I. INTRODUCTION

Challenges to financial inclusion in Latin America and the Caribbean (LAC) as well as policy prescriptions to enhance financial inclusion in region have become a focus of inquiry in recent years. The literature finds that even though the degree of financial inclusion in LAC is mostly in line with fundamentals, there remain important gaps and cross-country variations, especially with respect to financial inclusion of households (Dabla-Norris et. al. 2015a and Martínez Pería 2014). Insufficient financial inclusion is generally attributed to institutional weaknesses, low levels of bank competition resulting in high cost of financial services, inadequate infrastructure, and an excessively restrictive regulatory environment (Dabla-Norris et. al. 2015b, Fishbane 2014, and Rojas-Suárez 2016).

The rapid expansion of fintech activities is widely viewed as having the potential to alleviate financial frictions and improve financial inclusion. This may happen by lowering the cost barrier for accessing financial services—especially severe in remote rural locations and for marginalized groups such as the urban poor—and by alleviating information asymmetries between service providers and consumers, especially acute for those unbanked (IMF 2019 and Berkmen et. al. 2019). For example, “mobile money and mobile banking have emerged as powerful enablers of financial inclusion” in Asia-Pacific (Loukoianova and Yang 2018) and in Africa (IMF 2019). Focusing on LAC, Cantú and Ulloa (2020) argue that fintech has a clear potential to make a difference, but—owing to the relatively small footprint and lack of data—observing its impact on financial inclusion may be a challenge.

The opportunities created by fintech also come with new challenges to financial inclusion. Certain groups may be excluded due to a lack of access to smartphones and a lack of affordable internet data-plans, and due to discrimination stemming from “arms-length” analytical decision-making tools (IMF 2019). More generally, Frost (2020) notes that while fintech has the potential to improve financial inclusion, especially in the developing countries, “fintech activities will remain subject to the same well-known market failures present in other areas of finance, including information asymmetries and adverse selection in lending; liquidity mismatches with deposits; systemic importance and moral hazard with large intermediaries; and various forms of interconnectedness in the financial system.” This implies that the potential benefits from fintech may not materialize at the same pace and to

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2 In general, financial inclusion is taken to mean that “individuals and businesses have access to useful and affordable financial products and services that meet their needs—transactions, payments, savings, credit and insurance—delivered in a responsible and sustainable way.” (World Bank, no date). For the purpose of our analysis we define financial inclusion as “the access to and use of formal financial services by households and firms.” (Sahay et. al., 2015). This paper focuses on financial inclusion of households.

3 Fintech is defined as a wave of technological innovation in the financial sector that “leverages the explosion of big data on individuals and firms, advances in artificial intelligence, computing power, cryptography, and the reach of the internet” (He et. al., 2017).

4 Jagtiani and Lemieux (2017) report similar results for the United States based on the data from LendingClub, a peer-to-peer lender.

5 Bazarbash (2019) and Philippon (2019) argue that although machine learning can enhance financial inclusion by leveraging nontraditional data sources, it remains vulnerable to the problems of discrimination and information asymmetry.
the same extent in all parts of the world and may not fully circumvent the constraints that limit traditional finance.

Inspired by these observations, this paper analyzes whether fintech can help minimize financial inclusion gaps in LAC and how governments can leverage fintech development to foster financial inclusion. To this end, the paper documents the changes in financial inclusion in LAC since 2014, including new forms of financial inclusion driven by the development of fintech (Section II), investigates whether the emergence of fintech has implied changes in the determinants of financial inclusion (Section III), and, uses case studies to investigate the role of the regulatory environment in leveraging fintech for financial inclusion (Section IV). Throughout the analysis, the paper also considers the effects of the COVID-19 pandemic on financial inclusion directly but also indirectly on the potential development of fintech applications that could in turn support financial inclusion.6

II. STYLIZED FACTS

This section examines the progress of financial inclusion across LAC since 2014. It argues that composite financial inclusion indices, even when updated to account for the rise of digital payments services, do not allow for a detailed analysis of recent trends, and fail to capture inequalities across demographic categories (e.g., poor, uneducated, and young households). Looking at a wide range of financial inclusion indicators, it documents a persistent lag in financial inclusion in LAC compared to the rest of the world, along with significant within-region and within-country heterogeneity. It also finds mixed evidence of a positive effect of fintech on financial inclusion in the region.

A. Financial inclusion of households has stalled in LAC since 2014

There are numerous indicators of financial inclusion and part of the empirical literature has aimed at developing multi-dimensional indices to aggregate the various facets of financial inclusion (see for instance, Amidžić, Massara and Mialou, 2014; Camara and Tuesta, 2014; Dabla-Norris et al. 2015a; Sahay et al. 2020). In a paper focusing on Latin America, Dabla-Norris et al. (2015a) compute three sub-indices capturing three dimensions of financial inclusion: (i) usage of financial services by households; (ii) usage of financial services by SMEs; and (iii) access to financial institutions. The first sub-index aggregates variables from the World Bank Global Findex Database; the second one is based on answers to the World Bank Enterprise Survey, while the third one uses data from the IMF Financial Access Survey (FAS). In the absence of new Enterprise Survey data, this paper focuses on the first and third

6 CCAF, World Bank and World Economic Forum (2020) notes that “FinTech markets in EMDEs and in jurisdictions with more stringent COVID-19 lockdown measures appear to be growing more in comparison with those in AEs and lower stringency jurisdictions”, but cautions that performance has been highly heterogenous and that many fintech firms would benefit from additional government assistance and regulatory support.
sub-indices and updates them using the latest Findex and FAS vintages. The two sub-indices are then averaged to produce a single financial inclusion index. This index and the sub-index for use of financial services by households are represented in the left and right graphs respectively of Figure 1.

