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The Legal Classification of Cryptocurrency in South African Law: An Argument for Classification as Currency.

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Abstract

Cryptocurrency – and indeed the underlying blockchain technology in general – have the potential to become a dominant method of effecting the transfer of value in a manner that fundamentally shifts the way in which electronic transactions take place. South Africa is a strong emerging market with the potential to attract substantial investment in new technologies should its regulatory response to such innovation remain principled.

The primary purpose of this dissertation is to investigate the most appropriate classification of cryptocurrency in South African law. The research is qualitative in nature. It considers selected aspects of the existing legislative framework and scholarly opinion in determining whether cryptocurrency is best classified as property or as currency. The necessary corollary of this research focus is to consider the fundamental importance of such a classification for legal policy design generally, and the practical effects thereof.

This dissertation hypothesises that the value of the blockchain technology lies in its commercial viability and its potential scalability, particularly in the African context. Thus, the required objective of regulatory intervention should be to preserve the commercial viability of cryptocurrency and avoid stifling technological advancement, whilst simultaneously ensuring the protection of vulnerable users. The conclusion is that cryptocurrency is best classified as foreign currency. This dissertation acknowledges that although it is possible to fit such a classification into existing legislative frameworks, a more specialised structure is ultimately required. Additionally, it raises concern about the harm caused by reactive regulatory intervention and instead recommends a principled policy approach, cognisant of the need for maturation of the technology.

Contents

I. Introduction

> "The law has to accept the remarkable fact that, while man has conquered the moon, he has signally failed to conquer the problem of the value of money, its stability and its relationship with full employment, credit and economic growth" – F.A. Mann[1]

Modern world history is fraught with economic crises.[2] Characteristic of a large percentage of crises experienced around the globe is mismanagement and malpractice on the part of global financial institutions as well as poor monetary policy adopted by governments. Consequently, there has long-since been a call for an alternative to the trust-based, Bretton Woods structure in existence today. Enter cryptocurrency.

The Oxford English Dictionary defines 'cryptocurrency' as 'a digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank.'[3] Simply put, cryptocurrency is a limited entry on an electronic database that cannot be altered by any person unless specific conditions are fulfilled.[4]

The first decentralised cryptocurrency was Bitcoin. It was created by an anonymous individual or group of individuals who operate(s) under the pseudonym Satoshi Nakamoto, and released as open-source software in 2009.[5] The sceptics have described Bitcoin as a "Ponzi scheme"[6], as "the mother of all bubbles"[7] and even as "noxious

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[1] In the Preface to F.A. Mann, *The Legal Aspect of Money*, 3rd ed. (London: billings & Sons Ltd., 1971).
[2] For example: 1991 India economic crisis; the Finnish banking crisis (early 1990s), the Swedish banking crisis (1990s); the 1994 economic crisis in Mexico; the 1997 Asian financial crisis; the 1998 Russian financial crisis; the 2001 Turkish economic crisis; the 2002 Uruguay banking crisis and, of course, the Global Financial Crisis of 2008.
[3] Oxford Online Living Dictionaries, accessed 03/08/2018, available at: https://en.oxforddictionaries.com/definition/cryptocurrency.
[4] "What Is Cryptocurrency: A Guide for Beginners," *CoinTelegraph* (2016), accessed 19/03/2018, https://cointelegraph.com/bitcoin-for-beginners/what-are-cryptocurrencies#history.
[5] Joshua Davis, "The Crypto-Currency: Bitcoin and Its Mysterious Inventor.," (10 October 2011), accessed 01/08/2018, available at https://www.newyorker.com/magazine/2011/10/10/the-crypto-currency.
[6] George Ou, "Bitcoins, a Crypto-Geek Ponzi Scheme," *HighTech Forum* (10 June 2011), accessed 19/03/2018, available at http://hightechforum.org/bitcoins-a-crypto-geek-ponzi-scheme/.
[7] Nouriel Roubini, professor of economics at New York University, in an interview with *The Guardian*: Angela Monaghan, "Bitcoin Biggest Bubble in History, Says Economist Who Predicted 2008 Crash," *The Guardian* (2 February 2018), accessed 19/03/2018, available at https://www.theguardian.com/technology/2018/feb/02/bitcoin-biggest-bubble-in-history-says-economist-who-predicted-2008-crash.

poison".[8] This is unsurprising considering that, at its inception, Bitcoin was little more than 'thirty-one thousand lines of code and an announcement on the internet'.[9] However, the genius of Bitcoin is indisputably the underlying blockchain technology and the prospective purposes that it could serve.

Blockchain has the potential to act as a powerful platform for virtual currencies in the future.[10] Managing Director of the International Monetary Fund, Christine Lagarde, has predicted that 'weak institutions and unstable national currencies' in particular, may see growing adoption of virtual currencies built on the blockchain.[11] Indeed, Lagarde predicts that cryptocurrency may become the choice currency for trade as it will soon be 'easier and safer than obtaining paper bills, especially in remote regions, and because it could actually become more stable'.[12] However, scalability of the technology necessitates regulatory recognition and intervention. In turn, regulation and integration within a larger body of law on cryptocurrency is dependent on a proper understanding of the nature of cryptocurrency in existing South African law. It is thus an opportune time to conduct research into the most appropriate classification of cryptocurrency in law.

A. Research Question

The primary research question of this dissertation is: *whether a legal classification of cryptocurrency as property or as currency is most appropriate where the objective is to*

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[8] Charles Munger at the annual meeting for Daily Journal Corporation in Los Angeles: Noah Buhayar, "Munger Calls Bitcoin a 'Noxious Poison' Government Should Tackle," *Bloomberg Businessweek* (14 February 2018), accessed 19/03/2018, available at https://www.bloomberg.com/news/articles/2018-02-14/munger-calls-bitcoin-a-noxious-poison-government-should-tackle.
[9] Op cite note 6 at p1.
[10] As Kyle Bass, founder of Hayman Capital Management, stated in an interview with Bloomberg: cryptocurrency is 'a bit of mania at this moment' and it is likely that many people will lose a lot of money, however in the long-term cryptocurrency 'is a viable asset class': Lily Katz, "Kyle Bass Says Ico Investors Will Get Wiped out in Crypto 'Mania'," *Bloomberg Technology* (6 October 2017), accessed 19/03/2018, available at https://www.bloomberg.com/news/articles/2017-10-06/bass-says-ico-investors-will-get-wiped-out-in-crypto-mania.
[11] Christine Lagarde, "Central Banking and Fintech: A Brave New World?" (paper presented at the Bank of England Conference, London, 29 September, 2018), accessed 19/03/2018, available at https://www.imf.org/en/News/Articles/2017/09/28/sp092917-central-banking-and-fintech-a-brave-new-world.
[12] Ibid.

preserve its commercial viability and avoid stifling technological advancement, whilst simultaneously ensuring the protection of vulnerable users.

Such a question necessitates the inclusion of various sub-questions. As such this dissertation will explore: *what cryptocurrency is and how it operates; why it is important to classify and consequently regulate cryptocurrency in a manner that preserves its commercial viability; why a classification as 'currency' or as 'property' is important; and the practical effects of each respective classification.*

B. Method and Limitations

The research is qualitative in nature, having consulted numerous legal and technical journals, books, national legislation (including draft Bills), case law, online forums, press releases and reports. In conducting this research two primary limitations were met: (1) very little research has been done into the legal classification of cryptocurrency, with a particularly large lacuna present in the South African context. This necessitated the consideration and adaptation of academic writing in foreign jurisdictions to the South African context; and (2) the blockchain technology is in its infancy and is ever evolving, therefore any discussion herein had to remain cognisant of this fact so as to ensure conclusions reached are not rendered nugatory in the near or immediate future.

C. Importance of this Research

The question then arises whether it is necessary to discuss the legal classification and regulation of a technological structure shrouded in uncertainty and likely to undergo a multiplicity of changes in the coming years. This must be answered in the affirmative. Cryptocurrencies built on the blockchain are rapidly gaining traction and it is clear that this technology will continue to be utilised for the foreseeable future. Consequently it is vital that legislators and policy makers respond with creatively formulated regulations that reflect an understanding of the technological nuances of cryptocurrency. In this way policy may have an influence on the manner in which the technology matures.

Furthermore, the current regulatory response to the rise of cryptocurrency has been largely reactive in nature. It is of great importance that comprehensive research be conducted on the legal nature of cryptocurrency so as to allow for a principled analysis of the best method of regulatory intervention.

D. Structure of this Research

This dissertation consists of six parts. *Part I* serves as an introductory overview of the research topic and elucidates the primary purpose of this dissertation.

Part II examines the technical workings of cryptocurrency, using as its starting point the first explanatory paper introducing Bitcoin published by Satoshi Nakamoto in 2008.

Part III aims to identify the perspective from which all subsequent analysis is conducted and includes an important note on two key assumptions underlying discussion in this dissertation.

Part IV moves to a consideration of the potential classification of cryptocurrency as property. Following a clear outline of the scope of the legal definition of property, the discussion moves to determine whether a classification of cryptocurrency as such is theoretically sound. This dissertation proposes that although possible, such a classification should not be the preferred approach as the consequences thereof are undesirable at best.

Having determined that a broad classification as property is practically objectionable, *Part V* explores the possibility of classifying cryptocurrency as currency. The varying manifestations of currency are both defined and distinguished. It is argued and demonstrated that a classification as foreign currency best serves the holders of cryptocurrency and its future commercial viability.

Finally, *Part VI* draws on the analysis conducted in preceding chapters and formulates an opinion as to the most appropriate approach to regulation of cryptocurrency in the South African context.

II. Understanding the Technical Aspects and Applications of Cryptocurrency

A legal analysis of cryptocurrency necessitates a clear understanding of what cryptocurrency is and how it operates. This paper does not restrict its discussion to the regulation of Bitcoin alone. However, being the first materialisation of cryptocurrency, the technology developed by Satoshi Nakamoto underlying Bitcoin forms the basis for most other cryptocurrencies with only minor adjustments made to the code. Thus, an understanding of how Bitcoin operates will provide a firm foundation for understanding how all other cryptocurrencies utilising blockchain operate.

The current financial system utilises a trust-based model in which all electronic transactions require a trusted third-party intermediary to process and record the transaction. By way of example: Peter would like to transfer R1 000.00 to Jordan. To do so he notifies the trusted third-party intermediary of his intention, who checks whether he has enough digital money in his account, and then records in its ledger a R1 000.00 deduction to Peter's account and R1 000.00 addition to Jordan's account. The transaction is then complete. The inherent weakness of this system is the reliance placed on third-party intermediaries who are singular in number. Thus, in order for chaos to erupt in society, all that is required is for one intermediary to go corrupt; or one controlling individual within an intermediary to go corrupt; or the database of an intermediary to be hacked or otherwise compromised.

Another issue with the existing trust-based model is the fact that completely non-reversible transactions are not possible as financial institutions cannot avoid mediating disputes.[13] This, in turn, increases transaction costs and limits the minimum practical transaction size. Satoshi Nakamoto expands on this issue of reversibility by stating that:

> "… there is a broader cost in the loss of ability to make non-reversible payments for non-reversible services. With the possibility of reversal, the need for trust spreads. Merchants

[13] Satoshi Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System " (2008), available at www.metzdowd.com. at p1.

must be wary of their customers, hassling them for more information than they would otherwise need. A certain percentage of fraud is accepted as unavoidable."[14]

In sum, the greatest weakness with the current system is the presence of a central point of compromise or failure, and the technological age is making it increasingly difficult to fortify this weak spot. Despite the clear pitfalls of the existing system, it has maintained its position in society because there simply has not been an alternative. The question of how to transfer money without requiring a third-party intermediary to maintain the ledger has long since remained unanswered, because without an intermediary money could be spent twice. In computer science, this is referred to as the "double-spending" problem.

Imagine that digital cash is simply a computer file with no intermediaries processing and recording a transaction; Peter would send R1 000.00 to Jordan by 'attaching a money file to a message'.[15] However, the fact that Peter has sent that money file to Jordan does not remove it from his computer, in the same way that sending a document as an attachment via email does not remove that document from your computer.[16] Therefore, Peter could retain a copy of the money file and send the *same* R1 000.00 to Linda, this being a manifestation of the "double-spending" problem.[17] Until Satoshi Nakamoto published[18] a solution in a nine-page white-paper entitled *Bitcoin: A Peer-to-Peer Electronic Cash System* in October 2008, the double spending problem could only be solved by utilising a 'ledger-keeping trusted third party'.[19] The solution proposed is undeniably revolutionary and is referred to as 'blockchain'.

Blockchain is the technology behind/underlying Bitcoin and most other cryptocurrencies,[20] but its uses far exceed supporting electronic currency. A blockchain is

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[14] Ibid.
[15] J Brito and A Castillo, *Bitcoin: A Primer for Policy Makers* (Mercatus Center at George Mason University 2013). at p3.
[16] Ibid.
[17] Ibid.
[18] Op cite note 13.
[19] Op cite note 15 at p4
[20] Cryptocurrencies such as Ethereum, Dash, Litecoin, Zcash, Monero and NEO (China's first open source blockchain platform) are variants of Bitcoin's use of blockchain technology.

a distributed,[21] immutable,[22] pseudo-anonymous,[23] and validated[24] database existing as multiple nodes 'such that if 51% of the nodes agree the trust of the chain is guaranteed'.[25] It is a database of ever growing records, where only one entity is granted the ability to append the next set of records to the database every ten minutes.[26] Competing "miners" perform complicated mathematical equations to determine who gets to add the next "block" to the "chain". Once one of the miners add the next block containing a list of the previous ten minutes worth of transactions, the entire network of users has the ability to evaluate the addition and ensure there were no double spends or objectionable transactions[27]. Where evidence is found of double-spending or objectionable transactions, the consensus rules built into the blockchain remedy the situation, as will be shown below.

The various concepts introduced will be further explored in the remainder of this chapter. At this stage, however, it is important to recognise that Bitcoin addresses the double spending problem by utilising the blockchain system to distribute the entire ledger publicly amongst 'all the users of the system via a global peer-to-peer network'.[28] The distribution of the ledger via the peer-to-peer network means that the users of the system replace the ledger-keeping trusted third party.[29]

In the existing system, it is the intermediary who is aware of all transactions, who determines which transaction occurred first, and who records that transaction in the ledger. In order to eradicate the role of the intermediary, Satoshi Nakamoto foresaw that the peer-to-peer system would require that transactions be publicly announced and would have a

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[21] "Distributed" because each node in the system maintains a full copy of the blockchain.
[22] "Immutable" because a transaction that occurs via the blockchain cannot be changed.
[23] "Pseudo-anonymous" because an address key formulated as a random string represents the identity of the users involved in a transaction.
[24] The "miners" validate the blockchain by building each consecutive secure block.
[25] Joseph J. Bambara and Paul R. Allen, *Blockchain: A Practical Guide to Developing Business, Law and Technology Solutions* (McGraw-Hill Education., 2018). at p580.
[26] This specification of time is specific to the Bitcoin blockchain network but may vary between differing cryptocurrencies. (ibid. at p847).
[27] A transaction will be objectionable where it does not comply with the built in consensus rules of the blockchain.
[28] Op cite note 15 at p4.
[29] Satoshi Nakamoto envisaged the distributed ledger as being the solution to the double spending problem by noting that 'the only way to confirm the absence of a transaction is to be aware of all transactions' op cite note 13 at p2.

built-in system that allowed the users within the network to determine which transaction occurred first via rules of consensus.

For the purposes of this paper it is vital to understand (1) how the internal mechanisms of the blockchain ensure the integrity and security of the network; and (2) how a transaction occurs within the Bitcoin network.

Within the Bitcoin blockchain there are multiple 'nodes' – the technical term referring to the computers that connect to the Bitcoin network. In order to make a transaction, the user has to announce its intention to the network. A multiplicity of users are broadcasting this intention to the network all the time, often in close succession. Some of the nodes (termed 'full nodes') are tasked with determining and agreeing on 'exactly which transactions were broadcast and the order in which these transactions occurred'.[30] Together the full nodes maintain the global distributed ledger.

To frame this concept in a more tangible manner, in a physical ledger written down in a book with multiple pages each detailing the transactions that have taken place, a "block" would be represented by a single page in the ledger. In order to maintain a global distributed ledger, the full nodes download a copy of every block and every transaction in the system and verify them against Bitcoin's consensus rules.[31] Where a block or transaction falls foul of these internal rules, it is rejected by the network and in this way fraud is avoided. Verification of transactions is achieved through the clever use of public-key cryptography.

