The Media Life of Cryptocurrencies: From Libertarian Dreams to Institutional Control

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Abstract

This project's central research question is: *'What are the key cryptocurrency discourses that exist in the crypto space, and by whom are they created?'*. This thesis focuses on the historical trajectory of the media life of cryptocurrency. Specifically, it identifies cryptocurrency discourses in international news media and explores how they are socially constructed from a Social Construction of Technology (SCOT) perspective. Utilising computational topic modelling, a text analysis of cryptocurrency articles (N=4200) published from 60 countries in international news media, identified key topics associated with cryptocurrency from 2018 to 2020. The thesis presents a theoretical STS deconstruction of how cryptocurrency has been conceptually understood by media actors, accompanied by empirical evidence of the key finding that there are two major discourses which characterise news media communication about cryptocurrency: the 'Crypto-Crime' discourse and the 'Financial Governance' discourse. The main argument held in this thesis is that these two macro discourses are appropriated by international media but often emanate and are echoed from institutional positions. Vitally, this study is the first to demonstrate both theoretically and empirically, how news media in different countries ascribe diverging meaning to cryptocurrency technology, offering audiences varied images of what cryptocurrency is through discourse appropriation. Results showed that the co-constitution of discourse was strong across the UK and US whose news media appropriated the crypto-crime and crypto-governance discourses to different degrees. The thesis reveals how institutional positions are channelled through skewed news media narratives, from corporate economic and governmental control rationales. This control is demonstrated as being enacted through the state regulation of cryptocurrency, or complete bans, as in the case of China. Sometimes control is exerted through the innovation of state Central Bank Digital Currencies (CBDCs), as in many countries including the US, UK, Venezuela some EU countries. This is important because a new monetary form of digital currency can transform state macro-economic and micro-economic structures, affecting the social, economic, and political lives of global citizens.

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CHAPTER 1: Introduction and Literature Review

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Introduction

Bitcoin Sensationalism in the Media and Public Interest

"My future died that day in court when I was sentenced to life without parole. When I got back to the federal detention center, I did not go straight to my cell block as usual. There is no parole in the federal system, so life means your whole life. It is the same as a death sentence. It just takes longer" (Ulbrict 2021).

This is what 29-year-old Ross Ulbricht wrote from his federal prison cell, known more notoriously as his online alter ego 'Dread Pirate Roberts'. In 2013, Ross Ulbricht was arrested by the FBI (Federal Bureau of Investigation) and charged with money laundering, conspiracy to commit computer hacking and conspiracy to traffic narcotics. Two years earlier, Ulbricht had launched the Silk Road, the first modern dark web market, renowned for selling illegal drugs and other illicit goods in the US. On 23 June 2013, it was first reported that the DEA seized 11.02 Bitcoin, then worth a total of $814 (Cohen and Levine 2013). Later, researchers would evaluate the total revenue made by all sellers, from public listings, to slightly over USD 1.2 million per month, corresponding to about USD 92,000 per month in commissions for the Silk Road operators (Christin 2013). Bitcoin, used as a pseudonymous payment method, enabled this marketplace to thrive, as would other cryptocurrencies on future dark web markets.

Meanwhile, in 2013 John Ratcliff, 59, invested $15,000 in 150 Bitcoin at $100. Now, unlike Ulbricht sitting in a proverbial cage, he is overseeing the construction of a new $1.4 million "dream house" with a view of the mountains and waiting for his new $250,000 Tesla Roadster to go into production. For the latter, he put down a deposit using proceeds from the sale of six Bitcoin. He also reportedly purchased a house for his nephew, paid off his children's student loans and has set aside some of his crypto fortune for charity (Weiss 2021).

What Bitcoin did for both men could not be more different. Those who have got involved in cryptocurrency endeavours have been; an eclectic mix of criminals, corporate and retail investors, technology developers, and simply those members of the public who have taken an

interest in crypto, due to the hype pedalled in the popular news media about rising crypto prices and hyped investment opportunities. Cryptocurrency has been an exhilarating topic of interest for the public because of such life changing extravagant stories and therefore has been a key feature in the news press, particularly so in the last five years where public interest has grown where they have learnt more about the new technology. The diffusion of cryptocurrency awareness in the public sphere has reinforced itself as a feedback loop. These stories usually characterised by indulgence and an excessiveness of wealth has created more awareness and piqued public interest in cryptocurrency, as they try to understand this seemingly complicated blockchain technology living in the digital realm that can produce such material affluence – either legitimately or illegitimately.

The way the public understands cryptocurrency can be heavily influenced by individual stories of crypto indulgence in the news media, particularly so in the above Silk Road story, as it told a narrative tale of criminal activity of money laundering on the dark web. This captured the imagination of the public who en masse, would never directly experience such serious crime in their personal or professional lives. While most of the public only ever experience money laundering through news stories, and not as part of their daily lives, 'dirty' money is a hot topic in mass media as crime and technology share a complex and sometimes innovative relationship that is often interesting to be entertained by.

Greater media attention on money laundering has led to number of TV shows and movies focusing on the crimes that lead to money laundering, including for example, Breaking Bad, Narcos, Ozark, The Infiltrator, and McMafia. News articles offer a particular perspective though, as they represent true events reported in real time, where readers may have a closer relationship with the medium by being a daily reader, providing an implicit trust in the news they receive. Through their selection of stories and display of news, journalists focus attention and influence the publics perceptions of what the most important issues are (McCombs and Valenzuela 2021). The first experience for those who receive information about laundering, may well have been through newspaper entertainment, through stories of cryptocurrency and money laundering such as the stories above. The criminal element of digital currencies and its representation in international news media is discussed later in this thesis in chapter 3.

Discourse is therefore important in the story of cryptocurrency, for it shapes public understandings of its nature and character, and ultimately determines how the public might relate to it. The role of the media as an institutional mass communicator of discourse is therefore central to public understanding of cryptocurrency as they act as a mediator of narrative between stories of cryptocurrency and civic society. Attention is drawn to particular aspects of cryptocurrency based on the news media outlet's political or social agenda. Messages about cryptocurrency like many other newsworthy topics from news media are not random but prioritised based on agenda setting from editors and journalists. Agendas then provide priorities not just information (McCombs and Valenzuela 2021). This agenda can work to influence public thoughts and feelings toward cryptocurrency, like the effects of other sensationalised news stories where *"citizens deal with a second-hand reality, a reality that is structured by journalists' reports about these events and situations, which in turn are amplified and transformed"* (McCombs and Valenzuela 2021, 1).

Why Study Cryptocurrency?

The prevalence of cryptocurrency is reflected in the crypto economy's increase in capacity of coins and in trading volume (Best 2021). It is a global economy with a growing market capital (Kharif 2021) and is part of larger blockchain movement dedicated to innovation in decentralised digital products. With this increase in prevalence and applicability of innovative blockchain solutions that are often associated with crypto tokens, has arisen a range of social, political, and economic debates. These have included considering for example, if there is a need for private money in society, how this decision should be made, and who should be held accountable for such decisions.

A crucial objective in the dissemination of new cryptocurrencies and development of a larger blockchain movement, rests on cultivating public trust and acceptance of cryptocurrency technology. In the academic literature, concerns have been voiced about the link of cryptocurrency to criminal funding and illicit activities, especially as these types of digital transactions create a lack of transparency by shielding identities (Teichmann 2018; Amiram, Jorgensen, and Rabetti 2020; Kottasova 2018). However, the academic literature is not a channel for mass communication in the same way that the news media operate for

disseminating cryptocurrency information, and how they relate to current crypto events, such as crypto governance or economic trends.

The media as a reflection of society for example, has a substantial impact on the way issues are framed to the public in many disciplines including innovation and technology (Fritzsche & Dürrbeck, 2020; Gjika, 2020). In this way the media have the power to influence meaning making (see (Carah and Louw 2015), and discourse allows us to consider how institutions produce frameworks of meanings that organise social practices. Public opinion and acceptance of modern technologies cryptocurrency will be impacted by the media they consume about it, as with other innovative and rapidly developing technologies such as Artificial Intelligence (Ouchchy, Coin, and Dubljević 2020).

As members of civil society are consumers in the market economy and citizens of states, they are key stakeholders for technology adoption. Every person for example, in civil society uses money in their daily lives for transactions to meet their material needs and wants – no one regardless of race, sex, gender, class or socio-economic status is beyond this phenomenon, as money is required to survive in a capital economy. A new monetary form that offers digital currency therefore can transform state macro-economic structures for consumers and workers in civil society, and likewise affect more specifically the micro-level stakeholders' interactions with digital currency and the wider price effects of the crypto market[1]. The micro effects of this disruption will be seen at the individual level in society, where the public adapt to new forms of currency and ways of dealing with digital money online – for example interactions with blockchains and potentially smart contracts. Moreover, public opinion can potentially affect what crypto projects are developed in the future, and how blockchain is regulated by governments in future. For these reasons it is imperative to analyse how cryptocurrency is portrayed in the media. This thesis central research question is then:

'What are the key cryptocurrency discourses that exist in the crypto space, and by whom are they created?' This is analysed by identifying the discourses through a topic modelling method (explained in detail in the methodology chapter).

[1] See 'The Impact of News Media on Cryptocurrency Prices: Modelling Data Driven Discourses in the CryptoEconomy'. Working paper available at: http://doi.org/10.5526/r0a3-7n46.

The thesis then considers how media outlets can produce meaning toward cryptocurrency by deploying various narratives across discourses[2]. **Vitally, this study is the first to demonstrate both theoretically and empirically how news media in different countries ascribe diverging meaning to cryptocurrency technology, offering audiences varied images of what cryptocurrency is, through discourse appropriation.** As each media outlet has its own agenda, cryptocurrency reporting (through the selection of crypto-focused topics and timing of publication) is framed around this, with concentrated implicit messages wrapped up in narratives, which themselves are part of broader discourses. **These macro discourses were identified as 'crypto-crime' and 'crypto-governance' during the study**. Both are discussed throughout the thesis.

For example, later in this thesis, I will show how Chinese state backed press appropriated a crypto-crime-discourse with narratives of disorder and chaos, to achieve the political goal of persuading Chinese society that cryptocurrency is inherently criminal and dangerous, to gain support for the government's own state backed digital currency. This discourse was supported by various political actions, including the banning of cryptocurrency in China, which had economic effects that rippled through the global crypto markets sending the price of Bitcoin spiralling downwards. A fair balance of crypto reporting was not witnessed in the Chinese press, compared to European press who for example reported some 'success' stories of investors who made millions from crypto investing, such as the protagonist John Ratcliffe in the story above.

The UK and US press however presented a more balanced view of cryptocurrency i.e., presenting a fair discussion of regulation, as opposed to a silencing of debate for the potential legitimisation of crypto as in the China case. This regulatory trend was fairly consistent across the UK and US media outlets, with both countries reporting on the development of crypto regulation in their respective territories. However interestingly at the local level, some local media outlets in Europe presented explicitly a more favourable position toward crypto regulation and legitimisation. This was seen for example in the Maltese press where the country has taken a very aggressive approach to regulation, positioning itself as a crypto leader. Crypto stories from Maltese press tended to present cryptocurrency in an extremely positive light, highlighting its entrepreneurial aspects, advantages, and possibilities for a

[2] This is discussed in more detail in the methodology chapter.

future digital economy in Malta. We could say Maltese press (non-state-backed) were bullish on cryptocurrency, but the analysis is deeper. This was not just news media speculation but correlated with the Maltese governments actions in supporting cryptocurrency politically, legally, and economically, by their attempts to create an attractive economic landscape to entice crypto companies to the island. Low reporting on crypto crime appeared in Maltese press, compared to crypto news in the UK or US for example.

The co-constitution of discourse was strong across the UK and US whose news media appropriated the crypto-crime, crypto-governance, and crypto-economy discourses to different degrees. An obvious example is that Financial Times in the UK adopted the crypto economy by virtue of the fact that their role is to present financial news. However, a more subtle trend that could not be viewed from one to two articles that only rose from analysing big data (of hundreds of articles) was that they tended to appropriate the crypto-crime discourse and crypto-governance discourse together. In other words, they used crime stories to portray an explicit need for regulation. This agenda unlike the Maltese press, was not presented in a way to support cryptocurrency and digital innovation but to curtail cryptocurrency in a negative manner. The FT were not only bearish on crypto but explicitly treated Bitcoin as a renegade technology, which deserved nothing but criticism. As the crypto markets got stronger however, they were forced to admit in later articles that it had wide support (even receiving traditional institutional financial support), they however remained cynical of its potential and efforts.

The vision of Bitcoin can therefore be dependent upon what one reads in the news press. The news itself is not neutral information but is reliant on the discourse of which the news media institution chooses to present as parts of its institutional agenda. This then can lead to ascribing diverging meanings to cryptocurrency offering audiences varied images of what cryptocurrency is, through discourse appropriation. This will be explored throughout this thesis.

The Original Cryptocurrency: Bitcoin

The innovative cryptocurrency, Bitcoin, is an electronic payment system based on cryptography, which was created in 2008 by pseudonymous developer/s, Satoshi Nakamoto (Nakamoto, 2008)[3]**.** It is important to mention here, that the idea of digital cash (e-cash) that protects users' anonymity, is historically, a much earlier convention.

In 1983, David Chaum proposed a new type of cryptography; a blueprint for blind signature cryptosystems (Chaum 1983). Bitcoin has adopted digital signatures to ensure users remain pseudonymous, along with other added technological advances. Bitcoin, as with other cryptocurrencies, runs on a decentralized peer to peer payment network, which contains a public ledger; known as a blockchain. The Bitcoin website explains that:

"…ledger contains every transaction ever processed, allowing a user's computer to verify the validity of each transaction. The authenticity of each transaction is protected by digital signatures corresponding to the sending addresses, allowing all users to have full control over sending Bitcoin from their own Bitcoin addresses. In addition, anyone can process transactions using the computing power of specialized hardware and earn a reward in Bitcoin for this service. This is often called "mining". (Bitcoin.org, no date: para 6).

This means that unlike fiat money where the Bank of England controls the value of the pound through the process of printing money, no centralized government or agency, controls cryptocurrency. Bitcoin is controlled and powered by its users. One major difference however sets Bitcoin (and its altcoins[4]) apart from fiat currency. The difference is that there can be no inflation, due to Bitcoin never having more than 21 million coins in circulation (Bitcoin.org, no date: para 3). The claim by Bitcoin.org (2017), is that there will be no currency limitation due to the ability of Bitcoin to be digitally split into smaller denominations, aptly known as bits, i.e., there are 1,000,000 bits in a Bitcoin.

When this crypto project started in 2018, the market capital of Bitcoin stood at a significant $110,655,462,292 (Coinmarketcap, n.d.), but as of writing in December 2021 it stands at $2.17

[3] The identity of the creator of Bitcoin is still not known. Goodman's (2014) article in Newsweek identified Dorian Satoshi Nakamoto as Bitcoin's real creator, however, after questioning Dorian Satoshi Nakamoto he denied creating the cryptocurrency.

[4] Altcoins are an abbreviation of Bitcoin Alternative, including every single cryptocurrency except Bitcoin. See (Wilmoth 2014)

Trillion (CoinMarketCap 2021). This market capital puts Bitcoin worth at more than household names such as investment bank Goldman Sachs Group Inc. and global internet retailers such as eBay.

Understanding Bitcoin as a Blockchain Technology

Bitcoin is popular and controversial, but often an equally misunderstood technological phenomenon. Being a modern technology, Bitcoin has many characteristics that need to be disentangled to comprehend its complicated nature. It has both its many strengths and weaknesses, and threats and opportunities as a market technology. Bitcoin itself, refers to the overarching technology, comprising of the Blockchain which is the decentralised platform which underpin Bitcoin themselves as a form of digital token exchange (Narayanan, Bonneau, Felten, Miller, & Goldfeder, 2016).

The blockchain technology underpinning Bitcoin can serve as a decentralised platform where users of any size or capacity whether individuals or small to medium businesses to corporations and governments alike, can make exchanges securely, keeping sensitive information on a public ledger pseudonymously. This allows users to protect their real identities whilst transacting online, alleviating the concern of a personal identity data breach. The use of pseudonyms as a privacy and data protection mechanism is often cited as one of Bitcoin's major strengths (Bitcoin.org, n.d.-b; Nakamoto, 2008; Narayanan et al., 2016). Partly, this is due to the blockchain also offering a transparency element in addition to its pseudonymising protection method. Exchanges are transparent therefore due to being recorded on the decentralised ledger, and an important feature of this is that once an exchange has been recorded on the ledger it can no longer be amended, duplicated, or erased.

The consequence is, unlike a centralised ledger where an administrator can access the system to change or manipulate data, the blockchain decentralised ledger guarantees the data remains indefinitely and is distributed for all users to observe. Of course, the ledger does not reveal the real-life identities making the exchanges but uses the pseudonyms instead, protecting privacy whilst enhancing trust. The Bitcoin blockchain therefore offers a decentralised platform where exchanges can occur in a trusted digital environment, specifically in a cyberspace where users can be sure that exchanges are legitimate and secure. The Bitcoin themselves are digital tokens which can be exchanged on the blockchain and can serve their

users as a form of digital currency. They can be utilised by users as a medium of exchange, as they can be used to purchase tangible and intangible goods on the 'real life' market[5], but also offer to be a store of value in the form of a digital asset, where one can invest with the intention of drawing profit in the future.

Literature Review

A Brief Blockchain History of Counter-Culturalism and Cyber-Libertarianism

A Blockchain is a distributed ledger (or database) that is shared among the nodes of a computer network. As a database, a blockchain stores information electronically in digital format. This information is collected and stored in sequential time stamped 'blocks', which differs from a traditional database where data is usually stored in tables. The innovation in the blockchain format, is that in harnessing cryptographic methods it guarantees the fidelity and security of a record of data and generates trust without the need for a trusted third party (Hayes 2022).

The first blockchain, Bitcoin created by Satoshi Nakamoto (2008) was a blockchain primarily to be an open public ledger, with the underlying assumption in the white paper that all members in society should be able to participate in the system to benefit. Thus, the collective identity was heavily reliant on the developers that maintained the software and its users. Therefore, a logical presumption is that most of the network who consisted of the Bitcoin community had a highly influential contribution to its immediate identity as an emerging permissionless blockchain technology.

Whilst the Bitcoin community consisted of users with different societal ideals, personal feelings, and political motivations for this technology (Golumbia 2015; Daughtry 2019), the traits of being an open and permissionless technology in how Bitcoin was designed i.e., how the code was written and system design, was at the heart of Bitcoin, amounting to a culture of 'the code is law' attitude to the software. This cypher punk libertarian attitude formed in part on the backdrop of libertarian ideals of freedom from state in cyberspace, which Lessig

[5] See http://spendBitcoin.com/ for over 100,000 merchants accepting Bitcoin as of 20/11/18.

argues developed in post-communist Europe where the bond between freedom and absence of state was so persuasive that led to sentiment that governments would not, and in fact could not, regulate cyberspace (Lessig 2006).

Prevailing thoughts borne from failed communist states offered hope of freedom from state control, that cyberspace would be a self-ordering entity. In technological form, the internet afforded Bitcoin this privilege. It provided this hope with promise of self-order in cyberspace retreat from controlled freedom in which in the real world, the state had strong control and had monopoly of currency creation. Bitcoin offered a new form of currency that could be exchanged peer to peer, free from government control and third-party banking. Bitcoin for instance, has been described as;

"Ideological purity for wealthy libertarians who want to exist in a permanent offshore mega-yacht limbo, free of the annoying trappings of the state, comforted by a digital cushion of crypto-money" (Mortished 2018).

In an unordered space, the code is law ideal is cyberspaces law i.e., the code of cyberspace. This undoubtedly gave Bitcoin in the beginning of its a life, as an innovative early-stage technology, a unique digital identity, akin to its libertarian roots as a right-wing software project (Golumbia 2016). Future public blockchains would develop a few years later modelled similarly on Bitcoin's identity of a permissionless technology, including the cryptocurrencies Ethereum (Buterin 2013) and Litecoin (Lee 2011), among others.

Bitcoin's influence as the authority blockchain is notable in this aspect[6]. Due to future technologies paralleling Bitcoin's design features, the new crypto's use was pre-determined, to an extent that it mirrored the underlying ideology that was a participatory and 'open to all' philosophy, which embodied much of cyberculture idealism[7]. Cyberculture; this collaborative community ideology of decentralising control and flattening organisations, according to Fred Turner (2010) developed particularly in the United States, post-Vietnam war. In the wake of conflict and social instability, in a bid to reject the dehumanising and centralised bureaucracy

[6] Bitcoin was the first built blockchain and to date holds the largest market capital of any cryptocurrency, reportedly worth $2 Trillion (Kharif 2021).

[7] On Cyberculture Idealism and global social space, see 'A declaration of the Independence of Cyberspace'(Barlow 1996).

of the state, some activist factions of the public turned to new forms of governance in the form of collectiveness in the 1960's.

Early forms of technology and increasingly computers, embodied a counterculture dream of empowered individualism and collaborative and spiritual communion among these activists (Turner 2010). In the paper 'The Californian Ideology' authors Barbrook and Cameron (1996) describe this anti-capitalist and anti-state activism in San Francisco, US:

"*During in the '60s, radicals from the Bay Area pioneered the political outlook and cultural style of New Left movements across the world. Breaking with the narrow politics of the post-war era, they launched campaigns against militarism, racism, sexual dis-crimination, homophobia, mindless consumerism, and pollution"* (Barbrook and Cameron 1996, 47).

Collaborative social projects emerged during this time including the Whole Earth catalogue created in 1968, bringing together a range of professionals and amateurs sharing knowledge and utopian visions. This projects creator, Stewart Brand along with other influential leaders, synthesized a vision of technology as a countercultural force which would shape public understandings of computers and machines through various social networks from the 1960's to 1990's, to what Turner describes at 'network forums' (Turner 2010). He described how these network members redefined communication networks as 'virtual communities' and cyberspace as the electronic frontier in the digital equivalent of the 60's communards hope of achieving the counterculture dream. The members themselves *were "visible and credible spokesmen for the socio-technical vision they helped create"* (Turner 2010, 6).

