Exploring the usefulness of Fintech in the dark era of COVID-19

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Abstract

This article explores the potential opportunity of FinTech on the financial system in the dark and wicked era of COVID-19. We first provide a seven-figure overview of the unpleasant impact of COVID-19 on the financial system. FinTech sees itself on the one hand as a hope to rebalance the global financial system in this time of financial turmoil, and on the other hand becomes an ultimate weapon to strengthen the resilience of the financial system and respond to the crisis by ensuring the functioning system while respecting containment measures and preventing the spread of the virus.

Keywords : FinTech, Financial system, COVID-19

JEL Classification : E2, E44, G2, O33

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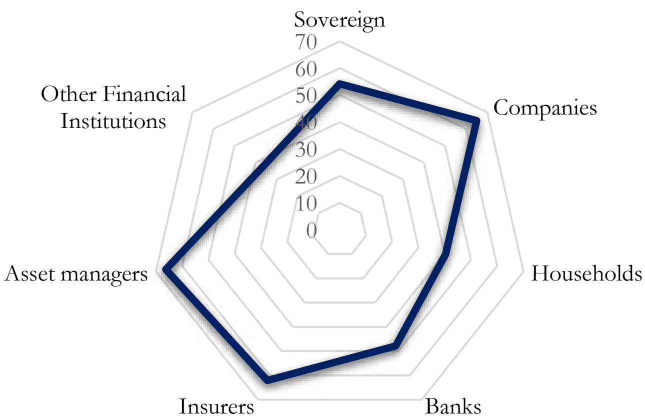
1. Introduction

The advent of the crown monster — COVID-19, has significantly infected the financial system[2] and the way of working in the financial industry. Front-end or face-to-face operations have been obstructed, the payment system (Galicia *et al.* 2020; Auer *et al.* 2020; De Girancourt *et al.* 2020) is all the more seized as the service financial[3]. The nature of the shock of COVID-19 is different from many shocks that we have known the world, even less during the last 100 years, the world has never experienced such an epidemic, precisely because the virus has emerged in the era of hyper globalization and interconnection of systems, which implies an incredible fragility of systems via the contagion and domino effect. This interconnection linked to the systemic nature of financial sectors increases global financial vulnerability (Figure 1.1) and induces cracks in the financial fabrics of economies. Figure 1 shows us that currently vulnerability is much higher among asset managers; in the company sector, which reflects a prolonged period of recession and a high cost of financing would lead to business bankruptcy; in the sovereign sector and in the insurance sector. The insurance sector showed a significant loss in portfolios, the US economy and the Euro Area suffered respectively in March and April a loss of 1.8% and 6% (Figure 1.2). This has serious consequences for international capital flows and leads to a disruption of global financial stability. Contrary to the situation of the international financial crisis of 2007-2008, banks have more capital and liquidity (IMF, Global Financial Report (2020), and they have been subjected to stress tests and macroprudential supervision, this puts them in a slightly less vulnerable position from a systemic point of view. However, the resilience of banks can be tested in some countries in the face of an uncertain recovery and a prolongation of the recession. believing that the financial system is doing badly and needs a miracle to get off on the right track.

Figure 1.1. Systemically importance pinpointing the high vulnerability of the global financial system (by sector)



Source: IMF, Global Financial Report Data (2020)

While all are not working and the financial system is coughing, technology is pinning the design of the financial system by holding the torch with a ray of hope and repainting the global financial

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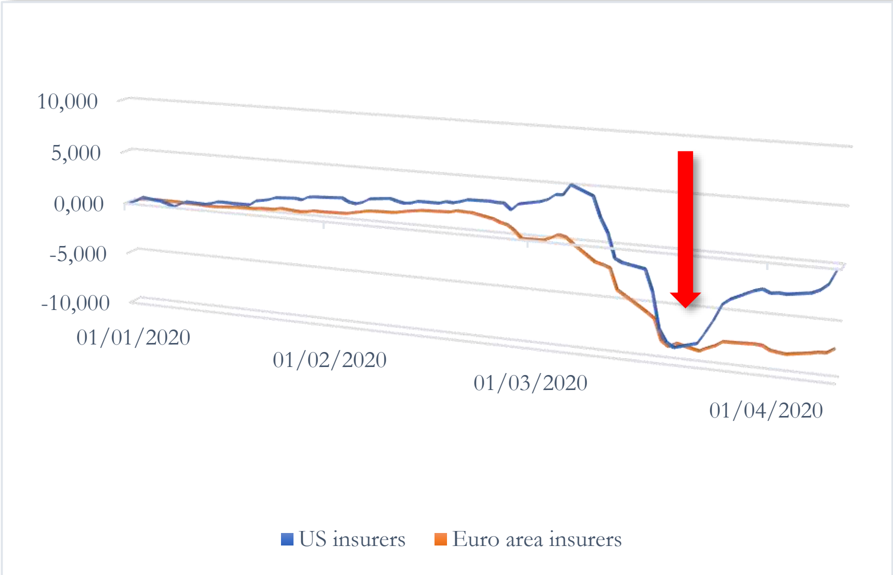
[2] See the World Economic Forum (2020) briefing note on the outcome of several multi-stakeholder dialogues organized by the Platform of the World Economic Forum to shape the future of financial and monetary systems, whose topic of the day was: "Impact of COVID -19 on the Global Financial System".

[3] See Ernst & Young Associates LLP report on COVID-19: impact on the financial services sector, 2020

infrastructure. Fintech sums up this word — *hope for a resilient financial system in times of COVID-19*, has seized the opportunity to demonstrate its ability to ensure the functioning of the system while respecting containment measures and preventing the spread of the disease. virus. This would facilitate government action to find safe vaccines and clean up underinvested health posts and intervene in other sectors to mitigate the impact of COVID-19 on the economy.

