

Bitcoin and Virtual Currencies Are Real: Are Regulators Still Virtual?

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While the bitcoin is reaching all pockets and headlines, the regulatory debate is also at its peak. Following brief analysis of the blockchain mechanism, this article focuses on the regulatory approaches taken in the EU as well as in single Member States and third countries around the world. Regulatory intervention seems to be appropriate and could build on the points of convergence of national and international policy makers.

I INTRODUCTION

It is already ten years that the bitcoin is on the market; and twenty years from the primary conception by Wei Dan of a currency exploiting cryptography.¹ Yet, only today is the bitcoin on the main headlines of daily newspapers and TV newscasts all around the world and its value fluctuations closely monitored on a number of websites.² If a couple of years ago virtual currencies³ were a topic for policy-making elites, nowadays they have reached all classes, irrespective of profession and interests.

The virtual currency market is evolving with the speed of light.⁴ This should not be a surprise though, taking into account the parallel ongoing development of digital economy. Both, virtual currencies and digital economy⁵ provoke concerns, mainly due to the lack of information, while they also contain the promise of an infinite and innovative potential. The technology behind Bitcoin,

blockchain or digital ledger technology, is in fact expected to overhaul the way transactions are performed and records are kept.

Yet, what is certain at this stage is that society, business and authorities are facing a completely new reality, a peer-to-peer virtuality, often without any ruling authority as point of reference.⁶ We need to familiarize ourselves with these new forces and learn how to exploit them as best as possible. We need to understand them thoroughly and learn how to trust them. And for this purpose we have to find answers to the questions they raise, or at least start doing so. For example, it must be clarified (1) whether market forces can sufficiently direct the emerging virtual communities, or are external rules needed, (2) whether it is possible to enforce any rules in a virtual world, (3) whether or not there should be (virtual) tax for totally or partially virtual transactions and virtual money.

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¹ Wei Dan presented already in 1998 such a type of currency. Cryptography would substitute central banks with respect to the issuance and circulation of this new money, rendering unnecessary the supervision by any single authority. See Bitcoin: Frequently Asked Questions, <https://bitcoin.org/eng/faq> (accessed 22 Jan. 2018).

² The evolution in the meantime can be illustrated in the background story of the Bitcoin Pizza Day, celebrated every 22 May. On that day, in 2010, Laszlo Hanyecz purchased 2 pizzas, paying 10,000 bitcoins. It was the first purchase of real, tangible value with bitcoin, and hence a landmark in its virtual history. After 8 years, such transaction would be unconceivable, since no one would pay what equals to around EUR 73,600,000 (value as of 11.05.2018, according to Coindesk) for a pizza (or two). Cf. G. Caffyn, *Bitcoin Pizza Day: Celebrating the Pizzas Bought for 10,000 BTC*, <https://www.coindesk.com/bitcoin-pizza-day-celebrating-pizza-bought-10000-btc/> (accessed 1 Feb. 2018).

³ The European Banking Authority has defined virtual currencies as 'digital representation of value that is neither issued by a central bank or public authority nor necessarily attached to a fiat currency (FC), but is accepted by natural or legal persons as a means of exchange and can be transferred, stored or traded electronically'. See European Banking Authority, *Opinion on Virtual Currencies*, EBA/Op/2014/08, 10 (2014). Cryptocurrencies, such as the Bitcoin, are a sub-category of virtual currencies that use cryptography for the creation of new currencies and the control of transactions, enabling a decentralized transactions system. See Paul Vigna & Michael J. Casey, *Cryptocurrency: The Future of Money?* 42 (Random House 2016).

⁴ For further analysis see Piergiorgio Valente, Ivo Caraccioli, Giampiero Ianni & Michele Vidoni, *Riciclaggio e Criminalità. Idra per gli Stati, Sisifo per la Società, Nesso per gli Organismi Sovranazionali* (Eurilink University Press 2017).

⁵ For further analysis of the concerns arising in connection with digital economy and relevant business models, see P. Valente, *Digital Revolution. Tax Revolution?*, 72(4a/Special Issue) BIT (2018).

⁶ The existence of a real virtual world is evidenced by the so-called Bitnation, where sovereignty is claimed to be shifting from State to Citizen; see S. Tarkowski Tempelhof, *Bitnation, Pangea Jurisdiction and Pangea Arbitration Token (PAT)*, *The Internet of Sovereignty*, <https://tse.bitnation.co/> (accessed 12 Feb. 2018).

In light of the above, the present article seeks to approach the world of virtual currencies and its vague limits and to identify some principles for the tailoring of solutions. To this end, the text is structured in 6 sections. Section 2 focuses on the Bitcoin phenomenon, as the most diffused virtual currency, and its mechanics. Section 3 provides an overview of the regulatory approaches to virtual currencies in the EU. Section 4 concentrates on unilateral approaches taken in different jurisdictions around the world. Section 5 seeks to identify points of convergence of the various policies in order to use them as basis for the design of new rules. Finally, section 6 summarizes the above concluding that the absence of concrete regulation of virtual currencies should be urgently remedied on an international scale.

2 THE BITCOIN PHENOMENON EXPLAINED

2.1 Understanding the Bitcoin Mechanism

The creator of the Bitcoin, Satoshi Nakamoto,⁷ defines it as ‘peer-to-peer electronic cash system’ in the Bitcoin Whitepaper,⁸ by virtue of which the Bitcoin was introduced in 2009. The Bitcoin was developed to serve specific needs of a digitalized society and in particular the need to carry out online payments without referring to a financial institution or other third party. Today e-transactions and, in general, cashless transactions constitute a significant share of the total worldwide volume of transactions performed on a daily basis and such share is projected to see a continuous increase in the near future.⁹ Cashless payments require, in principle, a connection with the payer’s bank account, hence reference to a financial institution. Nevertheless, engagement of financial institutions (as well as of any other intermediary) is not costless. To the contrary, it is expensive in terms of time as well as due to the

application of transaction fees. As a result, transactions of small amounts are excluded from the scope of cashless payments and any advantages the latter imply.

