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COVID-19 AND FINTECH IN LATIN AMERICA: IMPACT AND POLICY OPTIONS

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Abstract. The coronavirus crisis (COVID-19) crisis highlighted a disadvantage of globalization: risks are more systemic. That is, crises are no longer local, but quickly spread to other countries in a region and around the world. In this context, the use of information and communication technologies was an automatic response of society. The financial technology (Fintech) sector is considered a safe option to preserve health at the time of making a transaction. This paper aims to analyze the effects that the coronavirus crisis had on the use of Fintech services in Latin America. To this end, the concept of Fintech is clarified. Next, the types of Fintech services used in Latin America are characterized. The data on the number of companies and the use of Fintech products before and during the COVID-19 crisis are then analyzed. Finally, policy options for driving financial inclusion and increasing the benefits of using Fintech services in the region are presented. The results allow us to conclude that the progress of the Fintech sector in Latin America was affected by the COVID-19 pandemic.

Keywords: COVID-19, Fintech, Latin America, finance, technology. Reikšminiai žodžiai: COVID-19, Fintech, Lotynų Amerika, finansai, technologijos.

Introduction

The COVID-19 pandemic reduced the mobility of people, increased uncertainty in the international movement of funds and generated a global public health emergency. Moreover, as COVID-19 spread, governments took drastic measures to curb the disease. This created a global economic crisis of new proportions in terms of widespread job losses, company closures, and defaults, which in turn increased the possibility of a new global financial meltdown.

The long-term economic impact of this new disease will depend, to a large extent, on the success of countries in collectively containing the transmission of the virus. The risks of not taking action are: 1) a dramatic increase in the number of deaths and infections; 2) the collapse of health care systems; 3) greater difficulties for businesses to operate; and 4) the paralysis of the global economy. However, if government action is confined solely to the return of autocratic societies, where borders are again erected and self-sufficiency is the goal, local solutions will be insufficient to solve a global crisis.

In this context, the use of information and communication technologies was the automatic response of society to avoid a return to autocracy and to allow a similar dynamic to the one that existed before COVID-19. The pandemic generated a significant increase in the adoption and use of online communication and merchandise exchange services. Within this industry, the financial technology (Fintech) sector is seen as a safe option for preserving health when conducting transactions. This is because Fintech services make it possible to comply with quarantine, physical distancing, biosecurity measures and other restrictions on the mobility of people imposed by governments. In addition, they eliminate the risk of contagion through the handling of cash, coins, and banknotes.

In this sense, the current paper analyzes the effects that the coronavirus crisis had on the use of Fintech services in Latin America. To this end, a theoretical and conceptual research method is carried out through the observation and analysis of existing information. First, the concept of Fintech is clarified. Next, the types of Fintech services used in Latin America are characterized. Then, data on the number of companies and the use of Fintech products before and during the COVID-19 crisis are analyzed. Lastly, we present policy options to stimulate financial inclusion and increase the benefits of using Fintech services in the region.

Definitions of Fintech

Recent years have seen a significant movement to inform, educate, describe, and even standardize what Fintech is. This term, which has become widespread in the last two decades, is the contribution of a technology consortium initiated by Citicorp, a predecessor of Citigroup, in the early 1990s (Hochstein 2015), when they sought cooperation between banking and technology. From there, its etymological origin is recognized in the union of the terms *finance* and *technology* (Zavolokina, Dolata and Schwabe 2016), and it is identified as a concept under construction due to the lack of a unique and universal definition.

In this sense, the term Fintech is associated with a new financial industry that uses

technology to improve financial activities (Schueffel 2016). Philippon (2016) linked Fintech to digital innovations in business models that have transformed the financial sector, and Arner, Barberis and Buckley (2016) perceived it as a set of financial solutions enabled by technologies.