Figure 1.2. Estimated profit and loss of insurance portfolios (Percent, year-to-date)



Source: IMF, Global Financial Stability Data (2020)

Let us backpedal the understanding and why of Fintech[4], it was designed to inhibit the weakness in financial institutions, and make financial services much more efficient, with specialized software and algorithms that are used on computers and, more and more, on smartphones. These Fintechs cover digital and technological innovations in the institutional sector and offer new gateways in the business world, democratize access to financial services, but create significant challenges in terms of privacy, regulation and law enforcement. Examples of innovations that are at the heart of FinTech today include cryptocurrencies and blockchain, new digital advisory and trading systems, artificial intelligence and machine learning, peer-to-peer lending, equity crowdfunding and mobile payment systems (Philippon, 2017). It is estimated that more than 1.7 billion[5] adults worldwide do not have access to financial services. Fintech has a huge social and economic impact, especially in low-income countries, which are taking advantage of possible benefits and opportunities, including, expanding access to financial services and financial inclusion; improvement of the payment system with the development of Orange money and M-Pesa services which carry out all traditional banking operations from mobile phones (payment, current account management, money transfer, payment solutions savings and insurance). In a market, the buyer and the seller just need to exchange a message (SMS) to carry out transactions, pay water and electricity bills, buy Canal + bouquets, and

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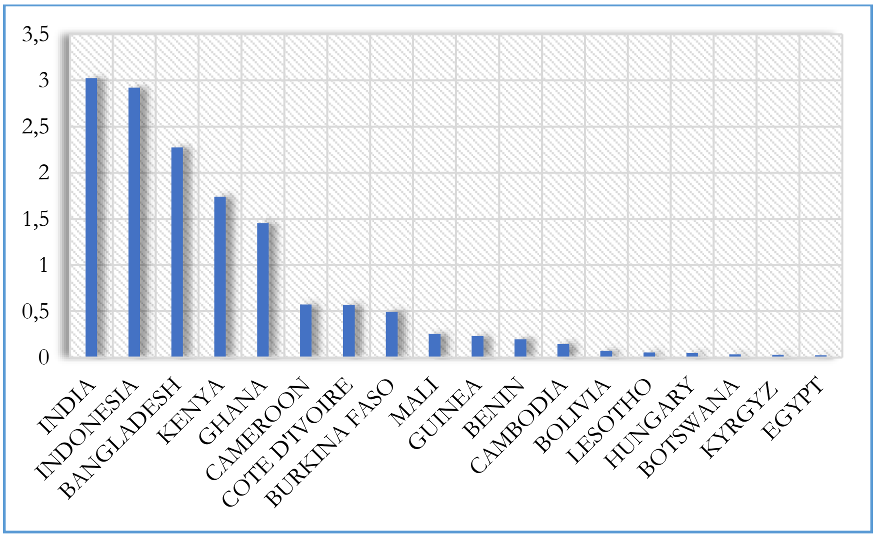
[4] The Fintech refers to two words "finance" and "technology" and is any small, rapidly growing company that uses technology for the efficiency of financial services and processes. It should be noted that the large technological companies are starting to be created and to come into play. These companies are called "Bigtech", they come to support the Fintech by bringing very high technology, deep pockets, huge networks, mountains of data, big data management and exceptional user experience to drive significant efficiency and effectiveness gains and strengthen financial inclusion.

[5] World Bank Group and International Monetary Fund in THE BALI FINTECH AGENDA (2018)

so on (Herlin, 2015). By facilitating financial infrastructure, Fintech can play a big role in maintaining the resilience of the financial system during a major shock at the height of COVID-19. These advantages convince us that the current financial system must evolve.

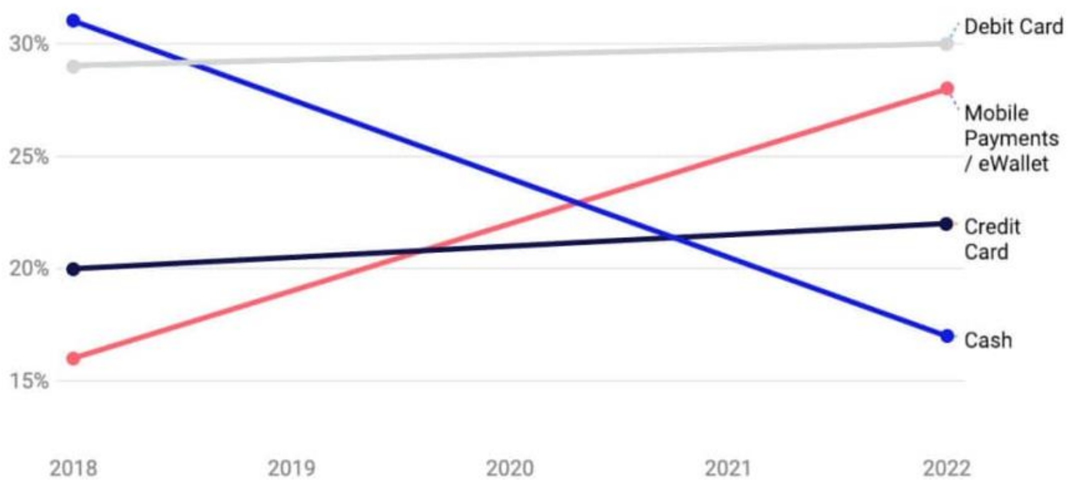
Figure 1.3. Use of financial services, Mobile money, Number of mobile money transactions (During the reference year, from 2018-12-31 to 2019-12-31), Billion Us



Source : IMF, Financial access survey, World data.Ai

Increasingly the use of Fintechs in the world and especially in the emerging and low-income country, there is a growing boom in transactions via financial technology through the mobile phone. At the interval of one year (2018-2019), the financial service exploded via the mobile phone (Figure 1.3). And According to Worldpay research, by 2022 (Figure 1.4) credit cards, debit cards and mobile payments are expected to overtake cash at all outlets around the world, there is a second digital revolution, that of Fintechs.