Against this backdrop, the Bitcoin proposes a cashless payment system that is independent from financial institutions and any other intermediary. Instead of employing a trustworthy third party to guarantee transactions, the Bitcoin applies a kind of (complex) public registry (the aforementioned blockchain or digital ledger technology) of all bitcoin transactions of its users with an absolute chronological order.¹⁰ Privacy of the users and security of the transactions are ensured with the use of cryptography.¹¹ As a result, all actions are codified so as not to reveal any information, apart from the fact that they took place at a certain time.

It is worthwhile looking closer at the basics of the Bitcoin mechanism in order to capture its genuineness, promises and challenges. According to the Bitcoin Whitepaper, a bitcoin unit is a ‘chain of digital signatures’, like an e-check; its transfer is effected accordingly, i.e. through a (new) digital signature following the last one – by virtue of which the payer acquired the bitcoin.¹²

What distinguishes bitcoins from checks is the lack of physical form. This has been the main challenge in the creation of any virtual currency: to find a way to ensure that it has not and cannot be spent twice. Apart from a signature, the valid transfer of a physical check requires its handover to the next owner. This ensures that there is only one person that has the check at any time and by definition this is not an option in the case of virtual currencies.¹³ The digital nature of such a currency permits replication, making it transferable more than once;¹⁴ as such the whole system would thus end up being rather volatile and risky due to the wilful dishonesty or even involuntary mistake of any user.

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⁷ The name is widely believed to be a pseudonym. See S. Bearman, CNBC, *Bitcoin’s Creator May Be Worth \$6 Billion – But People Still Do Not Know Who It Is*, <https://www.cnbc.com/2017/10/27/bitcoins-origin-story-remains-shrouded-in-mystery-heres-why-it-matters.html> (accessed 24 Jan. 2018).

⁸ S. Nakamoto, *Bitcoin: A Peer-To-Peer Electronic Cash System*, <https://bitcoin.org/en/bitcoin-paper> (accessed 16 Jan. 2018).

⁹ Global non-cash transactions increased by 11.2% during 2014 and 2015, while they are expected to multiply by 10.9% on a global scale by 2020. See Capgemini and BNP Paribas, *World Payments Report 2017* 5 and 9, <https://www.worldpaymentsreport.com/download> (accessed 17 Jan. 2018).

¹⁰ It is not the first time in history of money that validity of transactions and respective transfer of money is ensured through public memory, instead of a reliable third party. Rai (or stone money) has served as currency for the Yap in Micronesia. Rai has the form of large circular disk and is carved from limestone. Its dimensions do not permit hand-to-hand transfer; as a result it can only be exchanged orally, while it always remains in the same place (one even at the bottom of the sea). The singularity of the transaction/truth of oral saying is however safeguarded since the chain of ownership of the Rai is recorded in oral history. The new owner is thus certified through their name being added to the (oral) chain. Contrary to the blockchain transactions, exchange of Rai is fully transparent and known to all, excluding privacy and confidentiality. Cf. M. Thoma, *Economist’s View, Yapping About Money: The Stone Money of Yap*, http://economistsview.typepad.com/economistsview/2005/09/yapping_about_m.html (accessed 8 Mar. 2018).

¹¹ If cryptography is in the heart of blockchain technology, its history as a method to shield communication from unreliable or hostile recipients long precedes the first computer. Some first traces are identified around 1,500 BC, in Mesopotamia, where a craftsman sought to codify his recipes. Some thousand years later the *Athab* system was used to encrypt messages through substitution of the letters: each letter was changed to the one that would be found in its position, were the alphabet reversed. This system has been used in various versions throughout the years, amongst which widely known is the so-called Caesar’s cipher. In essence, Caesar substituted each letter of the protectable message with the one following it in the Latin alphabet after three positions. Although there seems to be no evidence that this method ever betrayed Caesar, today it is considered rather unsafe. Cf. Khan Academy, *Journey Into Cryptography*, <https://www.khanacademy.org/computing/computer-science/cryptography> (accessed 8 Mar. 2018).

¹² To this end, all users of the Bitcoin system are required to have an account that generates such signature.

¹³ It must be noted that certain physical forms of bitcoins have been issued, such as ‘*Denarium*’; nevertheless they are not widely used. See Bitcoin, *supra* n. 1.

¹⁴ R. Ali, J. Barrdear, R. Clews & J. Southgate, *The Economics of Digital Currencies*, 54(3) Bank Eng. Q. Bull. 277 (2014).

In the Bitcoin scenario, the aforementioned enigma has been solved through a timestamping mechanism. Timestamping responds to the need to evidence that certain data existed at a certain time, i.e. that a given event took place on a given day, at given time. For the mechanism to be efficient, it must exclude subsequent alterations of the data or the date of the timestamp by anyone, including their creator. Thus, timestamping allows to record publicly in a definitive manner the sequence in the transfer of bitcoins and preclude double-transfers by the same owner.

Timestamping of bitcoin transactions evolves in two main steps. Firstly, each user has a special software, the timestamping server. For every transaction made from such user's bitcoin account, the timestamping server produces a unique code (hash)¹⁵ and publishes it so that it takes its (chronological) place in the blockchain.¹⁶ Hashing leads to one-way codification of the data, i.e. they cannot be de-codified. A transaction's place in the blockchain becomes definitive once the transaction is verified.

Verification constitutes the second step of timestamping and in Bitcoin terms is called mining. The process is performed by users (miners) that avail themselves of targeted advanced hardware and receive bitcoins as consideration for their services. Once the servers of the aforementioned users identify a new transaction in the blockchain they compete in scanning the blockchain to verify the history of the bitcoin(s) and the lack of a double transfer, solving a difficult mathematical problem.¹⁷ When this is verified and the problem is solved, the transaction in question becomes definitive, takes its place in the blockchain and is buried under the next transactions. Since verification is effected by an open number of miners and new coins are issued by virtue of the same procedure, the system is de-centralized and autonomous, independent from any third party.