Each user holds two unique "keys": one private key known only to that user, and one public key (derived from the private key) that a user may share with the world. These keys allow the full nodes to verify that a transaction has taken place and between which users. A digital "wallet" is where users generate their public/private keys, store them, protect them and make sure their public/private keys are all generated in accordance with the network rules. A digital "wallet" may thus be defined as 'a software program that stores

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[30] Arvind Narayanan, Joseph Bonneau, and et al., *Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction* (New Jersey: Princeton University Press, 2016). at p4.

[31] A detailed statement of these rules is not necessary for present purposes, however it should be noted that one of these internal rules is that a transaction output cannot be double-spent within a single block chain, thereby preventing double-spending.

private and public keys and interacts with various blockchains to enable users to send and receive digital currency and monitor their balance'.[32] Importantly, a user need not maintain the same public key for every transaction as it is possible to generate an almost infinite number of public keys. For those users especially concerned about their privacy, there are even instances[33] where it is possible to generate a new private key for each transaction (from which multiple public keys could theoretically be generated). Users can thus determine their own level of protection.

By way of example: when Peter wishes to transfer Bitcoins to Jordan he will notify the Bitcoin network by creating a message termed a 'transaction'. This message contains Jordan's public key and is "signed" with Peter's private key. Any user can then look at Peter's public key and verify that 'the transaction was indeed signed with his private key, that it is an authentic exchange, and that Jordan is the new owner of the funds'.[34]

The question then arises how Jordan will know that the majority of the nodes have agreed that, at the time of the transaction, the Bitcoin sent by Peter to himself was first received. Satoshi Nakamoto's solution involves the employment of "timestamps" and "proof-of-work" which is achieved through the utilisation of "cryptographic hash functions".

A hash function is simply a mathematical function that 'takes in an input value, and from that input creates an output value deterministic of the input value'.[35] Importantly, every input value has a determined output: whenever the hash function is run the 'x' input value will always receive the same 'y' output value.[36] Cryptographic hash functions are collision resistant (i.e. two distinct inputs will not produce the same output); capable of hiding (i.e. if you are given the 'y' output value there is no feasible way for you to determine the input 'x' value); and are puzzle friendly (a complex cryptographic concept that essentially means that even if you are given part of the input and part of the output, it will remain

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[32] "Cryptocurrency Wallet Guide: A Step-by-Step Tutorial," (2017), accessed 25 April 2018, available at https://blockgeeks.com/guides/cryptocurrency-wallet-guide/.
[33] By way of example: certain digital wallets allow for a new private key to be generated for every transaction.
[34] Op cite note 15 at p5.
[35] *What Are Hash Functions* (2017), accessed 25 April 2018, available at https://learncryptography.com/hash-functions/what-are-hash-functions.
[36] Ibid.

very difficult to find the rest of the input).[37] These characteristics are vital for ensuring that a malicious miner cannot alter data appearing earlier in the ledger whilst still allowing for data to be added to the end of the ledger.[38]

Mamoria provides a simplistic explanation for how this operates in practice in his popular article *The ultimate, 3500-word, plain English guide to blockchain*. Here he refers to the hash function as a "machine" that, when given an input value, will calculate a unique output value. The vital characteristic of this "machine" is that when given the output alone it is extremely difficult to calculate the input; but when given both input and output, it is relatively easy to verify if the input leads to the output.

In explaining how the "machine" works, Mamoria gives the following problem scenario:

> 'Imagine I give you two boxes. The first box contains the number 20893. I, then, ask you, "Can you figure out a number that when added to the number in the first box and fed to the machine will give us a word that starts with three leading zeroes?" … the only way to calculate such a number is by trying every number available in the entire universe. After several thousand attempts, we'll stumble upon a number, say 21191, which when added to 20893 (i.e. 21191 + 20893 = 42084) and fed to the machine, will yield a word that satisfies our requirements. In such a case, this number, 21191 becomes the seal for the number 20893.'

In technical terms, the "seal" that Mamoria is referring to is called the "hash" and the efforts of the miners to determine the hash value is referred to as the "proof-of-work". Put differently: the hash value is simply proof that efforts were made to calculate it.

The next technical aspect to consider is the "mining" of blocks. A miner is a computer connected to the Bitcoin blockchain that competes to 'solve a block'. To do this, all the miners in the system are presented with a very complex mathematical problem that requires time, electricity and CPU power to solve. The first miner to solve the problem (the "successful miner") announces it to the rest of the network who immediately verify whether it yields the required output. Bitcoin's internal protocol requires fifty-one percent

[37] Op cite note 30 at p2-8.
[38] Ibid. at p11.

of the network to verify that the calculation is correct for the block to be sealed. The new block is added to the longest chain verified by the majority of the network.[39]

For avoidance of doubt, this process is not controlled by any external entity or trusted intermediary, but rather by the consensus rules built into the code of the blockchain by its creator. These consensus rules are alterable only by the network participants and can occur only where there is a decision to alter such rules by the network participants. Where such a decision is not contested, the consensus rules are simply upgraded to reflect the newly agreed consensus framework, all future blocks are created reflecting the change.[40] Where such a decision is contested, a fork will occur in which the chains split with one chain following original consensus rules, and the other chain following the newly agreed consensus rules.[41]

To a legal mind, the possibility of forks occurring is likely to cause concern, bringing the revered concepts of certainty and predictability under threat. However, in practice, forks are a method of ensuring the blockchain is continuously upgraded and improved by the network participants.[42] Certainty is preserved by the mere fact that it is the network participants themselves making the change, and not a third party who may do so without the knowledge of the participants.

However, problems arise when examining the side-effects of a fork, particularly financial loss resulting from 'replay-attacks'.[43] However, blockchain developers are continuously working on improving the internal protocol to protect users against replay-attacks. Legal regulation must allow space for technological improvement in this regard.[44] Nevertheless, this weak point in the blockchain technology raises interesting legal questions that, though outside the scope of this dissertation, deserve further examination in future research. For example, what legal recourse is available to an individual who suffers financial loss

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[39] Ibid. at p37.
[40] Bernard B. Parah, "Hard Forks, Soft Forks… What's a Fork," *Coin Monks* (28 June 2018), https://medium.com/coinmonks/hard-fork-soft-fork-what-is-a-fork-cd752ae63403. at p1.
[41] Ibid.
[42] Ibid.
[43] A replay-attack is where cryptocurrency users accidentally send cryptocurrencies on two blockchains following a fork when they only meant to send funds on one, thereby suffering financial loss.
[44] Alyssa Hertig, "Blockchain Forks Are All the Rage, but Can They Ever Be Safe?," *Coindesk* (19 October 2017), accessed 23/11/2018, https://www.coindesk.com/blockchain-forks-rage-will-ever-safe.at p1.

following a replay-attack considering that such loss is not attributable to the actions of another identifiable individual but rather to the combined will of the network participants?

Returning then to the technical workings of the blockchain, it is important to understand that when a miner solves a block, it has the option of including a record of as many of the transactions that have occurred within the preceding ten minutes into the block as it can. However it must do so without exceeding the block size accepted by the network enforcing the consensus rules. Such an inclusion is not a requirement for the creation of a block. Instead, the Bitcoin network incentivises the inclusion of transactions into a block by allowing miners to keep whatever transaction fees are associated with the transactions they include.[45] In this way, it is highly unlikely, though not impossible, that a valid transaction will not be included into a block.

Additionally, the successful miner will apply a "timestamp" to the block it has sealed, thereby providing a rough indicator as to when the block was formed. If a malicious *miner* tries to alter the contents of the block, the hash value will allow a node to verify the integrity of the block and reject it if it is found to have been tampered with. The identification of tampering is efficiently achieved as the altered block will yield a different input that, when fed into the hash function, will not produce the output number used to seal the block. On the other hand, if a malicious *node* tries to change any of the data in a block, the rest of the network will deny any transactions coming from that node, deeming its actions to be a double spend or fraudulent transaction.

In addition to data (i.e. the information contained on the single "page" of the ledger), each block contains a hash pointer to the previous block. A hash pointer simply references

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[45] In the interests of clarity, each node verifies each incoming transaction **independently** by testing it for compliance with the internal rules of the blockchain, verifying its signature and checking for conflict with previous transactions. Where a transaction passes these tests, the node includes the transaction in its local list of provisional unconfirmed transactions (the "memory pool"). The memory pool is then forwarded on to its peers. Transactions whose evaluation is dependent on other unseen transactions are 'placed in a temporary holding area (the "orphan pool")'. Transactions which fail are rejected outright. When a new block is created, it contains a set of 'as-yet unconfirmed transactions' (i.e. those falling within the memory pool), and the other nodes in the system will then **independently** verify the block. Once accepted the block is added to that node's local copy of the blockchain. Importantly, 'any transactions in the node's memory pool or orphan pool which conflict with those in the new block are immediately discarded.' See Gideon Greenspan, "The Blockchain Immutability Myth: Where Flexible Thinking Is Preferable to Dogmatism," *Private Blockchains* (4 May 2017), accessed 17/09/2018, available at https://www.multichain.com/blog/2017/05/blockchain-immutability-myth/.

another piece of known information - in this case the values of the previous block - thereby linking the various blocks into a chain. The hash ensures that each block not only reveals where the value of the previous block was, but 'it also contains a digest of that value', which allows nodes to verify that the value has not been altered.[46]

In sum, a transaction and the subsequent transfer of the bitcoin(s) is recorded, time-stamped, and displayed within a single block of the block chain. Each block is sealed utilising a cryptographic hash function that prevents the alteration of the data in the block. Public-key cryptography ensures that all nodes within the network have a continually updated and verified record of all transactions that have occurred within the Bitcoin network, thereby guarding against double-spending and fraud. The currency is considered to be 'decentralised' as it does not require a third-party intermediary to perform the ledger-keeping function and transactions are denominated in Bitcoins, the value of which is determined on an open market and not derived from gold or government fiat.

[46] Op cite note 30 at p11.

III. Legal Perspectives and Underlying Assumptions

Analysis of the most appropriate legal classification of cryptocurrency requires recognition of the perspective from which such analysis is conducted. This dissertation is written from a legal policy perspective for the reasons outlined in this chapter. Such a perspective informs the construction of two key assumptions underlying analysis, identified and justified below.

A. Legal Perspective

A legal perspective informs the approach to classification taken within this paper and thus must be identified. There is very little research that has been completed on the classification of cryptocurrency from a strictly doctrinal perspective. The advantage of a classification founded in doctrine is that it allows for adjustments to be made in response to new issues that may arise; but also, arguably more importantly, limits the need for the creation of legal fiction. However, the absence of thorough doctrinal analysis is in itself informative.

Cryptocurrency is not simply a modern manifestation of an age-old issue as, for example, causing an entire information system to breakdown by electronic means has been deemed a modern manifestation of the common law crime of malicious damage to property.[47] Rather, cryptocurrency is a unique construct that behaves/operates in an unprecedented manner, making it difficult to draw parallels to existing legal structures. Consequently, there is limited space to extend existing legal doctrine in order to accommodate the concept of cryptocurrencies without creating legal absurdities. Additionally, a strictly doctrinal approach limits analysis to legal considerations alone. Important discussions surrounding the social and economic effects of a particular classification of cryptocurrency are consequently engaged with to a lesser degree, as the focus is restricted to what is good in law.

The alternative is then a classification from a legal policy perspective. This requires a common-sense approach, with consideration of prevailing societal views, informed by

[47] *S v Howard* Unreported Case no. 41/258/02 (Johannesburg Regional Magistrates Court).

constitutional values. Adopting a legal policy perspective allows for a classification cognisant of the uses and proposed uses of cryptocurrency, and the need to ensure its functionality is not undermined. Furthermore, this perspective allows for important socio-economic factors to be considered, such as the need to promote financial inclusion and the need to protect vulnerable consumers. Such considerations are of particular importance within a South African context.[48]

A number of studies indicate that a vast majority of adults are unbanked and without access to financial services[49] and academic opinion postulates the power of cryptocurrencies utilising the blockchain platform to promote financial inclusion on the African continent.[50] Thus, this paper strikes a balance between doctrinal analysis and analysis from a legal policy perspective. Discussion is informed by a consideration of doctrinal classification questions, however conclusions reached are guided by legal policy considerations. Such an approach ensures analysis is responsive to advancements in the technology underlying cryptocurrency as well as the varying socio-economic needs prevalent within the South African context.

B. Underlying Assumptions

Two key assumptions lie at the core of analysis: firstly, it is assumed that cryptocurrency has value; and secondly, it is assumed that it is most appropriate to classify cryptocurrency in a way that preserves rather than destroys its commercial viability. Importantly, it is not

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[48] Jean-Philippe Stijns, *Banking in Sub-Saharan Africa: Interim Report on Digital Financial Inclusion* (European Investment Bank, 2017).

[49] C.f. Anthanasius Fomum Tita and Meshach Jesse Aziakpono, *The Effect of Financial Inclusion on Welfare in Sub-Saharan Africa: Evidence from Disaggregated Data* (Economic Research Southern Africa, 2017); African Development Bank, *Financial Inclusion in Africa* (Tunisia: African Development Bank Group, 2013); Asli Demirgüç-Kunt and Dorothe Singer, *Financial Inclusion and Inclusive Growth: A Review of Recent Empirical Evidence* (World Bank Policy Research, 2017), accessed 21 June 2018, https://ssrn.com/abstract=2958542; Jose Andre Roman, "Bitcoin: Assessing the Tax Implications Associated with the Irs's Notice Deeming Virtual Currencies Property," *Review of Banking & Finance Law* 34 (2015); Op cite note 48.

[50] UNECA, *Bockchain Technology in Africa Draft Report* (Addis Ababa: United Nations Economic Commission for Africa, November 2017), available at https://www.uneca.org/sites/default/files/images/blockchain_technology_in_africa_draft_report_19-nov-2017-final_edited.pdf. at p18. See also, as an example, BitPesa, a Kenyan company utilising the blockchain to enable the economic transactions in and out of Africa https://www.bitpesa.co/.

the objective of this section to provide extensive insight into the debates surrounding the assumptions made herein. This is not the focus of this dissertation. Rather, the aim is to alert the reader to the presence of contention surrounding such assumptions, and to include brief motivation for the stance adopted herein.

1. Cryptocurrency Has Value

The *source* of the value of cryptocurrencies remains highly contentious. This is notwithstanding the fact that "value" is simply the 'desirability that someone allocates to something',[51] and the demand for cryptocurrency in the market place indicates that cryptocurrencies have been allocated value.

At its inception, cryptocurrency was intended to act as a store of value and a means of exchange similar to the Rand or Dollar.[52] However, its decentralised nature means that a crypto-coin does not derive its value in a manner recognised by traditional economic models. By way of example, the shareholder equity model attaches value to a 'share' or 'security' by virtue of the fact that it represents a proportionate ownership stake in something (i.e. a company).[53] In the context of currency, the first paper notes served as a promise to furnish the holder with the equivalent value in metal (usually gold, silver and/or bronze) as the value inscribed on the document.[54] Thus, currency initially derived its value from the fact that the issuer had metal reserves that could be redeemed at any time.[55]

During the course of the twentieth century, the variations of this 'gold-standard' system were abandoned and replaced by modern fiat money. Fiat money derives its value from the law: the currency is supported by the government as sovereign and is subsequently supported by the economy of the territory where it is accepted.[56] Thus, value is derived

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[51] Andres Guadamuz and Chris Marsden, "Blockchains and Bitcoin: Regulatory Responses to Cryptocurrencies.," *Sussex Research Online* 20, no. 12 (2015), available at http://sro.sussex.ac.uk/58872/. p5.
[52] Nakamoto clearly articulates an intention for Bitcoin to act as a currency, even referring to it as such, in his first explanatory paper: op cite note 13 at p1.
[53] See the following case law in which the court articulates that the value of a share is derived from it representing a bundle of rights held in respect of the company which in turn generate various entitlements (e.g. to dividends when declared) for the shareholder. *Cooper v Boyes No and Another* 1994 (4) SA (C) at p535; *Bradbury v English Sewing Cotton Co Ltd*, 1923 (744) *AC* (HL) at p746.
[54] Op cite note 51 at p5.
[55] Ibid. at p6.
[56] Ibid. at p6.

from the economic strength and trustworthiness of the issuing government or reserve bank. By contrast, cryptocurrency does not derive its value by virtue of the fact that it represents ownership of or in something, nor does it enjoy governmental backing as of yet. As a result, debate exists around whether cryptocurrencies can ever be viewed as a sustainable store of value.

The vast majority of cryptocurrencies[57] possess an internal limit on the number of crypto-coins that can ever be mined. This has prompted some to argue that value is derived from the scarcity of the crypto-coins.[58] An alternative argument is that value is created through the labour (CPU power) expended in improving the underlying protocol of the blockchain, for example, by helping to maintain the ledger or by using the service.[59] The most convincing argument, however, is that value is derived from market acceptance which, in turn, is a result of the utility of cryptocurrency. This argument is rooted in the understanding that value is 'subjective and is in every individual's mind'.[60] Bitcoin, being the first manifestation of cryptocurrency, is utilised to illustrate this argument.