Moreover, the Financial Stability Board (2017) defined it as the application of the most recent technological developments to transactions executed in the financial system. In that direction, Gomber, Koch and Siering (2017) considered it a neologism that describes the use of new technologies, mainly those related to the Internet, in the development of activities in the financial industry. In this regard, Gai, Qiu and Sun (2018) defined it as a sector of the economy that serves the needs of companies and organizations through the incorporation of technology applications to financial services. Furthermore, for Thakor (2020), Fintech is equivalent to the use of technology to provide new and improved financial services.

Considering this conceptual breadth, in this research the term *Fintech* is considered to represent technological applications that simplify the processes of financial intermediation. These have the function of optimizing each transaction, improving it, and, above all, allowing access to financial services for a greater number of people. In this sense, Fintech services are those that can be provided by the traditional financial sector or by nonfinancial organizations known as Fintech startups.

These Fintech startups differ from companies in the traditional financial sector because they propose disruptive innovations for the provision of financial services. Their characteristics include the following: a) the propensity to make risky but profitable decisions; b) the freedom that they have in the absence of a rigid regulatory framework for their activity; and c) the opportunity to develop new and efficient intermediation systems from scratch (Philippon 2016). In addition, these organizations can address customer problems that traditional companies have not addressed (Cuya 2016). The widespread use of Fintech is generating: 1) changes in the traditional structures of the financial industry; 2) modifications in the way companies in the sector create and offer products; 3) the high incorporation of new organizations; and 4) facilities for financial intermediation (Hurtado and Molina 2021).

Fintech in Latin America

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In the case of Latin America, the Fintech industry is growing rapidly. Innovation and new technology ventures in the financial services sector represent topics of interest for the future of the region (OECD et al. 2020). Thus, the number of ventures within this sector of the economy experienced a in number 66% increase between 2018 and 2019, reinforcing the role of Fintech as a generator of employment and income. Similarly, Latin American companies in the Fintech sector are distributed in eleven business segments, as follows: 1) payments and remittances; 2) lending; 3) corporate finance management; 4) personal finance management; 5) crowdfunding; 6) business technologies for financial institutions; 7) digital banking; 8) credit scoring, identity, and fraud; 9) insurance; 10) wealth management and financial asset trading; and 11) capital markets. There is also an

additional segment, digital currencies, in which Latin American companies have not yet ventured as generators (IDB, IDB Invest and Finnovista 2018, Garzon 2018).

Of the eleven segments presented above, Latin American Fintech companies have positioned themselves mainly in three: 1) payments and remittances; 2) loans; and 3) corporate finance management. On the other hand, in terms of segmentation by country, it stands out that 86% of these ventures are in Brazil, Mexico, Colombia, Argentina and Chile; 11% are concentrated in countries such as Ecuador, Peru, Uruguay and Venezuela; while the remaining 3% are located in Costa Rica, the Dominican Republic, Guatemala, Panama, El Salvador, Bolivia, Honduras and Nicaragua (IDB, IDB Invest and Finnovista 2018).

This level of participation has generated, according to Berkmen et al. (2019), four differentiated ecosystems for companies in the Fintech sector in Latin America. Ecosystem 1: countries with a high growth rate (greater than 100%) in relation to 2017. With few ventures of this type in 2017, by 2018 this group represented an important entrepreneurial force, offering multiple growth opportunities. Countries in this group include Venezuela, Panama, Ecuador, Uruguay, Peru, and the Dominican Republic. Ecosystem 2: countries with a high growth rate (greater than 50%). This group is made up of nations that developed a greater number of ventures in 2017 compared to the set of countries in ecosystem 1, and includes Costa Rica, Colombia, Brazil, Argentina, and Mexico. Ecosystem 3: countries with low growth (between 1% and 49%). Countries with pioneers in companies of this type include Chile and Guatemala. Ecosystem 4: countries with negative growth - in other words, where the number of ventures decreased compared to 2017. This group includes Paraguay. These data present an important transformation of the Latin American financial system. They show that, at least in Latin America, the Fintech sector is being boosted to provide greater possibilities to those who have the capacity to use them.

