research papers where legal ones dominate in Part 1 research papers where legal ones dominate in Part 1 of the monograph related to the topics of Law and Sustainability, while the last two papers in Part 2 of the monograph deal with economic issues of globalized, and digitalized world, with law as an integral part of it. Global environmental protection development, societal progress, and finally, the exercise of fundamental human rights. Thus, legal, improving and/or adjusting the applied methods in practice. This thematic monograph comprises eight economic, and scientific reflections regarding the reconceptualization of basic notions/institutes by various social science disciplines could contribute to the ongoing national and international debate at the public policy level, to implement theory in Exploring the intersection of various traditional legal disciplines – labour, business, and ecological law, with sustainability issues aims to offer valuable insights into the significant academic uncertainties about the future of a multilateral, issues are undoubtedly linked to economic sustainable development.



Dr Mirko Vasiljević, Professor Emeritus opment goals, and define standards in terms of sus-tainable development. The themes covered in the monograph are internationally relevant, advocating best-practice approaches in the field.

serve as guidelines for policymakers to enhance states' efficiency in achieving the sustainable devel-

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LEGAL INSIGHTS INTO ENVIRONMENTAL SUSTAINABILITY

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LEGAL INSIGHTS INTO ENVIRONMENTAL SUSTAINABILITY

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Legal Impact of the New Models of Doing Business Like Uber, Airbnb and Blockchain on Green Economy*

Abstract

Exploring the linkage between the green economy and new models of doing business like Uber, Airbnb and Blockchain is challenging, particularly having in mind the necessity for a deeper technology integration with an impact on achieving sustainable development goals. However, the authors argue the linkage between the green economy and these new models of doing business, considering their revolutionariness in terms of business decision-making and resource management. A basic impact and, therefore, a connection between these models of doing business and the green economy is in the consumption, as a consequence of optimal choices and coordination of consumers with the suppliers, as well as collaborative sharing economy. Authors, firstly, analyse the legal status of the aforementioned models of doing business and, subsequently, their impact on the green economy. The authors concluded that decentralized process of decision-making, which is enabled through access to Internet (digital) platforms and resolved

asymmetry of information, is a crucial factors in determining the new models of doing business in terms of the green economy transition.

Keywords: Uber, Airbnb, Blockchain, Information asymmetry, Green economy

Introduction

Having in mind the new models of doing business as Uber, Airbnb, Blockchain and others which are based on sharing economy, one might wonder if there is an impact of such models on the 113

^{*} This paper was written as part of the 2024 Research Program of the Institute of Social Sciences with the support of the Ministry of Science, Technological Development and Innovation of the Republic of Serbia.

green economy.¹ Precisely, if there is an enhancement of life and, in general, environmental conditions, due to a better way of concluding and performing contracts in business and civil law area?

The direct impact of legal institutes on the green economy has not been noticed, while indirect could be scientifically significant to analyse. In the case of Uber and Airbnb, as well as Blockchain and Distributed Ledger Systems, and also in other modes of concluding and performing contracts, the underlying idea lies in the faster and easier way of matching suppliers with the consumers. Given that, Uber, Airbnb and Blockchain could be considered as some kind of 'nontraditional intermediaries' not unlike stock exchange. That is because these models, so-called Internet or digital platforms, make circumstances in which they imitate the traditional stock exchange in the manner in which they collect and centre a lot of supply and demand, while they optimize the matching and choosing process among them. Also, Uber, Airbnb and Blockchain are not only markets where supply and demand meet, but also the organizers of their respective markets, just like the stock exchange.

More than 80% of the global GDP is generated in urban areas, while cities are also accountable for most of the energy consumption and pollution (Jovanović, Ostojić & Nikolić, 2023: 85). The basic impact of these 'evolving' business models on the green economy derives from the original definition of the green economy, determined as a process or a result of improving social well-being while, at the same time, significantly reducing environmental risks. The mere fact that new models of doing business are time-saving in their nature, and have influence on changing the manner of business decision-making (opting not to have ownership of the good, but use it only through different kinds of short forms of lease) could have a positive impact on mitigation of ecological risks. To be more precise, these models enhance the bypass process of contemporary consumer culture (actually, behaviour) which consists of constantly buying a lot of goods and services which are, on one hand, not necessary in a long term, and on the other, this produces a problem with an accumulation of unnecessary things.

