The paper examines whether cryptocurrencies, such as Bitcoin, may be contributed to the share capital of a company limited by shares. The issue is discussed from the point of view of Swiss and Croatian law. In Switzerland, it is an already established practice that cryptocurrencies are accepted as a contribution in kind. On the other hand, in Croatian practice, there have been no registered cases of such attempts. The paper therefore analyses whether such contributions would even be possible under the current regulatory framework and, irrespective of the answer, if some legislative changes would be necessary and/or beneficial.

Keywords: cryptocurrencies, company incorporation, share capital contribution, contribution valuation and audit

"Virtual currencies, perhaps most notably bitcoin, have captured the imagination of some, struck fear among others, and confused the heck out of the rest of us."

(Thomas Caper, US State Senator)

1. INTRODUCTION

Digitalization is a key driver of innovation, ongoing structural change, and, in the long term, the competitiveness of a national economy. Among the remarkable and potentially promising developments in digitalization is the increasing use of distributed ledger
technology (DLT) and blockchain technology.\textsuperscript{1} Such technology has the potential to disrupt many areas of modern societies and has already proven to be an interesting and attractive system that has great potential to ensure trust among participants who do not necessarily know each other. One of the well-known success stories has been the use of a distributed transaction ledger for cryptocurrencies such as Bitcoin (BTC).\textsuperscript{2}

As cryptocurrencies are simply the next step in the evolution of money, it is not surprising that people have tried to use it to pay in the legally required capital at the moment of setting up a legal entity or in the case of a capital increase. Since the autumn of 2017, it has been possible in Switzerland to use cryptocurrencies such as Bitcoin as a form of payment of the capital contribution for a company limited by shares. In the past months, there have been many such transactions, which shows that this has been widely accepted and thus it is just a question of time until such attempts happen in Croatia. The second part of the paper, consequently, focuses more on an analysis of whether cryptocurrency contributions could be made within the current regulatory framework of Croatian company law and less on the actual procedure of company incorporation or in the increase of the company’s share capital through such contributions.

2. CRYPTOCURRENCIES

A cryptocurrency (also called crypto-coin, crypto-asset, crypto money, or token) is decentralized digital money that has been issued according to rules, i.e. a protocol, that have been defined from the beginning. It is an internet-based medium of exchange that uses encryption techniques to create monetary units (digital cash) that can be used as an electronic payment between two parties and to verify the transfer of it as each transaction is tracked/recorded in a public ledger in order to prevent the so-called double-spending problem. Cryptocurrencies are considered to be decentralized, i.e. not controlled by just one person, as well as digital, and the transfer between users is peer-to-peer (P2P), i.e. from person to person online and not via banks, and confirmed via a process commonly called mining. Every movement of a cryptocurrency (regardless of size) is recorded in a public ledger in a verifiable and permanent way. This transactional data is encrypted and distributed across the entire network. Before the data can be permanently recorded, it has to go through a "mining-process" which involves the use of computer hardware and

\textsuperscript{1} Very often, the term distributed ledger technology (DLT) and blockchain are used as synonyms, but there are differences: DLT is an umbrella term that describes technologies which store, distribute and facilitate the exchange of records or information between users in a database, which are used publicly or privately. The governance in DLTs is mostly centralized in one or a few validator nodes that are identified, and other nodes that might have read access with the permission of the validator nodes. Governance is closed and the network of nodes is permissioned and new nodes can only join with permission from the validator nodes. Blockchain is a special form of DLT according to which the data is organized in a "chain of blocks"-form without a central administrator among people who know nothing about one another and therefore this data is distributed to everyone in the form of chained "blocks".

software to confirm that the newly received transaction is valid. Miners use their computers to help validate and timestamp transactions, adding them to the ledger in accordance with a particular timestamping scheme. They are incentivized to perform this task because there is the possibility that they may be rewarded for this computational work. The cryptocurrencies are usually stored in a secure digital wallet, which is also used to send and receive crypto money.

3. USE OF A CRYPTOCURRENCY AS A MONETARY CONTRIBUTION OR A CONTRIBUTION IN KIND

In most countries, the share capital of a company can be paid up either in money or in kind.\(^3\) No general statement can be made without looking at the legislation of each state whether the transfer of a cryptocurrency can be considered as an acceptable money contribution. However, if a state does not accept the payment of cryptocurrencies as money contributions, then it has to be examined if a founder or a shareholder can fulfil his obligation for payment of the share capital by using assets instead of money. Thus, the question arises whether or not cryptocurrencies are considered at least as assets and therefore can be used as a contribution in kind.

4. CRYPTOCURRENCIES AS CONTRIBUTIONS IN KIND IN SWITZERLAND

4.1. Generally

According to Article 621 of the Swiss Federal Code of Obligations (CO),\(^4\) the share capital of a company limited by shares must amount to at least CHF 100,000.00. When a company is founded, then the capital contribution must be at least CHF 50,000.00 (Art. 632, para. 2 CO). Money contributions have to be deposited with an institution subject to the Federal Act of 8 November 1934 on Banks and Savings Banks for the exclusive use of the company (Art. 633 CO).

