borrowers (given that the treatment occurs at the community level) this figure is likely larger for borrowers alone. The most commonly purchased durables include gold, and silver, motorcycles, sarees, color TVs, refrigerators, rickshaws, computers and cellphones. Additionally, authors found that households invested in home durables and restrained their consumption of unnecessary or “temptation” goods, such as tobacco or alcohol.

In an experiment at the individual level implemented in Bosnia and Herzegovina, Augsburg et al. (2015) evaluated the impacts of a microcredit extended to a poorer, “marginal” segment of the population that the loan officers of the local MFI would normally reject. Despite finding evidence of higher self-employment and increases in business’ inventory, authors found that households reduced their home durables, however, the significance of this last effect vanished once significance levels were corrected for multiple hypotheses testing.

### **3.2 Non-Financial Institutions**

Non-financial institutions refer to private sector companies such as department stores, retail stores and producers of home durables. These should not be confused with non-banking financial institutions, which are financial in nature but do not have a full banking license and are not supervised by a national or international banking regulatory agency.

Non-financial institutions play a key role in providing credit to the most vulnerable individuals. Non-financial institutions normally have less stringent approval criteria than traditional financial institutions to qualify for their credit cards. The most common requirements are a valid identification (ID) and a work or income certificate. Some companies may even accept the recommendation of a current user of their financial products as a substitute for these documents. Applications may also be approved instantly. This process is in stark contrast to the one used by more traditional financial entities, which generally require applicants to have a credit history and collateral in case of default. Thus, low-income individuals are rarely able to access this market.

Retail store, which constitute a sub-set of non-financial institutions, have become a common provider credit to the poor and unbanked (or underbanked) populations of LAC. Table 6 shows the total number of retail store credit cards issued in Latin America over the last 7 years (for countries with available data). Although the growth

of retail store credit has stagnated and even slightly decreased in some countries in the last years, its penetration is considerable: Brazil has the largest number of cards (over 130 million), followed by Mexico (49.1 million) and Colombia (8.6 million). The value and number of transactions is also considerable (Table 6). In 2018, there were over 1.5 billion transactions in Latin America on retailer store cards, totaling over US\$29 billion (average transaction of around US\$19).<sup>20</sup>

**Table 6. Number of Retailer Store Cards (Million)**

	2012	2013	2014	2015	2016	2017	2018
<b>Argentina</b>	4.1	4.6	4.9	4.9	3.4	2.5	2.6
<b>Bolivia*</b>	0.7	0.7	0.8	0.9	0.9	0.9	0.9
<b>Brazil</b>	138.2	137.7	136.3	136.1	133.6	131.2	130
<b>Chile</b>	13	12.6	6.9	5.3	4	3.7	3.5
<b>Colombia</b>	5.5	6.4	6.4	7.1	7.7	7.7	8.6
<b>Costa Rica*</b>	0.3	0.3	0.4	0.4	0.4	0.4	0.4
<b>Ecuador*</b>	0.03	0.04	0.04	0.04	0.04	0.05	0.1
<b>Guatemala*</b>	0.9	1	1.1	1.1	1.2	1.3	1.4
<b>Mexico</b>	33.5	36.8	37.9	40.2	43.1	46	49.1
<b>Peru*</b>	0.1	0.1	0.2	0.2	0.2	0.2	0.2
<b>Uruguay*</b>	1.9	2	2	2	-	-	-
<b>Venezuela</b>	0.4	0.4	0.3	0.3	0.2	0.2	0.1
<b>Latin America</b>	<b>207.1</b>	<b>212.1</b>	<b>207.2</b>	<b>209.2</b>	<b>205.7</b>	<b>205.5</b>	<b>208.5</b>

Source: Euromonitor International (2019).

\*Modeled data.<sup>21</sup>

**Table 7. Number of Store Card Transactions (Million)**

Country	2012	2013	2014	2015	2016	2017	2018
<b>Argentina</b>	85.5	88.1	90.2	92.3	64.8	48.1	49.5
<b>Bolivia*</b>	10.7	12.2	13.7	15.2	16.7	16.9	16.9
<b>Brazil</b>	566.7	601.1	605	616.8	630.4	628.1	624.6
<b>Chile</b>	43.4	45.5	41.5	32.7	23.6	20.5	17.4
<b>Colombia</b>	32.5	36.5	35.9	35.7	49.5	52.1	54.5
<b>Costa Rica*</b>	3.5	3.9	4.3	4.6	4.9	5.2	5.5
<b>Ecuador*</b>	0.3	0.4	0.4	0.4	0.4	0.4	0.4
<b>Guatemala*</b>	10.4	11.7	12.9	13.9	15	16	17.4
<b>Mexico</b>	419.5	470.4	493.7	529.2	572	614.2	659.1
<b>Peru*</b>	1.4	1.6	1.5	1.5	1.5	1.6	1.7
<b>Uruguay*</b>	22.7	21.7	22.2	22.6	-	-	-
<b>Venezuela</b>	3.8	3.5	2.3	1.4	0.9	0.6	0.4
<b>Latin America</b>	<b>1,257.90</b>	<b>1,359.90</b>	<b>1,392.90</b>	<b>1,440.00</b>	<b>1,458.30</b>	<b>1,485.90</b>	<b>1,533.60</b>

Source: Euromonitor International (2018).

\*Modeled data.

<sup>20</sup> These figures are likely a lower bound given that information on several countries is missing.

<sup>21</sup> Euromonitor models market sizes for countries that are not researched directly for a consumer good or service. The modeled data is created by associating similar countries with the non-researched countries based on socioeconomic, demographic, geographic, and cultural indicators. Once these pegs are established, the missing data is estimated using an econometric regression that captures key comparative factors such as per capita GDP and level of urbanization. Then, the modeled data is analyzed and adjusted by Euromonitor research teams to ensure that the results are consistent with empirical evidence.