Fintech before and during the COVID-19 crisis in Latin America

The aforementioned advances in the Latin American Fintech sector are the result of the region's capacity to incorporate the changes generated by the latest technological innovations in financial services. However, the development of these activities in Latin America, and the world, has recently been conditioned by an unforeseen and unusual element: the COVID-19 pandemic.

COVID-19, and the measures implemented to deal with it, have impacted all areas of life in society, with obvious implications in the psychological, economic, and personal relations fields. In the psychological field, Dosil et al. (2020) and Sandin et al. (2020) highlighted the prevalence of fear of contagion, social isolation, and income problems due to job loss; emotional symptoms such as worry, stress, hopelessness, anxiety, nervousness, and depression; and sleep problems.

In the area of human relationships, collective confinement and the generalization of Internet activities has increased the distancing between human beings. In the economic and commercial sphere, there is evidence of: a) job losses; b) a drop in household income; c) greater public and private indebtedness; d) a decrease in the level of consumption in countries; e) a reduction in the price of raw materials; f) a breakdown in global value chains; g) a decline in the growth of economies; and h) greater vulnerability of international financial markets.

This vulnerability of financial markets is the result of a combination of increased requests for financing by companies and governments and elevated risks of default by debtors who reduced their income during the first months of the pandemic. Simultaneously, the digital financial infrastructure developed over the past decades was consolidated during the COVID-19 health crisis.

During the pandemic, the use of Fintech products increased due to: 1) the fear of contagion of the virus; 2) the high cost of financial intermediation; 3) physical distance; and 4) strict biosecurity measures. Consolidation in the support of e-commerce, door-to-door sales, remittances, and new forms of businesses offering digital payment methods to reduce the use of cash were observed among other ventures that emerged during the pandemic.

This situation represents the first impact of the COVID-19 crisis on the Fintech sector. Both in the world and in Latin America, financial technology companies facilitated the normal development of societies during confinement by using technological applications and updated platforms. According to Arner et al. (2020), this generated an important movement in favor of financial literacy and the training of people in the financial area.

By December 2019, before the expansion of COVID-19 and the declaration of the pandemic, the global context of the sector showed: 1) a strong upward trend in the size of the market; 2) an increase in the number of Fintech companies worldwide, reaching 21,700; 3) the predominance of companies from North America, Europe and Asia-Pacific; 4) the expansion of the number of Latin American Fintech startups, reaching more than 1,200; and 5) the preponderance of the digital environment over the physical in the preferences of users of traditional financial intermediation services (Quiros 2020; Ditrendia 2020).

In addition, during 2019 the cell phone was the preferred electronic device in the world when performing financial transactions. Thus, users worldwide accessed their financial applications 1 trillion times in that year. In relation to Fintech, the number of monthly active users of these applications grew at a rate of 20%, while the number of bank users only grew at a rate of 15%. In addition, Indonesia, Japan, Russia, South Korea, India, and the United Kingdom were the countries with the highest growth in the number of Fintech application users. In Latin America, Brazil, Mexico, Argentina, Colombia, Chile and Peru were the countries where the number of Fintech users grew the most (Finnovista 2020; We Are Social & Hootsuite 2020a). This is the result of: a) the growth path of the global economy; b) the increase in activities in the digital economy; and c) the increase in interest in technological solutions to the problems of daily dynamics in society.