In an analogous way to Turner's networks but much later in the late 2000's, Satoshi Nakamoto's mail list and subsequent Bitcoin forums provided the networks, albeit virtual networks, for its birth and development. Bitcoin project members in the technology's infancy, created and sought to reinforce its collective identity which was heavily dependent on its earliest users - the Bitcoin community. This community consisted in the initial stages of the developers who took over the development of Bitcoin from Satoshi, the likes of Hal Finney, Nick Szabo, and Craig Wright. Open-source development in its very nature by its modularity trait of software, however, allowed a certain amount of disruption to the technological design

and its underwritten code. As the developer community grew, so did its ambitions and conflicting priorities. With no central actor to control its code and brand image, Bitcoin collective identity would soon be redefined, just as STS (Science and Technology Studies) scholar Sheila Jasanoff (2004, 39) has argued that *"collective identities are also contested or under negotiation in the working out of scientific and technological orders".*

This was the case with Bitcoin, when in 2017 the Bitcoin community faced divisions within. Competing ideas arose about how Bitcoin should operate in future to take account of the need to scale up the Bitcoin protocol to increase the number of transactions per second, by means of increasing block size limit. Some members in the Bitcoin community resisted a change to protocol instead aligning themselves with maintaining the original common set of rules for the cryptocurrency. This shift in solidarity split the community into two camps, one who continued with the original code and the other who adapted the code, forcing a 'hard fork' which formed a new cryptocurrency Bitcoin Cash (Bitcoin Cash n.d.). This not only created a new code and subsequent software but opened space for new members to join the new community contributing to distinct roles, thus creating a new physical and social identity, for a similar blockchain (Kwon et al. 2019). Journalist Jemima Kelly described this copycatting as *"a bit like the Burberry scarf, Bitcoin has become a victim of its own success, with countless knock-offs undermining its value"* (Kelly 2018)[8].

From this point onwards, future cryptocurrencies emerged as their own blockchains with their own features and identities, separating them both in practice and theory from their original cryptocurrency predecessor, the Bitcoin blockchain. Each cryptocurrency with its own interpretation of the blockchain has grown its own identity among its online user communities as they seek to promote different philosophies, which achieve different political gains through software features. This serves to further confuse society as to what blockchain is, and to whom it serves and ultimately benefits.

The expression of identity from the original public blockchain Bitcoin, represented a technology socially and politically that is starkly different from those blockchains which have

[8] However, this is not an entirely accurate statement; while there have been new copycat projects using similar blockchain protocols, Bitcoin's value has not been devalued in the financial sense. Bitcoin is still the most popular leading cryptocurrency with the highest market capitalisation.

been created for use by private institutions who seek to control them, by restricting features such as who is approved to participate and what data is submitted to the system including transactions for example. These tightly controlled protocols within private blockchains contrast with the open source blockchains such as Bitcoin who openly allow users to contribute to the software code, participate freely as a node (providing they have the computing power) and are voluntarily considered as part of the Bitcoin community.

The fundamental notion of permissionless blockchains such as Bitcoin, is the protection of its user's identities plus transparency, whilst trust in the system is enhanced by game theory incentives and cryptography. Whereas with its private counterparts, permissioned blockchains - examples of which include Hyperledger and Corda (Valenta and Sandner 2017), the lack of anonymity enables users to be identified so that permissions can be granted based on their identity.

This 'public to private' shift in blockchain illuminates the idea that whilst a technology may be designed by a creator/s with a particular vision in mind as to how the technology would be optimised by the consumer and by whom, with time through varying discourses, the technology may be highjacked for consumption for another use, or by a different user group. This result of a shift may be understood as an expression of identity, which highlights how the distinct roles that knowledge and its production play in shaping and sustaining such social roles, and how they give them power and meaning in the context of software creation. This thesis then will explore the different societal understandings of cryptocurrency, and the role of the media in creating them. Technologies in this way therefore can be, and certainly are, adapted to serve new purposes in society. This adaption from open source permissionless blockchain to private permissioned blockchains, often operated by corporations or big business, has resulted in new identity cultures of blockchain which has only muddied the waters on what blockchain is and whom the platform technology serves.

The Blockchain Revolution

'The Blockchain Revolution' was a 2016 book written by Don and Alex Tapscott documenting the profound technological shift that is changing how the world does business and everything else, using blockchain technology. Don Tapscott's associated TED talk explains how Blockchain is the next generation of the internet that provides a native medium for value, where assets (such as money, stocks, bonds, Intellectual Property, music, art, and

votes) can be sold, transferred, exchanged, and managed in a trusted and secure way across a distributed ledger.

Unlike legacy systems in the financial industry, where the settlement of a transaction often takes a few days, instead with a blockchain, the payment and settlement occur simultaneously with just a change in the ledger occurring with immediate effect. Many companies faced with this new type of competition in the financial services industry, have reconsidered their position asking how they can embrace this technology for business success. According to Deloitte's Blockchain 2021 survey for example, 76% of respondents agreed that their respective organization will lose an opportunity for competitive advantage if they do not adopt blockchain and digital assets (Deloitte 2021).

Blockchain can be defined as a progressive platform technology on which developers can build innovative applications such as Bitcoin and other cryptocurrencies. More cynically however, Blockchain as a concept is often accompanied by the term 'revolution', and is shrouded in misconception, becoming a hyped buzzword for some businesses to use fleetingly, in the hope of adding market value to their products. The umbrella term 'Blockchain' is often used with little intent, to haphazardly describe a type of ledger that is a replicable record keeping data system, regardless of its unique technological aspects. Therefore, conceptually Blockchain can have different meanings to different people in space and time. However, the reality is that in the digital world, a host of unique features can separate several types of Blockchains, where in fact they only a share the minor common characteristic of linking and replicating cryptographic data in blocks across a specific network.

What is widely accepted is that at the heart of Blockchain, it can be satisfactorily thought to be a 'distributed ledger technology'. But within this remit, the way a protocol (or program) has been built, i.e., the governance model it implements, and the way in which it implements it, varies among different Blockchains. The ways and means in which data is inputted, validated, and distributed varies tremendously among permission, and permission-less Blockchains. For example, there is a contrast between those systems which are centralised ledgers; where only one (or a select few users) controls the ledger via participatory voting process, and decentralised ledgers where all users can participate in the voting process. The

result of this variation in protocol from one Blockchain to another, is that it can cause a direct effect on the outcome of the program. The outcome therefore is dependent upon whatever process has been followed in accordance with the programs allocated protocol. Governance then, in terms of voting protocol is just one example of how different Blockchains can function to produce distinctive features, in line with the overall objective of the specific Blockchain's goals. Governance is just one example of differences among Blockchain technologies, for a full overview see Rauch's et al (2018).

The term 'Blockchain' can theoretically encompass these differences across various Blockchains, as the underlying technology functions with the same goal; with data being stored in blocks and eventually through a type of voting process becoming validated by users and replicated on the network. However, use of the generic term of 'Blockchain' to describe all Distributed Ledger Technologies overlooks many of the technological features which are fundamental to the processes that each one performs. It is therefore necessary to reject the all-encompassing term 'Blockchain' when analysing such technologies and concentrate on the underpinnings that represent its replicable record keeping form. That is, to consider and accept Blockchain in its simplest form as a distributed ledger technology system. In this way, diverse types of Blockchains can be explored and analysed by establishing a useful apparatus to review Distributed Ledger Technology (DLT) systems.

Noting the lack of terminology standardisation in the eco system and using a systems-based approach, Rauch's et al. (2018) have established a useful apparatus by setting a conceptual framework in which they have devised a multidimensional tool that can be utilised by policy makers, researchers, and investors to examine and compare DLT systems. This tool they claim offers a more comprehensive understanding of a DLT system's inner workings and the roles the various actors play in the DLT eco system (Rauch's et al., 2018). Specifically, they focus on the characteristics of a DLT system listing five conditions which should be met to be considered a DLT, including that the system should be capable of ensuring; shared recordkeeping, multi-party consensus on a shared set of records, independent validation by each participant, evidence of non-consensual changes and have resistance to tampering (Rauch's et al., 2018). Rauch's et al (2018) state that the DLT conceptual framework and multidimensional tool can be applied to cryptocurrencies such as Bitcoin, but also include DLT systems that predate Bitcoin too. They explain their methodology stating that;

"We aim to conceptualise a DLT system in this vein as a set of interconnected and hierarchical components and their interacting processes, rather than a simple collection of parts, it is the 'configuration' of hierarchical components- and their interrelations and interactions- that determines the functionality and characteristics of a particular DLT system" (Rauch's et al 2018, p. 16).

An STS Account of Blockchain Technologies

Aside from systems-based conceptualisations such as Rauchs et al (2018) that accounts for interrelations and interactions of processes, blockchain as a concept appears to have absconded from 'social life'. This is in spite of the fact that it is a technology historically entrenched with deep socio-political roots and offers a new type of online social interaction and integration that adapts how data communication is undertaken, transmitted and computer mediated by humans. Here we must consider the Blockchain as a technology that is *just* as connected to humans and our social, economic, and political activity as traditional communication methods. We, as sociologists must welcome this technology within our remit and focus on it, with just as much seriousness as we have done in the past with traditional communication technologies.

There has been some sociological analysis of blockchain, including for example Nigel Dodd's account of the 'Social Life of Bitcoin'. Whilst this critical analysis takes a particular focus on social practices, organizational structures and the "*utopian ambitions that sustain it*" (Dodd, 2018: 1), it provides an illuminating discussion on the extent of the merit of Bitcoin's currency character and the varying ideologies that support it[9]. He argues in particular that Bitcoin expresses two forms of monetary disintermediation that are closely associated with this moment in the history of money, namely, its separation from banks and the state. This is an important observation, as he notes both forms of disintermediation underline the political appeal of Bitcoin. He stated for example;

"*My core thesis is that there is a paradox at the heart of the Bitcoin phenomenon. Bitcoin will succeed as money to the extent that it fails as an ideology. The currency relies on that which the ideology underpinning it seeks to deny, namely, the dependence of money upon social relations, and upon trust. Insofar as Bitcoin has been successful qua money, it is*

[9] For a further study of Dodd's work on Bitcoin, digital and community currencies see (Dodd 2015).

because of the community that has grown up around it. Ironically, however, this community is sustained by the commonly held belief that Bitcoin has replaced social relations – the trust on which all forms of money depend – with machine code. This belief is a fiction. Bitcoin has thrived despite, not because of, its reliance upon machines." (Dodd 2018, 3).

Dodd's stance is essentially that, it is the Bitcoin community that has supported its growth, as opposed to its reliance of technology. For example, while community members speak of a commitment to Bitcoin because of a lack in trust in either the state or banks, they are under the (naïve) impression that trust is not required as mathematical technology can provide the solution vis a vis cryptography. They fail to acknowledge however, that they trust in the social organisation of Bitcoin. For example, they put trust into the coded laws of finite supply, decentralisation, and distribution. This according to Dodd can be contested, as the finite supply of 21 million coins could theoretically be amended by those with power to do so (the likes of chief developers), so community members therefore **trust** those with the power will not amend the finite supply and increase its supply. Further, decentralisation and distribution arguments can also be contested as mining pools centralise production. This leads Dodd to conclude that *"Bitcoin itself seems not only to replicate but exacerbate the self-same inequities of wealth and power that can be found in the existing financial system"* (Dodd 2018, 21). Despite this opinion, he does however finish his essay claiming that Bitcoin, and cryptocurrencies in general, are part of a diverse future for money.

While I concur, that Bitcoin may be not as decentralised and equitable as members of its community claim, where I differ from Dodd is on the idea that there is a commonly held belief by the community that Bitcoin has replaced social relations. Just because the technological feature of cryptography is parroted as a justification for Bitcoin, this 'blind trust' in cryptography, does not amount to a denial of the social sphere or social life of money. Moreover, many arguments that favour Bitcoin put an emphasis on a lack in trust with those in power (hence narratives of elite state and bank power often are presented), which is not necessarily a mere lack of trust in individuals in society alone – just those with unwielded or excessive power. Therefore, it seems this is a reductive and narrow argument. Dodd admitted himself the members of the community have a propensity to implicitly trust the developers and node leaders to adhere to the code, without making sweeping changes that would drastically change Bitcoin's 'core' rules, such as the finite supply of 21 million coins.

Dodd's analysis suggests community members believe they lack trust in humans and instead need to rely purely on coded rules, whereas in practice they are trusting key authorities within the decentralised system. This seems obvious on the surface, as the 'trust justification' is often put forward to support Bitcoin. However, the 'Bitcoin community' is ill defined and difficult to measure – for example does the community include early adopters and developers who are part of the Bitcoin Reddit and GitHub, as well as institutional and retail investors, and also include criminals who have used Bitcoin for illegitimate purposes?

It is also problematic to assume the ideology of separation of money from state, accompanied by a 'code is law' attitude is truly believed by institutional crypto investors, who rely on state apparatus of the law and regulation for a secure and stable economic environment. The individuals' Dodd refers to (in a similar way to how David Golumbia refers to the same homogenous socio-political group – a group of right leaning ideologues) were likely the original community who as cyber libertarians, were politically motivated. This is true to some extent. Yet, Bitcoin as with other cryptocurrencies are continually adapting their identity with heterogenous groups adopting the technology, in an evolving socially contested digital space. The heterogenous groups that participate in cryptocurrency cannot be ignored, and so to distinguish between them is very difficult to construct a fixed identity on a singular community cohesion based on social or political motivations, in a disorderly space. For example, individual and collective identities play an important role in co productionist accounts of science and technology. For STS scholar - Sheila Jasanoff, identity *"is one of the most potent resources with which people restore sense out of disorder*" (Jasanoff 2004, 39).

An STS approach allows for the relationship between scientific knowledge, technological systems, and society to be explored. Blockchain technology is that of a scientific progress upon the development of centralised computer architectures, along with a technological application of platforms and the human interaction that interacts with blockchain networks. Co productionist writings often are in this way concerned with emerging phenomena which is how we can consider new, innovative technologies such as blockchain. Whilst these technologies are in their emerging state, the identity they take is consistently under negotiation and flexible (Jasanoff 2004). We have witnessed this flexible negotiation in the evolution of cryptocurrencies in how different political and social groups have assembled to

reach a political goal through cryptocurrency entrepreneurship, however this does not explain why media institutions appropriate different discourses that can change over time.

An STS account for blockchain technology could then take some lessons from the social construction of technology (SCOT). This would allow a deeper and flexible analysis of the social processes and relationships at the institutional (albeit decentralised) level within media organisations, rather than just at the individual level of the ideologies of the collectives that participate in using cryptocurrency. To unpick a blockchain technology like cryptocurrency, is then to pull apart and evaluate its workings of its design and the social influences this has on media discourse. The next section dives into the SCOT approach to understand how media institutions can create knowledge in the public sphere by producing media discourse which affects conceptual understandings cryptocurrency.

The Media Life of Blockchain: A SCOT Approach

The social construction of technology (SCOT) perspective has had a long history of development with arguments against the idea of technological determinism and linear progression (Bijker 2009; Pinch and Bijker 1984; MacKenzie and Wajcman 1999). A constructivist analysis provides a theoretical perspective that credits that *"technology does not have its own intrinsic logic but is socially shaped"* (Bijker 2009, 5). In this fashion the ontology of technology is questioned, addressing how new technology is made and studied i.e., its knowledge production and how it is utilised (or not) within society. This now needs to be applied to emerging digital technologies including cryptocurrencies, but for the purposes of this thesis, the social construction of blockchain by the media. This is because the role of the media as an institutional mass communicator of discourse is central to public understanding of cryptocurrency as they act as a mediator of narrative between stories of cryptocurrency and civic society; therefore, they are constructors of crypto discourse.

The ontology of blockchain technology requires an evaluation on how and why this 'revolutionary' platform has been socially constructed by the media. SCOT demonstrates flexibility of the material object or technological artefact in how people perceive them, interpret them and how social influences even affect their design (Bijker, Hughes, and Pinch 1987). Therefore, using a SCOT perspective and

homing in on this 'social' production of technology by the media, the social construction of cryptocurrencies can be interpreted through the blockchain design principles which are characterised by unique social and political features.

This sociological thesis is not intended to provide a technical explanation of cryptocurrency[10], nor its economics (or crypto economics as sometimes referred to[11]), for there are a complete set of literature which fulfils this task and as described above a working conceptual Distributed Ledger Technology framework available (Rauchs et al. 2018); but it is useful to set out its principles of design that characterise its political and social nature - this can be considered the 'Blockchain Design Principles' adopting an Science and Technology (STS) framework.

It is important to note that these blockchain principles are not formal dictions provided by the pseudonymous creator Satoshi Nakamoto, nor Bitcoin's developer community, but instead provide a novel topography by the author, which operates as a scaffold of the distribution of political and social features, for the purposes of this inquiry. In sum, I put forward that these blockchain principles can be summarised as follows – that permissionless crypto are technologies which are publicly understood or viewed as 'open and participatory, democratic, immutable, and revolutionary'.

The reason for identifying these principles is twofold. Firstly, all the above principles (or terms) have been used informally to describe, for example, the earliest and most popular cryptocurrency to date; Bitcoin; and secondly, though technological features vary among a variety of cryptocurrencies, they are common denominators in most decentralised permissionless public ledger technologies. Much of the dialogue centred on crypto, relies on these principles for frames of reference, which legitimates this conception of blockchain principles. This assists in the inquiry to recognise the ideologies associated with crypto, as a foundation for a system of belief, or chain of reasoning in their sociological and political context. These culminate in distinct discourse patterns which inform many of the thesis topics

[10] See (Narayanan et al. 2016) for a comprehensive introduction of Bitcoin and cryptocurrency; see (Bos et al. 2014) for a cryptographic elliptic curve for cryptocurrency explanation; and see (Badev and Chen 2014) for a Bitcoin technical background and analysis.
[11] See (Berg, Davidson, and Potts 2019) for an understanding of crypto economics.

on cryptocurrency and often are referred to in crypto discourse in the public domain, and particularly so in the news media discussions of crypto – the focus of this thesis.

Cryptocurrency as a Social Construction: Open and Participatory, Permissionless and Revolutionary

The key elements of these principles are discussed herein. The first of these principles maintains that peer to peer public ledgers are a barrierless entry i.e., open, and participatory. The participatory nature of Bitcoin theoretically allows for 'anyone' to join the Bitcoin network as a validator or miner, allowing any person (with the necessary computing power) accessibility to therefore participate in the network, regardless of gender or sex, class or socio-economic status, race or religion, political party or labour movement affiliation, or any other divisive individual characteristic. This of course benefits the individual as they have the freedom to exchange (i.e., enter peer-to-peer transactions), or freedom to trade for digital labour (i.e., as a miner), providing they have the technical capability to participate as a node in the network. Barriers to entry then are technological ones rather than individual attributes, and freedom to contract is a universal digital right.

As in theory anyone can participate as a node to validate transactions, this inevitably describes the permissionless blockchain as a democratic platform; for each node can participate by a 'vote' as part of a one node, one vote protocol (Nakamoto 2008). This democratic nature of blockchain is the second principle of the blockchain principles, and by its very definition of a permissionless technology shows how it conforms to a system designed to dispose of hierarchical decision-making processes, which usually require permission from a line manager, or person in authority to be granted for participation. Thus, this democratisation of wealth creation explains the flattened nature of the decentralised digital platform, where decisions are distributed among nodes. As decisions have an effect(s) on the workings of any organisation, whether it be a traditional company or a digital platform, in this case the permissionless blockchain distributes not only decisions, but power among the actors (nodes). Decision making as a process is a power, which can be conceived as a force where it is exerted from actor onto another actor, or in this case it is a set of actors exerting their force through the process of block validation onto the node, who cast its potential block onto the blockchain for approval.

As each block is approved via the validation route through collective consensus of nodes agreeing on the new block cast to the chain, once approved by the majority it has achieved endorsement and thus becomes part of the blockchain as a legitimate transaction (Nakamoto 2008). This majority validation is important for it confers legitimacy onto the block, which legitimates the next block that gets attached to it, and so forth in the block validation chaining process. This is third principle of the blockchain principles which is immutability.

As each block attaches to the previous valid block, the whole chain is a cumulative legitimisation of each recorded block, compounding to a validation, or at least an implicit judgement, that the blockchain is complete and free of error. It cannot be tampered with according to the protocols, apart from in a situation of an attack where bad actors attempt to chain an illegitimate block, or in a malicious 51% attack. Game theory discourages bad actors against this type of activity, and it is often heralded as unlikely to the low probability of such an event occurring[12]. The blockchain is viewed as immutable, where every actor has a copy of the same ledger with the same identical transaction data, where data cannot be changed over time (Nakamoto 2008).

The final principle of blockchain, which unlike the previous principles is exogeneous, in that its cause is from the outside of the digital platform and not a purpose of the blockchain design – that is the last principle of the blockchain technology as a revolution. This is where blockchain is, in every day thought and discourse perceived as a revolutionary technology (Tapscott and Tapscott 2016; Kakavand, Kost De Sevres, and Chilton 2017; Halaburda 2018). In part, a reason that drives this narrative of a blockchain revolution is that to the lay public, crypto technology appears novel and new. However, as technology writers, social constructionists and socio-technical scholars are acutely aware, in fact crypto, specifically Bitcoin, is an advancement of a group of improved technologies that have a rich history of adaption and progression, including proof-of-work systems, cryptographic hash methods, double blind signatures and e-cash digital systems.

Other drivers of the revolution narrative are more political, than technical in nature. For example, in the political context, the term revolution refers to a forcible overthrow of a

[12] See (BitPanda n.d.) for explanation of 51% attacks.

government, or social order. Bitcoin has often been perceived as an anarchist system, that due to its decentralised structure in cyber space, it does not belong in any state jurisdiction and is considered by some as an anarchical tool to achieve freedom of state or corporate (banking) intervention in private market activity. In some cases, it is seen by some activists, as an attempt to overthrow the existing hegemony of global corporate power and/or unwarranted state power, stemming from earlier ideologies held by the Cypherpunk and crypto-anarchist movements (May 1992; Dai 1998; Turner 2010).

It becomes clear that the assemblage of the above blockchain principles - open and participatory, democratic, immutable, and revolutionary, distinguish this technology from earlier forms of digital platforms. This contrasts with earlier digital platforms such as the oligopoly technology giants of Amazon or Uber for example, who according to Tapscott

"have appropriated the largesse of the digital age asymmetrically: we have created wealth creation but we have growing social inequality" (TED Talk 2016).

