

**LEGAL PERSPECTIVE ON
BLOCKCHAIN
THEORY, OUTCOMES, AND OUTLOOKS**

edited by

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Blockchain Technology: Driving Towards the Next Industrial Revolution?

SUMMARY: 1. Introduction - 2. The Blockchain Case - 2.1. A Foundational Technology - 2.2 Definition and Function of Blockchain - 2.3. The Bitcoin - 2.4. The Blockchain Promises - Applications - 3. Regulatory Approaches and Challenges - 3.1. Introductory remarks: The Discussion - 3.2. Regulatory Approaches to Virtual Currencies - 3.3. Other Regulatory Initiatives - 4. Remarks - 4.1. Introduction - 4.2. Lessons from Bitcoin - 4.3. Making the Case for Blockchain - 5. Conclusion

1. Introduction

New technologies have provoked a new revolution in human history: the so-called “digital revolution” or “next production revolution”³. It marks the passage from the mechanical or analogue electronic technology to digital electronic technology, with primary impact on the area of communication but also, subsequently, in production⁴. It is revolution, because it has the capacity to overhaul established social structures. In fact, it is already doing so: starting with business and trade, new technologies are now shaping labour, governance, culture.

The dominant trend is towards a global village: everyone and everything is a few steps – or rather a few clicks – away; cultures intermingle in an explosive mix, while national borders keep losing ground and relevance – mere remnants of a fading past. This is where we are heading and each new development, e.g. every new platform, novel application, promising social network or innovative robot is one more (cyber-) brick for the construction of the global village.

Surprisingly, despite constant, factual progress towards total globalization, a kind of inertia is increasingly observed in a number of countries, both advanced and emerging. More and more nations are adopting introvert policies advocated by populist governments, as if to resist to the multi-cultural trend, to protect local interests under threat. Seeking to explain the controversy of a globalizing world opting for nationalist approaches, there seems to be evidence that economic uncertainty and political instability go hand-in-hand⁵.

Change implies by definition risk and demands effort to adjust to new standards; the more fundamental the change the higher the risk, the more the stress. And where

¹ Anna Manitarà, *Valente Associati GEB Partners* (www.gebpartners.it).

² Alessandro Valente, *Valente Associati GEB Partners* (www.gebpartners.it).

³ OECD, *The Next Production Revolution: Implications for Governments and Businesses*, OECD Publishing, Paris, 2017.

⁴ P. VALENTE, *Digital Revolution. Tax Revolution?*, 72 Bulletin for International Taxation 4a/Special Issue, IBFD Journals, 2018.

⁵ M. FERRERA, *Uncertainties and Inequalities: Political Risks*, in the *Age of Uncertainty, Global Scenarios and Italy*, ed. A. COLOMBO, P. MAGRI, Edizioni Epoke – ISPI, 2017.

loss of control is at stake, people tend to search for it in known structures, in what they are comfortable with. Breaking the ground under modern society, digitalization and globalization, could well be included amongst the causes of increasingly widespread introvert political movements. Yet, the conflict shall have to be resolved, with the society making its way in-between controversies: multilateralism vs. unilateralism, supranational institutions vs. states' micro-politics, new nomads vs. physical walls, global rules vs. local regimes claiming their established rights.

The way forward is a challenging one that is sparking a lot of debate. The present paper aims at contributing to this debate, focusing on new technologies, their promises and their risks and trying to identify the questions to be answered in order to overcome uncertainty and clear the way to effective, sustainable globalization. In particular, part two concentrates on the blockchain technology, a state-of-the-art creature of digitalization that seems to be bringing revolution in itself. Part three explores then the approaches that have been taken by policy-makers and regulators around the world towards the new technology and its various applications. Part four examines past regulatory efforts addressing similar phenomena in order to identify those mistakes that should not be repeated in the effort to set a context for the new technologies and the immense potential they entail. On these premises, it may be concluded that the current revolution can and must build on experiences of past revolutions; only thus can it be exploited promptly and in full.