Two Fintech services that were consolidated during 2019 were: mobile payments – services which allow financial transactions via cell phones; and mobile wallets – services

that facilitate the movement of funds as if they were traditional financial instruments such as credit or debit cards. In terms of mobile payment services, Thailand, China, Taiwan, South Korea, and India led the world in their use. In Latin America, Brazil, Mexico, Argentina, and Colombia were the countries that used this type of payment system the most. Virtual wallets consolidated their position as the most widely used means of payment by consumers in e-commerce, accounting for 42% of annual spending worldwide. Within this sub-sector of financial technologies, China, South Korea, the United States, and India were the countries that most frequently used e-wallets from Fintech companies. In Latin America, Brazil, Mexico and Colombia stood out, with Mercado Pago being the most used service in the region (Ditrendia 2020; Finnovista 2020; We Are Social & Hootsuite 2020a). Thus, the sector closed 2019 on a growth path, consolidating the participation of Latin American users and companies (see Table 1).

These results changed in the first half of 2020, due to the COVID-19 pandemic and the measures implemented to contain the contagion. For the financial technology sector, this crisis implied an increase in the use of cell phones and their applications, as well as the closure of businesses and ventures. This is because new investments in the sector were affected, like many small and medium-sized companies in the world, by the fall in the income flow of economies, the reduction of entrepreneurs' resources (Ditrendia 2020), and the abrupt drop in investments in the sector. According to Marous (2020), this drop represented a regression to 2017 levels. Simultaneously, consolidated Fintech companies updated their applications to respond to the new needs of users, strengthening communication with them and keeping services within the latest technological developments.

In 2020, the number of Fintech startups dropped to 20,925 companies worldwide, of which North America and Europe retained the largest number (We Are Social & Hootsuite 2020b). In the same period, Latin America evidenced a slight growth in the number of Fintech companies, reaching 1,250 startups (Ditrendia 2020). This result contradicts the effect generated by the COVID-19 pandemic in the sector worldwide, but corroborates the interest of the Latin American population in finding technological solutions through Fintech ventures and the use and development of online activities. This also led Latin American countries to achieve the highest growth rates in the world within the digital advertising market during the pandemic, centered in Colombia, Chile, Brazil, Argentina and Mexico. The same was true of the participation of the population in Instagram, Twitter, Snapchat and LinkedIn, where Mexico, Brazil, Argentina, and Colombia led the way (We Are Social & Hootsuite 2020b).

Similarly, the cell phone continued to be the world's preferred electronic device for financial transactions in 2020. With respect to the evolution of Fintech application downloads, these continued to grow at a rate of more than 25% per month, reflecting the increase in the level of penetration of these services during the crisis period. In Latin America, Argentina, Mexico, Brazil, Colombia, Uruguay and Chile were the countries where the number of users grew the most (Lavalleja 2020; We Are Social & Hootsuite 2020b).

In relation to the use of mobile payment services and mobile wallets, during the 2020 COVID-19 crisis 43% of payments in global e-commerce were made through e-wallets –

one percentage point above the value of the indicator in 2019. In Latin America, Argentina, Mexico, Brazil, Colombia, Uruguay, Chile, and Peru led the use of this payment modality (Quiros 2020; ACI 2020; We Are Social & Hootsuite 2020b). These results show a change in the order of Latin American countries, with more users and the expansion of the use of these services to new countries in the region. They also reflect the fact that the sector grew in recognition during the health crisis, which generated new challenges for Fintech companies in the world and reinforced Latin America's potential in these activities.

	2019	2020
Fintech companies (World)	21,700	20,925
Fintech companies (Latin America)	1,200	1,250
Download of Fintech apps (monthly growth rate)	20%	25%
Countries with more Fintech app users (World)	Indonesia, Japan, Russia, South Korea, India and the United Kingdom	Indonesia, Japan, Russia, the United States, India and Germany
Countries with more Fintech app users (Latin America)	Brazil, Mexico, Argentina, Colombia, Chile and Peru	Argentina Mexico, Brazil, Colombia, Uruguay and Chile
Countries with more mobile payment users (world)	Thailand, China, Taiwan, South Korea and India	China, India, Indonesia, Russia and the United States
Countries with most mobile pay- ment users (Latin America)	Brazil, Mexico, Argentina and Colombia	Brazil, Mexico, Argentina and Colombia
Countries with more e-wallet users (world)	China, South Korea, the United States and India	China, Italy, Russia, India, Germany
Countries with most e-wallet users (Latin America)	Brazil, Mexico, Argentina, Colombia, Chile and Peru	Argentina, Mexico, Brazil, Colombia, Uruguay, and Chile
E-wallets in e-commerce (percentage of total expenditure)	42%	43%