It is submitted that, at its inception, value was attached to Bitcoin because of its utility. It served a purpose and fulfilled a need that no other financial mechanism has been able to satisfy: namely the transfer of funds (no matter how large or small) expeditiously between two individuals without reliance on an intermediary institution, and with negligible transaction costs. Recognition of its utility resulted in the market's acceptance of cryptocurrency as a mechanism of facilitating exchange. This, in turn, resulted in an increase in the number of individuals who wished to enter the system. The basic principle

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[57] For example, Bitcoin has a cap of 21 million Bitcoins that can ever be mined; Litecoin has a cap of 84 million, Zcoin has a cap of 21.4 million and Ripple has an existing cap of 100 billion coins with a maximum of 1 billion distributable coins per month. By contrast, the Ethereum block chain possesses no cap as it serves as a platform for the creation of smart contracts and thereby fulfills a different function.

[58] Gareth W. Peters, Efstathios Panayi, and Ariane Chapelle, "Trends in Crypto-Currencies and Blockchain Technologies: A Monetary Theory and Regulation Perspective," *Journal of Financial Perspectives* 3, no. 3 (19 August 2015 2015), accessed 26/06/2018, available at https://arxiv.org/pdf/1508.04364.pdf. at p12. Op cite note 51 at p7-8.

[59] Steven Johnson, "Beyond the Bitcoin Bubble," *New York Times* (16 January 2018), accessed 19 June 2018, available at https://www.nytimes.com/2018/01/16/magazine/beyond-the-bitcoin-bubble.html; op cite note 51 at p7.

[60] As articulated by Brazilian economist Fernando Ulrich 'there is no intrinsic value' but rather there are 'intrinsic properties (chemical and physical)', thus value is subjective and dependent on market adoption. C.f. Fernando Ulrich, *Bitcoin: A Moeda Na Era Digital.* (São Paulo: Instituto Ludwig von Mises Brasil, 2012).

of supply and demand then applies: as the demand for Bitcoin increased, so did the value attached to it by the market. Thus, the value of cryptocurrency variates, and will continue to do so, in accordance with its acceptance in the market.

Consequently, the value of a cryptocurrency has the potential for volatile fluctuations. A principal example of this was the significant rise and subsequent fall in value between November 2017 and February 2018, in what has become known as the '2018 crypto-crash'.[61] The fact that cryptocurrencies are at present a volatile store of value,[62] however, does not warrant a conclusion that existing values are artificially attached and will eventually plummet to a permanent state of zero value.[63] This is essentially the prediction of those who describe cryptocurrency as the "mother of all bubbles"[64] or a "Pyramid scheme".[65] It is submitted that such an argument fails to recognise the ever-present utility of cryptocurrencies that ensures market adoption. Increased market adoption decreases speculative interest and will assist in stabilising the value of cryptocurrencies in both the short and long terms.[66] This assumption is referenced and reinforced throughout this paper.

2. Classification to Preserve Commercial Viability

Cryptocurrencies have been commercially successful to varying degrees, and acceptance continues to grow.[67] Whether cryptocurrency will become a dominant method of payment remains unclear, and challenges are most certainly associated with a form of payment not

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[61] Brad Tuttle, "Bitcoin Just Hit a New Low for 2018. Here's How Much You Would Have Lost If You Bought at the Peak," *TIME* (25 June 2018), accessed 04/12/2018, available at http://time.com/money/5320970/bitcoin-price-low-2018-peak/. Dan McCrum and Jemima Kelly, "That Crypto-Crash in Full," *Financial Times* (11 June 2018), accessed 04/12/2018, available at https://ftalphaville.ft.com/2018/06/11/1528712107000/That-crypto-crash-in-full/.

[62] Paul Breloff and Nathan Krishnamurthy, *Bitcoin and the Bottom of the Pyramid: How Cryptocurrency Can Make Good on Its Promise of Financial Inclusion* (Center for Fiancial Inclusion, 2014).

[63] Eric P. Pacy, "Tales from Cryptocurrency: On Biocoin, Square Pegs, and Round Holes," *New England Law Review* 49, no. 121 (2014). at p141.

[64] Op cite note 7; Paul Krugman, "Opinion: Bubble, Bubble, Fraud and Trouble," (29 January 2018), accessed 03/12/2018, available at https://www.nytimes.com/2018/01/29/opinion/bitcoin-bubble-fraud.html.

[65] Matthew J. Belvedere, "Bitcoin Is a 'Pyramid Scheme,' Warns Former Wells Fargo Ceo Dick Kovacevich," (16 January 2018), available at https://www.cnbc.com/2018/01/16/bitcoin-is-a-pyramid-scheme-warns-ex-wells-fargo-ceo-dick-kovacevich.html.

[66] John Kelleher, *Why Do Bitcoins Have Value?*, vol. 21 June 2018 (Investopedia, 2018).

[67] Evan Hewitt, "Bringing Continuity to Cryptocurrency: Commercial Law as a Guide to the Asset Categorization of Bitcoin," *Seattle University Law Review* 39, no. 619 (2016).

yet fully understood. Nevertheless, new forms of commerce should be advanced as a means of promoting economic growth, particularly when challenges associated thereto may be effectively addressed through proper regulation.[68]

The advantages of a regulatory approach that preserves commercial viability are numerous. As outlined above, cryptocurrencies fulfill a very necessary function and, once regulated in a manner that ensures protection of vulnerable users, have the potential to promote financial inclusion. Furthermore, the ability to effect cross-border transactions with minimal transaction fees and without reliance on intermediary institutions is greatly beneficial to international trade.[69] Finally, the internal limit placed on the number of crypto-coins that can ever be generated (built into the protocol of the majority of cryptocurrencies) means that, unlike fiat currency, cryptocurrency can never be artificially inflated.[70] There are however various issues with preserving the commercial viability of cryptocurrencies that cannot go unstated.

A principle concern alluded to above, is the volatility of the value of cryptocurrencies. Such volatility has prompted numerous arguments that cryptocurrencies are not a useful store of value and are thus unworthy of regulatory preservation.[71] However, much of this volatility has been linked in part to the fact that cryptocurrencies are still in their youth, and in part to the overriding speculative interest.[72] A multiplicity of writers argue that value will stabilise as developers improve the internal supply protocols to limit the volatility,[73] as more businesses accept cryptocurrency as a payment method, and once regulators clarify their position, all of which reduce speculatory interest and cause a shift back to adoption for utility.[74]

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[68] Ibid.
[69] Ly Kien-Meng, "Coining Bitcoin's 'Legal-Bits': Examining the Regulatory Framework for Bitcoin and Virtual Currencies," *Harvard Journal of Law and Technology* (2014).
[70] Op cite note 63.
[71] David Yermack, *Is Bitcoin Real Currency?*, 1 December 2013 ed., *Centre for Financial Stability* (2013).
[72] Tara Mandjee, "Bitcoin, Its Legal Classification and Its Regulatory Framework," *Journal of Business & Securities Law* 15, no. 2 (2015). at p171; op cite note 63 at p128; Op cite note 58 at p93.
[73] Grégory Claeys, Maria Demertzis, and Konstantinos Efstathiou, *Cryptocurrencies and Monetary Policy* (European Parliament: Policy Department for Economic, Scientific and Quality of Life Policies, 2018), accessed 05/08/2018, available at http://www.europarl.europa.eu/cmsdata/150000/BRUEGEL_FINAL%20publication.pdf. at p13.
[74] Op cite note 63 at p128; Timothy B. Lee, *These Four Charts Suggest That Bitcoin Will Stabilize in the Future*, 3 February 2014 ed., *Washington Post* (2014). C.f. also Kerry Lynn Macintosh, "How to Encourage

A secondary concern is the impact on existing fiat currency. As postulated by economist Friedrich Hayek, cryptocurrency may have an impact on the price stability of existing fiat currency and on national monetary policy, to the extent that cryptocurrencies could affect the demand for obligatory national currency.[75] Hayek explains that as soon as national currency begins to compete with a parallel coin, demand for the existing fiat currency is diminished thereby disrupting all governmental planning relating to the money supply.[76]

Chapter V, Part E of this paper includes a more detailed analysis of this issue and shows that, although valid, there are various methods of addressing these concerns. It is therefore submitted that the possibly negative effect that cryptocurrency may have on the price stability of existing fiat currency is a manageable one and does not necessitate a regulatory approach that destroys cryptocurrency.

The final concern often expressed is that the anonymity afforded to cryptocurrency users enables it to serve as an effective means of exchange on the Dark Web. The following case study illustrates the concern.

Case Study: **silkroad.onion**

The Enabling Role Played by Bitcoin

'Based on my training and experience, Silk Road has emerged as the most sophisticated and extensive criminal marketplace on the Internet today.' - Special Agent Christopher Tarbell, FBI, 2013[77]

Global Electronic Commerce: The Case for Private Currencies on the Internet," *Harvard Journal of Law and Technology* 11 (1998); Op cite note 74.

[75] Friedrich Hayek, *Denationalisation of Money: The Argument Refined* (London: 1990), accessed 21 June 2018, available at <https://mises.org/system/tdf/DenationalisationofMoneyTheArgumentRefined_5.pdf?file=1&type=document>.

[76] Ibid at p146. Hayek was writing in response to virtual currencies utilised within specific communities, most commonly within computer games or loyalty programmes. However, direct parallels may be drawn between virtual currencies and cryptocurrencies, though the latter is perhaps even more likely to have disruptive effect on national monetary policy than the former. See also discussion in Peters, Panayi, and Chapelle. (op cite note 58) at p109-10.

[77] Samuel Gibbs, "Silk Road Underground Market Closed – but Others Will Replace It," *Internet* (3 October 2013), accessed 03/12/2018, available at https://www.theguardian.com/technology/2013/oct/03/silk-road-underground-market-closed-bitcoin.

The Silk Road was an online market of illicit goods and services operating in a portion of the Deep Web[78] known as the Dark Web[79]. It was the first Dark Web market to emerge utilising cryptocurrency (specifically Bitcoin) in conjunction with The Onion Router (a type of Internet browser invented to 'ensure secure government communications for the U.S. Navy' now available as open source to access the deep web[80]) to guarantee a high degree of anonymity.[81]

The founder of the Silk Road, Ross Ulbricht, questioned the legitimacy of the United States Government's war on drugs. He wanted to create a free market place operating outside the control of the State where individuals were free to decide what they put in their bodies.[82] Initially, the products available were restricted to those that resulted in 'victimless crimes' and thus 'child pornography, stolen credit cards, assassinations and weapons of mass destruction were banned'.[83] Nevertheless, as the site grew an increasing amount of previously prohibited items began to enter the market place.

Bitcoin was the primary means of transferring value in Silk Road transactions as it enabled users to effect largely anonymous exchanges outside the control of the State or any other public/private intermediary. In its short lifespan it is estimated that over US$1 billion worth of Bitcoin changed hands through Silk Road.[84]

It took the United States authorities more than two years to identify and arrest Ross Ulbricht, following which the Silk Road domain was seized. Ulbricht was

[78] The Deep Web is defined as 'anything that a search engine cannot find' the converse being the Surface Web. C.f. A. Dominick Romeo, "Hidden Threat: The Dark Web Surrounding Cyber Security," *North Kentucky Law Review* 43, no. 73 (2016), available at https://chaselaw.nku.edu/content/dam/chase/docs/lawreview/v43/nklr_v43n1.pdf [accessed 24/11/2018] at p75.
[79] The Dark Web 'is a small portion of the Deep Web that has been intentionally Hidden' accessible only through 'specialised tools or interfaces', the most popular being Tor network. C.f. Ibid.
[80] Carmine DiPiero, "Deciphering Cryptocurrency: Shining a Light on the Deep Dark Web," *University of Illinois Law Review* 1267 (2017). at p 1273.
[81] Andrew Norry, "The History of Silk Road: A Tale of Drugs, Extortion & Bitcoin," (20 November 2018), accessed 24/11/2018, available at https://blockonomi.com/history-of-silk-road/.
[82] Ibid.
[83] Ibid.
[84] Ibid. See also Ahmed Ghappour, "Searching Places Unknown: Law Enforcement Jurisdiction on the Dark Web," *Stanford Law Review* 69 (April 2017), available at https://repository.uchastings.edu/cgi/viewcontent.cgi?article=2582&context=faculty_scholarship [accessed 24/11/2018] at p1077.

controversially convicted of computer hacking, money laundering and drug trafficking and 'was sentenced to life imprisonment without the possibility of parole'.[85] Despite the severity of Ulbricht's charges and later sentence, Silk Road 2.0 emerged within a month of the seizure of the original domain. This reflects the cat-and-mouse game – state authorities verses online illicit market places – that persists in perpetuity.

The Silk Road story received a great deal of media attention, and Bitcoin's central role as principal payment method for illicit goods did not go unnoticed. At present a multiplicity of cryptocurrencies are available and are used as the primary payment method on the Dark Web.

The role of cryptocurrency in market places such as the Silk Road is an easy and often utilised device to illustrate its evil underbelly and demonise the technology. Though this dissertation acknowledges the importance of recognising the negative potential of this technology, it is submitted that its facilitative role in the Dark Web is not reason enough to argue for the complete destruction of its commercial viability through regulatory intervention. Indeed, where cryptocurrency is used to purchase illicit goods, the established framework of criminal law may be reverted to in order to ensure the perpetrator is held accountable. Thus, in light of the above, any analysis conducted is done with the objective of achieving a positive regulatory strategy that endeavours to preserve the commercial viability of cryptocurrencies.

[85] Op cite note 80 at p1277.

IV. Cryptocurrency as Property

Proceeding on the assumption that cryptocurrency has value and that it should be classified in a manner that best preserves its commercial viability, discussion turns to the possibility of classifying cryptocurrency as property in law. By approaching this question through the lens of private law notions of property (as influenced by constitutional principles) the discussion is cognisant of the broader consequences of a property classification, applicable to all areas of law. This is preferable to the existing approach in academic literature, namely to prefer a property classification over any other in the context of tax law alone. This latter approach is reactive in nature and fails to account for the effect of such a classification in other areas of law or practice.

A. The Private-Law Notion of Property

The concept of property in law is highly abstract in nature, founded upon classical principles tested over time and adapted where required.[86] Though the term is used broadly in everyday language, in a legal sense 'property' means rights. Specifically, the 'rights of people in or over certain objects or things'.[87]

Pope & Mostert establish that the use of the term 'property' within a legal context may refer to three differing concepts: (1) to signify the right of ownership in a legal object; (2) to refer to the legal object to which the right relates; and (3) in reference to all the legal relationships that qualify for protection under the constitutional property clause.[88] The term 'property' is thus broadly defined to accommodate the multiplicity of contextually dependent meanings attached. The term 'things', however, is usually understood in a more restricted manner.[89]

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[86] Hanri Mostert and Anne Pope, *The Principles of the Law of Property in South Africa* (Cape Town: Oxford University Press, 2010) at p3.
[87] Ibid. p5.
[88] Ibid. p5.
[89] Ibid. p12; C G van der Merwe, *Sakereg*, 2 ed. (Durban: Butterworths, 1989) at p20-3.