2. *The Blockchain Case*

2.1. *A Foundational Technology*

Blockchain technology is deemed to be “foundational technology”⁶, bringing revolution into the digital revolution. It is alleged to be up-rooting the basic foundations of the society and to be forcing that they are revisited. It is said however that this was also the purpose underpinning its very development: borne from the foundational deficiencies identified in the social structure and commissioned to provide alternatives⁷. Pre-requisite to understand the revolution the blockchain seems to be promising is to understand the blockchain itself, i.e. its function and key features.

2.2. *Definition and Function of Blockchain*

The blockchain has been defined by the World Bank Group as “a particular type of data structure used in some distributed ledgers which stores and transmits data in packages, called “blocks” that are connected to each other in a digital “chain””⁸. A distributed ledger is described as a type of a record of data shared among various

⁶ R. T. AINSWORTH and V. VIITASAARI, *Payroll Tax and the Blockchain*, in *Tax Notes International*, 2017.

⁷ Institute for Austrian and International Tax Law, WU Global Tax Policy Center, First Meeting in the Multi-stakeholder Series, *Blockchain: Taxation and Regulatory Challenges and Opportunities*, Vienna, 2017.

⁸ World Bank Group (H. NATARAJAN, S. KRAUSE, H. GRADSTEIN), *Distributed Ledger Technology (DLT) and Blockchain*, FinTech note, no. 1, Washington, S.C., 2017. Available at <http://documents.worldbank.org/curated/en/177911513714062215/pdf/122140-WP-PUBLIC-Distributed-Ledger-Technology-and-Blockchain-Fintech-Notes.pdf>. Accessed 22 Nov. 2018.

parties⁹. Simply, blockchain is a method to record and share information, i.e. data and transactions. Its function is based on the use of cryptography and algorithms.

In particular, blockchain technology has three key elements:

(i) it is distributed, i.e. it functions on a peer-to-peer basis, without relying on centralized control¹⁰ and hence not amendable by any third party;

(ii) a consensus mechanism is used to guarantee the validity of the information on the blockchain and subsequently the security of the system; it constitutes a type of agreement among the users based on the solution of a mathematical problem (algorithm); this is the sole way to add information on the blockchain;

(iii) cryptography serves to protect the information stored on the blockchain and ensure that it remains confidential; in essence each new piece of information to be added on the blockchain is first encrypted (hashed) and then the hash is inserted in the blockchain.

Three types of blockchain technology are discerned, depending on the intensity of the distributed nature in each one. Thus, a permissionless blockchain is totally decentralized: there is no central control whatsoever. Anyone can gain access through the appropriate software and anyone can be a peer-to-peer user. All users – so-called “nodes” – have at all times the same copy of the ledger and the same rights in relation thereto. This is not the case in permissioned blockchains, where there is centralized administrator. The central administrator determines at his discretion the rules for the function of the permissioned blockchain and the users or nodes, depending on the purpose to be served by the specific blockchain. A permissioned blockchain might be either open or closed, depending on whether or not it can be accessed by those who do not have permission to be users.

2.3. *The Bitcoin*

The first and most diffused application of the blockchain is the bitcoin¹¹. It was launched in 2009 in order to respond to the increasing need to effect in a time-effective, costless and secure way online – cashless – payments¹². The bitcoin uses permissionless blockchain technology, which means that any person that disposes of the necessary software can use it to effect and receive payments. There is no central authority to amend or otherwise control the blockchain; all users have identical copies of the record, which could only (theoretically) be altered all together (by a computer more powerful than all the other together).

⁹ The term “distributed ledger technology or DLT” reflects a broad category of technologies or methods to store and organize information in a peer-to-peer manner. By way of an example, apart from blockchain, there is the directed acyclic graph, which has been used in the IOTA platform. Cf. World Bank Group, *supra* note 8; Policy Department for Economic, Scientific and Quality of Life Policies (R. HOUBEN and A. SNYERS – Directorate General for Internal Policies), *Cryptocurrencies and Blockchain: Legal Context and Implications for financial crime, money laundering and tax evasion*, Study Requested by the TAX3 Committee for the European Parliament, 2018.

¹⁰ There are however types of blockchain technology where there is central control, as explained below.