**Table 8. Retail Store Cards Transactions – Retail Values (Million)**

Country	2012	2013	2014	2015	2016	2017	2018
Argentina	2,404.7	2,686.9	2,944.4	3,245.1	2,272.6	1,680.9	1,594.1
Bolivia*	329.7	355.5	364.2	306.2	275.9	266.7	228.6
Brazil	13,484.5	12,254.5	11,074.4	10,195.0	9,663.6	9,253.0	8,625.2
Chile	6,832.1	6,589.5	5,063.0	3,854.9	2,881.7	2,575.5	2,246.2
Colombia	2,232.3	2,145.8	2,180.9	2,195.9	1,889.1	1,896.8	1,943.2
Costa Rica*	230.0	256.5	282.7	268.7	254.9	236.9	246.9
Ecuador*	7.0	7.7	7.0	5.6	5.2	5.7	6.2
Guatemala*	871.7	1,000.8	1,030.4	973.2	871.9	737.9	775.5
Mexico	7,541.8	8,345.8	8,065.3	8,568.4	8,903.4	9,361.2	9,694.0
Peru*	24.2	27.3	26.0	23.6	22.4	23.3	24.9
Uruguay*	239.8	235.2	237.5	253.0	-	-	-
Venezuela	3.6	3.3	1.8	0.7	0.2	0.2	1.3
<b>Latin America</b>	<b>37,557.2</b>	<b>37,666.6</b>	<b>35,276.3</b>	<b>33,925.6</b>	<b>30,938.5</b>	<b>29,770.2</b>	<b>29,198.9</b>

Note: Constant 2018 prices (US\$ million).

Source: Euromonitor International (2019).

\*Modeled data.

Due to the ease of access and the large volume of transactions, retail store credit cards and similar products may become the most important point of access to financial services for historically excluded and vulnerable populations in LAC. Yet this type of credit still represents a small proportion of total consumer credit (6% on average) in most countries in the region. Currently, Mexico displays the highest share of store card transactions as a proportion of total consumer credit (around 16.5%), followed by Colombia with 5.8% and Argentina with 4%. In contrast, in Venezuela, the relative importance of the transactions made through these cards is substantially smaller as they represent only 0.4% of consumer credit for 2017.

**Table 9. Store Cards Transactions/ Consumer Credit provided by the Mainstream Financial Sector<sup>22</sup>**

Country	2012	2013	2014	2015	2016	2017	2018
Argentina	9.47%	8.16%	8.21%	8.37%	6.40%	5.95%	4.04%
Brazil	4.31%	3.69%	3.25%	3.16%	3.31%	3.04%	2.74%
Chile	17.67%	16.27%	12.34%	8.89%	6.00%	4.69%	-
Colombia	8.54%	7.78%	7.42%	7.15%	5.98%	5.89%	5.82%
Mexico	19.00%	18.83%	17.60%	16.87%	16.14%	13.82%	16.53%
Venezuela	1.45%	1.12%	0.60%	0.35%	0.29%	0.42%	-

Source: Euromonitor International (2019).

<sup>22</sup> The mainstream financial sector is made up of retail banks, credit unions, and building societies (Euromonitor International, 2018).

Examples of retailers with growing credit programs are abundant in the region. For example, *El Grupo Monge* (GMG)<sup>23</sup> – a retailer with a presence in Nicaragua, Peru, Honduras, Guatemala, El Salvador, and Costa Rica – offers a program called *Flexipagos* through which its customers can finance the purchase of household appliances and other durables. *Flexipagos* allows customers to decide each month how much they can repay. Program participants are usually from low-income and vulnerable populations with no access to formal financial markets. In Costa Rica, GMG reported that 49% of its clients were from this segment of the population as of 2015. The store offers its clients financial plans between 6 and 48 months, with interest rates of 40–80%, for the purchase of home durables (IDB Invest, 2016). This is higher than the average interest rates charged by local banks for consumer credit (15.9%) and credit cards (42.4%) (Table 10).

*Flexipagos* has fewer informational requirements than traditional lending institutions. Clients must be 18 years or older and submit two personal references as well as an employer certificate or proof of monthly income. GMG developed a psychometric credit scoring system with the help of the *Entrepreneurial Financial Lab* (EFL) and *Fair Isaac* to assess applications by predicting individuals' repayment patterns given their socio-demographic characteristics. This scoring mechanism has allowed GMG to accelerate and automate its credit approval process. According to EFL (2014), 12 months after the implementation of the credit scoring system in Perú (one of the countries where GMG is present), GMG's clients grew by 35%, while the default rate of its credit portfolio remained the same. This represented around 3,000 new accounts opened by previously unbanked Peruvians.

In 2011, the Inter-American Development Bank (IDB) Invest approved a loan of up to US\$10 million for *GMG Holding S.A.* that is part of a syndicated loan arranged by Citibank. *GMG Holding S.A.* used this loan to refinance its financial liabilities and finance medium-term account receivables to improve its financial structure, support growth, and enable the group to open new points of sale (IIC, 2011). IDB INVEST's (2016) evaluation of GMG's project points out that GMG's credit portfolio increased from US\$217 million in 2010 to US\$308 million in 2015, and that while the total number of clients fell by nearly 9% from 2011 to 2015, the average loan size increased. To date, there has been no rigorous impact evaluation of the program's effect on users' welfare, use of time, or the acquisition of home durables.

*Regal Forest Holdings* is another example of a private enterprise offering credit to its customers to purchase their goods.<sup>24</sup> This company has a presence in several countries in LAC including Trinidad, Guyana, Costa Rica, Barbados, and Paraguay. In each of these countries *Regal Forest* operates a retailer store brand that offers its customers different ways of financing the products they sell, which are mainly household appliances, electronic devices, furniture, motorcycles, and other home durables. Its target population is also composed of unbanked, middle-class, and low-income individuals. Like *Flexipagos*, interest rates charged by institutions in the

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<sup>23</sup> At the time *GMG Holding S.A.* received a loan from IDB Invest in 2011 it was the parent company of *El Gallo más Gallo*, *Almacenes Prado*, *El Verdugo*, *Importadora Monge*, and *Play*, which import electrical appliances and sell them on the wholesale and retail market.

