

IMPACT OF COVID-19 PANDEMIC ON FINANCIAL INNOVATION, CASHLESS SOCIETY, AND CYBER RISK

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ABSTRACT

The global pandemic, as an unprecedented event in the recent past, has significantly changed the modern world. Numerous companies and individuals have faced various challenges that are still present. The aim of this paper is to review the impact of pandemic on financial innovation, fintech companies, cryptocurrencies, the development of a cashless society, and cyber risk. It tests two already confirmed hypotheses: H1: COVID-19 pandemic has affected the development of financial innovations and cashless society; and H2: COVID-19 pandemic has led to increased cyber risk. The method applied is desk research, i.e. a review of the existing studies and their unification. The paper shows that fintech companies proved to have been resilient during the crisis since they have managed to change their business model and offer new products and services (financial innovations). It also indicates that it is obvious that the number of cashless transactions have increased due to the pandemic, but that it is still not reasonable to expect a completely cashless society in the near future. The paper highlights that cyber risks are on the rise owing to the growth of cashless transactions and digitalisation of businesses driven by the global pandemic.

Keywords: *Cashless Society, COVID 19, Financial Innovation, Cyber risk.*

1. INTRODUCTION

The twenty-first century has been marked by numerous challenges for which the modern world had not been fully prepared. Although there had been numerous indications that something like this could happen, one gets the impression that the modern society was taken by surprise and completely unprepared. Political, economic and security challenges such as terrorist attacks, restricted conflicts and wars, natural disasters, climate change, the global financial crises, and the like marked the first two decades of this century.

However, nothing shook the world like the outbreak of the coronavirus pandemic in December 2019. It spread to the entire world in just a few months and led to a huge loss of human lives, major lifestyle changes, and devastating consequences for the economy. Due to the restricted movement of people and difficulties in the movement of goods and capital, the functioning of economic operators was significantly hampered and, consequently, the key business risks increased. The pandemic is actually a kind of reflection of the world in which we live, with all its virtues and flaws and it has affected the global economy through at least three channels:

- virus spread to almost all countries in the world,
- preventive measures aimed at curbing the spread (social distancing, working from home, lockdowns, closing of international borders, and the like), and
- stimulating monetary and fiscal policy measures aimed at supporting the economy and socially vulnerable population.

The COVID-19 pandemic has led to fundamental changes in the way people live and work, but it has also brought about numerous social disruptions and impact on all industries. One of the most significant changes was the growth of business digitalisation in all segments, and increased digitalisation means a growing number of users (Radukić, Mastilo & Kostić, 2019, p. 41). This was due to the transition to remote work of a large number of people and the increased use of modern technologies in order to reduce direct contact. A ZDNet study (2020) showed that the use of remote desktop protocols increased by 41% in just the first two months of the pandemic. All of these changes discussed in the Global Risk Report (World Economic Forum, 2021) are referred to as the Fourth Industrial Revolution. The following table shows the pandemic impact on individual sectors and the latter's response to the posed challenges.

Table 1. Pandemic impact on observed sectors.

Area	Impact	Response
Education	Temporary suspension of classes	On-line lectures, shortening of classes, division into smaller groups of students
Trade	Temporary closure of stores, shortening of working hours	Limiting the number of customers in a store, increasing online sales, home delivery
Transport	Temporary disruptions, limiting the number of passengers	Reduction of the number of passengers per vehicle, requirements for possession of adequate tests, cancellation of certain transport lines
Restaurants	Temporary closures, limited working hours, reduction of the number of guests	Restricting the number of allowed guests in the facility, increasing home delivery, requesting proof of vaccination and/or testing
Financial system	Shortening of working hours, limiting direct contacts	Growth in the use of e-banking, electronic platforms and cashless payment methods

Source: Author's analysis.

The COVID-19 pandemic continues to pose a major threat to modern society with unforeseeable consequences. Epidemics and pandemics are nothing new and people have been facing them since the early times. Not only have they claimed a large number of lives, but they have also destroyed entire economies and countries. Some researchers claim that nothing has killed as many people throughout history as viruses, bacteria and parasites, not even all wars combined or natural disasters such as earthquakes or volcanoes (Walsh, 2020). Epidemics and pandemics have changed not only the course of history over the centuries, but almost the entire humanity in demographic, sociological, cultural and religious, as well as political, economic, military, state and legal and every other sense (Šćekić, 2020).

