Digital Currencies: Some Practical Implications for the IFA

Research Project for Emerging Issues/Advanced Topics Course

Master of Forensic Accounting

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1.0 - Introduction

1.1 – Overview and Objectives

Terms such as cryptocurrency and blockchain have seemingly become common vernacular of late. However, cryptocurrency as a concept and blockchain as a technology are largely not well understood by the public in general. While many people are aware of their existences, how digital currency transactions work are not as intuitive, nor ingrained in society as traditional money transactions are (traditional money is also known as fiat currency). As digital currencies become more commonplace, the current state of regulation around its ownership and use create unique issues which are not typically encountered with other asset classes. It remains unclear at this point whether digital currency will ever be considered 'normal' tender, but corporate and individual behavior seem to indicate that this type of currency will play some role in our economy in the future, and at the very least, presently. Considering that major corporations have started to accept digital currencies to settle transactions[1], investment banking firms are exploring and implementing digital currency based services for their clients[2], and individuals are trading and using these currencies at increasing rates[3], Investigative Forensic Accountants (IFAs) cannot ignore how digital currencies could potentially impact an investigation they are involved with.

[1] Chokun, Jonas, "Who Accepts Bitcoins As Payment? List of Companies, Stores, Shops," 99bitcoins.com, September 13, 2018, 10:56am, https://99bitcoins.com/who-accepts-bitcoins-payment-companies-stores-take-bitcoins/, accessed on May 10, 2019

[2] Anirudh, VK, "87.5% of all Bitcoins (BTC) will be mined by 2020 – Here's why it matters!," ambcrypto.com, May 27, 2018, https://ambcrypto.com/87-5-bitcoins-btc-mined-2020-heres-why-matters/, accessed on May 10, 2019.

[3] "What is Cryptocurrency," onlinebusiness.northeastern.edu, https://onlinebusiness.northeastern.edu/neu-msf/guide-to-the-rise-of-cryptocurrency-digital-currency-and-bitcoin/, accessed on May 10, 2019.

While many legitimate uses of digital currencies exist, they have a stigma surrounding them causing many to believe that they are inherently linked with criminal activity[4]. One study suggests that "approximately one-quarter of Bitcoin users and one-half of Bitcoin transactions are associated with illegal activity. Around $72 billion of illegal activity per year involves Bitcoin, which is close to the scale of the US and European markets for illegal drugs."[5] So, one would anticipate that an IFAs role as it relates to digital currencies would primarily be in the realm of criminal investigations relating to areas such as money laundering, trafficking, illegal payments, and illicit sales. However, the attributes which make digital currencies desirable when carrying out the type of criminal activity listed above, also lend themselves to being useful in committing fraud in other areas that IFAs commonly play a role in investigating as well. This paper intends to explore the challenges that cryptocurrencies pose in some of the other traditional areas IFAs practice in. Specifically, the paper will discuss the following practice areas/areas where fraud relating to cryptocurrency could occur: Family law (focusing on separation and divorce in particular); Bankruptcy and insolvency; and Financial Statement Misrepresentation; Business Valuation will not be specifically addressed as its own 'area', however the problematic nature of valuing digital currencies is a topic that is pervasive throughout the paper when discussing the other areas of practice. Specific criminal activities will also not be discussed, unless the activity falls under the purview of one of the sections that will be highlighted in the paper. Some methods or approaches to overcome

[4] Comben, Christina, "Why is Cryptocurrency Associated with Criminal Activity," coincentral.com, July 8, 2018, https://coincentral.com/cryptocurrency-and-criminal-activity/, accessed on May 10, 2019.

[5] Foley, Sean and Karlsen, Jonathan R. and Putnins, Talis J., Sex, Drugs, and Bitcoin: How Much Illegal Activity Is Financed Through Cryptocurrencies? (December 14, 2018). Review of Financial Studies, Forthcoming. Available at SSRN: https://ssrn.com/abstract=3102645 or http://dx.doi.org/10.2139/ssrn.3102645

the issues discussed throughout the paper will also be explored for the specific practice areas also.

1.2 – Report Summary

The following serves as a summary of what will be discussed throughout the paper as it pertains to the problematic nature and implications that cryptocurrencies can have on an IFA's investigation:

Section 2 – Characteristics of Cryptocurrencies

Problematic Characteristics of Cryptocurrencies and Related Transactions
- Transactions, and transactional process is unfamiliar to many people causing a knowledge gap between those who know how cryptocurrencies function and those who do not
- A high level of anonymity is afforded to parties involved in a transaction
- Not all blockchains on which cryptocurrency transactions are recorded follow the same rules, therefore, depending on which cryptocurrency is in use, the availability of information can differ

- Cryptocurrency transactions were purposefully intended to be private and anonymous by those who helped pioneer these types of currencies

Section 3 – Regulatory Environment of Cryptocurrencies

Regulatory Issues
- There is a lack of global consensus about how to approach digital currencies, which is problematic when a single transaction can pass through many countries
- Generally, there is a global disagreement on whether cryptocurrencies are securities or commodities
- National regulators are trying to fit cryptocurrencies into existing regulation and not accommodate for the uniqueness of the technology

Section 4.1 – Family Law (primarily divorce and separation)

Issues the IFA Can Encounter with Cryptocurrencies
- Digital currencies lend themselves well to being hidden or difficult to locate
- Difficult to ascertain whether one spouse has fully disclosed their entire cryptocurrency portfolio holding
- The value to be applied to the cryptocurrency involved in a marital dispute can be problematic
- Differing knowledge levels between spouses about digital currencies can introduce risk to this type of engagement

Section 4.2 – Financial Statement Misrepresentation

Issues the IFA Can Encounter with Cryptocurrencies
- Establishing the existence, completeness, and ownership of cryptoassets on a company's financial statements
- Obtaining suitable evidence that indicates revenue related to cryptocurrency activities should be recognized

- Determining whether cryptoassets should be considered impaired
- Uncovering all related party transactions
- Ascertaining whether the value of cryptocurrency assets that a company has reported is reasonable

Section 4.3 – Bankruptcy and Insolvency

Issues the IFA Can Encounter with Cryptocurrencies
- Tracing cryptocurrency assets can be difficult if not fully disclosed by the debtor
- Recovering digital currencies can be problematic if the type of cryptocurrency and private key of the wallet holding the funds is unknown; digital currencies are not a physical asset. The cost to recover the currency could be expensive as well.
- The value to be applied to a debtor's cryptocurrency portfolio can be difficult to ascertain and may impact the fiduciary duty of those overseeing the bankruptcy proceeding

2.0 – Digital Currencies: Generally

While digital currencies have become more prevalent over the past decade, "one of the first proposals of digital currency came in 1982"[6], from computer scientist and the eventual creator of DigiCash, (a digital currency company created in 1990), David Chaum[7]. Given how far Chaum's proposal goes back, digital currencies are clearly not an entirely new concept, however, for most people, it is a recent and not well understood one. The key takeaways from a recent survey conducted by HBUS found that: "1) Awareness of cryptocurrencies has doubled since 2018; 2) Despite this, a recent HBUS survey found crypto adoption is not keeping pace with awareness; and 3) Lack of education cited among top reasons holding up more widespread adoption, respondents said"[8].

2.1 – What is a Digital Currency?

Generally, a "digital currency is electronic money. It is not available in bills or coins"[9] and is predominantly found in two forms: virtual and crypto. "Virtual currency is

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[6]Lai, Victor, "The History of Digital Currency", Crushcrypto.com, November 20, 2018, https://crushcrypto.com/digital-currency-history/, accessed on May 12, 2019.

[7] Lai, Victor, "The History of Digital Currency", Crushcrypto.com, November 20, 2018, https://crushcrypto.com/digital-currency-history/, accessed on May 12, 2019.

[8] Keely, Aislinn, "HBUS report finds crypto awareness doubling since 2018", Theblockcrypto.com, May 13, 2019, 6:09pm, https://www.theblockcrypto.com/2019/05/13/hbus-report-finds-crypto-awareness-doubling-since-2018/, accessed on May 12, 2019.

9 Financial Consumer Agency of Canada, "Digital currency", Canada.ca, January 19, 2018, https://www.canada.ca/en/financial-consumer-agency/services/payment/digital-currency.html, accessed on May 12, 2019.

digital currency that is used within a specific community and has no real-world value"[10]. Where "cryptocurrency is a digital currency, where transactions are recorded on a public digital ledger called a blockchain, and every process along the way is secured by cryptography."[11] The primary commonalty between the types of digital currencies is that neither are backed through a centralized banking system. The fundamental difference between the two types of digital currencies is that cryptocurrencies have widespread tangible value when exchanged for fiat currency, where virtual currencies only have value to the community in which they are used. This paper will focus on crypto digital currencies as the basis of discussion. Also, the terms cryptocurrency and digital currency will be used interchangeably from hereon.

2.2 – How Does a Cryptocurrency Transaction Work?

Like fiat, cryptocurrencies can be exchanged for goods and/or services between two parties that are willing to transact. The major difference between the two medians of exchange lies in how a transaction is processed and monitored. As transfers of cryptocurrency takes place in the blockchain, the environment where a transaction takes place differs greatly compared to where a fiat transaction occurs. A traditional transaction would typically take place within a country's centralized banking system, which is heavily

[10] Yang Alcocer, Yuanxin (Amy), "Digital & Virtual Currencies: Definition, Types & Forms", study.com, https://study.com/academy/lesson/digital-virtual-currencies-definition-types-forms.html, accessed on May 12, 2019.

11 "How Does Cryptocurrency Work?", cryptocurrencyfacts.com, https://cryptocurrencyfacts.com/how-does-cryptocurrency-work-for-beginners/, accessed on May 12 ,2019.

regulated and monitored. Whereas a cryptocurrency transaction takes place over an unregulated algorithm[12], which has very minimal oversight associated with it.

A very simple description of how a typical cryptocurrency transaction occurs is as follows: "Step 1) A wants to send cryptocurrency to B; Step 2) The transaction is represented online as a block; Step 3) The block is distributed to everyone on the network; Step 4) A miner within the network will confirm that the transaction is valid; Step 5) The block is then added to the blockchain or public ledger; and Step 6) The currency then moves from A to B."[13] Also, the preceding process would require the public and private keys associated with the sender's digital wallet to coincide for the transaction to be processed. And the main identifier of the sender and receiver is their public key, not necessarily who they are. A visual representation of how a typical transaction occurs has been included in Appendix A for reference as well.

2.3 – Problematic Characteristics of a Cryptocurrency Transaction

While the preceding steps are an oversimplification of how a cryptocurrency transaction is processed, it does illustrate the vast difference between them and the more traditional types of transactions we are used to which occur in the banking system. With the most glaring differences being that cryptocurrency transactions can be theoretically viewed by anyone and are validated via the blockchain technology the cryptocurrency is

12 "How Does Cryptocurrency Work?", cryptocurrencyfacts.com, https://cryptocurrencyfacts.com/how-does-cryptocurrency-work-for-beginners/, accessed on May 12 ,2019.

13 "What is Cryptocurrency," onlinebusiness.northeastern.edu, https://onlinebusiness.northeastern.edu/neu-msf/guide-to-the-rise-of-cryptocurrency-digital-currency-and-bitcoin/, accessed on May 10, 2019.

being processed on, not a bank related system or bank employee. On the surface, the inherent transparency and the tamper-free technology associated with the use of blockchain would appear to be an advantage from the point of view of an IFA when considering what investigational impacts digital currencies can have. However, as things stand now this is not the case.

From the IFAs perspective, generally, the problem the characteristics that a cryptocurrency transaction presents are two-fold. Firstly, from a practical perspective, "the transaction amounts are public, but who sent the transaction is encrypted (it is pseudo anonymous). Each transaction leads back to a unique set of keys. Whoever owns a set of keys, owns the amount of cryptocurrency associated with those keys (just like whoever owns a bank account owns the money in it)."[14] So determining whom the underlying individual is behind a particular transaction is not a simple task. Furthermore, the justification or motivation behind an individual undertaking a particular transaction is not a relevant factor either, potentially further complicating the IFAs mandate. Know Your Client (KYC) protocols utilized by financial institutions is one example of how they have aimed to curb some of these practical issues currently facing the investigation of cryptocurrency related frauds. While 86% of cryptocurrency exchanges surveyed in a University of Cambridge study indicated that they have implemented some version of KYC[15] as part of their business model, due to the lack of oversight over the crypto industry

[14] "How Does Cryptocurrency Work?", cryptocurrencyfacts.com, https://cryptocurrencyfacts.com/how-does-cryptocurrency-work-for-beginners/, accessed on May 12 ,2019.