For nearly two decades, it has been possible to use not just Swiss Francs but also freely convertible foreign currencies like the Euro, HRK or USD as a money contribution if the exchange rate of the foreign currency reaches, at least at the moment of the registration of the company or of the capital increase in the cantonal commercial registry, the required amount that has been promised in the public deed. However, if the exchange rate does not equal at least the promised amount at the moment of the registration by the competent

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\(^3\) For example, see § 27 Aktiengesetz for Germany, § 20 Aktiengesetz for Austria and Article 582 para. 1 of the Companies Act for United Kingdom. The same is generally applicable for other countries as well.

cantonal registry of commerce or the approval of the Swiss Federal Registry of Commerce, then the registration has to be rejected.\textsuperscript{5}

In Switzerland, cryptocurrencies cannot be used as capital contributions as the authorities of the registries of commerce do not regard them as state-issued currencies. The difference between a cryptocurrency and a currency like the Swiss Franc and the Croatian Kuna is that cryptocurrencies like the Bitcoin are independent of any type of controlling authority. This means that there are no monetary reserve bodies, banking institutions, or required transactional guidelines to follow. Cryptocurrencies can be used by anybody, anywhere, and have the ability to self-manage the entire system, from currency creation and distribution to ensure that each transaction is valid. Thus, they use decentralized control as opposed to centralized state-issued currencies and central banking systems. Furthermore, the aforementioned Article 633 CO requires the founders to pay the monetary contribution to an institution subject to the Federal Act of 8 November 1934 on Banks and Savings Banks. At the moment, there is no Swiss bank that has a specific account for setting up a company or paying in the amount for a capital increase into which cryptocurrencies can be paid ("Kapitaleinzahlungskonto").\textsuperscript{6}

However, a founder or a shareholder can fulfil his obligation for payment of the newly created or increased share capital by using assets instead of money. As cryptocurrencies are considered at least as assets, they can be used as a contribution in kind according to Article 634 CO.\textsuperscript{7}

4.2. Cryptocurrencies as a contribution in kind

4.2.1. Cryptocurrencies as an asset

4.2.1.1. Generally

A founder can fulfil his obligation for payment of the share capital by using assets instead of money; thus, it is \textit{de facto} a kind of "barter deal" based on which the transferor transfers assets to the company and he fulfils his duty to pay in the capital and receives as a consideration a specific amount of shares of the company. When this occurs, the asset – according to the constant practice of registries of commerce in Switzerland, which has been supported by the courts – must be capitalizable ("aktivierbar"), available


("verfügbar"), transferable ("übertragbar"), and sellable ("verwertbar"). It is not a requirement that assets have to be linked to the purpose of the company. Typical contributions in kind are property rights (movables and real estate), outstanding claims and intellectual property rights (e.g., patents, trademarks or certain kinds of licences). However, future outstanding claims, personal skills, the provision of labour, knowledge or goodwill alone are not accepted as contributions in kind. Thus, a cryptocurrency, which is subject to a contribution in kind, has to fulfil the four aforementioned criteria.

4.2.1.2. Capitalizable asset

The issue of whether or not an asset is capitalizable, i.e. an item which can be included in the balance sheet, has to be determined in accordance with the accounting legislation. According to Article 959, para. 2 CO, we can speak of a capitalizable asset if the company can dispose of it due to past events ("power of disposal"), if a cash inflow is highly likely, and if the value of the asset can be estimated in a reliable way. The legal qualification of the asset is not solely decisive; the economic view must also be taken into account.

Thus, a cryptocurrency cannot be prohibited by regulatory or even penal law. If, for example, the Swiss Financial Market Supervisory Authority (FINMA) started a regulatory proceeding against a certain type of cryptocurrency or its operator, then this is a strong indication that the cryptocurrency cannot be taken as a contribution in kind. Furthermore, the aforementioned requirement of "power of disposal" excludes the asset from potentially being subject to forfeiture (e.g., due to penal or administrative law). As long as cryptocurrencies can be freely sold, a cash inflow is guaranteed. However, this requires an active market, where the cryptocurrencies can be traded, nearly no barriers for entry to or exit from these markets exist, there is transparency regarding the mechanisms that determine the price, and there are reasonable transaction costs. To date, there are thousands of cryptocurrencies on the market (https://coinmarketcap.com/). They are traded on online platforms such as www.coinbase.com, www.kraken.com, etc. There are many transactions and thus it is possible to find an acquirer. This results, de facto, in free convertibility and a specific exchange rate. In practice, the founders or the members of a board of directors have to ensure at the moment of notarization that the cryptocurrencies, which will be transferred to the company, are at least equal to the

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12 See MÜLLER/STOLTZ/KALLENBACH, pp. 1319 and 1324.
amount of the promised founding capital or the amount of the capital increase. Usually, the involved parties consider a safety margin (e.g., 5% more), as the market prices of cryptocurrencies are quite volatile.\(^{13}\)

**4.2.1.3. Transferable asset**

In order for an asset to be used as a contribution in kind, it needs to be transferable. Thus, there cannot be any contractual or legal transfer restrictions like regulatory interventions.\(^ {14}\) Therefore, if the FINMA or a competent public prosecution authority seizes a cryptocurrency or the latter has been prohibited (e.g., due to anti-money laundering legislation). However, if the cryptocurrency is established in the market and there are no signs of illegal activities, then there is no reason not to accept a cryptocurrency as an asset which may be subject to a contribution in kind.\(^ {15}\)

**4.2.1.4. Available asset**

The asset, which is used as a contribution in kind, has to be available after the transaction has been registered in the commercial register, i.e. the company immediately acquires ownership and the right to dispose of it (see Article 634 (2) CO). With regard to cryptocurrencies, this means that the company has to have access to the cryptocurrency-account or wallet. Thus, the company needs to have the possibility to transfer the crypto money via a secret, private key.\(^ {16}\)

**4.2.1.5. Sellable asset**

A contribution in kind has to be sellable legally validly to a third party. This requires that there is at least a "limited market" ("beschränkter Markt").\(^ {17}\) Regarding cryptocurrencies, there is such a market if the crypto money is traded every day in a respectable volume. This can be considered as a sign that it is sufficiently sellable.\(^ {18}\) In the last few years, there has been a substantial increase in the transaction volume of cryptocurrencies (e.g., on 4 April 2019, there was a market cap of USD 173,051,917.277 and a trading volume of

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\(^ {14}\) See MÜLLER/ZYSSET/KALAITZIDAKIS, op. cit., p. 8.

\(^ {15}\) See MÜLLER/STOLTZ/KALLENBACH, op. cit., p. 1325 s. and MÜLLER/ZYSSET/KALAITZIDAKIS, op. cit., p. 8.

\(^ {16}\) See also MÜLLER/STOLTZ/KALLENBACH, p. 1326.