According to the above-defined index, financial inclusion of households has stalled since 2014 in Latin America. After strong progress between 2011 and 2014, the use of financial services by households plateaued out in 2017 in the region but improved in the rest of the world. This, combined with a reduction in financial access due to a reduction in the number of banking branches, led to a small drop in the overall financial inclusion index with LAC countries falling on average behind Middle Eastern and Central Asian countries in 2017.

However, those indices do not account for the growing role of digital payment services in financial inclusion and may therefore miss fintech-driven improvements. A recent paper by Sahay et al. (2020) proposes to complement “traditional” financial inclusion indices with a “digital” financial inclusion index which aims to measure the use of digital payment services through mobile money, mobile phone, and the internet. This index is computed for a sample of 52 emerging markets and low-income countries over 2014-2017, including 13 Latin-American and Caribbean countries. The results show that an improvement in financial inclusion in LAC between 2014 and 2017 was in part driven by an increase in the fintech-driven financial inclusion index (Figure 2). However, progress in fintech-driven financial inclusion was generally more limited in LAC countries than in other countries in the sample. The ranking of fintech-driven financial inclusion actually declined in 2017 compared to 2014 in all except one of the 13 LAC countries in the sample. Two LAC countries saw an increase in fintech-driven financial inclusion accompanied by a decline in traditional financial inclusion as measured by the levels of the respective indices. Thus, the evidence of a positive impact of fintech on financial inclusion in the region is mixed.

The index is composed of four subindices with different weights: 1) index of traditional access (25 percent weight): number of ATMs and branches per 100,000 adults; 2) index of traditional usage (25 percent weight): percentage of adults with an account, percentage of adults who saved at a financial institution in the past year, percentage of adults who own a debit card, percentage of adults who receive wages through a financial institution account, percentage of adults who use a financial institution account to make utility payments; 3) index of fintech access (37.5 percent weight): mobile subscriptions per 100 people, percentage of population with internet access, number of registered mobile money agents per 100,000 adults; 4) index of fintech usage (12.5 percent weight): percentage of adults with a mobile account, percentage of adults who use internet to make payments, percentage of adults who use a mobile phone to receive salary or wages, percentage of adults who use a mobile phone to make utility payments.

Note that the indices from Dabla-Norris et al. (2015a) and Sahay et al. 2020 are not directly comparable because they combine different variables, but also because the sample of countries covered is not the same.
Aggregate indices aim at summarizing multiple dimensions of financial inclusion into a single number. The values of those indices are however very sensitive to the movement of the underlying variables, the sample of countries considered, and to the aggregation method. To overcome these shortcomings, the analysis of this paper instead relies on 12 indicators of financial inclusion (from the Global Findex Database) that capture both traditional aspects of financial inclusion and fintech-related measures. We focus on the shares of adults (defined as individuals older than 15 years) having an account with a financial institution, saving or borrowing from a financial institution, holding a debit or a credit card, having used that debit or credit card in the past 12 months, having made or received a digital payment in the past 12 months, receiving wages or government payments on an account with a financial institution or a card, having used the internet to make a payment over the past 12 months, or having paid a utility bill with a mobile phone over the past 12 months. One should note that the last four variables only capture the digital payment dimension of fintech while leaving out other fintech activities such as crowdfunding, lending platforms, or the use of artificial intelligence and machine learning for financial activities. Moreover, the data do not distinguish among

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**Figure 1. Household Financial Inclusion Since 2011**


**Figure 2. Traditional and Fintech-Driven Financial Inclusion**

users those who have access only to digital financial services, financial institutions, or to both, which limits the analysis of the potential benefits of fintech-driven financial inclusion.

For all measures considered, the average for LAC countries lies below the world average in 2017 and is sometimes very close to the average for the least advanced region. Thus, the share of adults paying their utility bills with their mobile phones is lower in LAC than in any other region of the world (Figure 3). Progress since 2014 has been on average smaller in the LAC region than in other regions and unequal across measures (Figure 4). While the share of adults having a credit card has increased more in LAC than in other regions except North America, usage of both debit and credit cards—as well as the internet—to make payments, has declined between 2014 and 2017.

Figure 3. Measures of Financial Inclusion in 2017

Note: AFR=Sub-Saharan Africa, APD=Asia and Pacific, EUR=Europe, LAC=Latin America and Caribbean, MCD=Middle East and Central Asia, NA=North America, WRD=World.

Source: Findex Global Database; Authors’ calculations.

Figure 4. Changes in Measures of Financial Inclusion between 2014 and 2017

Note: AFR=Sub-Saharan Africa, APD=Asia and Pacific, EUR=Europe, LAC=Latin America and Caribbean, MCD=Middle East and Central Asia, NA=North America, WRD=World.

Source: Findex Global Database; Authors’ calculations.
B. There is substantial heterogeneity within the LAC region

The average for LAC countries masks significant country heterogeneity within the region. Figure 5 distinguishes between the Caribbean region, Central America, and South America, and shows the relative position of each country within each sub-region for all financial inclusion measures. Each sub-region includes countries where financial inclusion is relatively high and countries where it is still very low.