15 Hileman, Dr. Garrick & Rauchs, Michel, "Global Cryptocurrency Benchmarking Study", jbs.cam.ac.uk, 2017, https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-global-cryptocurrency-benchmarking-study.pdf, accessed on May 12, 2019.

in general, KYC protocols may not be as an effective method as it has been for the banks presently.

Secondly, from a technological perspective, not all blockchains are created equally. While Bitcoin may be the most well know cryptocurrency, at the time of the writing of this paper, over 2100 different types of cryptocurrencies were available for purchase globally[16]. Given how a cryptocurrency transaction works, each variation of cryptocurrency requires its own blockchain to log the transactions occurring for that particular currency. So, theoretically each blockchain can have its own idea of how a cryptocurrency transaction should be processed. Blockchain is a concept, thus no standard exists, and is therefore open to interpretation and can differ between the various types of cryptocurrencies available. "While Bitcoin is credited as the first blockchain technology, many of the technology designs that are labeled "blockchain" today bear little to no resemblance to Bitcoin's blockchain."[17] Therefore, depending on how a particular cryptocurrency's blockchain functions, the accuracy and transparency associated with that blockchain may not provide the data an IFA requires to carry out their investigation. This means then that while investigating any particular situation where cryptocurrency may be relevant, in addition to dealing with anonymity that cryptocurrency presents, an IFA would also have to assess the nuances and the limitations the particular blockchain they are dealing with has as well.

16 "All Cryptocurrencies", coinmarketcap.com, https://coinmarketcap.com/all/views/all/, accessed on May 12, 2019.

17 Jeffries, Adrianne, "'Blockchain is Meaningless", theverge.com, March 7, 2018, 11:36am, https://www.theverge.com/2018/3/7/17091766/blockchain-bitcoin-ethereum-cryptocurrency-meaning, accessed on May 12, 2019.

2.4 – The Cypherpunk Movement

A third characteristic of cryptocurrency which makes the IFAs job difficult is more philosophical in nature. The manifestation and evolution of cryptocurrency as it is currently understood stems from the Cypherpunk Movement which began in the early 1990's[18]. A declaration written by Eric Hughes titled "A Cypherpunk's Manifesto"[19] outlines how Cypherpunks viewed technology and digital currency's role relative to society. "The Cypherpunk Movement is directly responsible for the creation of digital currency, blockchain technology, and Bitcoin."[20] When trying to understand what the potential impact cryptocurrencies were intended to have and how these intentions would impact an IFA's investigation, gaining insight into the purpose behind the idea is important. Some key takeaways from Hughes' manifesto are as follows:

- "Privacy is necessary for an open society in the electronic age."[21]
- "Privacy in an open society requires anonymous transaction systems. Until now, cash has been the primary such system."[22]

18 Lopp, Jameson, "Bitcoin and the Rise of the Cypherpunks", coindesk.com, April 12, 2016, 13:43 utc, https://www.coindesk.com/the-rise-of-the-cypherpunks, accessed on May 12, 2019.

19 Lopp, Jameson, "Bitcoin and the Rise of the Cypherpunks", coindesk.com, April 12, 2016, 13:43 utc, https://www.coindesk.com/the-rise-of-the-cypherpunks, accessed on May 12, 2019.

20 "How Does Cryptocurrency Work?", cryptocurrencyfacts.com, https://cryptocurrencyfacts.com/how-does-cryptocurrency-work-for-beginners/, accessed on May 12 ,2019.

21 Hughes, Eric, "A Cypherpunk's Manifesto", activism.net, March 9, 1993, https://www.activism.net/cypherpunk/manifesto.html, accessed on May 12, 2019

22 Hughes, Eric, "A Cypherpunk's Manifesto", activism.net, March 9, 1993, https://www.activism.net/cypherpunk/manifesto.html, accessed on May 12, 2019

- "Privacy in an open society also requires cryptography. If I say something, I want it heard only by those for whom I intend it."[23]
- "We cannot expect governments, corporations, or other large, faceless organizations to grant us privacy out of their beneficence."[24]
- "We the Cypherpunks are dedicated to building anonymous systems. We are defending our privacy with cryptography, with anonymous mail forwarding systems, with digital signatures, and with electronic money."[25]

After considering the extracts from Hughes' manifesto above, it is evident that privacy and anonymity were vital components for the successful functioning and completion of cryptocurrency transactions. It appears that, in his opinion, the purpose behind the creation and use of digital currencies was in large part to facilitate faceless and nameless transactions, where parties involved in a transaction would only be identified if they so choose. The Cypherpunk Movement viewed cryptocurrencies as a means to operate outside of the normal boundaries' governments, corporations, and society had laid out. These types of transactions, by design, were created to make unwinding them very difficult. This is important for an IFA to understand as when an investigation does or has the potential to involve cryptocurrencies, the IFA must remain alert to the fact that detection of these transactions will be difficult, and that difficulty encountered is by design.

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23 Hughes, Eric, "A Cypherpunk's Manifesto", activism.net, March 9, 1993, https://www.activism.net/cypherpunk/manifesto.html, accessed on May 12, 2019

24 Hughes, Eric, "A Cypherpunk's Manifesto", activism.net, March 9, 1993, https://www.activism.net/cypherpunk/manifesto.html, accessed on May 12, 2019

25 Hughes, Eric, "A Cypherpunk's Manifesto", activism.net, March 9, 1993, https://www.activism.net/cypherpunk/manifesto.html, accessed on May 12, 2019

3.0 – Digital Currency Regulation

3.1 – A General Current State of Affairs

"Back in 2014, Canada's Parliament approved Bill C-31—the world's first national law on cryptocurrencies. This put Canada among the most progressive and transparent countries when it comes to crypto regulation. That said, the law is currently not in force, as it would require all businesses dealing with cryptocurrencies to register with FINTRAC."[26] Canada like many countries, realize that regulations governing cryptocurrencies need to be implemented in some manner, but have yet to determine the best approach to suit this progressive and unique technology. More stringent regulation around the ownership, use, and dissemination of cryptocurrencies would seemingly be one method to alleviate some of the challenges that their inherent characteristics present. However, the global reach that any cryptocurrency transaction can have makes regulation difficult.

A consistent approach globally would be needed to effectively regulate cryptocurrencies. "Without that central location to shut down, any meaningful crackdown would have to be a global endeavor."[27] This is not to imply though that fiat does not present difficulties when trying to trace transactions if deceit is intended. However, fundamentally, countries around the world are having a difficult time agreeing on what type of asset cryptocurrencies should be classified as. "There's a big debate in several

26 Miner One, "Crypto Regulation Around the World: Who Is Crypto-Friendliest?", medium.com, April 17, 2018, https://medium.com/@minerone.io/crypto-regulation-around-the-world-who-is-crypto-friendliest-373e58141660, accessed on May 12, 2019.

27 Martindale, Jon, "Go ahead, pass laws. They can't kill bitcoin, even if they try", digitaltrends.com, December 19, 2017, 12:57pm, https://www.digitaltrends.com/computing/dont-worry-about-bitcoin-regulation-it-cant-be-stopped/, accessed on May 12, 2019.

jurisdictions about how to classify cryptocurrencies. Are they commodities or securities? The way they are classed will determine how they are regulated under current laws."[28] For instance, the rules pertaining to precious metals and public company securities are different. At the very least, with fiat, countries can generally agree on what it is. Conversely, cryptocurrency is classified differently from a legal point of view depending on what jurisdiction you are referring too.

Appendix B[29] illustrates how differently countries around the world treat cryptocurrencies domestically. The illustrations demonstrate that the current level of regulation amongst countries varies between whether: cryptocurrencies are taxed, anti-money laundering laws apply, cryptocurrencies are banned, and national/regional cryptocurrencies are being developed[30]. Given the divergent opinions on what cryptocurrencies are and whether they should be embraced indicates just how difficult the IFAs job can be when these assets are involved. Depending on where an investigation takes place, or which country (or countries) a transaction of interest may pass through, means the rules the IFA is working within can drastically change. And therefore, the information available to the IFA as a result can be drastically different also. Using Canada and its current approach as an example, the difficulties cryptocurrency presents to

28 Kharpal, Arjun, "Cryptocurrencies: Regulating the new economy", cnbc.com, August 9, 2018, 2:20 am, https://www.cnbc.com/2018/08/09/cryptocurrencies--regulating-the-new--economy.html, accessed on May 12, 2019.

29 The Law Library of Congress, "Regulation of Cryptocurrency Around the World", www.loc.gov, June 2018, https://www.loc.gov/law/help/cryptocurrency/cryptocurrency-world-survey.pdf, accessed on May 12, 2019.

30 The Law Library of Congress, "Regulation of Cryptocurrency Around the World", www.loc.gov, June 2018, https://www.loc.gov/law/help/cryptocurrency/cryptocurrency-world-survey.pdf, accessed on May 12, 2019.

lawmakers when trying to regulate them, and why moving towards customized regulation tailored towards cryptocurrencies unique characteristics becomes evident.

3.2 – The Local Perspective as An Example

Cryptocurrencies are not considered legal tender in Canada. However, digital currencies have been taxed under Canada Revenue Agency's purview since 2013.[31] Since 2017 the Canadian Security Administrators (CSA) have published two notices, CSA Staff Notice 46-307 and CSA Staff Notice 46-308 attempting to implement a framework to regulate cryptocurrencies within a securities context.[32] These notices deal with Initial Coin Offerings (ICOs) and Initial Token Offerings (ITOs), essentially only one facet of cryptocurrency activity as a whole, when contemplating what the IFA needs to consider. At the moment, the Bank of Canada's formal stance with regards to cryptocurrencies is to "characterize them technically as securities."[33] Conversely, "The Canada Revenue Agency (CRA) "has characterized cryptocurrency as a commodity and not a government-issued currency. Accordingly, the use of cryptocurrency to pay for goods or services is treated as

31 Comply Advantage, "Cryptocurrency Regulations in Canada", complyadvantage.com, https://complyadvantage.com/knowledgebase/crypto-regulations/cryptocurrency-regulations-canada/, accessed on May 12, 2019.

32 Masse, Dean C., Fouin, Laure, D'Souza, Shane C., & Schneider, Andrea, "Canadian Securities Administrators Provide Further Guidance on the Securities Law Implications of Token Offerings", mccarthy.ca, June 12, 2018, https://www.mccarthy.ca/en/insights/blogs/snipits/canadian-securities-administrators-provide-further-guidance-securities-law-implications-token-offerings, accessed on May 12, 2019.

33 Comply Advantage, "Cryptocurrency Regulations in Canada", complyadvantage.com, https://complyadvantage.com/knowledgebase/crypto-regulations/cryptocurrency-regulations-canada/, accessed on May 12, 2019.

a barter transaction."[34] Canada's current state of affairs on this topic illustrates that if it is possible that a leading government in terms of regulating cryptocurrencies is conflicted within its own borders, coming to a reasonable global consensus could be problematic. Continuing to use Canada as an illustration, why a lack of clarity on how to approach regulation can lead to issues becomes apparent.

"Based on its technological innovation, low energy costs, high internet speed, and favorable regulatory environment, Canada has emerged as a leading crypto and blockchain nation. Canada is the third leading nation behind the United States and United Kingdom to embrace this technology."[35] Given the favorable conditions present in Canada to mine cryptocurrency and to facilitate blockchain technology, even if cryptocurrency loses favor with Canadians as a median to facilitate trade or from a speculative point of view, this does not mean that cryptocurrency will not have some presence in Canada. Without effective regulation, companies domestically and internationally, may use Canada's favorable conditions to cultivate the industry, and the risks that come with lax regulation will continue to persist. When considering the philosophy underlying the creation of cryptocurrencies mentioned in the Section 2, by no means is finding a solution to the regulatory issues facing lawmakers a simple one.