Same as with all long-lasting dramatic events that claim many human lives every day and generate great material losses, researchers will need a lot of time, effort and commitment to comprehensively and deeply analyse the key aspects of this pandemic, as well as its real causes and long-term consequences. However, we can already confirm now that this pandemic has brought to light numerous risks and vulnerabilities of the digitalised, robotised and globalised world (Fabris, Luburić & Sekulović, 2020). On the other hand, it has led to the growth of digitalisation of businesses and triggered further acceleration of financial innovation that had gained great momentum after the global financial crisis.

Since the pandemic has further accelerated business digitalisation, the paper aims to examine how it has affected financial innovation (FinTechs), cashless society, and cyber risk. Therefore, the paper tests two hypotheses H1: COVID-19 pandemic has affected the development of financial innovation and cashless society; and H2: COVID-19 pandemic has led to increased cyber risks.

The method applied is desk research, i.e. a review of the existing studies and their findings and drawing relevant conclusions. However, primary research has been carried out for the areas that had not been subject to any detailed study such as cryptocurrencies.

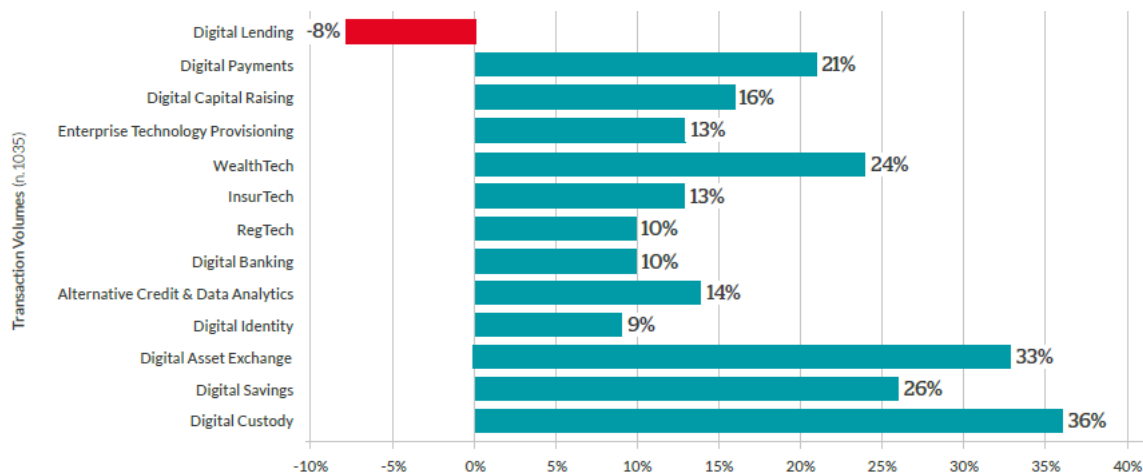
The paper is organised as follows. After the introduction, the second part analyses how the pandemic affected financial innovations and fintech companies. The third part addresses cryptocurrencies, while the fourth part discusses the impact of the pandemic on the development of a cashless society. The fifth part analyses cyber risk and the pandemic influence on their development, and the sixth part provides concluding remarks.

2. IMPACT OF THE PANDEMIC ON FINTECH COMPANIES AND FINANCIAL INNOVATIONS

The global financial crisis has been one of the generators of change and financial innovation because clients have lost confidence in the traditional financial sector which has proved to generate high operating costs. Like all major social changes and upheavals that create winners and losers, the pandemic has affected different sectors differently. Although it has created many more losers, the great challenges it has brought along have stimulated innovation. Those sectors that adapted more quickly to the changed habits of consumers or to the “new normal” found themselves on the side of the winners.

The pandemic has affected fintech companies (FinTechs) through several channels. On the one hand, social distancing, lockdowns and other restrictions have given a strong stimulus to the digitalisation of payments and greater use of financial innovation, but on the other hand, the entire society and fintech companies have been affected by the economic consequences of the pandemic. Thus, a [World Bank study \(2021\)](#) confirmed that this sector has faced growing costs, namely a 5% increase in agent or partner downtime, an 8% increase in on boarding expenses and an 11% increase in data storage expenditure.