<sup>24</sup> *Regal Forest Holdings Co. Ltd.* is composed of Unicomer (Trinidad) Limited, *El Gallo más Gallo de Alajuela S.A.* – Goyo (Costa Rica), *Wisdom Products S.A.E.C.A* (Paraguay), Unicomer (Guyana) Incorporated, and Unicomer (Barbados) Ltd.

holding are often higher than those charged by local banks; *Gollo*, for example, a retailer in Costa Rica which is part of the holding, charges interest rates above 50% (MEIC, 2015). In 2016, IDB Invest approved US\$24 million to finance the Holdings companies'<sup>25</sup> client loan portfolio. To date, there has been no evaluation available on the program.

Retail stores, supermarkets, and department stores have implemented business models such as those developed by GMG and *Regal Forest* in other countries of LAC. In Argentina, *Garbarino*, a retailer, gives its customers credit to buy home durables and appliances. In Peru, *Supermercados Peruanos*, a supermarket chain, employs the same model, while in Mexico several retailers like *Distribuidora Liverpool*, a department store, *Grupo Famsa*, another department store, and *Chedraui*, a department store and supermarket, issue their own cards. In Ecuador stores like *La Ganga*, who specializes on selling home durables, also issues its own card. In Colombia, supermarkets such as *Éxito*, *Alkosto*, *La 14*, and *Olimpica* have granted credit cards to their customers for the purchase of household appliances.

Some retailers who also offer credit cards are present in several countries in LAC. For instance, *Falabella* offers financial services in Perú, Argentina, Colombia, and Chile. Other retailers with a presence across the region include *Ripley*, *Cencosud*, *Walmart*, and *Elecktra* (see Annex for the company shares of store cards across different LAC countries). The store card business offered by these organizations has been acquired by local banks over time or is managed through a separate financial entity. The Chilean retailer *Falabella*, for example, over time developed *Banco Falabella*, which offers a variety of financial services, while the store card offered by the supermarket *Éxito* in Colombia is managed by the financial intermediary *Tuya S.A.*

Across the region, these programs typically charge higher interest rates than local banks, partly due to the higher risks associated with serving unbanked and low-income populations. In countries with interest rate caps, the gaps between the rates tend to be smaller; in Colombia, for example, the interest rates charged by all banks, retailers, cooperatives, etc. for consumption credit must not exceed the national interest rate cap. The interest rate charged by the home goods store *Alkosto* is 28.6%, close to the current interest rate cap (28.7%) (*Alkosto*, January 2019; Superintendencia Financiera de Colombia, January 2019). Countries without a universal interest rate cap have wider gaps: in Mexico, consumer credit and credit cards are charged at 38.09% and 36.18% (see Table 10), respectively, while retailers like *Coppel* issue credit cards that charge interest rates of up to 63.5% (*Bancoppel S.A.*, n.d).

The stores' credit product offerings across the region are not limited to credit cards for the purchase of home durables. As described by Capizzani et al. (2012), retail stores have begun to offer additional financial services and products such as insurance, educational loans, etc. For example, in Brazil some stores offer their clients consumer loans and insurance plans. In Mexico, some retailers have

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<sup>25</sup> US\$15 million for Unicomer (Trinidad) with a tenure of 3.5 years, and US\$9 million to Gollo with a tenure of 3.5 years.

expanded their services to offer their customers educational and automobile loans. Finally, in Chile, *Hites* stores offer their clients cash advances.

Despite all the benefits that these services may bring to low-income and unbanked populations, there is anecdotal and some empirical evidence regarding the potential negative effects, especially related to over-indebtedness. According to Evans (2014), the relative ease of accessing non-financial credit compared to traditional banking credit is often coupled with poorer screening mechanisms that disregard the consumer's financial standing and use biased or incomplete customer information. Credit issuing stores often compensate for these information asymmetries with higher interest rates and a lack of transparency regarding their terms and conditions. This often worsens in environments that do not regulate non-financial institutions that issue credit, which may increase the likelihood of predatory techniques, excessive annual interest rates, or unilateral debt refinancing.

The problems of over-indebtedness and high interest rates are not exclusive to the non-financial microfinance sector. Traditional microfinance products offered by the banking sector have also been accused of increasing clients' vulnerability. According to Mosley (2001), when average debt-service ratios are disturbingly high, borrowers may be forced out of the system, possibly resulting in decapitalization and impoverishment. In India, multiple news outlets have reported micro-finance related suicides, some even mentioning the word "epidemic" (Biswas, 2010; AP, 2012).

Although over-indebtedness issues related to non-financial institutions have not received the level of worldwide attention as those in India related to microfinance institutions, local news outlets and local authorities in LAC have documented some cases. For example, the Chilean retailer *La Polar* admitted in 2011 that it covertly raised its interest rates and fines on outstanding debt for more than a million credit card holders in an attempt to boost profits (Sernac, 2012). Costa Rican stores *Gollo* and *Monge*, for example, were accused of violating regulatory requirements regarding transparency of their terms and conditions by presenting misleading information to their customers such as displaying the longest tenors possible with small monthly payments or showing weekly rather than monthly payments in their customers' bills and credit advertisements (CRHoy, 2015; MEIC, 2015). In 2016 Costa Rica's minister of finance, Welmer Ramos, criticized the GMG's payment system since *Flexipagos* clients ended up with high debts and interest rates of over 60% (CRHoy, 2016).