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¹ The concept of sharing economy is not a new one. It was presented after WWII, and it has been often considered the "best idea since Keynes" (Weityzman, 1984: 4).

Therefore, models of renting, leasing and chartering modified by special methods through Internet platforms have a result not only in the improvement of intermediary model, but also maximizing the efficient use of goods in an ecologically functioning environment.

In this article, the authors consider the new models of doing business such as Uber and Airbnb, as well as Blockchain and Distributed Ledger System, and their impact on the green economy. Specifically, the authors analyse the intermediary role of these new business models which, with the help of the Internet, creates a *sui generis* type of stock exchange.

Legal Status of Uber and Airbnb

Computer technologies have brought the new models of doing business especially in the sphere where many people are referred to each other in meeting their daily or periodical needs (Janković, 2020a: 279 BL). It is particularly highlighted in the transport and tourism industry. Uber and Airbnb are typical examples of new business models which have evolved from the combination of Internet and IT technologies.

As a company and idea of transporting people, Uber was founded in San Francisco, USA, in 2009. During the 2010s, it spread around the world. The fundamental concept of Uber lies in the sharing economy inherent to the mechanism of sharing the surplus of owned goods and services, having in mind the optimal satisfaction of own preferences. The same basic concept, is present, also, in Airbnb.² However, in the evolved concept of Uber and Airbnb, this original type of sharing surplus of goods and services of every person involved has transformed into the traditional way of doing business through the legal form of company (Janković, 2019: 402– 404). Therefore, Uber and Airbnb have the legal status of companies, i.e. usually limited liability partnerships and rarely traditional joint-stock companies. edited volumes

² Initially, the concept of sharing surplus of goods and services was not manifested through the company manner of doing business, or even any known legal form of it. These were just common people who were ready to share their goods and services to the extent they felt possible and appropriate (Sundararajan, 2016: 7–10).

Uber and Airbnb represent some kind of stock exchange because they serve as intermediaries between supply and demand for the transport and tourist services. They serve as an optimal matcher between many supplies and specific demands, collected by special computerized algorithms. To be legally precise, Uber (and, also Airbnb) serves not only as a technical, IT tool that matches many suppliers of transport services and many demanders (i.e. consumers), but also as a legal form for collecting both of these and arranging them in an appropriate way. Uber, therefore, having the role of the intermediary (as a sort of stock exchange), has, simultaneously, the role of a market and that of the market organizer.

Besides the aforementioned Uber's legal qualification of intermediary (which is also applicable to Airbnb), there are two additional legal qualifications, both in theory and in legal practice (especially before European courts).³ First of them is the role of an immediate provider of transport and tourists services. According to that role, Uber acts as a typical, simple carrier, just like any taxi carrier, while Airbnb is a traditional hotelier who provides passenger with accommodation, meals and other similar services. The second is the role of Uber and Airbnb as mere organizers, but not immediate providers of tourist and transport services. This role is similar to the role of carrier in a freight forwarder contract, and to the role of tourist agency as part of a traditional contract of packet arrangement (Janković, 2020b: 205 PiP).

Finally, the opinion that Uber is a carrier (and consequently Airbnb is a classic tourist agency) prevailed in most of the world, based on the argument that these business models, have crucial control over the process of negotiating and performing the contract, and also, collecting the price (Janković, 2020a: 286–288). However, besides this prevailing opinion, we considered Uber and Airbnb not only from the legal perspective in this article, but also from the economical and, finally from the consumers' perspective, with the purpose to highlight the impact of these business models on the green economy.

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³ The basic legal problems concerning Uber in Europe sprung from the uncertainty for consumers which consisted of the lack of monitoring of drivers and vehicles, insurance, and process of licensing of potential drivers (Colagnelo & Zeno-Zencovich, 2019, 138).