The blockchain principles instead represent the opaque (where users remain pseudonymous for privacy) yet transparent (where transactions can occur with trust without knowing the other party) but still accessible (where entry is permissionless) nature of decentralised platforms. These principles of design, characterise crypto's permissionless blockchain platform that seek to achieve a true sharing economy. On a closer look, these principles contain within them and describe the distinctive ways or practices of crypto, which can be considered as a culture. The crypto culture is therefore the ideas, customs and social behaviour of a particular people that inform and activate practices who, develop and maintain the platform (the creator, developers, and miners), and those who use the platform (users who transact crypto peer to peer).

The entirety of stakeholders in the decentralised blockchain, may hold differing social and political views, just as in any other type of organisation. However, crypto protocols dictate that for the 'greater good', priority is given to the group - the rest of the stakeholders in the blockchain rather the individual. The individual for example, as a single miner can race to approve a block through the proof of work mechanism using his or her own computational

power, however only the fastest to solve the puzzle will be rewarded with a mining reward, where the rest of the blockchain community is rewarded through the validation of blocks, and the successful continuation of the legitimate blockchain.

Thus, this system of attempting to achieve the 'greater good,' can be therefore considered a collectivist culture, adherent of the practice or principle of giving a group priority over each individual within it. As such, 'selfish' individualistic mining where for example a miner attempts to withhold a block, is not rewarded, nor tolerated by the community. The practices of crypto activity executed through technological protocols, are therefore not politically or socially value-laden free, but an expression of the ideas and behaviours by those who designed the system into a collectivist form, and the community that continues to maintain and support the collectivist ideals.

Collectivist cultures can work to benefit a community or state in that they offer common ideals or traits, specifically where group loyalty is encouraged and where decisions are based on what is best for the group. With the decentralised blockchain principles as outlined above, it can be said that the protocols work for greater emphasis based on common goals (validity and continuation of the blockchain), over individual pursuits (individual profit making from selfish mining).

Distributed Ledger Technologies as Modern Money: The Debate of the Future of Bitcoin and Virtual Currency Markets

The idea of using 'money' as a valued 'common instrument of exchange' is historically extraordinarily rich. Many commodities in the past have substituted for numismatic money, including salt, shells, cattle, cod, tobacco, sugar, hides and metals. A 'common instrument of exchange' whether in the numismatic sense, or through non-monetary exchange means, has enabled citizens from the earliest civilisations to modern day trading, to undertake the activity of exchanging with other citizens in society to attain goods or services which were required by an individual. Commerciality is therefore a product of society, as citizens live by the very activity of exchanging in some form. As Smith put it *"every man…becomes in some measure a merchant"* (Smith 1723-1790, 1976). This is a statement that is as true today in the 21st C

as it was in the 18th C when Smith made his observation, as exchanging remains a dominant activity in modern economic markets both in real space and cyber space.

Since the earliest inception of exchange markets, the 'common instrument of exchange' developed as fiat currency, fulfilling the traditional role as a means of avoiding the coincidence of supply required for a barter transaction. This development has continued into the postmodern world, where digital forms of fiat currency representation such as credit and debit cards are widely used as financial tools as means to repay a debt (i.e., an exchange). Such forms of modern exchange using digital currency as an intermediary, have taken on great technological advancement with an increasing use of digital methods to transact on both 'in person' and 'online' markets.

Forms of money have also expanded into the use of digital tokens for transacting which are used on the internet to buy, sell, and trade on many online platforms. This voucher-based system tends to reward customers for future purchases but only for a company, brand, or product. Such examples of platforms are online shopping markets which provide digital coupons awarded to their customers on a criteria basis i.e., for their loyalty to the company or brand; or online platforms in the aviation industry via airline websites who offer incentivised tokenisation in the form of airmiles to reward frequent loyal flyers. However, the use of tokenisation has taken on a new form in the postmodern era. Use of tokenisation has expanded out of voucher-based systems, to that of tokenisation representing money in digital form for purposes beyond incentivisation. This is where digital tokens are used for exchanging as a currency for their own sake, and not as part of an incentivised voucher-based system.

Digital currency, as a modern form of tokenisation takes a step closer to becoming 'money' for its very function that it can and is intended to be, substituted for numismatic or fiat currency; seeking to replace it completely in an online exchange. This is in opposition to a voucher-based system which only substitutes part of the exchange between buyer and seller, as the digital voucher, whether it is in air-miles or a supermarket token for example, is restricted in its function to act as 'money'. The voucher can only be used for its specified use outlined by the company which provides it. Conversely, with digital currency, it is purposefully designed as a digital representation of fiat currency that can be utilised on any

online platform, minus any use restrictions on a company, product, or brand. In this way, digital currency can be highly liquid and exchangeable tokens, which can be considered 'money' based on their design function and purpose.

Bill Maurer (2015) has questioned whether we are witnessing a kind of financial feudalism with the rise of competing currencies, marketplaces, and transactional networks. Evidence of a rise in alternative digital currencies, digital asset exchanges and crypto markets[13], seem to illustrate a fair and robust assessment of today's modern money markets. A plethora of cryptocurrencies are available in the informal free market, as are the crypto exchanges which facilitate their exchange from fiat to crypto, and peer to peer transacting. Similarly in the formal markets, traditional financial companies have taken steps to benefit from crypto market profiteering by means of offering various financial investment derivatives upon the cryptocurrencies themselves. For example, as of 2020 CME (Chicago Mercantile Exchange) group offer options on Bitcoin Future for trading (CME 2020). No longer are fiat (state backed) and crypto (non-state backed) in battle to be the major currency in any given state but now are increasingly inextricably tied together between formal and informal markets that are subject to one and others financial value and performance. These formal and informal markets that adopt cryptocurrency as an underlying asset share the commonality that they treat crypto as a digital asset, regardless of its legal and social identity.

The creation of crypto as a new digital asset class is however the consequence of a history of 21st century development of mobile money, which itself is nested within a longer period of credit and money development. This is a development that can be traced back to early Mesopotamia to the Babylonian code of Hammurabi; one of the earliest civilisations with which money and credit were recorded on physical ledgers in the form of stone steel structures. Whilst money and credit has existed for many centuries, Maurer points out that it is the development of mobile money that has characterized the money in the technological revolution. More specifically, due to the recent internet and IT infrastructure advances, this has enabled possibilities to be exploited to create new types of digital currencies, providing the examples of airlines, retailers, and Bitcoin - to which he refers to these creators as money

[13] Coinmarketcap reports 5,170 cryptocurrencies currently available across 20,851 market as of 10/03/20. See https://coinmarketcap.com/all/views/all/.

innovators. These innovators have focused their energies on creating what is exchanged and their source of value.

The other activity which has gained traction in the technological revolution concerns the development of alternative types of infrastructure, where existing and new currencies travel through payment platforms, such as with the likes of companies including PayPal, Visa and Mastercard. According to Maurer, this strategy of networks is due to the increase in 'transaction professionals' working on improving infrastructure to adapt for money to be transmitted more efficiently on a scalable level i.e., cheaper, or faster relative to the number of transactions. He attributes that the existence of these actors is a further sign of neo liberalisation in the money markets, as free trade and lower taxes are sought, but also importantly that the key institutions of modern capitalism i.e., the marketplaces themselves are being privatised (Maurer 2015). This is never clearer than in the number of markets operating, both formal and informal, offering crypto related products and services, to retail as well as institutional clients. Whilst these products, or crypto assets such as Bitcoin may be novel in themselves, the model of competing currencies is not entirely a new phenomenon.

Bitcoin as a digital currency representing monetary value, however, has faced a problem of definition. Some proponents argue it fulfils the characteristics of money (digital money) i.e., it is a store of value, it has some liquidity, and it is exchangeable. Yet others claim it better suits the definition of an asset due its price volatility. Economists have reported on the value of Bitcoin, with research focusing on the rising price of Bitcoin and its volatility (Ciaian, Rajcaniova, & Kancs, 2016; Hileman & Rauch's, 2017). Similarly, Bornholdt & Sneppen (2014) have analysed the market forces driving Bitcoin, specifically the perception of the value of Bitcoin. They conclude that;

"perception of value in a social system is generated by a voter-like dynamic, where fashions form" (ibid. p1).

These 'fashions' are based on perceptions, such as attitudes and values toward Bitcoin which in a social system, can then influence positively or negatively on the crypto market. However, without knowing what the human demand for Bitcoin presently is and in turn what societal consensus is for alternative currencies such as crypto, it is difficult to speculate how the public will a) define Bitcoin and b) how this definition will affect the crypto eco system.

Depending upon the societal consensus of Bitcoin's definition, whether Bitcoin can substitute as a real economic alternative to fiat currency, has been highly debated. Academics in the information technology sector (Barber, Boyen, Shi, & Uzun, 2012; Courtois, Song, & Castellucci, 2016; Eyal & Sirer, 2018), have questioned the notion whether Bitcoin will ever be an option for a stable and sustainable main currency. The security of Bitcoin has attracted much attention in this area, as it is essential for market stability that any sustainable currency is safe and secure for users. Currently, there appears limited research into society's thoughts and feelings about Bitcoin's definition, usability, or sustainability. It is therefore difficult to ascertain if, and how the public understand cryptocurrency.

As it is likely that news media has an effect on public understandings of cryptocurrency, this research attempts to contribute to knowledge by analysing how media narratives are constructed and how media institutions co-create societal understandings of cryptocurrency technology through various discourses. The idea that Bitcoin can represent a modern digital money in society, is only valid if the public understand it in such a way and are willing to accept this view. For example, regardless of technical or academic analysis on Bitcoin's currency features, public consensus will drive adoption one way or the other.

The assertion that digital tokens can be used as money or specifically as a type of virtual currency is however purely a utility one. Just because they *can* be used as a modern method of exchange, the sociological question is *should* they be used. Should cryptocurrencies be adopted, what groups in society would benefit and why? What affect would this have on the structure and relations of traditional banking system and the wider economy? How would cryptocurrency be supported both politically and legally? These are questions which form the complex debates and discourse around Bitcoin, including other altcoins and stablecoins.

Bitcoin as a type of digital currency, does not currently have legal standing in the UK as legal tender which could be considered a case against supporting the use of it within a free market - which is itself protected by law. The legality of Bitcoin is therefore a contentious issue due to its lack of legal standing in the UK (HMRC, 2014). Bitcoin is not circulated for public use by the UK's central bank – the Bank of England, or by the Royal Mint. Currently, Bitcoin is only able to be circulated once mined on the network and acts as a decentralised currency.

This is in stark contrast to fiat currency, which is circulated, controlled, and regulated by the Bank of England as a central authority. Operationally, the centralisation and decentralisation feature are an important distinction to make between fiat currencies and cryptocurrencies. The very nature in the way they operate is politically and economically influenced to varying degrees. The concern of financial governance within society raises questions of who should create and control monetary policy and to what degree, which has invoked controversial socio-political debates centred around use of crypto currency vs fiat currency in a postmodern society.

Cryptocurrency is created and controlled by its users who are a non-state entity, and therefore crypto is not legally enforced by the UK government as a currency. Yet crypto can function like any other currency - to buy and sell goods or services, be traded as an asset, or be traded in an analogous way to a foreign exchange currency – GDAX is an example of the latter[14]. As a result of Cryptocurrencies currently falling outside the remit of the state and the Bank of England's monetary policy (including its regulatory safeguards) has led some critics to argue that crypto poses a threat to the stability of the financial system by destabilising the economy (Inman, 2014; Jopson, 2016). On the other hand, the use of fiat currency in society has had a long history of legitimation through political support by governments with its bestowed legal tender status, economic regulatory frameworks protections, and legal mechanisms in place for arbitration and dispute resolution.

The Monetary Control Debate: Bitcoin as an Expressed Form of Socio-Tech Resistance to the Traditional Financial and Banking System

The Bank of England recently announced that it, along with a group of international central banks, are discussing potential use cases for central bank digital currencies (CBDC) (Bank of England 2020). The group of banks, including the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, the Sveriges Riksbank and the Swiss National Bank, and the Bank for International Settlements (BIS), are working together as a group to explore the possibilities of implementing CBDCs in their home jurisdictions. The group cochaired by Benoît Cœuré, Head of the BIS Innovation Hub, and Jon Cunliffe, Deputy Governor of the Bank of England, will consider and assess CBDC use cases, including their;

[14] GDAX – Global Digital Asset Exchange Platform also known as Coinbase Pro is an online platform where digital assets can be traded (Pro, n.d.).

'economic, functional, and technical design choices, including cross-border interoperability; and the sharing of knowledge on emerging technologies' (Bank for International Settlements 2021).

What is clear, is that there is room for digital currency innovation that is state backed in the future of money. The Bank of England stated that a CBDC:

> *"could provide households and businesses with a new form of central bank money and a new way to make payments. It could ensure that the public has continued access to a risk-free form of money issued by the central bank, which may be especially important in the future as cash use declines and new forms of privately issued money become more widely used in payments"* (Bank of England 2020, 4).

The inevitability of a state backed digital currency means it is likely that the implementation of a CBDC is a question of when, rather than if. What is more questionable is what the use case will be for a CBDC, and how the Bank of England (BoE) will decide to design, implement, and integrate it into the UK's existing financial system (see Coulter 2020). The BoE's white paper sets out three models of central bank digital currency that the Bank of England might consider but sees CBDC as an opportunity to achieve their objectives of 'achieving and maintaining monetary and financial stability' (Kumhof and Noone 2018).

To reach this goal the Bank of England have commonly exercised their right to vary interest rates and undertake quantitative easing for an increase in money in circulation, or to control inflation. Considering the economic effects of the coronavirus pandemic of 2020, when markets were at an all-time low since the 2008 market crash (Baltaji 2020), CBDCs might seem an attractive option for monetary expansion. This would not be the first time the Bank of England has exercised its powers in stimulating the economy with currency alternatives and other monetary policy choices.

Since the Bank of England's charter by Parliament in 1694, monetary policy in the United Kingdom has typified the way in which the political and economic activity of fiat currency creation has been undertaken and legally enforced. Key decisions on how much currency and

what types of currency are in circulation, are predominate examples of the ways in which powers are exerted through monetary policy by this central authority. It particularly illustrates how the central bank is an important actor and plays a vital role within the political economy. Currency creation can then be considered a highly political and economic activity, with the Bank of England now able to explicitly set monetary policy around this activity. Since its implementation, the institution has solidified its central powers, including becoming the only bank with the power to create currency bestowed as England's legal tender. This is discussed in more detail in chapters 3 and 6 where the governance of virtual currencies and disruption of money markets is analysed and contextualised with a background provided to how money has been historically governed in the UK by the state central bank.

As the Banks of England's powers of currency creation and policy powers have increased since its parliamentary charter, opponents have argued that this type of financial system is a monopoly where the power to create currency and influence the wealth of a country is concentrated into the hands of a small group of elites in the banking, corporate and legal industries. In a Marxist fashion, the argument is that these elites aim to serve the few, and not the many through the structure and relations of the financial system.

Arvind et al (2018, p. 2) explain how this concentrated social power is entrenched into the current financial system, claiming that *"elite groups and clusters of power and influence can play a critical role in determining who gains and who loses within the financial system".* Particularly, they highlight how in their own words, how;

"*Bank of England in the wake of a nineteenth-century banking scandal shows the facility with which the legal profession has long been able to stay close to and intertwined with the very core of finance and to influence its elites"* (Arvind, T. Gray, J. Wilson, 2018, p. 4)[15].

Societal resistance against this monopoly of elite can be witnessed in many forms by different actors, which in part has been fuelled by the 2008 United Kingdom financial crisis. In the public arena, socio-political movements are witnessed such as the 'Occupy' activist

[15] See (Arvind, T. Gray, J. Wilson, 2018) for a comprehensive illustration of the role and relationships of the elite within the 'Magic Circle' in London to the Bank of England.

movement who aim to bring *"together concerned citizens to fight for a new political and economic system that puts people, democracy and the environment before profit"* (Occupy, n.d., p. 1). With a similar vision for a monetary system that supports a 'fair, democratic, and sustainable economy', the not-for-profit 'Positive Money' group campaigns by educating, researching, and influencing decision makers, because in their opinion;

"Right now, the money and banking system isn't working for most people. It causes house price bubbles, high levels of debt and rising inequality. It lays the foundations for financial crises, and it harms our environment. Big banks have too much power and there is a large democratic deficit in the way the Bank of England makes decisions" (Positive Money, n.d., p. 1).

Mark Carney, Former Director of the Bank of England admitted himself that *"in the depths of the global financial crisis, the coincidence of technological developments and collapsing confidence in some banking systems sparked the cryptocurrency revolution"* (Carney, 2018, p. 6). The formation and implementation of crypto as a backlash to the democratic deficit within the banking system, could therefore be considered as an expressed techno-economic form of liberalism. Bitcoin does indeed have a history of libertarian philosophy, due to its Cypherpunks roots with its concerns around privacy and surveillance of users in their online activities.

Further, Bitcoin does indeed embody a liberal free-market philosophy, owing to its ideals of individual liberty to trade as one desires with private digital money. This is backed by its decentralised open-access voting system and its functional design of flattening hierarchies. Its design philosophy serves to disseminate power and transparency among its users on the decentralised network. Each user has access to a copy of the ledger and can vote for transactions to be validated. In theory, any person with enough computing power can participate in the network as a miner holding distributed power, or with lesser resource, at the very least become a crypto user to buy and sell the digital commodity.

On the surface there appears no monopoly or 'elite' that one must contend with to participate in the system of the Bitcoin network. At a macro level, this is a logical observation of the

Bitcoin architecture. The free and free access to all for participation is certainly one of the advantages of Bitcoin that its advocates would preach, along with the wider message that crypto is more trustworthy than fiat, due to the supply being fixed and it being free from risky private bank practices. And whilst this argument may present elements of truth, despite such benefits, it is a naïve conception of Bitcoin and is an oversimplified analysis.

At a micro level of Bitcoin architecture, the power dynamics are far more complex due to the social relations and access to power resource between the different actors within both the network and crypto eco system. A closer techno-sociological exploration at the structure would identify that structurally hierarchies must exist within the network for blocks to be validated. Only certain blocks will eventually make it into the blockchain and thus be considered legitimate blocks. To achieve a legitimate block a user must computationally compete to solve a mathematical puzzle. Competition is a factor built into the system for the purpose to incentivise miners to participate by working on the network and they receive a reward for finding valid blocks. A purpose which has the end of incentivising miners so that they are encouraged to participate on the network but are also discouraged from attempting to hack the system.

This competition to find valid blocks indicates that as not every user's block will be validated and subsequently published on the public ledger, resources must also differ between users. A mining pool for example who have more computational resource (i.e., better hash power) than the average individual miner, or small group of miners, have an improved chance of solving the computational puzzles. They consequently then have a statistically higher chance of finding a valid block on the system. Thus, computer hash power and other resources required for system participation can be unequally distributed. Unequal distribution of power can lead to inequality within the system. Mining Bitcoin becomes more centralised with ASIC's, mining pools and farms which can be run by single entity. ASIC's can be expensive and only those with enough capital can participate contributing to a centralising mining process which acts against Bitcoin's philosophy to work as a decentralised progressive technology, which as a monetary tool seeks to offer equal voting power and open participation to all members of society.

This SCOT deconstruction has revealed how complex cryptocurrency technology can be both in its structural architecture and design functionality. The famous narratives that Bitcoin is a private money that anyone can enter without restriction, and transact in a private and uncensored manner, is a misnomer. So is the misconception that because of these design functionalities such as increased privacy, open access, and freedom from state and bank control; that extreme political groups particularly of the right (Golumbia 2015) or criminals (Albrecht et al. 2019) are the key customer target group Bitcoin use and other privacy enhancing cryptocurrencies. This may be true to the extent that they are used as tools for illicit purposes by criminals, however, this is over-simplifying the analysis and does not explain the bigger picture; why other groups in society decide to interact with cryptocurrency, or why some groups do not. Are there other features of the technology that appeal to other socio-economic groups, and why? For example, further studies would benefit from understanding what design features appeal to millennials, who we know are a large legitimate user group of crypto.

As discussed in the introduction, the stereotypes of extremists and criminals may have come from perceptions of cryptocurrency informed by the media, as the way the public understands cryptocurrency can be heavily influenced by sensational and extreme crypto stories. It is then imperative to analyse how cryptocurrency are portrayed in the media, to provide some answers to this bigger sociological crypto puzzle. Analysing the global media discourses is the first step to take.

Thesis Outlook

This thesis central research question is 'What are the key cryptocurrency discourses that exist in the crypto space, and by whom are they created?' This is analysed first by identifying the discourses and then considering how media outlets can produce meaning toward cryptocurrency by deploying various narratives across discourses[16]. This thesis does this by showing how news media in different countries ascribe diverging meaning to cryptocurrency

[16] This is discussed in more detail in the methodology chapter.

technology, offering audiences varied images of what cryptocurrency is through discourse appropriation.

This enquiry is pursued in this thesis with the following structure. Chapter 1 is this introductory chapter, which has set the scene for this study with an introduction to and background literature of Cryptocurrency and Blockchain. Chapter 2 describes the methodology of the study, explaining both the theoretical and methodological underpinnings of the study design. Chapter 3 is where the findings are discussed regarding cryptocurrency and its financial regulation, in what creates the crypto-governance macro discourse. Chapter 4 discusses the study's findings in relation to the link between cryptocurrency and crime and the subsequent crypto-crime macro discourse. Chapter 5 reveals how other states, namely China and Venezuela as case studies, have responded to cryptocurrency by developing their own versions of Central Bank Digital Currencies, and the potential consequences this may have for the crypto space. Chapter 6 demonstrates how states have responded to cryptocurrency discourse, in relation to regulation and governance in the form of introducing Central Bank Digital Currencies (CBDC), with a specific focus on the impact that a UK CBDC is likely to have on decentralised cryptocurrencies. Chapter 7 concludes the thesis with a finale of a summarisation of the key findings of this crypto study, teamed with the implications set out that each crypto discourse has on the crypto-economy and wider civil society.

CHAPTER 2: Methodology

Contents

Theoretical Methodology of Study

This chapter explains the methodology of this mixed methods cryptocurrency study and explores why a computational discourse analysis was chosen to explore the central research question of this thesis, which is "what are the key cryptocurrency discourses that exist and by whom are they created, in the crypto space?"