USD 35,390,831,796 according to the website www.thethie.io). However, in practice, certain cantonal registries of commerce check the listing on www.coinmarketcap.com and are of the opinion that the higher a cryptocurrency is ranked, the more it can be considered as an asset for a contribution in kind. For example, cryptocurrencies like Bitcoin or Ether (ETH) have been accepted by the authorities without further discussion. However, lower-ranked cryptocurrencies may have to file additional documents.

4.2.2. Further requirements

In order to reduce the risk of overvaluing assets used for payment and thereby weakening the share capital, the Swiss Code of Obligations provides for numerous precautionary measures for incorporations or capital increases based on contributions in kind: contributions in kind (Article 634 CO) have to be based on a written contract or a public deed if real estate is involved, which provides explicitly that a company limited by shares will be able to dispose of the assets at the moment of the registration of the transaction in the respective cantonal registry of commerce and approval of the Swiss Federal Registry of commerce. Furthermore, it is necessary for the articles of incorporation to address the fact that there is a contribution in kind (Article 628 para. 1 CO), that there is a "report by the founders" or a "capital increase report" (Articles 635 and 652 CO) and an "audit confirmation" (Article 635a or 652f CO) confirming the value of the contribution in kind.

4.2.2.1. Agreement to make a contribution in kind

A contribution in kind can be made only if there is an appropriate written or (mandatory for real estate) notarized agreement regarding the contribution in kind (Article 634 (1) CO). Thus, the transferor and the company have to name the asset and the number of shares that the transferor will receive as a consideration. This agreement has to be appended to the deed of incorporation or capital increase (see Article 631 para. 2 (5) CO).

The transferor is engaged to conduct the specific actions that are required in order to make sure that the transaction is registered in the distributed ledger. Each cryptocurrency itself determines what has to be done by the transferor to ensure transfer of the asset. According to certain authors, it is also possible not to register such transactions in the distributed ledger, a quasi transfer "off-chain". Nevertheless, the transferor and the company should document in a detailed manner their contractual duties in naming the cryptocurrencies, which shall be the contribution in kind (including their trade abbreviations), the specific amount of crypto money, in which wallet the

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19 However, it seems that almost 90 percent of cryptocurrency exchanges' reported trade volumes may be incorrect due to misreporting (see WILLIAM SUBERG, New Report Warns 87 percent of Cryptocurrency Exchange Volume Is Potentially Suspicious, 19 March 2019 [https://cointelegraph.com/news/new-report-warns-87-percent-of-cryptocurrency-exchange-volume-is-potentially-suspicious; last visited 22 July 2019]).

crypto money is stored, and how it will be transferred from the transferor to the company.\textsuperscript{21}

\textbf{4.2.2.2. Report by the founders or a capital increase report}

The founders’ report is a written document in which the founders declare the type and adequacy of the founders’ valuation of the contributions to be made in kind (Articles 635 (1) and 652e (1) CO).\textsuperscript{22} Usually, the valuation method must be indicated in the report in a comprehensible manner. In general, the valuation must be based on market value, but may not be set any higher than the value assigned to the contribution in kind,\textsuperscript{23} as the valuation must be carried out prudently and must not prevent the reliable assessment of the economic position of the undertaking (see Article 960 para. 2 CO). This report has to be appended to the deed of incorporation or capital increase (see Article 631 para. 2 (2) CO).

In practice, the report contains information about the trading platform which was used for the valuation of the cryptocurrency at the moment of the creation of the report of the founders or of the capital increase report, and the market value. With regard to less known cryptocurrencies, it is advisable to name the trading platforms on which they are traded. Furthermore, possible entry barriers to these trading platforms also have to be named as this reduces significantly the potential buyers of the cryptocurrency. In addition, it is advisable to consider a safety margin as the market prices of cryptocurrencies are quite volatile and with regard to the time period between the beginning of the transaction and the registration in the commercial registry.\textsuperscript{24}

\textbf{4.2.2.3. Audit confirmation}

The founders' report or the capital increase report must be audited by an admitted auditor (Article 635a or 652f CO). This means that the valuation made in the report is deemed to be accurate if the auditor considers it to be reasonable.\textsuperscript{25} This confirmation has to be appended to the deed of incorporation or capital increase (see Article 631 para. 2 (3) CO). Usually, the auditors will examine the adequacy of the valuation. Thus, the maximum value is the current market value, which is determined after the consultation of various trading platforms.\textsuperscript{26}

\textsuperscript{21} See also MÜLLER/STOLTZ/KALLENBACH, p. 1327 s.
\textsuperscript{22} SIFFERT/TAGMANN, op. cit., article 43 para. 46 s.
\textsuperscript{23} BAUEN/BERNET, op. cit., p. 24 para. 74.
\textsuperscript{24} Fact Sheet of the registry of commerce of the Canton of Zug regarding cryptocurrencies of April 6, 2018, para. 4 (https://www.zg.ch/behoerden/volkswirtschaftsdirektion/handelsregisteramt/merkblatter/informationen-zur-anmeldung/Merkblatt%20ueber%20Liberierung%20mit%20Kryptowaehrungen.pdf; last visited July 22, 2019) and MÜLLER/STOLTZ/KALLENBACH, p. 1329.
\textsuperscript{25} SIFFERT/TAGMANN, op. cit., article 43 para. 50 s.
\textsuperscript{26} See also MÜLLER/STOLTZ/KALLENBACH, p. 1329.
4.2.2.4. Articles of association

The fact that there is a contribution in kind, the valuation of the asset, as well as the name of the founder/investor and the shares allocated to him, must be indicated in the articles of association (Article 628 para. 1 CO). The articles of association have to be appended to the deed of incorporation or capital increase (see Article 631 para. 2 (1) CO).27

4.2.2.5. Business registration

Once the incorporation of the company or its capital increase is done, then it has to be registered by the competent cantonal Registry of Commerce and approved by the Swiss Federal Registry of Commerce (Article 642 CO). All the aforementioned documents ("Handelsregisterbelege") have to be filed, together with a so-called "application for registration" ("Handelsregisteranmeldung"), which has to be signed by the members of the board of directors, with the Cantonal Registry of Commerce.28 The cantonal registrar usually verifies at the moment of registration whether the transferred crypto money equals at least the promised or increased capital.29

5. CRYPTOCURRENCIES AS CONTRIBUTIONS IN KIND IN CROATIA

5.1. Generally

According to Article 161 of the Croatian Companies Act (CA), the share capital of a company limited by shares has to amount to at least HRK 200,000.00.30 This means that it is not possible to incorporate a company with a lower amount of share capital. However, this does not mean that the registered share capital should always be paid in full before it is entered in the commercial register either. The Croatian legislator enables contributions to be made in money and/or in kind.