A study by [Pompella and Constantino \(2021\)](#) confirmed that FinTechs showed a significant degree of resilience during the global pandemic. This finding was also confirmed by the [World Bank study \(2021\)](#) which showed on a sample of 1,385 fintech companies from 169 countries that FinTechs recorded a strong year-over-year growth in the first half of 2020. This is best summed up by [M. Blake \(2021\)](#), Head of Financial and Monetary Systems, World Economic Forum: “Despite this challenging backdrop, FinTechs have proven resilient and adaptable: contributing to pandemic relief efforts, adjusting operations and offerings to serve vulnerable market segments, like micro, small and medium-sized businesses, while posting year-over-year growth across most regions” (p.1). Namely, the pandemic has shown that fintech companies have access to more individuals, lower the cost of financial services, and that they reduce the need for face-to-face interactions ([Nejad, 2022](#)). The following graph shows the value of services of key fintech companies during the first six months of 2020 as compared to the same period in 2019. It clearly shows the growth of all services, except digital lending.

Figure 1. Changes in the value of financial innovation services (H12020/H12019).

Source: World bank and Cambridge Center for Alternative Finance (2021). The GlobalCovid-19 FinTech Market Rapid Assessment Study. Cambridge: World bank and Cambridge Center for Alternative Finance.

Social distancing has encouraged increased use of mobile phones for payments, as well as the use of various financial management applications. A study by [Fu and Mrinal \(2022\)](#) shows that there was a daily increase between 21% and 26% in downloadable financial applications for mobile phones during the pandemic. A large number of studies have confirmed the increased growth of e-payments and e-wallets during the pandemic ([Deloitte, 2020](#); [Pompela & Constantino, 2021](#); [Aldasoro, et.al, 2021](#); [World Bank, 2021](#); [Fu & Mrinal 2022](#)).¹ As expected, the more narrow the period of lockdown, the greater the growth in the use of these applications.

Also, it turned out that there was a significant increase in demand for digital lending², which was more pronounced in economies in transition and developing countries ([Fu & Mrinal 2022](#)). The growth in demand for the fintech sector services was also confirmed by the [World Bank study \(2021\)](#) which showed that the highest growth of 40% was registered in Middle East and North Africa, followed by Sub-Saharan Africa and North America, both up 21%. This is not a surprising result, given that the traditional financial sector is less developed in these countries and that borrowing costs are higher than in developed countries. With the extended duration of the pandemic, it is reasonable to expect a further growth in demand for digital lending because cash reserves will be exhausted.

[Nejad \(2022\)](#) showed that fintech companies significantly changed their business models during the pandemic, i.e. “two-thirds of firms said they had changed their business model in response, including by reducing fees, changing qualification criteria, and easing payment requirements, about 60 percent reported launching new products and value-added services, such as offering information, forty percent of firms surveyed indicated that they have either introduced or are in the process of introducing enhanced fraud or security measures as a response to business conditions under the pandemic.” The [World Bank study \(2021\)](#) found that 60% of the surveyed fintech companies launched new products or services in response to the pandemic, and that as many as 32% of the remaining 40% planned to introduce new products or services. The rapid change in the business model of FinTechs is certainly one of the reasons why most of them managed to seize the opportunities and successfully respond to the challenges posed by the pandemic, which resulted in these companies creating a large number of innovations that allowed them to cope with the “new normal”.

The pandemic has led to increased cooperation between banks and fintech companies because it turned out that it was possible for them to find common interests although that had seemed

¹Observing a sample of 71 countries, [Fu and Mrinal \(2022\)](#) found that during the pandemic, an increase of approximately 3.2 million finance application downloads per day globally and a further 1.1 million daily within the lockdown periods.

²A slightly different conclusion on the issue of digital lending was reached by the [World Bank study \(2021\)](#), but it covered a shorter period, only the first half of 2020.

unlikely before the pandemic as these institutions had acted from the position of competitors. We also saw in some countries that health institutions connected with fintech payment institutions. During the pandemic, financial innovations triggered increased inclusion. The World Bank estimates that 1.7 billion individuals worldwide do not have bank accounts and, according to the Federal Deposit Insurance Corporation's estimate, some 6.5% of American households do not have access to bank accounts (Deloitte, 2020b). As a rule, these are individuals from socially disadvantaged and/or vulnerable groups. As governments around the world provided financial assistance to the most vulnerable categories of population during the pandemic, this opened up space for fintech companies to reach out to those individuals that did not have bank accounts or to be intermediaries in connecting these people with banks.