An Inductive Approach to the Cryptocurrency Space

Cryptocurrency is attracting great attention in the financial and economic markets. It has increasingly over the last five years been a phenomenon addressed by some sociologists and political economists (Golumbia, 2016; Dodd, 2018a). However, such studies, whilst highlighting interesting narratives through various theoretical lenses, do not give due care and attention to empirical findings across the crypto social space. Nigel Dodd (2018a) for example in his paper, references one survey of 510 members of the Bitcoin community on the Bitcoin forum conducted by a student and a few disparate blogs. Yet a systematic and thorough discourse analysis is not undertaken, nor referenced. Dodd claims: *"I subject this claim to critical scrutiny by exploring the nature of Bitcoin as a social space"* (Dodd, 2018a, p. 37), but appears to omit empirical evidence beyond an internet survey, concluding on various Bitcoin narratives. Dodd locates Bitcoin narratives in monetary discourses which are skilfully embedded in the grand theories of Locke, Rousseau, and Hayek, among others.

As useful and thought-provoking that Dodd's analysis is, it is lacking systematic empirical underpinnings. This PhD thesis puts forward that a pragmatic analysis was necessary to empirically discover what crypto narratives are, and who they are constructed by in the wider crypto space. The discovery of narratives is **a priori,** to assumptions linked to historical or current debates, upon monetary discourse, political theory, and social action. Golumbia (2016) on the other hand, takes more of a political focus in explaining how Bitcoin narratives

are often associated with ideologies the right-wing political groups but again is empirically vacant (Golumbia, 2015). This thesis provides a rigorous inductive approach which makes no conclusions before the data, but instead allows the data to emerge in an inductive style to produce an interpretive constructivist theory of the crypto space.

Computational Theory for an Inductive Crypto Study

Nelson (2020) offers a framework for inductive contemporary research, in which she argues that by adding computational techniques it provides the;

> *"ability to incorporate massive amounts of data into theory-generating research in a rigorous and reliable fashion, mitigating the shortcomings of purely qualitative research. By staying grounded in an interpretive relationship with the data, my proposed method also mitigates the shortcomings of purely computational methods, namely the output from computational methods is often difficult to interpret in meaningful ways"* (Nelson, 2020, p. 5).

In a similar vein, this study benefitted from scaling up to incorporate substantial number of crypto articles into theory generating research - akin to a grounded theory inspired approach. This mitigated a strictly qualitative method approach, where human capacity and time constraints would limit the number of articles analysed in the study. The negative consequence of embracing a purely qualitative approach in this study would have presented the risk that a particular discourse i.e., a narrative trend and/or interpreted construction is missed or overlooked if they were not present in the small hand collected news corpus.

The corpus in this study aimed to cover as many different news outlets internationally as possible (within the given timeframe) to achieve a 'macro' snapshot of crypto coverage, within a given period and space. It was therefore necessary to collect big data, in the form of thousands of articles to inform the study. This process was essential for a discourse analysis, to achieve the central research question which set out to uncover the existing cryptocurrency narratives in the crypto space.

Discourse Analysis

Co Productionist Approach for Critical Inductive Discourse Analysis

Discourse analysis is a research method for studying written or spoken language in relation to its social context. Analysing discourses in a critical fashion, can contribute to knowledge of meaning making practices in how an individual, organisation, political or social group represents a narrative and constructs a discourse. This construction is made by actors who themselves have been subject to constructed narratives in the past and present where, as Achugar (2018, p. 279) explained that *"in every instance our actions make history by impacting others, but at the same time we are affected by the actions of others with whom we co-exist and who have come before".* However, how these discourses are negotiated when there is an infantile past for historical narratives is interesting. For example, new phenomena such as cryptocurrency leads actors to struggle to rely on past discourses or hegemony which are related. Instead, they may be impacted by other similar narratives of modern technology products which share similar characteristics. This however can become complex when there are competing priorities or ideologies of technological products.

Communication analysts who conduct discourse analysis can do so through various mediums of communication, including but not limited to: Books, newspapers and periodicals, marketing material, such as brochures and advertisements, business and government documents, websites, forums, social media posts and comments or interviews and conversations. The level of communication analysis can range from vocabulary, grammar, structure and genre, non-verbal communication, and conversational codes. With the rise of social media usage in recent years, many discourse analysts have also studied social media, often with the aim to summarise large conversational flows, to answer 'what' and 'who' questions i.e., what the users are talking about? What matters most to them? What is trending right now? Who is talking about what? Who is talking to whom? (Lipizzi *et al.*, 2016).

This research study adopted this style in discourse analysis by being concerned by the 'what' and 'who' of questions of cryptocurrency. The key research questions to this end were 'what

are the key cryptocurrency discourses that exist and by whom are they created in the crypto space?' These key questions drove the discourse analysis, to explore the scope of the cryptocurrency space.

Computational Discourse Analysis: A Quantitative Tool for a Qualitative Approach

Harnessing both quantitative and qualitative methods in this mix method study, allowed for big data to be analysed by use of a quantitative tool whilst maintaining an iterative qualitative approach. Once the key discourses had been identified via topic modelling, each narrative could be analysed thoroughly, accounting for nuances within each discourse across article publication outlets. This involved an iterative process of 'zooming out' to see the data in context i.e., looking at the big data trends, and then 'zooming in' on the quantitively identified key topics to qualitatively interpret the data.

This approach is unique to the study of crypto, where the literature to date, makes a priori assumptions on the empirical evidence of crypto discourses. Further, this study and its approach sets it apart from other socio-political crypto studies where often Bitcoin particularly is focused upon (Golumbia, 2015, 2016; Dodd, 2018b) but often excludes the other cryptocurrencies, actors and institutions and subsequent discourses, which constitute the wider crypto space.

Media Audiences, Making Meaning, and Representations

The digitisation of news media, particularly with social media platforms, has impacted the quality of news, and in part contributed to disinformation content and fake news (Lee, Lindsey, and Kim, 2017; Shu *et al.*, 2017; Martens *et al.*, 2018; Waszak, Kasprzycka-Waszak and Kubanek, 2018). This study avoided including news media and blogs on social media platforms for this reason, instead only analysing news articles from reputable outlets, defined as professional newspapers in print (or their respective online versions).

While this study did not include social media produced or promoted news stories, the news articles in the corpus may have been reached by the original news article readers, distributed by a social media platform or aggregate news site, such Yahoo or Google news. Therefore, this Discourse Analysis cannot dismiss any potential 'content overload of news consumption' effects on the original readers. However, in terms of media consumption, it considers instead other socio-economic and cultural 'media effects' through the lens of Stuart Hall's (2003) book 'Culture, Media and Language' and his framing of encoding mass news media communication. The analysis in this thesis is limited to the encoding elements of Hall's framework (and does not account for or make any claims on the decoding elements of Hall's framework applied to the news articles, as there is no data to support such claims).

The following two sections briefly give an overview of the 'Production – Circulation – Consumption – Reproduction' framework to highlight how a structure of news circulation is produced and communicated through the delivery of connected but individual moments—production, circulation, distribution/consumption, reproduction' (Hall 2003). This approach is distinguished compared to earlier loop models where they have been criticised for their linearity – sender/messenger/receiver – which are models that focus on message exchange but are in the absence of a structured conception of the different moments when complex structure of relations occurs (Hall, 2003). Consequently, Hall's framework can account for the underlying economic processes, social structures, and power relations, that were beyond the theoretical frame of reference in earlier accounts of linear mass media model effects (Carrabine, 2008).

Hall (2003) offers a valuable frame of reference, that can be adopted to understand the media and the social construction of crypto crime through Discourse Analysis. The economic processes, social structures and power relations involved in the production, distribution and consumption of crypto news media, sheds light on the news making process i.e., the perceived 'newsworthiness' and the activities of journalists such as cultural decision-making but also accounts for the social and political relations which can influence institutional narratives.

Production Media Framework: The Social Cultural Construction of Cryptocurrency

This process Hall (2003, p. 117) argues should be thought about it in terms of *"a structure produced and sustained through the articulation of linked but distinctive moments—production, circulation, distribution/consumption, reproduction"*. The process he emphasizes is a complex structure in dominance which is sustained via connected practices, where the production and consumption of media messages are structurally determined by powerful influences (including the medium used, discursive conventions and institutional constraints). He explains how a 'discursive' product is organised through the operation of codes within the series of developing discourse.

The production process involves the 'means' (its material instruments), as well as its own consortium of social (production) relations (the organization and combination of practices within media apparatuses). This leads to the discursive form from which the circulation of the product takes place, including the distribution to audiences (Hall, 2003). Once this part of the process is complete, the discourse must then be translated (or decoded) by audiences, by being transformed into social practices. In this way the circuit of production, circulation, consumption, and reproduction is complete. This process according to Hall (2003, p. 117) can only be complete and effective, if meaning is transformed by readers, for, if *"no 'meaning' is taken, there can be no consumption"*.

'Preferred' meanings produced and promoted by powerful media, Hall (2006) argues, can engender deeply entrenched ideologies of race, gender, class, and ethnicity, as the media become powerful active agents in 'othering' certain outgroups. The cultural maps of meaning that media institutions possess, inform construction of 'news' and events through discourse, which is a distortion of reality. Due to reality not having a fixed meaning in and of itself, there is no news until it has been 'constructed.' Thus, for Hall, culture (and media institutional culture) is a system of representation, containing maps of meaning channelled from values, beliefs and ideologies, leading culture to be primary to the event of news construction.

Through Stuart Hall's lens, the sociological structural view therefore considers media articles as *"forms of representation that are commercially produced commodities, which circulate as culturally meaningful objects and are actively interpreted by audiences in diverse settings"* (Carrabine, 2008, p. 12). This framework can be applied to the findings of this crypto study to empirically identify how such 'cultural commodities' (i.e., the media articles) portray cryptocurrency as a cultural digital product. Further the findings can be applied to analyse how through the social production of discourse, media outlets can produce meaning and transform attitudes toward cryptocurrency through attempted 'preferred' fixed meanings, which result in varying media effects. Such attempts fixed 'preferred' meanings provided by media institutions through discourse may be laden with socio-economic prejudice (i.e., gender and class) and socio-political assumptions (i.e., tech determinism beliefs) with biases around cryptocurrency as a digital technology, to 'culture' the technology.

Importantly, this study is the first to show both theoretically and empirically, that when crypto is cultured in this way through discourse; where perspectives are not challenged and news is not contextualised, a distorted reality of cryptocurrency is (re)presented for readers to consume. The media articles are therefore viewed as cultural commodities. Further, during the process of distribution of discourse via these cultural commodities, readers decoding the commodities, find cryptocurrency as a technological concept to be a digital product that has been already 'cultured' by media. This said, this thesis does not make any further arguments for the ways meanings are negotiated by audiences but instead focuses on the level of representation by the news media outlets as the constructors and distributors of messages, through discourse appropriation. Hall's encoding/decoding framework is therefore important, but for this study, due to its design, only the elements of encoding are suitable for understanding the level of representation of cryptocurrency by the news media.

Natural Language Processing (NLP) for Discourse Analysis using Topic Models

Natural Language Processing (NLP)

Embracing computational methods in the social sciences in the form text analysis can offer the benefit of scaling up a research study's coding system, to analyse copious quantities of documents, that could never be read by one researcher (or small group) alone, due to limited

human capability. Natural Language Processing - supervised and unsupervised machine learning techniques can therefore offer an advanced range of text analysis tasks, such as identifying references to people, places, organizations, events, and more. Recent advances in machine learning algorithms have increased dramatically due to more available distributed computing power, big data available in a digital form, and a more expansive understanding of the structure of human languages (Cambria and White, 2014; Hirschberg and Manning, 2015; Kocaman and Talby, 2021). NLP has recently transformed health research (Clarke, Foltz and Garrard, 2020; Carriere *et al.*, 2021; Ofer, Brandes and Linial, 2021), business and management research (Garg *et al.*, 2021; Sri, 2021; Tarnowska and Ras, 2021), environmental research (Cai, 2021; Wu *et al.*, 2021), as well as legal research (Agrawal, Jagannathan and Delhi, 2021) to name a few.

Discourse Analysis using Topic Models

Topics models have been adopted in the social and political sciences to identify media discourses and to understand the framing of narratives, particularly in national media representations. In an exploration to understand events in society, such as national crisis, topic models have been used to evaluate media coverage and explore how mass media shapes citizens understandings of the events. A key example of this, was Heidenreich *et al.*, (2019) study into the so-called 'European refugee crisis'. The authors analysed the national media discourses in Hungary, Germany, Sweden, the United Kingdom, and Spain for the time. They applied Latent Dirichlet Allocation topic modelling in five languages and based on N = 130,042 articles from 24 news outlets. Similarly, Grimmer (2010) used topic models as a methodology to study the themes in political press releases, and Törnberg and Törnberg, (2016) used topic models for analysing online forums.

The utility of topic modelling for discourse studies, is therefore popular within the social sciences, for automatically discovering thematic information in large collections of texts. However, it has received limited criticism from Brookes and McEnery (2019), who in their critique of topic models for discourse analysis highlighted some shortcomings. They stated their findings, which confirmed:

"the topic modelling approach was able to group texts into 'topics' that were truly thematically coherent with a mixed degree of success, while the more traditional approach to

discourse analysis consistently provided a more nuanced perspective on the data which was ultimately closer to the 'reality' of the texts it contains" (Brookes and McEnery, 2019, p. 3).

A look at their method gives more of an explanation behind these findings. The authors first questioned how reliable an indicator the topic word-lists were alone of the themes in the texts assigned to that topic. Their response was that topic word-lists alone were of limited use for interpreting the topics produced by the computer (Brookes and McEnery, 2019).

The authors second research question addressed how thematically coherent the topics were generated by the computer. Once they had qualitatively analysed the texts assigned to each topic in phase 2 of our study, they found that, of the 20 topics we considered, just 6 exhibited some theme or other commonality running through *all* 20 assigned texts. Thus, the majority ($n = 14$) of the topics therefore lacked thematic coherence throughout and were mixed in terms of their reliability (Brookes and McEnery, 2019).

Based on the above results, such a study could cast doubt over the thematic coherence of the 'topics' generated using topic modelling methods. The utility and usefulness of topic modelling for exhibiting thematic consistency has been questioned. However, there stands a crucial difference between the Brookes and McEnery's (2019) study and this presented crypto study. Brookes and McEnery's study were extremely broad, in which they attempted to thematically group texts into 'topics' emerging from an ample collection of online patient comments about the National Health Service (NHS) in England. As human language can be so vast, particularly when talking about complex human experiences, simple cooccurrence counts may not be the best solution for thematically organising such large unstructured text (Günther and Quandt, 2016).

In this crypto study, only one theme was queried and analysed – cryptocurrency. Therefore, as the news articles had already been filtered to the one subject of cryptocurrency, the likelihood that topics relating to it would be more relevant, than discussions around a multifaceted themes of NHS complaints and experience topics, which used a host of language in complex ways. Further, in this crypto study, mainstream news reports were sourced from traditional news outlets, that would have gone through a journalistic process of professional editing and publication quality control, hence reducing risk of messy data interfering with

computation. With the NHS study, the unstructured patient complaints, could have yielded unclean and complex data which may have negatively affected topic word results.

Considering the critique, Brookes and McEnery (2019) did find some value in topic modelling providing some recommendations for researchers employing topic models. One of these recommendations was that "*the examination of the topic word-lists should form the initial part of the investigation and be followed up with qualitative, more contextualised analysis of the texts making up the topics"* (Brookes and McEnery, 2019, p. 19). This recommendation is in line with this research study, where although topic models were used in a quantitative manner, qualitative human iteration formed various stages throughout the process. This was most clearly witnessed at the stage where both the LDA and CorEx models were qualitatively compared against on the quality of the topics produced, using the researchers' pre-existing knowledge of the cryptocurrency space.[17]

Topic Model 1: Latent Dirichlet Allocation (LDA) Topic Model

Latent Dirichlet Allocation (LDA) topic modelling is one technique in the field of natural language processing text mining, that is a process to automatically identify topics present in a text object and to derive hidden patterns exhibited by a text corpus, based on probabilistic latent semantic analysis (Nikolenko, Koltcov and Koltsova, 2017). Using Bayesian inference, a topic therefore, is a distribution over a fixed vocabulary, where unobserved (or latent) topics are assumed to be generated first before documents. Documents are generated from a mix of topics in different proportions, in this way it is understood as a generative process (Blei, 2012). A key assumption of LDA topic modelling is that documents can exhibit multiple topics but only the number of topics is specified in advance, it is hence a generative process.

Blei (2012, p. 79) argued for the use of topics modelling, claiming that the *"utility of topic models stems from the property that the inferred hidden structure resembles the thematic structure of the collection"*. Adopting probabilistic topic models for text analysis as an algorithmic solution, can be therefore especially useful for the purpose for document

[17] This is discussed in more detail in the following Topic Model sections.

clustering, organizing large blocks of textual data, information retrieval from unstructured text and feature selection (Ding, Li, and Peng, 2005).

This study adopted computational methods using a mix of both computational text analysis and human qualitative interpretation for the discourse analysis. In the first instance, the quantitative work was performed using the Python programming language utilising Natural Language Processing (NLP) to undertake the unsupervised learning technique of Latent Dirichlet Allocation (LDA) topic modelling. The unsupervised approach was chosen so that the topics could emerge out of the data, situated in a grounded theory methodology. As such, no topics were given or 'fixed' to the model, as would have been the case in an alternative supervised approach.

The unsupervised approach was used in this crypto study for finding and observing the bunch of words known as "topics" in large clusters of texts. Topics can be defined as a repeating pattern of co-occurring terms in a corpus; however, the name can be misleading. As Jacobs & Tschötschel (2019, p. 471) explained:

> *"topics are clusters of words that reappear across texts, but the interpretation of these clusters as themes, frames, issues, or other latent concepts (such as discourses) depends on the methodological and theoretical choices made by the analyst".*

Iterative qualitative interpretation was then required from the researcher to undertake a discourse analysis, which presented as the most frequently co-occurring across the corpus; understood as the key topics. Both computationally and qualitatively, the data was pre-processed before analysis, which broadly involved cleaning and text processing the data.

Topic Model 2: Correlation Explanation (CorEx) Approach

The LDA model produced a set of topics that were qualitatively coherent to a human reader in terms of topic interpretability, which produced some good coherence scores (discussed in detail in next section). However, an alternative approach was taken to explore and compare topic models, in terms of topic quality. At this stage, significant effort and time was spent to find an appropriate topic modelling algorithm. The LDA model produced some 'junk' topics.

These ‘junk’ topics while semantically related to the topic of cryptocurrency, did not provide, or contribute to a discursive discourse for analysis. A simple example of one of these ‘junk’ topics was topic 0, which included the term ‘Port Elliot’ which referred directly to a past cryptocurrency event held at Port Elliot, Australia. The model therefore correctly deduced that this event was relevant to the query of cryptocurrency in the corpora of articles, however, for my discourse analysis this did not provide any insight into media framing of cryptocurrency. Consideration was given to relevant topics that instead were qualitatively understood and differentiated as a construction of ‘value framing’ or ‘perspective’ of cryptocurrency, that were picked for publishing by news media outlets.

In the second instance of modelling, the Correlation Explanation (CorEx) topic model (Gallagher *et al.*, 2017) was used to explore the results it presented. In particular, the aim was to explore the CorEx model results to reduce the amount of junk topics. Gallagher et al., (2017, p. 529) introduced Correlation Explanation (CorEx) in 2017, explaining it as *“an alternative approach to topic modelling that does not assume an underlying generative model, and instead learns maximally informative topics through an information-theoretic framework”.* Most probabilistic generative topic models (as is the case with LDA models) stipulate mechanisms for how documents are written to infer latent (hidden) topics. In the case of LDA models, the mechanisms may be explicitly stated (Blei, Ng and Jordan, 2003) and can relate to numerous generalizations that account for meta data within the corpus, such as the authorship (Steyvers *et al.*, 2004), document labels (Blei and McAuliffe, 2009) or hierarchical structure (Blei, Griffiths and Jordan, 2010).

The CorEx approach reduces model assumptions compared with LDA models, by adopting an approach to learning about latent topics that is grounded in information theory, where the framework generalises to hierarchical and semi-supervised extensions with no additional modelling assumptions. Word-level domain knowledge is *“flexibly incorporated within CorEx through anchor words, allowing topic separability and representation to be promoted with minimal human intervention”* (Gallagher *et al.*, 2017, p. 529).

Gallagher et al., (2017) claim that CorEx produces topics that are comparable in quality to those produced by unsupervised and semi-supervised variants of LDA. Gallagher *et al.*, (2017) found throughout an assortment of datasets, metrics and experiments the topics

produced by CorEx yielded document classification results that were on par with (or better) than those produced by LDA topics. In terms of clustering, CorEx consistently produced document clusters of a higher rank. Words were ranked according to mutual information with the topic, and topics were ranked according to the amount of total correlation they explained.

This crypto research study confirmed the findings of Gallagher et al (2017), finding that the CorEx approach yielded better clusters, in terms of producing better topics than the LDA model, resulting in less junk topics. Therefore, the CorEx approach was the preferred methodology to proceed with the crypto discourse analysis.

Study Method: The Process

Data Collection and Preparation

To construct a suitable corpus of documents for analysis, the researcher manually collected and downloaded media articles in the form of text files from traditional news media outlets. The articles were retrieved from across 60 countries globally, covering the broad theme of 'cryptocurrency'. 4200 news articles written in the English language were drawn from the Nexis news database and 'News API', using the query 'cryptocurrency' between the period July 2018 to June 2020. See Figure 1 for article publication distribution across country of origin.