The Impact of Uber and Airbnb on the Green Economy

The basic concept of the green economy which has been defined by the UNEP (United Nations Environment Programme) is viewed as a mutualism of the improvement of social welfare on the one side, and reduction of environmental risks and damages, on the other (Willis & Kirby, 2015: 19). More precisely, the green economy is the exploitation of the potentials of our planet in the accordance with ecological standards, which finally results in a reduction of the carbon emission (for example, in the transport sector resources, actually, net-zero transport) and pollution, while at the same time enhances energy and resource efficiency (Newton & Cantarello, 2014: 2–3). The authors argue that the green economy is not only an economic issue, but also requires a multidisciplinary approach to the subject.⁴ Although, as it has already been mentioned that the green economy has a core meaning in the term of net-zero transport and, in general, is limited to the process of reducing the harmful gases etc., we have tackled the green economy from economic and legal perspective.

Uber, Airbnb, Blockchain and other Internet (digital) platforms are examples of self-organization in the current market, based on the ideas of the sharing economy and, in an indirect manner, of the green economy. The substantial impact of these internet platforms on the green economy consists of the idea of resolving information asymmetry which usually exists between demanders (i.e. consumers) and suppliers (Janković, 2020a: 279). These internet platforms solve the information asymmetry problem by making the process of concluding and performing the contracts between the two opposite sides – consumers and suppliers, easier and faster.

Reducing the time consumed for concluding and performing the contract via internet platforms is the first real impact to the green economy. It is an appropriate contribution to the concept

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⁴ Some scientists have deemed that the financial crisis from 2007 accelerated the process of actualization of the green economy, through promoting the positive opinion of the green economy as a concept to solve the many problems which caused the global economic crisis (Newton & Cantarello, 2014: 1–2).

of the green economy, having in mind the scope and generality of contracts concluded in this way. These contracts are derived from basic human needs such as transport, accommodation, food, banking services, etc. In the absence of these internet platforms, the process of contracting would remain long lasting (time consuming), making the information asymmetry a problem.⁵

As a consequence of the use of internet platforms, the general consumption is reduced, because the platforms, as particular markets, enable people to use goods and services more preferably and rationally.⁶ This is self-evident in terms of the green economy, due to reduced consumption which, as such, reduces pollution in the general sense. Nowadays, in the era of the Coronavirus, these platforms serve as tools for remote concluding and, even performing the contracts, enabling daily human needs.

Legal Status of Blockchain

In a globalized world where environmental sustainability is a principal success factor, what is the role of the blockchain technology? (Parmentola et al., 2021: 1). By using a comparative legal approach, we analyse whether and how blockchain technology influenced environmental sustainability.

Blockchain is defined as a novel and fast-evolving approach to recording and sharing data across multiple data stores (or ledgers) (Parmentola et al., 2021: 2). One should be aware that blockchain technology works in the form of a distributed ledger system where data, used in communication or transactions, are stored in a publicly available network of digital blocks (Parmentola et al., 2021: 3). Blockchain, distributed ledger technologies and smart contracts, challenge traditional private-ordering beliefs (Kulms,

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⁵ The concept of sharing economy manifested in Uber and Airbnb, resolves not only the information asymmetry problem, but it also provides a system of trust between the consumers and suppliers, through the reputation scale of these virtual markets (Monakhov, Monakhov & Telny, 2021: 28–43).

⁶ General consumption is reduced and became functional due to not only the classic concept of sharing economy, but also through a new economic paradigm based on collaborative consumption, which in the biggest degree impacts sustainable development, and in an indirect manner the green economy. More about collaborative consumption as an economic paradigm can be seen in (Iscan, 2020: 37 et seq).

2019: 307). This research analyses whether there is still space for law. The paper gains insights into a recent codification process conferring erga-omnes effects on the blockchain-related contracts and the values stored on electronic ledgers, having in mind that blockchain and distributed ledger technologies alter traditional business operations, finances, industries and public services (Kulms, 2019: 307). Business transactions could be carried out in 'real time' without the intervention of traditional intermediaries such as investment companies.

Blockchain technology has passed forth a new infrastructure for transmitting and storing data. Blockchain, which was first initiated in 2008 through Bitcoin, opens up multiple possibilities that will transform the contemporary business operations by authorizing business execution, including multiple services without a central authority or any particular participant. (Pinto e Netto & Menengola, 2021: 22). Blockchain works differently than the traditional data bases, as it does not have to be centrally maintained. The transactions to be executed are approved consensually, which means that no intermediary is involved in the process, as the network users themselves approve the transactions. One should be aware that blockchain technologies differ significantly from centralized networks, such as those used by the banking system, since in these cases, all transactions are processed and stored in a central server (Pinto e Netto & Menengola, 2021: 23). In distributed networks, each of the blocks, distributed among the users in a decentralized way, has a complete copy of the ledger, which is permanently updated by the network, so there is no need for a central authority. This may enable efficiency and lower the costs of companies and other organizations, by allowing faster transactions that are disseminated digitally across a number of different parties. Additional benefit of the blockchain technologies is that there is no need for a trusted third party to serve as an intermediary for the transactions, since everything occurs under the supervision of all the nodes that make up the network. A huge advantage of blockchain technology is the elimination of vulnerable central points (Pinto e Netto & Menengola, 2021: 23).