Table 1. Fintech before and during the COVID-19 crisis in Latin America

Source: Own elaboration based on We Are Social & Hootsuite (2020a, 2020b); Finnovista (2020); Ditrendia (2020); Lavalleja (2020); Quiros (2020); ACI (2020).

Thus, the impact of the drop in income caused by COVID-19 on the expansion path of the Fintech sector is evident. This is reflected in the reduction in the growth of the number of companies engaged in these activities in the world and the drop in the rate of increase in the number of Fintech startups in Latin America. In a crisis that affected productive sectors in different ways, these results show the greater vulnerability of the Fintech sector compared to companies in the traditional financial system. This vulnerability is mainly observed in time in the market, relative profitability levels (Marous 2020), and institutional backing from central banks and governments.

Similarly, the pandemic has allowed consolidated Fintech organizations to advance in their business models. In this way, they are responding to consumer demands, strengthening the role of financial technologies in global society, and maintaining a growth trajectory. These results do not exempt them from the impact of the reduction of revenue from their activities, which will affect the digital transformation goals set in the medium and long-term.

Policy options to boost financial inclusion using Fintech

The impact of the COVID-19 pandemic on the Fintech sector shows a sustainable economic activity that is facing an asymmetric shock for the first time. Furthermore, given the stability of the companies in the sector, they are organizations with the capacity to: a) meet the requirements of consumers; b) withstand the crisis; and c) present themselves as an economical, efficient, safe and friendly option for financial intermediation. In this way, Fintech services are an option for advancing the financial inclusion of the global population of people who do not currently participate in any financial intermediation service.

Currently, there is still a large group of individuals, families and companies excluded from the traditional financial system. This is a consequence of: a) failure to comply with the requirements demanded by banking institutions to access a loan; or b) a lack of knowledge, income, and guarantors to guarantee access to financing. Thus, while 93% of people over 15 years of age have access to the financial system in the developed countries of North America and Western Europe, the global average is 61%, and in Latin America this figure is only 45.8% (CEPAL 2018). Given this scenario, it is necessary to boost financial inclusion in Latin America through public and private initiatives that provide products and services adapted to the needs of individuals and companies.

One of the most attractive strategies is through the consolidation of Fintech services in the region. This implies advocating policies that enable the development of Latin American technological infrastructure and improve Internet access and cell phone penetration. In this way, it will be possible to reduce transaction costs and achieve greater access to online financial services for individuals and businesses.

To make progress toward these goals, the infrastructure policies that each Latin American country can implement must be complemented by educational policies, legislation, and cooperative foreign policy. Educational policies will allow the region to reach an adequate level of financial literacy. In addition, the population will more easily recognize all of the fund intermediation alternatives in the market.

In the legal sphere, the enactment of laws regarding the Fintech sector will: 1) allow for the recognition of its activities in Latin American countries; 2) reduce the risks faced by users and the traditional financial system due to illicit activities, cyberattacks, fraud and bankruptcies; and 3) facilitate a stable investment environment. The importance of this public policy option is highlighted by the fact that the region is lagging behind in this field: only Mexico has made progress in regulating the sector, while Brazil, Colombia, Uruguay and Peru are taking their first steps (Lavalleja, 2020).