Blockchain technology claims to basically preclude any possible cheating of the system. On the one hand, hashing shields the data. On the other hand, once a transaction is verified, it is memorized as such by the servers of the users

and is buried under the next transactions. Considering that the same blockchain is in the memory of all users, a transaction – along with all transactions that follow it – could only be changed by a server that would be more powerful than all others that remember the transaction together. Even if that were possible, such powerful user would be in a position to acquire so many bitcoins through mining that it would be irrational to opt for cheating instead of playing by the rules.

2.2 Interim Conclusions

The bitcoin, virtual currencies and the blockchain in general, constitute a technological masterpiece with an important potential that can be projected beyond the field of payments. Their fast evolution makes harder their appropriate regulation. In addition, already at the current stage, there is a number of regulatory challenges. Decentralization means absence of any one body accountable for what takes place in the system, i.e. regulators must identify the subject of the rules, to whom any rules shall be addressed. In addition, they must agree on who is the proper regulator. Virtual currencies can circulate everywhere the Internet reaches, i.e. potentially to all jurisdictions, which shall be equally tempted to produce regulation. In any case, as shown in the above analysis, the Bitcoin system functions on the basis of a number of new economic activities, such as mining and virtual currency exchange, on which there are no legislative and tax precedents.

3 EU REGULATORY FRAMEWORK OF VIRTUAL CURRENCIES

3.1 Introductory Remarks

The Bitcoin is today the most important virtual currency with a 90% share of the relevant market.¹⁸ According to the most recent data, the market value of outstanding bitcoins is assessed at USD 191,530,010,992 while from

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¹⁵ It is worth noting that hashing – key notion for the function and security of the Bitcoin system – uses an algorithm for the generation of prime numbers. A first type of such an algorithm is attributed to the ancient Greek mathematician Eratosthenes: the so-called sieve of Eratosthenes, dated back in 250 BC. Eratosthenes presented in essence a formula that permits identification of all prime numbers preceding any given number-limit. Although ingenious at its time, the sieve of Eratosthenes would be too slow for the current needs. However, it has provided an invaluable departing point for the development of the science of mathematics, today called to guard the integrity of the new currency. See F. Macdonald, Science Alert, *An Ancient Greek Algorithm Could Reveal All New Prime Numbers*, <https://www.sciencealert.com/an-ancient-greek-algorithm-could-be-the-key-to-finding-new-prime-numbers> (accessed 8 Mar. 2018).

¹⁶ Timestamping leads to primary encryption of a transaction (message) through attribution of codified identity. The term cryptography was borne in ancient Greece from the words κρυπτο- (meaning secret) and γραφο (meaning write), although Greeks did not invent cryptography. In ancient Greece cryptographic techniques were widely used, such as the Spartan skytale (dispatch-scroll). Its function was explained by Plutarch: each party of the communication had a round piece of wood, the pieces being identical; the message was written on a parchment cut like a strap so that it could be rolled around the wood; the sender would roll the parchment to write the message and unroll it to send it while the receiver would roll it back to read. Ancient Greeks used also other methods – distinctive from cryptography – to protect their communications, e.g. steganography. The difference lies with the fact that in steganography the message is plainly readable but tricky to be found. By way of an example, Herodotus recorded Histiaeus to have written a message on the scalp of his servant, sending it out once the hair were grown back. See M. Djekic, Australian Science, *A Skytale – Cryptography of the Ancient Sparta*, <http://www.australianscience.com.au/technology/a-scytale-cryptography-of-the-ancient-sparta/> (accessed 8 Mar. 2018); G. Kessler, *An Overview of Steganography for the Computer Forensics Examiner*, 6 FSC 3 (2004).

¹⁷ See D. Sirila, *The Pleasures and Perils of New Money in Old Pockets*, Work Requirement for LL.M. Program, Harvard Law School, 14 (2016).

¹⁸ European Parliament, *Report on Virtual Currencies*, 2016/2007(INI), 5 (2016).

a sector-wide perspective more than 1,400 different virtual currencies are recorded.¹⁹ Despite the high numbers, there is no concrete regulatory framework of virtual currency systems, Bitcoin included, at international level, partly due to the significant challenges they present, as mentioned above. However, they are increasingly attracting the attention of policy makers. In this respect, several efforts may be discerned towards the clarification of the status of virtual currencies at EU and unilateral level.

3.2 EU Single Market

In the EU context, a first formal approach to the virtual currency problem was made by the European Central Bank (ECB) in 2012,²⁰ i.e. three years after the Bitcoin was launched. In the respective paper the ECB acknowledged the lack of legal framework as a distinctive feature of such currencies,²¹ to which a number of other qualities were attributed. By way of an example, the conversion from virtual to traditional currencies is directed by market forces. Looking at EU legislation, the ECB considered that the Electronic Money Directive²² and/or the Payment Services Directive,²³ as in force, do not apply to virtual currencies. As regards risks in connection with virtual currencies, the ECB saw no noteworthy risk in terms of price, financial and payment system stability at that stage. It noted though that this could change in case of expansion of virtual currencies and therefore close monitoring was strongly recommended. In this context, the ECB put on the table the question of regulation, suggesting in particular the registration of virtual currency schemes' owners as financial institutions.²⁴

Two years after the above ECB paper, in 2014, the debate on the appropriate approach to virtual currencies became more intense, involving also other EU institutions.²⁵ The main question-marks were underlined by the European Parliamentary Research Service (EPRS) in early 2014 in relevant briefing.²⁶ Specifically, the EPRS brought forward once again the pressing issue of lack of regulation, distinguishing two different questions. Firstly, it was arguable whether

rules could be effectively introduced within virtual currency schemes, or their enforcement would in any case be impossible. Secondly, a decision should be made on whether any regulatory steps should lie in the extension of existing EU legislation or in the production of new rules.