**Table 10. Interest Rates in Latin America, 2018**

Country	Central Bank's Intervention Rate	Average Consumer interest rate	Average interest rate credit cards
Argentina	58.50%	63.84%	107.07%
Brazil	6.50%	41.19%	312.91%
Chile	2.60%	20.60%	25.95%
Colombia	4.25%	28.74%	26.72%
Costa Rica	5.25%	15.94%	41.42%
Guatemala	2.75%	27.80%	46.40%
Mexico	8.00%	38.09%	36.18%
Peru	2.75%	44.46%	49.65%
Uruguay	-	41.70%	77.50%
Latin America	11.09%	35.82%	87.14%

Note: The Central Bank's intervention rate was retrieved from the International Financial Statistics Database published by the International Monetary Fund (IMF) (<http://data.imf.org>). Since July 2013, the Central Bank of Uruguay uses monetary aggregates targets to formulate monetary policy instead of an intervention rate. Other sources used for this table are reported in the Annex.

In sum, retail stores across LAC have allowed low-income households and unbanked and underbanked populations to access financial services that may help them acquire appliances and home durables that in turn increase their welfare and income. These companies use similar models to reach vulnerable populations in their respective countries. In general, these schemes do not require customers to possess collateral or a formal credit history, like banks and other entities do. However, the lack of regulation of this sector and the lax screening devices used by these stores may have adverse effects on their target population. High interest rates and over-indebtedness make individuals more vulnerable to shocks and hamper further financial inclusion. Yet there is very scarce empirical evidence on the impacts of microfinance programs provided by non-financial institutions, which makes the regulator's job more difficult as most available evidence is often anecdotal or biased.

### 3.3 Utilities' companies

Public and private utility companies have also entered the microlending arena for the financing of home durables. For example, in 2001, *CODENSA*, a private utilities company in Colombia, began to implement a program called *Crédito fácil para todos* (Easy credit for everyone, in English). The company took advantage of the size of its clientele and the billing information available about its customers to offer a credit card to its customers for the exclusive purchase of electronic devices, household appliances, and home improvements. This credit is mainly directed to the low-income, unbanked population of Bogotá and other municipalities where *CODENSA* operates.

The annual effective interest rate for *CODENSA*'s credit card<sup>26</sup> was 28.37% as of December 2018, which is slightly below Colombia's interest rate cap of 29.10% for the same period (Superintendencia Financiera de Colombia, 2018, 2019). To access *CODENSA*'s credit program, applicants must be aged 18 to 72 and prove they earn

<sup>26</sup> Now managed by the financial institution *Scotiabank Colpatría*.

at least COP 350,000<sup>27</sup> (CODENSA, n.d). Applicants must also have a valid ID, they must be active users of *CODENSA*, and they must supply personal references.

Six years after the start of *Crédito Fácil*, Arbeláez et al. (2007) analyzed the impacts of the program among a sample of beneficiaries in Bogotá from 2001 to 2006 regarding customers' level of poverty, credit access, and possession of home durables. The impact assessment revealed that approximately 66% percent of them lacked a previous credit history. Nearly 62% of the clients were from the lowest quintile of the income distribution, and about 73% of users had only a high school education. The authors concluded that the credit disbursed by *CODENSA* had been concentrated among individuals who typically have lower incomes and fewer assets.

Arbeláez et al. (2007) also evaluated the effects of the credit line and household appliances on beneficiaries' quality of life and welfare. Using a principal component analysis approach, the authors constructed a welfare index based on the available socioeconomic variables and the assets the individuals purchased using *CODENSA*'s credit. They show that the number and the value of the credits has a positive contribution on the welfare index. They also find that the acquisition of home durables such as computers, washing machines, and refrigerators through credit lines had a positive impact on the welfare index.

Finally, the authors analyze the impact of having a credit history with *CODENSA* on the time required and the probability of obtaining other credit with formal financial entities, in the context of a hazard model. They conclude that the *Crédito Fácil* program improves applicants' ability to access other financial products and reduces the time needed to do it. However, the authors acknowledge that their results may be biased by unobservable characteristics. Since the evaluation lacks a control group, the results cannot be causally attributed to the use of *CODENSA* credit.

Given the apparent success of *Crédito Fácil*, in 2009 *Empresas Públicas de Medellín* (EPM)<sup>28</sup> launched a similar program called *Tarjeta Somos*, financed by the Inter-American Development Bank in 2009. EPM followed the model implemented by *CODENSA* and issues program users a credit card. The main objective of this program was to increase access to financial services for low-income or unbanked populations in order to improve their quality of life by acquiring home durables and construction materials to improve their homes. This program also sought to reduce energy consumption by helping to replace old household appliances with new energy-efficient models.

EPM pre-filters its customer database based on billing information. The subset of customers eligible to apply is required to provide certain demographic and income-related information. The regulations are flexible and allow self-employed, retirees, and housewives to apply. This information is used to screen applicants based on their credit risk.

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<sup>27</sup> Around US\$111.959 as of January 18, 2019 using OANDA's currency converter (<https://www.oanda.com/currency/converter/>).

<sup>28</sup> EPM is a Colombian public utilities company that provides services such as electricity and water to roughly 1.7 million households in and around Medellín.

Azevedo et al. (2018) examined the program's effects on outcomes that reflect its original objectives – the purchase of household appliances, home improvements, time use, and access to traditional formal financial services. To estimate the effects, the authors compared clients whose credit score made them eligible for the card and decided to accept it in late 2013 to those who were eligible but declined the card. To reduce self-selection bias, the authors used an entropy balance (EB) method and combined then with Differences-in-Differences.

These authors found that acquiring the card was associated with *using* it, which implies that beneficiaries are able to access credit at better terms and conditions compared to informal channels. Although the authors did not find a noticeable effect in the probability of having a savings account, bank loan, or credit cards, having the card was found to be associated with a reduced likelihood of borrowing from family members. Additionally, authors found that obtaining the card was associated with making home improvements, such as increasing the number of floors (stories/levels), kitchens, and bathrooms. The card was also found to increase the likelihood of purchasing washing machines. Authors also found an improvement in card holders' self-reported saving capacity, which they argue signals their ability to better manage, control, and plan their family economy, as well as the manageability of the new acquired debt.