In the Caribbean, Trinidad and Tobago is the country with the highest level of financial inclusion across all but one measure, while Haiti is the country where financial inclusion is the lowest. The fraction of people borrowing from a financial institution is the highest in the Dominican Republic and may reflect regulatory efforts to promote microcredit (see Appendix 2). In Central America, financial inclusion is much higher in Costa Rica than in any other country in that sub-region. In South America, Chile, Uruguay, and Venezuela are the three countries most frequently at the top of the list (although the indicators for Venezuela may have changed significantly since 2017), with Brazil having the largest share of adults receiving government payments into a financial account or a card. The latter likely reflects the success of Brazil’s cash transfer program Bolsa Familia, channeling monthly allowances to some 13.8 million families through debit cards in 2020. Uruguay is ahead in the share of adults having and using a credit card, a result that may be attributed to the incentive in the form of VAT reduction provided by the government for credit card payments.

Countries that perform well according to traditional measures of financial inclusion tend to also be ahead in terms of fintech-related financial inclusion. This observation challenges the idea that fintech services could substitute for traditional financial services and allow countries to catch up with more advanced peers in terms of financial inclusion. Paraguay is the only country in the entire LAC region where the share of fintech users (measured by the proportion of adults making/receiving digital payments) exceeds the proportion of traditional account holders.

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10 Mexico is included in the South America region, since its economy shares more characteristics with large South American countries than with the relatively small Central American countries.
Figure 5. Cross-Country Heterogeneity within the LAC Region in 2017

Note: ARG=Argentina, BRA=Brazil, BOL=Bolivia, CA=Central America, CAR=Caribbean, CHL=Chile, COL=Colombia, CRI=Costa Rica, DOM=Dominican Republic, ECU=Ecuador, GTM=Guatemala, HND=Honduras, HTI=Haiti, MEX=Mexico, NIC=Nicaragua, PAN=Panama, PER=Peru, PRY=Paraguay, SA=South America, SLV=El Salvador, TTO=Trinidad and Tobago, URY=Uruguay, VEN=Venezuela.

Source: Findex Global Database; Authors’ calculations.
C. Poor, young, and uneducated adults are more likely to be financially excluded

Looking at specific measures of financial inclusion, instead of aggregate indices, allows to analyze the dispersion across various population groups, depending on the age, the gender, the education level, the income level, or the location (rural or urban) of the respondents. Figure 6 shows how the proportion of adults with an account at a financial institution and who made or received digital payments in the past 12 months varies according to the characteristics of the respondents.

In general, the proportion of adults with an account at a financial institution or using digital payments is smaller for poor, young and less educated adults in all regions of the world. However, the gap between poor adults and the overall population is larger in LAC than in other regions, suggesting a greater role of income as a determinant of financial inclusion in the region. Similarly, young households are less likely to have an account or use digital payments in all LAC countries, except Chile and Costa Rica.

The link between education and financial inclusion in LAC is not unambiguous. On the one hand, in LAC—like in most other regions—the gap between the less educated adults and the overall population is larger for the use of digital payments than for the ownership of an account. That is an intuitive result, because the use of fintech requires minimal tech literacy in addition to some financial literacy. On the other hand, in most LAC countries adults with low education are the demographic group that experienced the largest increase in financial inclusion between 2014 and 2017 (Figure 6, bottom graphs).

While both women and rural adults tend to have lower levels of financial inclusion than the average population, the gap is relatively small. In Argentina, women are actually more likely to have an account or use digital payments than men, while the proportions of men and women having an account are the same in Bolivia. The gap between rural and urban households is on average larger for the use of digital payments than for access to an account at a financial institution, suggesting that access to technology is likely as relevant an obstacle to financial inclusion as is physical distance from bank branches or other financial institutions. Argentina, Brazil, Colombia, Peru, and Mexico, the five largest countries by land area in the region, all record a larger urban-rural gap for fintech-related measures of financial inclusion than for traditional ones which could be a reflection of the critical role of government-owned banks in rural areas in these countries.

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11 The gap for account holding between poor adults and the overall population amounts to 12.5 percentage points in LAC, versus 9.9 in Europe and 9.4 in the Middle East and Central Asia. For the use of digital payments, the gap is of 11.7 percentage points in LAC, 10.4 in Europe, 8.9 in Asia, and 8 in the Middle East and Central Asia.

12 Defined as adults having completed primary education only.

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Figure 6. Heterogeneity Across Specific Groups of the Population in 2017

Percent of Adults Having an Account at a Financial Institution

Percent of Adults Having Made or Received a Digital Payment in the Past 12 Months

Changes between 2014 and 2017

Change in the Share of Adults Having an Account at a Financial Institution (in ppt)

Change in the Share of Adults Having Made or Received a Digital Payment in the Past 12 Months (in ppt)

Note: AFR=Sub-Saharan Africa, APD= Asia and Pacific, EUR=Europe, LAC=Latin America and Caribbean, MCD= Middle East and Central Asia, NA=North America (excluding Mexico).

Source: Findex Global Database; Authors’ calculations.
Box 1. Regional and Gender Differences in Financial Inclusion in Mexico

This box documents significant regional differences in the use of financial services in Mexico using the results of the 2018 National Inclusion Survey (INEGI, 2018). It illustrates the strong correlation between income and financial inclusion at the micro-level as well as gender differences in financial inclusion depending on the size of urban areas.

Microdata from Mexico’s National Inclusion Survey (ENIF) allow to compare financial inclusion measures across 6 regions. The share of households using at least one type of financial product (savings account, credit, insurance, or retirement account) varies from 60 percent in the south to 82 percent in the north of the country. The picture is similar for each type of financial product. This north-south financial inclusion divide closely mimics the income gap, with higher income on average in the northern states and lower income in the south (see maps below).