Most importantly, 2014 saw the landmark Opinion of the European Banking Authority (EBA) on Virtual Currencies, also seeking to respond to the key question on regulation.²⁷ Following an extensive examination of the risks connected to virtual currencies as well as of their potential benefits, the EBA concluded in favour of specific regulation.

Taking a long-term perspective, the EBA provided a detailed outline of the potential regulation. Main purpose should be the prevention of the use of virtual currencies for illegal purposes by introducing accountability and reducing the margin for anonymity. Simultaneously, consumers' privacy, transactions' security and availability of remedies in case of failures should be ensured by imposing basic obligations on users of virtual currencies. To this effect, EBA recommended a series of measures including (1) establishment of specific (even decentralized) authority responsible for each virtual currency on the market, (2) some identification of consumers by other participants of virtual currency schemes, e.g. exchange service providers, (3) application of rules against market manipulation and insider dealing, (4) introduction of minimum capital requirements, (5) provision of evidence on information technology (IT) systems' security etc. EBA also stressed that an optimal regulatory approach should build on global consensus, taking into account that virtual currencies have by definition a global reach.

Considering that a complete and concrete legal response to virtual currencies needs time, EBA comprised in its Opinion some short-term actions. In this respect, EBA recommended the creation of disincentives for financial institutions, i.e. credit, payment and e-money institutions, to involve in virtual currencies, e.g. in their exchange. Such measure would minimize the interaction between the traditional financial services

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¹⁹ Coinmarket, *Cryptocurrency Market Capitalizations*, <https://coinmarketcap.com/> (accessed 22 Jan. 2018).

²⁰ European Central Bank, *Virtual Currency Schemes* (2012).

²¹ ECB defined virtual currency schemes as 'unregulated, digital money'. See European Central Bank, *ibid.*, at 13.

²² Directive 2009/110/EC of 16 Sept. 2009 on the taking up, pursuit and prudential supervision of the business of electronic money institutions amending Directives 2005/60/EC and 2006/48/EC and repealing Directive 2000/46/EC [E-Money Directive], OJ L 267 (2009).

²³ Directive 2007/64/EC of 13 Nov. 2007 on payment services in the internal market amending Directives 97/7/EC, 2002/65/EC, 2005/60/EC and 2006/48/EC and repealing Directive 97/5/EC, OJ L 319 (2007), already substituted by Directive (EU) 2015/2366 of 25 Nov. 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC, OJ L 337 (2015).

²⁴ European Central Bank, *supra* n. 20, at 44.

²⁵ In addition to the EU institutions, the discussion involved local authorities, such as the Bank of England and the OECD. See Ali et al., *supra* n. 14, at 277; A. Blundell-Wignall, *The Bitcoin Question: Currency versus Trust-Less Transfer Technology*, OECD Working Papers on Finance, Insurance and Private Pensions (2014).

²⁶ European Parliamentary Research Service, *Bitcoin: Market, Economics and Regulation*, Briefing, 7 (2014).

²⁷ See European Banking Authority, *supra* n. 3.

sector and virtual currencies, thus contributing to the shielding of the former from any undesired developments in the latter. Furthermore, EBA favoured the extension of the subjective scope of the EU anti-money laundering legislation²⁸ to virtual currency exchange service providers. It stressed though that other EU legislation, such as the aforementioned E-Money Directive, should not be extended to virtual currencies, because the latter were materially different from the means of payment regulated thereunder.

In spite of EBA's detailed proposals, the European Commission did not take any corresponding action²⁹ immediately. As a result, the regulatory vacuum remained, being clarified step by step, driven by factual developments. In such context, the next important step came with the decision by the EU Court of Justice (ECJ) on a case regarding taxation of bitcoin exchange services.³⁰ The ECJ classified transactions for the exchange of bitcoins with traditional currencies for a given fee as 'supply of services for consideration' within the scope of the VAT Directive.³¹ On this premise the Court went on to find such services exempt from VAT, holding the respective transactions as financial transactions.³² As a result, the ECJ saw bitcoin exchange services as equal to exchange services for traditional currencies from the perspective of VAT treatment,³³ outlining thus the approach to be adopted by Member States in this respect.

The above ECJ decision inspired further clarifications by the VAT Committee of the European Commission in early 2016.³⁴ Such Committee examined the application of the VAT Directive on a range of activities concerning the bitcoin, departing from its recognition by the ECJ as means of payment. In the case of goods or services

supplied for price paid in bitcoin, VAT would apply to the supply transaction taking into account the equivalent value in traditional currency of the price in bitcoin.³⁵ No VAT would apply to the value of bitcoins *per se*. In the case of digital wallet services, VAT would in principle not apply, since they are not provided for consideration.³⁶ As regards mining activities (analysed above under section 2.1), the application or not of VAT seems arguable due to the special nature of the consideration, where required. In any case, should mining services be held to fall under the scope of the VAT Directive, they would be exempt as transactions concerning both currency and payments.³⁷ Finally, VAT should be considered applicable to intermediation services, i.e. where an online platform functions as a forum for the interaction and supply of services between and/or among its users.

Following up on the above, mid-2016 saw the long-awaited proposal of the European Commission to extend the scope of the Anti-Money Laundering Directive (AMLD) to virtual currencies.³⁸ Such proposal was finally adopted at the end of 2017.³⁹ Hence from 2019 – when the amended AMLD is expected to enter into force – respective obligations regarding anti-money laundering shall apply to (1) virtual currency exchange and (2) digital wallet service providers.