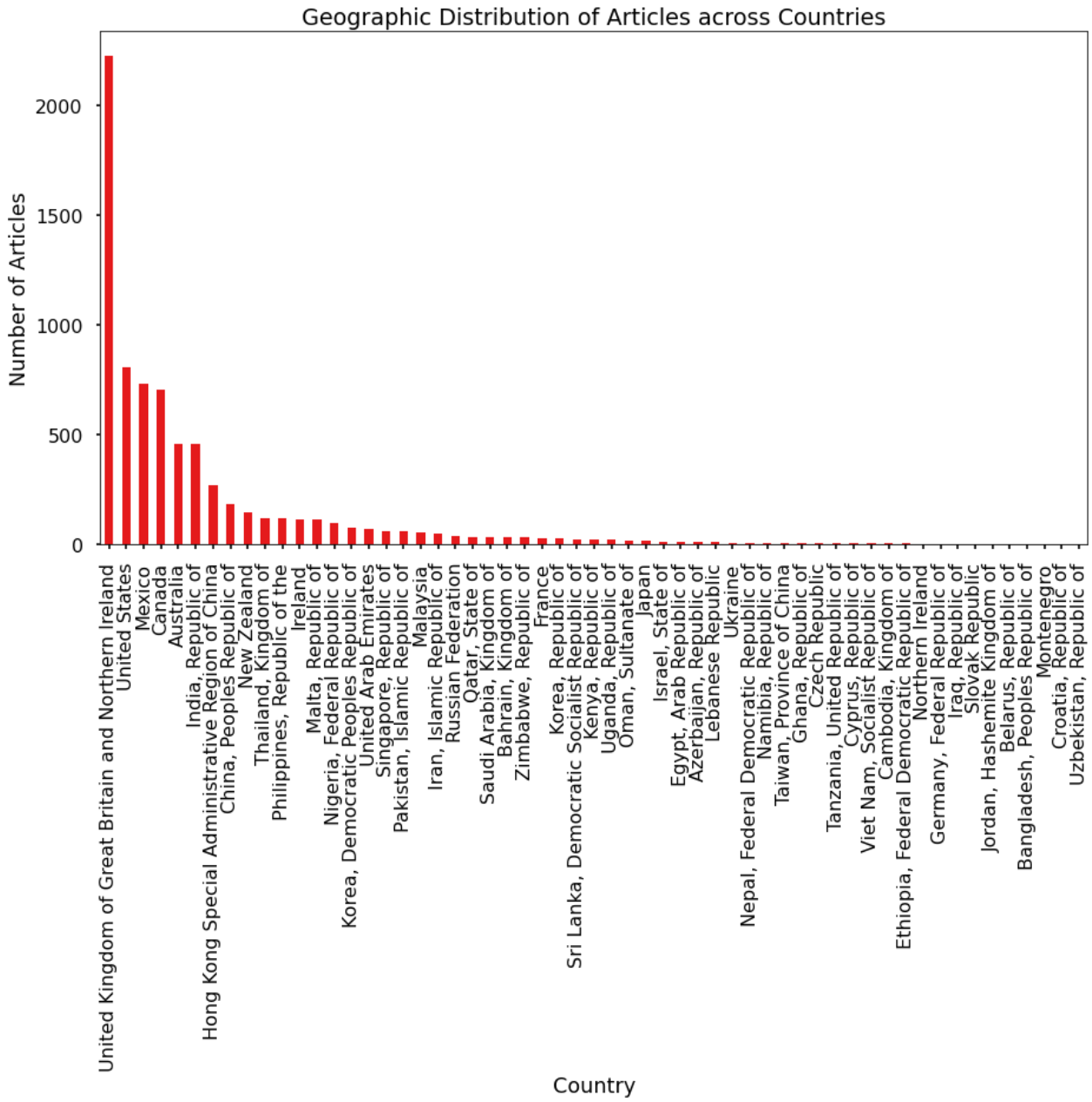


Figure 1

Natural Language Pre-Processing Stage

After the text had been collected and collated, the text was pre-processed in Python using the SpaCy (Honnibal M, 2017), Gensim (Rehurek, R. & Sojka, 2011) and Pandas (Mckinney, 2010) python packages. Pre-processing was a prerequisite prior to conducting the Natural Language Processing (NLP) on the text. The NLP stage consisted of four broad steps; 1. to load the input data (crypto text articles), 2. to pre-process the data, 3. to transform documents into bag-of-words vectors and finally 4. to train the LDA model.

SpaCy is a free, open-source library for advanced Natural Language Processing (NLP) in Python. SpaCy explains that it is;

"designed specifically for production use and helps you build applications that process and "understand" large volumes of text. It can be used to build information extraction or natural language understanding systems, or to pre-process text for deep learning" (Honnibal M, 2017, p. 1).

Part of this process was to train the phraser which included lemmatizing the text articles (assigning the base forms of words (spaCy, no date a)), tokenizing the text articles (segmenting the text into words and punctuation marks etc (spaCy, no date b)) and to compute bigrams (multi word expressions or common phrases) using Gensim (Rehurek, R. & Sojka, 2011).

After pre-processing the text, spaCy was then used to 'parse and tag' a given document. This was where the trained pipeline and its statistical models were applied, enabling spaCy to make predictions of which tag, or label was most likely to apply in the context. One of spaCy trained components included binary data that was produced by showing the corpus enough examples for it to make predictions that generalized across the language – for example, a word following "the" in English was most likely to be a noun.

Named Entities

Named entities (a real-world object that is assigned a name, i.e., a person or place etc) were recognised by SpaCy in the documents by asking the model for a prediction. Specifically, top cryptocurrency key actor names and/or institutions were predicted by the statistical model based on the corpus of crypto articles. The following top count entity results were as follows:

Query	Entity Person	
Cryptocurrency	Donald Trump	236
	Satoshi Nakamoto	228

Mark Zuckerberg	218
Blockchain	203
Bitcoin	169
Coinbase	142
Gerald Cotten	130
Cryptocurrencies	124
Trump	121
Wright	110

NLP Stage

After the text was converted from text to tokenised documents, the 'tokens' were stored in a dictionary format to create a map between words and their integer id's, in an ID-to-word fashion. This then allowed for the tokenised documents to be converted to vectors. An algorithm (doc2bow) was then applied to count the number of occurrences of each distinct word, converting the word to its integer and returning the result as a sparse vector. In the first trial, the LDA model was then set up and run over an arbitrary 20 topics in the first instance. The full code is available here: https://github.com/kellyann88/Crypto_NLP.

Determining the Number of Topics in the LDA Model

Topic coherence was used as an intrinsic evaluation metric in this study. This metric was used to quantitatively justify the model selection. Topic coherence, measure a score on a single topic by measuring the degree of semantic similarity between high scoring words in the topic. These measurements help distinguish between topics that are semantically interpretable topics and topics that are artifacts of statistical inference (Stevens *et al.*, 2012).
Human inference is superior for topic interpretability, as "*human topic rankings serve as the gold standard for coherence evaluation"* (Röder, Both and Hinneburg, 2015). However human evaluations can be a lengthy and time-consuming process. Therefore, quantitative topic coherence measures aided in the process for this big crypto data study.

In topic modelling, there is no correct number of topics per se, however some results may identify better topics than others (Blei and McAuliffe, 2009). In this study, it was then a reiterative process to conduct various trials of number of topics to identify the optimal number. To find the optimal number of topics, LDA trials based on different values of number of topics were undertaken, to select the one that produced the highest coherence value (see coherence scores below).

Alpha and Beta Hyperparameters

Model hyperparameters (parameters whose value is used to control the machine learning process) alpha and beta were set to the default model setting (Rehurek, R. & Sojka, 2011). The alpha controlled the mixture of topics for any given document. Turned down, the documents would have had less of a mixture of topics. Turned up, the documents would have had more of a mixture of topics. The beta hyperparameter controlled the distribution of words per topic. Turned down, the topics would have had less words and turned up, the topics would have had more words.

Coherence Scores

A list of coherence scores is shown below in Figure 3. The higher the score, means a higher coherence. The coherence score in topic modelling can be used to measure how interpretable the topics are to humans. In this case, topics are represented as the top N words with the highest probability of belonging to that particular topic. The coherence score measures how similar these words are to each other.

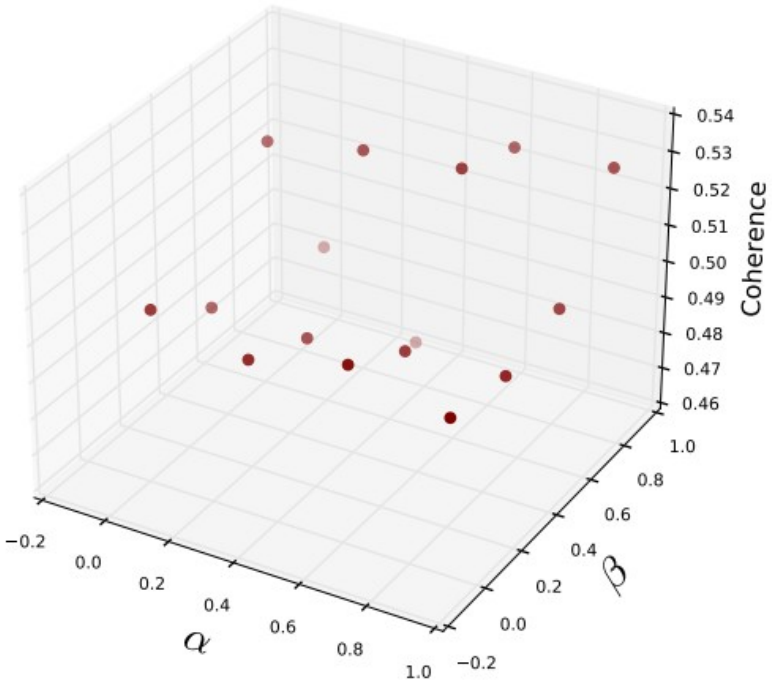
Figure 3: LDA Model Coherence Scores

Coherence Score for 2 Topics: 0.39292289905602684
Coherence Score for 3 Topics: 0.3788144649220806
Coherence Score for 4 Topics: 0.41582806224485985
Coherence Score for 5 Topics: 0.520078761481786

Coherence Score for 6 Topics: 0.49921412845067786
Coherence Score for 7 Topics: 0.48345636604965875
Coherence Score for 8 Topics: 0.46549877730960043
Coherence Score for 9 Topics: 0.5264890006506777
Coherence Score for 10 Topics: 0.5428697051158228
Coherence Score for 11 Topics: 0.5554796117403719
Coherence Score for 12 Topics: 0.5289678843292401
Coherence Score for 13 Topics: 0.5175285199968084
Coherence Score for 14 Topics: 0.5533459500838053
Coherence Score for 15 Topics: 0.5136746262336542
Coherence Score for 16 Topics: 0.5258380347071241
Coherence Score for 17 Topics: 0.49240202268334665
Coherence Score for 18 Topics: 0.5365406737584716
Coherence Score for 19 Topics: 0.5083534455884343
Coherence Score for 20 Topics: 0.4944249336489218

It was apparent from the above scores that the optimal number of topics in the LDA model trials was 18 topics (shown in bold); this was the 3rd highest coherence score. The coherence scores gave a useful quantitative indication to whether the model was statistically sound, however the highest coherence score did **not** necessarily mean it was the best score for human interpretability. Therefore, a qualitative assessment was required from the researcher to analyse the top three highest coherence scoring models, to see how interpretable the topics were. Therefore the 14-topic model ,11-topic model, and the 18-topic model were evaluated against each other in terms of comparing topic quality. The 18-topic model was selected, as comparably it had less 'junk' topics than the other two models and essentially contained topics which were more intuitive to a human reader.

The LDA model was then run, passing in the default alpha and beta values to calculate coherence. See below for alpha, beta, and coherence graph.



18 Topic LDA Model

The 18-topic model was then run using the highest alpha and beta scores. The model produced the following topics, shown below in Figure 4:

TOPIC 0 | 0.027*"ph" + 0.003*"vh" + 0.002*"group" + 0.002*"victor_harbor" + 0.002*"club" + 0.002*"centre" + 0.002*"carrickalinga_house" + 0.002*"goolwa" + 0.002*"market" + 0.001*"pt_elliot"

TOPIC 1 | 0.002*"quadrigacx" + 0.001*"court_appoint" + 0.001*"payment_processor" + 0.001*"bank_draft" + 0.001*"vancouver_base" + 0.001*"scotia_supreme" + 0.001*"owe" + 0.001*"ceo_and_sole" + 0.001*"pass_code" + 0.001*"quadrigacx_user"

TOPIC 2 | 0.006*"year" + 0.005*"people" + 0.005*"company" + 0.005*"use" + 0.004*"work" + 0.004*"time" + 0.004*"money" + 0.003*"know" + 0.003*"day" + 0.003*"like"

TOPIC 3 | 0.000*"patent" + 0.000*"commend" + 0.000*"philips" + 0.000*"hku_space" + 0.000*"asia_leadership" + 0.000*"legal_team" + 0.000*"wuxi" + 0.000*"chong_sing" + 0.000*"jeepney" + 0.000*"kokila_alagh"

TOPIC 4 | 0.001*"maren" + 0.000*"axe" + 0.000*"ueland" + 0.000*"bobby" + 0.000*"khayali" + 0.000*"esalen" + 0.000*"rodney" + 0.000*"ejjoud" + 0.000*"jespersen" + 0.000*"ueland_and_jespersen"

TOPIC 5 | 0.001*"ceza" + 0.001*"iceland" + 0.001*"lambino" + 0.000*"salerno" + 0.000*"char" + 0.000*"economic_zone" + 0.000*"cagayan_economic" + 0.000*"zone_authority" + 0.000*"raul_lambino" + 0.000*"ihe"

TOPIC 6 | 0.016*"Bitcoin" + 0.008*"cryptocurrency" + 0.008*"blockchain" + 0.007*"use" +
0.006*"cryptocurrencie" + 0.006*"company" + 0.006*"year" + 0.006*"market" + 0.006*"new" + 0.005*"technology"

TOPIC 7 | 0.016*"wright" + 0.005*"nakamoto" + 0.004*"north_korea" + 0.002*"north_korean" + 0.002*"craig_wright" + 0.001*"satoshi" + 0.001*"mr_freeman" + 0.001*"andresen" + 0.001*"wright_claim" + 0.001*"pty_ltd"

TOPIC 8 | 0.004*"hagen" + 0.001*"anne_elisabeth" + 0.001*"tom_hagen" +
0.001*"ransom_note" + 0.001*"disappearance" + 0.000*"falkevik_hagen" +
0.000*"mr_hagen" + 0.000*"oslo" + 0.000*"hagen_lawyer" + 0.000*"char"

TOPIC 9 | 0.000*"char" + 0.000*"Bitcoin_btc" + 0.000*"let_have_a_baby" +
0.000*"million_yuan" + 0.000*"global_stablecoin" + 0.000*"eur_million" +
0.000*"facebooks" + 0.000*"week_edition" + 0.000*"today_where_satoshi" +
0.000*"satoshi_nakaboto"

TOPIC 10 | 0.014*"good_morning" + 0.010*"property" + 0.009*"euro" + 0.008*"income"
+
0.008*"thank" + 0.008*"box" + 0.007*"rent" + 0.006*"greeting_and_a_lot" +
0.006*"declare" + 0.005*"return"

TOPIC 11 | 0.001*"oil_and_gas" + 0.001*"intercontinental_exchange" + 0.000*"loeffler" +
0.000*"char" + 0.000*"energy_sector" + 0.000*"sugarbud" + 0.000*"security_filing" +
0.000*"kolochuk" + 0.000*"kelly_loeffler" + 0.000*"corporate_governance"

TOPIC 12 | 0.000*"char" + 0.000*"shop_locally" + 0.000*"teach_young" +
0.000*"stitcher"
+ 0.000*"second_be_decentralisation" + 0.000*"retailer_which_own_no_inventory" +
0.000*"undermine_by_communication" + 0.000*"chairman_of_wandisco" +
0.000*"unassailable_have_be_superseded" + 0.000*"bygone_age"

TOPIC 13 | 0.000*"â" + 0.000*"manifesto" + 0.000*"tarrant" + 0.000*"char" +
0.000*"mass_murderer" + 0.000*"australian_academic" + 0.000*"pseudocommando" +
0.000*"ammunition_belt" + 0.000*"tarrant_life" + 0.000*"regular_guy"

TOPIC 14 | 0.003*"accuse" + 0.001*"crore" + 0.001*"arrest" + 0.001*"r_crore" +
0.001*"kotadiya" + 0.001*"bhatt" + 0.001*"surat" + 0.001*"patel" + 0.001*"police" +
0.001*"bhardwaj"

TOPIC 15 | 0.000*"char" + 0.000*"gramatik" + 0.000*"epigram" + 0.000*"data_source" + 0.000*"muvhango" + 0.000*"napier" + 0.000*"Bitcoin_btc" + 0.000*"ada" + 0.000*"skeem_saam" + 0.000*"isidingo"

TOPIC 16 | 0.000*"gv" + 0.000*"sept" + 0.000*"oct" + 0.000*"char" + 0.000*"nando" + 0.000*"camping" + 0.000*"macaron" + 0.000*"hulme" + 0.000*"info" + 0.000*"admission"

TOPIC 17 | 0.009*"venezuela" + 0.007*"petro" + 0.004*"maduro" + 0.003*"bolivar" + 0.003*"oil" + 0.003*"venezuelan" + 0.002*"venezuelans" + 0.002*"sovereign_bolivar" + 0.002*"economic" + 0.002*"hyperinflation"

Figure 4: LDA Topics

In a two-step process, this topic modelling algorithm estimated the distribution of topics over a set of documents, and a probability distribution of words for each of the 18 topics shown. Therefore, the number next to each topic represents the topic-word probability distribution across the corpus. For every word then there is a proportion expressed as a score aligned to each topic, this is a *"distinguishing characteristic of Latent Dirichlet Allocation, the documents in the selection share the same set of topics, but each document exhibits those topics in different proportion"* (Blei, 2012, p. 79).

LDA Topic Results

At this qualitative stage, initialising human interpretability, it became clear that some topics could be considered 'junk' topics. For example, Topic 0 has words relating to a geographical area in South Australia (Port Elliot), where a historical cryptocurrency conference took place. Whilst this event was related to cryptocurrency, it has little relevance to the rest of the corpus of articles which thematically discuss cryptocurrency discursively. Likewise, topics 3, 4, 10, 12, 15 and 16 could also be considered junk topics, with little relevance to cryptocurrency being discussed thematically in the news media. Qualitatively, topics 1, 2, 5, 6, 7, 8, 9, 11, 13, 14, 17 appear the most coherent to a human reader with some pre-existing knowledge of the crypto space.

CorEx Topic Results

The CorEx approach (Gallagher *et al.*, 2017), yielded the following topics shown below in Figure 5:

```
1: wetsuit,meal,phil,family_history,wellness,south,rotary,middleton,st_augustine,building_vh
2: way,like,thing,good,time,work,think,change,people,want
3: eat,sign,book,wealthy,blue,door,farm,correspondence,performer,plate
4: life,man,home,leave,old,child,write,live,family,spend
5: court,police,arrest,quadrigacx,investigation,accuse,cotten,nova_scotia,court_document,allege
6: need,build,new,create,use,system,future,business,provide,opportunity
7: bank,financial,regulation,regulator,issue,government,risk,regulate,transaction,central_bank
8: year,high,big,buy,end,start,rise,cent,day,investment
9: art,town,train,compass,nursery,hall,club,foot,gardens,institute
10: challenge,industry,develop,solution,artificial_intelligence,lead,datum,bring,application,internet
11: petro,venezuela,maduro,bolivar,venezuelan,sovereign_bolivar,hyperinflation,venezuelans,caracas,minimum_wage
12: security,online,information,user,company,case,account,website,include,access
13: china,country,economic,chinese,state,oil,national,president,south_china,morning_post
14: attack,travel,threat,group,malware,describe,american,check,campaign,visit
15: investor,market,price,bitcoin,value,trade,exchange,crypto,trading,asset
16: technology,blockchain,blockchain_technology,innovation,global,development,enable,potential,benefit,sector
17: politic,america,class,bridge,welcome,road,exercise,chamber,coach,worship
18: australian,wright,mark_zuckerberg,nakamoto,zuckerberg,facebook,satoshi_nakamoto,craig_wright,australia,scandal
```

Figure 5: 18-Topic CorEx Model

The CorEx latent topic results on the surface seemed more plausible to a human reader, however some 'junk' topics appeared again. Topic 1 for example, relates to the irrelevant crypto event in South Australia, as it did in the LDA model. Topics 2, 3 and 4 could also be considered junk topics. Yet, the remaining 15 CorEx topics all have relevance and are coherent to a human who is familiar with the crypto space. The CorEx therefore produced good topics across the corpus and in fact, some corresponded and were duplicated across both models. For instance, topic 5 that had a heavy focus on the political economy of Venezuela showed in both the CorEx (topic 11) and LDA model (topic 17). The topics of Bitcoin, blockchain and technology also appeared in both models (topic 6 in the LDA model and topic 15 in the CorEx model), which are most obviously explicitly related to the theme of cryptocurrency. Economy themes across both models arose with the topics of markets (topic 6 in the LDA model and topic 15 in the CorEx model), and economic (topic 5 in the LDA model and topic 13 in the CorEx model).

Exploring the Association between LDA and CorEx models

The topic correlations between LDA and CorEx models proven above, gives validity to the assertion that these topics are consistent across the corpus, even under different model parameters. They are therefore the key topics. Some topics whilst not duplicated exactly word for word can be inferred with similar semantic meaning or referring to a particular event; for example, the topics - 'court document', 'police', 'arrest' and 'scotia supreme' (meaning scotia supreme court) in the CorEx model, correlates with 'allege' and 'court appoint' in LDA model, which refer to the same crime news story. This association validity across models, as well as qualitative human interpretability was the reason that the CorEx approach was chosen to proceed with for this study's discourse analysis[18].

The Discourse Analysis and Qualitative Interpretation of Results

Once the CorEx model had produced the 18-topic model, the software analysis program 'NVivo' was used as a tool to qualitatively explore the key news stories within each topic. This allowed for the news articles to be classified into discourse themes and narrative subthemes, to make sense of the corpus in context, and to have the ability to zoom in and out of stories within the corpus. The major themes that arose out of this qualitative analysis were; 1. cryptocurrency and its links to crime, 2. the debate and rise of cryptocurrency governance and regulation, and 3. sentiment discussions around the crypto economy (specifically Bitcoin and other major cryptocurrency price and market capital speculation). Therefore, these distinct themes were considered as discourses and relevant articles from the top topics were categorised into one of these three discourses.