Blockchain and distributed ledger systems could be organised as permissionless or private networks. The software cannot

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be openly downloaded for private, or permissioned blockchain and distributed ledger systems. Alternately, participants will have to require access, ordinarily from the organisers of the platform, by accepting the terms of operation, including validation and the standards of digital trading (Kulms, 2019: 309). Having in mind that private blockchain systems benefit from low verification costs, the costs of running trusted nodes still cannot be dispensed with (Catalini & Gans, 2019: 12). The international finance community has begun to estimate the perspective of permissioned blockchains. The permissioned blockchain systems are thought to be assuring a high degree of compliance with local regulatory interventions, since the 'gatekeeper' of the permissioned system normally has to apply for a licence from local capital market authorities (Kulms, 2019: 310).

Blockchains, digital assets and smart securities generate both positive and negative externalities. Also, blockchain and distributed ledger technologies are progressively being seen as a way for the derivatives industry to realise operational efficiencies and cut costs (ISDA Linklaters, 2017: 3). Notwithstanding, legislators appear to have decided not to interfere with digitisation in the making. "A regulatory sandbox approach or supportive blockchain statutes are recommended as an element of regulatory competition to attract business" (Kulms, 2019: 311).

It should be noted that blockchain is a technology that could be used for any modification in ownership and keeping of significant information and documents such as licences, certificates and government decisions (Ølnes et al., 2017: 355). It can be implemented in the blockchain operations of the registration of property, copyright, identity, votes and smart contracts, i.e. the performance automation of the contracts that can only be executed when the pre-specified conditions are fulfilled, eliminating a third party (Kewell et al., 2017: 429). However, blockchain technologies are in the nascent stage, and there is still a lack of agreement on what a smart contract is, what role it can play in the derivatives market, and how it might interact with the existing legal rules and standards (ISDA Linklaters, 2017: 3).

As smart contracts and artificial intelligence are beginning to integrate with blockchain technology, scholars concentrates on how the assertion that 'code is law' can be reconciled with

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traditional notions of offer and acceptance. The question is how assets can be stored digitally and whether they produce erga-omnes effects. Once recognised as a 'thing', a piece of property, digital assets could be traded like any other commodities (Kulms, 2019: 311).

Blockchain ledgers do not have a specific location for each transaction, so each node potentially could be located in a different country. In that sense, it is not clear whose jurisdiction a blockchain might fall under. In terms of legal disputes, deciding which laws could be enforced and which courts have the right to decide on the matters will be challenging (Herweijer, Waughray & Warren, 2018: 23). In addition, except legal and regulatory issues, there are logistical and cultural issues that are yet to be solved to clear the path for extensive usage of the blockchain technology (Hughes et al., 2019: 116).

Nowadays, legal and regulatory frameworks of blockchain are defined only in a small number of jurisdictions. At the EU level, Regulation on Markets in Crypto-assets are proposed as a part of the Digital Finance package. The proposal of regulation has several goals. The principal goal is one of legal certainty. For digital asset markets to develop within the EU, there is a need for a sound legal framework, clearly defining the regulatory treatment of all digital assets and the internet or digital platforms that are not covered by current financial services legislation. The second goal is to support and promote innovation. To promote the development of digital assets and a wider use of blockchain and distributed ledger technology, it is necessary to put in place a safe and proportionate framework to support innovation and fair competition. The third goal is to instil suitable levels of consumer and investor protection and market integrity, given that the digital assets and blockchain applications not covered by the existing financial services legislation present many of the same risks as more familiar financial instruments. Finally, the fourth objective is to provide financial stability, because digital assets and blockchain technology are permanently evolving (Proposal of Markets in Crypto-assets Regulation, 2020: 2)