Figure 1.4. Global digital and cash payments (Forecasting) (%)



Source : Worldpay

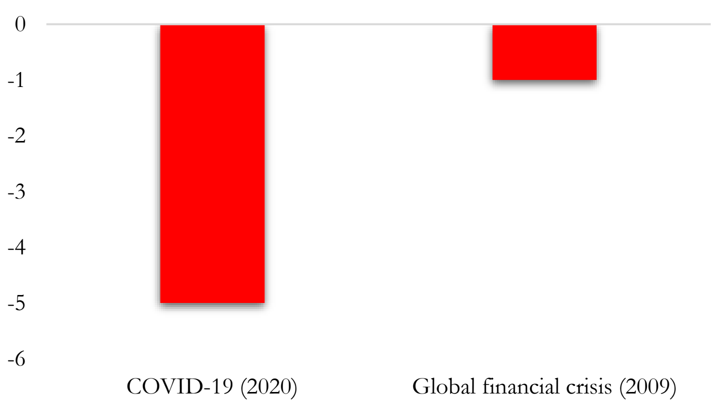
Given this dark and uncertain financial environment impacted by COVID-19, we explain how Fintech could remedy this situation and keep the ecosystem and the financial system afloat. This analysis is motivated by the personal observation that we are going through, on the known difficulty in the financial assets of people especially who have sometimes been blocked in financial institutions, who to a certain extent have suffered heavy financial losses and have not been able to hedge their liquidity risks, and on the other hand the difficulties linked to the contamination of the spread of the virus, which have pushed States and financial institutions to put in place measures of barrier, social distancing, minimum services and shorten working hours. All of this has strongly affected the cash flow of many people, SMEs and other businesses and has had a mechanical impact on consumption, investment and economic growth. The difficulty encountered in this study relates to the data, which are not easy to measure and contextualize, however the nature of the text is clear and complete. In the near future, we will continue to investigate this issue shaking the financial world with more sophisticated tools.

Besides the introduction and conclusion, the structure of the article is as follows: Section 2 paints the grim landscape of the financial system during the COVID crisis, showing a fairly significant disruption in the financial system, which hinders the financing of economies and opens the scourge of the Great lockdown crisis of the first half of 2020. Section 3 illustrates the search for financial balance through the boom in FinTech, seen as an opportunity to be seized to demonstrate its performance and meet the challenges linked to the crisis, and finally deals with Fintech as the ultimate weapon to respond to the COVID-19 crisis. This action would be seen as a hope and a miracle. Section 4 goes beyond COVID -19, by opening a debate on the conduct of global finance through FinTech, which indeed also faces some smart and cybernetic risks.

2. Black landscape of the financial system in the dark period

COVID-19 has plunged the world into immeasurable disaster, forcing countries to institute quarantines and social distancing practices to stem the pandemic: the world is placed in Great Lockdown, this is the worst economic recession that the world has known since the Great Depression (Bluedorn *et al.*, 2020 ; Gopinath, 2020). Growing uncertainty around the pandemic has caused the global economy to contract 5%. For the first time since the Great Depression, both advanced and emerging and low-income countries are in recession, this Grand Lockdown is therefore the worst recession and is much more serious than the Global financial crisis (Figure 2.1).

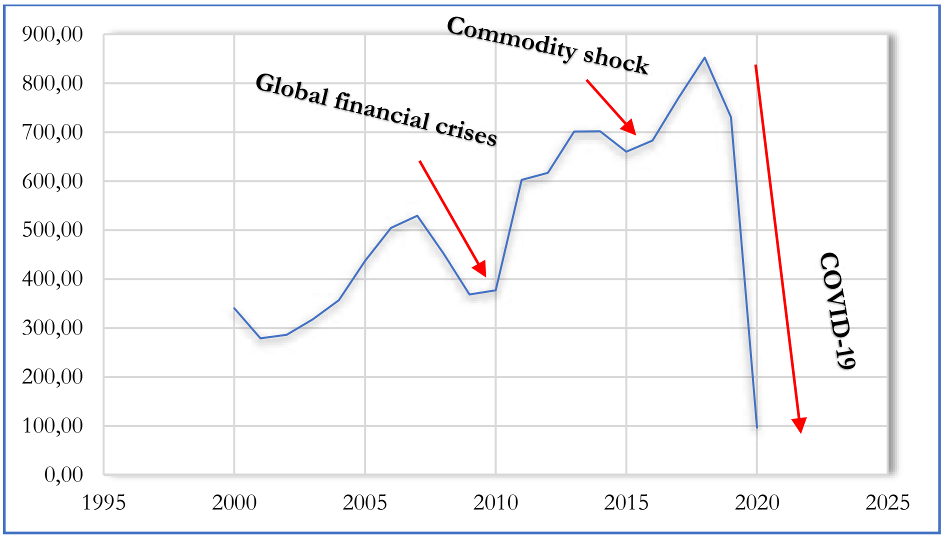
Figure 2.1. Recessive effect of two major global crises, (Real GDP (%)



Source : Author ; IMF, World economic outlook, October, 2020

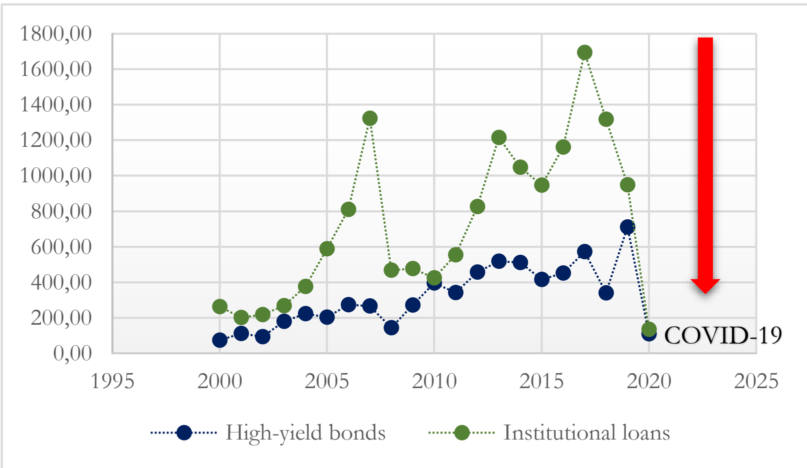
Like the Achilles heel, the global financial system is more fragile and vulnerable to exogenous shock (Dullien *et al.*, 2010; Dabla-Norri and Bal Gündüz, 2012; Essers, 2013; Carrera and Lanteri, 2017). It behaves procyclically with regard to exogenous shocks, Figure 2.2 shows the disruption of the financial system via the sharp fall in bank loans, which have been threatened by the advent of COVID-19. This pandemic shock has terribly exposed global financial stability (Adrian and Natalucci, 2020; Boot *et al.*, 2020), with fear defined by the speed of the spread and uncertainty. Comparing with the 2008-2009 Global financial crisis, financial vulnerability during COVID-19 is four times greater.