The crypto crime discourse and the crypto financial governance discourse are discussed in the chapters that precede this methodology chapter. The crypto economy discourse while prevalent, did not present as significant as the crypto crime and financial discourse, and was not considered to provide much insight into media construction of cryptocurrency meaning. For example, news reporting was shallow in the crypto economy discourse, with speculation narratives dominating about crypto price and its perceived popularity. The other two discourses however, the crypto-crime and crypto financial governance discourses, took on a

[18] Further findings on the themes and topics themselves will be discussed in depth in the findings chapter. This information is to give a methodological illustration as to how the models correlate and the rationality behind choosing a model to proceed with for the discourse analysis.

more social and political dimension to the way narratives were chosen and appropriated by news press. It was for this reason that for this study the crypto-crime and financial governance discourse were the focus for sociological analyses.

Limitations of the Study Methodology

As data were drawn from the Nexis news archive database, it was difficult to categorise news stories with their specific source that were from South America. This is because Nexis collate all the South America news reports into one category, named 'CE Noticias Financieras English.' The other news articles within the Nexis archive were collated into specific country group and often also name their specific news organisation. This was useful for analysis purposes; however, it did limit the analysis that could be carried out on news stories from South America.

Conclusion

In conclusion, this crypto study took a grounded inductive stance to a computational discourse analysis to address two key research questions 1. What are the key cryptocurrency discourses? and 2. By whom are the discourses created? This methodology allowed for topics to emerge out of the data, a priori to theoretical assumptions linked to historical or current debates upon monetary discourse, of which lack empirical evidence. The study adopted unsupervised machine learning methods to aid in the process of working with big data; a corpus which contained articles from over 60 countries and 5 continents. Quantitative probabilistic prediction models were built, including LDA and CorEx models to predict topics. Both LDA and CorEx models were trialled and assessed against topic quality in the form of controlled metrics, including hyperparameters and coherence measures. Human qualitative researcher skills were used in collaboration to iteratively work through each process of the method stage, including qualitatively exploring the corpus thematically and particularly so in the last stage of topic interpretation. The next chapter discusses the findings of this topic modelling crypto study, where a 'Financial Governance' key discourse was identified in the international news media.

CHAPTER 4: The Crypto Financial Governance Discourse

Contents

Shaping Financial Governance in Digital Currency Regulation Discourse

In the last chapter, the methodology of the thesis was discussed in detail and the rationale was set out for a computational discourse news media study into cryptocurrency. This chapter therefore discusses the findings of this topic modelling crypto study, where a 'Financial Governance' key discourse was identified in the international news media. The salience and vividness effects in the news media of cryptocurrency is discussed with reference to the regulation of digital currencies. This is illustrated by the Libra/Diem case study, which follows the discourse around the regulation of Facebook's new crypto project. The attraction of financial regulation of virtual currency is also reflected upon through Brett Scott's 'Jungle Book' analogy, which highlights the importance of public language to mental models on the conception of money and the understandings which are consequences of these mental models.

Much of governance discourse naturally centres around discussions of regulation. This is often underpinned by a moral philosophy to limit harmful social and economic effects of an unregulated space by government interlopers - often official regulators. Even in markets which lack government interference, that appear efficient from a free market perspective, are however prone to imperfections, excess or abuse. Adam Smith (2006), a founding father of economic liberty and advocate of free-market principles, even conceded to the fact that markets are not self-regulating, and as such, markets (just like people) require a moral framework and a set of governance rules, to achieve a well-functioning economic and social system. The concern of financial governance within society therefore raises questions of who should create and control monetary policy, and to what extent. These questions feed into historical debates around the extent of government intervention into economic markets. The innovation of digital currencies has reignited many of these old debates, but also provided new technological opportunities which themselves have posed contemporary challenges to the traditional social and economic order.

As is revealed in chapter 6, fiat money in capitalist nation states have had a long history of political support by governments with its bestowed legal tender status, economic regulatory frameworks protections, and legal mechanisms in place for arbitration and dispute resolution. Chapter 6 presents the monetary control debate, illustrating how the central bank is an important actor and plays a vital role within the political economy in governing money. More

specifically for example this is achieved through currency creation and setting monetary policy, such as controlling inflation through the interest base rate in the UK case. However, such concentration of power and influence has led socio-political movements to argue that the financial system of big banks (including the central banks) along with the growth of powerful corporations serves the few, rather than the many in civil society.

Bitcoin (and other cryptocurrencies that have followed) have however, offered an alternative to the elite system of concentrated monetary power and control, where in theory anyone can join crypto monetary control with low barriers of entry. This technocratic solution which is more decentralised and distributed (not concentrated) in nature while offering the utility of money as a store of value, does not mean however that it is a legitimate currency in the eyes of the law. Cryptocurrencies including Bitcoin, with their absence of legal standing as UK legal tender (HMRC 2014; Department of Treasury 2021), are not circulated for public use by the UK's central bank – the Bank of England. Bitcoin is only able to be issued once mined on the network and acts as a decentralised and distributed cryptocurrency (Nakamoto 2008). This is in stark contrast to fiat currency, which is controlled and regulated by the Bank of England as a central authority in the UK (Bank of England 2021).

Operationally, the centralisation and decentralisation feature are an important distinction to make between fiat currencies and cryptocurrencies, the latter which can evoke various levels of decentralised permissioned and permissionless blockchain features (Hileman and Rauchs 2017). The very nature in the way they are designed and operate, is therefore politically and socially influenced in varying degrees, and this has its own governance consequences for users (Golumbia 2016; Dodd 2018b; Filippi and Loveluck 2016; Nabilou 2020).

As a result of cryptocurrencies falling outside the remit of the state's governance including the Bank of England's monetary policy (including its regulatory safeguards), has led some critics to argue that crypto poses a threat to the stability of the financial system by destabilising the economy (Jopson 2016; Inman 2014). Concern about cryptocurrencies are echoed by those who highlight the link of cryptocurrency to criminal funding and illicit activities (Teichmann 2018; Amiram, Jorgensen, and Rabetti 2020; Kottasova 2018). This concern is evident in chapter 5, where the crypto crime discourse and disorder framing is discussed and analysed.

Whilst digital currency is a recent monetary development in the last decade, it is however clear that illegal drug markets existed before Silk Road and did not emerge in a vacuum where none had existed before, and nor did it invent the technologies upon which it is dependent (Martin, Cunliffe, and Munksgaard 2019). Illicit transactions have risen, both in total value and as a share of all cryptocurrency activity, however, illicit transactions still constitute a small share of all cryptocurrency activity at just 1.1% (Chainalysis 2021). The Chainalysis report accounts a low prevalence rate of 1.1%, which could be considered a minimal risk to financial stability.

Further, as crypto assets increasingly become regulated (Department of Treasury 2021) both in the crypto currency exchange and DeFi markets (Wintermeyer 2021; Dale 2021), concerns about illicit activity may be allayed with the inception of a regulatory framework applied to digital currencies (Perlman 2019; Treasury 2020)[19]. Governance through the means of regulation, therefore, it appears is on the cards for cryptocurrency, where it is only a matter of time before jurisdictions control digital currencies through framework approaches such as legal apparatus (Perlman 2019; Ioannou 2020; Skotnicki and Piano 2021; Ferrari 2020), or decentralised finance is regulated by international professional and industrial codes of conducts through standard organisations (Werbach 2009; 2021).

Hirshleifer (2008; Hirshleifer and Teoh 2017), put forward the 'psychological attraction theory of financial regulation', where the authors provide an overview of some social and psychological processes that underlie financial and other forms of regulation including; Salience and Vividness Effects, Omission Bias, Scapegoating and Xenophobia, Fairness and Reciprocity Norms, Overconfidence, Mood Effects and Availability Cascades, and Ideological Replicators. This theory, in which the authors argue that regulation is the result of psychological biases on the part of political participants – voters, politicians, bureaucrats, and media commentators; and of regulatory ideologies that exploit these biases.

[19] This forthcoming regulation is discussed in more detail in the following chapter on CBDCs.

Media commentary containing regulatory ideologies that exploit these biases can contribute to skewed narratives, which have wider effects than public discourse, causing volatility in real world financial markets. News media specifically, have been shown to have great effects on the financial markets, because the function of the media, is a source of information and sentiment (Walker 2016). Bloomberg or Reuters for example, as reputable financial media outlets can affect the markets as investor behaviour can be in response to company news and events which gain high media coverage (Baker and Wurgler 2007; Tetlock 2007). Media coverage that exhibits varying optimism and pessimism may be captured through the fixed effects, as well as article length, writing style, and availability of information to different journalists (Walker 2016).

By focusing on the media commentators and the financial governance discourse in this way, this crypto study applies Hirshleifer's (2008) theory to concentrate on the corpora of articles covering cryptocurrency, with a focus on governance and regulation. This chapter therefore focuses on the 'Financial Governance' discourse which was identified in the international news media. This financial governance discourse incorporated a host of narratives versed from differing perspectives. These different understandings reinforced narratives and subjectively stylised the way regulation was discussed and disseminated as objective public policy discourse, by newspaper outlets. Importantly, this study is the first to demonstrate both theoretically and empirically, that when crypto is cultured through the financial governance discourse; where perspectives are not challenged and news is not contextualised, a distorted reality of cryptocurrency is (re)presented for readers to consume.

To explore the differing perspectives on how money is a governed commodity in society and is conventionally understood, I adopt Brett Scott's Jungle Book Analogy. This amplifies two competing schools of thought – conceived as the 'Tarzan' (orthodox thought) and 'Mowgli' (unorthodox thought) suite, acknowledging money's social and political nature from opposing perspectives. I then attempt to understand the form of regulation and the public policies which shape governance, by considering the differing belief perspectives that are taken (as Scott does with the Tarzan and Mowgli suites), which serve to inform and maintain the key narratives that are formed and adopted in public discourse on crypto governance. The chapter presents the data which evidence the key narratives that are adopted in public discourse on crypto governance in the international news media which act as a disruptor in

the crypto economy. The evidence suggests there is a pervasive risk discourse and an interrelated consumer protection narrative, which form the debate surrounding state digital currencies. Further, I argue that there is a regulatory determinism within global disruptive populist discourse.

The Jungle Book Perspective

The way digital currency is often considered for regulation is twofold – through conventional understandings of both money and technology. Brett Scott provides a fantastic 'Jungle Book' analogy to how people conventionally understand money through what he calls the Tarzan Suite, where in fact they should he argues, broaden their horizons in their currently orthodox perspective to what he calls the 'Mowgli Suite'. He explains these as drivers with his analogy;

> *"The drivers I am running are a very unorthodox package called the* ***Mowgli Suite****. Those of us who use this package find that many conventional statements about money sound empty or circular, because conventional ideas about money run on the far more dominant* ***Tarzan Suite****. The Tarzan Suite is a mental model that lies behind almost all public language about money, and it has a huge (detrimental) effect on our understanding of economic systems"* (Scott 2021, p. 1) .

Scott (2021) therefore claims that he himself runs the Mowgli Suite package, over the conventional Tarzan suite. The Tarzan suite he claims, is the basis for modern economic thinking and the ideas are often incorporated into modern orthodox theories of money which are misguided. What distinguishes the Mowgli from the Tarzan suite is their starting points. Mowgli, the young protagonist in the Jungle Book films, is a feral child brought up by a wolf, a bear, and a panther in the jungle. Even though they are non-human creatures, they educate him with language skills, and form his social network for him to survive.

As Mowgli was taken in as a baby by a community of creatures, this is the starting point for the Mowgli suite i.e., before a human being is an independent grown up who can fend for themselves, they are reliant upon others to learn language, skills, and belief to assist them to

navigate the world. Each person as a self-reliant individual however was once a baby themselves, and there was no original self-reliant human. Scott contends (2021) that they are, therefore, only people kept alive by social networks, which always *precede* individuals.

When Mowgli grows into adulthood and survives, as he does in the film, he evolves into the character of Tarzan, able to exist (quasi)independently in the wild. This position of being a solo adult is the starting point of the Tarzan Suite. Tarzan as an individual adult can choose to leave a primordial 'state of nature' to find a jungle clearing to call their own and form a society to protect their individual interests and enter a social contract (creating a society) with other Tarzans if he wishes. However, Tarzan (as a fully grown Mowgli), would not have survived to claim the jungle clearing, without the necessary protection from the jungle creatures.

For Enlightenment thinkers, Scott (Brett Scott 2021, 1) states;

"it was appealing to start from the perspective of fully grown adults, because it enabled them to present society as being preceded by individual rational choice: from this perspective you can begin to claim that people have individual reasons to 'create society' or enter into market exchange, for example".

Modern economics then never begin with children (like Mowgli) being cared for by mothers (like his creature carers). Rather, it begins with fully-grown Tarzans swinging into forest clearings to contract and exchange with others, a starting image that is then used as an explanation for why certain social forms will consequently form. This is analogised by Scott as a modern monetary theory of Tarzans (individuals) bouncing around markets like independent atoms, but where Mowgli (raised by a community) is ignored as the backstory.

Those who conceive the Mowgli suite as a priority over the Tarzan suite, then consider the starting point as the interdependent community rather than autonomous individual. Those in the sociological discipline, often gives rise to the importance of the Mowgli suite, in its attempts to understand markets through relations of people and organisations which can be understood as interdependent communities, similarly as can analyses of market networks.

On the contrary, Scott continues his argument that those who commit to the Tarzan suite, do so by placing individuals and the forerunner that leads to society and markets within it. Large capitalist nation states are the only place where this can take place, as opposed to the previous clan kinship sociological structures that existed in history who relied on interdependency for survival. The Tarzan Suite thus "*generally avoids thinking about the economy as an interdependent network of permanently connected people facing constraints created by the others, they are dependent upon"* (Scott 2021, p. 1).

Running the Tarzan suite allows people to forget about their background kin networks who raised them and with this orientation can imagine themselves as being an individual preceding a network. In the Tarzan suite, the idea that the world is driven by the market choices of floating individuals has driven a discipline in modern economic thinking and theories. With this perspective, they can then justify theories that present human groups as being collections of individuals coming together out of individual economic rationality, which Scott considers as naïve.

Money then, according to the opposing Mowgli drivers, in the credit orientation, is that people or institutions will start from a position of dependence and can get things from a 'battery' of other people they are connected to, by issuing *promises* to return things later. This differs from the 'value for value' assumption in the Tarzan Suite's commodity orientation. In the credit orientation it is assumed that monetary exchange has value going one way – in the form of actual labour from someone in the 'battery' – and a promise or credit for future value going the other way. It is 'value for credit-for-value' (Scott 2021).

Further, in the Mowgli suite drivers, if money takes the form of a commodity, Scott (2021) argues it will be subject to principles that transcend commodities. In other words, an interdependent network of people could use a commodity form as a proxy for a monetary unit, but it is not being used as a temporary bridge between two autonomous individuals. Instead, Scott claims it is *"being used to fire up latent connections between de facto interdependent people, a commodity form running on credit rails"* (Scott 2021, p. 1).

Scott's valuable 'Jungle Book' analogy is insightful and a highly recommended read in full to understand the full scope of his argument, which is only briefly summarised here for the purposes of this chapter. What is important to note in this context, is particularly that the idea is refreshing in how it identifies the importance of public language to mental models on the conception of money. He uses the Mowgli and Tarzan Suites to demonstrate how drivers i.e., assumptions and ideologies, guide an individual's certain train of thought and lead them to take an ideological position on the social and political characterisation of money.

Brett Scott's own take on digital currency regulation, highlights the media' role in amplifying ideas about Bitcoin, and states the nature of the political and social regulatory discourse surrounding regulation. He comments on Bitcoin's potential as so much more than a currency, perhaps hinting implicitly from the Mowgli suite perspective, that it could amount to an innovative commodity form running on credit rails, as discussed in his earlier works on different states of consciousness of money using his jungle book analogy. He comments specifically on Bitcoin, that;

"Of course, any new scene is prone to developing internal echo chambers that amplify both commonalities and differences. While questions regarding Bitcoin's regulatory status lead hyped-up cryptocurrency evangelists to engage in intense sectarian debates, to many onlookers Bitcoin is just a passing curiosity, a damp squib that will eventually suffer an ignoble death by media boredom. It is a mistake to believe that, though. The core innovation of Bitcoin is not going away, and it is deeper than currency" (Scott 2014, p. 1).

Acknowledging that money is inherently social, with its own social relations and practices that govern it (Dodd 2015; Ingham 1996; Dodd 2018a; Igham 2004; Graeber 2012; Zelizer 2013), is also beneficial for analysing the governance and control of money through regulation. Regulation, far from being independent from money and technology, is a closely related concept. This concept is built by individuals from understandings and framings such as Scott's 'Jungle Book' suite, with different drivers that guide their ideologies. Therefore, the regulatory social relations and practices including media discourses, can expose an array of ideologies that underpin governance blockchain practices such as policy decisions, that can have a real-world effect on the crypto economy. Moreover, research suggests that the

analysis of Bitcoin as a digital currency and market singularity[20], has highlighted how the design and issuance of any monetary system is essentially political (Dallyn 2017).

The Data Results - The Financial Governance Discourse

Just as described in the methodology chapter, this crypto study took a grounded inductive stance to a computational discourse analysis to address two key research questions 1. What are the key cryptocurrency discourses? And 2. By whom are the discourses created? This methodology allowed for topics to emerge out of the data, a priori to theoretical assumptions linked to historical or current debates upon monetary discourse, of which lack empirical evidence. The study adopted unsupervised machine learning methods to aid in the process of working with big data; a corpus which contained articles from over 60 countries and 5 continents. Quantitative probabilistic prediction models were built, including LDA and CorEx models to predict topics. The CorEx model was chosen for its topic quality as explained in the methodology chapter.

The table below (table 1) displays the CorEx output from this cryptocurrency study (the code can be accessed here: https://github.com/kellyann88/Crypto_Corex). This chapter focuses on the theme of financial governance, which was one of the top topical themes in the model output. This is discussed in more detail below.

[20] See (Dallyn 2017) who adopts Karpik's conception of market singularities is used to understand the Bitcoin phenomenon by outlining the beliefs that maintain Bitcoin's status as a volatile financial asset. Market singularities are markets for kinds of goods and services that are of uncertain and incommensurable value.

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1: wetsuit,meal,phil,family_history,wellness,south,rotary,middleton,st_augustine,building_vh
2: way,like,thing,good,time,work,think,change,people,want
3: eat,sign,book,wealthy,blue,door,farm,correspondence,performer,plate
4: life,man,home,leave,old,child,write,live,family,spend
5: court,police,arrest,quadrigacx,investigation,accuse,cotten,nova_scotia,court_document,allege
6: need,build,new,create,use,system,future,business,provide,opportunity
7: bank,financial,regulation,regulator,issue,government,risk,regulate,transaction,central_bank
8: year,high,big,buy,end,start,rise,cent,day,investment
9: art,town,train,compass,nursery,hall,club,foot,gardens,institute
10: challenge,industry,develop,solution,artificial_intelligence,lead,datum,bring,application,internet
11: petro,venezuela,maduro,bolivar,venezuelan,sovereign_bolivar,hyperinflation,venezuelans,caracas,minimum_wage
12: security,online,information,user,company,case,account,website,include,access
13: china,country,economic,chinese,state,oil,national,president,south_china,morning_post
14: attack,travel,threat,group,malware,describe,american,check,campaign,visit
15: investor,market,price,bitcoin,value,trade,exchange,crypto,trading,asset
16: technology,blockchain,blockchain_technology,innovation,global,development,enable,potential,benefit,sector
17: politic,america,class,bridge,welcome,road,exercise,chamber,coach,worship
18: australian,wright,mark_zuckerberg,nakamoto,zuckerberg,facebook,satoshi_nakamoto,craig_wright,australia,scandal
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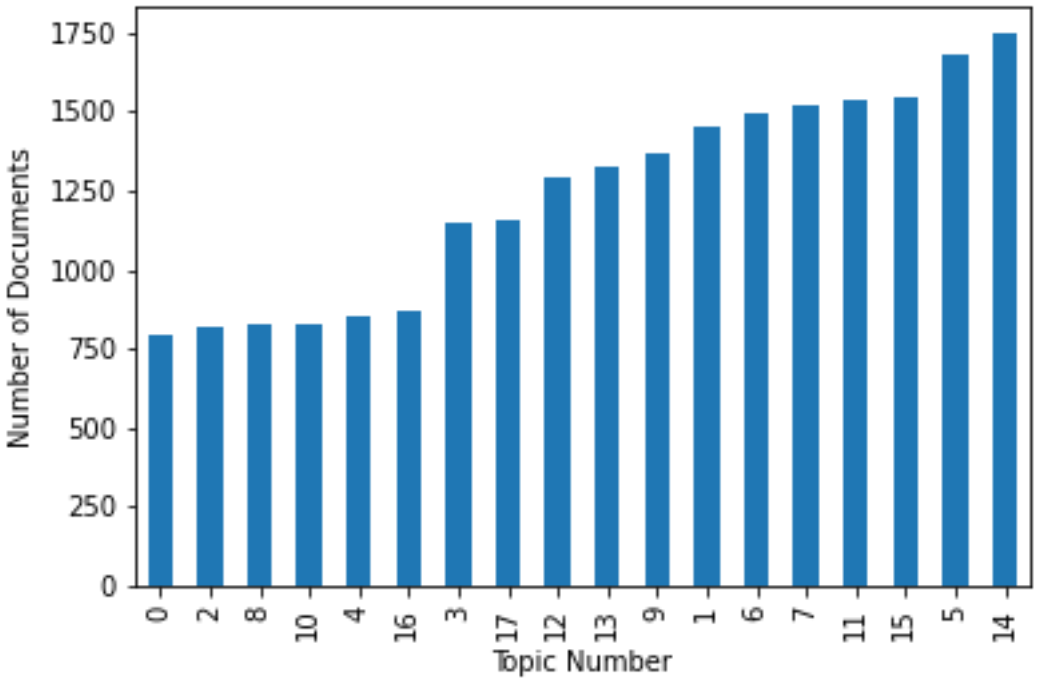
Table 1: CorEx Output

Topic 7 in Table 1 above contains terms which relate to governance and the regulation of cryptocurrency – this chapter is dedicated to the theme of financial governance and the news media's discourse of financial governance.