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[34] Mariam Al-Shikarchy et al., Gowlings WLG, *Canadian Taxation of Cryptocurrency . . . So Far*, Lexology (Nov. 14, 2017), https://www.lexology.com/library/detail.aspx?g=6283077e-9d32-4531-81a5-56355fa54f47

35 Jackson, Dave, "How Canada Has Become a Leading Blockchain Nation", stockhouse.com, August 15, 2018, https://stockhouse.com/news/newswire/2018/08/15/how-canada-has-become-leading-blockchain-nation#lLwm1yfW1k5muEQj.99, accessed on May 12, 2019.

3.3 – Issues That Can Occur with an Uncertain Regulatory Environment – The QuadrigaCX Situation

Whether regulation is a positive or negative when it comes to innovation in general is an ongoing debate[36]. It can be argued that the cryptocurrencies were created in large part to hinder traditional approaches to regulation given its decentralized nature. Whether the current cryptocurrency user community wants regulation is also debatable. A recent survey conducted on this topic in the United States indicates that "one of the key concerns by a number of bitcoin investors and commenters is whether government regulation could halt bitcoin's growth in the U.S. and emerging markets. With that in mind, it's perhaps no surprise that almost half of those surveyed said that did not think the government should regulate bitcoin in 2018."[37] However, the circumstances which arose out of the QuadrigaCX case left users of this Vancouver-based cryptocurrency exchange wanting more stringent regulation[38]. QuadrigaCX's demise is an example of the perils that may exist in the inconsistently regulated industry of cryptocurrency.

QuadrigaCX's sole director suddenly passed away. "Soon after his death was announced, court documents revealed he was the only QuadrigaCX employee who knew the encrypted pass codes needed to access $190 million in missing Bitcoins and other

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36 Hileman, Dr. Garrick & Rauchs, Michel, "Global Cryptocurrency Benchmarking Study", jbs.cam.ac.uk, 2017, https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-global-cryptocurrency-benchmarking-study.pdf, accessed on May 12, 2019.

37 Martindale, Jon, "Can bitcoin see more exponential growth in 2018? Its investors say yes", digitaltrends.com, December 14, 2017, 2:41pm, https://www.digitaltrends.com/computing/bitcoin-investor-survey-2018/, accessed on May 13, 2019.

38 Macdonald, Michael, "Controversial QuadrigaCX cryptocurrency exchange placed in bankruptcy", cbc.com, April, 8, 2019, 5:42pm, https://www.cbc.ca/news/canada/nova-scotia/quadrigacx-cryptocurrency-exchange-bankruptcy-1.5089539, accessed on May 13, 2019.

cryptocurrency locked in offline digital wallets."[39] Essentially these offline wallets held the private key necessary to disperse funds associated with this offline (or cold storage[40]) wallet, which held most of the exchange's funds. Severe difficulty in withdrawing the funds from the cold storage wallet was encountered due to the lack of controls that were required to be instituted around access to the exchange's digital wallets. Ultimately, the wallet was able to be accessed, however, the wallet did not contain nearly as much money as anticipated. "Large amounts of funds passed through the cold wallets but were then sent to other accounts, including on other crypto exchanges. This means these funds may exist on other exchanges."[41] If these funds were to be located on other exchanges, gaining access to the private keys associated with the digital wallets holding these cryptofunds would again present difficulties when trying to disperse these funds to QuadrigaCX's users. Again, regulation which outlines rules on the accessibility of digital wallets holding funds for an exchange would have helped alleviate this problem also. While the QuadrigaCX case is an extreme example, regulatory inconsistencies or shortcomings can pose many problems for the IFA when working on a cryptocurrency related case. "Regulation is the

39 MacDonald, Michael, "Cryptocurrency platform QuadrigaCX should be placed in bankruptcy: monitor", Canadianbusiness.com, April 3, 2019, https://www.canadianbusiness.com/business-news/cryptocurrency-platform-quadrigacx-should-be-placed-in-bankruptcy-monitor/, accessed on May 13, 2019.

40 "What Are The Differences Between Cold Storage Wallets and Ledger's Hardware Wallets", ledger.com, April 10, 2019, https://www.ledger.com/2019/04/10/what-are-the-differences-between-cold-storage-wallets-and-ledgers-hardware-wallets/, accessed on May 13, 2019.

41 Copeland, Tim, "The Complete Story of the QuadrigaCX $190 Million Scandal", decrypt.co, March 13, 2019, https://decryptmedia.com/5853/complete-story-quadrigacx-190-million, accessed on May 13, 2019.

controlling of an activity or process, usually by means of rules."[42] Having defined rules allows the IFA to understand what guidelines they are exactly working within.

3.4 – Inconsistent Regulation and Impacts to the IFA

The purpose of the commentary thus far on the current state of regulation surrounding cryptocurrencies is not meant to be taken as an opinion on whether the current state of regulation is appropriate or not. Rather the point of this discussion is to illustrate that, one, without a clear global outlook on how oversight is to be applied to cryptocurrencies, and two, without a truly customized regulatory approach to capture the uniqueness of this asset, the job of the IFA becomes much more difficult in crypto related investigations. Some of these difficulties IFAs can encounter related to regulations as they currently stand are as follows:

Crypto Havens vs. Strict Regulation

Since the characterization of cryptocurrencies has not been unified amongst various countries, what exactly they are is open to interpretation. The ability for a crypto transaction to pass through many countries can cause issues for an IFA as a result. Countries such as Liechtenstein, Malta, Gibraltar, and Bermuda have all passed recent legislation which are very crypto friendly in order to foster the growth of crypto related industry in their respective countries. Where the majority of the G20 countries are weary

42 "Definition of Regulation", collinsdictionary.com, https://www.collinsdictionary.com/dictionary/english/regulation, accessed on May 13, 2019.

about impacts that cryptocurrencies can have on their economies.[43] Hypothetically, if it is assumed that regulation around the 'cashing out' of cryptocurrencies into fiat would be an effective measure to track, at the very least, who has received fiat for crypto, then theoretically this aspect of a transaction could be traced. Furthermore, any fiat transactions occurring after this could be tracked as well using current methods available to the IFA. However, if a Crypto Haven did not regulate the conversion of crypto into fiat, then all that would need to occur for an investigative trail to go cold would be to exchange the crypto into fiat in a Crypto Haven. As this would then allow the fiat of the Crypto Haven to be converted into the fiat of another country and the tracing of this transaction would essentially end there. While this is a hypothetical situation, it does highlight that differing governmental views on how cryptocurrencies are to be approached can cause practical limitations to a potential mandate an IFA may have.

Technology Standards for Cryptocurrency Exchanges

While the characterization and focus of regulation differs amongst countries, one of the main areas that countries have tried to place rules around is cryptocurrency exchanges[44] for those countries that have classified cryptocurrency as a security. A cryptocurrency exchange is essentially a trading platform for users to convert fiat into

[43] Millian, Luis, "The cryptic world of crypto-currency regulations", canadianlawyermag.com, February 4, 2019, https://www.canadianlawyermag.com/author/luis-millan/the-cryptic-world-of-crypto-currency-regulations-16801/, accessed on May 13, 2019.

[44] Cryptomaniaks, "Is it time to regulate cryptocurrency exchanges? Best Crypto Exchange/Medium", medium.com, September 23, 2018, https://medium.com/predict/is-it-time-to-regulate-cryptocurrency-exchanges-medium-best-crypto-exchange-3ad3a01a1fa0, accessed on May 13, 2019.

cryptocurrencies and vice versa. However, even if exchanges are following the rules outlined for them by regulators, it does not mean that the underlying technology which the exchange is utilizing is effective. A study conducted by the Ontario Securities Commission in 2018 had the following findings concerning the use of cryptocurrency exchanges for those surveyed[45]:

- "21% of crypto exchange users reported a halt in trading;"[46]
- "20% of respondents encountered issues withdrawing money from their account;"[47]
- "16% of respondents encountered problems transferring money into their trading platform account;"[48] and
- "15% of those surveyed did not understand the fees they are being charged."[49]

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[45] Ontario Securities commission, "OSC Study: Lack of understanding of cryptoassets puts Ontarians at risk", osc.gov.on.ca, June 28, 2018, https://www.osc.gov.on.ca/en/NewsEvents_nr_20180628_cryptoassets-ontarians-at-risk.htm, accessed on May 13, 2019.

[46] Innovative Research Group/Ontario Securities Commission, "Taking Caution: Financial Consumers and the Cryptoasset Sector", osc.gov.on.ca, June 2018, https://www.osc.gov.on.ca/documents/en/Investors/inv_research_20180628_taking-caution-survey-results.pdf, accessed on May 13, 2019.

[47] Innovative Research Group/Ontario Securities Commission, "Taking Caution: Financial Consumers and the Cryptoasset Sector", osc.gov.on.ca, June 2018, https://www.osc.gov.on.ca/documents/en/Investors/inv_research_20180628_taking-caution-survey-results.pdf, accessed on May 13, 2019.

[48] Innovative Research Group/Ontario Securities Commission, "Taking Caution: Financial Consumers and the Cryptoasset Sector", osc.gov.on.ca, June 2018, https://www.osc.gov.on.ca/documents/en/Investors/inv_research_20180628_taking-caution-survey-results.pdf, accessed on May 13, 2019.

[49] Innovative Research Group/Ontario Securities Commission, "Taking Caution: Financial Consumers and the Cryptoasset Sector", osc.gov.on.ca, June 2018, https://www.osc.gov.on.ca/documents/en/Investors/inv_research_20180628_taking-caution-survey-results.pdf, accessed on May 13, 2019.

While these survey results do not indicate that a majority of those surveyed are experiencing these problems, it does indicate that a material number of users are. From the IFAs point of view, the availability of reliable information is paramount to carrying out an effective investigation. In some instances, the absence of information is as good as having information, however given the inherent characteristics of cryptocurrencies, it is not an asset where a lack of information can be viewed as a positive. Therefore, the survey results are an indication that the technological infrastructure of some cryptoexchanges may be insufficient to place a high degree of confidence in the availability of information that they are supposed to be tracking. While regulations over crypto exchanges is an evolving area, until some standard of technical infrastructure is mandated on the crypto sector, the information that is supposed to be recorded and archived may not be readily available if an IFA requires it.

Trying to Fit Cryptocurrency into Existing Regulation

Due to its recent notoriety, cryptocurrencies have gained a lot of public awareness, but this awareness does not mean that they are understood.[50] The increase in popularity has meant that governments have had to act to ensure that the public is protected in general. However, governments themselves may very well be having a difficult time dealing with this technology as it was partially designed to make regulation difficult. Considering that

[50] Innovative Research Group/Ontario Securities Commission, "Taking Caution: Financial Consumers and the Cryptoasset Sector", osc.gov.on.ca, June 2018, https://www.osc.gov.on.ca/documents/en/Investors/inv_research_20180628_taking-caution-survey-results.pdf, accessed on May 13, 2019.

most countries classify cryptocurrencies as either a commodity or security, it is evident that regulators are attempting to fit cryptocurrencies into a regulatory framework that already exists. This may be for a couple of reasons. Firstly, it may be easier from an administrative point of view to fit these assets under a framework which already exists. And secondly, governments may need more time to adopt a policy that aptly suits cryptocurrency, so current regulations may be a temporary solution until a more customized approach is implemented. The issue that arises for the IFA based on the current state of regulation is that it assumes that a cryptocurrency transaction needs to take place on an exchange, so theoretically existing regulation should capture most transactions. If cryptocurrencies took place through a centralized system that may be a valid assumption, however since blockchain technology is used, the assumption does not hold up as well. Blockchain technology "uses a special kind of network called 'peer-to-peer network' which partitions its entire workload between participants."[51] Participation on an exchange is not necessary to partake in a cryptocurrency transaction. Therefore, all the information that may be relevant to an IFAs investigation may not be captured under current regulations, thus potentially further complicating an investigation.