In the meantime, basing its stance on the discussion of the aforementioned Commission's proposal, the European Parliament has made further suggestions. Specifically, it proposed the establishment of a Task Force on Digital Ledger Technologies to monitor the developments in the area of virtual currencies, develop corresponding expertise and contribute to the optimal exploitation of the new opportunity. It also underlined the global reach and

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²⁸ Directive (EU) 2015/849 of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No. 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC [AMLD], OJ L 141 (2015).

²⁹ European Central Bank, *Virtual Currency Schemes – A Further Analysis* 32 (2015). It must be noted however that the Commission is always monitoring the relevant developments, as is evident in a series of working papers released, such as No. 811 and 854. In addition, the Joint Research Centre published its 2015 Report '*The Digital Agenda of Virtual Currencies*'. Such Report focused on the Bitcoin and sought to identify any features that could impede the expansion of its use as currency.

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

³¹ Council Directive 2006/112/EC of 28 Nov. 2006 on the common system of value added tax [VAT Directive], OJ L 347 (2006).

³² The ECJ stressed that 'In the case in the main proceedings, it is common ground that the "bitcoin" virtual currency has no other purpose than to be a means of payment and that it is accepted for that purpose by certain operators', following the opinion of Advocate General Kokott.

³³ On the risk of uncertainty that might arise from *Hedqvist* seen in the light of the various definitions of the term currency that have been given in EU and international context, see C. Trenta, *Bitcoin and Virtual Currencies. Reflections in the Wake of CJEU's Bitcoin VAT Judgement*, 4 Tax L.Q. (Giappichelli Editions 2016).

³⁴ European Commission, DG TAXUD, Value Added Tax Committee, Working Paper No. 892, *Issues Arising From Recent Judgments of the Court of Justice of the European Union*, taxud.c.1(2016)689595 – EN, (2016).

³⁵ The VAT Committee clarified that VAT would be calculated taking into account the equivalent value in 'the currency of the Member State where the supply takes place [...] at the time when the transaction takes place'. As regards conversion mechanisms, the VAT Committee considered application of the mechanism used for conversion with traditional currencies of non EU Member States (Art. 91(2) of the VAT Directive), acknowledging though that there were practical difficulties in the bitcoin case. See European Commission, *ibid.*, at 5.2.2.

³⁶ Digital Wallet services were deemed to include services permitting 'users to hold their virtual currency accounts, keep a record of their balances and interact with other users'. They may be conceived as digital bank accounts, offering something similar to e-banking services. According to the VAT Committee, where such services are provided for a fee, they would fall within the scope of the VAT Directive but would be exempted as financial transactions (Art. 135(1)(e)). See European Commission, *ibid.*, at 5.2.3.

³⁷ See VAT Directive, *supra* n. 31, Art. 135(1)(d) and (e).

³⁸ European Commission, *European Commission Strengthens Transparency Rules to Tackle Terrorism Financing, Tax Avoidance and Money-laundering*, Press Release IP/16/2380 (2016).

³⁹ EU Council, *Money Laundering and Terrorist Financing: Presidency and Parliament Reach Agreement*, Press Release 794/17 (2017).

interdisciplinary character of virtual currencies, and block-chain technology in general, as of the utmost importance for any regulatory initiatives.

Apart from the AMLD amendment, the EU has not taken more concrete action on virtual currencies until today. In this light and under the pressure of a continuously evolving virtual market, several Member States have sought to respond to the challenges at national level. Unilateral measures are being taken also by non-EU countries.

4 UNILATERAL MEASURES ON VIRTUAL CURRENCIES

Unilateral measures adopted at state-level were classified by the ECB in 2016 in 4 main categories,⁴⁰ which in principle seem to be still applicable today:

- (1) clarifying statements, mainly on the legal status of virtual currencies as well as on their proper taxation;⁴¹
- (2) warning statements on the risks engendered by transactions with such currencies;⁴²
- (3) establishment of requirements, especially in terms of authorization/licensing, for the provision of services related to virtual currencies or other regulation;⁴³
- (4) prohibition of specific activities when involving virtual currencies.⁴⁴

Depending on their policy goals and administrative capacity, different countries adopt different measures. It is worth however exploring further the attitude of certain advanced jurisdictions that have shown an early legislative interest on the matter. Such jurisdictions include Italy, US, Australia and Japan. Their experience could provide a useful reference point for other jurisdictions as well as

international and supranational organizations seeking to formulate their position.

To begin with Italy, it has not recognized virtual currencies as legal tender. Nevertheless, since 2017, virtual currency exchange service providers are subject to the national legislation on anti-money laundering.⁴⁵ Most importantly, a proposal to introduce notification obligations for such service providers is currently under consideration.⁴⁶ With respect to the tax area, the Revenue Agency provided important clarifications on the taxation of bitcoin exchange activities, in 2016, following a request for a tax ruling.⁴⁷ The clarifications made are fully aligned with the ECJ indications in *Hedqvist*. Bitcoin was approached as a peer-to-peer payment system based on a so-called *cryptovalore*, which serves as currency. Hence, in Italy, bitcoins are treated as means of payment (and speculation), similarly to foreign currencies. The Revenue Agency addressed the bitcoin both (1) in the context of professional activity (bitcoin exchange services) as well as (2) from the standpoint of individual users (non-business context). Regarding professional activities, the ECJ view⁴⁸ was repeated and then expanded to issues not considered by the ECJ, e.g. taxation of net income from provision of bitcoin exchange services.⁴⁹ Any part of the income that is in bitcoin is to be taken into account in the exchange value at the end of the relevant tax year.⁵⁰ From the perspective of individuals holding and using bitcoins privately, i.e. not in connection with business activity, there is no tax on capital gains, i.e. even upon exchange of the bitcoin with Euro. However, tax exceptionally applies in case of speculation, which is assumed if the individual holds bitcoins exceeding an equivalent of around EUR 51,000 for more than seven consecutive days within a year.⁵¹

At the other side of the Atlantic, in the United States, although national authorities showed an initial quick

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⁴⁰ See European Central Bank, *supra* n. 29, at 29. A slightly different classification with respect to jurisdictions' attitude towards bitcoin has been proposed by A. Borroni, who discerned (1) total lack of regulatory action (e.g. Greece), (2) regulation only from a tax perspective (e.g. UK), (3) recognition and regulation (e.g. Brazil) and (4) prohibition (e.g. China). See A. Borroni, *Bitcoins: Regulatory Patterns*, 32(1) BFLR 55 (2016).