'Thing' simply denotes 'the object of a right'.[90] Thus, the confusion present in the meaning of 'property' between a particular right and its object, is absent from the less complex meaning of 'thing'.[91] Complexity arises when addressing the question of whether corporeality is an essential characteristic or a common characteristic of a 'thing'. Although divergence in academic opinion exists, delving into this debate is not useful to, nor the focus of, this paper. Additionally, even the strongest proponents[92] for corporeality being an essential rather than common characteristic concede that, in practice, incorporeals are 'frequently treated as the objects of real (proprietary) rights'.[93] Incorporeality is thus treated in practice[94] as a common but not essential characteristic of a 'thing'. Such a conclusion is further bolstered by the broader definition of 'property' found in the Constitution.[95]

Although the function of the constitutional property clause differs from private law remedies protecting property, its interpretation by courts is informative. While the Constitutional Court[96] has interpreted 'property' in section 25 of the Constitution as having corporeality as a starting point, constitutional protection of incorporeal property is viewed as unproblematic.[97] Consequently, to treat corporeality as a *common* characteristic of a thing is to align the private law conception of property, although far more narrow in application, with that encompassed in the Constitution.[98] The remaining characteristics of

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[90] François du Bois, *Wille's Principles of South African Law*, 9 ed. (Claremont: Juta & Co Ltd, 2014) at p409.
[91] Ibid at p409
[92] Notably van der Merwe (op cite note 89) at p37; op cite note 90 at p412-19.
[93] Op cite note 90 at p419.
[94] As well as by scholars who reject the inflexible nature of a dogmatic approach to corporeality, see for example Mostert and Pope (op cite note 86) at p22; and PJ Badenhorst, J M Pienaar, and H Mostert, *Silberberg and Schoemans the Law of Property* (Durban: LexisNexis, 2006) at p18.
[95] Section 25 *The Constitution of the Republic of South Africa*, *108* (1996).
[96] *First National Bank of SA Limited T/a Wesbank v Commissioner for the South African Revenue Services and Another* 2002 (4) SA (CC). Approach later followed in *Zondi v Mec for Traditional and Local Government Affairs* 2005 (3) SA (CC).
[97] *Law Society of South Africa v Minister for Transport* 2011 (1) *SA* (CC) para 83 where Moseneke DCJ states "Section 25(4)(b) makes it clear that property is not limited to land. It must follow that both corporeal and incorporeal property enjoy protection." See also AJ Van der Walt, *Constitutional Property Law* (Cape Town: Juta, 2005). p65-6; op cite note 86 at p27.
[98] Op cite note 86 at p27.

a ‘thing’ are uncontentious and include an impersonal nature,[99] independence,[100] appropriability[101] and use and value[102].[103]

Falling within the scope of the legal definition of ‘property’, and consequently treated as such, are shares[104] and other securities. However, regulation is governed less by the rules of property law, and more by specialised legislation, the latter being more responsive to the complex characteristics peculiar to shares and other securities.

‘Securities’ is broadly defined in both the Companies Act[105] and the Securities Services Act[106] and includes shares and any other debt instrument (including hybrid securities) used to finance a company.[107] The Companies Act[108] defines a share as ‘one of the units into which the proprietary interest in a profit company is divided’. The nature of a share has been described by the courts as ‘a bundle of intangible property rights’ held in respect of a company.[109] It is incorporeal, movable property,[110] transferable in any manner provided for in statute.[111] Parallels have been drawn between cryptocurrency and securities, most notably by the United States Exchange Control Commission.[112] The impossibility of such a classification is detailed below.

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[99] In keeping with the doctrine of legal subjectivity, humans cannot be regarded as ‘things’.
[100] A ‘thing’ must have an independent legal (rather than physical) existence.
[101] A ‘thing’ must be susceptible to human control, control being the possibility of enforcing and protecting the right in the thing.
[102] Value may be economic or sentimental, and negative value (i.e. unwanted things) qualifies.
[103] Op cite note 86 at p22-4.
[104] C.f. the oft cited English case *"Bradbury v English Sewing Cotton Co Ltd.*" (op cite note 53) where Lord Wrenbury stated that a share ‘forms a separate right of property’ which is the ‘property of the corporator’ at p746.
[105] Section 1 of *The Companies Act*, *71* (2008).
[106] Section 1 of *Securities Services Act*, *36* (2004).
[107] C.f. discussion in Farouk HI Cassim, *Contemporary Company Law*, 2 ed. (Claremont: JUTA & Co Ltd, 2012). where it is established that the issue by a company of any security other than a share is an issue of a debt instrument; further that securities other than shares include hybrid securities arising in recent years, possessing characteristics of both a share and a debt (at p231).
[108] "The Companies Act." Section 1.
[109] Fidelis Oditah, "Takeovers, Share Exchanges and the Meaning of Loss," *Law Quarterly Review* 112 (1996) at p426-7. See also *Standard Bank of South Africa Ltd and Another v Ocean Commodities Inc and Others* 1983 (1) *SA* (A) at p288, *Liquidators, Union Share Agency v Hatton* 1927 (AD) at p250.
[110] Section 35(1) "The Companies Act.".
[111] See Van Zyl J in *"Cooper v Boyes No and Another*" (op cite note 53) at p535.
[112] *Statement on Potentially Unlawful Online Platforms for Trading Digital Assets* (US Securities Exchange Commission, 2018). See also the cases of *Sec v Shavers* No. 4:13-Cv-416, 2013 Wl 4028182. and *In the Matter of Erik T. Voorhees* No. 9592, 2014 Wl 2465620 where it was held that interests in entities that own Bitcoin will be characterized as securities subject to SEC regulation.

B. Does Cryptocurrency Fall Within the Scope of Legal Property?

1. Characteristics of Crypto-coins

Determining whether a corporeal object possess all necessary characteristics of a 'thing' is a relatively simplistic task. The same task performed in respect of an incorporeal is far more complex. In this paper, this difficulty is further exacerbated by the novelty and the multiple uses of cryptocurrency. Nevertheless, in order to be characterised as property, cryptocurrency must be capable of legal classification as a 'thing'. Such a classification is possible only if it can be shown that cryptocurrency possess all legal characteristics of a thing.[113]

The first chapter of this paper gave a technical explanation of cryptocurrency. Recall that ownership of a crypto-coin is linked to the private (cryptographic) key(s) stored in a 'wallet'. Holders are storing digital "coins", each of them with their own unique identification code, as well as their private and public keys. The public and private keys have crypto-coins, and therefore value, attached to/associated with them in accordance with the transaction history recorded in the blockchain.[114] For example, the blockchain has a record that Jordan's public key received Bitcoin with unique code GWY34K equivalent to R1 000.00 in value from Peter. Only Jordan has access to the corresponding private key (stored in his wallet) and consequently is the only person able to transfer that R1 000.00 worth of Bitcoin to another holder.

Thus, a crypto-coin is essentially a *record* of a value stored in a wallet on the corresponding blockchain.[115] All system participants can view how many crypto-coins, or fractions thereof, are present in each system wallet.[116] This ensures the publicity

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[113] Op cite note 86 at p20.
[114] Doles Silva, "Cryptocurrencies and International Regulation" (paper presented at the Modernizing International Trade Law to Support Innovation and Sustainable Development, Proceedings of the Congress of the United Nations Commission on International Trade Law, Vienna, 4-6 July, 2017), accessed 09 July 2018, available at http://www.uncitral.org/uncitral/en/commission/colloquia/50th-anniversary-papers.html. at p4.
[115] Don Tapscott, "Blockchain: The Ledger That Will Record Everything of Value to Humankind," (5 July 2017, accessed 4 July 2018, available at https://www.weforum.org/agenda/2017/07/blockchain-the-ledger-that-will-record-everything-of-value/; Scott A. Wiseman, "Property or Currency: The Tax Dilemma Behind Bitcoin," *Utah Law Review* 2016, no. 3 (2016) at p420.
[116] Op cite note 114 at p4. Note, however, that only the unique wallet number is accessible and not the details of the wallet holder.

requirement for transfer of property in law is satisfied by the internal mechanisms of the blockchain.

Recall further that, for a limited period of time, these crypto-coins can be automatically generated by the network and granted to miners as a reward for solving a predetermined number of blocks. The new crypto-coins are predetermined by the network and are generated at a fixed declining rate until the internal limit is reached, after which no new crypto-coins are generated.[117] Once again, this "coin" is nothing more than a snippet of identifiable code that represents a value.[118] Thus, crypto-coins can be obtained through mining efforts or through transactions, and are associated with the holder's address/wallet on the blockchain.

The question then is whether a digital record of value (hereafter a "crypto-coin") can be deemed a thing within the scope of private-law notions of property.

It is clear from the outset that crypto-coins are incorporeal as they cannot be touched or perceived by the five senses.[119] Furthermore, they are undoubtedly impersonal in nature, and (as discussed previously) have both use and value. Regarding the characteristic of appropriability, in order to fall within the scope of a 'thing' crypto-coins must be susceptible to human control. Control need not manifest in the physical form of the word, but rather amounts to 'the possibility of enforcing and protecting the right in the thing'.[120] The fact that a crypto-coin is linked to the distinguishable cryptographic key held by a holder, and the fact that the value thereof is transferable, and transferable only by the holder in possession of the requisite corresponding key, is evidence enough of the appropriability of crypto-coins. Whether cryptocurrency possesses legal independence, requires a more detailed discussion.

Although cryptocurrency utilises the blockchain in order to ensure decentralisation, crypto-coins should be viewed as legally independent from the blockchain itself. Such

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[117] This deflationary characteristic has caused parallels to be drawn between cryptocurrency and gold, and its consequent classification as a commodity. See Mandjee (op cite note 72) at p178.
[118] Noelle Acheson, "What Is Bitcoin," (26 January 2018, accessed 4 july 2018, available at https://www.coindesk.com/information/what-is-bitcoin/.
[119] Op cite note 86 at p32. AJ van der Walt and G Pienaar, *Introduction to the Law of Property*, 6 ed. (Claremont: JUTA, 2009). p14.
[120] Op cite note 86 at p23.

independence is inherent in a technical understanding of cryptocurrency: the blockchain is viewed as the framework or technology underlying cryptocurrencies, but its uses extend beyond supporting a cryptocurrency. Rather, the cryptocurrency is built 'on top' of the blockchain and, although it holds records of all transactions that have taken place, the blockchain technology is understood to be distinct from the crypto-coins it records. This is so notwithstanding the fact that the blockchain and the cryptocurrency it supports are often referred to collectively; for example, "Bitcoin" is used to refer to the Bitcoin-blockchain as well as the Bitcoin-coins.[121]

Thus, crypto-coins must be viewed as legally distinct and independent from the blockchain supporting them for three principle reasons: (1) such a legal construction is in line with the technical understanding of how cryptocurrencies operate; (2) the blockchain records the transactions that have occurred, whereas the crypto-coin is the actual record of value, these differing functions contribute to legal independence; and (3) because the blockchain is a distributed ledger with multiple nodes contributing to its functioning, there can be no ownership of the blockchain itself,[122] yet in practice holders of crypto-coins speak of ownership thereof. Whether ownership rights can in law be exercised over crypto-coins is debated below. However, to not treat the blockchain as legally independent from crypto-coins would lead to legal absurdity, particularly when attempting a determination of what rights are granted to a holder of crypto-coins.

2. Nature of Crypto-coins

Having established the possibility of crypto-coins possessing all the characteristics of a thing, a multiplicity of questions arises: do ownership rights vest with the holder of crypto-coins; how is transfer of crypto-coins effected in law; can real security rights be established over crypto-coins; can crypto-coins be sold in execution? These questions are essential in determining how the law is to treat cryptocurrency and what its users may utilise it for. Answering such questions necessitates a classification of the thing, being the

[121] Op cite note 118.
[122] Nieman equates this with the fact that no person or entity owns the technology behind email. A Nieman, "A Few South African Cents' Worth on Bitcoin," *Potchefstroom Electronic Law Journal* 18, no. 5 (2015). p1986.

crypto-coins, according to its nature.[123] The most important classification for present purposes[124] is the classification of the thing as corporeal or incorporeal, and its further classification as movable or immovable.[125] Additionally, classification as consumable or non-consumable will be briefly outlined to illustrate how viewing crypto-coins as property rather than currency can alter our perspective of their legal nature.

Once again, this process of classification is complicated by the contrasting uses of cryptocurrency in practice: to some holders it is a means of exchange for goods or services, to others it is a means of generating economic gains resulting from fluctuation in value. Nevertheless, in both instances, crypto-coins are utilised, traded and exchanged because they are perceived to hold value. As outlined in the previous chapter, this value is derived from market acceptance alone, and not from any rights afforded to the holder in the same way that a share may grant the holder a right to dividends, or a lease grants the holder the right to use and enjoy the property over which the lease is held.

Here, the discussion of corporeality and incorporeality again arises, albeit in a different context. The determination is not whether incorporeality is *characteristic* of crypto-coins (this has already been established above) but rather whether a crypto-coin is in *nature* incorporeal. The enquiries are distinct.[126] Difficulty arises as crypto-coins are not synonymous to presently recognised incorporeal things. Thus, two possible (contrasting) approaches may be adopted: (1) property law must be developed so as to recognise a new form of incorporeal things (as it did in recognising electricity), so as to avoid the difficulties associated with viewing crypto-coins as rights; or (2) crypto-coins fit no existing category of incorporeal things and therefore must constitute an incorporeal (personal) right.

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[123] Op cite note 86 at p32; op cite note 90 at p419.
[124] The classifications listed are of greatest importance as they directly affect the utility of crypto-coins in commerce because such classification determines the way in which transfer is effected, the powers granted to holders in law, the kinds of rights attached, etcetera. In this was such classification offers response to the questions here posed.
[125] Op cite note 90 at p419.
[126] Op cite note 86 at p33.

2.1 An argument for a new form of incorporeal things

Things deemed to be incorporeal in nature include forms of energy (such as heat, sound and light), and rights where such rights fulfil the same function as a thing.[127] A lease, usufruct, mortgage, pledge, notarial bond, intellectual property rights (patents, copyright, and trademarks) and shares[128] are all examples of rights deemed to fulfill the same obligation as a thing, and are thus considered incorporeal property.

Characteristic of rights considered to be things in property law, and so characteristic of all these examples, is that the object or content of the right is a thing, whether corporeal or incorporeal. For example: a lease is a right held in respect of a thing allowing the holder to use and enjoy the fruits of the thing;[129] a mortgage is a right held in respect of immovable property as security for a principle obligation;[130] and intellectual property consists of rights held in respect of ideas or inventions.[131] Similarly, a share is 'a bundle of intangible (personal) property rights' held in respect of a company.[132] To view a crypto-coin as a right fulfilling the same obligation as a thing, or to draw parallels between the nature of shares and crypto-coins, is legal fallacy.

Unlike a share or any other incorporeal property right, the crypto-coin is itself the thing. It does not operate as a right (or bundle of rights) held in respect of a thing or entity. Instead a crypto-coin is a unique string of digital code acting as a record of value. There is no authority in common law or in contemporary legal writing for the proposition that a property right can be held in respect of a record of value, even where the record of value itself may be considered a thing.

Notwithstanding the above, an argument could be made for the recognition of crypto-coins as being incorporeal in nature, thereby developing a new form of incorporeal property. This is because South African law does not possess a *numerous clauses* of

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[127] Ibid. See also op cite note 89 at p25.
[128] Op cite note 53.
[129] Op cite note 9 at p906.
[130] Ibid at p631.
[131] Jeremy Waldron, "What Is Private Property," *Oxford Journal of Legal Study*, no. 5 (1985). p321.
[132] Op cite note 109 at p426-7. See also *Standard Bank of South Africa Ltd and Another v Ocean Commodities Inc and Others*" (supra note 109) at p288, "Liquidators, Union Share Agency v Hatton." (supra note 109) at p250.

incorporeal things, thus there exists wide scope for a new category of incorporeals to be developed. An argument for a new category of incorporeal property may be constructed in a manner similar to arguments in favour of recognising information as a thing capable of ownership and thus protected and governed by the rules of property law.[133] Central to any argument in favour of the expansion of property law principles, is the notion that property is 'a vibrant idea' evasive of singular definition and ever evolving and adapting to societal developments and challenges.[134] It is one that must be understood in the context of both private law and constitutional law, the latter requiring a balance to be struck between the interests of an individual owner and those of the general public.[135] Consequently, there is a need to reconcile the private-law views on property as 'the solitary object under the dominium of an individual owner' with what the public views as property.[136] Indeed, courts have been willing to adapt private-law notions of property to recognize and protect certain incorporeals even before the enactment of the constitutional property clause.

By way of example, in *Froman v Herbmore Timber and Hardware (Pty) Ltd*[137] the court acknowledged that electricity was an incorporeal deserving protection as property in law.[138] Such protection arises not by virtue of analogy between incorporeals and corporeals, or by analogy between existing incorporeals and electricity, but rather because the court found merit or legal justification for recognition of the rights that flow from these properties.[139] Such an approach was followed in numerous cases addressing the incorporeal nature of electricity,[140]evidencing that the private-law notion of property is

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[133] See, for example, Mzukisi Njotini, "Chapter 2: Aspects of Property Law in E-Crimes and E-Authentication - a Legal Perspective" (University of South Africa, 2016), accessed 6 July 2018, http://uir.unisa.ac.za/bitstream/handle/10500/21720/thesis_njotini_m.pdf?sequence=1&isAllowed=y.
[134] Ibid. p61. See also discussion in Waldron. (op cite note 131) tracing the difficulty experienced by legal scholars and judges alike in developing an appropriate definition of 'property'.
[135] Van der Walt, *The Constitutional Property Clause: A Comparative Analysis of Section 25 of the South African Constitution of 1996* (JUTA, 1997) at p53.
[136] Ibid at p53.
[137] *Froman v Herbmore Timber and Hardware (Pty) Ltd* 1984 (3) *SA* (WLD).
[138] Ibid at p610.
[139] Ibid at p610.
[140] See *Naidoo v Moodley and Boyers v Stansfield Ratcliffe & Co Ltd* 1951 (3) *SA* (TPD); *Bonquelle (Edms) Bpk v Munisipaliteit Van Otavi* 1984 (3) *SA* (W).; supra note 137.

not founded on inflexible principles. Instead principles can be developed in response to emerging societal needs and challenges.[141]

Thus, it could be argued that cryptocurrency, or more accurately crypto-coins, have become a means to generate wealth and to establish and develop business. They represent a positive development in commerce that, if regulated appropriately, may see a more inclusive financial mechanism integrated into society. Following the reasoning of the court in *Cooper v Boyes*, even though the thing cannot be compared to corporeal property, nor is it synonymous to recognised forms of incorporeal property, crypto-coins generate interest or value to a holder.[142] Consequently, a holder is given a reasonable expectation that the law will recognise and protect this interest or value.[143] This reasonable expectation together with the fact that the nature of crypto-coins is such that they could fall within a person's estate, illustrates an argument in favour of recognising crypto-coin's as a new form of incorporeal property: an incorporeal thing not being a right.[144] The effect of such recognition is that real rights, such as ownership, may be held in respect of crypto-coins.