According to Article 179 CA, if the shares are paid in money, at least one-quarter of the par value of each share must be paid before it is entered in the commercial register. In addition to the par value of each share, if the shares are issued for a higher value (i.e. agio), the full amount exceeding the par value must also be paid. In such a situation, the management of the company should invite the shareholder to pay the outstanding amount

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27 See also SIFFERT/TAGMANN, op. cit., article 43 para. 34.
28 Articles 43 s. of the Swiss Federal Ordinance of the Registry of Commerce.
30 Companies Act, Official Gazette 111/93, 34/99, 121/99, 52/00, 118/03, 107/07, 146/08, 137/09, 125/11, 152/11, 111/12, 68/13, 110/15 and 40/19. It should also be noted that HRK 200,000.00 amounts to approximately EUR 27,000.00 (4 July 2019). With regard to certain business activities, a higher amount of starting share capital is required for companies limited by shares (e.g., financial institutions, stock exchanges, investment companies).
of the contribution after registration by the commercial registrar.\(^3\) On the other hand, contributions in kind can be made with goods (tangible assets) and rights (e.g., contractual claims, copyrights, trademarks, patents). If the shares are paid in kind, prior to the registration of the company in the commercial register, such contributions must be made in full. This applies also to the situation where contributions are partly made in money and partly in kind. However, if a contribution in kind consists of an obligation to transfer the property of a specific good to the company, such transfer shall take place within five years following the entry of the company in the commercial register. Therefore, it is possible not to transfer the whole contribution before registration if such contributions are made in money or if a shareholder promises to transfer a specific good to the company within five years from the entry of the company in the commercial register.

The foremost question regarding the use of cryptocurrencies as share capital contributions in Croatia is whether cryptocurrencies can be qualified as either money, goods or rights. From the outset, it should be noted that it is unlikely that under current Croatian legislation it would be possible to qualify cryptocurrencies as money, and this is in line with the general global view on this issue. Various international institutions related to the operation of the global financial system have provided a cryptocurrency definition in their statements and opinions, which is in line with the aforesaid (e.g., European Banking Authority, European Central Bank, Financial Action Task Force).\(^3\) Similarly, Article 1 para. 2 (d) of Directive 2018/843 provides that “virtual currencies” mean a digital representation of value that is not issued or guaranteed by a central bank or a public authority, is not necessarily attached to a legally established currency and does not possess the legal status of currency or money, but is accepted by natural or legal persons as a means of exchange and which can be transferred, stored and traded electronically.\(^3\)

\(^3\) The outstanding amount has to be paid either at the time stated in the agreement between the shareholder and the company or, in the absence of such a provision, at a time at the management’s discretion. This is coherent since it is considered that the management is free to evaluate the best moment when the company needs a fresh inflow of cash.

\(^3\) The European Banking Authority defined virtual currencies as a “digital representation of value that is neither issued by a central bank or public authority nor necessarily attached to a FC, but is used by natural or legal persons as a means of exchange and can be transferred, stored or traded electronically”. See EUROPEAN BANKING AUTHORITY, EBA Opinion on “virtual currencies”, EBA/Op/2014/08, 4 July 2014, para. 19. The European Central Bank defined virtual currencies as a “type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community”. See EUROPEAN CENTRAL BANK, Virtual Currency Schemes, October 2012, p. 13. Finally, the Financial Action Task Force defined virtual currencies as “digital representation of value that can be digitally traded and functions as (1) a medium of exchange; and/or (2) a unit of account; and/or (3) a store of value, but does not have legal tender status (i.e., when tendered to a creditor, is a valid and legal offer of payment) in any jurisdiction”. See FINANCIAL ACTION TASK FORCE, FATF Report on Virtual Currencies: Key Definitions and Potential AML/CFT Risks, June 2014, p. 4.

the distinction between cryptocurrencies and so-called "fiat money" issued or guaranteed by a central bank or a public authority (i.e. CHF, EUR or HRK).

It should be noted that Croatian banking and tax authorities have released several opinions on the nature of cryptocurrencies. However, these opinions relate solely to the question of whether cryptocurrencies can be qualified as electronic or traditional fiat money and to the question of cryptocurrency transaction tax treatment. In its first opinion, the Croatian National Bank (CNB) stated that under the current regulatory framework cryptocurrencies cannot be qualified as electronic money since such currencies cannot reflect the value of money received in return for it.\textsuperscript{34} The CNB reiterated this position in its subsequent explanation by clearly stating that cryptocurrencies cannot be qualified as money nor can cryptocurrency transactions be qualified as traditional payment services within the current applicable regulation.\textsuperscript{35} The CNB bases its conclusions on the position that cryptocurrencies cannot fulfil the basic functions of a traditional currency, namely the function of storing a stable value since they are not used as a measure for comparing the relative value between various goods and services. Besides, it concludes that cryptocurrencies cannot be considered as an exchange or a savings medium either. As for the tax treatment of Bitcoin cryptocurrency transactions, the Croatian Tax Administration concluded that bitcoins can be qualified as a transferrable instrument (i.e., transactions, including intermediation, relating to savings, current and giro accounts, payments, transfers, debts, cheques, and other transferrable instruments), meaning that such transactions fall outside the scope of VAT application.\textsuperscript{36} In its later opinion, the Croatian Tax Administration further elaborated that the income realized by cryptocurrency transactions falls under the scope of capital gain income tax.\textsuperscript{37}