¹¹ S. NAKAMOTO, *Bitcoin: A Peer-to-Peer Electronic Cash System*, 2009. Available at: <https://bitcoin.org/bitcoin.pdf>. Accessed 22 Nov. 2018.

¹² P. VALENTE, *Bitcoin and Virtual Currencies Are Real: Are Regulators Still Virtual?*, 46 *Intertax* 6 & 7, Kluwer Law International, 2018.

The bitcoin works like an e-check, in essence being a chain of digital signatures and transferred accordingly, i.e. with a new digital signature. Each new transaction is encrypted and the hash is inserted into a block that will be definitively added to the bitcoin blockchain, once validated. As mentioned above, validation requires the consensus of all users following the solution of an algorithmic problem (or cryptographic puzzle)¹³. In the case of bitcoin, such problem is solved (and hence the transaction is validated) by the miners, i.e. users with special hardware employing significant amount of computer power to solve the problem and remunerated for successful validation through new bitcoins¹⁴. Encryption and validation together¹⁵ imply that the bitcoins cannot be double-spent, thus responding to the major challenge in the use of digital money.

2.4. *The Blockchain Promises - Applications*

The blockchain technology is said to be promising the transformation of the internet from “Internet of Information” to “Internet of Value”. Such expectation derives from the new technology’s two basic features:

- (i) it eliminates the need for a trustworthy third party to guarantee the validity of peer-to-peer transactions;
- (ii) it provides an immutable, shared and at-real-time-up-to-date record of information.

These features render the blockchain technology attractive to a wide range of industries, to the private and public sector. In essence, it could be used to facilitate any peer-to-peer transactions, especially in the private sector, on the basis of the first above feature. Equally, due to its second feature, it could be used in all cases where cooperation of an unknown and indefinite number of parties is required, especially in the context of government or intra-government functions.

In the private sector, by way of an example, the blockchain technology could facilitate and enhance the security of transactions in relation to property, tangible or intangible. In essence a blockchain with information on all transactions performed and the status of relevant rights acquired in relation to certain property could be embedded into the property itself. This could be the case for any type of property, including real estate and cars, as well as company shares and intellectual property. Property embedding such a blockchain and practically narrating itself the legal rights thereon is referred as “smart property”¹⁶. Smart property implies faster and less costly transactions, less disputes, more transparency, more trust in the market, more investment, more growth. Another promising application is smart contracts, i.e.

¹³ The algorithmic problem involves information on the whole blockchain existing at the time of the transaction or transactions to be validated and information on the new transaction. Policy Department for Economic, Scientific and Quality of Life Policies, *supra* note 9.

¹⁴ P. VALENTE, *supra* note 12.

¹⁵ Encryption or hashing and validation are the two subsequent steps of the timestamping mechanism, which warrants that certain information existed at a certain time, while not revealing the content of the information.

¹⁶ Blockgeeks, *17 Blockchain Applications That Are Transforming Society*, available at: <https://blockgeeks.com/guides/blockchain-applications/>. Accessed on 22 Nov. 2018.

contracts made on the blockchain, including an IFTTT (if-this-then-that) code that renders them self-executable¹⁷.

The public sector has at least equal reasons to adopt the blockchain technology for a number of functions. It is no surprise that several governments around the world are experimenting with the implementation of blockchain in asset registration¹⁸ or for public record-keeping (e.g. personal or criminal records)¹⁹. Remarkably, the blockchain technology could provide a powerful tool in the fight against tax fraud and evasion, while facilitating the efficient cooperation among different tax authorities or between tax authorities and taxpayers. Establishing the use of blockchain for the storing of financial information by corporate taxpayers, tax authorities could avail themselves of an always accessible and timely updated record of financial transactions for audit purposes. In addition, they could share such information with foreign tax authorities with interest in the same taxpayer in a timely and safe manner, in a kind of self-executing country-by-country reporting²⁰.

3. *Regulatory Approaches and Challenges*

3.1. *Introductory remarks: The Discussion*

While the use of the blockchain is conquering new areas, the debate concerning its potential regulation is reaching its peak. Some of the regulatory-centered questions raised include the following, albeit constituting only a part of the overall discussion and prescribing uncertainty as the sole certainty for the future.