Other utility companies from different regions of Colombia have replicated these credit programs with similar success. *Promigas*, a natural gas distributor, launched the *Brilla* program in 2007 to help families acquire household appliances and construction materials for home improvements. During the last 10 years *Brilla* has expanded its services and now includes financing programs for vehicle insurance and education (Manaus Consulting, 2016).

### **3.4 The Government**

In response to the subpar possession rate of home appliances and their high prices, governments across LAC have launched programs that promote the purchase and/or replacement of household appliances through discounts or credit. In 2014, the Argentinian government launched the *Ahora 12* program, which allowed individuals to repay home goods bought in 12-month installments with lower or no interest rates, as long as they met three conditions: (i) the goods were bought at a store affiliated with the program, (ii) their credit card was also affiliated with the program, and (iii) the goods bought were part of a government-approved list (La Nación, 2014; Ministerio de Justicia y Derechos Humanos, 2017; Ministerio de Producción y Trabajo, 2018).

In 2015, the Argentinian government launched the *Renovate* program, which allowed households to buy coolers, freezers, and washing machines at a 25% discount. In 2016 the government launched *Ahora 18*, which expanded the approved list of goods and extended the repayment period to 18 months (Ministerio de Producción y Trabajo, 2016). Similarly, in 2017, the government continued expanding the programs launching *Ahora 3* and *Ahora 6*, which allowed repayment periods of 3 and 6 months respectively for selected goods (Ministerio de Producción y Trabajo, 2017).

Ecuador has also developed public programs that give credit lines to buy or replace household appliances. In 2014, the Ministry of Electricity developed *Programa de Cocción Eficiente* (Efficient Cooking Program, in English), which promotes replacing gas stoves with an induction cooker, which use electricity rather than gas or other fossil fuels. Therefore, the program also aims to reduce the consumption of imported subsidized gas. The price of the cookers varied between US\$156 and \$676, and all households have access to credit through the local electric company. Families can repay this credit in 72-month installments on their electricity bill. The local electric company also offered to finance the installation of the induction cookers (Empresa Eléctrica Quito, 2014).

The Venezuelan *Mi Casa Bien Equipada* (My Well-Equipped Home, in English) program, launched in 2010, also extends credit to purchase household goods. It is the result of collaboration with the Chinese manufacturing company *Haier*, which established a manufacturing facility in Venezuela in 2012. The program allows households to buy their manufactured household goods at a 15% interest rate over a 24-month period (Noticias24, 2010).

In 2009 the Mexican government introduced a large-scale appliance replacement program that helped 1.9 million low-income household replace their old refrigerators and air conditioners with more energy efficient models. The program provides both direct cash payments and subsidized financing. The direct cash payments came in two different amounts, approximately corresponding to \$140 and \$80 dollars. To qualify for the more generous subsidy a household needed to have a fairly low level of mean electricity consumption. Households with medium levels of electricity consumption were eligible for the smaller subsidy, and households with high levels of electricity consumption were eligible for subsidized financing only. This structure was implemented out of distributional concerns in an attempt to target the program to lower-income households (Davis et al., 2014).

In 2018, Colombia introduced a similar program to the one introduced in Mexico in 2009. Named "*Entrégala y Ahorra*" (Submit it and Save, in English), the program consists in the provision a lower sales tax (5% vs. 19%) for the purchase of newer refrigerators for low and middle-low income households who agree to submit their old refrigerators (Presidencia de la República, 2018).

### **3.5 Case Study: How do Paraguayans finance their home goods?**

Evidence presented so far suggests that non-financial institutions may play the most prominent role in the credit market for home durables, however, this evidence is not conclusive. This is so because there is no consolidated data on how individuals in LAC finance the purchase of durables with a breakdown by the relevance of each source (e.g., microcredit vs. store credit). In response to this, IDB Invest financed

the collection of data<sup>29</sup> on home durables' financing, through surveys to more than 2,900 middle and middle-low income<sup>30</sup> individuals in Paraguay (Table 11).

Consistent to the trends observed in the rest of LAC (Tables 9, 10 and 11) and what is expected for the income level of those surveyed, possession rate of time-using goods such as washing machines, refrigerators is relatively high, but significantly lower than the possession rate of time-using goods such as T.V's. Interestingly, most individuals finance their purchases of home durables with savings and disposable income or through credit provided by the stores or retailers. In fact, over 80% of the individuals in our sample financed the acquisition of the home durables through both of those sources. Data also shows that individuals have little or no access to other financing sources for household durables besides disposable income, savings or credit from stores, which is consistent to with the low ownership of credit cards observed in Table 5a for Paraguay. For instance, none of the people surveyed used a credit card to buy a washing machine, and only 2.5% used credit from a financial institution to purchase it. These figures are similar for other durables like stoves, TV sets, microwaves, and sound systems.

## 4. Conclusions and Recommendations

Over 208 million retail store cards have been issued in LAC. In addition, region wide different credit programs by these retailers have become very popular: *Falabella*, originally a retailer, now offers financial services in Perú, Argentina, Colombia, and Chile. Other retailers with credit programs across the region include *Ripley*, *Cencosud*, *Walmart*, *Elecktra*, *El Grupo Monje*, among others. The expansion of some of these programs has even been supported by multilateral and commercial banks. But, are these programs welfare enhancing? Should they continue to be supported?

Despite the expansion of alternative credit from the real sector across LAC, few studies have explored its impact on financial inclusion and welfare. Furthermore, the evidence on why supporting the adoption of home durables is important in the first place is also scarce. In this setting, we aim to provide a consolidated review of the available evidence supplemented by market data and a case study, to inform policy makers, donors and other stakeholders on the state of the art and highlight knowledge gaps for future research.

We found that in LAC, a significant percentage of low-income households lack access to time-saving appliances, like washing machines or electric stoves, that may have a positive effect on their welfare. For instance, less than 10% of households in the 1<sup>st</sup> income decile in Bolivia, Ecuador, Guatemala and Peru have a washing machine. This situation does not get much better by the 5<sup>th</sup> income decile, with less than ~20% of households owning a washing machine. However, substantial heterogeneity is observed across countries: Argentina, Costa Rica and Chile have

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<sup>29</sup>Questions on the possession of durable goods and financing of durables were added to a survey on savings and credit behavior of Paraguayans. This survey was collected for a randomized control trial designed and implemented by IDB Invest.