2.2 An argument for crypto-coins as incorporeal rights

Notwithstanding the above, there exists an argument that the absence of legal authority for the proposition that a property right can be held in respect of an incorporeal record of value indicates that crypto-coins cannot be deemed incorporeal things. Crypto-coins are 'neither corporeal movable things, nor fixed property, nor a real right in a corporeal thing or fixed property, nor electricity,' and thus some legal practitioners have concluded they are best described as incorporeal (personal) rights.[145]

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[141] Op cite note 133 at p67.
[142] "*Cooper v Boyes No and Another*" (op cite note 53) established that an interest or value indicates whether or not property status should be granted to an object. See also discussion in Njotini (op cite note 133).
[143] Op cite note 53.
[144] See discussion in both Walt and Pienaar (op cite note 119) and Badenhorst, Pienaar, and Mostert (op cite note 94) on the fact that a classification as incorporeal property requires only that the thing could form part of a person's estate, and to form part of a person's estate the thing must be useful, valuable and regarded as *in commercio*. Crypto-coins possess all these qualities.
[145] Robert Gad et al., "What Are the Tax and Exchange Control Implications of Bitcoin?," *ENSight* (20 September 2017), accessed 10 July 2018, available at https://www.ensafrica.com/news/What-are-the-tax-and-exchange-control-implications-of-Bitcoin?Id=2795&STitle=tax%20ENSight.

The difficulty with viewing crypto-coins as personal rights is that they simply do not fit the definition. A personal right is a right against a person arising out of a delictual or contractual obligation.[146] Furthermore, the object of a personal right is a performance.[147] By way of example, to treat shares as 'bundles of personal rights' is sound in law because the purchaser of shares is entering into a contractual relationship with the company issuing the shares for the purchase thereof. Further, the holder of a share is 'entitled to a certain interest in the company, its assets and dividends',[148] thus the object of the right is indeed performance.

By contrast, crypto-coins are obtained through transfer via the blockchain or through mining efforts and cannot be said to arise out of a delictual or contractual obligation. In this way, it could be said that they are a technological rather than a legal creation. Furthermore, as has been mentioned previously, a crypto-coin is not held in respect of an object, it is itself the object/thing. Thus, it cannot be viewed as a right the object of which is a performance. It is therefore more accurate to draw parallels between crypto-coins and electricity, than it is to view crypto-coins as being akin to an incorporeal right. This is so because like electricity, crypto-coins are best described as *sui generis* incorporeal things.

Proceeding then on the assumption that crypto-coins are incorporeal in nature, the enquiry moves to an analysis of whether they are movable or immovable, and consumable or non-consumable in nature.

2.3 Movable or immovable, consumable or non-consumable in nature.

Classification as movable or immovable is vital as it dictates how a thing may be acquired.[149] Roman-Dutch law classified incorporeals as movable or immovable by identifying whether the object of the right was moveable or immovable.[150] Again, a crypto-coin is difficult to classify owing to its *sui generis* nature. Nevertheless, a

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[146] George L. Gretton, "Ownings Rights and Things," *Stellenbosch Law Review* 8 (1997) at p178; op cite note 86 at p45. Op cite note 90 at p427.
[147] Op cite note 90 at p429.
[148] Supra note 109 at p288.
[149] Op cite note 86 at p34.
[150] Op cite note 90 at p422.

classification of crypto-coins as movables is an uncontroversial approach: crypto-coins are in no way linked to immovable property such as land, and no such link is foreseeable. Further, a classification as movable ensures their use is not unduly hampered by restrictive rules of acquisition (such as the requirement of registration for the transfer of immovable property).

Turning to the question of whether crypto-coins are consumable or non-consumable, it must be stated that such an enquiry is conducted in this chapter from the perspective that a crypto-coin is property rather than currency. If classified as currency, a plethora of legal authority dictates that crypto-coins must be consumable in nature. This is because it is settled in our law that money is by nature consumable. A classification as currency indicates crypto-coins are performing a function synonymous to the function performed by money and should thus be treated as such. However, in the context of this chapter, to view crypto-coins as property alters the perspective of the nature as consumable or non-consumable.

In modern South African law a test on the reduction of the value of the thing is applied to determine its classification as consumable or non-consumable.[151] Where a substantial reduction in the value of the thing occurs over a long period of time it should be deemed consumable in nature. The mere fact that a monetary value can be attached to the thing, or that the value of the thing fluctuates overtime, does not indicate it is a consumable in nature.[152] In the case of crypto-coins as property, its value is not reduced as a result of its use of a long period of time, and is thus more accurately classified as non-consumable in nature.

In sum, an argument can be made in favour of the classification of crypto-coins as incorporeal movable, non-consumable, property.

[151] Op cite note 86 at p39; op cite note 94 at p40.
[152] Op cite note 53 at p535.

C. Consequences of a Classification as Property

This dissertation has thus proposed an argument for the legal possibility of classifying cryptocurrency as property, and indeed would go so far as to state that cryptocurrency is property in law. Nevertheless, it is submitted that a broad classification as property within the private-law notion thereof, should not be the preferred approach. This is because the practical effect of such a classification is not only greatly detrimental to the commercial viability of cryptocurrency, but it also places an undue burden on the holder of crypto-coins and in some instances, may even result in legal absurdities. The difficulties associated with a classification as property call for comprehensive research and is outside the scope of this dissertation. Rather, it is the purpose of this *Part D* to show awareness of existing difficulties to the extent necessary for the ultimate formulation of an opinion as to whether a classification as property is preferable to one as currency.

Four key consequences become immediately apparent when classifying cryptocurrency as property. Firstly, the degree of anonymity enabled by the blockchain creates difficulty in the enforcement of property law remedies. Secondly, when cryptocurrency is utilised as a means of exchange for goods and services, a classification as property effectively reverts the exchange from a sale structure back to a barter exchange. Thirdly, by virtue of the classification as property, holders are, in theory, empowered to attach security interests to crypto-coins. Finally, the widely debated considerations regarding taxation of cryptocurrency when classified as property are outlined below.

1. The Issue of Anonymity of Blockchain Transactions

Concerns surrounding the anonymity of transactions on the blockchain are frequently raised by those sceptical of cryptocurrency's application in the real-world economy. Such concerns are rooted in a recognition of the use of cryptocurrency as a vastly speculative investment instrument or as a means of payment for illicit goods. The latter perspective is exacerbated by the extensive media coverage of Bitcoin's integral role as primary payment method for illicit goods on the "Dark Web".[153]

[153] Op cite note 15 at p7.

However, in truth, the anonymity enabled by the blockchain is with large limitation and broad scope exists for the abolishment of existing obscurity. Consequently, authors have adopted the term 'pseudonymity' in describing the privacy afforded to blockchain users.[154]

Essentially, cryptocurrency at present affords greater anonymity than an electronic fund transfer ("EFT"), but less anonymity than a transaction effected in cash. Unlike cash, the blockchain contains a permanent unalterable record of the fact that 'a transaction took place between two public keys, the time and the amount'.[155] Unlike an EFT, the public keys hide the identity of the parties to the transaction. However, once a public key is linked to an individual's identity all transactions made by such individual can be easily traced.

Thus, to circumvent the anonymity issue, authorities may – indeed this dissertation recommends they should – implement regulations requiring cryptocurrency exchanges to insist on identity disclosure to access the blockchain. Furthermore, though detailed discussion falls outside the scope of this paper, it should be noted that even without such regulations there are numerous technical ways in which to link an individual's identity to a public key, thereby further circumventing the issues resulting from anonymity afforded by cryptocurrency to its users at present.[156]

2. Cryptocurrency Transaction as a Barter Exchange

It is settled law that transfer of ownership of a thing can only be a sale if such a transfer is effected for a specified price in money.[157] An exchange of crypto-coins for goods or services is therefore outside the scope of a sale in law. Instead, it manifests as a barter exchange.[158]

Barter transactions, the world's most ancient form of commerce, amount to the 'direct exchange of goods or services having offsetting values', without any monetary

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[154] Ibid; op cite note 63 at p128; op cite note 30 at p33.
[155] Op cite note 15 at p8.
[156] Ibid.
[157] Rena van den Bergh, "The Roman Tradition in the South African Contract of Sale," *Journal of South African Law* 53 (2012). Citing *Ulpianus, libro primo ad Sabinum*; C 4 64 7: "It was long ago decided that a purchase cannot be made with property (other than money)." at p56. See also op cite note 90 at p891.
[158] Op cite note 90 at p891.

exchange.[159] Barter is thus identifiable by the absence of an exchange of a specified price in money. In traditional barter transactions, 'the parties always trade directly with each other' obviating the requirement that each party to a barter exchange must want what the other party offers.[160] An exchange of cryptocurrency (when classified broadly as property) for goods or services falls squarely within the scope of the definition of a barter exchange.

Barter exchanges have limited use in the modern business world as simultaneous double coincidence (the requirement that each party to a barter exchange must want what the other party offers) is difficult to achieve.[161] This issue does not, however, manifest in the context of exchanges of cryptocurrency for goods or services.

This is so because, despite a legal definition of cryptocurrency as property, holders party to the transaction are likely to have the intention of utilising the cryptocurrency as an alternative monetary unit. Thus, parties to the exchange are likely to utilise the cryptocurrency exchanged in subsequent exchanges for differing goods and services. The converse is, however, not true: holders are unlikely to utilize the good(s) exchanged for cryptocurrency to effect further barter exchanges (here the artificiality of a classification as property arises, though without any foreseeable legal consequence). Nevertheless, the classification of the exchange as barter has no real practical implication beyond the taxability of the transaction, as will be examined in more detail below.

3. Possibility of Attachment of Security Interests to Crypto-coins

In theory, classification of cryptocurrency as property results in the possibility of the attachment of security interests. Assuming acceptance of the above argument that crypto-coins are incorporeal movables in nature, there exists abundant judicial authority for the view that incorporeal movable property may be the object of a pledge.[162] However, the issue of delivery of crypto-coins then arises.

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[159] Paul Mishkin, "Countertrade and Barter: The Basic Legal Structure," *International Business Law* 7, no. 14 (1986) at p7.
[160] Ibid at p7.
[161] Ibid at p7. See also Ross M. Starr, "The Structure of Exchange in Barter and Monetary Economies," *The Quarterly Journal of Economics* 86, no. 2 (1972), available at http://www.jstor.org/stable/1880564. discussing the difficulty in achieving simultaneous double coincidence.
[162] Op cite note 90 at p645. See also op cite note 89 at p673-88; Scott Lubbe, "Mortgage and Pledge," *LAWSA* First Re-issue vol 17 (1999). at p526.

A core requirement of pledge is that the owner of the movable property delivers it to the creditor.[163] In the context of incorporeal movables this delivery is physical. Traditionally, incorporeals (rights) are delivered by cession *in securitatem debiti*. However, there may only be cession *in securitatem debiti* of personal rights,[164] which a crypto-coin is not. A possible solution is to deem the transfer of the pledged crypto-coins via the blockchain to the creditors 'wallet' as delivery. Owing to the fact that transactions on the blockchain are irreversible, there is no risk of the debtor effecting a 'charge back' of crypto-coins prior to the principle obligation being discharged. The creditor thus has control synonymous to control exercised over corporeal movables. An alternative solution is for the holder of cryptocurrency to cede his/her/its rights in the 'wallet' to the creditor. This would operate in the same way that a security interest over a bank account can be created over 'the account holder's rights in the bank account, and rights against the bank in respect of that account,' and transferred by cession *in securitatem debiti*.[165]

The issues surrounding delivery are circumvented in the case of notarial bonds as delivery is not a requirement. A notarial bond is a form of real security that may be held over particular movables or all movables – whether corporeal or incorporeal in nature – as security for a debt.[166] It is likely that cryptocurrency, when considered property in law, may be subjected to a notarial bond, subject to approval from creditors.

No real issues are foreseeable as a result of security interests being held in respect of cryptocurrency beyond the possibility of fraudulent actions of the debtor by, for example, disposing of cryptocurrency over which a notarial bond is held. However, the law may address such an issue in the same manner it addresses the issue in respect of corporeal property fraudulently disposed of. Additionally, the law must establish regulatory safeguards circumventing anonymity, the absence of which would increase the likelihood of dissipation by the debtor of cryptocurrency to which a security interest is attached.

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[163] Bois (op cite note 19) citing Grotius 2.48.27-9 and Voet 20.1.12 at p646.
[164] Ibid at p653.
[165] Celia Becker and Kelle Gagne, "Taking Security in Africa: A Comparative Guides for Investors," (2016) at p4.
[166] Op cite note 90 at p651.

The fact that South African law does not provide for blanket liens held over all present and future property of a debtor, as is possible in American law, means that there is no risk of a debtor disposing of cryptocurrency without recognising that it is subject to a security interest that may be realised at a later time.[167] A security interest held over cryptocurrency would, however, greatly hamper its ability to be utilised in a manner akin to currency. Nevertheless, this is at the election of the holder/debtor who agrees to the security interest to begin with.

4. Tax Implications of a Classification as Property

In a statement[168] the South African Revenue Service ("SARS") on 6 April 2018 indicated that cryptocurrencies will not be treated as currency for tax purposes. Instead they are to be treated as intangible property over which normal tax principles should apply. US commentators argue that the US Internal Revenue Service's indication that it would tax cryptocurrencies as property destroys the fungible nature of virtual currency, rendering it less useful for commerce.[169] Furthermore, a plethora of academic criticism in the United States has been directed at the labour intensiveness and consequent impracticality of such a classification for tax purposes.[170] These issues are rooted in the need to calculate capital gains, an arduous process that becomes increasingly complex as the number of capital transactions a taxpayer engages in during the taxable year increases.[171]

Returning to the South African context, it must be stated from the outset that the issue outlined below arises where the intention of the taxpayer is to hold the cryptocurrency as a capital asset. The taxpayer will be deemed to have held cryptocurrency as a capital asset, and therefore be required to calculate capital gains, if the intention of the taxpayer 'in acquiring, storing, disposing or exchanging it was a capital intention and remained as

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[167] See Hewitt op cite note 67 at p629-632 for an articulation of this problem in the American context.
[168] SARS, *Sars's Stance on the Tax Treatment of Cryptocurrencies* (2018).
[169] Adam Levitin, "Bitcoin Tax Ruling," *CREDIT SLIPS* (26 March 2014), accessed 09 July 2018, available at http://www.creditslips.org/creditslips/2014/03/bitcoin-tax-ruling.html. See also Robinson Meyer, "Why Bitcoin Can No Longer Work as a Virtual Currency," *THE ATLANTIC* (26 March 2014), accessed 09 July 2018, available at http:// www.theatlantic.com/technology/archive/2014/03/why-bitcoin-can-no-longer-work-as-a-virtual-currency-in-l-paragraph/359648/.
[170] Op cite note 67 at p634.
[171] Ibid at p634.

such' for the duration of the period that the cryptocurrency was held.[172] Further, there was 'no profit-making scheme present and no factors indicating a scheme of profit-making were present'.[173] Thus, the primary test for determining the capital or revenue nature of an exchange involving cryptocurrency is the taxpayer's intention in acquiring the cryptocurrency used.[174] Where a taxpayer is using cryptocurrency as a means to effect exchange for goods or services, it is likely that the intention is to hold the cryptocurrency as a capital asset.

As shown above, the exchange of cryptocurrency for goods or services amounts to a barter exchange. The tax treatment of barter transactions is complex, as the taxpayer must possess the knowledge and ability to determine an objective (market) value of the objects of the transaction/exchange in order to calculate the taxable profit.[175]

A classification as property places cryptocurrency within the scope of the definition of an "asset" defined in para. 1 of the 8th Schedule of the South African Income Tax Act, 58 of 1962 ("the Income Tax Act"). This definition of "asset" includes 'property of whatever nature, whether movable or immovable, corporeal or incorporeal, excluding any currency, but including any coin made mainly from gold or platinum'. Disposal of an asset is defined as 'any event … which results in the creation, variation, transfer or extinction of an asset, and includes the sale, … exchange or any other alienation or transfer of ownership of an asset.'