Cryptocurrency Does Not Have to be Converted into Fiat

To this point, very few countries have adopted a national cryptocurrency which is considered legal tender. Venezuela, Senegal, Tunisia, and the Marshall Islands are the

[51]Rosic, Ameer, "What is Blockchain Technology? A Step-by-Step Guide For Beginners", blockgeeks.com, 2016, https://blockgeeks.com/guides/what-is-blockchain-technology/, accessed on May 13, 2019.

pioneers which have developed national digital currencies which are considered legal tender on par with their national fiat currency.[52] This should imply then that in every other country in the world, cryptocurrency would be required to be converted to fiat to have practical value. As mentioned above, if cryptocurrency needed to be converted to fiat to have value, then this would reduce the pseudo-anonymity of using cryptocurrencies as this conversion could be regulated. However, this is not the case. At a growing rate, businesses around the world are accepting cryptocurrency as a means of payment.[53] Consumers can purchase items in a wide range of categories such as: general merchandise, computer related services, web related services, travel services and food.[54] And with "84% of executives surveyed in a 2018 PwC Report indicating that they are actively involved with the technology"[55], trends seem to be indicating that more and more businesses are considering accepting cryptocurrencies as a means of payment.

This means that cryptocurrencies do not have to be cashed out into a national currency to have practical value. Therefore, if a country does not require companies that accept cryptocurrencies to comply with their version of anti-money laundering rules, individuals or companies receiving tangible value in exchange for cryptocurrency may be

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[52] O'Neal, Stephen, "State-Issued Digital Currencies: The Countries Which Adopted, Rejected, or Researched the Concept", cointelegraph.com, July 19, 2018, https://cointelegraph.com/news/state-issued-digital-currencies-the-countries-which-adopted-rejected-or-researched-the-concept, accessed on May 13, 2019.

53 Moreau, Elise, "13 Major Retailers and Services That Accept Bitcoin", lifewire.com, June 3, 2019, https://www.lifewire.com/big-sites-that-accept-bitcoin-payments-3485965, accessed on June 4, 2019.

54 "Companies that Accept Bitcoin – List Updated for 2019", 2019, https://www.ccn.com/companies-that-accept-bitcoin, accessed on May 13, 2019.

55 Rooney, Kate, "84% of companies are dabbling in blockchain, new survey says", cnbc.com, August 27, 2018, 7:01 pm, https://www.cnbc.com/2018/08/27/84percent-of-companies-are-dabbling--in-blockchain-new-survey-says-.html, accessed on May 13, 2019.

difficult to track. If businesses are not required to keep some sort of record in this regard, then the IFAs job to track a transaction involving cryptocurrencies becomes more difficult. Furthermore, a cryptocurrency owner can transfer currency to another cryptocurrency participant via the blockchain without having to convert it into fiat. Thus, if parties transact directly with one another outside of a formalized transaction system that is under a government's purview, unraveling these transactions can be difficult. Even though the transactions occurring on the blockchain are viewable by anyone, as blockchain technology is not easily understandable, identifying and tracing these types of transactions is difficult.

4.0 – Impacts of Digital Currencies on Specific IFA Practice Areas

To this point the paper has explored how the characteristics of cryptocurrencies and regulations pertaining to them can present difficulties to the IFA in investigations involving the asset in general terms. The purpose of this section is to discuss how digital currencies can be problematic in specific practice areas of the IFA profession. The practice areas which will be focused on are: family law, financial statement misrepresentation, and bankruptcy and insolvency for the reasons mentioned in Section 1.1. While valuation will not be discussed as a separate item, issues of valuation are pervasive throughout the areas of practice which are discussed. A survey conducted by the AICPA in 2014 indicated that of 443 professionals surveyed, they practiced in these areas in the following proportions[56]:

Area of Practice	**% of Those Surveyed Practiced in Area**
Bankruptcy & Insolvency	12%
Family Law	16%
Financial Statement Misrepresentation	27%
Valuation	37%
None of These	29%

[56] AICPA Forensic and Valuation Services Section (2014). The 2014 AICPA Survey on International Trends in Forensic and Valuation Services.

4.1 - Family Law

Family Law most typically covers topics such as "divorce, separation, child custody, support payments, shared parenting, and property settlements."[57] The area of family law that most lends itself to encounter issues related to cryptocurrencies are divorce and separation settlements, considering that coming to agreements in these areas can at times be highly adversarial. "Spouses may try to hide funds during divorce proceedings in several ingenious ways to improve the share of the ultimate financial settlement."[58] Given the characteristics of digital currencies discussed, detecting such instances of deceit becomes that much more difficult.

4.1.1 – IFAs Typical Role in Family Law Engagements

The IFAs role in family law cases can be vast. Areas that IFAs typically participate in when engaged for a family law dispute include: "business valuations, income determination, lifestyle/marital spending analysis, martial balance sheet construction, asset tracing, impact of tax issues, analysis of corporate benefits, assisting in deposition and trial preparation, and expert witness testimony."[59] Most of these services may be relevant when a case goes to court in a divorce or separation situation, and can arise in simple or complex

57 Legal Aid Ontario, "Family Law Information Program (FLIP)", legalaid.on.ca, http://www.legalaid.on.ca/en/getting/flip.asp, accessed on May 15, 2019.

58 Hyder, Cheryl B., "D-I-V-O-R-C-E may actually spell F-R-A-U-D", fraud-magazine.com, May/June 2005, https://www.fraud-magazine.com/article.aspx?id=4294967743, accessed on May 15, 2019.

59 Klein, Hubert, Rodriguez, Kristie, and Still, Andrew, "The Continuing Role of the Forensic Accountant in Divorce Proceedings:, eisneramper.com, March 14, 2019, https://www.eisneramper.com/forensic-accountant-divorce-1015/, accessed on May 15, 2019.

circumstances. Performing these services becomes more difficult when the financial situation of the couple presents some level of complexity, such as the ownership or potential ownership of cryptocurrencies. These types of legal proceedings rely on the parties involved being transparent and fully disclosing information on all relevant matters under scrutiny. However, "family law practitioners, fraud examiners, and forensic accountants should never forget that information received from either party may be intentionally misstated and/or manipulated."[60] And when cryptocurrencies are involved the IFA must be especially astute.

4.1.2 – How Digital Currencies Complicate the Practice Area

Hidden Assets and Locating Hidden Assets

Cryptocurrency ownership can be an effective way to hide assets, so they do not become part of the family property that is to be divided. For assets to be divided equitably between spouses after a marriage breakdown, each spouse must be forthcoming about the assets they own that the other spouse may not be knowledgeable of. Given the anonymity that is inherent with the ownership of cryptocurrency, if a spouse does not disclose the ownership of such assets, determining whether ownership exists can be an issue. Unless one spouse suspected that the other spouse had some sort of ownership interest in this asset class, hidden cryptocurrencies owned which should be part of the family assets to be divided may easily be overlooked or not considered at all. Furthermore, if it is determined

60 Hyder, Cheryl B., "D-I-V-O-R-C-E may actually spell F-R-A-U-D", fraud-magazine.com, May/June 2005, https://www.fraud-magazine.com/article.aspx?id=4294967743, accessed on May 15, 2019.

that there was ownership of cryptocurrencies that was not disclosed, locating these assets may be just as problematic. Determining how many digital wallets an individual has or following a transaction through to determine whether ownership exists and quantifying that ownership can be an onerous task practically, and an expensive task from a cost perspective. In addition to the IFA, a blockchain or cryptocurrency expert would most likely need to be engaged to locate the potential hidden assets. Who pays for this work to be done if hidden assets cannot be identified or located becomes an issue as well that will have to be considered.

Completeness of Disclosure

Depending on where and how cryptocurrency is stored by one or both spouses, determining precisely how much cryptocurrency a spouse owns is a problematic endeavor, even if ownership is disclosed. Reporting mechanisms for cryptocurrencies held on exchanges may not provide as reliable information that can normally be received from banks or securities companies depending on where the exchange is located. Typically, crypto exchanges make CSV files available for download to their clients for them to view their transaction history[61], similar to financial institutions. Additionally, cryptocurrency owners can take a screenshot of their account holdings.[62] However, financial institutions

[61] Liao, Shannon, "How to File Your Income Taxes on bitcoin in 2018", theverge.com, January 29, 2018, 8:00 am, https://www.theverge.com/2018/1/29/16928768/cryptocurrency-bitcoin-how-to-file-taxes-2018-return-compliance-irs, accessed on May 15, 2019.

62 Macdonald, Asher M., "What Happens with Cryptocurrency in a Divorce", mcleod-law.com, March 7, 2018, https://www.mcleod-law.com/resource/what-happens-cryptocurrency-divorce/, accessed on May 15, 2019.

make available statements as well that coincide with the CSV file generated. As a CSV file is digital, the potential exists that the information can be doctored prior to being given to the other spouse's legal representation. And depending on the exchange the crypto is held on, any further documentation may not be available to substantiate the CSV file. So even if cryptocurrency accounts and transactions are disclosed, the opposing side requesting the information may be not be able to assume that the information is complete. And the potential lack of documentation to corroborate the information provided makes assessing the completion of information difficult.

Complicating the idea of disclosure further relates to a recent court decision rendered by the Ontario Superior Court of Justice on April 5, 2019 in M.M.D. v. J.A.H., 2019 ONSC 2208.[63] Justice Nakonechy considered the characteristics of cryptocurrencies and determined that "a substantial risk that production of information could lead to attacks and give third parties the ability to access and perhaps steal these assets"[64]. Thus, the spouse owning the cryptocurrency in this case was permitted to produce redacted documents regarding their cryptocurrency holdings, so they were not unfairly prejudiced when it came to the potential of the assets to be stolen. The Court's ruling on this situation implies that the opposing spouse will essentially receive incomplete information due to the inherent security risks that are present with accessing someone's private key.

63 Balakrishnan, Anita, "Judge allows redactions on cryptocurrency disclosure in child support feud", lawtimesnews.com, April 22, 2019, https://www.lawtimesnews.com/author/anita-balakrishnan/judge-allows-redactions-on-cryptocurrency-disclosure-in-child-support-feud-17145/, accessed on May 15, 2019.

64 M.M.D. v. J.A.H., 2019 ONSC 2208 (CanLII), <http://canlii.ca/t/hzmhq>, retrieved on 2019-05-15.

Value of Currency to be Applied

Assuming that full disclosure has been made by both spouses, and the amount of cryptocurrency owned is not in dispute, what the worth of that cryptocurrency is could become a contentious topic to evaluate. Most likely, one spouse will want it to have a lower value, with the other wanting a higher one. Unlike the more efficient systems that exist for national currencies, commodities, and securities, due to its infancy in comparison, cryptocurrencies have not yet established a marketplace where a reasonable range of what it is worth can be agreed upon between the disputing parties.[65] "The spread — the difference between the buy and sell price — on foreign currency trades will be a few pennies at the most, while spreads on cryptocurrency trades can be as high as a few dollars. All this points to a very thin market that naturally moves very quickly and thus increases the volatility of cryptocurrency prices."[66] Even if markets exist to value the cryptocurrency held, finding a reasonable value that both parties can agree on can be difficult if quotes for the cryptocurrency differ greatly.

Knowledge Level of Spouses Regarding Cryptocurrency

One of the key findings in the OSC survey it conducted on the cryptoasset sector was "cryptocurrency awareness is high, but knowledge is relatively low. A large majority (81%) of Ontarians have heard of Bitcoin. However, most are not very familiar with the

65 Aziz, "Guide to Valuing Cryptocurrency: How to Value a Cryptocurrency", masterthecrypto.com, https://masterthecrypto.com/guide-how-to-value-a-cryptocurrency/, accessed on May 15, 2019.

66 Pauw, Chrisjan, "How Cryptocurrency Prices Work, Explained", cointelegraph.com, July 24, 2018, https://cointelegraph.com/explained/how-cryptocurrency-prices-work-explained, accessed on May 15, 2019

concept of cryptocurrencies. 52% say they have heard of cryptocurrencies, but don't know much about them."[67] Depending on the relative knowledge levels of the spouses involved in a marital dispute regarding cryptocurrencies, some risks can arise. The first one has already been discussed above in that one spouse may not even suspect the existence of these assets as the asset class is not one that is typically considered by them due to their lack of knowledge of it. The other risk that arises when it has been decided that one spouse must transfer cryptocurrency to the other; and one spouse understands the technology and the other does not. Based on how cryptocurrency transactions occur, if the private key is lost or stolen after the transfer, or if the assets are transferred to the wrong account or lost/stolen during transmission, who bears the financial liability for this, and how to measure this financial liability needs to be considered[68].