<sup>30</sup>The average monthly income of the people surveyed is US\$440, nearly 40% are self-employed, and only 20% contribute to pension fund.

possession rates of certain home appliances that are close to those of developed economies (e.g., washing machine possession is above 69% in the first income decile, and above 86% overall).

**Table 11. Ownership and financing of home durables in Paraguay  
(Survey of 2,925 middle-income individuals)**

Durable Good	Ownership	Type of financing					
		Disposable Income/ Savings	Credit from Retailer/ Supermar ket/Store	Credit from Financial Institution/ Cooperative	Credit Card	Loan from Family/ Friends	Loan from Usurer
Washing Machine	85.2%	31.2%	54.4%	2.5%	0.0%	0.0%	0.0%
Refrigerator	94.6%	34.7%	51.4%	2.1%	0.0%	0.1%	0.0%
Stove	19.6%	62.6%	23.3%	1.9%	0.0%	0.0%	0.0%
Gas/Electric cooker	91.0%	44.9%	37.8%	1.3%	0.1%	0.2%	0.0%
Microwave	51.7%	40.7%	44.1%	1.3%	0.1%	0.2%	0.0%
Electric Shower	71.7%	90.1%	3.8%	0.2%	0.0%	0.1%	0.0%
Video player	45.0%	66.3%	23.5%	0.9%	0.0%	0.0%	0.0%
Sound System	71.8%	41.3%	44.6%	1.8%	0.1%	0.1%	0.0%
Music player	18.7%	63.1%	24.3%	1.8%	0.2%	0.0%	0.0%
Gaming consoles	15.2%	61.6%	27.2%	1.6%	0.2%	0.0%	0.0%
Motorcycle	44.5%	29.5%	62.4%	3.7%	0.1%	0.2%	0.0%
Automobile /Truck	36.6%	44.4%	39.8%	7.0%	0.0%	0.8%	0.2%
Bicycle	37.9%	57.9%	25.5%	1.3%	0.0%	0.0%	0.0%
Television Set	97.1%	42.8%	45.9%	1.6%	0.0%	0.1%	0.0%
Mobile phone	97.5%	52.3%	37.4%	1.4%	0.0%	0.0%	0.0%
Desktop	17.8%	53.5%	34.8%	1.5%	0.0%	0.0%	0.0%
Laptop	24.0%	50.0%	33.6%	1.9%	0.3%	0.0%	0.0%
Tablet	9.0%	56.7%	24.7%	0.8%	0.4%	0.0%	0.0%

*Source: this data was collected through surveys to 2,925 middle and middle-low income individuals in Paraguay. Note: columns under the heading "type of financing" do not add up to 100%. Remaining shares correspond to other forms of financing, gifts or for cases when the owner does not remember how the durable in question was acquired.*

These statistics need even more attention if we consider empirical evidence in both developed and developing countries which shows that household appliances free up time previously allocated to domestic work, thus allowing an increase in time devoted to the labor market, education, leisure, or childcare. An increase in these variables can in turn lead to a rise in household income and general welfare. This is an important topic for future research, given that coverage of household utilities has

increased substantially in the last few decades in the region and thus the household appliance revolution is now more likely than ever to take place.

Since in some countries the retail value of some durables is considerably higher than the monthly minimum wage, it is difficult for low-income households to access these kinds of goods. Public and private programs have helped close the financing gap for low-income individuals. Retail stores and some utilities' companies have offered their customers credit cards to buy household appliances and other home durables in affiliated stores. Among these alternatives, credit from retail stores (directly or via proprietary credit cards) seems to be the most used for financing the acquisition of home durables.

The scarce literature on the impact of these programs has found that access to credit through these mechanisms has positive effects on household welfare, the acquisition of some home durables, and home improvements. Yet the evidence on further financial access is weak and/or inconclusive, suggesting that beneficiaries of these credit programs cannot access further credit or other financial instruments with banks or traditional financial institutions. These studies also struggle to find casual effects since individuals usually self-select into these programs. It is also difficult to build a control group given that most customers (universe of interest) often qualify for this kind of credit with retail stores.

Despite the benefits that these alternative sources of credit may have on increasing diffusion rates and closing adoption gaps between low and high-income segments, more research and attention is needed with regards to the terms and conditions offered. In particular, high interest rates and over-indebtedness may reduce the benefits derived from these programs. Hence, it is important for governments and other organizations funding such projects to regulate this market to protect consumers. It is also important to push for educational programs on financial literacy to prevent the financial abuse of low-income families.

## **Abbreviations**

**2SLS** Two-Stage Least Squares

**DID** Difference-in-Differences

**DSGE** Dynamic Stochastic General Equilibrium

**EFL** Entrepreneurial Financial Lab

**FINCA** Foundation for International Community Assistance

**GDP** Gross Domestic Product

**GMG** El Grupo Monge

**ID** Identification

**IDB** Inter-American Development Bank

**IMF** International Monetary Fund

**IV** Instrumental Variable

**LAC** Latin America and the Caribbean

**MFIs** Microfinance Institutions

**NGO** Non-Governmental Organization

**OECD** Organization for Economic Cooperation and Development

**TV** Television

**UK** United Kingdom

**US** United States

**US\$** United States Dollars

**WBG** World Bank Group

## **Declarations**

### **Availability of data and materials**

The data sources and information used in the current study are publicly available and their accesses are indicated and linked in the manuscript. The dataset of the case study is available from the corresponding author on reasonable request.

### **Competing interests**

The authors declare that they have no competing interests.