It is unquestionable that cryptocurrencies share some of the same functions as fiat money. Namely, cryptocurrencies are capable of being used as a means of payment and for expressing the numerical value of goods and services. They have, however, difficulties in storing a stable value due to their highly volatile nature.\textsuperscript{38} Such high volatility of their market value is a result of their high susceptibility to market fluctuations and the

\textsuperscript{34} CROATIAN NATIONAL BANK, Opinion No. 282-810-19-05-14/ST/DO, Zagreb, 27 June 2014.
\textsuperscript{35} CROATIAN NATIONAL BANK, Što su virtualne valute? Explanation dated 9 February 2018, Zagreb, available at the CNB official website (www.hnb.hr).
\textsuperscript{37} TAX ADMINISTRATION, Opinion 410-01/17-08/29, No. 513-07-21-01/18-4, Zagreb, 19 March 2018. For a more detailed review of the cryptocurrencies tax treatment, see NEVIA ĆiĆIN-ŠAIN, Oporezivanje Bitcoina, Zbornik PFZ 67 (3-4)/2017, pp. 655-693.
\textsuperscript{38} However, it should also be noted that generally cryptocurrencies are currently not capable of processing a huge number of simultaneous transactions (e.g., Bitcoin can process up to seven transactions simultaneously) as their more-traditional counterparts are (e.g., credit card payment systems can process around ten thousand transactions simultaneously). Besides, they are not recognized or used as currency paid for goods or services in the same manner as fiat money in domestic or international transactions. See IVANA PARAĆ VUKOMANOVIĆ, Pravna priroda virtualnih valuta, PUG 3/2019, pp. 413-414 and NIELS VANDEZANDE, Virtual Currencies, A Legal Framework, Intersentia, 2018, pp. 160-161.
application of the basic market principle of supply and demand.\textsuperscript{39} This means that in
Bitcoins, the stated prices for goods and services bare the risk of such volatility; e.g., the
risk that the price paid in Bitcoins could result in a significant fiat money countervalue
difference within a short time. For example, a single bitcoin could yield a counter value of
USD 10,000.00 today and USD 7,000.00 tomorrow. If a trader or a service provider accepts
Bitcoins as a means of payment for goods or services, it would entail a higher level of effort
from the trader or service provider to ensure that the nominated price for such goods and
service reflects the actual value (e.g., through the need to make constant adjustment to
the stated cryptocurrency prices). In addition, it would also mean that a trader or service
provider will normally very quickly exchange such cryptocurrency tokens for a counter
value in a traditional currency since every other decision will result in speculative
investment activity (i.e., betting on the possibility that the cryptocurrency exchange rate
will work in favour of the trader and yield extra income at the moment the cryptocurrency
tokens are exchanged for HRK). The sustainability of such an activity is highly
questionable in the long run since every business requires a constant flow of traditional
currency to fuel its business operations. It should be noted that fiat money is not immune
to the risk of volatility either. Higher rates of inflation normally result in the unstable
purchasing power of the national currency and an increase in prices for goods and
services denominated in that currency. However, unlike traditional currencies, whose
value can be affected by the state’s monetary intervention, cryptocurrencies do not have
such backing and their value is affected solely by the market and its stakeholders (e.g., by
holders of cryptocurrency units or tokens whose interest is normally to generate profit
through the sale of such financial assets). In other words, state-backed fiat money is more
capable of storing a stable value than cryptocurrencies. This might change in the future
with the advent of cryptocurrencies backed, not only by market participants, but also by
financially strong multinational corporations (e.g., the Libra cryptocurrency by Facebook
and other involved parties).

In other words, it is our position that although cryptocurrencies are capable, more or less
successfully, of fulfilling all the functions of fiat money, they cannot be relied upon or used
in everyday transactions in the same manner as traditional currencies.\textsuperscript{40} Consequently, it
is generally considered that although cryptocurrencies could be considered as money in
the broader sense (based on a functional approach), in the narrower sense and for the
time being they cannot be qualified as such as they are not used, recognized or supported
as regular, official and legal means of payment in Croatia.\textsuperscript{41} Given that cryptocurrencies
lack a stable value, it is more suitable to consider whether they could be qualified as a
contribution in kind which also regularly implies the prior value determination of such a

\textsuperscript{39} MARKO PERKUŠIĆ, Pravna pitanja elektroničkog plaćanja, Doctoral Dissertation, unpublished, 2019, pp. 344,
374.

\textsuperscript{40} PARAĆ VUKOMANOVIĆ, op. cit., p. 417 and VANDEZANDE, op. cit., pp. 161-162.

\textsuperscript{41} This does not mean that bitcoin trade and exchanges are forbidden or considered illegal in Croatia, but just that
the current regulatory system does not equate cryptocurrencies to the official HRK or other national currency.
contribution. This is to ensure that the value corresponding to the nominal value of the share capital is contributed to a company limited by shares.

As a result, the text below will not analyse any further the possibility of whether cryptocurrencies could be used as contributions in money. The paper will instead focus on whether cryptocurrencies could be used as contributions in kind for the payment of shares of a company limited by shares.

5.2. Cryptocurrencies as contributions in kind

According to Article 176 para. 2 CA, only goods or rights which have an economic value can be contributed to the share capital of a company limited by shares. The CA expressly states that an obligation to provide services may not be contributed as share capital.

The contribution of goods also entails the contribution of rights, but more specifically the ownership right over either movable or immovable assets. According to Article 2 para. of the Act on Ownership and Other Property Rights (AOR), goods are corporeal parts of nature, different from people and used by people. However, even incorporeal parts of nature are regarded as goods if they are expressly recognized as such by law (e.g., dematerialized shares of a company).