⁴¹ Specifically, clarifying statements have been issued by the Finnish Central Bank and the German Ministry of Finance. Remarkably, the clarifications given are not aligned. Thus, the Bitcoin qualifies as financial instrument in Germany while not in Finland. See European Central Bank, *supra* n. 29, at 30.

⁴² Such warnings have been issued for example by the Central Banks of Germany, France, Belgium and the Netherlands. They focus on the risk virtual currencies might have in facilitating money laundering and terrorist financing as well as on the relevant lack of stability and supervision. See European Central Bank, *supra* n. 29, at 30.

⁴³ By way of example, authorization is required in Sweden as well as in France for virtual currency exchange services. On the other hand, other Member States, such as Denmark and Germany have clarified that, in principle, there is no licensing requirement for these services. See European Central Bank, *supra* n. 29, at 31.

⁴⁴ In particular, financial institutions and payment service providers may not be involved in Bitcoin transactions in China while the use of the Bitcoin is totally prohibited in Indonesia and Russia. In this regard, in 2014, the EPRS had observed that 'the most restrictive approach is in countries with strong capital controls'. See European Parliamentary Research Service, *supra* n. 26, at 7.

⁴⁵ IT: Decreto Legislativo 90/25 May 2017.

⁴⁶ IT: Ministry of Economy and Finance, Press Office, Communication n. 22/2 Feb. 2018 (Valute virtuali: in consultazione pubblica lo schema di decreto per censire il fenomeno).

⁴⁷ IT: Revenue Agency, Central Regulatory Department, Risoluzione 72/E/2 Sept. 2016.

⁴⁸ IT: Decreto del Presidente della Repubblica 633/26 Oct. 1972, Art. 10(1)(3).

⁴⁹ Income tax in Italy consists of (1) Corporate Income Tax (*Imposta sul Reddito delle Società – IRs*) applied at a 24% rate (in 2018) and (2) Regional Tax on Productive Activities (*Imposta Regionale sulle Attività Produttive – IRAP*) applied at a (general) 3.9% rate (in 2018).

⁵⁰ On this point it is also clarified that the exchange value can be calculated by reference to the average exchange price offered on the various websites.

⁵¹ IT: Decreto del Presidente della Repubblica 917/22 Dec. 1986, *Testo Unico sulle Imposte sui Redditi* (Income Tax Code), Art. 67(1)(c)ter and Art. 67(1)ter).

reaction to the virtual currency phenomenon, lately uncertainty – especially regarding taxation – seems to prevail. What is not questionable is that as commodity, virtual currencies fall within the scope of Commodity Exchange Act and the authority of Commodity Futures Trading Commission.⁵² Moreover, in terms of taxation, they are considered property, according to a 2014 Notice of the US Internal Revenue Service (IRS).⁵³ Thus, income tax rules apply to salaries and fees paid in virtual currency, pursuant to respective tax legislation and taking into account market value, while reporting rules for payments in property apply to payments in virtual currencies. On the other hand, the IRS has not issued any updates on the tax treatment of virtual currencies since 2014, despite the significant developments since that time and the recurrent requests it has received.⁵⁴ Indicatively, concerns have been expressed on the lack of official point of reference for the assessment of market value. Equally, tax treatment of virtual currencies as property seems to imply disproportionate administrative burden for taxpayers as to recording of transactions.

In contrast to the silence of the US, Australia took a number of steps to clarify its approach to virtual currencies in 2017, still not recognizing them however as legal tender.⁵⁵ With the purpose to address concerns on money-laundering through virtual currencies, the Australian legislative body included them in the scope of national anti-money laundering legislation, with effect from 2018.⁵⁶ Thus, exchange service providers shall need to register and comply with relevant obligations. As regards taxation, virtual currencies are regarded as property. Their tax treatment has been detailed in recently updated guidance regarding goods and services tax.⁵⁷ The Australian Taxation Office (ATO) has thus clarified that goods and services tax does not apply to virtual currencies. As a result, ATO addresses the problem of double taxation of transactions with such currencies. In any case, such transactions are subject to income and capital gains taxes, with the specification that income tax does not apply to relevant individual income from personal transactions, i.e. transactions that are not concluded in the context of business activity.⁵⁸

Finally, an illustrative regulatory example offers Japan, which in 2016 enacted detailed provisions with respect to operations involving virtual currencies.⁵⁹ Although bitcoin and other virtual currencies are not recognized as legal tender, they have been expressly accepted as legal means of payment in the 2016 legislation. Furthermore, anti-money laundering and similar concerns are addressed through the extension of the scope of relevant legislation to exchange service providers. In this line, the latter need to comply with customer due diligence obligations as well as to report suspicious transactions. The most distinctive feature of the Japanese legislation is that it is user-oriented, including targeted measures to protect consumers. To this effect, it subjects exchange service providers to a number of obligations, such as (1) registration with Japanese authorities, (2) fulfilment of capital requirements, and (3) audit controls. Equally, such service providers are obliged to provide specific information to users as regards transactions. In terms of taxation, virtual currencies seem to be treated as property. As such they triggered application of consumption tax, which however has been removed with effect from 1 July 2018.⁶⁰ Apart from the above exemption however, Japanese taxation of virtual currencies is not as clear, in lack of any official regulations issued by the National Tax Agency. According to oral sources, though, transactions with virtual currencies are subject to income taxes.