4.1.3 – Potential Solutions/Approaches for the IFA to Reduce the Complexities

The most effective solution to alleviate the complexities described above would be to have full disclosure between the involved parties of all crypto related assets. However, this can never be guaranteed or assumed. And until the courts have dealt with this topic enough to establish precedents in this area of family law, the IFA must be creative when

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[67] Innovative Research Group/Ontario Securities Commission, "Taking Caution: Financial Consumers and the Cryptoasset Sector", osc.gov.on.ca, June 2018, https://www.osc.gov.on.ca/documents/en/Investors/inv_research_20180628_taking-caution-survey-results.pdf, accessed on May 13, 2019.

68 Macdonald, Asher M., "What Happens with Cryptocurrency in a Divorce", mcleod-law.com, March 7, 2018, https://www.mcleod-law.com/resource/what-happens-cryptocurrency-divorce/, accessed on May 15, 2019.

trying to deal with the complexities that can arise from these assets being hidden or not fully disclosed. Many approaches the IFA can implement are similar to ones that would be used if fiat were involved, however they just need to be tailored to the characteristics of cryptocurrencies. To determine whether there may be an issue related to cryptocurrencies in a divorce or separation scenario, the IFA may want to consider the following types of questions[69]:

1. "Is the spouse very tech savvy?"[70]
2. "Has the spouse ever owned cryptocurrency?"[71]
3. "If so, did he or she buy and sell on an exchange, or did he or she receive cryptocurrency for goods and services?"[72]
4. "If so, how did the spouse store and transact in cryptocurrency?"[73]
5. "Did the spouse use cryptocurrency as part of their trade or business?"[74]

[69] DiMichael, Mark, "A Forensic Guide to Finding Cryptocurrency in Divorce Litigation", February 1, 2019, https://www.citrincooperman.com/infocus/a-forensic-guide-to-finding-cryptocurrency-in-divorce-litigation, accessed on May 15, 2019.
[70] DiMichael, Mark, "A Forensic Guide to Finding Cryptocurrency in Divorce Litigation", February 1, 2019, https://www.citrincooperman.com/infocus/a-forensic-guide-to-finding-cryptocurrency-in-divorce-litigation, accessed on May 15, 2019.
[71] DiMichael, Mark, "A Forensic Guide to Finding Cryptocurrency in Divorce Litigation", February 1, 2019, https://www.citrincooperman.com/infocus/a-forensic-guide-to-finding-cryptocurrency-in-divorce-litigation, accessed on May 15, 2019.
[72] DiMichael, Mark, "A Forensic Guide to Finding Cryptocurrency in Divorce Litigation", February 1, 2019, https://www.citrincooperman.com/infocus/a-forensic-guide-to-finding-cryptocurrency-in-divorce-litigation, accessed on May 15, 2019.
[73] DiMichael, Mark, "A Forensic Guide to Finding Cryptocurrency in Divorce Litigation", February 1, 2019, https://www.citrincooperman.com/infocus/a-forensic-guide-to-finding-cryptocurrency-in-divorce-litigation, accessed on May 15, 2019.
[74] DiMichael, Mark, "A Forensic Guide to Finding Cryptocurrency in Divorce Litigation", February 1, 2019, https://www.citrincooperman.com/infocus/a-forensic-guide-to-finding-cryptocurrency-in-divorce-litigation, accessed on May 15, 2019.

6. "Where does the spouse keep their important records? Does the client have access to them?"[75]

7. "What electronic devices does the spouse own?"

8. "Does the client still have physical access to his or her spouse's electronic devices, such as computers, phones, and tablets?"[76]

The answers to the above questions may very well be the first step in determining whether a spouse is hiding crypto assets or has not fully disclosed how much of the asset they own.

If there is a presumption that cryptocurrencies do exist and it is suspected that one spouse has not been forthcoming with regards to their full ownership of the currency, the IFA can consider doing the following:

- Signing up for a mock account on an exchange or platform where a spouse has stated they hold cryptocurrencies to determine what documentation is available when it comes to assessing whether there are any issues with disclosure.
- Since the technology is invasive based on how blockchain operates, if the spouse's public key is known, the transactions involving this public key can be traced (however this could be a very time-consuming and expensive exercise depending on the circumstances).

[75] DiMichael, Mark, "A Forensic Guide to Finding Cryptocurrency in Divorce Litigation", February 1, 2019, https://www.citrincooperman.com/infocus/a-forensic-guide-to-finding-cryptocurrency-in-divorce-litigation, accessed on May 15, 2019.
[76] DiMichael, Mark, "A Forensic Guide to Finding Cryptocurrency in Divorce Litigation", February 1, 2019, https://www.citrincooperman.com/infocus/a-forensic-guide-to-finding-cryptocurrency-in-divorce-litigation, accessed on May 15, 2019.

- Look through the spouse's bank statements and credit card statements to trace whether deposits or withdrawals were made to a crypto account.[77]
- Look through a spouse's phone, or computer device to determine if apps or programs are present indicating that a digital or paper wallet may exist.[78]
- Inspecting a spouse's tax returns or personal net worth statements to look for indications that ownership of digital currencies exists and in possibly what magnitudes.[79]

Every situation is unique and may include unique nuances, which renders the list above to be a non-exhaustive one. However, generally, the items listed above should allow the IFA to assess whether crypto assets are held and provide insight into how much of the asset a spouse owns.

77 Rozin Golinder Law, LLC, "Cryptocurrency and Equitable Division in NJ Divorce:, rgfamilylaw.com, June 30, 2018, https://www.rgfamilylaw.com/blog/2018/june/cryptocurrency-and-equitable-division-in-nj-divo/, accessed on May 15, 2019.

78 Rozin Golinder Law, LLC, "Cryptocurrency and Equitable Division in NJ Divorce:, rgfamilylaw.com, June 30, 2018, https://www.rgfamilylaw.com/blog/2018/june/cryptocurrency-and-equitable-division-in-nj-divo/, accessed on May 15, 2019.

79 DiMichael, Mark, "A Forensic Guide to Finding Cryptocurrency in Divorce Litigation", February 1, 2019, https://www.citrincooperman.com/infocus/a-forensic-guide-to-finding-cryptocurrency-in-divorce-litigation, accessed on May 15, 2019.

4.2 – Financial Statement Misrepresentation

Financial statement misrepresentation can be generally described as a broad issue where a company intentionally misstates their financial position via its financial statements to achieve an objective that is unique to their particular motivation[80]. Such motivations can include reporting a more favorable net profit figure, or reduced debt obligations to name a few. Some common occurrences of where misrepresentations arise in financial statements are: valuation of balance sheet items, ownership of balance sheet items, lack of or omission of adequate note disclosures, understating or overstating revenue and expense items, and a failure to disclose related party transactions. Investigating alleged instances of financial statement misrepresentations can be difficult under normal circumstances, and cryptocurrencies, considering their nature discussed in the earlier part of this paper, further complicates this area of practice for the IFA.

4.2.1 – IFAs Typical Role in Financial Statement Misrepresentation Engagements

If an occurrence of financial statement misrepresentation is suspected, an IFAs role, if engaged to investigate whether a misrepresentation occurred, can include assessing "evidence of economic transactions and reporting which is as contained within an accounting system"[81]. Essentially, by assessing the underlying information used to prepare the financial statements under scrutiny, the IFA seeks to detect irregularities or neglections/inclusions that should or should not have been reported in the financial

[80] Ilter, C. (2014). Misrepresentation of financial statements. *Journal of Financial Crime, 21*(2), 215-225. doi:http://dx.doi.org.myaccess.library.utoronto.ca/10.1108/JFC-04-2013-0028

[81] Oyedokun, Godwin, Integrity of Financial Statements and Forensic Accounting Techniques in Internal Control of Business Organisations (March 30, 2015). Available at SSRN: https://ssrn.com/abstract=2861578 or http://dx.doi.org/10.2139/ssrn.2861578

statements. Detecting instances of intentional manipulation of financial statements and assessing whether financial statements are fairly presented (given the evidence available) based on the assertions made by management can also be under the IFAs purview when practicing in this area. Evaluating whether the assertions made my management are valid in relation to cryptocurrency transactions can be particularly challenging.

The recency and uniqueness of cryptocurrencies are primarily two of the factors that make them difficult to understand. Enough time has not yet passed for individuals to become acclimated with them in order to have a more confident understanding of these currencies. To reiterate one of the key findings from the OSC's survey on the Cryptoasset Sector: "Cryptocurrency awareness is high, but knowledge is relatively low. A large majority (81%) of Ontarians have heard of Bitcoin. However, most are not very familiar with the concept of cryptocurrencies. 52% say they have heard of cryptocurrencies, but don't know much about them."[82] One of the key objectives of financial statements are that they should be presented fairly for the users of them. Due to the lack of understanding surrounding cryptocurrencies, determining if these assets are presented fairly in financial statements that include them becomes difficult.

[82] Innovative Research Group/Ontario Securities Commission, "Taking Caution: Financial Consumers and the Cryptoasset Sector", osc.gov.on.ca, June 2018, https://www.osc.gov.on.ca/documents/en/Investors/inv_research_20180628_taking-caution-survey-results.pdf, accessed on May 13, 2019.

4.2.2 – How Digital Currencies Complicate the Practice Area

Existence of Cryptoassets

For companies who report crypto related balances on their financial statements, understanding whether the transactions related to the crypto related balances reported occurred can be challenging to substantiate. The use of blockchain technology which facilitates the cryptocurrency transactions a company would undertake should alleviate this concern as the public ledger blockchains represent should be theoretically free from manipulation. So, if a company can prove what its public key is, transactions utilizing this public key should be straightforward to trace. However, since there is no agreed upon standard as to how blockchains are to be constructed and secured, the reliability of the particular blockchain in question may not provide reliable information. This is particularly worrisome since blockchains are essentially functioning as a third-party service provider. Thus, it may be difficult to substantiate cryptoasset balances resulting in a potential misrepresentation.

Completeness of Cryptoassets

Additionally, determining whether all transactions related to cryptocurrencies that a company undertook are recorded can also be an issue. While everything occurring on the blockchain should be logged, it is possible for parties to complete cryptocurrency transactions via off-chain transactions, essentially transactions not occurring over the

blockchain.[83] While these transactions defeat the purpose of what blockchain was created for, they are cheaper to complete. If a company were to conduct off-chain transactions and not disclose them, it would be difficult for an IFA to assess whether the completeness of a cryptoasset balance is valid.

Ownership of Cryptoassets

Determining whether a company owns the cryptocurrency they have reported to can be a problematic assertion to validate. For anyone owning a wallet, hot or cold (online or offline), that holds cryptocurrencies, there are two key identifiers, the wallet's public and private keys. To use the crypto in the wallet, the wallet owner must have the private key which pairs with the public key the wallet is assigned.[84] Questions can arise to whether the company actually owns the cryptocurrency within a wallet if they do not possess the private key that corresponds to the public key. If for some reason a private key has been lost, using the cryptocurrency within the wallet is impossible, so it can be argued that the company does not own the currency within the wallet as they cannot control it. Due to the secretive nature that is encouraged around private key ownership, finding proof that a company can access the coins in the wallet can be difficult to detect. The same issue is

83 Brown, Mike, "Off-Chain Transactions Will Save the Blockchain, Explains Crypto Expert", inverse.com, June 6, 2018, https://www.inverse.com/article/45627-off-chain-transactions-cryptocurrency-blockchain, accessed on May 19, 2019.

84 Energy Premier, "Understanding what cryptocurrency wallet is and how it works", hackernoon.com, June 1, 2018, https://hackernoon.com/understanding-what-cryptocurrency-wallet-is-and-how-it-works-d68499480b48, accessed on May 19, 2019.

also relevant when conducting subsequent event testing.[85] The QuadrigaCX case mentioned earlier is an example of how ownership of assets can be misrepresented on financial statements.