Figure 2.2. Disruption of financial stability in the world, (Bank loans, Trillions US)



Source: IMF, Global Financial Stability Data (2020)

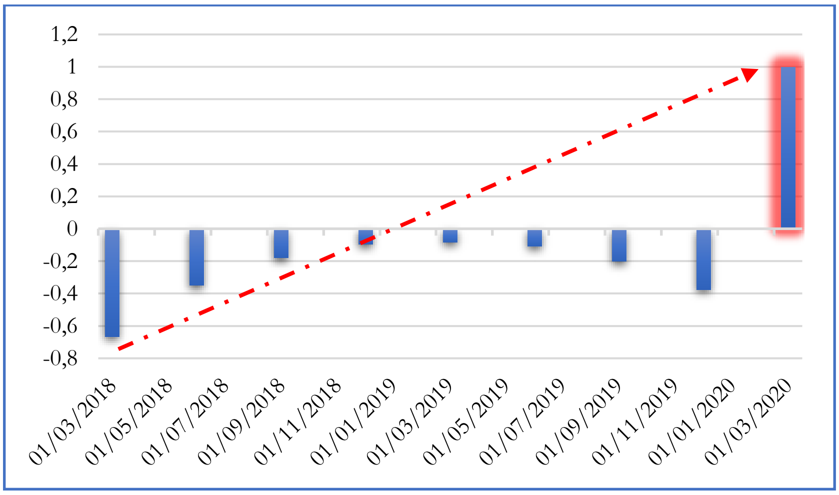
Figure 2.3. Global gross issuance of high yield bonds and institutional leveraged loans (Trillions US)



Source: IMF, Global Financial Stability Data (2020)

The COVID-19 shock has put the global financial system under considerable strain. As the heart of the financial system is pierced by the sword of the coronavirus to the last beat, causing severe strains on global gross issuance of high yield bonds and leveraged loans (Figure 2.3). This pandemic weakened the balance sheets of financial institutions and increased risks for the financial sector and deteriorated credit quality. The intensification of the pandemic, along with the resulting containment measures, and greater uncertainty about the duration of the pandemic, increase financial sector vulnerabilities and tighten financial conditions in emerging and low-income countries (Figure 2.4).

Figure 2.4. emerging and low-income countries Financial Conditions

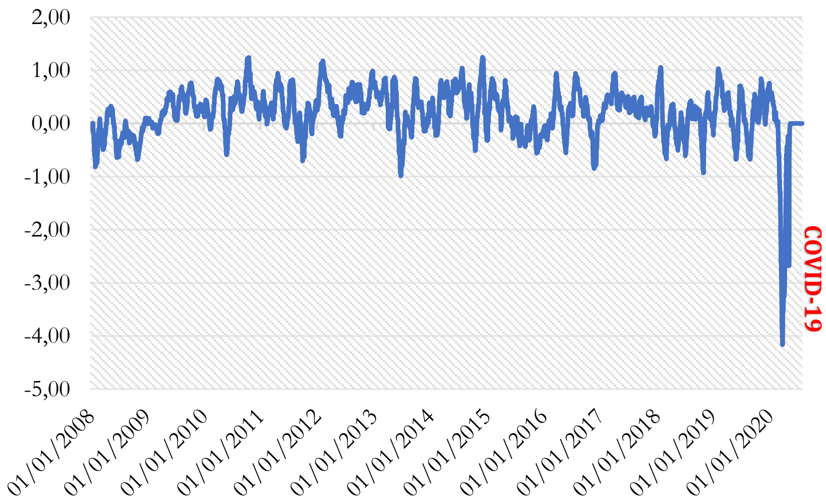


Source: IMF, Global Financial Stability Data (2020); Author

Global Financial Conditions Indices (Standard deviations from mean)

At the same time, the pandemic led to a sharp increase in risk aversion, the financial system of several countries suffered a considerable impact following sharp reductions in capital flows (Sandri, 2020). Indeed, the COVID-19 shock, significantly worse than the global financial crisis, resulted in a sharp reversal in capital flows to emerging markets (De Bock *et al.*,2020 ; Kalemli-Ozcan, 2020). Figure 2.5 of non-resident capital flows shows that the first quarter of 2020 saw the biggest exit from emerging markets on record, surpassing the worst points of many financial turmoils. This sharp fall has accentuated the decline in economic activity in emerging and low-income countries.