The graph below (graph 1) shows the number of documents that each topic is represented in, from the CorEx analysis. It can be seen in the graph below that topic 6 (which is interpreted as a theme of governance) is an extremely prevalent topic, appearing in 1500 documents (news articles). **Note: Topic 7 on table 1 (above) is represented as topic 6 on Graph 1 (below), as this was sourced from python code which starts indexing at 0 and not 1.**

Further, other substantive topics interrelate to governance (specifically discussions of a lack of regulation) as for example topic 5, 14, 16, 18 (shown in table 1 above), which contain news articles reporting on crypto-crime or investment scandals, where discourse often takes the perspective of crime being commonplace, due to the lack of self-governance or formal regulation in the crypto-economy. This chapter is therefore dedicated to exploring the financial governance discourse.



Graph 1: CorEx Topic Distribution Across Number of Documents

Salience and Vividness Effects in the News Media

'Financial governance' public discourse is one example of the social and political processes that generates and drives ideologies of economic crypto regulation. To understand the form of regulation and the public policies which shape governance, it is then necessary to consider the type of information that is used, the differing belief perspectives that are taken (as Scott does with the Tarzan and Mowgli suites) which serve to inform the key narratives that are adopted in public discourse on crypto governance.

As David Hirshleifer (2008) poignantly asserts, the media are an agent to this dissemination of beliefs on financial regulation policy;

"Economists have long wondered why harmful policies are so enticing. Inattention alone is not the answer; often bad policies are adopted at exactly those times when public discourse focuses sharply on them. To understand the form of regulation, we need to understand what kinds of information the most salient and what kinds of arguments are the

most alluring. We also need to understand the social process by which naïve feelings and beliefs about public policy spread through the media and from person to person" (Hirshleifer 2008, p. 858).

Hirshleifer (2008) argues that politics is the struggle for attention, where political competitors construct slogans to make their positions appear reasonable, comprehendible, and easily memorable. Past psychological research has shown that salient stimuli effects reflect the close relationships among the processes of comprehension, remembering, and attribution, and that attributional processing can take place at the time of the encoding and storage of information, as well as at the time of its retrieval from memory (E. R. Smith and Miller 1979). Further research showed that attention is drawn to salient stimuli and to vivid stimuli, such as personal stories, and emotionally arousing information (Nisbett and Ross 1980).

Consequently, regulatory debates are profoundly influenced by extreme events, and by sentimental stories (Hirshleifer 2008; Hirshleifer and Teoh 2017). For example, extreme events such as criminal hacking have helped set the scene for a change in digital currency regulation in the United Kingdom. This article in the Mail Online details how a hacker stole a considerable sum of money from the victim, with the author using the sentimental story that the money was the victim's life savings as well as his two daughters' college funds, adding an empathetic tone and vividness to it;

"Nicholas Truglia, 27, faces 21 felony counts after he allegedly went on a hacking spree that targeted six victims. Authorities said Truglia successfully hacked into six victims' phones but was only able to steal money from Robert Ross. Truglia allegedly stole $500,000 each from Ross' Coinbase and Gemini accounts on October 26. Coinbase and Gemini are digital currency companies that broker exchanges of cryptocurrencies including Bitcoin and Ethereum. The money was Ross' two daughters' college funds and his entire life savings" (Daily Mail Reporter 2018).

The emotive story of victims losing their life savings to crypto scams, was also reported on by INews, when in 2019 they reported;

*"Vijay Poinoosawmy told **i** how her father Darmalingum, who is 80 and in frail health, lost his life savings – which NatWest is refusing to refund in full"* (Tanner 2019, p. 1).

This salience and vividness effect of these news stories, where victims lose their life savings together with high profile hacking or scam stories in the international media, help establish an anti-crypto mood, creating pressure for a regulatory response to digital currency and the technology platforms they operate on. As such, there were media reports explicitly drawing the link between cryptocurrency and the lack of regulation, leading to the potential loss of life savings.

This article in the dataset, refers to media coverage in the Financial Mail Online regarding companies that have been exploiting their Financial Conduct Authority (FCA) regulatory status to promote unregulated investments including mini bonds and cryptocurrency. London Capital and Finance is one example of this, who as a mini-bond provider went into administration after leaving 14,000 investors out of pocket, due to its selling of unauthorised products (Shannon 2019). The Mail Online used cryptocurrency scandals for salience value, while at the core of the article, the reader is left with impact from the shocking negative personal effect of potentially losing one's life savings;

"Then there are straight cryptocurrency scams. None of them, not even minibonds, come under full FCA oversight. Yet that has not stopped punters betting their house…The recent scandals serve to highlight a bigger issue: the individual responsibility that people now bear for their lifetime savings" (Shannon 2019, 1).

Similarly, this article warned of the significant individual risks of engaging in cryptocurrency activity, used in comparable content and tone;

"If you decide to trade or use virtual currencies you are taking on a lot of risk with no recourse if things go wrong" (McInnes 2018, 1)

It would appear the salience and vividness effect are adopted by the media to highlight the risk the public as individuals face with no protection, due to the gap in crypto regulation. Risk is highly featured in the corpora of articles which fall into the financial governance discourse and this framing of risk is usually centred on protecting consumers from crypto. The chart

below (table 2[21]) displays the frequency that risk as a governance topic was discussed in the corpora of news articles. Risk (and the synonym risky) appeared as one of four of the most salient terms when crypto news articles discussed the financial governance of cryptocurrency, supporting the argument that there is pervasive risk discourse and an interrelated consumer protection narrative in the international media.

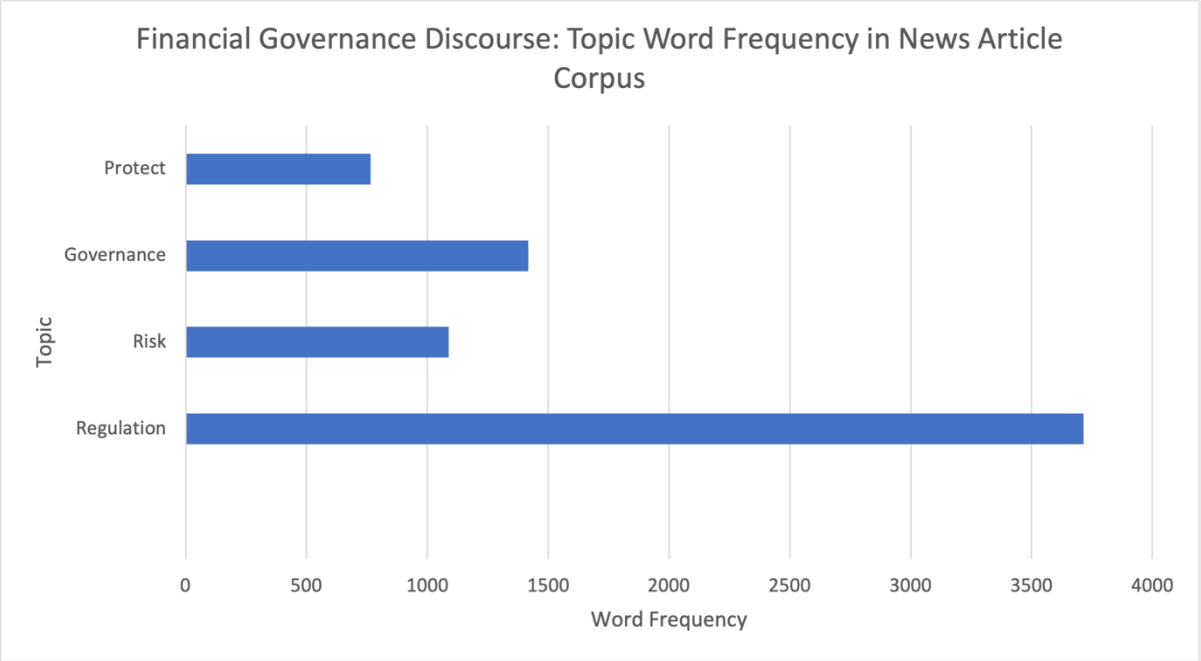


Table 2. Source: Authors own. (2022) 'Financial Governance Discourse: Subject Word Frequency in News Article Corpora'.

Risk Discourse: The Consumer Protection Narrative

Consumers are protected in the free market from anti-competitive behaviours from traditional companies (McMahon 2020), however crypto projects are often organisations which are communally decentralised in their structure, with no central organisation or authority to regulate (Lianos et al. 2019; Herian 2018; Walch 2019). This raises legal challenges for regulators to address, in light of dispute resolution and enforceability issues (Kaal and

[21] This table was produced in Excel by the author with data extracted from the Python model.

Calcaterra 2018). Further, as Dupont and Maurer (2015, 1) point out *"blockchain systems occasion a reconsideration of two of the central legal devices of modernity: the ledger and the contract"*.

An independent set of rules, a subset of law known as 'Lex Cryptographia' (Wright and De Filippi 2015), could displace court enforcement by code enforcement, however, in practice it is likely that this would involve incorporating cryptocurrency into existing frameworks (Ferreira 2021) or implicate an extension to existing legal doctrines (Agnikhotram and Kouroutakis 2018). This has led to an international debate among state officials and policy makers on how to regulate digital currency. This has taken its place in public discourse with the media playing a key role in the debate which this article in the American Banker emphasised;

"When people talk about regulating digital currency businesses, they usually mean one of two things: protecting customers funds, or preventing money laundering, terrorism financing and other financial crimes. While the two goals are not mutually exclusive, they are different - and a debate brewing over a model law for state legislatures is bringing that difference to the fore" (Clozel 2016, 1).

The consumer protection narrative is therefore key to the public discourse of risk, as it relies on addressing two underlying assumptions 1. estimating the risk of crypto to the public and 2. assessing under what rules or devices the public should be protected. The language of risk is economically rational through the perspective of Brett Scott's Tarzan suite; for in capitalist nations who trade globally, traditional kinships and the relationships which once characterised survival and communal living arrangements, can no longer be relied on for trust in economic commerce, when for example trading with strangers is the norm.

The Tarzan suite takes a protectionist stance, seeing individuals in the market as needing legal protection provided by the state, as traditional local relational mechanisms of trust cease to exist in an increasingly physically disconnected local world, but increasingly faceless virtual globalised world. It is this perspective that underpins the language of risk and informs the consumer protection narrative that is pervasive in international news media. The media adopt this Tarzan suite as the normative stance to take this position. For example, risk discourse is shaped by the media by different framings of these underlying assumptions and

consequently different consumer protection narratives are formed. Most articles debated not if crypto *should* be regulated; but the debate centred on *when and how* to regulate it. The proliferation of the subject of regulation through international articles in evidenced in table 1, interpreted as the frequency of regulation mentioned throughout the dataset, which totals 6986 mentions of governance through regulation.

The normative media stance, or in Stuarts Hall's (2003) 'preferred' media construction of governance narrative, is that crypto regulation is a necessity. This was witnessed for example in the explicit need for crypto regulation displayed in international media headlines, such as these:

- 'Cryptocurrency regulation is essential' (Daily News 2019)
- 'Cryptocurrency: UK regulator focuses on Bitcoin' (Cuthbertson 2018) (The Independent)
- 'Cryptocurrency frameworks needed' (The Mercury 2018)
- 'Sagay, Others Seek Regulatory Framework for Virtual Currency' (The Nation 2018b)
- 'Tightening cryptocurrency regulations' (Japan Times 2018)
- 'The Future of Cryptocurrency Regulation' (Hutchinson 2019) (The Toronto Star)
- 'The IMF should take over Libra' (Gulf Times 2019)

The preferred framings of crypto regulation drew attention to how crypto had gained international recognition as a risk for illicit activity and pointed to how 'major power' (governments) needed to make virtual currency subject to state governance. This article which reported on the G7 summit, makes this subjection to state governance explicit: *"the leaders of the major powers gathered in France are interested in controlling the use of virtual currencies…One of the goals is to ensure that virtual currencies are subject to money laundering laws and consumer protection regulations"* (CE Noticias Financieras 2019).

The Libra/Diem Project Case Study

The issue of state governance and protectionism, particularly referred to Facebook's upcoming digital currency project -Libra, which gained much traction and salience, due to the company's power and reputation as an international technological powerhouse. There were for example 93 references to the Libra project within the corpora of news articles.

In 2020, Facebook reached the mark of 2.8 billion monthly active users, a dramatic increase from its infancy. Over the course of just twelve years, the share of the world population using the social media platform in 2004 rose from roughly five percent in 2009 to approximately 36 percent (Zandt 2021), demonstrating the scale and power that one company can hold over a population. The Libra story exemplifies how the risk discourse plays out in relation to protectionist debates about regulation and contributed to the pervasive risk discourse and an interrelated consumer protection narrative. The consumer protection narrative offered a stark contrast to free market narratives, which are often accompanied by technological determinist ideologies surrounding big tech corporations and their new products or services, which tend to overpromise technocratic solutions to real world social dilemmas.

The consumer protection narrative proliferated articles which discussed the Libra project during its concept launch, which can be understood as a discourse which perceives Zuckerberg's project as a fundamental risk to the public. In part this reflects Facebook's contentious position in the public domain as a corporate threat to individual liberty, embodying wider public concerns around privacy over their data (with respect to data misuse and their role in the Cambridge Analytica scandal *(Ziacita 2019)*. Wolf (2019, 1) summed up the public consensus of distrust, when he stated that *"Facebook has not proved itself worthy of trust, to put it mildly"*.

The Libra project was a key artifact discussed in the governance debate within the international media, which consequently featured as a 'top topic' in this study's topic model. The Libra project was framed as an existential threat to society, with the media adopting the risk discourse and consumer protection narrative. The words 'risk' and 'libra' co-occurred 58 times in the corpora, signalling that this project centred around discussions of risk. This risk

framing contrasted with Facebook's stance in which they claimed that the Libra association, instead of posing a risk or a threat in fact intended to empower people. They claimed;

"The Libra Association's mission is to enable a simple global payment system and financial infrastructure that empowers billions of people. The Association's first step toward creating a more inclusive and innovative financial system began in June 2019 with the announcement of the project. Our goal was to establish a collaborative dialogue early in the journey. We have worked with regulators, central bankers, elected officials, and various stakeholders around the world to determine the best way to marry blockchain technology with accepted regulatory frameworks" (Diem Association 2019, 1).

News media coverage of the project however, focused on how Facebook could ensure and 'prove' consumer protection, and often the tone of the articles revolved around the emotion of trust. More specifically, this was staged around discussions about suspicion of the company from regulators and state officials, despite the fact the Libra Association consistently claimed they were 'collaborating' with regulators. For example, this article set out concerns about the project framed with the consumer protection narrative, using language such as 'safeguard' and 'rule out unlawful behaviour';

"Global regulators, American lawmakers as well as President Donald Trump have raised concerns about the currency. They will not approve the digital coin until Facebook proves it can safeguard the platform and also rule out unlawful behavior" (Daily Monitor 2019, 1).

Meanwhile, negative headlines such as these were more unambiguous with their aversion for the Libra project and mistrust of Facebook, making an implied implication that consumer protection was needed;

- 'Don't Trust Facebook's Libra Cryptocurrency Plan' (Qatar Tribune 2019)
- 'McAfee slams Facebook's cryptocurrency push as an invasion of privacy' (D. Swan 2019)
- 'CEO Jack Dorsey: 'Hell No' To Twitter Joining Libra' (Stefan 2019)
- 'Libra/Facebook: friends disunited' (Financial Times 2019)

- ‘Libra can only build trust without Facebook’ (Titcomb 2019)
- ‘The threat and the promise of digital money; Cryptocurrencies look overhyped, the new payment platforms useful and Libra worrying’ (Wolf 2019)
- ‘Libra does not meet parameters that make a cryptocurrency reliable’ (CE Noticias Financieras English 2019a)
- ‘Watchdog warns of 'risks' from Facebook's Libra; Cryptocurrency’ (Powell 2019)

The pervasive risk narrative was therefore present across different countries with varying governance systems and throughout a range of media outlet political standpoints, in a surprisingly united way. The risk narrative in the media also brought added legitimacy and salience with new stories of Libra’s co-founder admission of the considerable risk of the project. The Times reported on this in 2019;

“Mark Zuckerberg has admitted that Facebook's plan to introduce a digital currency is a "risky project", after the departure of several main partners” (Knowles 2019, 1).

In response to the debate and public risk discourse on the Libra project, the international media turned its attention to coverage of the political regulatory scrutiny the project came under from various governing states;

“One of the leaders of Libra, Facebook's cryptocurrency, has claimed the more than twelve partners working on the project for their support to defend the plan against regulatory doubts poured out on it. Voices of aid have emerged as regulatory scrutiny by the US and Europe is intensified” (CE Noticas Financieras English 2019, 1).

The salience and vividness effects of the heavily criticised Libra project, led the media to continue to cover the US congressional and EU (European Union) scrutiny of Facebook, with article headlines such as these in the international press;

- ‘Mark Zuckerberg defends Libra against US Congress’ (CE Noticias Financieras English 2019b)

- ‘Zuckerberg pressured to testify about Libra’ (Calgary Sun 2019)
- ‘Regulators fail to 'like' Facebook's Libra’ (The Times 2019)
- ‘Regulatory issues dog Facebook's Libra launch’ (Neghaiwi 2019)
- ‘Libra coin group in talks with EU regulators’ (DT News 2019)

The framing of the pending threat of Facebook’s Libra project was short lived however, and, eventually, the governance discourse transformed from being framed with risk and uncertainty narratives, to coverage of the Libra project as a ‘failure’ when Facebook dropped the project after partners eBay, Stripe and Mastercard (among others) withdrew their support (Kumparak 2019).

Facebook faced immense scrutiny by US congress under political regulatory pressure (Murphy and Stacey 2019; CE Noticias Financieras English 2019b). This resulted in a change in strategy whereby the Libra project underwent a marketing campaign to improve its public image. A rebranding and name change from Libra to Diem was one PR stunt undertaken by Facebook; as well as few other operational changes. This article summed up the effect that the regulatory pressure had on Facebook, and the subsequent response from central banks;

“Regulatory pressure forced Facebook to modify its stable coin, opting for more modest ambitions, such as only basing it on a single fiat currency, and rebranded it as Diem. The wake-up call sent central banks scrambling to their drawing boards to potentially create digitise cash to avoid others doing it for them” (Pugsley 2021, 1).

Thus, governance of cryptocurrency may be perceived by some as being successful in this case by protecting consumers from the risk of Facebook’s power to misuse Libra (or Diem). However, more widely media news coverage pushed a risk discourse which represented crypto as inevitably being governed by state instruments and international frameworks in a regulatory determinism. This regulatory determinism along with the consumer protection narrative portrayed in the international news media as presented in this study, is particularly actioned through the framing of risk represented by the Libra/Diem Project.

Regulatory Determinism

The regulatory determinism and framing of risk through the consumer protection narrative through for example the Tarzan suite, infers that crypto activity, whether used as a peer-topeer currency transacting, or as an investment mechanism is a hazardous task. The news media's discourse on crypto governance constructs the scene where use of crypto is perceived as irresponsible risk-taking by the user, due to the lack of crypto regulation.

The user (or Tarzan) is assumed to be unable to mitigate their own risk or adopt risk at their own will in a free market fashion. Instead in the Mowgli suite however, the local community would collectively own the resources to mitigate risk in a communal manner, relying on mutual relations and shared responsibility. However, in the Tarzan suite a central authority i.e., in this case a state regulator is required to protect the proverbial lone wolf – the Tarzan in society. The media draw upon this assumption to legitimate their position in the risk discourse.

The news media's risk discourse is affected by the fact that irresponsible and reckless risktaking is a social problem, with serious human and economic costs (Fischer et al. 2011). In this way, the broader governance discourse takes on a powerful latent message that crypto causes social and economic harms which amount to a social problem. Crypto is then illegitimated by the discourse and becomes deviant, by purview of its lack of regulation. The need to 'govern' digital currencies was a key message in the corpora of news articles, of which is clearly seen in table 2 above showing 'govern' as the most popular word relating to the governance i.e., the control and authority of cryptocurrencies.

On the other hand, while the governance discourse carries a negative sentiment by use of the new media's disruption narrative, state institutions such as central banks have appropriated the disruption narrative but in a unique way. Central bank institutions have adopted the disruption narrative to argue the benefits that CBDCs bring to developing economies and unbanked communities. The arguments of 'the social good of equality' were originally seen in crypto proponents' discussions, where much of the discourse rested on the idea that such

communities could easily access crypto without the need for the mediation of a centralised state or corporate bank; who had underserved or failed them in the traditional banking model.

Narratives of financial inclusion have historically been used as a guise for private companies to justify bringing financial products and tools to populations that may exploit them as new market customers due to their vulnerability[22]. For example, developing economies and their unbanked communities have received much attention for their propensity to adopt mobile banking services (and often high-rate micro lending services) in the past, due to their lack of alternative options (Makore, n.d.; Asongu and Odhiambo 2019; Maurer 2015)[23].

The financial inclusion argument of the unbanked, has been particularly useful for libertarians also, who use this narrative to highlight the failings of the state system and traditional banking model. Ironically in response, the central bank, and corporate institutions instead of fighting such a narrative, assumed it, and highlighted the failings of the traditional system they are part of to present as a defensible case for the development and implementation of a retail CBDCs[24]. A report by the Bank of International Settlements (BIS) has pointed this out, stating that:

"Central banks now recognise that any financial crisis in the new market-based credit system will inevitably land on their own balance sheets, so they have an incentive to build supervisory and regulatory structures that reduce the likelihood of financial crisis in the first place" (Mehrling 2014).

Cryptocurrency was re-imagined years later with the introduction of CBDCs to suit these central banking goals. CBDCs have been subsequently designed as a supervisory and regulatory tool, in response to the wild west[29] unregulated space of the crypto economy. In

[22] For example, see (Agarwal et al. 2017) who using administrative account level data, studied the largest financial inclusion program in India that led to 255 million new bank account openings. Their findings showed that exploiting regional variation in ex-ante financial access, the authors found that regions more exposed to the program saw an increase in lending and defaults on new loans. These results are consistent with banks catering to the new demand for formal credit by previously unbanked households. Also see for example (Mohane, Coetzee, and Grant 2000) for an overview of the microlending market in South Africa.

[23] This financial inclusion is discussed in more detail in the next chapter on CBDCs.

[24] The following chapter on CBDCs outlines and explains the retail CBDC objectives for this purpose. [29] The 'wild west' has been a term to describe the lawlessness of cryptocurrencies and quantitively it was used 18 times to describe cryptocurrencies in the corpora of articles.

this context, they can also be considered as an extension of financial inclusion opportunities; seen in the past with other mobile banking tools.