3. PANDEMIC IMPACT ON CRYPTOCURRENCIES

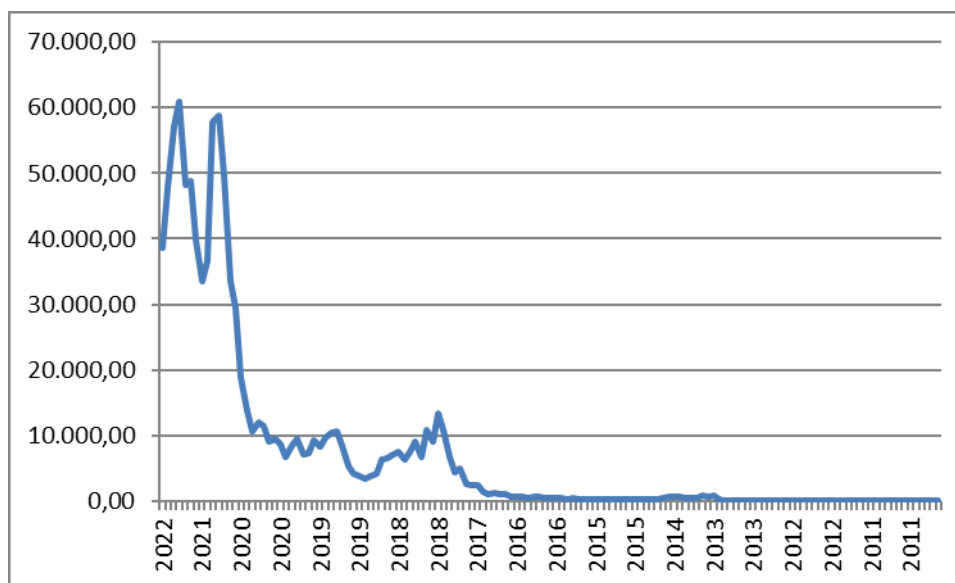
One of the biggest innovations in the financial system in the last fifty years has been the emergence of private cryptocurrencies. They appeared during the Global financial crisis, as a result of distrust in the existing financial system and the search for alternative ways of investment. In 2012, there were only 6 cryptocurrencies, while today there are over 2,000 and they keep growing.

However, over time, it has been shown that from the idea of being a form of money independent from governments (central banks) they have become more of a speculative form of electronic securities.³ To wit, cryptocurrencies do not have the basic characteristics of money. They do not have the first feature of money and that is to be a means of payment because there are just a few products today that can be paid for with cryptocurrencies. Also, digital currencies do not have another important function of money and that is to be the measure of value because there is almost no product whose value is exclusively expressed in digital currencies (and there is a negligible number of those whose price is in digital currency). Then, these currencies do not have the third function of money -to be the custodian of value, because when you have money, your expectation is that it will have approximately the same value in the future, and no one can give even a wide estimate of the value of digital currencies in the future.

Central banks have taken quite a different position on this issue. Private digital currencies are banned in some countries (India, China, Russia), some central banks are considering introducing their own, and most central banks warn of the risks posed by their use.

The following figure shows the value trends of the bitcoin, as the most famous cryptocurrency and the best representative of the crypto market.

³There are numerous examples of how big players can influence the movement of cryptocurrency values. For more details see Browne (2021).

Figure 2. Bitcoin value in USD.

Source: Author (based on data available at Yahoo finance).

The figure clearly shows that the growth of the bitcoin value coincided with the global spread of the pandemic. In January 2020, bitcoin was worth USD 7,188, rising to USD 18,795 in December, and reaching the maximum value of just over USD 60,000 in November 2021, which coincided with the spread of the omicron variant of the virus. However, as the pandemic was showing signs of weakening, a steep decline in bitcoin began, and in February 2022, it dropped to below USD 40,000. It has become clear that the pandemic that implied the growth of risk affected the growth of cryptocurrencies as speculative forms of trade and that the weakening of the pandemic and improved economic prospects resulted in the bitcoin value decline. This indicates that cryptocurrencies are basically speculative forms of trading and that their importance grows in unstable and challenging times and diminishes as uncertainty dies down. As a reminder, they have emerged as a product of unstable circumstances, i.e. the Global Financial Crisis.

There is no evidence that cryptoassets have brought benefits to the society, but it cannot be ruled out that there will be no benefits in the future given their rapid development. The [Bank of England \(2018\)](#) highlighted a number of risks that cryptoassets can pose:

- consumers may suffer large losses as a result of buying cryptoassets that are not suitable for their needs or buying them while being unaware of the associated risks. The high volatility of cryptoassets, which may attract investors, can also lead to substantial losses;⁴ however, without proper regulatory protection, individuals remain unprotected.
- Jeopardizing market integrity due to manipulation - cryptoassets are still in their early stages of development, which means that there is a problem of inadequate control, low price transparency, and conflicts of interest. This market suffers from frequent manipulations and dissemination of misleading information in the media that threaten market integrity. Also, there is no information on market participants and owners of cryptoassets.
- Financial crime – cryptoassets have been recognised as one of the most important targets for fraudsters.