(i) Is it a chimera to seek to regulate the blockchain? Can we regulate it in an effective manner?

(ii) If we can regulate effectively the blockchain, should we? Do we hope to achieve better results by drafting rules than letting the market be the regulator?

(iii) If it is better to set the rules:

- When should we intervene: before knowing the full picture (in order to prevent) or afterwards (risking to be too late)

- What should we target to regulate: the blockchain technology or each individual application?

- To what extent should we regulate: should we opt for minimal rules leaving maximum freedom or is this already too risky?

- Who should be entrusted with producing the regulation: governments, international bodies, the users, the entrepreneurs, the blockchain itself or all together?

- The range of the applications and the impact the new technology is promising has necessarily attracted the attention of stakeholders from various sectors and countries. The issue is legal as much as it is scientific, business, political and social.

¹⁷ N. SZABO, *The Idea Of Smart Contracts*, 1997. Available at: <http://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/idea.html>. Accessed on 22 Nov. 2018; World Bank Group, *supra* note 8.

¹⁸ For example the Republic of Georgia's National Agency of Public Registry is cooperating with a bitcoin mining company in order to renovate the land titling. World Bank Group, *supra* note 8.

¹⁹ This is the case with Estonia, which has also introduced e-residency. World Bank Group, *supra* note 8.

²⁰ Institute for Austrian and International Tax Law, WU Global Tax Policy Center, *supra* note 9.

Even if the questions are pending (or more precisely: have not even been adequately defined yet), pieces of regulation have already entered the international scenario. In terms of form, these initiatives may indicatively be national legislation or recommendations and warnings or prohibitions or also projects to exploit the new potential. In terms of substance, the approaches endorsed vary significantly and are not coordinated.

In general, the regulatory efforts that have been undertaken at the current stage target:

- a) either virtual currencies, which is the most widespread of the applications of blockchain
- b) or other applications and/or the underlying technology itself.

3.2. *Regulatory Approaches to Virtual Currencies*

The majority of the regulatory efforts concentrate on virtual currencies. Their significant expansion in the last few years has demanded from policy-makers to take a position, at least in the most advanced economies. In lack of coordination and common understanding, the positions that have been promoted by national regulators vary significantly.

Firstly, the extremes outlining the range could be the following:

- Prohibition as illegal: Morocco, Bolivia, Ecuador, China and Nepal have adopted this approach²¹;
- Crypto-haven approach: Bermuda, Gibraltar Liechtenstein, Malta and Puerto Rico have introduced or are in the verge of introducing specific legislation to encourage the crypto-currency business²²;
- National crypto-currency: Venezuela has been leading in this respect, adopting Petro-currency (a cryptocurrency alleged to be backed by petroleum resources – which existence however seems to be highly doubtful²³) and others are said to follow²⁴.

Furthermore, an increasing number of national legislators is extending national anti-money laundering legislation to virtual currencies. Examples include Japan, which has enacted relevant legislation since 2016 and Australia, which followed with effect from 2018²⁵. Similarly, in the European Union (EU), the Anti-Money Laundering Directive has been amended to include virtual currencies with effect

²¹ B. STEPHENSON, *5 Countries Where Bitcoin Is Illegal: Bitcoin and other cryptocurrencies are outlawed in several countries*, in Lifewire, 2018. Available at <https://www.lifewire.com/where-is-bitcoin-illegal-4156601>. Accessed 18 Oct. 2018.

²² N. POPPER, *Have a Cryptocurrency Company? Bermuda, Malta or Gibraltar Wants You*, in The New York Times, 2018. Available at <https://www.nytimes.com/2018/07/29/technology/cryptocurrency-bermuda-malta-gibraltar.html>. Accessed 18 Oct. 2018.

²³ B. ELLSWORTH, *Special Report: In Venezuela, new cryptocurrency is nowhere to be found*, in Reuters, 2018. Available at <https://www.reuters.com/article/us-cryptocurrency-venezuela-specialreport/special-report-in-venezuela-new-cryptocurrency-is-nowhere-to-be-found-idUSKCN1LF15U>. Accessed 18 Oct. 2018.