Figure 2.5. Nonresident Portfolio Flows to Emerging Markets (moving average; US billions)



Source: IMF, Global Financial Stability Data (2020); Author

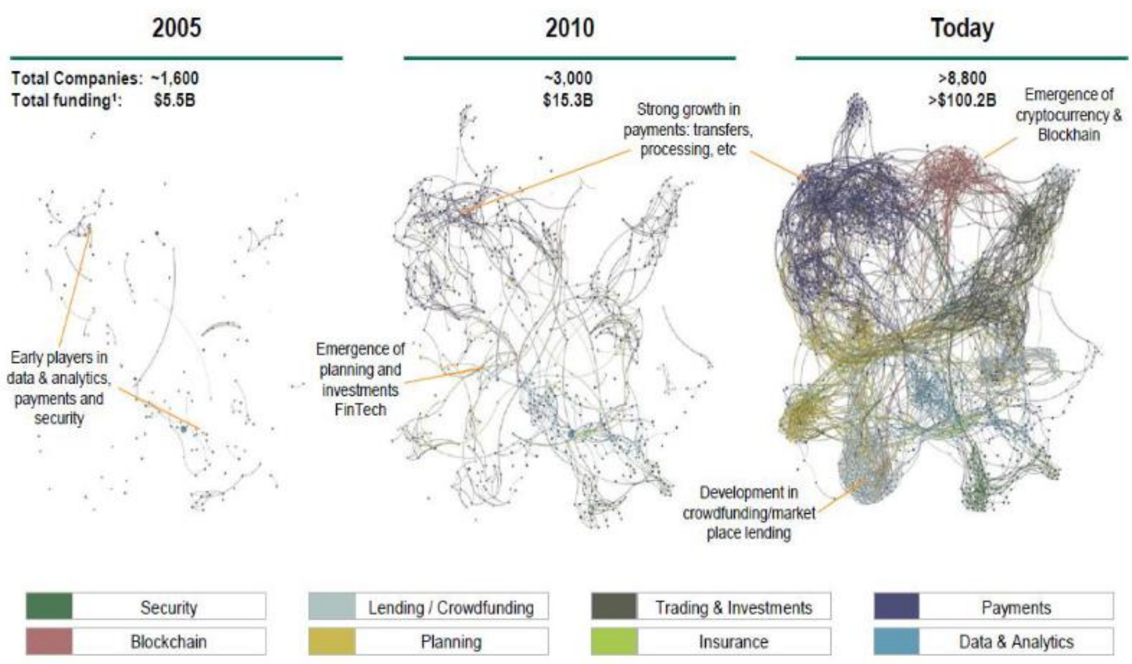
The sense of risk has become besieged among investors, who tend to systematically embrace the continuity of the sudden stop in the face of this heightened uncertainty of the pandemic. Thus, it is certain to see even lower flows and the positioning of investors sharply down in recent years, which is accentuated by the lack of liquidity in certain financial markets and the problems of debt sustainability.

The COVID-19 crisis represents the biggest test of the global financial system and financial regulatory reforms since the 2008 financial crisis. The financial system faces the double challenge of keeping the flow of capital into the real economy to sustain a healthy recovery and preserve the financial resilience to support that recovery. This crisis choked the wind of the financial system, which reverberated in countless micro and macroeconomic consequences. We believe that the hope to heighten this tragedy and rebound the financial system would be to turn to FinTech (Big Tech).

3. Turning point

The digital age has had a significant impact on the financial sector over the past decade, marked by a global push for new technologies. These new technologies in the financial service have gradually changed the potential of the entire ecosystem and financial system in ways that are faster and more disruptive than ever (Sangwan *et al.*, 2019). These revolutionary forces, aimed at strengthening the efficiency of the financial system, have previously been opposed and difficult to accept by financial institutions which take them for competitors (Li *et al.*, 2017; Zveryakov *et al.*, 2019; Suprun *et al.*, 2020). And those institutions with remarkable influence on decision-making and consumer choice have successfully deterred much of the misdeeds of FinTech. However, when the Global financial crisis arose, questions arose about the financial infrastructure and the future functioning and movement of capital flows in the financial system, doubts arose about the efficiency of financial services and a turning point developed on the preference of FinTech (figure 3.1) (Teigland *et al.*, 2018).

Figure 3.1. Growth in FinTech investments



Source : Fintech Control Tower

It is well known today that the financial system has been deeply shaken by the shock of COVID-19. Not only have consumers lost their confidence and their savings due to losses in the financial system, but also they have sprouted a demand that is expressed in financial democracy. Therefore, it is not too surprising that players in the financial system are viewed with contempt by consumers, businesses, although everyone knows that the pandemic is the cause. As a result, investments in Fintechs have increased considerably (Parameshwar *et al.*, 2019), Figure 3.1 shows the Fintech landscape mapped in eight categories of services, in this case, payments, insurance, planning, loans and crowdfunding, blockchain, trading and investments, data and analytics, and security. This signals the great change and opportunity that Fintechs have seized over the past ten years. The magnitude of this change in the world has been so great that you could say that what was once taken for granted in the financial system has changed completely. What consumers, bankers and governments consider to be normal today is not what it once was. Fintech faces challenges to keep this boom in balance and ensure financial stability in the midst of a massive shock.

Studies on the turning point of the rise of Fintech during this decade and its implications on the financial system, have been carried out by several authors (Thakor, 2019; Spulbar *et al.*, 2020; Ahmad and Al Mamun, 2020; Ogege and Boloupremo, 2020; Frost, 2020), Lu *et al.* (2020) have written a review of the relevant literature on the rise of FinTech and its future, showing how researchers have focused a great deal of attention on the rise of FinTechs. These advancements have proven that customers, but especially young people, demand a seamless, real-time, hyper-personalized banking experience that complements their digital lifestyle. They expect their banks to provide an experience that matches the convenience of today's popular challenger banks. And they won't hesitate to choose one that offers relevant and hassle-free products and services (Figure 3.2). This will certainly push a lot of banks, which is almost already the case in countries like Indonesia, Malaysia, Singapore, etc., to adapt and step by step to borrow the same path to keep their customers.