It is unlikely that private digital cryptocurrencies will become a widely accepted means of payment, but it is likely that some central banks will start issuing their own digital currencies. Also, at Singapore FinTech Festival, a former IMF Executive Director, Ms. Christine Lagarde, recommended that central banks should consider issuing their own digital currencies. The ECB has announced that it is seriously preparing for the introduction of the digital euro, which will not be a substitute

⁴For example, the volatility of the ten most important cryptocurrencies (measured by market capitalisation) was 25 times higher than the US stock market in 2017.

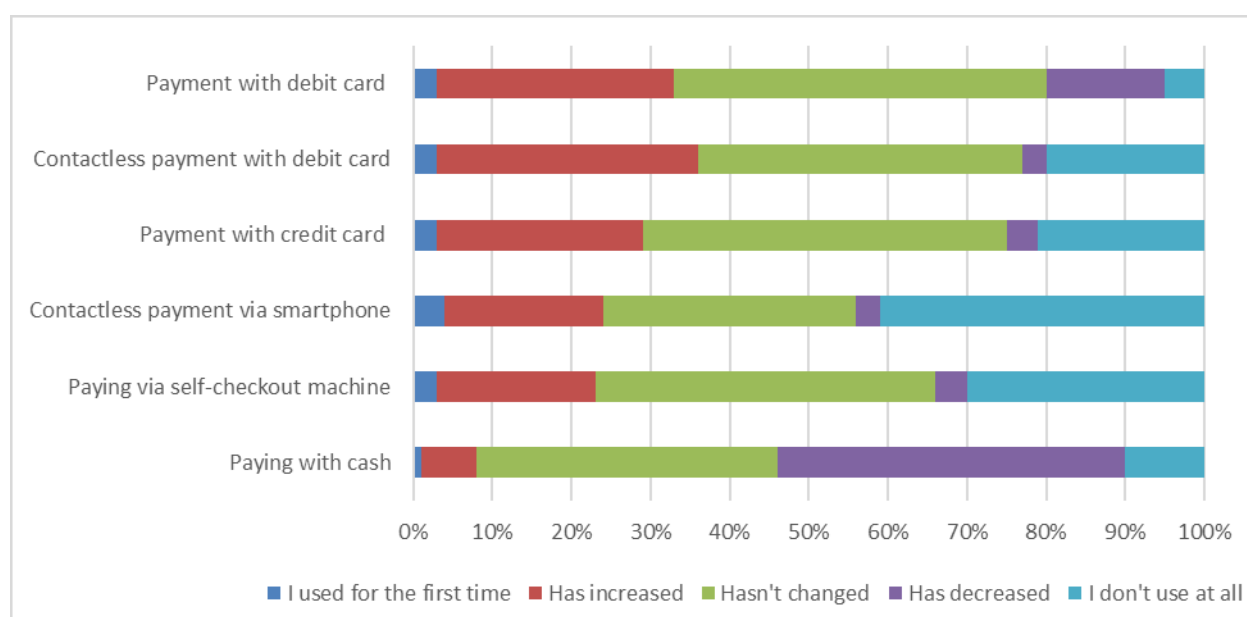
for cash but rather its supplement.

4. PANDEMIC IMPACT ON THE CASHLESS SOCIETY DEVELOPMENT⁵

There have been a growing number of products and services paid without cash such as various applications, bus fares, airline tickets, internet stores, and the like. Smart phones also revolutionized payments. There have been less high-denomination banknotes and coins in circulation, the latter in particular due to high minting and handling costs. When it comes to large value transactions, cash plays no role whatsoever. It is most common with households and retailers as well as for low-value payments because some merchants do not accept electronic payments due to high transaction fees. Banks have been reducing the number of their branches and employees and started encouraging cashless payments.

The pandemic has only accelerated this trend, because cashless payments are a form that significantly reduces the risk of transmitting infections. Mastercard data show that they grew by nearly 45% since the pandemic started (Filipiak, 2022). Similar conclusions were reached by Deloitte (Egerth, 2022), which clearly showed, on a sample of 1,500 Swiss citizens, that cashless transactions increased during the pandemic. The findings of this study are shown in the following figure.