²⁴ N. SMITH, *Cambodia expected to follow Venezuela with plans for a national cryptocurrency*, in The Telegraph, 2018. Available at <https://www.telegraph.co.uk/news/2018/03/06/cambodia-expected-follow-venezuela-plans-national-cryptocurrency/>. Accessed 18 Oct. 2018.

²⁵ P. VALENTE, *supra* note 12.

from July 2018²⁶. Most importantly, the Financial Action Task Force is expected to conclude on global standards to address the anti-money laundering risks inherent in crypto-currencies, following respective call by the G20²⁷.

While the above approach on anti-money laundering seems to be shared around the world, the regulatory initiatives differ as regards a number of other concerns. An illustrative example is taxation of transactions in virtual currencies and relevant business activities. Certain jurisdictions, such as the US, define and tax virtual currencies as property, since 2014²⁸. Japan and Australia have endorsed the same tax approach to virtual currencies²⁹. In the EU, important clarifications have been provided by the Court of Justice, in a 2015 judgement regarding VAT (Value Added Tax) treatment of transactions for the exchange of virtual currencies³⁰. The Court held that such transactions are exempt from VAT, assimilating them to transactions for the exchange of traditional currencies. Hence, for the EU virtual currencies are not taxable as property.

3.3. *Other Regulatory Initiatives*

As mentioned under 2 above, virtual currencies constitute a mere sample of the potential inherent in blockchain technology. Such potential is being gradually unveiled, mainly for the purpose of facilitating the transfer of value of all types – and not only as money. Not surprisingly, the international arena starts to gradually see regulators evaluating their stance in relation to other uses of blockchain, apart from virtual currencies.

The regulatory initiatives focused on non-currency related blockchain applications or on the underlying algorithm itself are still hesitant – and justifiably so. Such applications are still under development; their implications are still unknown and only partially conceivable. As a result, relevant initiatives include mainly measures and/or tax regimes to favor the flourishing of the new technology. Any initiatives are in principle not coordinated but promoted at national – or even local – level.

Remarkable steps have been taken in this regard by the United Arab Emirates (UAE) and Saudi Arabia. Specifically, UAE has adopted the Emirates Blockchain Strategy 2021³¹ with a view to substituting an important part of government functions with blockchain applications. To this end, the constitution of a dedicated council has been provided that will execute the project. At the same time, UAE is cooperating with Saudi Arabia in order to enable international payments on

²⁶ Directive (EU) 2018/843 amending Directive (EU) 2015/849, and amending Directives 2009/138/EC and 2013/36/EU, OJ L 156, 19.6.2018, pp. 43-74.

²⁷ J. CONBOYE and H. MURPHY, *Global standard for cryptocurrency anti-money laundering to be agreed*, in *Financial Times*, 2018. Available at <https://www.ft.com/content/1a67f6b2-bbf7-11e8-94b2-17176fbf93f5>. Accessed 18 Oct. 2018.

²⁸ US Internal Revenue Service Notice 2014-21.

²⁹ P. VALENTE, *supra* note 12.

³⁰ *Skatteverket v David Hedqvist*, C-264/14 (CJEU, 22 Oct. 2015).

³¹ The Official Portal of the UAE government, Emirates Blockchain Strategy 2021. Available at <https://government.ae/en/about-the-uae/strategies-initiatives-and-awards/federal-governments-strategies-and-plans/emirates-blockchain-strategy-2021>. Accessed on 18 Oct. 2018.

blockchain³². In terms of regulation, both countries seem keen to adopt blockchain friendly regimes in order to boost development in their territories³³.

A similar encouraging attitude for blockchain technology development seems to be prevailing in Switzerland and in particular in Zug. The canton has already allowed payment for public services in virtual currencies, while it recently conducted the first blockchain enabled e-voting in the local elections³⁴. In addition, it has established favorable tax rules for blockchain start-ups in order to attract relevant investment and most importantly in order to boost development, use and integration of such technology locally³⁵.