Revenue Related to Cryptomining

"Blockchain miners receive rewards for creating blocks of validated transactions and including them in the blockchain. Many blockchain miners pool their computing power in mining pools with other miners."[86] The reward received is revenue to the miner who validated transactions in the blockchain. Determining whether the mining activities are attributable to the company reporting the revenue, and in what proportion, as companies combine their resources to carryout mining, can pose difficulties to the IFA. The availability and reliability of agreements relating to joint cryptomining efforts, and whether revenue claimed to be received exists and relates to cryptomining efforts can be hard to substantiate depending on the contractual obligations and the willingness to provide documentation of those involved in the mining efforts. Additionally, depending on where a company is located it may not be required to track this information. Also, miners may not want to track or report this information if it impacts them negatively.

85 Canadian Public Accountability Board, (CPAB), "Auditing in the Crypto-Asset Sector", cpab-ccrc.ca, http://www.cpab-ccrc.ca/Documents/News%20and%20Publications/Auditing%20in%20the%20Crypto-Asset%20Sector.pdf, accessed on May 19, 2019.

86 Canadian Public Accountability Board, (CPAB), "Auditing in the Crypto-Asset Sector", cpab-ccrc.ca, http://www.cpab-ccrc.ca/Documents/News%20and%20Publications/Auditing%20in%20the%20Crypto-Asset%20Sector.pdf, accessed on May 19, 2019.

Impairment of Cryptoassets

The fiat value of bitcoin rose from $930 USD to nearly $20,000 USD over a 12-month period from December 2016 to December 2017 (depending on what exchange you are looking at).[87] Subsequently, on one exchange database Bitcoin was trading at $5,318USD on May 1, 2019, and was trading at $8,200 USD on May 20, 2019.[88] This is to illustrate the large swings in value digital currencies can experience over just days and months. These changes in value can be particularly difficult to assess in the context of companies which invest in assets to mine cryptocurrencies. The worth of the assets is proportional to the value of the crypto they are meant to mine. Depending on what point of time a company is reporting its financial results relative to the value of the cryptocurrency they are active in mining could mean that the value of the assets could be impaired if the value of the cryptocurrency is low. However, understanding that large fluctuations can and do take place with the pricing of cryptocurrencies, determining how these fluctuations impact the carrying value of the related assets at times when the value is down must be considered by the IFA. It cannot be assumed that prices will rise, and whether companies have accurately reflected the potential impairment of their assets is dependent on their outlook of the pricing of cryptocurrencies in general. Assessing whether these assumptions are reasonable is challenging for the IFA due to the lack of

87 Higgins, Stan, "From $900 to $20,000: Bitcoin's Historic 2017 Price Run Revisited", coindesk.com, December 30, 2017, 16:20 utc, https://www.coindesk.com/900-20000-bitcoins-historic-2017-price-run-revisited, accessed on May 19, 2019.

88 Ccn.com, "Bitcoin Price/USD", ccn.com, https://www.ccn.com/bitcoin-price, accessed on May 20, 2019.

stability and high volatility in the pricing of these assets, and the potential bias of management to want to overstate assets.

Related Party Transactions

A company may disclose all transactions pertaining to the public key that the company owns, however it may not disclose whether that the transactions they took part in were with entities or individuals that are related to it. For instance, if a company accepted cryptocurrency as means of payment for goods or services it sold, and if a related entity or person to it was purchasing the product from the company, and that fact was not disclosed, revenue for the company may possibly be overstated if the volume of business with that related party (or parties) was material to the company's overall performance and not in the normal course of business. If related party transactions are suspected and not disclosed, whether an IFA could practically substantiate that each party a company transacts with is at arm's length is debatable given the characteristics and regulation pertaining to cryptocurrencies currently.

Value of Cryptoassets

Volatility in the pricing of cryptoassets is evident in the large spreads these currencies trade for on various exchanges. As the price of a particular cryptocurrency could differ greatly depending on what exchange you choose to transact on, determining what the value of the cryptocurrency a company owns in fiat is could be a difficult endeavor. And due to the existing regulatory conditions in the marketplace, a company could

undertake manipulative and abusive practices to artificially increase the value of the currency they hold. Similar to capital markets, companies dealing in cryptocurrencies could engage in pump and dump schemes, undertake wash trades, or spoof cryptocurrencies they own, to artificially inflate their own cryptocurrency assets. Unless there were some reason to suspect that this is occurring, this may be very difficult for the IFA to detect.

4.2.3 – Potential Solutions/Approaches for the IFA to Reduce the Complexities

The Canadian Public Accountability Board (CPAB) recently published guidance for auditing Cryptoassets[89], and this publication will be used as the basis when discussing potential solutions to overcome the complexities in financial misrepresentation engagements that involve cryptoassets. The following approaches can be undertaken to reduce the risk of the issues mentioned above from occurring:

Existence

"Engaging blockchain and cryptography specialists to assist in understanding and evaluating blockchains that support amounts recorded in an entity's books and records, in addition to using block explorers (tools that review and extract information recorded on

89 Canadian Public Accountability Board, (CPAB), "Auditing in the Crypto-Asset Sector", cpab-ccrc.ca, http://www.cpab-ccrc.ca/Documents/News%20and%20Publications/Auditing%20in%20the%20Crypto-Asset%20Sector.pdf, accessed on May 19, 2019.

blockchain ledgers)"[90] would be effective means of validating whether transactions do exist and that the information they are based on is reliable.

Completeness

Requesting companies to provide documentation with regards to all off-chain activities could be one method to detect these transactions. If they are unwilling to provide documentation and these transactions are suspected, using similar techniques to validate the existence of transactions can be used to detect breaks in the company's transaction history or the posting of batch transactions to the blockchain which would be an indication that off chain transactions potentially occurred.

Ownership

To ensure that a company can use the cryptocurrency in their wallet, requesting to see verification of the balance it has indicated, in addition to having it run a dummy transaction proving that the private key for the wallet is owned by the company could alleviate concerns pertaining to ownership and access to the currency.[91]

90 Canadian Public Accountability Board, (CPAB), "Auditing in the Crypto-Asset Sector", cpab-ccrc.ca, http://www.cpab-ccrc.ca/Documents/News%20and%20Publications/Auditing%20in%20the%20Crypto-Asset%20Sector.pdf, accessed on May 19, 2019.

91 Canadian Public Accountability Board, (CPAB), "Auditing in the Crypto-Asset Sector", cpab-ccrc.ca, http://www.cpab-ccrc.ca/Documents/News%20and%20Publications/Auditing%20in%20the%20Crypto-Asset%20Sector.pdf, accessed on May 19, 2019.

Revenue

Requesting documentation pertaining to co-mining agreements would be a starting point when assessing the validity of revenue. And subsequently vouching revenue transactions related to cryptomining to ensure it corresponded with agreements received would substantiate revenue further. In the absence or receiving such agreements, assessing the computing capabilities of a company's cryptomining assets and comparing that to the revenue recorded would assess the reasonableness of the revenue reported. Furthermore, looking at the company's electricity use by inspecting utility bills could also help assess whether revenue figures recorded in relation to cryptomining was valid. Information exists on how much electricity is necessary to take part in cryptomining for particular currencies. So, if the currency that the company is dealing in is not specifically reported on, then existing information can be used to help assess the reasonability of revenue recorded. Additionally, the availability of existing coins left for the particular coin the company deals in and comparing that to what the company has indicated they mined would also help assess the reasonability of revenue related to its cryptomining activities.

Impairment of Assets

Understanding the estimates used by management is an important first step when assessing the value of their cryptoassets and whether an impairment exists. Based on the assumptions management uses, the IFA can then compare those assumptions to external sources of data, such as various crypto exchanges over a period of time, status of and potential impacts of impending regulation, and stats related to remaining coin availability for a particular cryptocurrency to either corroborate or find fault in management's assumptions.

Related Party Transactions

To assess whether related party transactions are being unreported, looking at a company's cryptocurrency transactional history is a starting point for the IFA. Using this history and relevant technology to more quickly analyze the data, the IFA can: look for patterns where there is a high volume of transactions with a particular digital wallet, whether there seem to be favorable terms given to certain parties, if any addresses of parties being transacted with are the same as management at the company, and if any transactions appear to be out of the ordinary. Furthermore, the IFA can look at transactions after a reporting period to determine if any large amounts of product have been returned, or if large amounts of cryptocurrencies have been transferred out of the company for no apparent reason. Performing these procedures may allow the IFA to determine whether related parties exist and have not been reported.

Valuation

To assess whether a company is partaking in manipulative tactics to impact the value of a cryptocurrency they hold, the IFA should assess the pattern of their trading activity to determine if any red flags exist. Unnecessary trades, trading volumes that are not consistent with the objectives of the company, and trades that were inexplicably not executed should be viewed as indicators that potential manipulation may be occurring.

4.3 – Bankruptcy and Insolvency

Generally, in Canada most bankruptcy and insolvency procedures are governed under two Federal statutes the Bankruptcy and Insolvency Act (BIA) and the Company Creditors Arrangement Act (CCAA). The events that can emerge during a bankruptcy or insolvency proceeding requires the use of the IFA at times.

4.3.1 – IFAs Typical Role in Bankruptcy and Insolvency Engagements

An IFA can participate in a bankruptcy and insolvency engagement in many ways by taking on the following roles:

- "An expert for the receiver/trustee"[92];
- "An expert for the creditor committee"[93];
- "An expert for the debtor"[94];
- "A restructuring consultant"[95]; and
- Can aid with "fresh start accounting"[96]

Some of the specific tasks that the IFA can assist with in a bankruptcy or insolvency proceeding are: investigating suspected fraud in the bankrupt/insolvent business, tracing funds and assets, providing assistance to litigation teams, conducting interviews, helping

[92] Moulton, G. IFA 2905H: The IFA's Role in Insolvency Matters, week 3 (PowerPoint slides).

[93] Moulton, G. IFA 2905H: The IFA's Role in Insolvency Matters, week 3 (PowerPoint slides).

[94] Moulton, G. IFA 2905H: The IFA's Role in Insolvency Matters, week 3 (PowerPoint slides).

[95] Moulton, G. IFA 2905H: The IFA's Role in Insolvency Matters, week 3 (PowerPoint slides).

[96] Moulton, G. IFA 2905H: The IFA's Role in Insolvency Matters, week 3 (PowerPoint slides).

with insurance claims, locating and preserving electronic data, and helping in the preparation of asset seizure applications.[97] In view of the many items that need to be considered in an occurrence of bankruptcy or insolvency, situations which involve digital currencies can become more complex for the IFA to carry out their role.

4.3.2 – How Digital Currencies Complicate the Practice Area

Tracing Assets

If fraud is intended on the part of a bankrupt party, storing currency via a non-disclosed hot or cold wallet can be an effective method to avoid those assets from being considered when having to repay creditors. The emergence of the use of digital currencies as a store of value and a method to transact means that the IFA needs to consider how this asset can be an ideal choice if a bankrupt party decided to hide assets. Even though cryptocurrencies are traceable as transactions are recorded in a blockchain, this is still a highly complex process which requires a deep level of knowledge about how cryptocurrencies work, if the data needed to be examined is legally accessible. "However, if the data is stored on a cloud server, it may be in another jurisdiction halfway around the world and somewhat inaccessible in the absence of appropriate recognition and ancillary orders."[98] And this complexity is present when it is known that crypto balances exist, and the type of cryptocurrency being used is known.

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[97] Moulton, G. IFA 2905H: The IFA's Role in Insolvency Matters, week 3 (PowerPoint slides).

[98] Pascoe, Lee, "Bankruptcy, recognition proceedings and recoveries in a cryptocurrency world", March 22, 2018, https://www.ibanet.org/Article/NewDetail.aspx?ArticleUid=dd394ab4-b3d7-4f79-9888-67fba0a1cfe7, accessed on May 17, 2019.