Figure 3. How has the coronavirus changed payments?



Source: Egerth, K. (2022). Cash is no Longer King in Times of COVID-19. Deloitte. Retrieved from <https://www2.deloitte.com/ch/en/pages/consumer-industrial-products/articles/cash-is-no-longer-king-in-times-of-covid19.html>.

Some governments encourage a shift toward digital services because they see it as a way to address money laundering, tax evasion and also boost competition in financial services, as well as reduce the spread of the coronavirus. Others argue that digital payments protect consumers from being robbed or losing money, as well as sparing them the hassle of constantly carrying a wallet (Cerulus & Contituglia, 2018). It is obvious that cashless society has a number of advantages, but it also has a number of disadvantages that can be systematically shown in the following table.

⁵This part of the paper partly relies on my previous paper Fabris, N. (2019) "Cashless society—the future of money or a utopia?" *Journal of Central Banking Theory and Practice*, 8(1), 53-66.

Table 2. Costs and benefits of cashless society.

Benefits of cashless society	Costs of cashless society
Decline in crime and money laundering	Elderly and uneducated people could be on the side of losers
Convenient means of payment	Low level of financial and IT literacy can prevent some part of population from using cashless means of payment
Reduced shadow economy	Cybercrime
Fast development of IT technologies, smart phones and electronic applications support e-payments	Threats to privacy
Personal safety	Tradition
Lower transaction costs	IT risk

Source: Fabris, N. (2019). Cashless society—the future of money or a utopia? *Journal of Central Banking Theory and Practice*, 8(1), pp. 53-66, <https://doi.org/10.2478/jcbtp-2019-0003>.

The appearance of a cashless society raises a number of dilemmas for economic policymakers and all open questions are still left without final answers. Certainly the key dilemmas refer to whether a cashless society implies welfare growth or not; what implications would it have for monetary policy, and would the attainment of key objectives be facilitated or made more difficult? What are the risks? Would a cashless society be better in meeting user demand for money? What is certain is that a lot of research is needed that would shed light on all potential implications and they must always start with country specific circumstances.

The critical question for central bankers is how would digital money affect financial stability? A part of individuals could withdraw their money from banks, which would have a negative impact on liquidity. In such circumstances, a rational reaction of banks would be to increase interest rates and thereby attract new depositors, but this would also mean increasing lending interest rates that would further negatively impact employment, investment, and economic growth. In particular, banks that have a greater share of retail deposits can be at risk. The option suggested by the IMF is that banks could try to replace deposits with other forms of funding such as commercial paper, bonds, and equity (Mancini-Griffoli et al., 2018). Also, the other two possible options should be taken into account in the given circumstances, namely central bank could compensate banks for the loss of deposits through credit lines and allow the depositing of digital currencies in banks which would also bear interest.

The next question is how would digital currencies affect monetary policy transmission? The IMF considers that the basic interest rate channel may be the most affected, and the exchange rate channel is unlikely to be affected much (Mancini-Griffoli et al., 2018). A potentially bigger impact could be felt by countries in the inflation targeting regime because under inflation targeting, the effectiveness of monetary policy is a function of the transmission channels of monetary policy (Aguir, 2018). Nevertheless, further research is necessary before making any final conclusion.

However, considering all the above, it is not reasonable to expect the emergence of a cashless society in the near future, same as expecting that it could be based on private money. Nonetheless, what cannot be excluded and what may be likely in the near future is the emergence of central bank digital currencies, at least in some countries and as an alternative to cash. This is also supported by the fact that a number of central banks are very actively investigating the costs and benefits of introducing this money.

If we look at the history of money, we will notice that it went through evolutionary changes starting from the barter system, precious metals used as the means of payment, money made from precious metals and gold backed money to money whose value is completely separate from the material from which it was made. Central bank digital currency is a completely logical next step in this

process of money evolution. It is realistic to expect that in the coming period we will move towards a society in which the importance of cash will decrease, and this move has been largely accelerated by the pandemic. However, it is not reasonable to expect that we will move to a completely cashless society in the near future

Although it is obvious that we are moving towards a society in which the importance of cash will be diminishing, it still remains significant in certain situations such as in the times of financial instability or failure of some important financial institutions. Also, the recent hurricanes in America that led to power outages have shown that we have not yet come to the point where cashless forms of payment can completely replace cash payments.