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The Impact of Blockchain on the Capital Market and Green Economy

Recent decades have been marked by numerous changes in the capital market that have affected the alteration in the institutional structure of the functioning of the financial system (Sovilj & Stojković-Zlatanović, 2021: 267). A wider application of blockchain technology is one of the great challenges in the financial markets. Blockchain is an innovative certification technology with a high transformative power in new business models, exercising a social impact by offering solutions that include governance and sustainability (Tavares et al., 2019: 1). The intension of this research is to discover the various benefits of applying the blockchain-based platforms during environmental services negotiation. A lot of the relevant articles deal with the use of blockchain related to digital assets (cryptocurrencies), but only few address the use of blockchain in the capital markets and green economy.

The combination of some or all aspects of the blockchain technology could enable modern capital markets to overcome some of the numerous problems, and, perhaps more importantly, to offer innovative solutions (Hadžić & Nedeljković, 2018: 155). One of the first possible applications of blockchain technologies in the capital markets was observed in the area of transaction settlement. Settlement of a transaction is the process in which buyers (investors) of securities become their owners, while the sellers come into possession of money. In the capital markets, two working days usually pass from the moment of sale to the moment of settlement, which is a consequence of the fact that in that period buyers and sellers are given time to provide the accounts they need for the transaction. Improving and accelerating the settlement process, while at the same time providing security that the blockchain technology offers by disabling so-called double sales, i.e. the simultaneous sale of one security to two or more customers (actually, investors) or the use of the same funds for two purchases, would significantly contribute to lowering the costs and increase the confidence in the capital markets (Hadžić & Nedeljković, 2018: 155).

An additional advantage of the implementation of the blockchain technology is reflected in the increase of capital market

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liquidity. Usage of the blockchain technology contributes to a reduction in intermediary commission costs (to be more precise, costs of investment companies' services), as well as the reduction in the bid-ask spreads (differences between the offered purchase and sale price on the market) with a simplified trading procedure. This increases the efficiency of the capital market while reducing the information asymmetry between issuers and investors. In addition, appropriate application of the blockchain technology would further contribute to savings by minimizing errors (Hadžić & Nedeljković, 2018: 157). However, one should be careful with the application of the blockchain technology in the capital markets, taking into account that the capital markets are the most important but also the most vulnerable segment of the economic system of each country (Sovilj, 2020a: 112).

However, blockchain is a relatively new technology that has been primarily focused on the capital market and cryptocurrencies (Svetec, 2019: 61). The most significant use of blockchain is the development and operation of digital assets. In the meantime, blockchain has become independent from the initial cryptocurrencies operations, having in mind that blockchain has become the foundation of FinTech. Still, the blockchain technologies go well beyond electronic trading via a finance platform (Kulms, 2019: 329). Blockchain technologies introduce to digitisation in asset management, production processes in industry and agronomy, climate change, water management, land registry with electronic mortgages, public administration, e-government, green finance (Sovilj, 2020b: 267). It should be noted that the blockchain technology would also be crucial for integrating the internet of things into daily life applications. The internet of things, blockchain and peer-to-peer approaches play a significant role in the development of decentralized and data intensive applications running on billions of devices, preserving the privacy of the users (Conoscenti, Vetro & De Martin, 2016: 1). In the meantime, the blockchain technology has created a very acceptable technology in the internet of things, attracting substantial interest from energy supply corporations, innovative start-ups, financial institutions and international organizations, governments and scholars.

Currently, there is a serious academic debate about the impact of the blockchain technology on the sustainable development, and climate change adaptation and mitigation policies. Even though the blockchain technology is still in its nascent stage, researchers agree that it bids a number of potential interests that will help various institutions meet the demands of the Fourth Industrial Revolution. (Parmentola et al., 2021: 3). In addition, blockchain addresses a scope of environmental sustainability challenges, supporting environmental sustainability through three principal instruments related to resource rights, product origins and behavioural incentives (Herweijer, Waughray & Warren, 2018: 23). It could relieve novel sources of green production, as well as storage and supervising of data-related activities liable for pollution and environmental degradation, the collection and analysis of low-carbon data in timely decision-making, and supporting the growth of a sustainable supply chain (Parmentola et al., 2021: 3).