In other words, Croatian law generally adopts the corporeality doctrine of things treating incorporeality as an exception that needs to be expressly granted by law. This means that cryptocurrencies, having an incorporeal nature, cannot be regarded as goods according to the general requirement of the corporeality of things. Furthermore, in the absence of a specific cryptocurrency regulation which would eventually expressly recognize cryptocurrencies as incorporeal goods, one can only conclude that under the current Croatian regulation cryptocurrencies cannot be regarded as things. This is opposite to the position of Austrian law where Allgemeines bürgerliches Gesetzbuch (ABGB) does not require goods to have a corporeal property.

Consequently, since Croatian law has taken a firm stance on the requirement of the corporeal property of goods, cryptocurrencies cannot be considered as such to make a share capital contribution in kind. On the other hand, under Austrian law,

42 JAKŠA BARBIĆ, Pravo društava, Knjiga druga, Društva kapitala, Dioničko društvo, 6. izdanje, Organizator, 2013, p. 204.
43 Act on Ownership and Other Property Rights, Official Gazette 91/96, 68/98, 137/99, 22/00, 73/00, 129/00, 114/01, 79/06, 141/06, 146/08, 38/09, 153/09, 143/12 and 152/14. See also NIKOLA GAVELLA/TATJANA JOSIPOVIĆ/IGOR GLIHA/VLADO BELAJ/ZLATAN STIPKOVIĆ, Stvarno pravo, Svezak 1, Narodne novine, 2007, pp. 66-67, 94-96.
44 A similar stance exists in Germany where §90 Bürgerlichen Gesetzbuches (BGB) provides that only corporeal objects can be regarded as things. For more, see LAURENZ BENNDORF, Bitcoins – Versuch der rechtlichen Entschlüsselung einer Kryptowährung, Omniscriptum, 2015, pp. 35-36.
45 See §285 ABGB which provides that everything that is distinct from a person and serves the use of people is considered a thing in a legal sense. For more, see BENNDORF, op. cit., pp. 37-38.
46 PERKUŠIĆ, op. cit., pp. 345-347.
cryptocurrencies could be considered as goods and consequently can be treated as such to make share capital contributions in kind.\textsuperscript{47}

Contributions in kind can also be made by transferring rights to the company. These rights have to be determined, they have to be transferrable, and they need to have an economic value which can be indicated in the company’s balance sheet.\textsuperscript{48} Normally this implies the right of servitude, pledge, the right to build on a real estate, rights deriving from sub-concession contracts, rights relating to intellectual property (e.g., copyrights, trademarks, and patents), shareholder rights, and contractual and extra-contractual claims. Rights are an expression of a civil law relationship between its participants where the right of one participant complements an obligation of another participant. This means that a holder of a certain right holds a claim against other participants consisting of either a request to effect a certain performance or a request to abstain from such a performance.\textsuperscript{49}

A token of a certain cryptocurrency (e.g., Bitcoin) is issued according to a predetermined program algorithm (rules). There is no issuer in such a situation that might qualify as a counterparty to the acquirer of such a cryptocurrency token. This means that, consequently, no legal relationship between the issuer and the acquirer exists which could form the basis of a claim or a civil law relationship.\textsuperscript{50} In other words, the acquirer is not a creditor since there is no debtor in such an arrangement and the cryptocurrency does not represent a claim against another person.\textsuperscript{51}

Notwithstanding the normative deficiency resulting from the crude and traditional understanding of the concept of a right, it is unquestionable that cryptocurrency tokens indeed have economic value and are transferrable from one person to another. This legal deficiency is further emphasized by the fact that a contractual claim can be artificially formed to accommodate such a crude legal result. This can be undertaken by simulating a contractual relationship where one party provides another party with a certain number of bitcoin tokens free of charge (i.e., a donation contract) or for a symbolic service or provision of goods.\textsuperscript{52} In such a situation, a claim for the surrender of a determined or determinable number of bitcoins is created within a framework of a certain civil law (contractual) relationship between the two participants. The holder of such a contractual claim could then use it to contribute to the share capital of a company limited by shares. This is undertaken by transferring the claim to the company in return for the shares. Nevertheless, it can also be argued that between all users of the cryptocurrency system there exists a wide understanding, i.e., a civil law relationship, by the mere consent to

\textsuperscript{47} For the position of treating cryptocurrencies as a thing under ABGB, see BENNDORF, op. cit., pp. 37-49.
\textsuperscript{49} In this regard from the position of Austrian law, see § 859 ABGB.
\textsuperscript{50} See Federal Council, Legal framework for distributed ledger technology and blockchain in Switzerland. An overview with a focus on the financial sector, p. 50 (https://www.newsd.admin.ch/newsd/message/attachments/55153.pdf; last visited July 22, 2019) and BENNDORF, op. cit., p. 50.
\textsuperscript{51} PERKUŠIĆ, op. cit., p. 347.
\textsuperscript{52} BENNDORF, op. cit., p. 50.
participate in the prearranged blockchain system. The right formed thus is the claim of recognition between and toward all such participants and the acknowledgment of the right to transfer such cryptocurrency tokens to another person and exchange them for a standing market countervalue in traditional currency. This means that every holder of a cryptocurrency token is simultaneously the obligee and the obligor in a loose “contractual” arrangement established on willing participation in a specific blockchain system.\(^{53}\)