The EU is also competitive in this regard. In April 2018, 22 Member States signed a Declaration for the establishment of the European Blockchain Partnership³⁶ that will function as the framework for the joint building of blockchain infrastructure in the EU. The Declaration sets out the next steps for the pursuit of this purpose, including:

- constitution of a group of representatives assigned by each Member State,
- indication of areas where use of the blockchain could be most beneficial,
- outlining of technical specifications.

The Partnership may be expected to favor avoidance of fragmentation in relation to the approach of blockchain-related issues in the Single Market, promoting its leading position in this respect. An EU Blockchain Observatory and Forum was established in February 2018³⁷.

4. *Remarks*

4.1. *Introduction*

At the present stage, the potential of the blockchain technology is gradually developing and the eyes are on the new applications and their uses, on innovation and its stimuli, on the coordinates of a jurisdiction that can attract and boost blockchain entrepreneurship. Trying a guess of the future, though, the changes the new structure shall bring to the society, the uncertainties, the question-marks, the

³² The Bank of England (BoE) is moving in the same direction, targeting to set in motion from 2020 an update to its system, permitting its connection with blockchain firms and thus enabling settlement in advanced technology systems. Cf. J. SALMON, *Bank of England confirms renewed payments systems will interface with blockchain*, 2018. Available at <https://www.lexology.com/library/detail.aspx?g=c664dbc7-878f-4372-980e-66ef1bcdaa0b>. Accessed on 19 Oct. 2018.

³³ Intellectsoft, *Blockchain Regulation: Technology Is Welcomed, Cryptocurrency Regulated*, 2018. Available at <https://www.intellectsoft.net/blog/blockchain-government-regulation/>. Accessed on 18 Oct. 2018.

³⁴ M. ALLEN, *'Crypto Valley' Zug to trial blockchain voting*, 2018. Available at https://www.swissinfo.ch/eng/sci-tech/system-test_-crypto-valley--zug-to-trial-blockchain-voting/44177440. Accessed on 18 Oct. 2018.

³⁵ Intellectsoft, *supra* note 33.

³⁶ Until October 2018, other 4 Member States have signed the Declaration. Cf. European Commission, Digital Single Market, *European Countries Join Blockchain Partnership*, 2018. Available at <https://ec.europa.eu/digital-single-market/en/news/european-countries-join-blockchain-partnership>. Accessed on 18 Oct. 2018.

³⁷ European Commission, *supra* note 36.

action plans, the failures, the successes, the integration are revealed. The virtual currencies' pattern may be reasonably expected to be repeated in the blockchain case: the more the expansion, the more the regulatory reaction. The key challenge is always to learn from the past.

4.2. *Lessons from Bitcoin*

The bitcoin is computing its first decade: in scientific and technological terms it is fully grown up - even old. In terms of actual use and regulation, though, it is still in its infancy. Although its advantages and disadvantages are the same from its first public appearance in 2009³⁸, it is only in the last couple of years that its use is spreading. Equally, it is only in these last years that regulators and policy-makers have started taking serious steps to understand its mechanics and evaluate the outline of an appropriate regulatory framework³⁹. Yet, the prevalent stance amongst regulators seems to be still abstinence from adoption of rules as long as the use of bitcoin and virtual currencies does not pose a threat for the stability of the financial system⁴⁰.

The aforementioned hesitant – or ignorant? - regulatory reaction to the bitcoin proposal during the first ten years of its appearance has produced or at least contributed to the existing status:

1. Bitcoins and virtual currencies are currently widely used as a means of investment and potentially speculation, especially by persons with high expertise in communication technologies;
2. The largest part of the modern society rejects the use of bitcoins and virtual currencies⁴¹, due to lack of trust; hence, the use of bitcoin as money is still limited and generates fear;
3. Evidently bitcoin and virtual currencies have been used for money laundering activity, which led several countries extending their anti-money laundering legislation accordingly;
4. The rules actually adopted by certain countries as response to the bitcoin phenomenon are fragmented from an international perspective⁴²; they range from prohibition to acceptance while there is no concrete line of treatment in tax terms;
5. A so-called crypto-havens phenomenon seems to be on the rise, with several small countries adopting targeted legislation to attract the taxable base of crypto-currency enterprises⁴³.