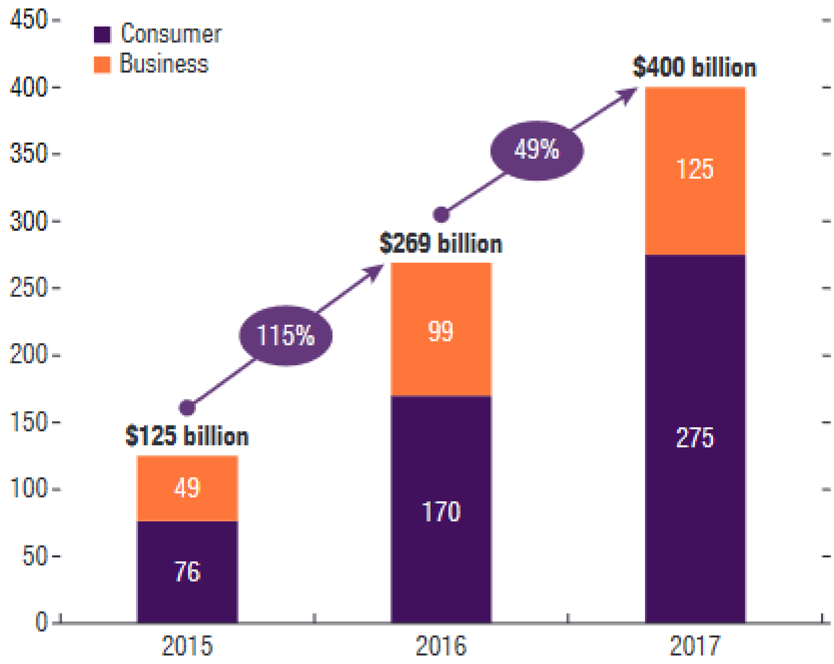
Figure 3.2. Impact of Fintech (and BigTechs) on Customer perspective

Source: Capgemini Financial Services Analysis, 2019; World Retail Banking Report 2019, World Fintech Report, 2020

As the dark age of COVID-19 continues to create unprecedented levels of global uncertainty (Ahir *et al.*, 2021), FinTechs seek to seize this opportunity despite the various hurdles presenting themselves, it is a big challenge. for FinTechs to leverage their unique strengths and skills to seize new opportunities in the future. The most immediate concern would be to alleviate the current uncertainty that hangs over the financial system. FinTechs are on the verge of demonstrating their ability to serve the financial world even to the poorest population. Jagtiani and Lemieux (2017), asserted through their research that FinTech has added a fairly broad dimension to credit modeling and improved financial inclusion, allowing some borrowers to be assigned better loan ratings and benefit from 'cheaper credit than before. Likewise Ozili (2018), demonstrated that Fintech has positive effects on financial inclusion in emerging economies. Thus, Fintech offers low- and variable-income people more funds and amenities, in the sense of the costs they will pay to obtain these services from regulated conventional banks. These results indicate that debtors will more often distribute their funds to fintechs than to banks and even less banks are facing liquidity difficulties during this period of COVID-19.

While, the risk of transmission of COVID-19 still persists through the speed of monetary circulation via banknotes and other contacts at bank counters, FinTech offers financial services adapted to the pandemic. The usual consumer shift in payments amid COVID-19 is increasingly visible in the days to come and unfolds into a fully-fledged mechanism. The focus will be on how human contact or interaction can be removed for payments. Thus, this COVID-19 crisis with all its detrimental effects on economies and financial systems, gives Fintechs various opportunities in the near future. Fintechs therefore have a unique ability to expand financial inclusion, improve people's daily lives and stimulate economic growth.

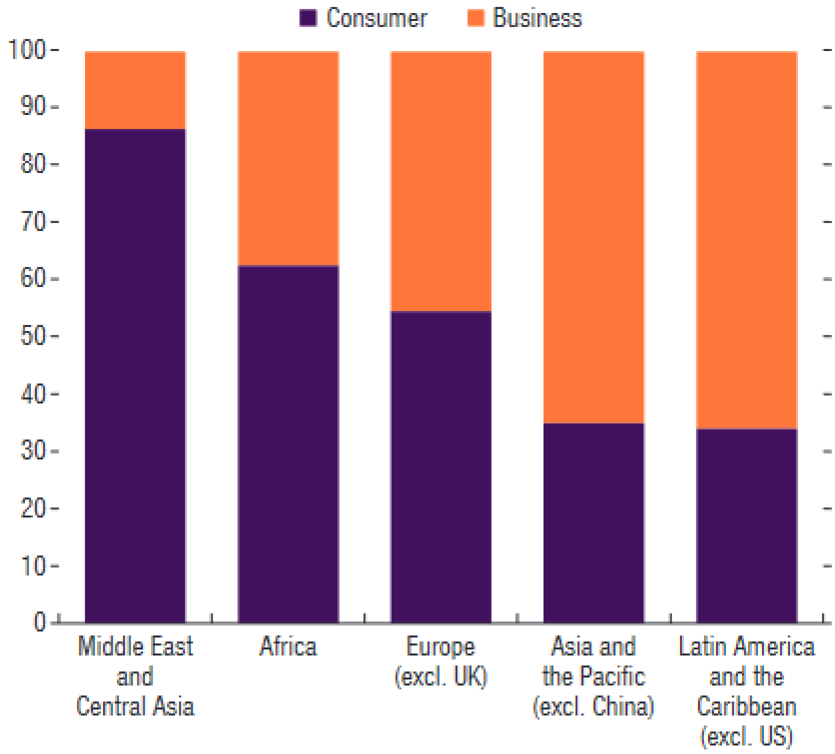
Figure 3.3. Global FinTech Lending by Main Segments, 2015-17 US billions



Source : Sahay et al (2020).

The rise of mobile money and online payments, and the expansion of user data that accompanies it, has boosted digital lending (Sahay *et al.*, 2020). In most countries, digital payment services are paving the way for digital lending for which online lending, through digital platforms that directly connect lenders to borrowers, doubled in value between 2015 and 2017, largely due to consumer credit (Figure 3.3). These markets are developing more and more in many emerging and low-income countries, such as Kenya and India (Von Allmen *et al.*, 2020.). The volume of fintech lending is slowly hanging on, dominated by Asia and in the same way, Africa seems to be adapting more and more to fintech (Figure 3.4). Thus, digital transformation creates opportunities and challenges for FinTechs to increase their dominant positions on this turning point.

Figure 3.4. Composition of FinTech credit by region (%), 2017



Source : Sahay et al (2020).