5. PANDEMIC IMPACT ON CYBER RISK

Increased use of digital technologies and financial innovations will certainly lead to the growth of cyber risks. It is one of the fastest growing segments of crime. The global pandemic, in turn, was the trigger that has led to a further growth in cyber risks through increased use of digital technologies and cashless transactions. Also, during the pandemic, a large number of individuals lost their jobs and thus their livelihood has been jeopardized. Therefore, it is realistic to expect that a growing number of individuals will engage in cybercrime in order to provide existence for themselves. On the other hand, the pandemic has led to the global recession, so a large number of companies have been forced to reduce their operating costs. As [Deloitte \(2020\)](#) pointed out, this often means less allocation of funds for the protection of IT systems and the reduction of the number of employees in IT departments. In this way, the exposure to cyber risk has increased. This link between the rise of cybercrime and the pandemic has been confirmed by a number of studies. Thus, for example, the New York Department of Financial Services confirmed a high growth of cybercrime during the pandemic ([Baldwin, 2020](#)). According to a report by the well-known Internet security company [Kaspersky \(2021\)](#), during the first three quarters of the pandemic, the average daily number of attacks blocked by their antivirus program increased by as much as 25 percent. In their study, [Fu and Mrinal \(2022\)](#) found significant growth in predatory and fraudulent applications.

Also, it should be kept in mind that various types of software, which is simpler and potentially more dangerous, that can be used for cyberattacks, has become widely available today. So, nowadays it is possible to carry out cyberattacks as it requires less financial resources and knowledge, which expands the list of potential cyber criminals. The growing importance of cyber risk is evidenced by the fact that NATO declared the cyber domain the fourth operational domain at the summit in Warsaw in 2016, thus equating the actions and consequences within cyberspace with those within the other three domains: water, air, and land.

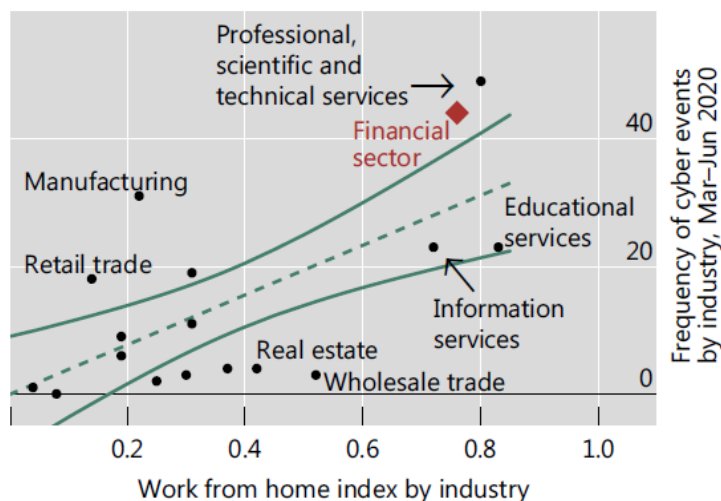
A RAND corporation study conducted before the pandemic outbreak showed that cyberattacks cause annual damage of 1% of global GDP ([Dreyer et al., 2018](#)). [ISACA \(2020b\)](#) estimated that in 2021, losses from cyberattacks could reach USD 6 trillion or USD 16.4 billion a day. If we look at the economic parameters of countries, cybercrime would be the third largest economy in the world, behind the United States and China. It is predicted that by 2025, cybercrime will produce losses of as much as USD 10.5 trillion a year, which is significantly more than the damage caused by natural disasters and makes it more profitable than the global drug trade ([Morgan, 2020](#)). In addition to financial losses, cyberattacks can make it difficult or disrupt the business of individual companies, and even entire markets, and lead to a loss of credibility.

Cyberattackers can be very different from criminal organizations and individual criminals, terrorists, insiders, hacktivists and all the way to state-backed hackers. The methods they use can be very different from IT failures, inserting malicious software, using insiders, phishing, stealing passwords, etc. The consequences can be financial loss, reputation loss, data loss, unavailability of certain services, and even the emergence of a systemic crisis.

The financial sector represents one of potentially the most attractive sectors for cybercriminals,

which is not surprising given that a successful cyberattack can bring great financial benefits. According to the BIS assessment (2021), the financial sector is one of the sectors that is most often the target of cyberattacks. The analysis of this institution shown in the following figure clearly indicates the risk of exposure of the financial sector to cyberattacks during the first quarter of the pandemic.

Figure 4. Work from home index vs cyberattacks.