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## Annex: Additional Tables

**Table A1. Company Shares of Store Cards (%)**

Country	Company Shares (by Global Issuer)	2013	2014	2015	2016
Argentina	Cencosud SA	26%	25%	29%	39%
	Banco de Servicios Financieros SA	21%	20%	20%	27%
	Red Megatone SA	8%	8%	8%	11%
	Frávega SA	17%	16%	16%	-
	Coto CICSA	14%	14%	13%	-
	Others	14%	18%	14%	23%
Brazil	Lojas Renner SA	16%	18%	19%	21%
	Guararapes Confecções SA	15%	16%	17%	17%
	Marisa Lojas Varejistas Ltda	14%	15%	15%	16%
	Arthur Lundgren Tecidos SA - Casas Pernambucanas	7%	8%	8%	8%
	União de Lojas Leader Ltda	5%	6%	6%	6%
	C&A Mode AG	2%	-	-	-
	Carrefour SA	6%	2%	-	-
Others	35%	36%	35%	32%	
Chile	Inversiones y Tarjetas SA	19%	27%	32%	37%
	CMR Falabella SA	44%	25%	28%	26%
	Inversiones Nueva La Polar SpA	2%	4%	13%	19%
	COFISA SA	10%	14%	11%	9%
	Inversiones SCG SA	10%	11%	10%	5%
	Servicios y Administración de Créditos Comerciales Presto SA	17%	18%	6%	4%
	Others	-	-	-	0%
Colombia	Tuya SA	27%	31%	30%	30%
	Red Multibanca Colpatría	16%	15%	17%	13%
	Char, Grupo	4%	5%	6%	8%
	Comfama	6%	6%	6%	6%
	Colsubsidio	6%	6%	6%	6%
	Compensar	5%	5%	5%	5%
	Caja de Compensación Familiar (CAFAM)	4%	4%	4%	5%
	Falabella SACI	8%	6%	5%	5%
	Comfenalco Valle	2%	2%	2%	2%
	Giros y Finanzas SA	1%	1%	1%	1%
	Banco Davivienda	1%	1%	0%	0%
	Servicios Empresariales Generales SA	0%	0%	0%	-
	Empresas La Polar SA	2%	0%	0%	-
Others	20%	19%	19%	20%	
Mexico	Almacenes Coppel SA de CV	64%	65%	66%	67%
	El Puerto de Liverpool SAB de CV	8%	9%	8%	9%
	Grupo Carso SAB de CV	8%	9%	9%	9%
	Grupo Famsa SAB de CV	6%	5%	5%	5%
	Grupo Palacio de Hierro SAB de CV	3%	3%	3%	3%
	Others	11%	10%	9%	8%

Source: Euromonitor International (2018).

**Table A2. Source for Average Consumer Interest Rate**

Country	Source
<b>Argentina</b>	Average interest rate for personal credits in local currency for the non-financial sector reported by Banco Central de la República Argentina. Banco Central de la República Argentina (2018, December). <i>Tasas de interés por préstamos al sector privado no financiero</i> . Retrieved January 18, 2019, from Banco Central de la República Arrgentina's website: <a href="http://www.bcra.gov.ar/PublicacionesEstadisticas/Cuadros_estandarizados_series_estadisticas.asp">http://www.bcra.gov.ar/PublicacionesEstadisticas/Cuadros_estandarizados_series_estadisticas.asp</a>
<b>Brazil</b>	Average interest rate for personal credit. Source: Banco Central do Brasil (2019, January). Taxas de juros de operações de crédito -Crédito pessoal consignado privado-pré fixado. Retrieved January 18, 2019, from Banco Central do Brasil 's website: <a href="https://www.bcb.gov.br/estatisticas/txjuros">https://www.bcb.gov.br/estatisticas/txjuros</a>
<b>Chile</b>	Average consumer credit interest rate. Banco Central de Chile (2018, December). <i>Informe Mensual Estadísticas Monetarias y Financieras diciembre 2018</i> . Retrieved January 18,2019, from Banco Central de Chile's website: <a href="http://www.bcentral.cl/tasa-de-interes">http://www.bcentral.cl/tasa-de-interes</a>
<b>Colombia</b>	Usury rate for consumer and ordinary credit reported by Superintendencia Financiera de Colombia. Source: Superintendencia Financiera de Colombia (2019, January). <i>Tasas de referencia mensual. Histórico Tasa de Usura</i> . Retrieved January 18,2019, from Superintendencia Financiera de Colombia's website: <a href="https://www.superfinanciera.gov.co/publicacion/60959">https://www.superfinanciera.gov.co/publicacion/60959</a>
<b>Costa Rica</b>	Average interest rate of the financial system for credits in local currency reported by Banco Central de Costa Rica. Source: Banco Central de Costa Rica (2019, January). Tasa de interés activa promedio del sistema financiero. Retrieved January 18,2019, from Banco Central de Costa Rica's website: <a href="https://gee.bccr.fi.cr/indicadoreseconomicos/Cuadros/frmVerCatCuadro.aspx?idioma=1&amp;CodCuadro=%20614">https://gee.bccr.fi.cr/indicadoreseconomicos/Cuadros/frmVerCatCuadro.aspx?idioma=1&amp;CodCuadro=%20614</a>
<b>Guatemala</b>	Average interest rate for consumer credit in local currency reported by Superintendencia de Bancos Guatemala. Source: Superintendencia de Bancos Guatemala (2018, December). <i>Tasas promedio ponderada de cartera de créditos por actividad económica</i> . Retrieved January 18,2019, from Superintendencia de Bancos Guatemala's website: <a href="https://www.sib.gob.gt/web/sib/informacion_sistema_financiero/promedio-ponderado-economico">https://www.sib.gob.gt/web/sib/informacion_sistema_financiero/promedio-ponderado-economico</a>
<b>Mexico</b>	Weighted average interest rate for personal credits and micro credits by outstanding balance reported by Banco de Mexico. Banco de Mexico (2018, August). <i>Transparencia y Competencia del Sistema Financiero</i> . Retrieved January 18,2019, from Banco de Mexico's website: <a href="http://www.banxico.org.mx/PortalTranspCompSistFin/">http://www.banxico.org.mx/PortalTranspCompSistFin/</a>
<b>Peru</b>	Average interest rate for consumer credit reported by Superintendencia de Banca, Seguros y AFP – Perú. Source: Superintendencia de Banca, Seguros y AFP – Perú (2019, January). <i>Tasas de interés promedio del sistema bancario</i> . Retrieved January 18,2019, from Superintendencia de Banca, Seguros y AFP's website: <a href="http://www.sbs.gob.pe/app/pp/EstadisticasSAEPortal/Paginas/TIActivaTipoCreditoEmpresa.aspx?tip=B">http://www.sbs.gob.pe/app/pp/EstadisticasSAEPortal/Paginas/TIActivaTipoCreditoEmpresa.aspx?tip=B</a>
<b>Uruguay</b>	Average interest rate for consumption credits in local currency reported by Banco Central de Uruguay. Source: Banco Central de Uruguay (2018, November). Tasa de interés activa en moneda nacional. January 18, 2019, from Banco Central de Uruguay's website: <a href="https://www.bcu.gub.uy/Servicios-Financieros-SSF/Paginas/Series-Estadisticas-Tasas.aspx">https://www.bcu.gub.uy/Servicios-Financieros-SSF/Paginas/Series-Estadisticas-Tasas.aspx</a>