Therefore, in accordance with para. 3 of the 8th Schedule, a capital gain will arise in a taxable year in respect of cryptocurrency exchanged (consequently deemed the disposal of an asset), and 'is equal to the amount by which the proceeds received or accrued in

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[172] Pranith Mehta, "How Sars Might Tax Your Bitcoin Transactions," *Tech Central* (26 January 2018), accessed 12 July 2018, available at https://techcentral.co.za/sars-might-tax-bitcoin-transactions/79248/. at p1.
[173] Ibid at p1.
[174] *Cir v Stott* 1928 (3) SATC (AD) at 254; *Natal Estates Ltd v Sir* 1975 (4) SA (A) at p193.
[175] LL Berger, "Bitcoin Exchange Transactions: Income Tax Implications to Consider within the South African Environment" (North-West University, 2016), accessed 12 July 2018, available at https://repository.nwu.ac.za/bitstream/handle/10394/17630/Berger_LL_2016.pdf?sequence=1&isAllowed=y. at p4.

respect of that disposal, exceed the base cost of that asset'. The consequence in practice is a complex calculation conducted in respect of each barter exchange performed.

By way of example: Peter utilises his crypto-coins so as to obtain goods and services, therefore in a manner akin to currency. A classification as property would require that he record the value of the crypto-coins at the time he acquired them. When he would like to purchase a good on, say, Takealot.com[176] with crypto-coins, he will need to record the exact price of the good (for tax purposes this is deemed the realisation on the asset) and then calculate his gain based on the basis that he had in the specific crypto-coins used at the time he acquired them.[177] This is further complicated by the fact that the crypto-coins used in an exchange could have been acquired at different times, from different sources, and at different price rates making the calculation of the base cost of the crypto-coin a cumbersome process.[178] Additionally, Peter will need to determine for how long he has held the specific crypto-coins used in the transaction so as to establish which category of gains (short-term or long-term) they fall under. [179] This process would need to be replicated *every time* a holder of crypto-currency utilised it in exchange for goods or services, necessitating the recordal and maintenance of sufficient information to properly calculate capital gains and losses at the close of the tax year.

The laborious nature of a capital gains calculation is not widely understood by a large majority of small business owners and everyday consumers.[180] This necessitate the consultation of tax specialists, generating extra expense. Furthermore, the commercial viability of cryptocurrency is severely hampered owing to the onerous burden placed on the taxpayer in recording capital gains. Consequently, the impracticality of the process will result either in cryptocurrency holders (particularly individuals and small businesses) simply not performing the calculation thereby not declaring capital gains, or not utilising cryptocurrency in an exchange for goods or services. The result is thus incentive to use

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[176] The online shopping site does in fact accept Bitcoins as payment for goods, thus the example is conceivable in practice.
[177] Op cite note 67 at p634-5.
[178] Op cite note 49 "Roman" at p455.
[179] Op cite note 67 at p635.
[180] Op cite note 115 "Wiseman" at p430.

cryptocurrency predominantly as a tool for (speculative) investment, thereby inhibiting one of the core purposes for which it was created and further promoting price volatility.[181]

This dissertation has emphasised that cryptocurrency is utilised for divergent reasons. Consequently, where the intention of the taxpayer in acquiring cryptocurrency is to make a profit, and such taxpayer has made it his business to carry it out (for example, a bitcoin miner or a bitcoin exchange such as Luno), the income derived from the trade of cryptocurrency for fiat currency may result in taxable gross income under section 1 of the Income Tax Act. This is because such a transaction is considered revenue in nature, and falls within the scope of "trading stock".

It is submitted that the definition of the term "trading stock"[182] is sufficiently broad to include cryptocurrencies within its scope, where the cryptocurrency is acquired by the taxpayer 'for the purpose of manufacture, sale or exchange by him, the proceeds from the disposal of which forms or will form part of his gross income', in the course of the his trade.[183] The difficulties outlined above in the context of cryptocurrency as a capital asset do not arise in this context, however, different computational issues may arise. By way of example: section 22 of the Income Tax Act requires trading stock held and not disposed of at the close of a tax year be valued. The difference in value of the opening stock at the beginning of the tax year is then considered in determining the income tax liability for the year. This necessitates a degree of record keeping as the cryptocurrency holder would be required to have knowledge of the value of the cryptocurrency at the beginning of the tax year. Nevertheless, such a calculation with all its complexities would occur once at the end of the tax year and not in respect of each transaction (deemed a disposal of an asset) as is the case where cryptocurrency is defined as a capital asset. Furthermore, it may be possible to deduct the expenses incurred in acquiring crypto-coins

[181] Nakamoto clearly stated cryptocurrency was to be a new form of currency, accessible to a wider class of people, free of government control and encumbrance (op cite note 13). See also op cite note 115 "Wiseman" at p434.
[182] Section 1 *South African Income Tax Act*, *58* (1962).
[183] Ibid. See also *SARS v I-Net Bridge (Pty) Ltd* (2011) 73 SATC 141 in which the Pretoria High Court held that 'data' acquired for resale fell within the scope of 'trading stock' for Income Tax purposes evidencing the possibility of extension of the scope of the concept of 'trading stock' to accommodate technological advances.

(for example through mining efforts) if it can be shown that the requirements of section 11(a), read together with section 23(g), of the Income Tax Act have been met.

A secondary tax consideration when regarding cryptocurrency as property is the applicability of Value Added Tax ("VAT"). Although, in theory, it is possible that VAT may be applied to cryptocurrencies the position remains unclear. In its recent statement, SARS indicated that it will review the VAT treatment of cryptocurrencies in the 2018 annual budget review. However, 'pending policy clarity … SARS will not require VAT registration as a vendor for purposes of the supply of cryptocurrencies'.[184] Should a classification as property remain in force, however, cryptocurrency is likely to be subject to VAT. This is the case because the supply of a 'good' or 'service', each term defined, attracts VAT in accordance with the Value Added Tax Act[185] ("the VAT Act").

Owing to its nature as a thing (and not a right), and assuming the expansion of the concept of an incorporeal thing to include a new category of cryptocurrency as done in respect of electricity, it is submitted that cryptocurrency should be deemed a good for the purposes of the VAT Act. However, in the absence of the expansion of such a category, and prior to amendment of the VAT Act, cryptocurrency is more appropriately squeezed into the definition of services for VAT purposes. This is supported by the express reference to a corporeal thing, or a real right held in respect of a corporeal thing (of which cryptocurrency is neither) in the VAT Act's definition of a "good".

Indeed the 2018 Draft Taxation Laws Amendment Bill[186] at paragraph 88 proposes defining the 'issue, acquisition, collection, buying or selling or transfer of ownership of any cryptocurrency' as a 'financial service', and consequently exempting it from VAT. Within the same Draft Amendment Bill, at paragraph 1(c), there is a proposal to define cryptocurrency as a 'financial instrument' for the purposes of income tax. A simplistic change such as this has huge consequences for income tax purposes.

Section 22 of the Income Tax Act excludes the determined value of undisposed trading stock from the calculation of taxable income and section 22(1)(a) expressly excludes

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[184] Op cite note 168.
[185] *Value Added Tax Act*, *89* (1991).
[186] *Draft Taxation Laws Amendment Bill* (16 July 2018).

financial instruments from its scope. Thus, the proposed classification of cryptocurrency as a financial instrument means that 'those who trade in cryptocurrency may not benefit from valuing their undisposed cryptocurrency using the valuation method contemplated in section 22'.[187]

Additionally, section 11D of the Income Tax Act grants a tax allowance for companies that invest in research and development in South Africa but expressly excludes the creation or development of financial instruments from its scope. Such an exclusion would include companies who mine or develop cryptocurrencies. Consequently the aforementioned amendment could discourage potential investment in fintech companies in South Africa.

Thus, although tax law often reclassifies private law classifications in the tax context, it is undesirable to classify cryptocurrency as a service (and consequently as a right) for tax purposes because such a classification is reactive in nature. Presently SARS, as administrator, is making use of interpretative measures to force cryptocurrency within the scope of existing law, despite its uncomfortable fit. Whilst the National Treasury continues on a path of equally reactive rather than principled response, as is evidenced by the proposed classifications found in the Draft Amendment Bill that will radically alter income tax and VAT consequences. Such an approach results in the classification of cryptocurrency in isolation, without comprehensive analysis and consideration of the broader implications thereof. Indeed, what is required is a principled policy debate at the level of the National Treasury, after which coordinated and consolidated changes to *all* applicable laws, tax and otherwise, may occur through and at the will of Parliament.

D. Conclusion

It is possible to argue for a classification of cryptocurrency as a new form of incorporeal thing; but to do so would require expansion of the present categories of incorporeal things

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[187] Wade Ogilvie and Arnold Mbeje, "Law Matters: Is SA Side-Stepping the Uprising of Cryptocurrencies?," *Business Report* (25 November 2018), accessed 29/12/2018, https://www.iol.co.za/business-report/economy/law-matters-is-sa-side-stepping-the-uprising-of-cryptocurrencies-18236935.

to include a *sui generis* category for cryptocurrency. Although such expansion is unproblematic from a legal sense owing to the absence of a *numerous clausus* of incorporeal property, its effect is less than desirable. To classify cryptocurrency as property greatly effects its ability to function as a means of exchange for goods and services. Consequently, cryptocurrency will be utilised increasingly as a speculative investment resulting in a propensity for bubbles to occur.[188] The collapse of a cryptocurrency "bubble" will have far reaching consequences, reverberating into wider financial instability if 'households, corporates and financial institutions hold unhedged debt positions'.[189]

However, an alternative exists as a classification as currency is both legally cogent and circumvents the need to develop *a sui generis* category of incorporeal things. This will be discussed further in *Chapter V* below.

Notwithstanding the fact that cryptocurrency is presently being held more prominently as an investment asset (thus more akin to property in nature) than as a means of exchange (thus more akin to currency), a perception of cryptocurrency as an asset should not be encouraged. The vastly speculative interest is not only damaging to the viability of cryptocurrency as a means of exchange, but it also places holders at great risk of financial ruin.

[188] Op cite note 73.
[189] Ibid.

V. Cryptocurrency as Currency

It is widely acknowledged that the intention of Satoshi Nakamoto in creating the first ever cryptocurrency was that it would be defined and used as a new currency, acting independent of existing financial institutions, free from inflation and unconfined by State borders.[190] Nakamoto was highly critical of the existing trust-based model upon which the contemporary global financial system rests.[191] This is evidenced by the somewhat contemptuous inclusion of the encoded text '*The Times 03/Jan/2009 Chancellor on brink of second bailout for banks*' in the first Bitcoin block which could only be mined by Nakamoto.[192]

Nevertheless, neither the intention of the creator, nor the inclusion of the word 'currency' in its very name, are enough to warrant a classification of cryptocurrency as currency in law. Similarly, it is also argued that the fact that, as at the time of this paper being written, the predominant use of cryptocurrency is to derive gains from its price fluctuations[193] does not alone warrant a classification as property. Such a classification is reactive in nature and fails to take account of the true characteristics of cryptocurrency. This in turn significantly limits the possible uses and applications for cryptocurrency in the future.

The discussion of cryptocurrency as currency that follows is conducted through analysis of the *characteristics* of cryptocurrency, and not through static observation of its popular use at this time. It has already been argued that a classification as property is possible, but not preferable.

Prior to embarking on an analysis of the characteristics of cryptocurrency, it is necessary to conceptualise money and identify its various forms or manifestations. In this regard, so as to align with economic theory, a functional approach to the definition of money is

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[190] Op cite note 13 at p1. See also the plethora of online articles: Op cite note 58 at p5; Livio Dinaj, "Is Bitcoin Serving the Intention It Was Created With?," (14 November 2017), accessed 01/08/2018, available at https://www.quora.com/Is-bitcoin-serving-the-intention-it-was-created-with.; op cite note 5 at p1; Daniel Cooper, "Bitcoin Is Failing as a Currency," (14 December 2017), accessed 01/08/2018, available at https://www.engadget.com/2017/12/14/bitcoin-is-failing-as-a-currency/.

[191] Op cite note 13 at p1.

[192] Jose Pagliery, *Bitcoin: And the Future of Money* (Triumph Books, 2014).

[193] See Nieman (op cite note 122) where a comprehensive analysis of the present uses of Bitcoin in South Africa reveals that, at present, it is primarily held for speculative reasons with far fewer instances of Bitcoin being used as a means of exchange for good or services.

adopted: here F.A. Walker's perennial maxim 'money is what money does' finds relevance.[194] Thus, money is defined below according to its functions. However, to have regard only to its functions fails to account for the dynamism and adaptability of money. As a result, the functional approach acts merely as a starting point for this chapter's discussion; a foundation upon which the various manifestations of money may be explored so as to determine where to best situate cryptocurrency.

A. Money in Economics versus Money in Law

F.A. Mann wrote in 1982 that the enquiry into what money is had engaged the minds of economists so constantly that 'a lawyer might hesitate to join in the attempt to solve it'.[195] Thirty-seven years later his statement still rings true.

In South African law, the concept of money finds no strictly legal articulation, nor is there much academic debate on what constitutes money in law. This sterility of debate has been attributed to the fact that the question, "What is money?" has few legal consequences for the rights of parties to commercial transactions.[196] This is especially true where 'payment by bank transfer is the almost universal method of settlement'. [197] Instead, in law, focus has been placed on determining not what constitutes 'money', but rather on what constitutes 'payment'.[198]

The seminal text (and perhaps the only comprehensive text) on what constitutes money in law is the prior referenced work by F.A. Mann, *The Legal Aspect of Money*. Following his death in 1991, Charles Proctor has continued the title, making vital improvements to the book in response to the developments and advancements of modern commerce. The title remains at the forefront of the discussion of what constitutes money in law, often

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[194] F.A. Walker, *Money* (New York: Henry Holt & Co, 1878) at p405.
[195] F.A. Mann, *The Legal Aspect of Money*, 4th ed. (Oxford: Clarendon Press, 1982) at p3.
[196] Roy Goode, *Commercial Law*, 3 ed. (UK: Penguin, 2004). at p450; op cite note 89 at p365.
[197] Ibid at p450.
[198] Ibid.

considered by South African courts,[199] and its formulation thereof is thus adopted for present purposes.

Proctor defines money in law as requiring the following characteristics:

> '(a) it must be expressed by reference to a name and denominated by reference to a unit of account which, in each case, is prescribed by the law of the state concerned; and (b) the currency and unit so prescribed must be intended to serve as the generally accepted measure of value and medium of exchange within the State concerned.'[200]

Thus, to a lawyer, money is what law specifies it to be. In this way Proctor confines the legal concept of money to that of legal tender. Conversely, to an economist money is what money does.

Through the lens of economic theory, money is quite simply 'those financial assets that can be used directly' to buy goods or services.[201] The time-honoured definition of money formulated by economists is stratified into three core characteristics, derived from its function: (a) a means/medium of exchange, (b) a unit of account, and (c) a store of value.[202] Evidently, the formulation of money in economic theory is broader than that in law. In the context of the former, where something does not at first appear to be money, but one day starts acting as a medium of exchange, a unit of account, and a store of value, then it becomes possible to construe it as money.[203]

It is submitted that in discussing a new method of exchange such as cryptocurrency, it is preferable to adopt a legal interpretation of money that is informed by economic theory. This is because cryptocurrency is a construct in its infancy. To discuss money from a strictly legal context results in static analysis with little room to justify a broadening of the scope of existing understanding of money. Thus, it fails to assist this paper in reaching

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[199] Supra note 109 at p281-2. *Standard Chartered Bank of Canada v Nedperm Bank Ltd* 1994 (4) *SA* (A) at p752. *First National Bank of Southern Africa Ltd v Perry No and Others* 2001 (3) *SA* (SCA) at p963.
[200] Charles Proctor, *Mann on the Legal Aspect of Money*, 6 ed. (Oxford University Press, 2005) at p35-36.
[201] Olivier Blanchard and David Johnson, *Macroeconomics: Global and Southern African Perspectives* (Pinelands, Cape Town: Pearson Holdings Southern Africa (Pty) Ltd, 2014) at pG8.
[202] Op cite note 63 at p140; op cite note 58 at p7. François R. Velde, *Bitcoin: A Primer*, December ed., vol. 317, *Chicago Fed Letter* (The Federal Reserve Bank of Chicago, 2013) at p1.
[203] Jo Lindsay Walton, "Money Is That Money Does," *Economic Humanities* (1 June 2017), accessed 01/08/2018, https://economichumanities.wordpress.com/2017/06/01/money-is-that-money-does/.

its objective. By way of example, following Proctor's characterisation of money yields the result that cryptocurrency cannot, in legal terms, be considered as a form of money, because existing law does not recognise it as such. The enquiry can thus go no further than recommending recognition as money in law.