ENIF data also allow to compare large urban areas to smaller ones. They show that financial inclusion is on average higher in larger urban areas, although the results differ depending on gender. Women are indeed more likely than men to have at least one financial product in smaller cities, while the opposite is true in larger cities.

Among the adults having at least one financial product, women are more likely than men to hold a savings account, while a larger share of men uses credit, insurance, or a retirement account, the latter reflecting the larger share of formal employment among men.

### Use of Financial Services by Gender and Size of Urban Area in Mexico

<table>
<thead>
<tr>
<th>Total</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Share of adults aged 18-70 with at least one financial product</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>68.3</td>
<td>65.2</td>
</tr>
<tr>
<td>Cities with fewer than 15,000 inhabitants</td>
<td>57.1</td>
<td>58.0</td>
</tr>
<tr>
<td>Cities with at least 15,000 inhabitants</td>
<td>74.4</td>
<td>69.0</td>
</tr>
<tr>
<td><strong>Among those who hold at least one financial product</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of people having a savings account</td>
<td>68.9</td>
<td>70.4</td>
</tr>
<tr>
<td>Share of people borrowing from a financial institution</td>
<td>45.6</td>
<td>44.8</td>
</tr>
<tr>
<td>Share of people having an insurance product</td>
<td>37.2</td>
<td>35.5</td>
</tr>
<tr>
<td>Share of people having a retirement account</td>
<td>57.9</td>
<td>47.6</td>
</tr>
</tbody>
</table>

III. Determinants of Financial Inclusion

We now turn to the question of the determinants of financial inclusion and whether those have changed with the development of fintech. We find evidence of a significant negative fixed effect for LAC countries across all financial inclusion measures, traditional and fintech-related, even after controlling for the usual drivers of financial inclusion. The magnitude of this fixed effect has not substantially changed between 2014 and 2017.

A. In terms of drivers of financial inclusion, LAC does not differ substantially from the world average

The usual determinants of financial inclusion considered in the literature (e.g., Martínez Pería, 2014; Dabla-Noris et al. 2015a; Rojas-Suárez, 2016) include:

Income per capita and income inequality. Richer countries tend to have higher levels of financial inclusion. First, because they typically have better financial and telecommunication infrastructures. But, more importantly, because high income also increases the demand for financial products, including by relaxing credit constraints. Surveys investigating the reasons for the lack of use of financial services by households often highlight that low income and self-exclusion play a larger role than supply-side considerations, such as high fees and stringent documentation requirements (Martínez Pería, 2014). While the lack of financial inclusion is often considered an important driver of persistent economic inequality, Claessens and Perotti (2007) argue that inequality affects financial access, “because unequal access to resources affects de facto political power” and “especially in a weak institutional framework (...) inequality makes it easy for established interests to influence access to finance by direct control or regulatory capture of the financial system.” At the same time, more financial inclusion and access to credit may positively affect both per capita income and inequality by providing financing for investment by individual entrepreneurs and helping households insure against adverse income shocks, so the relationship between financial inclusion and income goes both ways.

Education. Better education accompanied by greater financial literacy can obviously affect the use of financial services directly, and indirectly through its impact on future income. In the regressions that follow, the level of education is proxied by the enrollment rate.

Structure of the financial sector and costs of financial services. Supply-side barriers to financial inclusion can be monetary (fees, high lending rates) or non-monetary (such as the distance from financial institutions, documentation requirements to open an account or to apply for credit). The structure of the financial sector, and in particular measures of the concentration of the banking sector, are often used as proxy for monetary barriers. The ratio of overhead costs to assets captures the efficiency of the banking sector and its ability to reduce the cost of financial services. However, there is the possibility that more efficient banks are also less willing to cater to harder-to-reach or riskier customers, implying a negative relationship between banking sector efficiency and financial inclusion.

Availability of financial services. Non-monetary barriers are captured by the number of ATMs per 100,000 adults. The more ATMs, the more useful a debit card would be for cash withdrawal. The complementarity between ATMs and debit cards however also suggests the
possibility of a reverse relationship, in which greater financial inclusion would lead to the installation of more ATMs.

**Access to internet and cellular network coverage.** With the development of fintech and digital accounts, access to internet and cellular network coverage are more likely to affect people’s ability to access and use financial services.

**Rule of law.** The quality of institutions and the ability to enforce contracts are commonly considered as important determinants of financial development. Strong institutions and contract enforcement rules contribute to public trust and may encourage depositors to entrust their savings to financial institutions and banks to lend to more people against collateral.

Annex 1 provides a detailed description of the variables used and the data sources.

For all the variables considered, LAC countries do not differ much from the world average, with the exception of the Gini index and the bank overhead cost-to-total assets ratio, both of which are higher in LAC than in all other regions (Figure 7).