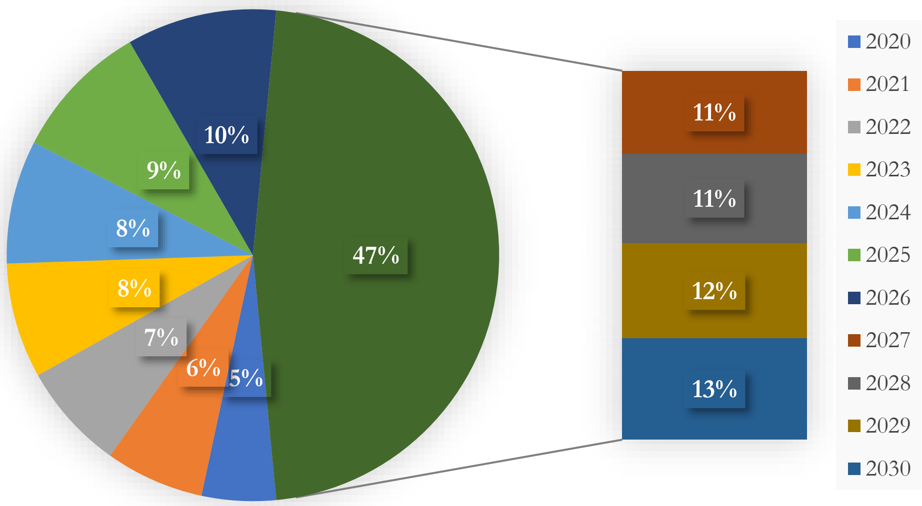
Now, with the challenge of the shock of COVID-19, the issue of accessibility to financial service has come to the fore. For those who cannot access mobile phones, the ability to frequent physical banks and manage their money is even more limited, if not cut off, exacerbating the already very limited availability and support offered by traditional financial institutions. Those who have been able to access the Internet in such markets, on the other hand, find that with their FinTech services, they can instantly tap into the financial resources essential to keep their businesses and their lives in order (Sahay *et al.*, 2020). The mobile payment system is developing more in emerging and low-income countries, although this infrastructure is still in its infancy, the majority of underdeveloped countries, in this case the Democratic Republic of the Congo, use much more of the mobile financial services like MPSA, Airtel Money, Orange Money and other banks are starting to reconfigure themselves to combine these financial innovations with their services to finally take advantage of the wealth created by FinTech. For the poor and many other people with variable and moderate incomes, their cell phones are their only connection to financial tools, information and other vital services. This means that delivering robust FinTech solutions to these regions is not a matter of convenience, as it is in advanced countries, but a necessity, as they fill the gaps for the unbanked. The pandemic offers FinTechs new opportunities and challenges to overcome to keep the financial system afloat. By offering a 98% digital solution, FinTechs could be seen as the centerpiece to respond to the crisis.

The COVID-19 crisis has disrupted the financial system and global growth, causing crises on a scale not seen since the Great Depression. These shocks are combined with the lockdown in the majority of countries and the widespread implementation of social distancing rules and minimum services limiting physical contact, financial institutions are now forced to reconfigure their infrastructure in order to adapt to the pandemic. As a result, FinTechs appear to be the ultimate weapon in responding to the COVID-19 crisis through their operationally digital channel. Certainly, the digital revolution has transformed our lives in fundamental ways and even with a pandemic imposing a battery of measures, it would have little impact on the rise of the digital age.

4. Beyond COVID-19: Can Fintech lead to the financial world post?

Certainly, FinTech will be assigned heavy tasks in the near future, on the one hand during this uncertainty covering the COVID-19 period and on the other hand after COVID-19. Figure 4.1 estimates the explosion in the growth of FinTech by 2030, which implies that FinTech will occupy the major part in the payment and banking systems. However, a question remains unanswered, that of knowing will COVID-19 be able to lead the financial planet beyond COVID-19?

Figure 4.1. Share of population using digital banking and payment in the World by 2030



Source: Author's estimation

The FinTech industry is prone to multiple cyberattacks and hacks, disinformation, and a fairly closed circle of computer geniuses understanding the mechanics of artificial intelligence. Beyond financial and operational considerations, each category of FinTech addresses unique challenges, alongside the difficulties they would pose, with great digital threats to come. Moreover, in the event of a digital crisis, in the sense that 80% of the population would use this digitization, it would create a global systemic crisis, with immeasurable damage. Consideration should be given to building a strong and secure digital infrastructure, coupled with adequate and smart technology regulation by regulators. Financial technology is advancing at an exponential geometric progression, with changes in real time, regulators should work to understand these dynamics and double their digital advances to maintain the stability of the financial system in all its forms (traditional and digital).

5. Conclusion

In this dark hour when the global financial system has been hit hard, FinTech is keeping this glimmer of hope and using its digital weapon to respond to this crisis. Barrier and social distancing measures that exclude physical contact paralyze financial institutions, in addition, the circulation of banknotes that can spread the virus. To overcome all these risks, FinTech becomes the turning point of the global financial machine.

References

Adrian, T., and Natalucci, F. 2020. COVID-19 Crisis Poses Threat to Financial Stability. *IMFBlog*, April.

Ahir, H., Bloom, N., and Furceri, D. 2021. What the Continued Global Uncertainty Means for You. *IMF Blog*, January.

Ahmad, S. M., and Al Mamun, A. 2020. Opportunities of Islamic FinTech: The Case of Bangladesh and Turkey. *CenRaPS Journal of Social Sciences*, Vol.2, pp.412-426, https://doi.org/10.46291/cenraps.v2i3.39

Auer, R., Cornelli, G., and Frost, J. 2020. Covid-19, cash, and the future of payments. *BIS Bulletin,* No 3, April.

Bluedorn, J., Gopinath, G., and Sandri, D. 2020. An Early View of the Economic Impact of the Pandemic in 5 Charts. *IMFBlog*, April.