However, legal policy favours pragmatism over the dogmatic alternative. A legal construction informed by economic theory allows for pragmatic observation of the internal characteristics of cryptocurrency, the manner in which it operates, and its practical uses in determining whether it may reasonably be construed as money. On this basis it will be shown that cryptocurrency can be classified as money, thus evidencing theoretical and practical grounds for the legal recognition thereof.

B. The Characteristics of Money

Money is a means/medium of exchange, a unit of account, and a store of value.[204] It is generally accepted that a medium of exchange means 'anything commonly agreed upon as a token of value used in transactions'.[205] Thus, where something is exchanged for a good or service not for itself, but rather to be exchanged at a later stage for another good or service, it is considered a medium of exchange.[206] Something will be deemed a unit of account where it 'enables the translation of values between different classes of and markets for assets, where those classes and markets may be segmented economically, geographically, or politically'.[207] The third and final characteristic requires little explanation. To be a store of value, money simply needs to be able to predictably maintain or increase in value over time.[208]

Determining whether cryptocurrency may be considered money requires analysis of whether cryptocurrency possess the widely recognised characteristics of money. Although not the only function, it is undisputable that cryptocurrencies are increasingly accepted by

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[204] Op cite note 63 at p140; op cite note 58 at p7; op cite note 202 "Velde" at p1.
[205] Ibid at p141.
[206] Op cite note 202 "Velde" at p1.
[207] David G. Oedel, "Why Regulate Cybermoney?," *American University Law Review* 46 (1997) at p1075-78.
[208] Op cite note 63 at p141. See also David D. Friedman and Kerry L. Macintosh, "The Cash of the Twenty-First Century," *Santa Clara Computer and High Tech Law Journal* 17 (2001).

merchants and individuals as a token of value used in transactions.[209] Cryptocurrencies are often exchanged not for the crypto-coin itself but rather as a means to effect present and future exchanges for goods and services. They are thus clearly a means of exchange when the holder's intention is to utilise it for such a purpose. However, when a holder's intention is to generate economic gain from fluctuation in value, the crypto-coins cannot be deemed a means of exchange. In this way they are more akin to property in the broader private law sense.

Proceeding on the assumption that a holder intends to use cryptocurrency as a means of exchange, the question whether it possesses the accounting characteristic of money is presently threatened by its volatility in value.[210] The dramatic fluctuations in value of a single crypto-coin presently characteristic of all cryptocurrencies means reliance is placed on crypto-exchanges linking the value of crypto-coins to another more stable (fiat) currency. However, as this paper has repeatedly argued, the volatility is symptomatic of speculative interest and the youth of cryptocurrencies. Consequently, once value stabilises, there is no reason why cryptocurrencies would fail as a reliable unit of account.[211] Later, this paper will show how regulatory intervention may aid in the stabilisation of value.

The third and final characteristic of money, namely to act as a store of value, has been discussed in detail in *Chapter III*. Although present volatility has led many to argue that cryptocurrencies cannot be considered a store of value, this paper has shown the falsity of such arguments.

Thus, where a holder intends to utilise cryptocurrency as a means of exchange, and assuming a stabilisation in price as cryptocurrencies mature, it can be persuasively argued that cryptocurrency is money. Indeed, this is the conclusion reached by the South African Reserve Bank in a position paper issued on 3 December 2014.[212] SARB indicated that

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[209] Op cite note 63 at p141. See also Nieman (op cite note 122) discussion on the increasing acceptance of Bitcoin as a means of exchange within the South African context.
[210] See Friedman and Macintosh (op cite note 208) where it is shown that a rapid change in the value of money results in difficulty in utilising information about past prices to judge present prices.
[211] Op cite note 63 at p141.
[212] National Payment System Department of the South African Reserve Bank, *Position Paper on Virtual Currencies*, 18/5/2-2014, pt. 02/2014 (2014) at p2.

cryptocurrency 'is a digital representation of value that can be digitally traded and functions as a medium of exchange, a unit of account and/or a store of value'.[213] However, even where cryptocurrency falls within the scope of the economic definition of money, it does not at present qualify as a legal tender for reasons explored below.[214]

Mann famously stated: 'not all money is legal tender, but all legal tender is money'.[215] Similarly, all currency, electronic money and virtual money is too 'money', but the converse is never true. Money is thus a broader term with many branches of classification. These branches are determined and distinguished by policy and statute, the scope of which is herein examined.

C. The Manifestations of Money

Currency may be broadly defined as a system of money in common use particularly in a State/country[216] that acts as a means to transfer value.[217] South African law contains no generalised definition of currency, but rather defines the term within particular contexts, and often with reference to its specific form. For example, for VAT purposes, section 2(2) of the VAT Act[218] defines currency as 'any banknote or other currency of any country, other than when used as a collector's piece, investment article, item of numismatic interest, or otherwise than as a medium of exchange.' By contrast, the Income Tax Act of 1962 avoids defining 'currency' and instead defines and distinguishes between 'local currency'[219] and 'foreign currency';[220] the latter enjoying an even more detailed definition in the context of the Exchange Control Regulations.[221] In recent years, the South African Reserve Bank ('the SARB') has also recognised and professed a definition of virtual currency with its various categorisations.

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[213] Ibid.
[214] Op cite note 72 at p166.
[215] Op cite note 1 at p124.
[216] s.v. "Investopedia," accessed 01/08/2018, https://www.investopedia.com/terms/c/currency.asp#axzz2CqfsX9BD.
[217] Op cite note 51 at p6.
[218] Op cite note 185.
[219] Section 24I(1) defines local currency as 'currency of the Republic.' Op cite note 182.
[220] Section 24I(1) defines foreign currency as 'any currency which is not local currency'. Ibid.
[221] *Exchange Control Regulations* (1961).

Thus, it is clear that 'currency' is a broader concept with context specific definition referencing its particular manifestation. For the purposes of this paper, the terms 'local currency' (and its inextricable link to electronic money), 'virtual currency' and 'foreign currency' require particular focus.

1. Local Currency and Legal Tender

'Local currency' refers to the system of money with legal tender status in a State. Legal tender is the 'national money lawfully established by the government to serve as a medium of payment of taxes and used for commercial exchange'.[222] The statutes organising the monetary system of a country dictate what money is to be considered legal tender.[223]

In the South African context, the South African Reserve Bank Act[224] and the Currency and Banking Act[225] dictate that the coins and banknotes circulated by the SARB constitute legal tender in South Africa. As will be discussed below, electronic money also enjoys legal tender status and may thus be termed local currency. Counterparties are legally obligated to accept the legal tender of their jurisdiction 'as payment for the discharge of debts or releases of securities', and as means of payment for goods and services.[226]

In its 2014 Position Paper, the South African Reserve Bank expressly stated that cryptocurrency, although possessing the characteristics of money, 'does not have legal tender status'.[227] Consequently, cryptocurrency cannot qualify as local currency in a legal sense until such time as it is expressly granted such status by national legislation. There can be no argument to the contrary.

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[222] Sarah Jane Hughes and Stephen T. Middlebrook, "Advancing a Framework for Regulating Cryptocurrency Payments Intermediaries," *Articles by Maurer Faculty* Paper 2025 (2015), http://www.repository.law.indiana.edu/facpub/2025 at p503.
[223] Op cite note 1 at p40.
[224] *South African Reserve Bank Act*, *90* (1989). See in particular ss17-20.
[225] *Currency and Banking Act*, *31* (1920).
[226] Op cite note 222 at p40.
[227] Op cite note 212 at p2.

2. Electronic Money

Electronic money (or 'e-money') has been defined as a digital representation of local currency 'used to electronically transfer value' denominated in local currency.[228] Put differently, e-money is the digital transfer mechanism enabling the transfer of value that has legal tender status.[229] In the Electronic Money Position Paper[230] the SARB declares that the issuance of e-money is the business of a bank as defined in the Banks Act.[231] E-money is thus inextricably linked to fiat currency and may be perceived as the electronic manifestation of coins and banknotes under the control of the SARB.

It has been established previously that without statutory recognition, cryptocurrency cannot be considered fiat currency/legal tender. E-money being intrinsically linked to fiat currency excludes any possibility of cryptocurrency being classified as e-money. Furthermore, this impossibility manifests not only in a legal context, but also when having regard to the very characteristics of cryptocurrency.

Firstly, the issuance mechanism in cryptocurrency is dictated by an unalterable mathematical protocol, whereas issuance of e-money remains within the control of the central banking authority.[232] Secondly, e-money functions as a result of the trust placed in the central authority or state that backs the fiat denomination underlying the e-money. [233] Conversely, cryptocurrency functions based on the trust its users place in the code and in their collective ability to review the changes made to it.[234] Finally, the existing level of anonymity characteristic of cryptocurrency transactions is in stark contrast to the rigid "know your customer" requirements of e-money transactions.[235] Consequently, even if

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[228] Financial Action Task Force, *Virtual Currencies: Key Definitions and Potential Aml/Cft Risks* (June 2014) at p4. See also op cite note 122 at p1984.
[229] Ibid.
[230] National Payment System Department of the South African Reserve Bank, *Position Paper on Electronic Money*, 01/2009 (November 2009).
[231] *The Banks Act*, *94* (1990).
[232] Op cite note 58 at p6.
[233] Ibid.
[234]Bill Maurer, Taylor C Nelms, and Lana Swartz, "When Perhaps the Real Problem Is Money Itself!: The Practical Materiality of Bitcoin.," *Social Semiotics.* 23, no. 2 (2013).
[235] Op cite note 58 at p6.

cryptocurrency was granted legal tender status by State legislation, it would remain at odds with the existing conceptualisation of e-money because it is decentralised.[236]

Of further relevance to the present discussion is distinction between e-money and virtual currency. The SARB has declared that it does not consider electronic money to form part of the virtual currency ecosystem.[237] An analysis of virtual currency indicates that the distinction is largely appropriate, though not entirely unproblematic.

3. Virtual Currency

The term virtual currency gained prominence in the 1990s where it was used to refer to the currencies restricted to virtual gaming environments;[238] for example the fictional "gold" used as currency in the popular online game, World of Warcraft.[239] It is thus a medium of exchange restricted to a specific online or virtual community. Although used primarily for online games, virtual currency has also been used for corporate loyalty programs or social media, to redeem prizes or to purchase virtual goods.[240]

Where virtual currency is utilised in an online game or virtual economy as a medium of exchange, parallels can be drawn with its fiat counterpart. Hugh & Middlebrook reference the following similarities:

> 'To start with, the currencies are typically used by the participants in the economy for the purchase of virtual goods and services. Secondly, the currencies feature a central authority, which … can regulate the money supply … In particular, some platforms actively manage the monetary supply, increasing money supply through in-game features, or reducing money supply through in-game "sinks"...'[241]

Interestingly, virtual currencies used in the online gaming environment have limited interaction with the real economy. This is attributable to the unidirectional flow enforced

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[236] Op cite note 63 at p139.
[237] Op cite note 212 at p5. See also op cite note 122 at p1984.
[238] Op cite note 58 at p4.
[239] A recent article on Fortune.com reveals that the value of the fake gold in Azeroth, the mythical setting of World of Warcraft, is actually worth 7 times more than the Boliva (Venezuela's real world currency). Chris Morris, "'World of Warcraft' Currency Is Now Worth 7 Times as Much as Venezuela's Cash," *FORTUNE* (7 May 2018), accessed 01/08/2018, available at http://fortune.com/2018/05/07/world-of-warcraft-currency-bolivar-venezuela-inflation/.
[240] Op cite note 222 at p504.
[241] Op cite note 58 at p4-5.

by internal game rules: i.e. it is often the case that a player can purchase but never sell the virtual currency.[242] As a result they present little to no threat to fiat currency.

This narrow construction of virtual currencies clearly excludes cryptocurrency from its scope. The primary distinction being that cryptocurrency is not confined to a singular virtual gaming platform with limited interaction with fiat currency. Further dissimilarities can be identified in the value generation mechanisms of virtual currencies, as well as the presence of an intervening centralised authority empowered to exert control over the in-game currency supply.[243]

Recently, however, the scope of the term virtual currency has been expanded. In its *Position Paper on Virtual Currencies* the SARB defines a virtual currency as 'a digital representation of value that can be digitally traded and functions as a medium of exchange, a unit of account and/or a store of value, but does not have legal tender status'.[244] Academic writers have adopted a similarly broad definition of virtual currency as being 'a medium of exchange existing entirely in intangible form that is not legal tender but which can substitute for legal tender'.[245] On this construction, virtual currencies are no longer confined to a particular virtual gaming world, or customer loyalty program, and have the potential to interact with fiat currency to a far greater degree.

The SARB follows the classification of the Financial Action Task Force in its paper on virtual currencies,[246] and categorises virtual currencies as either centralised or decentralised, and convertible or non-convertible.[247] Convertible virtual currencies are those that have an equivalent value in fiat currency and can be exchanged back-and-forth for a fiat currency.[248] Convertible virtual currencies can then be centralised or decentralised, the former distinguished from the latter by the presence of a central administration, monitoring and oversight authority.[249] Utilising this classification, the

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[242] Ibid at p5.
[243] Ibid at p6.
[244] Op cite note 212 at p4.
[245] Op cite note 222 at p504.
[246] Op cite note 228 at p4.
[247] Op cite note 212 at p2.
[248] Ibid.
[249] Ibid.

SARB defines cryptocurrency as 'a math-based, decentralised convertible virtual currency that is protected by cryptography'.[250]

The SARB also distinguishes decentralised convertible virtual currencies (i.e. cryptocurrencies) from e-money by arguing that the former is '*tradable* for cash', while the latter is '*redeemable* for physical cash or a deposit into a bank account on demand'.[251] Such a distinction will remain true for as long as States refuse to recognise cryptocurrency as legal tender. Even where cryptocurrency is utilised as a means of exchange in such a manner that it falls within the scope of the definition of money, it will remain unable to integrate with the existing financial system in the same way e-money has, as it does not enjoy equal status in law. Furthermore, the very purpose of cryptocurrency was to circumvent the need for a bank account held by a financial institution in order to initiate online transactions. Consequently, as long as e-money is characterised with reference to the presence of a central administering body, it will always be distinguishable from cryptocurrency, or decentralised convertible virtual currencies in any form.

In sum, what is vital to draw from this discussion is the fact that the SARB has classified cryptocurrency as a form of convertible virtual currency that, although without legal tender status, amounts to a digital representation of value that can be digitally traded and functions as a medium of exchange, a unit of account and/or a store of value. Such a classification is greatly disruptive to any classification of cryptocurrency as property. With such a classification in mind, it may then be possible to construe cryptocurrency as foreign currency.

D. Cryptocurrency as Foreign Currency

Section 1 of the Exchange Control Regulations, 1961[252] defines 'foreign currency' as 'any currency which is not legal tender in the Republic, and includes … **any other instrument**

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[250] Ibid. See also *Virtual Currencies: Key Definitions and Potential Aml/Cft Risks* (op cite note 228) at p5.
[251] (Own emphasis) op cite note 212 at p5; see also op cite note 122 at p1984.
[252] "Exchange Control Regulations." promulgated in terms of section 9 of the *Currency and Exchanges Act*, *9* (1933).

for the payment of currency payable in a currency unit which is not legal tender in the Republic' (*own emphasis*).

As has been shown, cryptocurrency has been classified as a type of currency, namely a decentralised convertible virtual currency. It has also been denied legal tender status as at the time of this paper being written. To conclude that cryptocurrency falls within the scope of 'any other instrument for the payment of currency' (being virtual currency) is uncontroversial. Whether cryptocurrency is 'payable in a currency unit', thus fulfilling the second requirement of the definition of 'foreign currency', is less clear.

"Currency unit" is nowhere defined in South African legislation. It is likely that this oversight is due to the fact that, prior to the advent of cryptocurrency, a currency unit was unambiguously used to refer to the standard unit of value issued as a coin, banknote or as e-money in any State. The currency unit thus refers to the unit of account accepted as legal tender in different jurisdictions. Cryptocurrency, however, is not confined to any one jurisdiction. It is a form of global money that, with the exception of Marshall Islands, does not hold legal tender status in any country at present.[253] Cryptocurrency is, however, represented by a widely recognised currency unit: for example, BTC is the currency unit for Bitcoin, LTC is the currency unit for Litecoin and ETH is the currency unit for Ethereum. Thus, if the term 'currency unit' is construed as 'any currency unit' then cryptocurrency falls within its scope. However, if one has regard to the context within which the term has been used until the advent of cryptocurrency, it is undeniably in reference to the unit by which the legal tender of a jurisdiction is measured.