**B. Econometric analysis**

We regress the various measures of financial inclusion (discussed in Section II) on the above drivers of financial inclusion. In addition, we include regional dummy variables. The preceding discussion underscored the possibility of reverse causality and the potential endogeneity of some regressors. To alleviate endogeneity concerns, the relevant explanatory variables are lagged by three years (corresponding to the period between two Findex surveys). Nevertheless, the results below should be interpreted with caution.
Most coefficients have the expected sign (Table 1, next page). Per capita income is positively and significantly associated with most financial inclusion measures, while the relationship between financial inclusion and income inequality measured by the Gini coefficient is negative. This negative coefficient may not bode well for financial inclusion in the near future, if we assume the COVID-19 pandemic will magnify income inequalities, as is commonly thought. School enrollment is positively associated with most measures of financial inclusion, as are the number of ATMs per 100,000 adults and the rule of law, confirming results already reported in the literature. The results for the structure of the banking sector and the cost of financial services are less clear and less intuitive, with the coefficient on bank concentration sometimes positive and significant. Interestingly, the variable used to measure internet access has a positive and significant effect both on fintech-related measures of financial inclusion and on the more traditional measure of the share of people having a financial account. Mobile coverage does not seem to influence any measure of financial inclusion.

Separate regressions for the years 2014 and 2017 (results not reported) yield broadly similar results. This suggests that the determinants of financial inclusion identified here have not changed between those two years.

Additional regressions show a strong correlation between traditional financial inclusion measures and some fintech-related measures such as the proportion of users of digital payments (Table 2). Although this result could reflect that both traditional and fintech financial inclusion measures are simultaneously driven by common (unidentified) external indicators (such as trust in institutions), we believe it can also be interpreted as evidence of a strong complementarity between traditional and fintech-related forms of financial inclusion, which potentially questions the idea that fintech may bring more financial inclusion outside traditional financial channels. Instead, fintech may simply allow banks to provide more services to their existing customers.

<table>
<thead>
<tr>
<th>Table 2. Relationship between Traditional Financial Inclusion and Fintech-Related Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
</tr>
<tr>
<td>Buy/Pay using internet</td>
</tr>
<tr>
<td>Have an account</td>
</tr>
<tr>
<td>Log per capita income (lagged)</td>
</tr>
<tr>
<td>Gini coefficient (lagged)</td>
</tr>
<tr>
<td>Enrollment rate</td>
</tr>
<tr>
<td>Number of ATMs (lagged)</td>
</tr>
<tr>
<td>Bank concentration</td>
</tr>
<tr>
<td>Bank overhead cost</td>
</tr>
<tr>
<td>Internet users</td>
</tr>
<tr>
<td>Coverage mobile</td>
</tr>
<tr>
<td>Rule of law</td>
</tr>
<tr>
<td>MCD</td>
</tr>
<tr>
<td>NA (excl. Mexico)</td>
</tr>
<tr>
<td>LAC</td>
</tr>
<tr>
<td>APD</td>
</tr>
<tr>
<td>EUR</td>
</tr>
<tr>
<td>Constant</td>
</tr>
<tr>
<td>Observations</td>
</tr>
<tr>
<td>R^2</td>
</tr>
</tbody>
</table>