A comparison of the above four legislative approaches evidences points of convergence as well as of deviation. As clear points of convergence seem to arise (1) the lack of recognition of virtual currencies as legal tender and (2) the application of anti-money laundering legislation to transactions in virtual currencies. In addition, more or less explicitly, all four jurisdictions acknowledge virtual currencies as a legal means of payment. Nevertheless, they seem to treat them differently for tax purposes. Australia and Japan treat it as property, exempting however the relevant transactions from consumption taxes. US treats it as property. And Italy, bound by the ECJ, treats it similarly to foreign currency.

Lack of coordination at international level is a risk inherent to legislation produced unilaterally, by

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⁵² This was affirmed by decision of Honourable Jack B. Weinstein of the US District Court for the Eastern District of New York on 6 Mar. 2018; see US: Commodity Futures Trading Commission, Press Release 7702/2018 of 6 Mar. 2018.

⁵³ US: Internal Revenue Agency, Notice 2014–2021, at 2.

⁵⁴ See US: Treasury Inspector General for Tax Administration, *As the Use of Virtual Currencies in Taxable Transactions Becomes More Common, Additional Actions Are Needed to Ensure Taxpayer Compliance*, Ref. No. 2016-30-83, 10 (2016).

⁵⁵ M. Canavan, *Welcoming the Bitcoin Challenge*, http://www.mattcanavan.com.au/welcoming_the_bitcoin_challenge (accessed 7 Mar. 2018).

⁵⁶ AU: Anti-Money Laundering and Counter-Terrorism Financing Amendment Act 130/2017.

⁵⁷ AU: Australian Government, Australian Taxation Office, *Tax Treatment of Crypto-Currencies in Australia – Specifically Bitcoin*, <https://www.ato.gov.au/General/Gen/Tax-treatment-of-crypto-currencies-in-Australia—specifically-bitcoin/> (accessed 7 Mar. 2018).

⁵⁸ See US: Treasury Inspector General for Tax Administration, *supra* n. 54, at 11.

⁵⁹ Y. Okano, Nomura Research Institute, *Virtual Currencies: Issues Remain After Payment Services Act Amended*, 243 Iakyara (15 July 2016).

⁶⁰ JPN: Ministry of Finance, Cabinet Order for Partial Revision of the Order for Enforcement of the Consumption Tax Act in The Official Gazette of Japan, Extra Edition No. 7, 31 Mar. 2017, n. 250.

individual states. This is largely the case with virtual currencies until today, to the limited extent there has been state intervention. An exception may be considered the above examined ECJ decision in *Hedqvist* (as per section 3.2 above) that binds EU Member States to the principles accepted therein. Yet, the virtual currency questions need to be conceived from a worldwide perspective. From such standpoint, there are mismatches even amongst advanced economies. Such mismatches are multiplied and magnified if more diverse jurisdictions are taken into account, e.g. developing countries, which have specified no approach or countries banning virtual currencies.

5 CONSENSUS AND NEXT STEPS

Fragmentation of states' legislations engenders risks when it relates to issues of broad reach, and virtual currencies are undoubtedly one of them. A recent example evidencing the grave implications of fragmentation is offered by international taxation, where a global project (OECD's Base Erosion and Profit Shifting Project or BEPS) was needed to solve the problem.⁶¹ To learn from the past and avoid similar situations in the future, it is crucial to address fragmentation at its birth. In other terms, it is urgent to identify a widely acceptable approach to virtual currencies to prevent and/or remove fragmentation. According to the International Monetary Fund (IMF), international dialogue needs to be sparked.⁶² To this end, international organizations have an inherent responsibility to stimulate it.⁶³

The design of a common approach to the series of questions on virtual currencies can draw on the points of convergence of the existing legislative and policy approaches. In addition, it needs to take into account and learn from the existing national and EU experiences, in order to avoid their mistakes and smoothen its way towards global consent.

A first question to address is whether a regulatory intervention is actually necessary or the market forces should be left free. The response could invoke a first point of convergence. An increasing number of legislators is taking action in relation to virtual currencies.

Irrespective of how different such actions might be, from banning to welcoming, legislators around the world are becoming more and more explicit. The unquestionable expansion of the phenomenon seems, in fact, to compel legislators to form a position.

The next question is then about identifying the most suitable approach to virtual currencies and on this point convergence is rare. The attitude adopted by advanced countries could serve as a departing point, considering that such countries have had to face the issue – as well as similar issues before that, e.g. the expansion of the internet – relatively earlier than others. Indeed, respective policy-makers seem to similarly flag the important potential of the new market as well as the high risks it raises. Amongst the most significant advantages are (1) the low transaction costs, (2) the reduced time for transactions, (3) the commercial certainty due to the irreversibility of transactions, (4) the ability to use virtual currencies in jurisdictions with underdeveloped financial services sector.⁶⁴ As regards the risks, policy makers agree that there is risk (1) to financial integrity, e.g. money laundering, tax evasion, tax fraud,⁶⁵ (2) to consumers/users of virtual currencies (e.g. online theft of identity or of their digital wallet as well as breach of contract, where lack of rules renders recovery rather impossible); (3) to financial stability and monetary policy.⁶⁶

On this basis, an appropriate approach seems to be one that addresses the risks while allowing global society to seize the potential benefits of the new currency.⁶⁷ In this regard, the IMF has distinguished the principles that should underpin the regulatory framework (which is also in line with EBA's analytical proposals above). Any norms should be flexible to respond to a continuously evolving subject of regulation – virtual currency, virtual market and blockchain technology. They should build on the distinctive features of virtual currencies, such as decentralization and not be exhausted in extending existing rules for other types of currencies. They should ensure that market intermediaries are economically sound, e.g. through the establishment of respective requirements.