It is equally unproblematic to assert that the only reason the term has been linked to the legal tender of a jurisdiction is because there simply was no conception of a *global* unit of account prior to the advent of cryptocurrency. Any argument that cryptocurrency possesses no currency unit because such currency is not yet State backed is feeble at best, denialist at worst. Consequently, a conclusion that cryptocurrency falls within the scope of the definition of foreign currency should be considered an unproblematic one.

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[253] Hilary Hosia and Nick Perry, "This Is the First Country to Adopt a Cryptocurrency as Its Official Currency," *Money* (5 March 2018), accessed 23/11/2018, available at http://time.com/money/5186316/this-is-the-first-country-to-adopt-a-cryptocurrency-as-its-official-currency/. at p1.

E. Consequences of a Classification as (Foreign, Virtual) Currency

It is submitted that a classification of cryptocurrency as foreign currency is theoretically unproblematic, requiring no adjustment to the scope of existing legal rules as is required in the context of property law. The consequence of a classification as currency is also such that it better preserves the commercial viability of cryptocurrency, as this *Part E* purposes to show. Once again, the numerous consequences associated with a classification as currency call for comprehensive research and, although the time is opportune, it is not the objective of this dissertation to do so. As previously stated, the purpose of broadly identifying key consequences of a particular classification of cryptocurrency is to show awareness of existing difficulties to the extent necessary for the ultimate formulation of an opinion as to the most appropriate classification in the long term.

It is necessary to begin by stating that a classification as currency ensures that a transaction in which cryptocurrency is utilised as a means of exchange for goods and services constitutes a sale rather than a barter exchange. The parties to such a transaction thus enjoy all established legal rules and protections associated with a contract of sale. Such a consequence requires no further analysis. Rather focus will be placed, once again, on the widely debated tax implications of a classification of cryptocurrency as foreign currency as well as the often expressed concern of the impact of a global decentralised currency on local fiat currency.

1. Disruption to Existing Fiat Currency

The impact on existing fiat currency where cryptocurrency acts as a secondary private currency was preliminarily raised in *Chapter III* of this paper. Recall that economist Friedrich Hayek postulated that cryptocurrency may have an impact on the price stability of existing fiat currency: as soon as national currency competes with a parallel coin, demand for the existing fiat currency is diminished, disrupting all governmental planning relating to the money supply.[254] Owing to the absence of specific empirical data tracking

[254] Op cite note 75 at p146. Hayek was writing in response to virtual currencies utilised within specific communities, most commonly within computer games or loyalty programmes. However, direct parallels may be drawn between virtual currencies and cryptocurrencies, though the latter is perhaps even more likely

the impact of the circulation of cryptocurrency on local currency,[255] the phatic analysis is compromised and reliance must be placed instead on economic theory regarding this subject.[256]

It is widely accepted, as posited by neo-chartalists, that 'when a state has a monopoly over the currency it also has the power to set prices, including interest rates and how currency will be exchanged for other goods and services'.[257] Consequently, the question raised by academic writers is whether an increase in the adoption of cryptocurrencies in the economy (over which the State possess no control over the supply) will create a friction in the ability of the State to set prices, interest rates and exchange rates.[258]

In theory, the introduction and uptake of cryptocurrency in the economy will affect price stability where such uptake substantially alters the quantity of local/fiat currency in circulation and where there is increased interaction between cryptocurrencies and the real economy.[259] Precisely how price stability is affected by the uptake of cryptocurrency is not the subject of this paper, however there is a growing body of research on this issue published by economists around the globe.[260] A review of this literature leads to a single possible conclusion: the increased popularity of cryptocurrency will unavoidably impact the economy and the stability of local currency. Whether such impact is a positive or negative one, however, is a point of contention.

The principal issue is that where local currency is competing with a private currency, problems for monetary policy implementation arise. This is because the government will have difficulty predicting the amount of private money in circulation in the economy and adopt an appropriate monetary policy in response. Central banks may have reduced

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to have disruptive effect on national monetary policy than the former. See also discussion in Peters, Panayi, and Chapelle. (op cite note 58) at p109-10, and op cite note 114 at p10.

[255] The lack of data is a result of the youth of cryptocurrency.

[256] Op cite note 114 at p11.

[257] Op cite note 58 at p18.

[258] Ibid at p18; op cite note 114 at p10; op cite note 75 at p146.

[259] Op cite note 114 at p10.

[260] Op cite note 73, see in particular p15-18; Working Papers Research Department, *On the Economics of Digital Currencies*, by Jesús Fernández-Villaverde and Daniel Sanches (Federal Reserve Bank of Philadelphia, February 2018) at p5.

control over short-term interest rates.[261] However, it has been argued that as cryptocurrency becomes more widely adopted, the monetary policy of the central bank becomes less relevant.[262] Nevertheless, the concern remains a real one.

Essentially, there exists two possible responses to the concerns raised: (1) regulators may choose to adopt a monetary policy that prevents cryptocurrencies from being valued as a medium of exchange;[263] or (2) regulators may choose a monetary policy that allows for the coexistence of local (fiat) currency and cryptocurrencies.[264]

The literature appears to reach consensus that to destroy any possibility of cryptocurrency acting as a medium of exchange so early in its development is undesirable[265] because it is not yet possible to accurately predict the full potential of the technology. Furthermore, in as much as economists theorise an impact on the stability of local currency, they also offer a multiplicity of solutions allowing for the effective coexistence of cryptocurrency and local currency.[266] In fact, some academics have gone so far as to theorise that a monetary policy allowing for the coexistence of government and private currencies has the potential to positively affect the economy.[267] This is because by breaking government monopoly over money supply cryptocurrency may act as 'a disciplining device on central banks'.[268]

Therefore, despite the unavoidable impact on local currency postulated by economists, a multiplicity of approaches exist for managing the impact and its effect. Consequently, this issue should not be relied upon as a means to avoid a classification as currency.

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[261] Dong He, "Monetary Policy in the Digital Age: Crypto Assets May One Day Reduce the Demand for Central Bank Money," *Money, Transformed: The future of currency in a digital world* 55, 2 (June 2018), accessed 06/08/2018 at p15.
[262] Ibid at p15.
[263] At present, Bitcoin is illegal in a few countries throughout the world, including Bolivia, Vietnam, Kyrgyzstan, Nigeria and Bangladesh.
[264] Op cite note 73 at p15.
[265] Op cite note 261 at p16; op cite note 73 at p16; op cite note 58 at p18.
[266] Ibid.
[267] Op cite note 73 at p15.
[268] Ibid at p15. See also Hayek (op cite note 75).

2. Tax Implications of a Classification as Foreign Currency

This chapter has shown that the most appropriate classification of cryptocurrency is as foreign, virtual currency. The primary tax implication of such a classification is that cryptocurrency will fall under the definition of "foreign currency" as defined in section 24I of the Income Tax Act, which will result in the taxpayer including exchange differences in the calculation of his or her taxable income as required by section 24I(3).

Section 24I(3) requires a taxpayer to include or deduct any gain or loss from a foreign exchange differential in his or her taxable income. Notably, this inclusion in or deduction from a taxpayer's income 'is in lieu of any inclusion or deduction ordinarily allowed in terms of the act'.[269] Section 24I taxes as income all profits and losses, whether realised or unrealised and whether of a capital or revenue nature, relating to any foreign exchange transactions entered into by a taxpayer.[270] The difficulty at present would be the attachment of an official valuation of each respective cryptocurrency, as existing price volatility and disagreement as to whether any true value may be attached at all presents a large hurdle. Nevertheless, proceeding on the assumption that appropriate regulatory intervention and maturation of the technology will create greater price stability, as this dissertation has argued, this is a hurdle that may be overcome.

An advantage to a classification as currency is that, contrary to a broad classification as property, cryptocurrency will be exempt from VAT. Section 2(1)(a) of the VAT Act defines "financial services" to include within its scope the "exchange of currency". Section 12(a) of the VAT Act exempts financial services from VAT. Therefore, should cryptocurrency be defined as foreign currency (and this paper has argued that where it is defined as currency in one context, it must be defined as currency in all contexts including for the purposes of tax) then transactions involving the exchange of cryptocurrency will be exempted from VAT. Additionally, 'currency' is excluded from the scope of the definition of 'asset' for the purposes of capital gains tax and is thus too exempt.[271]

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[269] Op cite note 172 at p1.
[270] Ibid.
[271] Para. 1 of the 8th Schedule of the "South African Income Tax Act." (op cite note 182).

VI. VI. Closing Remarks and Recommended Approach to Regulatory Intervention in South Africa

Premised upon a thorough understanding of the technical working of the blockchain technology, the possibility and effect of a classification of cryptocurrency as property and as foreign currency has been outlined. Though this dissertation showed that cryptocurrency can indeed be considered a new form of intangible property, it is argued that preference should be given to a classification as foreign currency as this best serves the eventual commercial viability of cryptocurrency.

Additionally, the harm caused by reactive regulatory intervention has been emphasised: although a poor unit of account at present, the technology is in its infancy and requires space and regulatory support to mature into a scalable tool for effecting a transfer of value. Thus, discussion on the place of cryptocurrency in the contemporary economy needs to be forward-looking and should translate into an active and comprehensive regulatory response. This being the finding of this research, what remains to be discussed is why a classification as foreign currency should be implemented and the best approach to doing so.

A. Justification for Regulatory Intervention

The opinion implicit throughout this dissertation is that the blockchain, and cryptocurrency built atop this technology, has the potential to improve the existing method of effecting electronic transactions. The blockchain allows for transfers of value without the need to visit a brick and mortar bank; the value transferable has no minimum threshold because a crypto-coin is easily divisible; there is no risk of fraudulent chargebacks; and the blockchain is far more secure against cyber breach than the contemporary digital banking system. These characteristics come together to provide great potential for promotion of financial inclusion particularly in the unbanked proportion of South Africa

(indeed across the African continent more broadly).[272] However, this view has no possibility of being realised without appropriate, principled regulatory intervention.

Regulatory intervention is vital for ensuring minimum and uniform conditions of use. It provides certainty and credibility to the technology and shapes the way in which cryptocurrency is used and for what purpose. Additionally, regulatory intervention can implement and enforce transparency requirements so as to reduce the degree of anonymity afforded to cryptocurrency users. Further, regulation has the potential to shape the way in which the technology matures to serve a greater purpose in the long-term, i.e. to act as a new scalable platform for the digital transfer of value. In its current form cryptocurrency should not operate as legal tender as there are too many inefficiencies in the system. However, blockchain developers can do very little to improve the existing imperfections amidst great uncertainty as to how the legislature will respond to technological developments. For this reason a clear approach must be adopted at parliamentary level and a regulatory approach reflecting such a stance must be formulated.

B. Timeline for Regulatory Intervention

Of great importance is the timing of regulatory intervention: to intervene too soon is to stifle technological progress and inhibit the commercial viability of cryptocurrencies. However late intervention leaves cryptocurrency holders vulnerable to exploitation, leaves gaps for tax evasion, creates uncertainty in the markets resulting in greater price volatility, and leaves greater room for illegal activity.

There has been a dramatic increase in the purchase of cryptocurrency on cryptocurrency exchanges by African users in general and by South African users more specifically.[273] In

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[272] See in particular Stijns (op cite note 48) argument at p11 that as an African country's mobile money market develops, 'attention should shift from facilitating investments to ensuring appropriate competition, aligning competition between banks and non-banks to enhance financial inclusion and making the regulatory frameworks of both sectors compatible.'

[273] United States based cryptocurrency exchange Paxful recently stated that transactions from African consumers has increased by 225% in the past year, with transactions totalling R948 million per month. South Africa in particular has seen an increase of 25% over the last year on the Paxful exchange alone. AI Newsroom, "African Appetite for Bitcoin Grows," *Technology* (31 October 2018), accessed 02/12/2018, available at https://www.iol.co.za/business-report/technology/african-appetite-for-bitcoin-grows-17700597.

light of increasingly widespread adoption and the crypto-crash of February 2018,[274] a legal policy perspective demands law reform. Regulatory intervention has thus become necessary for the protection of cryptocurrency holders and to attempt to aid in the stabilisation of value to avoid losses resulting from abnormal price fluctuations.

C. Recommended Approach to Regulatory Intervention

The regulatory approach adopted should clearly reflect the stance of Parliament taken in respect of cryptocurrency. Such a stance should be forward looking, informed by a detailed understanding of how the technology operates and where it has potential for scalable adoption in the long term. At present the South African legislature favours intervention through incremental pronouncements, however what is required is active intervention in the form of a comprehensive regulatory framework.

This paper proffers that the best approach to cryptocurrency is to allow for a parallel system of payment to develop. This requires a regulatory framework that classifies and thereby recognises cryptocurrency as a foreign currency capable of operating as a means of payment alongside the existing legal tender of the State. Such operation must occur within the scope of uniform conditions of use aimed at reducing anonymity and increasing transparency requirements. A principal concern, however, is the ability to attach liability to an individual, group of individuals or legal person(s) as the existing structure makes it difficult to do so. This requires creative regulation that reflects an understanding of the technical workings of the blockchain.

The first step is reducing the level of anonymity in transactions taking place on the blockchain. This may be achieved by targeting regulation at cryptocurrency exchanges, obligating the exchange to require identity disclosure by users so that transactions may be easily tracked within the blockchain. As soon as an individual's identity is linked to a cryptographic key, all transactions ever effected on the blockchain are easily traceable and, unlike the existing digital transfer system, unalterable.

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[274] Op cite note 61 at p1.

A further interesting possibility for creative regulation may be found in the internal consensus rules of the blockchain specific to each cryptocurrency. The consensus rules act as the "law" of the blockchain. It is thus possible to require that certain standards and mechanisms always be included within these built-in consensus rules in order for a cryptocurrency to be recognised as viable foreign currency in law. This creates a minimum threshold that must be met by new and existing cryptocurrencies and reduces the possible growth of unstable, unscalable cryptocurrencies. The regulation of consensus rules must however avoid being prescriptive in nature as this inhibits innovation. Rather regulation should be designed to ensure consumer protection and financial stability and should describe the result or standard that must be achieved. The market must then be allowed to develop the technology in whichever way it deems most appropriate to achieve this prescribed result. For avoidance of doubt, regulation prescribes the "what", and the market is left to determine the "how". This ensures that the lack of technical understanding at legislative level does not trickle through the regulatory intervention in a manner that becomes destructive to the commercial viability of the technology.

Finally, it is vital that within any regulatory framework jurisdictional issues are clarified so as to provide a mechanism for accountability. If users are unable to identify within which region and which court has jurisdiction to hear a dispute involving cryptocurrency, then accountability is rendered improbable. This issue cannot be overlooked.

D. Further Research Needs

In conducting research for this dissertation, gaps in legal academic study were identified that fell outside the scope of this study although they are interrelated. It is preferable that research into these areas be conducted prior to the formulation and implementation of a legislative framework addressing the functioning and use of cryptocurrency in South Africa. Some of these areas for further consideration are as follows.

Firstly, the difficulties associated with a classification of cryptocurrency as property and/or as currency require comprehensive research. This ensures that regulation is forward looking and pre-emptive, thereby able to identify and address problematic aspects of the chosen classification within the existing regulatory framework.

Secondly, the attachment of value to cryptocurrency is of vital importance in securing the possibility of scalable implementation of the technology. Thus, enquiries into how value

is or may be attached, the root causes of dramatic fluctuations of value and possible mechanisms to ensure stabilisation of value require further attention.

Thirdly, from a technical perspective, research is required into the mechanisms available to regulators to address existing issues such as the anonymity involved in cryptocurrency transactions and the uncertainty created by forks in the blockchain. However, such research must be conducted with an awareness that the end-result should be a regulatory response that allows the market to decide the best mechanism to achieve the prescribed standard. Nevertheless, understanding the mechanisms available to address technical issues allows regulators to determine what standard may be reasonable (and appropriate) to prescribe in the circumstances.

Finally, further research is required into the interaction between cryptocurrency and the law, with particular focus on how the existing legal framework may respond to new legal questions posed by the cryptocurrency technology. By way of example: how may the law attach liability where loss is caused by a fault in the blockchain and not by an identifiable individual; or how the law may address a refusal by a cryptocurrency holder to transfer value in crypto coins without the benefit of a third party who may be ordered to do so on the non-compliant party's behalf. A clear response to questions such as these ensures certainty and accountability for cryptocurrency users and is of particular importance for the protection of vulnerable cryptocurrency holders.

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