Standard errors in parentheses

* p<0.01, ** p<0.05, * p<0.1

13 Such as the share of adults making transactions over the internet and the fraction of people using digital payments and receiving wages or government payments on a financial account or a debit card.
<table>
<thead>
<tr>
<th></th>
<th>(1) Have an account</th>
<th>(2) Save in account</th>
<th>(3) Borrowed from bank</th>
<th>(4) Have debit card</th>
<th>(5) Have credit card</th>
<th>(6) Used debit card</th>
<th>(7) Used credit card</th>
<th>(8) Buy/Pay using internet</th>
<th>(9) Used digital payments</th>
<th>(10) Paid utilities with mobile</th>
<th>(11) Wages into account</th>
<th>(12) Gov payment into account</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log per capita income (lagged)</td>
<td>0.076***</td>
<td>0.086***</td>
<td>0.009</td>
<td>0.093***</td>
<td>0.089***</td>
<td>0.076***</td>
<td>0.063***</td>
<td>0.062***</td>
<td>0.064***</td>
<td>0.008</td>
<td>0.055***</td>
<td>0.049***</td>
</tr>
<tr>
<td>Gini coefficient (lagged)</td>
<td>0.001</td>
<td>-0.002</td>
<td>-0.001</td>
<td>-0.003*</td>
<td>-0.005***</td>
<td>-0.007***</td>
<td>-0.003***</td>
<td>-0.006***</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.004**</td>
<td>-0.003</td>
</tr>
<tr>
<td>Enrollment rate</td>
<td>0.002***</td>
<td>0.001</td>
<td>0.001***</td>
<td>0.002***</td>
<td>0.000</td>
<td>0.002***</td>
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<td>0.000</td>
<td>0.000</td>
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<tr>
<td>Number of ATMs (lagged)</td>
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<td>0.001***</td>
<td>0.001***</td>
<td>0.000</td>
<td>0.000</td>
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<td>0.000</td>
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</tr>
<tr>
<td>Bank concentration</td>
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<td>0.000</td>
<td>0.001***</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
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<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Bank overhead cost</td>
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<td>-0.005</td>
<td>0.001</td>
<td>-0.004</td>
<td>0.005</td>
<td>-0.008</td>
<td>0.003</td>
<td>0.000</td>
<td>0.001</td>
<td>0.007</td>
<td>0.001</td>
<td>-0.000</td>
</tr>
<tr>
<td>Internet users</td>
<td>0.002***</td>
<td>-0.001</td>
<td>0.000</td>
<td>0.002*</td>
<td>-0.001</td>
<td>0.002</td>
<td>-0.001</td>
<td>0.003**</td>
<td>0.004***</td>
<td>0.001***</td>
<td>0.002***</td>
<td>0.002***</td>
</tr>
<tr>
<td>Coverage mobile</td>
<td>-0.000</td>
<td>-0.002</td>
<td>0.001</td>
<td>-0.003</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.001</td>
<td>-0.003</td>
<td>-0.000</td>
<td>-0.000</td>
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<tr>
<td>Rule of law</td>
<td>0.010</td>
<td>0.079***</td>
<td>0.011</td>
<td>0.038*</td>
<td>0.048***</td>
<td>0.085***</td>
<td>0.036***</td>
<td>0.069***</td>
<td>0.040**</td>
<td>0.002</td>
<td>0.020</td>
<td>-0.026</td>
</tr>
<tr>
<td>MCD</td>
<td>-0.103***</td>
<td>-0.140***</td>
<td>0.023</td>
<td>-0.130***</td>
<td>-0.100**</td>
<td>-0.290***</td>
<td>-0.072***</td>
<td>-0.159***</td>
<td>-0.207***</td>
<td>-0.063***</td>
<td>-0.091***</td>
<td>-0.105***</td>
</tr>
<tr>
<td>NA (excl. Mexico)</td>
<td>0.028</td>
<td>0.102</td>
<td>0.098**</td>
<td>0.006</td>
<td>0.143*</td>
<td>-0.074</td>
<td>0.083</td>
<td>0.106</td>
<td>-0.106</td>
<td>0.054</td>
<td>0.026</td>
<td>0.089</td>
</tr>
<tr>
<td>LAC</td>
<td>-0.076**</td>
<td>-0.089**</td>
<td>0.031*</td>
<td>-0.072*</td>
<td>-0.040</td>
<td>-0.118***</td>
<td>-0.027</td>
<td>-0.115**</td>
<td>-0.188***</td>
<td>-0.058***</td>
<td>-0.063**</td>
<td>-0.106***</td>
</tr>
<tr>
<td>APD</td>
<td>0.174***</td>
<td>0.051</td>
<td>0.031</td>
<td>0.021</td>
<td>-0.071*</td>
<td>-0.148***</td>
<td>-0.036</td>
<td>-0.031</td>
<td>-0.053</td>
<td>-0.026</td>
<td>-0.024</td>
<td>-0.009</td>
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<tr>
<td>EUR</td>
<td>0.105**</td>
<td>-0.056</td>
<td>0.001</td>
<td>0.045</td>
<td>-0.095**</td>
<td>-0.076</td>
<td>-0.068**</td>
<td>-0.039</td>
<td>-0.030</td>
<td>-0.073***</td>
<td>0.031</td>
<td>-0.027</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.531***</td>
<td>-0.245</td>
<td>-0.114</td>
<td>-0.379*</td>
<td>-0.311</td>
<td>-0.233</td>
<td>-0.206</td>
<td>0.056</td>
<td>-0.279</td>
<td>0.023</td>
<td>-0.163</td>
<td>-0.436**</td>
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<td>Observations</td>
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<td>156</td>
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<td>156</td>
<td>154</td>
<td>154</td>
<td>140</td>
<td></td>
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<tr>
<td>R²</td>
<td>0.832</td>
<td>0.743</td>
<td>0.381</td>
<td>0.832</td>
<td>0.726</td>
<td>0.810</td>
<td>0.704</td>
<td>0.786</td>
<td>0.835</td>
<td>0.305</td>
<td>0.816</td>
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Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
In all regressions, the consistently negative and significant coefficient on the LAC dummy is striking. It captures the low level of financial inclusion in the region even after controlling for the usual drivers. We conjecture this negative LAC fixed effect may be due to either institutional features of the financial sector in the region that are not captured by the simple bank concentration variable included in the regression, or the role played by regulation and financial policies. This in turn may also be part of the reason of why fintech activities have not been more widely adopted in the region. This occurs because for example, a few large players in the financial industry in LAC countries, whose cost of capital is lower than for new entrants, are able to purchase fintech firms and prevent the emergence of fintech services that could serve unbanked customers outside the traditional financial sector. Alternatively, the strict financial regulations that were put in place in many LAC countries following banking and financial crises in the 1990s and early 2000s may hinder the adoption of fintech tools to promote financial inclusion. We investigate these hypotheses in the next section by way of case studies.

IV. Financial Inclusion and Fintech Strategies—Case Studies

This section summarizes the main lessons from six case studies conducted with the help of regulators, central banks, and other policy experts involved in financial inclusion and fintech in Argentina, Brazil, Chile, Colombia, the Dominican Republic, Honduras, and Mexico. Panama’s Superintendency of Banks also provided helpful inputs about regulatory initiatives in Panama. Appendix 2 includes the full case studies as provided by country experts.

While there has been a lot of discussion about financial inclusion in the past decade, formal financial inclusion strategies are still fairly recent. Except for Brazil which adopted its financial inclusion strategy as early as 2011, other countries adopted theirs later: Honduras in 2015, Colombia and Mexico in 2016, and the Dominican Republic in 2018. Chile set up a Financial Inclusion Unit in 2011 but adopted its first Financial Education Strategy only in 2016. Argentina approved a new strategy of financial inclusion in 2020.

Fintech strategies are, understandably, even more recent when they exist at all. Again, Brazil was a forerunner, adopting a law on payment institutions including electronic money issuers in 2013. Mexico passed a fintech law in 2018 to regulate financial technology institutions (crowdfunding and e-money institutions). Other countries have stepped up their efforts in recent years. In Colombia, a Fintech subcommittee follows fintech-related issues as part of the implementation of the 2016 National Financial Inclusion Strategy, and the Financial Superintendency has put in place a regulatory sandbox to allow fintech firms to test new products and services with a limited number of customers (an approach also followed by Brazil and Mexico). In general, the authorities are working on progressively regulating the various activities of fintech firms (digital deposits and digital payments, crowdfunding, peer-to-peer credit, robo-advisory), trying to facilitate the development of fintech firms while safeguarding financial stability (see Cantú and Ulloa, 2020, for a more detailed analysis of fintech regulatory frameworks in LAC).