Asset tracing is further complicated if cryptocurrency balances are not disclosed. Firstly, the IFA would have to perform procedures to determine whether hidden cryptocurrency balances exist. And secondly, the IFA would need to determine what variation of cryptocurrency is being used. As there are a multitude of cryptocurrencies available for use, and each is tracked via its own blockchain, the IFA would need to find, one, evidence indicating what type of cryptocurrency is being hidden; or two, the public key of the wallet being used to hold the currency, to trace the asset. It would be impractical to attempt to trace the hidden asset otherwise, especially in a bankruptcy situation where costs expended by the trustee must be tightly monitored.

For the purpose of Canadian bankruptcies and insolvencies, difficulties with tracing cryptocurrencies can also impact the IFAs role when engaged to investigate instances that can be deemed as Preferences under S.95[99] of the BIA. "Preferences applies if a debtor elects to pay only one or a few of his creditors and not the others, with the consequence of preferring certain creditors.[100] If a creditor was preferred and that preference was paid using a cryptocurrency then the transaction would be tracked on the blockchain. However, unless the preferred creditor is willing to disclose that they are the wallet holder associated with the public key for the crypto received from the debtor, establishing whether the disbursement was a preference would be difficult.

[99] Bankruptcy and Insolvency Act, R.S., 1985, c. B-3, Act current to 2019-05-22, Government of Canada Justice Laws Website, https://laws-lois.justice.gc.ca/eng/acts/b-3/fulltext.html, accessed on May 17, 2019.

[100] Jassmine Girgis "BIA Preference Payments: Evidence Rebutting the Presumption must be Objectively Reasonable" (8 March, 2018), online: ABlawg, http://ablawg.ca/wp-content/uploads/2018/03/Blog_JG_Gustafson.pdf

Recovery of Assets

Presuming that the IFA can establish that cryptocurrencies exist and in what form, the next area of difficulty the IFA could encounter would be when assisting a trustee in recovering the asset. In this regard, the cryptocurrencies could either derive from hidden assets a debtor did not disclose to creditors, or cryptocurrency stolen from an insolvent or bankrupt company (most likely a crypto exchange – but could be any company that held cryptocurrency that was stolen). "Given their decentralized nature, it is impossible to gain physical possession of digital assets."[101]

Two bankruptcy proceedings where recovering cryptoassets proved difficult both involved cryptocurrency exchanges. These cases are being discussed to illustrate the complexities that can arise when recovering digital currencies. One case involved QuadrigaCX which was discussed earlier. The other case involved cryptocurrency exchange Mt Gox. "At the beginning of 2014, Mt Gox, a bitcoin exchange based in Japan, was the largest bitcoin exchange in the world, handling over 70% of all bitcoin transactions worldwide. By the end of February of that year, it was bankrupt."[102] In February 2014 it was reported that 744,800 bitcoin belonging to clients of the exchange were either stolen or lost brining the amount of bitcoin lost by the exchange to 980,000 since 2011.[103] Mt

[101] Mendiola, John, "Cryptocurrencies in a Bankruptcy: A Complex Affair", silklegal.com, November 30, 2018, https://silklegal.com/cryptocurrencies-in-bankruptcy/, accessed on May 17, 2019.

[102] Norry, Andrew, "The History of the Mt Gox Hack: Bitcoin's Biggest Heist", blocknomi.com, updated June 7, 2019, https://blockonomi.com/mt-gox-hack/, accessed on May 17, 2019.

[103] Pascoe, Lee, "Bankruptcy, recognition proceedings and recoveries in a cryptocurrency world", March 22, 2018, https://www.ibanet.org/Article/NewDetail.aspx?ArticleUid=dd394ab4-b3d7-4f79-9888-67fba0a1cfe7, accessed on May 17, 2019.

Gox's bankruptcy proceedings are still ongoing and it is believed that the missing coins were either lost, stolen, or never existed.[104]

Recovery of assets in the QuadrigaCX case proved difficult because the private key associated with the wallet which held most of the exchange's crypto holdings could not be accessed by anyone besides the company's Director whom died (eventually the wallet was able to be accessed and it was found that it was essentially empty). Funds associated with a digital wallet cannot be utilized if the private key for that wallet is lost. As the safekeeping of a private key is the responsibility of the wallet owner, if measures are not taken to ensure that private key for a wallet remains accessible, the cryptocurrency contained therein is rendered meaningless. This implies that if those involved with safeguarding the private key choose not to be co-operative and divulge it, there is very little the IFA can do to compel them to provide the private key to assist with the recovery of assets. Recovery of assets in the Mt Gox case proved difficult because a likely scenario for some of the missing coins from the exchange was that they were stolen. When cryptocurrency is misappropriated "transactions made through the blockchain (with or without the wallet owner's consent) cannot be reversed, there is often little immediate recourse for victims who have lost coins this way."[105] Additionally, while the blockchain will record where the funds were deposited, if dealing with a sophisticated user, it could prove difficult to identify the owner of that public key.

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[104] Norry, Andrew, "The History of the Mt Gox Hack: Bitcoin's Biggest Heist", blocknomi.com, updated June 7, 2019, https://blockonomi.com/mt-gox-hack/, accessed on May 17, 2019.

[105] Amur, Leyla, "CSI crypto: Can victims recover stolen coin?", bravenewcoin.com, October 12, 2017, 12:06 utc, https://bravenewcoin.com/insights/csi-crypto-can-victims-recover-stolen-coin, accessed on May 17, 2019.

Valuation

A trustee in a bankruptcy or insolvency carries out their duty by ensuring the rights of the debtor and creditors are upheld. Due to cryptocurrencies' volatility in the marketplace determining the value of any recovered assets may become a difficult topic. "Any insolvency professional attempting to realize value will need to carefully consider their statutory obligations when determining whether, and when, it is in the interests of creditors to transfer the assets for funds or whether holding the cryptocurrency in its current form is a better long-term proposition for creditors."[106] A trustee may request that the IFA help assess the value of these assets if and when they are recovered. Given the mandate the IFA is trying to assist the trustee with, understanding and interpreting the volatility of cryptocurrency prices could be present difficulties not encountered with other assets.

The volatility of cryptocurrencies can also impact the IFAs role when trying to determine if transactions undertaken by the debtor would qualify as a Transfer at Undervalue according to S.96[107] of the BIA. Transfers at Undervalue can be generally described as "transactions in which no consideration was received by the debtor, or where the consideration received was less than the fair market value given by the debtor."[108] Most items that are transferrable have a reliable market where a reasonable fair market value can be assessed. As cryptocurrencies are not traded in an efficient market as of yet, determining

[106] Pascoe, Lee, "Bankruptcy, recognition proceedings and recoveries in a cryptocurrency world", March 22, 2018, https://www.ibanet.org/Article/NewDetail.aspx?ArticleUid=dd394ab4-b3d7-4f79-9888-67fba0a1cfe7, accessed on May 17, 2019.

[107] Bankruptcy and Insolvency Act, R.S., 1985, c. B-3, Act current to 2019-05-22, Government of Canada Justice Laws Website, https://laws-lois.justice.gc.ca/eng/acts/b-3/fulltext.html, accessed on May 17, 2019.

[108] Cassel Brock Lawyers, "Transfers at Undervalue", casselsbrock.com, September 15, 2009, https://www.casselsbrock.com/CBArticle/Transfers_at_Undervalue, accessed on May 17, 2019.

whether a transfer of cryptocurrency was under market value or not can be difficult to assess for the IFA. Since many marketplaces exist to trade cryptocurrency, and the spread can differ greatly depending on where you buy or sell, the IFA may be hard-pressed to find a value that fairly represents the position of debtors and creditors.

4.3.3 – Potential Solutions/Approaches for the IFA to Reduce the Complexities

A major consideration for a trustee in charge of a bankruptcy/insolvency proceeding is to recover assets in a cost-effective manner for creditors. While the following solutions are intended to help mitigate some of the issues identified above, it must be kept in mind that the methods implemented by the IFA will also need to consider the trustee's mandate; and would most likely require their approval before any particular method is chosen by the IFA.

Tracing of Assets

When attempting to trace whether cryptocurrencies exist, and in what form and amounts, the approaches an IFA can utilize are the following:

- If management is being uncooperative, or unforthcoming about divulging information, the IFA can interview executives or key employees individually to attempt to determine whether cryptocurrency balances exist, and to attempt to determine what version of coin the digital currency is being held in.
- The bankrupt's/insolvent's transaction history should be analyzed to identify any unusual withdrawals prior to or around the time-period coinciding with the

bankruptcy application; if unusual withdrawals have occurred, this could indicate that a digital wallet exists and the IFA should inspect documentation and website browser history to determine whether cryptocurrency exchange information or items related to cryptocurrencies can be identified.

- Engaging an expert that specializes in tracing crypto transactions can help track where cryptocurrencies have gone and in what amounts if it is known that a bankrupt party holds cryptocurrencies in some capacity.[109]
- Mareva Injunctions or Anton Piller Orders can be utilized in order to seize or search a debtor's assets in order to identify whether cryptocurrency assets exist.

Recovery of Assets

One of the most direct methods that has been undertaken thus far to recover cryptocurrency assets occurred in July 2018, when a Quebec Judge (Judge Pronovost) ordered the CEO of PlexCorp to transfer the equivalent of over $3 million CDN of bitcoin immediately in the courtroom or be held in contempt of court.[110] Seized computers were brought into the courtroom to facilitate this transfer.[111] While such an asset recovery

[109] Hrones, Matthew, "Yes, Your Bitcoin Transactions Can Be Tracked – And Here Are The Companies That Are Doing It", bitcoinist.com, June 28, 2018, 14:00, https://bitcoinist.com/yes-your-bitcoin-transactions-can-be-tracked-and-here-are-the-companies-that-are-doing-it/, accessed on May 19, 2019.

[110] Clay, Melanie, "Quebec Court Orders PlexCorps CEO to Transfer Millions in Bitcoin in the Courtroom", news.coinsquare.com, July 9, 2018, https://news.coinsquare.com/government/judge-makes-plexcoin-ceo-transfer-bitcoin-in-courtroom/, accessed on May 17, 2019.

[111] Clay, Melanie, "Quebec Court Orders PlexCorps CEO to Transfer Millions in Bitcoin in the Courtroom", news.coinsquare.com, July 9, 2018, https://news.coinsquare.com/government/judge-makes-plexcoin-ceo-transfer-bitcoin-in-courtroom/, accessed on May 17, 2019.

method is not under the purview of the IFA, it does illustrate that due to their characteristics cryptocurrencies can be withheld, and potentially harsh consequences need to be threatened in order to have these assets turned over. When attempting to recover assets in a bankruptcy/insolvency scenario, the IFA can utilize the following approaches:

- Based on what the identification stage yields if a Mareva Injunction or Anton Piller Order is utilized, the evidence obtained can also be used to develop asset recovery strategies.
- Assessing a company's internal controls pertaining to how the private key is held and accessed by management can give the IFA insight into how they disburse funds from their cryptocurrency wallets.
- Engaging cryptocurrency recovery experts that specialize in retrieving digital wallet passwords or restoring deleted digital wallets can assist the IFA with recovering cryptocurrencies.

Valuation

If asked to assist with valuing obtained or recovered cryptocurrencies in a bankruptcy engagement, to aid the trustee the IFA could do the following:

- Compare prevailing market rates to historical rates for the cryptocurrency to develop expectations for where the currency will trend to suggest whether a hold or convert strategy is preferable when considering the trustee's fiduciary duty.
- Consult with creditor committees and/or the debtor to determine what range of cryptocurrency conversion into fiat they feel would serve their interests.

- In the case of investigating below-market transfers, the IFA could assess a reasonable range of prices from reputable cryptocurrency exchanges to assess whether a transfer was at market or not.
- Interview the debtor to determine whether instances of suspected transfers below market were to a potentially related party.