**Table A3. Source for Average Interest Rate for Credit Cards**

Country	Notes and Sources
<b>Argentina</b>	Average effective annual rate for national credit cards reported by Banco Central de la República Argentina. Source: Banco Central de la República Argentina (2019, January). <i>Comisiones, cargos y tasas</i> . Retrieved January 18, 2019, from Banco Central de la República Argentina's website: <a href="http://www.bcra.gob.ar/BCRAyVos/Comisiones_cargos.asp">http://www.bcra.gob.ar/BCRAyVos/Comisiones_cargos.asp</a>
<b>Brazil</b>	Average revolving credit card interest rate. Source: Banco Central do Brasil (2019, January). <i>Taxas de juros de operações de crédito -Cartão de Crédito Rotativo em curso normal-pré fixado</i> . Retrieved January 18, 2019, from Banco Central do Brasil 's website: <a href="https://www.bcb.gov.br/estatisticas/txjuros">https://www.bcb.gov.br/estatisticas/txjuros</a>
<b>Chile</b>	Average revolving credit card interest rate reported by Banco Central de Chile. Source: Banco Central de Chile (2018, December). <i>Informe Mensual Estadísticas Monetarias y Financieras diciembre 2018</i> . Retrieved January 18,2019, from Banco Central de Chile's website: <a href="http://www.bcentral.cl/tasa-de-interes">http://www.bcentral.cl/tasa-de-interes</a>
<b>Colombia</b>	Average effective annual rate for credit cards. Source: Superintendencia Financiera de Colombia. (2018, December). <i>Comparativo de las principales tarifas de los establecimientos de crédito. Tarjetas de Crédito</i> . Retrieved January 18, 2019, from Superintendencia Financiera de Colombia's website: <a href="https://www.superfinanciera.gov.co/publicacion/61279">https://www.superfinanciera.gov.co/publicacion/61279</a>
<b>Costa Rica</b>	Weighted average interest rate for credit cards in local currency. Source: Ministerio de Economía, Industria y Comercio (MEIC). (2018, July). <i>Tercer estudio trimestral de tarjetas de crédito del 2018</i> . Retrieved January 18,2019, from MEIC's website: <a href="http://reventazon.meic.go.cr/informacion/estudios/2018/tarjetas/julio/INF-008-18.pdf">http://reventazon.meic.go.cr/informacion/estudios/2018/tarjetas/julio/INF-008-18.pdf</a>
<b>Guatemala</b>	Weighted average interest rate for credit cards in local currency as reported by Superintendencia de Bancos Guatemala. Source: Superintendencia de Bancos Guatemala (2018, December). <i>Tasas promedio ponderada de cartera de creditos por actividad económica</i> . Retrieved January 18, 2019, from Superintendencia de Bancos Guatemala's website: <a href="https://www.sib.gob.gt/web/sib/informacion_sistema_financiero/promedio-ponderado-economico">https://www.sib.gob.gt/web/sib/informacion_sistema_financiero/promedio-ponderado-economico</a>
<b>Mexico</b>	Weighted average interest rate for credit cards by outstanding balance. Source: Banco de Mexico (2018, December). <i>Transparencia y Compentencia del Sistema Financiero</i> . Retrieved January 18, 2019, from Banco de Mexico's website: <a href="http://www.banxico.org.mx/PortalTranspCompSistFin/">http://www.banxico.org.mx/PortalTranspCompSistFin/</a>
<b>Peru</b>	Weighted average interest rate for credit cards in local currency as reported by Superintendencia de Banca, Seguros y AFP's. Source: Superintendencia de Banca, Seguros y AFP – Perú (2019, January). <i>Tasas de interés promedio del sistema bancario</i> . Retrieved January 18, 2019, from Superintendencia de Banca, Seguros y AFP's website: <a href="http://www.sbs.gob.pe/app/pp/EstadisticasSAEEPPortal/Paginas/TIActivaTipoCreditoEmpresa.aspx?tip=B">http://www.sbs.gob.pe/app/pp/EstadisticasSAEEPPortal/Paginas/TIActivaTipoCreditoEmpresa.aspx?tip=B</a>
<b>Uruguay</b>	Average interest rate for credit cards in local currency as reported by Banco Central de Uruguay. Source: Banco Central de Uruguay (2018, November). <i>Tasa de interés activa en moneda nacional</i> . January 18, 2019, from Banco Central de Uruguay's website: <a href="https://www.bcu.gub.uy/Servicios-Financieros-SSF/Paginas/Series-Estadisticas-Tasas.aspx">https://www.bcu.gub.uy/Servicios-Financieros-SSF/Paginas/Series-Estadisticas-Tasas.aspx</a>