Boot, A., Carletti, E., Haselmann, R., Kotz, H., Krahnen,J., Pelizzon, L., Schaefer, S., and Marti Subrahmanyam, M. 2020. The Coronavirus and Financial Stability. Leibniz Institute for Financial Research, *SAFE Policy Letter*, no. 78, March.

Carrera, J. and Lanteri, L. N. 2017. Macroeconomic shocks and financial vulnerability. *Central Bank of Argentina Working Paper*, January.

Dabla-Norris, E. and Bal Gündüz, Y. 2012. Exogenous Shocks and Growth Crises in Low-Income Countries: A Vulnerability Index. *IMF Working Paper*, November.

De Bock, R., Drakopoulos, D., Goel, R., Gornicka, L., Papageorgiou, E., Schneider, P., and Sever, C. 2020. Managing volatile capital flows in emerging and frontier markets. *Vox cepr Policy*, August.

De Girancourt, F. J., Kuyoro, M., Ofosu-Amaah, N. A., Seshie, E., and Twum, F. 2020. How the COVID-19 crisis may affect electronic payments in Africa. McKinsey and Company. June.

Dullien, S., Kotte, D. J., Márquez, A. and Priewe, J. 2010. *The financial and economic crisis of 2008-2009 and developing countries*. United Nations Publication, December.

Ernst and Young. 2020. *COVID-19: Impact on the financial services sector*. Report. April.

Essers, D. 2013. Developing country vulnerability in light of the global financial crisis : Shock therapy? *Review of Development Finance*, n0.3, pp.61–83.

Frost, J. 2020. The economic forces driving fintech adoption across countries. *BIS Working Papers*, no.838, February.

Galicia, G., Garcia, J. A., and Natarahan, H. 2020. Payment and Settlement Systems – COVID Response Note. March.

Gopinath, G. 2020. The Great Lockdown: Worst Economic Downturn Since the Great Depression. *IMFBlog*, April.

Herlin, P. 2015. Apple, Bitcoin, Paypal, Google : La Fin des Banques ? Comment la technologie va changer votre argent. Groupe Eyrolles, Paris, ISBN: 978-2-212-56114-2.

International Monetary Fund. 2020. *Global Financial Stability Report : Markets in the Time of COVID-19*. April.

Jagtiani, J. and Lemieux, C. 2017. Fintech Lending : Financial Inclusion, Risk Pricing, and Alternative Information (2017-07-18). *FRB of Philadelphia Working Paper* No. 17, Available at SSRN: https://ssrn.com/abstract=3005260.

Kalemli-Ozcan, S. 2020. Emerging Market Capital Flows under COVID: What to Expect Given What We Know. *IMF Research*, September.

Li, Y., Spigt, R., and Swinkels, L. 2017. The impact of FinTech start-ups onincumbent retail banks'share prices. *Financial Innovation*, November, DOI 10.1186/s40854-017-0076-7.

Lu, H., Wang, B., Wu, Q., and Jing Ye, J. 2020. Fintech and the Future of Financial Service: A Literature Review and Research Agenda. *China Accounting and Finance Review*, Vol 22, no.3, September.

Ogege, S., and Boloupremo, T. 2020. The influence of the evolvement of financial technology (FinTech) firms on the delivery of financial services. *Forum Scientiae Oeconomia*, Vol.8, no.4, December.

Ozili, P. K. 2018. Impact of digital finance on financial inclusion and stability. *Borsa Instanbul Review*, no.18-4, pp.329-340, December, https://doi.org/10.1016/j.bir.2017.12.003.

Parameshwar, H. S., Sruthie, A., Cisse, M., Kumar, M. A., and Misra, S. 2019. Fintech and disruptions : An impact assessment. *Journal of Critical Reviews*, Vol 6, September.

Philippon, T. 2017. The FinTech Opportunity. *BIS Working Papers*, No 655, August.

Sahay, R., Von Allmen, U. E., Lahreche, A., Khera, P., Ogawa, S., Bazarbash, M., and Beaton, K. 2020. The Promise of Fintech : Financial Inclusion in the Post COVID-19 Era. *IMF PFFIEA* no. 20/09, July.

Sandri, D. 2020. Dampening the Impact of Global Financial Shocks on Emerging Market Economies. *IMFBlog*, May.

Sangwan, V. H., Prakash, P. and Singh, S. 2019. Financial technology : A review of extant literature. *Studies in Economics and Finance*, Vol. 37 no. 1, pp. 71-88. https://doi.org/10.1108/SEF-07-2019-0270

Spulbar, C., Birau, R., Calugaru, T., and Mehdiabadi, A. 2020. Considerations regarding FinTech and its multidimensional implications on financial systems. *Revue des Sciences Politiques*, n0 68, pp.77 – 86,

Suprun, A, Petrishina, T., and Vasylchuk, I. 2020. Competition and cooperation between fintech companies and traditional financial institutions. *E3S Web of Conferences 166*, https://doi.org/10.1051/e3sconf/202016613028.

Teigland, R., Siri, S., Larsson, A., Puertas, A. M., and Bogusz, C. I. 2018. *The Rise and Development of FinTech : Accounts of Disruption from Sweden and Beyond*. Routledge, New York, available at www.taylorfrancis.com.

Thakor, A, V. 2019. Fintech and banking: What do we know? *Journal of Financial Intermediation*, July, https://doi.org/10.1016/j.jfi.2019.100833.

Von Allmen, U. E., Khera, P., Ogawa, S., and Sahay, R. 2020. Digital Financial Inclusion in the Times of COVID-19. *IMF Blog*, July.

World Bank Group and International Monetary Fund. 2018. *THE BALI FINTECH AGENDA*. Annual Meetings. October.

World Economic Forum. 2020. *Impact of COVID -19 on the Global Financial System : Recommendations for Policy-Makers Based on Industry Practitioner Perspectives*. April.

Zveryakov, M., Kovalenko, V., Sheludko, S., and Sharah, E. 2019. FinTech sector and banking business: competition or symbiosis? *Money, finance and credit*, DOI: https://doi.org/10.21003/ea.V175-09.