Source:Aldasoro, I. et al. (2020). Cyber Risk in the Financial Sector. SUERF Policy Note, 206,1-16, Retrieved from https://www.suerf.org/docx/f_dda594513217fac90bbe56e5248d576c_18421_suerf.pdf.

Zakrzewski et al. (2019) found that the probability of an attack on financial institutions is 300 times higher than on other institutions. Aldasoro et al. (2020) point out that a quarter of all cyberattacks targets financial institutions. It can be particularly dangerous if one attack affects several financial institutions, which can jeopardize financial stability. KPMG (2021) points out that cyber security will be one of the top priorities of financial institutions in the coming period. The key challenges in managing cybersecurity in the financial system can be presented in the following table.

Table 3. Five key challenges in managing cyber security in the financial system.

Rank	Type
1	Growing business complexity and interconnectedness of financial institutions from different countries
2	Lack of professional staff for cyber risk management
3	Insufficient knowledge and understanding of the nature of cyber risk
4	Growth of business digitalisation, expansion of financial innovations and digital assets
5	Business expansion

Source:Fabris, N., Luburić, R. and Sekulović, R. (2021). Sajber rizik u finansijskom sistemu - izazovi tokom pandemije koronavirusa. Paper presented at the meeting of Association for Quality and Standardization, Kopaonik.

The global financial system will only become more vulnerable in the future as financial innovation, competition, as well as some new crises further fuel digital revolution. The maturity of the entire society combat cyber risk is of great importance. There should exist a general culture of cyber security because it protects an important asset of the company: data. Physical assets such as equipment, buildings, and even people can be replaced, but data is difficult to replace. It should be borne in mind that many cyber security requirements can be a barrier to business and employee comfort. Therefore, a balance needs to be struck between business security and business activities.

It is important that cyber security issues are highly positioned on the agendas of the highest governing bodies of all institutions. Cyber security must be invested in. Although companies are more likely to face losses from cyber incidents than, for example, floods or fires, companies are more willing to invest in the latter.⁶

⁶According to the American Association for Fire Protection, in 2018, a fire broke out in 3,400 companies. On the other hand, according to the Dark Reading report, 6,500 American companies faced compromising data through cyberattacks in the same year. Of course, these are only reported incidents and those that companies were aware of, so, in reality, their number is much higher (Isaca Journal, 2020).

6. CONCLUSION

The COVID-19 global pandemic has been an unprecedented event in the last 100 years (after the Spanish flu pandemic). It has seriously shaken the global economy and posed serious challenges to businesses around the world. Like all crises, this one has given rise both to innovations and opportunities. If history has taught us any lesson in this unprecedented crisis, it is that adversity inspires creativity. A new normal in the financial sector will be the growth of digitalisation, the emergence of financial innovations and new participants, the so-called fintech companies. The paper thus confirms H1 that the COVID-19 pandemic has affected the development of financial innovations and increased cashless transactions.

The uncertainty brought about by the pandemic has not bypassed fintech companies, but many of them managed to use it as a chance to create new products and services, adapt the existing ones and attract new clients, i.e. to adjust their business model to the new normal. A large number of studies have confirmed that fintech companies have significantly increased the scope of their activities during the pandemic and that this sector has proved to be very resilient.

Although being the biggest financial innovation, cryptocurrencies have not become what their original purpose was and that is money independent of governments (central banks). They do not have the functions of money but the characteristics of speculative securities. The pandemic has shown that growing uncertainty affects their value and that as business risk and uncertainty diminish so does the significance (value) of cryptocurrencies.

The pandemic, that is, social distancing, as well as remote work have affected the growth of cashless transactions. This has only accelerated the pre-existing trend of moving towards a cashless society. Although it is not realistic to expect a cashless society to come to life in the near future, the habits acquired during the pandemic will affect a further reduction of cash transactions. The growing announcements of central bank digital currencies are also a step towards that direction.

The paper also confirms H2 indicating that the pandemic has affected an increase in cyber risks. The global pandemic has spurred further growth in cyber risk through increased use of digital technologies and cashless transactions. This was also due the fact that when they were faced with jeopardized financial position, a significant number of companies reduced their expenses for the protection of IT systems. A large number of studies have confirmed the growth of cyberattacks during the pandemic, and one of the most exposed sectors was the financial sector. The global financial system will be even more vulnerable in the future because further development of financial innovation, competition, as well as some new crises will additionally fuel digital revolution. That is why the maturity of the entire society in the fight against cyber risks is of great importance.

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