Apart from institutions, academic theory offers important input as well. Indicatively, it has been proposed that since anonymity is the main source of the risks arising

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⁶¹ See P. Valente, *Taxless Corporate Income: Balance Against White Income, Grey Rules and Black Holes*, 57 ET 7, 271, 272 (2017).

⁶² International Monetary Fund, *Virtual Currencies and Beyond: Initial Considerations*, Discussion Note SDN 16/03, 5 (2016).

⁶³ On the need for intervention of public authorities, see also A. Borroni & M. Seghesio, *Hayek and Bitcoins: Which Governance for An International Currency?*, in *The European Union's External Action in Times of Crisis* (Oxford hart Publishing 2016).

⁶⁴ See European Banking Authority, *supra* n. 3, at 16.

⁶⁵ The risks to financial integrity have been repeatedly emphasized within the EU debate, e.g. by the EPRS in its 2014 Briefing (see European Parliamentary Research Service, *supra* n. 26, at 6) as well as by literature (see O. Marian, *Are Cryptocurrencies Super Tax Havens?*, 112 Mich. L. Rev. First Impressions 38, Ch. III (2013); Blundell-Wignall, *supra* n. 25, at 11). Nevertheless, it has been argued that the limited amount of bitcoins in circulation and foreseen to be issued appeased such concerns (see Bitcoin, *supra* n. 1).

⁶⁶ See International Monetary Fund, *supra* n. 62, at 31; See also European Banking Authority, *supra* n. 3, at 36.

⁶⁷ In the US, the CFTC Chairman recently argued for a do-no-harm regulatory approach; see US: *Written Testimony of J. Christopher Giancarlo, Chairman, Commodity Futures Trading Commission, Before the Senate Banking Committee*, Washington D.C. (2018).

from transactions in virtual currencies, it should be the principal target of any regulation. Linking anonymity with additional transaction costs, e.g. taxes, could disincentivize consumers/users from engaging into anonymous transactions with virtual currencies. Thus, important risks in relation to increase of criminality through such transactions would be managed.⁶⁸

In any case, it seems that three facts need to be accepted. Firstly, virtual currencies have come to stay, they are not temporary; this is evidenced by the almost ten years' old bitcoin as well as by its increasing acceptance worldwide. Secondly, there are important risks engendered by specific features of virtual currencies and in particular anonymity. Such risks include enhanced criminal activity, including money laundering, fraud and theft against users, tax evasion due to inherent difficulties of control of transactions. Thirdly, virtual currencies have significant advantages in terms of transactions while blockchain technology behind them has immense potential. Such facts together point to a single route forward: rules that carefully balance between risk mitigation and promotion of development.

Clear regulation along with detailed specifications on users' and service providers' obligations is also critical to ensure effective taxation of income in virtual currencies or from transactions therewith in the future. Regulation shall permit legal certainty, which is a prerequisite of tax compliance. Certainty on tax obligations is necessary for taxpayers to be able to fulfil them, while confidence to tax legislators and authorities is an additional incentive to the same end.⁶⁹ In addition, development of regulation must be perceived as the chance for policy makers (1) to balance administrative burden and taxpayers' benefits from relevant transactions and (2) tailor systems to supervise and control such transactions. Moreover, a common approach shall prevent mismatches among different national legislations, effectively addressing risks of tax planning and avoidance.

6 CONCLUSION

To sum up, this article engaged in the heated debate on virtual currencies, focusing in particular on the bitcoin, the first and most popular cryptocurrency. The interesting mechanism of blockchain technology, which is the basis for the whole Bitcoin system, was described to permit a better understanding of the cryptocurrency problem and the specific questions it raises. An outline followed of the most important steps made in the EU and beyond for the clarification of the legal status of virtual currencies and the design of relevant legislation

thereon. The article then continued with the identification of certain points where policy-makers seem to converge and that could hence constitute the basis for the design and implementation of a proper regulatory framework for virtual currencies.

The mathematics-related problem of virtual currencies seems to have been solved. But the regulation-related one appears to be more difficult. Until today the responses given have been fragmented, territorially limited and have unavoidably produced mismatches. Looking back at the BEPS story, these types of solutions are not sustainable in the long term. In addition, the arising uncertainty risks to prejudice the development of a rather promising area of technology by stifling rather than fostering it. Regulators need to take a clear stance.

On the question whether regulation is needed and can be effectively introduced, the answer seems to be positive. Important risks have been identified in connection with virtual currencies and they demand action for the protection of the respective market participants. It is all the more so in light of the diffusion of such currencies among simple citizens (i. e. not only among well-informed technological nerds). There is hence inherent responsibility of public authorities to act in order to ensure that (1) such participants are aware of the relevant risks and (2) there are safeguards to mitigate them and remedies, if such risks materialize. Any rules should be such to inspire trust in market participants towards the new technologies and to allow such technologies and the virtual currency market to evolve. As regards enforcement, the legislative steps taken already target mainly non-consumer participants of the virtual currency markets, such as exchange service providers. This seems to be a workable solution while an alternative could be the establishment of an accountable authority, as was suggested by EBA (see above under section 3.2). In addition, there does not seem to be doubt that a proper tax framework is necessary to ensure effective taxation of revenue from transactions in virtual currencies and taxpayers' equal treatment.

To appropriately address the challenges of virtual currencies that are entirely new and not comparable to any other known means of payment, the rules should be in principle tailor-made. Equally crucial is that such rules attract international consensus. Trying to identify the jurisdiction of competence would be in vain. Only global rules may lead to the desired effective framework and certainty.

In a nutshell, the new framework should be built on three pillars: international cooperation, innovation and diffused growth.

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⁶⁸ O. Marian, *A Conceptual Framework for the Regulation of Cryptocurrencies*, 82 U. Chi. L. Rev. 53 (2015).

⁶⁹ On the question of tax certainty, see OECD, International Monetary Fund, *Tax Certainty*, IMF/OECD Report for G20 Finance Ministers (2017).