In a recently study conducted by the Coolclimate Network at the University of California, it was estimated that the American banking industry emits 383.1 million tons of CO₂ per year for bank branches and 3.2 million CO₂ per year for ATMs, on the one side, while the bitcoin network produces 0.75 million tons of CO₂ per year, on the other. This leading to the conclusion that digital asset has 99.8% fewer emissions than the American banking system. Hence, should it be possible to soon replace banks with digital assets such as Bitcoin, Ethereum etc., which are all blockchain-based, this would likely cause a positive environmental impact. (Pinto e Netto & Menengola, 2021: 25). Also, with the establishment of national green investment banks, as well as the rapid growth of the green bond market, the interest in green financing has grown in the last decade (Ostojić, 2023: 24).

Nowadays, blockchain is applied in a number of fields. International organizations and states also recognized the opportunity of blockchain to affect substantially of the green economy and enhance environmental sustainability. In this regard, an excellent example is California which utilised blockchain technology to control Sacramento's groundwater. The similar project is the *Share & Charge* which was first implemented in the United Kingdom and later in the European Union, promoting the application of blockchain

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in controlling electric car charging systems. Recently, Mora emphasized the function of blockchain in establishing a sustainable society, identifying how various blockchain digital decisions could support sustainability from three points of view toward the topic on which the technology can be oriented – service delivery, resource management and city governance (Parmentola et al., 2021: 3).

Conclusion

The current economic system has proven to be inefficient in terms of sustainable development and, it is obviously necessary to find a new solution that will meet the conditions of the sustainable development and green economy. In this sense, blockchain and other digital platforms could enable efficient and transparent resource management, contributing to sustainability goals, decentralization of the energy system, and democratization of societies. Definitely, blockchain is destined to transform the business model in the proximate future, matching economic efficiency with the goal of reaching a more environmentally sustainable world. Blockchain-based supply chains are basically changing companies' manner of conducting business, proposing decentralized processes via public blockchain. Since innovative technologies, such as blockchain and other digital platforms, are still in their nascent stage, it is necessary to carefully analyse them and find effective solutions for their application. The obstacles that may occur in the implementation of digital platforms are primarily of the legislative nature. Therefore, the legal and regulatory framework for digital platforms such as Blockchain, Uber and Airbnb must also be established and operable internationally, across jurisdictions. In that sense, the currently legal and regulatory challenges for blockchain involve shared jurisdictions, networks of law and data privacy.

To summarise, the current legal and regulatory approach to blockchains oscillates between intervention and softness. In this context, it is often overlooked that digital platforms like those blockchain-based, or Uber and Airbnb, with their smart contracts, challenge traditional law beliefs. Therefore, a more comprehensive legal approach is necessary, combining insights from digital processes with capital market law, traffic law, contract law and edited volumes

property law (Sovilj, 2021: 309). Moreover, rules of property law and capital market regulations will have to be modified in order to advance the commodification of electronic signals, conferring on them the status of a 'thing' or, a financial instrument. Furthermore, an extensive legal approach towards digital platforms need to consider the fact the involvement of artificial intelligence reshapes established causation and liability concepts (Kulms, 2019: 329).

Although the solutions that the blockchain technology offers to modern capital markets are challenging, as well as promising, greater implementation in practice will be possible only after overcoming a number of identified but still largely unnoticed problems. The blockchain application presupposes not only technological challenges, but also the adoption of relevant legislation and a change in the established practices of the modern capital markets. These problems could incur additional costs and contribute to resistance of professional public regarding the proposed changes, which would lead to a significant slowdown in the overall process. In the long run, the blockchain application would probably completely change the roles of individual participants in the capital market, and above all, that of investment companies. Namely, by acquiring the role of intermediary in the capital market, the blockchain technology would take over the business of investment companies. In this sense, investment companies could redirect their business on providing advisory services to clients, while custody banks and central registries would provide some additional services to clients that do not exist today.

On the other side, Uber and Airbnb, as traditional representatives of the sharing economy, serve as particular, virtual markets resolving in that role the information asymmetry which has existed between consumers and suppliers for years. The crucial impact of Uber and Airbnb on the sharing economy consists not only in a reduced consumption, but also in the collaborative consumption, creating a more functional model of contemporary consumption and, as such, having an influence on the whole system of the green economy.

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