All countries explicitly recognize the large potential role that fintech innovations can play to boost financial inclusion, and most have taken measures to facilitate or encourage the use of fintech products. Specific initiatives aimed at improving financial inclusion include the relaxation of the requirements for opening a financial account, including a digital one, under
specific thresholds for deposits or transactions (Colombia, Panama) or for certain categories of people (e.g., accounts for minors in Mexico). In Colombia, SEDPEs (Sociedades Especializadas en Depósitos y Pagos Electrónico) created by a 2014 law, are exempted from some KYC requirements, such as verifying customers’ economic activity and income. In Chile, the state-owned bank, Banco del Estado, created the debit card CuentaRut in 2006, which requires only a valid government ID for opening, and prefigured the implementation of simplified bank accounts. In 2014, Brazil created “payment accounts”, which do not require physical branch service, cannot be used to get a loan, but can offer cards and be used to make or receive transfers, and are usually free. Account balances must be invested by the account provider into federal bonds or central bank reserves. Legislations on open banking, aimed at facilitating information sharing among financial institutions, have been implemented or are currently under discussion in Brazil, Chile, Colombia, and Honduras, and are expected to reduce transaction costs.

Policy experts are also keen to highlight countries’ initiatives to modernize payment systems and facilitate mobile payments. At end-2019, the Bank of Mexico set up the CoDi (Cobro Digital) platform to facilitate electronic payments and transfers. In Colombia, the real-time transfer system TransfiYa, which allows to send or receive money with a mobile phone number, emerged from a private arrangement between fintech firms Minka and ACH Colombia, and has been expanding rapidly since the beginning of the COVID-19 pandemic. The Superintendency of Banks in Panama is developing a new legal framework to regulate the payment system and to facilitate the operations of fintech firms through clear licensing and payment compensation rules, while safeguarding the integrity and transparency of the system.

A few measures have also been taken to increase access to credit. Several countries have modernized their legislation on secured transactions (Dominican Republic, Colombia) to expand the range of acceptable collateral and increase access to credit. In 2018, Brazil passed legislation to allow the issuance of digital invoices that can be used as collateral by firms to get a loan, and in 2020, created “segregated rural properties,” which can be easily transferred to creditors in case of default and are expected to support rural producers’ access to credit. Colombia raised the thresholds for low-value consumer loans, which are targeted at households with no previous access to formal financing, to up to four times the minimum wage, and allowed for transactions to be conducted electronically. The use of credit registries has also been expanded, with Brazil shifting from an “opt-in” to an “opt-out” regime where borrowers must explicitly refuse the recording of their loan or credit information in the registry. On the supply side, several countries have introduced regulations on crowdfunding (Colombia, Mexico) and peer-to-peer lending (Brazil).

Several countries used their response to the Covid-19 pandemic to promote fintech solutions with the goal to increase financial inclusion. Among those, Colombia implemented Ingreso Solidario, a new cash transfer program targeted at vulnerable households not previously covered by the social safety net and deployed through digital accounts and mobile wallets. Honduras distributed electronic cash vouchers to more than 70,000 households via mobile phones. Brazil allowed direct credit companies (SCD) to issue credit cards and on-lend resources from the Brazilian National Development Bank (BNDES). Mexico and Argentina preferred to rely on the traditional banking sector to ensure the safe distribution of cash transfers. Nevertheless, most policy experts acknowledge the pandemic provided an
opportunity to promote electronic payments and reduce the use of cash, and some reported an increase in fintech activity, especially for providers of digital transfers.

While financial inclusion has improved, it is difficult to ascribe the gains to specific policy actions. As suggested in Section II.B, one can attribute the high share of people receiving government transfers on a financial account or a debit card in Brazil to the success of its *Bolsa Familia* program. However, other incentives such as tax refunds for payments by debit or credit card, which were put in place in 2011 in Honduras, do not seem to have translated into a higher use of either debit or credit cards. Many initiatives are also too recent to have their effects reflected in the latest Findex data.

Policy experts highlight several remaining obstacles to financial inclusion in their respective countries. The small market size and limited possibilities for economies of scale can reduce incentives for innovation and fintech development (Chile, Dominican Republic). Low levels of financial literacy and limitations in digital skills, and insufficient mobile and internet coverage are other commonly cited hurdles, which authorities are addressing by developing financial education programs (Colombia, Dominican Republic, Honduras, Mexico) and by investing in improving mobile and internet access (e.g., the creation of “digital zones” with free internet access in Colombia). In Chile, the case study highlighted the existence of entry costs created by a concentrated incumbent sector, and the difficulty for fintech firms to access capital financing. The issue may be magnified by a restrictive legal and regulatory framework imposing barriers to innovation and competition in the financial sector (Honduras).