5.0 – Conclusion

"I have no expert evidence on this issue. It is clearly a volatile, emerging, intangible source of wealth which the courts will have to grapple with more frequently in future."[112] The preceding quote from Justice Nakonechy's April 2019 decision involving cryptocurrencies effectively summarizes the challenges that digital currencies present, and acknowledges that this is an area that has yet to fully manifest itself. The growing general acceptance of digital currencies and their inherent characteristics present pervasive issues that the IFA will have contend with when engaged in a situation that could involve them. While regulation is trying to adapt to the uniqueness of digital currencies, until some global consensus is reached on the parameters' governments will place on their use and trade, the IFA's job will remain difficult. Moreover, as digital currencies continue to evolve, the IFA must be aware that the challenges digital currencies currently present are rapidly changing due to the fluidity of the technology.

Innovations that the IFA will have to grapple with as cryptocurrencies become more developed and understood are:

i) Off chain transactions – digital currency transactions which occur between two willingly transacting parties that are not immediately reflected on the blockchain and are eventually recorded when the information is batched to the public ledger.[113]

ii) Privacy coins – a type of cryptocurrency that "obscures the digital addresses of the senders and receivers, as well as the value of the transaction. That offers

[112] https://www.canlii.org/en/on/onsc/doc/2019/2019onsc2208/2019onsc2208.html?resultIndex=1
[113] https://blockbasis.com/help/blockchain/difference-chain-off-chain-transactions/

users near-total anonymity, allowing them to instantaneously send digital cash without leaving any clues."[114]

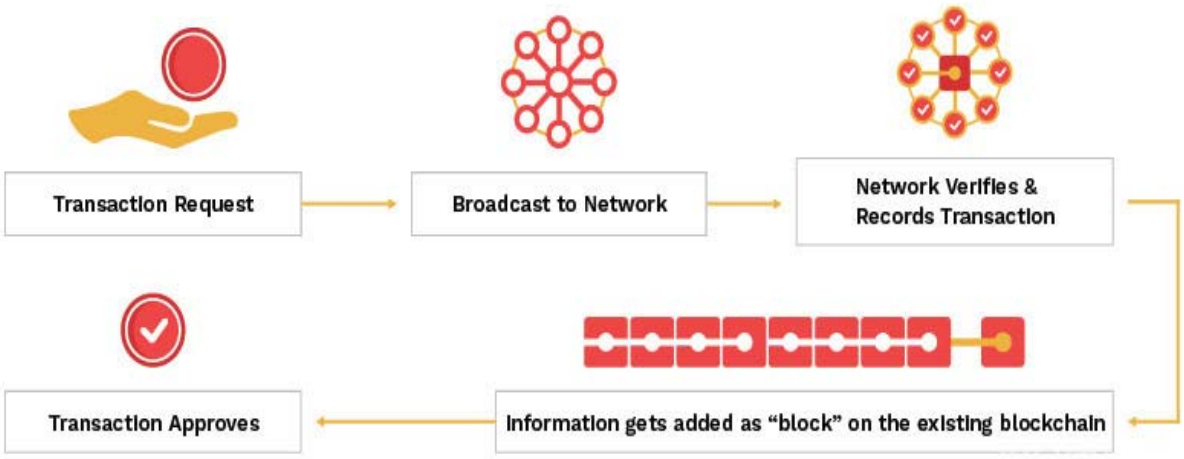
iii) Altcoins – cryptocurrencies that do not follow the traditional algorithmic rules that bitcoin has established.[115] These are cryptocurrencies that can function on a blockchain that do not follow the typical rules that the more prevalently traded cryptocurrencies do.

Given what has been discussed throughout this paper about the problems that traditional cryptocurrency transactions present to the IFA, it is evident how the above variations can further complicate the issues that digital currencies present. However, as the courts are seeking more expertise on the topic when evaluating evidence going forward as Justice Nakonechy's quote suggests, the IFA skillset can help fill this role. While cryptocurrencies do present unique issues, the characteristics that an IFA brings to an engagement makes them well-suited to provide the expertise the courts will be seeking. Creativity, professional skepticism, investigative problem-solving skills, knowledge of the legal process, and curiosity are just some of the characteristics that the IFA possesses to help address some of the issues that cryptocurrencies can present to an engagement. However, unless the IFA specializes in tracing, analyzing, and restoring transactions on a blockchain, the mentioned attributes can only take an investigation so far. To remedy this shortcoming, general approaches that the IFA should utilize to address the risks that cryptocurrencies present are to assume they exist and to perform procedures to rule out their existence; and

[114] https://www.reuters.com/article/us-crypto-currencies-altcoins-explainer/explainer-privacy-coin-monero-offers-near-total-anonymity-idUSKCN1SL0F0
[115] https://whatis.techtarget.com/definition/altcoin

to engage or include as part of the investigative team a cryptocurrency and/or blockchain specialist to assist with substantiating or ruling out possibilities that the IFA's work yields.

Appendix A – A Simple Visual Illustration of a Cryptocurrency Transaction

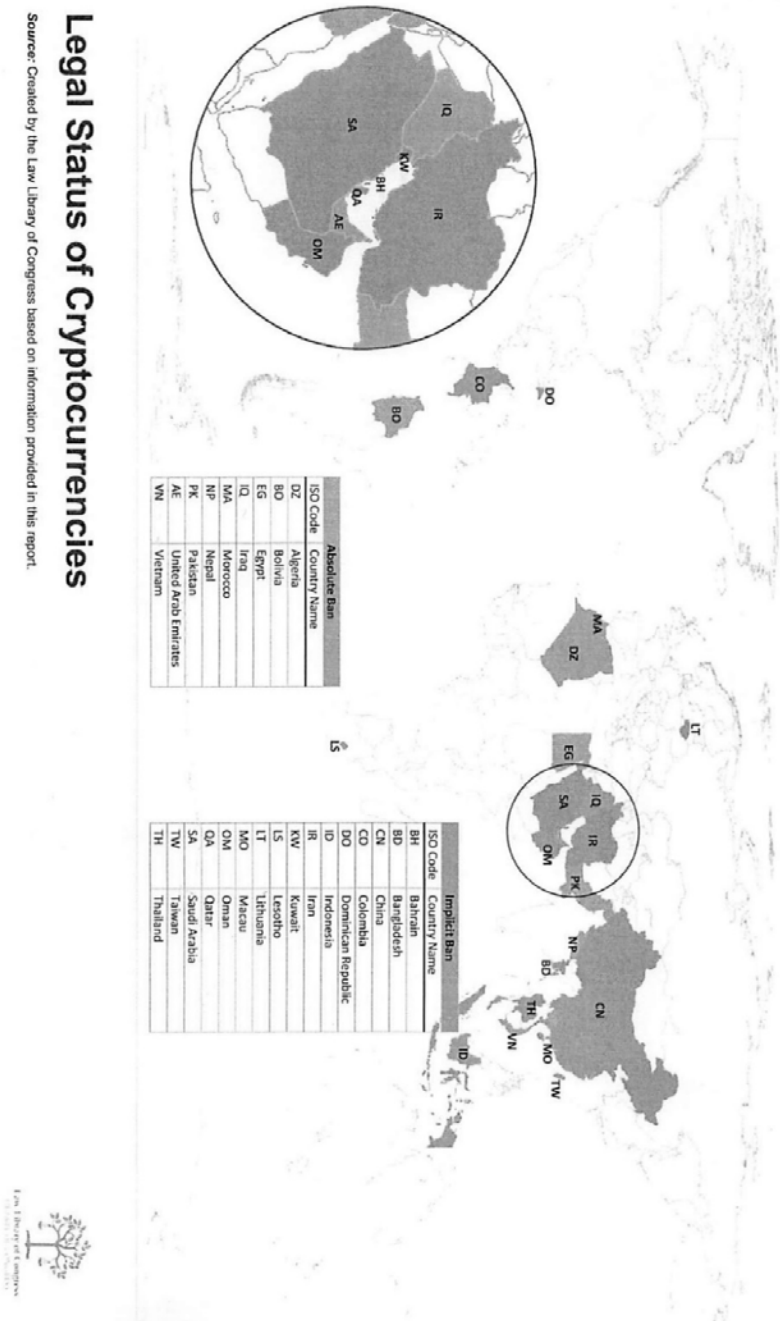


Source: https://www.bitdegree.org/tutorials/what-is-cryptocurrency/

Appendix B – Differing Regulation Around the World

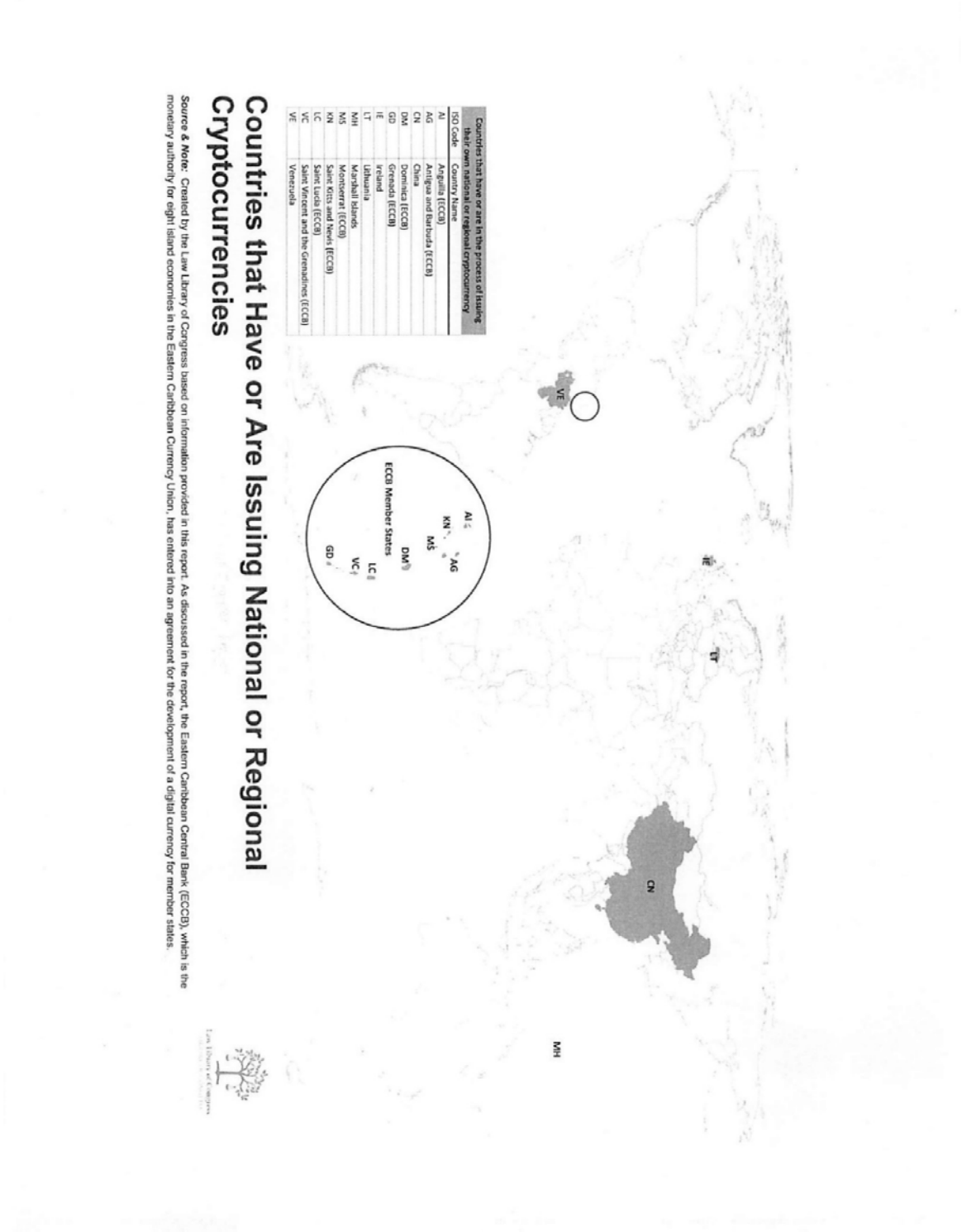
The following three diagrams from the Library of Congress' survey on cryptocurrency globally illustrates how the approach to regulation differs around the world.

Appendix B – 1 – Legal Status of Cryptocurrencies



Appendix B – 2 – Regulatory Framework for Cryptocurrencies

Appendix B – 3 – Countries that Have or Are Issuing National or Regional Cryptocurrencies



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