The above-described current situation seems to be in conflict with two key, broadly acknowledged characteristics of virtual currencies.

³⁸ S. NAKAMOTO, *supra* note 11.

³⁹ P. VALENTE, *supra* note 12.

⁴⁰ H. JONES, *EU says stands ready to regulate crypto-currencies*, Reuters, 2018. Available at <https://www.reuters.com/article/us-crypto-currencies-eu/eu-says-stands-ready-to-regulate-crypto-currencies-idUSKCN1GA1Q3>. Accessed on 23 Oct. 2018.

⁴¹ R. ALI, J. BARRDEAR, R. CLEWS, and J. SOUTHGATE, *The Economics of Digital Currencies*, 54 The Bank of England Quarterly Bulletin 3, 2014.

⁴² A. BORRONI, *A Fuzzy Set in the Legal Domain: Bitcoins According to US Legal Formants*, in *Bitcoin and Mobile Payments, Constructing a European Union Framework*, (ed.) G. GIMIGLIANO, Springer, 2016.

⁴³ N. POPPER, *supra* note 22.

Firstly, virtual currencies are by definition global. They are not meant to be used in a limited territory and they cannot be restricted in space; they are digital currencies and their space is the Internet and all the spaces/places it connects. Borne to serve cross-border exchanges, virtual currencies must be dealt with as such⁴⁴. In other words, virtual currencies demand international regulatory responses; fragmented national rules cannot claim to effectively control the phenomenon.

Secondly, virtual currencies have promised to revolutionize the way of transacting and there seems to be no question that they can do so⁴⁵. Users do not need to refer to any financial institution or other intermediary to warrant the validity of their transaction; unknown persons can securely transact with one another at almost zero time, regardless of location.

But if technology accomplished its mission bringing revolution, there is a real risk that the society as a whole does not live it and does not enjoy its benefits or - most probably does with important delay. The reason is that ten years after its launch, the bitcoin cannot be used as a means of payment, since it generates mistrust for the majority of its potential users. Hence, despite the fact that there is convergence regarding the important advantages of virtual currencies and the need to exploit them⁴⁶, the existing uncertain framework is strong enough to postpone the revolution.

At the same time, a new parallel world – haven-like – seems to be under construction around virtual currencies. As mentioned above, some countries have introduced targeted regimes to favor the virtual currency business. Recalling the harmful tax practices' case is unavoidable: targeted favorable legislation is the first step, regulatory competition comes next along with a serious risk to awake a race to the bottom, which is magnified where the international framework is fragmented. An immense international project was put in place to remedy the chaos in the case of harmful tax practices and the results are still to be seen⁴⁷. Hopefully, the story shall not be repeated – even if at present the similarities are alarming.

4.3. *Making the Case for Blockchain*

Beyond virtual currencies, infinite other applications of the blockchain technology are being explored and gradually implemented, while the underlying algorithm is still under development. In this case, the regulatory framework is even more immature. However, in light of the rapid evolution of the technology and its increasing use in practice, it is high time that the introduction of rules, if any, is seriously considered.

The first decision to take is whether there is need and margin for legislative intervention. Such a decision must also be taken by policy-makers, in an informed

⁴⁴ K. TU and M. MEREDITH, *Rethinking Virtual Currency Regulation in the Bitcoin Age*, 90 *Washington Law Review*, 2015.

⁴⁵ D. SIRILA, *The Pleasures and Perils of New Money in Old Pockets; M-PESA and bitcoin in Kenya*, Written Work Requirement for the Fulfillment of LL.M. Programme in Harvard Law School, 2014.

⁴⁶ IMF Staff Discussion Note, *Virtual Currencies and Beyond: Initial Considerations*, SDN/16/03, 2016. Available at <https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2016/12/31/Virtual-Currencies-and-Beyond-Initial-Considerations-43618>. Accessed on 23 Oct. 2018.