Notwithstanding the possibility of such a legal qualification of cryptocurrencies, it must be emphasized that cryptocurrencies have a market value and can be easily exchanged for HRK in Croatia through various cryptocurrency exchanges (e.g., Coinbase, Bitcoin Store, Gemini Exchange). Besides, cryptocurrencies are also easily transferable. Persisting in the traditional dogma concerning the legal nature of a right at a time where there is an obvious lack of a cryptocurrency regulation is not only counterproductive but also unreasonable. That is because it should only be important, from the perspective of the current company law rules on share capital, for the countervalue of the cryptocurrency tokens in HRK that were contributed into the share capital to correspond, at the time of the entry of such a contribution into the commercial register, to the value of the company’s share capital. This enables the company to exchange immediately or later (in the hope of making a greater return) the contributed cryptocurrency tokens for HRK and to use it to “fuel” its business activities. There is, therefore, no de lege lata reason to prevent the possibility of making a share capital contribution in cryptocurrency tokens under Croatian regulations. Company law rules on share capital contributions in kind aim to protect the company and its creditors. The purpose of such protection is to ensure that the newly incorporated company has at its disposal assets at the moment of entry into the commercial register, whose value corresponds to the par value of the shares issued for such a contribution. On the other hand, the purpose is not to ensure that such contributions are made solely in goods or rights that strictly correspond to the traditional notion of such assets. Therefore, the determination of the exact value of cryptocurrencies contributed to the share capital at the moment of entry into the commercial register should be a more important legal issue than whether a cryptocurrency, which holds value and is transferrable, can be contributed into the share capital of a company.

5.3. Value determination of contributions in kind

As already stated, according to Article 179 CA, contributions in kind normally have to be made in full prior to the entry of the company in the commercial register. According to Article 188 CA, the court shall refuse to register the company if the value of the rights contributed is significantly lower than the par value of the shares issued for them or if it is obvious that the value of such rights is clearly significantly overestimated. This is an

\(^{53}\) In this light, see Federal Council, Legal framework for distributed ledger technology and blockchain in Switzerland, An overview with a focus on the financial sector, pp. 50-51 (https://www.newsd.admin.ch/newsd/message/attachments/55153.pdf; last visited July 22, 2019).
expression of the general principle of entry of the share capital value into the company, i.e., that the actual value contributed to the share capital corresponds to the nominal value of the share capital.

This assessment is based on an internal audit report made by the management and the supervisory board as well as an external audit report made by special incorporation auditors appointed by the court. According to Article 182 CA, such an external audit shall be performed if a company incorporation is accomplished through contributions in kind. The purpose of such an audit is to ensure that the value of contributions in kind corresponds to the actual market value of such contributions. A resulting audit report is a supervisory tool of the audit that has been made internally by the company’s management and the supervisory board. However, Article 185.a CA provides an exception to this rule by prescribing that such an external audit will not be required if the value of the securities or other financial instruments is determined as an average weighted market value established by the regulated market in the last three months before being contributed to the share capital of the company. This exception shall not apply when such value was significantly influenced by extraordinary circumstances or when, based on new circumstances and at the moment of such a contribution into the share capital, the actual value turns out to be considerably lower than the one set out in the audit report.

The relevant moment for this assessment is the moment of registration by the commercial register.\(^{54}\) In other words, it is only important that the value of contributions in kind equals at least the value of the share capital at the moment of entry into the commercial register. Registration of the company shall be refused only if at that time the actual value of contributions in kind made into the share capital is significantly lower than the par value of the shares issued for such contributions. The “significantly lower” threshold means that the court will permit entry into the commercial register only if such a difference in value is inconsiderable or negligible.\(^{55}\) This assessment depends on the actual circumstances of each individual case (e.g., normally the ratio between the nominal value of the share capital and the actual value of the contributions made into that capital) and should not amount to more than several percentage points of the total nominal value of the share capital (e.g. 1-3% of the share capital). If the actual value of contributions is higher than the nominal value of the share capital, the court will permit entry into the commercial register since that is in the interest of the company and its creditors.\(^{56}\)

Since we qualified cryptocurrencies as contributions in kind, such a contribution will have to be made in full prior to the entry of the company into the commercial register. This entails an informal transfer of such cryptocurrency tokens from the shareholder to the “pre-company”, e.g., by the transfer of bitcoins from the shareholder’s digital wallet to the company’s digital wallet, according to the general rules on assignment. Such transfer

\(^{54}\) Barbić, op. cit., p. 249.
\(^{55}\) Barbić, op. cit., p. 249.
\(^{56}\) Barbić, op. cit., pp. 248-249.
must, however, enable the company to solely dispose of such intangible assets upon entry into the commercial register.\textsuperscript{57}

As already mentioned, cryptocurrencies are generally very volatile.\textsuperscript{58} Therefore, it is highly important that the value of the contribution made in a cryptocurrency corresponds to the par value of the shares issued for such a contribution at the moment of entry into the commercial register. This might present a significant challenge for internal and external auditors since such volatility can result in a sharp decrease of the cryptocurrency market value in the short time\textsuperscript{59} between the contribution of the cryptocurrency into the share capital and the court’s decision on registration of the company into the commercial register. In such a situation, the court will probably, based on the conditions set out in the previously mentioned Article 188 CA, refuse to register the company in the commercial register. In other words, the court is entitled to conduct its own value review of the contribution in kind to determine whether such value is significantly lower than the value of the shares issued for such a contribution. It is likely that the court will undertake this by comparing the current market value of the contributed cryptocurrency at the most notable cryptocurrency exchange with the value of the shares issued. This might unnecessarily prolong the process of incorporation and require from the shareholder additional contributions to compensate for the difference between the nominal value of the share capital and the actual value of the already-made contributions.

In order to ensure the general principle of the entry of the share capital value into the company, besides internal audit made by the management and the supervisory board, a special incorporation auditor will also be appointed by the court upon the request of the company’s representatives to check that the actual value of such a contribution corresponds to the shares issued for such a contribution. Because of the highly volatile nature of cryptocurrencies, the exception provided under Article 185.a CA regarding such external audit will regularly not be applicable. The volatile nature of the cryptocurrency mandates some coordination between the shareholders, the company, the external auditors and the court. Contributions have to be made prior to the entry into the commercial register. Hence, it is prudent to make additional contributions into the share capital, either in money or in kind (even in a cryptocurrency), in consultation with the external auditors before they issue their external audit report. The report will, in the absence of such an additional contribution, determine that there is a difference between the value of already-made contributions and the nominal value of the share capital. On the other hand, provided that there are additional contributions, if necessary the external audit report will state that the value of the contributions conforms to the nominal value.