Furthermore, cooperative foreign policy will enable the countries of the region to respond adequately to the challenges posed by global and regional public goods. In par-

ticular, these goods include financial and exchange rate stability, as well as the Internet and technological infrastructure. These are pure and impure regional public goods, respectively, which require the design of coordinated policies to minimize the possibility of monetary, exchange rate and financial crises and their contagion effects. In addition, cooperative foreign policy will make it possible to consolidate Latin American integration, advance in the convergence of existing integration processes (Hurtado and Vieira 2020; Hurtado, Zerpa de Hurtado and Mora 2021), and take the first steps toward agreements that facilitate the harmonization of macroeconomic policies (Hurtado 2020). In this way, it will be used as an instrument to solve problems of exclusion, low diversification, and confrontation in Latin America.

Conclusions

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- 1. This paper has analyzed the effects of the COVID-19 crisis on the use of Fintech services in Latin America. When characterizing the types of Fintech services used in Latin America, it was found that the sector is growing rapidly. Similarly, Latin American companies in the sector focus on payments and remittances, loans, and corporate finance management services, which are also the most widely used by usersservices. From the review country-by-country review country, we highlight that the largest number of Fintech ventures are in Brazil, Mexico, Colombia, Argentina and Chile,; followed by Ecuador, Peru, Uruguay and Venezuela.
- 2. After analyzing data on the number of companies and the use of Fintech products before and during the COVID-19 crisis, we concluded that the sector's progress in Latin America was affected by the pandemic. This was mainly due to: 1) the increase in the number of Fintech companies in the region; 2) the increase in the use of mobile payments and digital wallets; and 3) the incorporation of users from a greater number of Latin American countries. Globally, the pandemic changed the Fintech sector by: a) reducing the number of companies in the sector; b) increasing the number of users of Fintech applications; and c) increasing the importance of stable Fintech startups with more time in the market.
- 3. From these effects of the pandemic, policy options to boost financial inclusion through Fintech services in the region were raised. These policies imply the promotion of public and private initiatives that provide products and services adapted to the needs of individuals and companies in Latin America.
- 4. The following policy options are also identified: 1) the implementation of policies that enable the development of Latin American technological infrastructure and improve Internet access and cell phone penetration; 2) educational policies that allow for a higher level of financial literacy; c) the enactment of laws that recognize the sector's activities; and 3) cooperative foreign policy that provides the tools for an adequate response to the challenges of global and regional public goods – in particular, financial and exchange stability, the Internet, and technological infrastructure.

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COVID-19 IR FINANSINĖS TECHNOLOGIJOS LOTYNŲ AMERIKOJE: POVEIKIS IR POLITIKOS GALIMYBĖS

Anotacija. Naujojo koronaviruso (COVID-19) krizė išryškina globalizacijos trūkumą: rizikos yra labiau sisteminės. Tai reiškia, kad krizės nebėra lokalios, bet greitai išplinta į kitas regiono ir pasaulio šalis. Tokioje situacijoje automatiniu visuomenės atsaku tampa informacinių ir komunikacinių technologijų naudojimas. Finansinių technologijų sektorius ("Fintech") laikomas saugia galimybe išsaugoti sveikatą atliekant transakcijas. Šiame darbe siekiama išanalizuoti koronaviruso krizės poveikį "Fintech" paslaugų naudojimui Lotynų Amerikoje. Šiuo tikslu pateikiamas "Fintech" sąvokos išaiškinimas. Toliau apibūdinami Lotynų Amerikoje naudojamų "Fintech" paslaugų tipai. Be to, analizuojami duomenys, susiję su įmonių skaičiumi ir "Fintech" produktų naudojimu prieš COVID-19 krizę ir jos metu. Galiausiai aptariamos politikos galimybės siekiant skatinti finansinę įtrauktį ir padidinti "Fintech" paslaugų naudojimo naudą regione. Rezultatai leidžia daryti išvadą, kad pandemija paveikė "Fintech" sektoriaus pažangą Lotynų Amerikoje.

Reikšminiai žodžiai: COVID-19, "Fintech", Lotynų Amerika, finansai, technologijos.

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