⁴⁷ P. VALENTE, *Taxless Corporate Income: Balance Against White Income, Grey Rules and Black Holes*, 57 *ET* 7, 271, 272, 2017.

and reasoned manner. It may well be the case that the market forces are more appropriate to act as legislators. There are many arguments in favor:

(i) the market has the privilege of knowledge in relation to legislative bodies; the market lives the development and can react faster;

(ii) the market has proven more flexible than any other regulator and therefore more suitable to stimulate innovation, entrepreneurship, growth; the new technology demands flexible rules to flourish⁴⁸;

(iii) in the context of globalization, the market is genuinely a global regulator – the most global regulator of our times – and hence in a better position to set the rules for an intrinsically global phenomenon, such as the blockchain and its applications.

Yet, leaving the regulatory task to the market is per se a policy decision, which requires delicate evaluations.

In this respect, it must be taken into account that in the case of virtual currencies, the absence of a concrete regulatory framework may be one of the causes of their limited use as compared to their potential. The majority of the billions of potential users insist on known types of transactions, rejecting to exchange their fiat money with virtual currencies. There is uncertainty and uncertainty is development-adverse. A clear regulatory stance could potentially contribute to exploit the advantages of the new money and use them for growth.

Furthermore, the main revolution the blockchain technology is preaching relates to the role of intermediaries in a number of transactions. Financial institutions are not necessary for financial transactions, public registries are not necessary for real estate transfers, smart contracts can be executed by themselves. Yet, if traditional intermediaries are losing their role, a new type of intermediaries seems to be emerging: the ones behind the blockchain. The new activity has to be put into context, classified, connected with responsibilities and liabilities. This might not be a task for the market.

Moreover, the blockchain technology has certain uniquely intense characteristics, such as the margin for anonymity and the genuine a-territoriality, which require careful assessment before being left to the discretion of the market. In fact, regardless of whether the market has been proven an effective global regulator over time, this is the first time to deal with not-identifiable subjects. Equally, it is the first time that a technology or an application is totally detached from any national territory: they do not have to account to any national authority. In total absence of effective accountability, it is highly doubtful that the market forces can provide a fair and sustainable framework. There has been no such experience until today.

Introducing a regulatory framework or not cannot be a decision of a national legislator. No national legislator has a real power to implement such a decision. Each blockchain application is one more step towards globalization and towards independence from the state. Each new use is a new denial of the reference to third parties as guarantors of the events taking place at a given time and a given place. This has been one of the most important roles of states and their executive authorities until today and it is not necessary any more or at least it is less necessary. And where the role of the state fades, national borders lose relevance and globalization walks over. From this viewpoint, blockchain is purely global and may only be regulated as such, not by national regulators in a fragmented manner but by a global regulator with global authority.

⁴⁸ O. MARIAN, *A Conceptual Framework for the Regulation of Cryptocurrencies*, in 82 *University of Chicago Law Review Dialogue* 53, 2014.

5. *Conclusion*

Summing up, this paper centred on blockchain technology, its mechanics and its potential, looking at basic applications, already used or currently under implementation. The innovation of such technology seems capable to bring new social revolutions and gives rise to a series of questions, amongst others of regulatory interest. In this respect, a sample of the approaches that have been taken by regulators and policy makers around the world were studied in an effort to set out the current situation. Although it might be too early to outline a regulatory framework for a still developing technology, it was submitted that there are past experiences that could be the source of valuable lessons regarding the main features of any framework to be constructed.

This paper was inspired from the intense conflict the modern society is undergoing, in-between an unstoppable globalization and intensifying and spreading nationalist attitudes. Uncertainty seems to be at the root of the conflict, uncertainty sparked by continuous changes at an unprecedented pace rendering adjustment a survival race. This uncertainty needs to be addressed if the conflict is to be overcome. To this end, constructing a framework for the new technologies and their applications and potentially for the ongoing change is a key step. To this end, at this stage, the focus should be on past mistakes that should be exploited for the formulation of the questions to be answered to set the context.

In any case, setting the regulatory context shall not be sufficient. The society needs to be prepared to understand the rules of the game to play by them. A culture of change is needed to allow us to live in the world of the digital revolution and of every new revolution to come. It is transparent and substantial communication, dialogue and involvement that the society needs as well as the method to master the affluence of information for good purpose.

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