\textsuperscript{57} BARBIĆ, op. cit., p. 233.

\textsuperscript{58} For example, based on the data provided at Gemini (https://gemini.com/prices/bitcoin/), the price of one bitcoin on 19 April 2019 amounted to USD 5,280.00, reaching its peak value of USD 12,818.00 on 27 June 2019 and ultimately dropping to USD 9,857.00 USD on 17 July 2019. That is an increase in value of more than 80\% within a period of only several months.

\textsuperscript{59} Of course, a sharp increase in value is also possible. However, this is actually not a problem from the point of view of the protection of the company and third parties.
of the share capital. However, the external audit report will probably warn the court about the volatile nature of the cryptocurrency contributions. This should prompt the court to carry out the rest of the incorporation procedure quickly after the issuance of the external audit’s report to minimize the risk of such volatility and the possible refusal of the company’s entry into the commercial register due to a subsequent substantial decrease in the actual market value of such a cryptocurrency contribution.

As to the determination of the value for the initial cryptocurrency contribution, shareholders and the company should not focus solely on the cryptocurrency’s market value at the time such a contribution is made. On the contrary, the value of the contributions should be based on the previous changes in the cryptocurrency’s market value, i.e., the increases and drops of exchange-rate prices. How far one should look depends on many factors (e.g., the frequency and the intensity of market value spikes). One should also take into consideration market values at the most prominent cryptocurrency exchanges, especially those that are the most common exchanges in Croatia (e.g., Coinbase). It would be prudent to try to calculate a safe market value margin to act as a safety net in case of a decrease in the cryptocurrency’s market value (e.g., +5-10% of the market value at the time of the contribution into the share capital). However, one should note that it is very hard to predict such market value changes and thus calculate the appropriate safety margin. It is likely that the longer the time between the contribution into the share capital and the registration, the bigger the possibility that the safety margin will have to be set higher.60 Therefore, a very important factor is the speed of the incorporation procedure which is dependent on the commercial court seized with the incorporation application (e.g., normally, courts outside Zagreb are more efficient and quicker in this regard since the majority of all applications are lodged with the Commercial Court in Zagreb).

On the other hand, if the market value of the cryptocurrency contribution at the moment of entry into the commercial register ends up being higher than the actual market value at that time, the shareholder might arrange with the company compensation which would reduce his initial contribution to the nominal value of the issued shares at the time of registration. For example, such compensation might take the form of cash payment amounting to the difference between the nominal value of the shares issued and the value resulting from the sale of the contributed cryptocurrency for HRK on the cryptocurrency exchange. However, such an arrangement between the shareholder and the company should be included in the contract in which the shareholder promises the contribution of the cryptocurrency into the share capital.

60 For example, as stated in the previous footnote, the market value of bitcoin in the last 3 months has increased by around 80%. In the last month, the increase of bitcoin value is lower, ca. 12%, but there was a registered spike in the increase of the value of around 50%. See trading data on Gemini on 17 July 2019 and before (https://gemini.com/prices/bitcoin/).
These rules on contributions in kind during the incorporation of a company limited by shares apply accordingly to the subsequent increase in the company's share capital by contributions.61

6. CONCLUSION

According to Swiss practice, cryptocurrencies can be used as a contribution in kind. Such transactions have been registered regularly since the autumn of 2017.

On the other hand, there have been no publicly registered cases of attempts to make cryptocurrency contributions into the share capital in Croatia. This does not, however, mean that such contributions should be precluded. There is also no valid economic or legal reason to prohibit such contributions, irrespective of the insufficient domestic regulatory framework concerning cryptocurrencies. Such contributions should de lege lata be qualified as contributions in kind where external audit should help protect the company and its creditors from the highly volatile nature of cryptocurrencies. This does not mean that there is no need to regulate cryptocurrencies. In order to ensure legal certainty and achieve uniform legal treatment, it is necessary to enact de lege ferenda regulations on the legal status of cryptocurrencies. Such rules should not be prohibitive but permissive to this new form of intangible (digital) asset. Furthermore, they should adequately protect the company and its creditors from the highly volatile nature of the market value of a cryptocurrency. This can be accomplished by expanding the application of existing rules on contributions in kind to cryptocurrency contributions. The exact accounting and economic model for determining adequate value in situations of high volatility should be left to audit experts.

However, even if a jurisdiction should not admit cryptocurrencies as a contribution in kind, then it would still be possible to set up a company or to make a capital increase with a normal money contribution, and at a later moment the company can acquire cryptocurrency on a trading platform of its choice and pay for it with the paid-in capital.

61 For example, see Articles 305 and 305.a CA.
ULAGANJE KRIPTOVALUTA
U TEMELJNI KAPITAL DIONIČKOG DRUŠTVA

U članku se obrađuje pitanje mogu li se kriptovalute, kao što je Bitcoin, unijeti kao ulog u temeljni kapital dioničkog društva sa stajališta švicarskog i hrvatskog prava. U Švicarskoj je već uspostavljena praksa da se kriptovalute prihvaćaju kao nenovčani ulog. S druge strane, u hrvatskoj praksi nije bilo evidentiranih slučajeva takvih pokušaja. Stoga se u radu analizira bi li prema postojećem zakonskom uređenju to bilo dopušteno. Ulog u kriptovalutama ne bi se mogao smatrati ulogom u novcu, nego bi ga trebalo kvalificirati kao nenovčani ulog. Autori smatraju da se ne bi mogao smatrati ni ulogom u stvarima zbog pravila stvarnog prava. No, takav bi ulog već de lege lata trebalo dopustiti kao ulog u pravima, sa svim pravnim posljedicama takva uloga trebala bi se smatrati stvarima. De lege ferenda, radi pravne sigurnosti, pitanje unosa kriptovaluta kao uloga u temeljni kapital trebalo bi ipak posebno uređiti.

Ključne riječi: kriptovalute, ulog u trgovačko društvo, procjena vrijednosti, revizija

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