Country authorities are addressing regulatory rigidities and burdensome supervisory processes by setting up regulatory sandboxes and creating specific units to guide fintech firms through the regulatory and supervisory framework. This is notably the case in Colombia with the implementation of the eHub and Regtech initiatives by the Financial Superintendency. The Central Bank of Argentina set up a “financial innovation roundtable” to foster innovation and provide a discussion forum between the regulator and players in the financial ecosystem. Regulators are also authorizing new types of actors to compete with traditional banks, under strict rules to limit any financial stability risk. For instance, Brazil created Direct Credit Companies (SCD) in 2018, which can provide loans through electronic platforms using their own capital (they cannot raise deposits), and Simple Credit Enterprises (ESC) in 2019, which can grant loans and purchase receivables from micro and small enterprises also with their own capital only. These examples therefore provide support to both hypotheses outlined in the previous section about the reasons for the significant lag of financial inclusion in LAC countries compared with the rest of the world and illustrate how country authorities are working to address them.

The main risks from fintech identified by the case studies are related to cybersecurity, AML/CFT, and privacy. Interestingly, none of the case studies emphasized financial stability concerns as a risk. While potentially a sign of confidence of regulators in the strength of their regulatory frameworks (the regulatory sandbox approach being a way to identify potential risks before innovations are rolled out at a large scale), this calls for cautious monitoring of future fintech developments and their possible effects on the financial sector.
**Box 2. The Plan for the Financial Inclusion of Women in Honduras**

**Background.** Honduras faces the highest level of economic inequality in Latin America and one of the most unequal distributions of income and resources in the world, for men and women alike. Global indicators show that gender gaps in Honduras are the narrowest in health and education, substantial in economic life, and the widest in political life (WAGE, 2019). The literacy rate is almost identical for women and men, but the female share of graduates in science, mathematics, engineering, manufacturing, and construction at the tertiary level is at a mere 8.6 percent. Women in Honduras are more likely to have informal jobs than men (77.3 percent vs. 71.1 percent) and more likely to be financially excluded. 41 percent of women over the age of 15 hold an account at financial institutions or with mobile money-service providers, compared to 50 percent of men, below the average for LAC countries (45 percent).

Recognizing that facilitating women's access to financial products and services would allow them to expand their professional, personal and family development thus contributing to the productive capacity of the economy, the Honduran government devised a strategy to close the gender gap in its financial system by strengthening and reorienting the functions of financial supervision, surveillance, and analysis to include a gender perspective.\(^\text{14}\)

In February 2019, the National Banking and Insurance Commission (CNBS) of Honduras began implementing the *Plan for the Financial Inclusion of Women*, coordinated by a special Committee with technical assistance of a Canadian consulting company. The Plan aims to enhance the regulatory supervisory capacities of the CNBS to effectively improve the financial inclusion of Honduran women.

The plan has three stages:

1. Collection and reporting of quality information to identify gender gaps in deposits, credits and insurance, and in access to SME loans by women entrepreneurs.
2. Analysis of the collected information to quantify the impact of the financial inclusion of women on financial stability and market integrity, identify losses to national productivity resulting from limited access to financing by women, and identify missed business opportunities resulting from women's limited access to financial products.
3. Use of this information for the design of policy interventions, the evaluation of the impact of policies and regulatory interventions on women's access to and use of financial services, and an analysis of the quality of women's financial inclusion — including factors such as affordability, financial literacy, convenience and product choice.

In 2020, the Committee reported that the greatest challenge for the implementation of the Plan was the collection of data disaggregated by sex requested from the supervised entities (banks, the insurance and cooperatives sectors) and requested that gender data be collected by the statistical information systems of the supervised entities of CNBS. However, public awareness of the legal framework appears to be low, representing a likely challenge at the policy intervention stage.

In the context of the pandemic, the government is analyzing the impact of the COVID-19 shock on the activities of small entrepreneurs, disaggregated by gender, to assist the targeting mechanisms of the social support schemes. In 2021, regulatory intervention pilot programs are scheduled to take place and the amended National Financial Inclusion Strategy is expected to be launched based on the Committee's recommendations, along with specific targets for financial education and capacity development.

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\(^{14}\) This initiative builds on earlier efforts to enhance the financial inclusion of Honduran women, such as the 2015 *Law on the National Solidarity Credit Program for Rural Women*, which established credit programs that guarantee low interest rates, favorable repayment periods, and other conditions that facilitate women’s access to credit; put in place technical assistance programs that improve women’s business management skills and knowledge of new technologies; established a support and research network to strengthen a culture of entrepreneurship and innovation amongst women; and improved coordination mechanisms with other government agencies, NGOs, and private institutions to support these efforts.
V. CONCLUSION

Despite some improvement since 2011, the degree of financial inclusion in Latin America and the Caribbean remains lower than in other regions. Countries in the region have not yet benefited from fintech developments to boost financial inclusion, and both traditional and fintech-driven measures of financial inclusion show room for improvement.

There is a large heterogeneity among LAC countries, with a few countries faring much better than the regional and the world averages. However, poor, young, and uneducated adults are everywhere more likely to be financially excluded, compared with other population groups.

Income levels, inequality, education, the concentration and effectiveness of the banking sector, internet and mobile access, and the rule of law cannot account for the lower level of financial inclusion in LAC compared with other countries. But case studies suggest that high barriers to entry in the financial and fintech sectors and a constraining regulatory environment may constitute significant obstacles to greater fintech development and in turn to financial inclusion.

Recent regulatory reforms, supported by the adoption in most countries of financial inclusion strategies and discussions of new fintech strategies, should underpin the growth of the fintech sector in LAC and help boost financial inclusion. The COVID-19 pandemic led to an increase in the use of digital payments, in several cases helped by new government cash transfer programs distributed through digital wallets or mobile phones. These improvements, along with the positive effects of the latest governments’ efforts, should be reflected in the 2021 Findex survey.