Central Bank Digital Currencies (CBDCs)

Digital currency regulation according to public discourse, through debates witnessed in both the news media, institutions, and public policy, seem inevitable. Cryptocurrency a disruptive technology has been highly contested in society and represented by the news media as being criminogenic and disorderly (as will be discussed later in chapter 4 through the crypto-crime discourse-specifically the disorder narrative) and socio-economically risky (as detailed in this chapter through the financial governance discourse-specifically the risk narrative).

This news media representation of the debate reflects a lack of state and public trust in cryptocurrency, which has led states to consider the economic benefits of blockchain developments for their respective governments (M. Swan 2017; Allessie, David, Sobolewski, Maciej Sobolweski, Vaccari 2019; Chang et al. 2020). In doing so, in response to this pluralisation of money markets and competition of private digital technology from technology oligopolies like Facebook, nation states have responded accordingly by countering with their own state conferred versions of cryptocurrency-central bank digital currencies (CBDCs).

Innovation is one of the most influential factors which have emanated from cryptocurrencies, forcing central banks to face an adaptive, fast paced global financial market with blockchain adoption. As cash declines and digital payments rise in society, it is inevitable that payment infrastructures need to accommodate global commerce transactions, at a low cost and fast speed, therefore requiring interoperability. In the United Kingdom, for example the Bank of England has proposed their own development upon cryptocurrency, with the introduction of a sovereign backed Central Bank Digital Currencies (CBDC) (Bank of England 2021c), by setting up a task force to coordinate efforts (Bank of England 2021a).

This would give the central bank the ability to build on their traditional centralised role in the economy, ensuring stability by providing certainty and liquidity in the financial system, as the UK's monetary and fiscal policy manager, against a tide of 'private' digital money

production. International press coverage displays how other countries have considered introducing the blockchain technology via central state policy, bringing the subject of economic policy to the attention of the public through media discourse;

"NEW YORK – The world's central bankers have begun to discuss the idea of central bank digital currencies (CBDCs), and now even the International Monetary Fund and its managing director, Christine Lagarde, are talking openly about the pros and cons of the idea. This conversation is past due" (My Republica 2018, 1).

And Vietnam's consideration of a CBDC following suit of Chinas testing of their CBDC was reported on by Vietnamese press who wished to harmonise crypto integration;

"China officially started testing its sovereign digital currency, the so-called Digital Currency Electronic Payment (DCEP), at the beginning of this month, putting pressure on Viet Nam to research cryptocurrency in the context of international integration" (Thai News Service 2020, 1).

And in Thailand a similar case with media outlets bringing civic focus to blockchain public policy, with a positive sentiment for a CBDC contained in the headline – 'Thai handling of digital assets draws admiration';

"In the public sector, the Bank of Thailand has launched a wholesale Central Bank Digital Currency (CBDC) project called Inthanon for money transfers in the country's interbank market using the blockchain technology. Eight commercial banks are participating in the Inthanon initiative" (Asia News Network 2018, 1).

Moreover, in Saudi Arabia, media sentiment also favoured economic transformation with a preference for a CBDC over cryptocurrency, with one journalist reporting in the Saudi Gazette;

"Cryptocurrencies are already used globally for online transactions, with governments now exploring Central Bank Digital Currency (CBDC), which will be much safer and more highly-regulated than normal currency" (Al Omian 2020, 1).

In Canada however, the mood altered on the introduction of a CBDC, with the media choosing to air the deputy governors concerns of the risk associated with a potential CBDC;

"Deputy governor Timothy Lane told a University of Calgary audience that unless the risks associated with a central bank digital currency can be managed through appropriate design, the bank would not recommend issuing such a currency. "The design of a CBDC has important implications for its risk and benefits," Lane said according to the prepared text of his speech released in Ottawa. Some major reasons for caution about a central bank digital currency are concerns that it could become a vehicle for illicit transactions or that it could have significant negative implications for financial intermediation" (Canadian Press 2018, 1).

As these international media articles show, while CBDCs are likely to be structurally or operationally dissimilar to crypto (i.e., private centralised versions of cryptocurrency rather than public decentralised), public blockchain governance discourse has incorporated CBDCs into narratives of the future of disruptive financial technology. This media article detailed how digital currency as an emerging industry, has developed from the motivation of crypto aficionados to state policymakers;

"If CBDCs are ever issued, they will have nothing to do with these over-hyped blockchain technologies. Nonetheless, starry-eyed crypto-fanatics have seized on policymakers' consideration of CBDCs as proof that even central banks need blockchain or crypto to enter the digital-currency game" (ING 2018, 1).

The findings in this study therefore indicate how the governance risk discourse have brought public attention to political shifts to new monetary mechanisms, such as blockchain technology for digital currency use cases. It encompasses varied understandings of both money and technology (as in Scott's Jungle Book effect), framed through the risk discourse. The effect of this, is that regulatory ideologies prevail and can change audience's views and perceptions toward CBDCs, as it does in the risk discourse of cryptocurrency. Moreover, states adopt the risk discourse for protectionist ideals and to undermine crypto. By doing so, they can position themselves as protectors within the economy by taking a protectionist stance with the development of their own digital currency projects.

Global Financial Disruption: Disruptive Populism

The article named below is an example which plays into the risk discourse, with the headline explicitly supporting the proposition that CBDCs pose a threat to cryptocurrencies, and goes as far to posits the scenario where CBDCs could wipe out cryptocurrencies;

- 'Why CBDCs could destroy cryptocurrencies' (ING 2018)

This risk of financial disruption and uncertainty around the political and economic landscape as governments transform their monetary policy, assists the media in the saliency and vividness of crypto regulatory events. The global nature of crypto and interconnectedness of international markets (including CBDCs) provides the media with ammunition to amplify digital currency discourses, playing on public fears of uncertainty and disruption. This article from the Scotsman is guilty of this amplification of fear, in the tone and use of language deployed to describe the technological transformation;

"There is massive global disruption coming soon. Along with it will be a big fight. This disruption will not involve nuclear warheads and F-35 stealth jets but will be fought out on a global basis. Brexit will be small change compared to this scrap. And for many of us, we have no idea that it is coming. But the banks do. The next decade will see a global financial scrummage like no other we have ever witnessed or experienced" (Duffy 2019, 1).

It is well documented that contemporary technology firms eschew narratives with eschatological elements apparent in the dual rhetoric of disruption and inevitability (Geiger 2020, 1). This disruption and inevitably is clearly portrayed in the media and may be considered as an ideological narrative to break the existing financial system from its status quo and the elites which inhabit it[25].

[25] As the Banks of England's powers of currency creation and policy powers have increased since its parliamentary charter (see (Coulter 2021), opponents have argued that this type of financial system is a monopoly where the power to create currency and influence the wealth of a country is concentrated into the hands of a small group of elites in the banking, corporate and legal industries. In a Marxist fashion, the status quo is based on the fundamental argument that these elites aim to serve the few, and not the many, through the structure and relations of the financial system. Arvind et al (2018, p. 2) explain how this concentrated social power is entrenched into the current financial system, claiming that "elite groups and clusters of power and influence can play a critical role in determining who gains and who loses within the financial system", and highlight how the "Bank of England in the wake of a nineteenth-century banking scandal shows the facility with which the legal profession has long been able to stay close to and intertwined with the very core of finance and to influence its elites" (Arvind, T. Gray, J. Wilson 2018, 4)[30].

Societal resistance against this elite monopoly takes various forms by different actors, which in part has been fuelled by the 2008 financial crisis. In the public arena, socio-political movements such as the 'Occupy' activist movement who aim to bring *"together concerned citizens to fight for a new political and economic system that puts people, democracy and the environment before profit"* (Occupy n.d., 1), dominate this resistance ideology. With a similar vision for a monetary system that supports a 'fair, democratic, and sustainable economy', the not-for-profit 'Positive Money' group campaigns by educating, researching, and influencing decision makers to ensure a more equitable financial system. In their opinion;

"Right now, the money and banking system isn't working for most people. It causes house price bubbles, high levels of debt and rising inequality. It lays the foundations for financial crises, and it harms our environment. Big banks have too much power and there is a large democratic deficit in the way the Bank of England makes decisions" (Positive Money n.d., 1).

In coincidental timing of the back of the 2008 financial crisis in the West, in the first Bitcoin genesis block sent in 2009, Satoshi refers to the financial crisis which preceded the release of the new, innovative cryptocurrency. This reference indicates Bitcoin's release as a socio-technological backlash to the existing banking and capitalist financial system. This assertion can be backed by research that has found that the blockchain community is less trusting of institutions (Boon-Falleur and Laizeau 2021; Dodd 2018a; Bohr and Bashir 2014; Lustig and Nardi 2015; Golumbia 2015). Interestingly, the World Bank found that those who were unbanked also shared this characteristic of distrust in the financial system, which featured as a greater barrier to participating in the system (World Bank 2017).

Vitally, given that trust in institutions has been decreasing in recent years, decentralized systems powered by blockchain technology may consequently become appealing to a growing number of people around the world (Boon-Falleur and Laizeau 2021). With a return to the Jungle Book analogy (Brett Scott 2021), this can be perceived as a move to a more 'Mowgli' type driver, where the economy is based on a more decentralised (or communal) peer-to-peer reciprocal model. Particularly this is the case in the decentralised Web3 space where for example within the crypto and decentralised finance space, value is created and maintained by communities, rather than centralised actors such as corporations or large state

governments[26]. As Scott's Mowgli suite was explained earlier in this chapter - as an interdependent network of people using a commodity form as a proxy for a monetary unit, (which is not being used as a temporary bridge between two autonomous individuals), cryptocurrency could serve this purpose as a commodity form. The decentralised network is the interdependent network for there is no central actor (or single nodes) maintaining the network but a collective of nodes. The Mowgli drivers do then correlate with those who denounce centralisation, and who politically actively adopt the anti-state perspective on organising the economy based on a shared collective or a public ownership economic model.

According to Allon (2018), the anti-statist, anti-government, anti-bank space opened the financial crisis, where such ideas have gained traction; producing what has been described as a 'new libertarianism' that unites far-right politicians such as Ron Paul and the anarchist left of the Occupy movement. Mark Carney, Former Director of the Bank of England also admitted himself that;

"in the depths of the global financial crisis, the coincidence of technological developments and collapsing confidence in some banking systems sparked the cryptocurrency revolution" (Carney 2018, 6).

This study finds that while the financial crisis was not explicitly mentioned regarding linkage of the failing banking system to cryptocurrency legitimacy or adoption, the disruption narrative did prevail in an alternative governance discourse. For example, Martin Woolf in his coverage of crypto in the Financial Times has stated how this crypto 'disruptive' approach should be rejected in favour of a CBDC. In the context of disruption he ultimately claimed that right now " 'move fast and break things' is the last motto we need in finance" (Wolf 2019, 1).

[26] Web3 refers to a decentralized online ecosystem based on the blockchain and that is considered by proponents as the next phase of the internet. Platforms and apps built on Web3 will not be owned by a central gatekeeper as in the current Web2 ecosystem, where most communication and commerce take place on closed platforms owned by a handful of large powerful corporations, such as Google and Amazon. Rather, the Web3 ecosystem will be controlled and supported by users, who will earn their ownership stake by helping to develop and maintain those services. This sharing economy model is designed to promote wealth pre-distribution (TED Talk 2016), where the creation of value is decentralised among participants, and the growth of wealth is distributed among the communities that help build and support the ecosystem.

This disruptive ideology has been acknowledged by the UK's news outlet 'The Guardian', who present this as an alternative governance discourse. This disruption narrative is framed by quoting former White House strategist Steve Bannon, which according to him, disruption is part of cryptocurrencies appeal, claiming;

"Cryptocurrency is 'disruptive populism', it takes control back from central authorities" (Mahdawi 2018, 1).

This discourse based on disruptive populism, is also witnessed through media stories, that featured in the corpora of articles with headlines such as these examples;

- 'Blockchain a disruptive tech but can be tamed' (Ibrahim 2018)
- 'What makes blockchain the most disruptive career option' (Times of India 2018)
- 'SET, SEC adapting to tech disruption' (The Nation 2018a)
- 'Rise of digital disruption in the auditing process' (Daily Financial Times 2019)
- 'AI-driven globalization creating massive disruptions in economies worldwide' (The Sunday Guardian (India) 2018)
- 'Blockchain: digitally disrupting and transforming business ecosystems' (O'Reilly 2016)
- Five technologies disrupting our lives (MINT 2018)

These headlines demonstrate how blockchain is framed by the news media as being 'new and innovative' and importantly to how it informs the narrative - how it is breaking old political and economic traditions. The language of disruption describes a change but has negative connotations, unlike the word 'change' itself, that is more neutral in its meaning. Conversely, 'transforming' semantically is often understood in a positive tone to describe how business ecosystems adapt to changing socio-political environments.

Some positive blockchain sentiment was propelled by the disruptive innovation narrative where CBDCs were framed in the popular media as a way of financially incorporating those

who are currently excluded under the current system. This excerpt from an article demonstrates this framing;

"With blockchain technology and digital assets, people who are currently excluded from the financial market can participate in it, adding that the government, banks and people should understand that blockchain and Bitcoin are a better way of transacting business. She said that individuals, institutions, banks, government, religious bodies, should care about the things that build human inclusion and build economy that is equitable" (Nzeako 2019, 1).

Globally for example, the World Bank estimated that about 1.7 billion adults remain unbanked, defined as those without an account at a financial institution or through a mobile money provider (World Bank 2017). Women are overrepresented among the unbanked in most economies, even in economies that have successfully increased account ownership and have a relatively small share of adults who are unbanked.

The monetary system of the future could then follow like this innovation discourse to empower people particularly disadvantaged populations such as women, for those who are currently unbanked. Ideas of empowerment underlies this discourse of disruption. One of the most influential economic institutions such as well-regarded financial rating agency Fitch Ratings, adopted the discourse disruption with an article headlined 'Central Bank Digital Currencies May Disrupt Financial Systems', outlining the key potential benefits of CBDCs, stating;

"The key benefits of retail CBDCs lie in their potential to enhance authority-backed cashless payments with innovations in step with the wider digitalisation of society. For central banks in some emerging markets, a key driver for researching CBDCs is the opportunity to bring underbanked communities into the financial system, and improve the cost, speed, and resilience of payments." (Fitch Wire 2021, 1).

The CBDC benefit narrative crosses over from corporate institutions, such as for example, to non-profit French association of bankers and academics – SUERF[27], who also adopt the institutional innovation disruption framing of CBDCs. Yet, the digital disruption they refer to, while positive in sentiment for the overall economy in mitigating financial stability

[27] SUERF is part of the European Money and Finance Forum.

concerns, is more focused upon the risk to commercial banks and financial eco-system with the introduction of CBDCs. They claimed;

"Central banks are on track to introduce their own digital currencies in the coming years. While central bank digital currencies (CBDC) will shore up monetary sovereignty and mitigate financial stability concerns, they also pose risks of disruption to commercial banks and the financial ecosystem" (Ahya, Kam, and Richers 2021, 1).

Similarly, American bank JP Morgan bank as a corporate institution also adopted the disruption populism, pointing out the fact that disruption is not usually synonymous with the central bank, with it not particularly being renowned as an 'innovative' institution. Chief economist and Global Head of Economics at Morgan Stanley stated nevertheless, that CBDCs could cause noteworthy disruption in the economy, claiming;

"The word "disruption" is not typically associated with central banks. But as central banks edge closer to introducing their own digital currencies, significant disruption could play out in the financial system" (Ahya 2021).

Interestingly, the corporate institutional disruptive populist discourse with relation to CBDCs, shares some similarities with the public disruption populism in cryptocurrency more broadly. This shared narrative is particularly prevalent with decentralised cryptocurrency, where the common theme pronounced by proponents is that financial inclusion includes not just those who are unbanked, but those who are institutionally banked, but who naively entrust centralised corporate banks with their fiat money. The cryptocurrency disruption narrative displays arguments based on the belief that individuals should become their own bank and/or reduce (or eliminate) governmental influence over their personal finances by utilising crypto as a tool of emancipation[28].

[28] This belief system appears to fit the libertarian ideology that governments and big corporate banks cannot be trusted and must be bypassed in some way, as Golumbia (2016) has revealed in his book Bitcoin: Software as Right-Wing Extremism. Such libertarian groups are found in the Bitcoin user community who have been found to have prefer algorithmic authority to the authority of conventional institutions, which they see as untrustworthy. For example, using interview and survey data, Lustig and Nardi (2015) found that most users held traditionally libertarian beliefs. Importantly, this supports Golumbia's assertion that Bitcoin is inherently a right-wing software. Further, in an exploration of the Bitcoin community, Bohr and Bashir (2014) found that while libertarians view Bitcoin as an alternative currency that can free the individual from state power structures, left-of-centre users may be more attracted to Bitcoin as a decentralized payment system that challenges power structures within the realm of finance.

What this disruptive populist discourse in ideology shares among crypto enthusiasts, central bankers and government institutions with different political interests is wrapped up in a moral philosophy which uses the unbanked community (and usually more widely emerging economy populations) as a case study to disseminate ideas of equality, instead of privileged access or exclusion to the Western world. This moral judgement is sound, after all, who could deny that in the developed world, anyone should be denied or excluded from the financial system whom it is supposed to serve? It is, however, a convenient population for crypto proponents to use as exemplar, to display how the financial status quo has failed such communities. This enables crypto proponents to take the moral high ground, eschewing real inequality problems, whilst explicitly laying the blame at the government, big banks, or corporations, (and capitalism more generally) in a bid to demand a technocratic crypto sovereign[29].

The data shows that corporate and state institutions have not denied or ignored the social ill of financial exclusion as they may have in the past. Instead, they have used the developing economy and unbanked communities as a fitting case study, in an equivalent way to crypto proponents, for their own economic and political goals; to breed acceptance and justification for digital currencies. This is clearly witnessed in the populist disruptive discourse appropriated in the justification for a state CBDC by many different nation state countries, as discussed in detail above. Research has even exposed how states are incentivised to establish some blockchain-based governance systems, given that they can be designed not to threaten their own survival (Reinsberg 2021).

Conclusion

The news media can expose an array of ideologies that underpin governance blockchain practices such as monetary considerations and policy decisions, that can have a real-world effect on the crypto economy. This chapter has argued that international news media

[29] For a more detailed analysis on the technocratic crypto sovereign, see (Brett Scott 2014).

discourse mirrors corporate and state institutional positions on virtual currencies, through a disruption narrative often characterised by risk. This has been demonstrated by showing how the disruption populist discourse has been pervasive among international news media. Narratives of risk, change and innovation are reflected in governance discussions of both private decentralised cryptocurrency projects and state digital currencies (CBDCs).

Using Brett Scott Jungle Book's Tarzan Suite as a mental model to understand public language about money, the drivers i.e., assumptions, can guide us to recognise trains of thought which lead to ideological positions on the social and political characterisation of virtual currencies. Contingent upon which view one takes -Tarzan (orthodox) or Mowgli (unorthodox) – can explain the rationale behind an appropriated institutional discourse of 'disruption' and whether crypto is perceived as a wholly negative risk, or positive innovation of money or credit; or a softer nuanced version of both.

The media have a role in the amplification of this ideology through the disruption discourse. This amplification is displayed for example, from those institutions appropriating the disruption discourse running in the Mowgli mode, which as Scott points out, show that Bitcoin could be an innovative commodity form within credit social networks. The idea of reliance on social networks as opposed to singular connections, are narratives which are seen in the press that rely heavily on the peer-to-peer nature and decentralised framing of Bitcoin, giving the impression of a social commons maintained by the *community*. These social community ideologies are technological features that crypto proponents' often voice as key arguments for the use of decentralised digital currencies.

Those institutions who oppose crypto, appropriate the disruption discourse but instead take the Tarzan mode, believing that virtual currency only acts as a temporary singular bridge between two autonomous individuals, where a community is not required (or wanted), and where participants are not connected in social sphere. Central actors in this way take the position of a 3rd party to transactions to mediate, under this train of thought. The latter Tarzan stance can be acquainted with the capitalist model commonly found in the West, as it places emphasis on individuals in the transaction, over the community. Western institutions parrot these ideologies, with the traditional financial press such as the Financial Times in the UK

often mirroring and amplifying the disruptive discourse from an orthodox perspective, with elements of risk and fear underlying the narrative.

How a state responds to cryptocurrency based on this public discourse of crypto gives an indication to what role public discourse pedalled by the news media and public and private institutions has taken in regulating and governing them. The second chapter considered whether CBDCs pose a threat to cryptocurrencies themselves in this contested socioeconomic space. It considered the extent that a central bank digital currency would threaten cryptocurrencies in three separate but related sections. First, the historical role that the Bank of England has taken as the state authorised central bank was discussed, analysing the former and contemporary rights and privileges which have dictated their historical operational monetary and fiscal policy activities. The second section of the chapter moved on to assess the competencies (including the potential benefits and challenges) of crypto coins including stable coins, and a CBDC. Finally, the third part of the chapter, concluded by evaluating the necessity for decentralised cryptocurrencies as non-state conferred currency, compared to the proposed centralised sovereign backed CBDC, controlled by the Bank of England, in line with the populist disruptive discourse.

The next chapter (chapter 4) analyses the other key discourse that was identified from the data in this crypto study of international news media; which is the crypto-crime discourse. This analysis is then followed by chapter 5, which analyses how cryptocurrency as a technology is harnessed as a weapon by state anti-democratic media to drive populist discourses which achieve social, political, and economic goals that fit a government's agenda. I argue that the news medias' use of discourse with 'fixed' meanings promote a propaganda government-backed agenda, which is subtlety hidden in layers of biased narratives and underlying unquestioned assumptions. In this way, opposing perspectives are silenced and a distorted reflection of the reality of cryptocurrency and the digital economy is (re)presented to the public. Two case studies of China and Venezuela are discussed in detail to argue that both countries used state sponsored media to drive an anti-crypto discourse to suit the governmental political will, to pave the way for the introduction of their own state conferred digital currency counterparts.

CHAPTER 4: The Crypto Crime and Disorder Discourse

Contents

Introduction

This chapter follows the discussion of the financial governance discourse and the framing of cryptocurrency regulatory debates, with an exploration of the crypto-crime discourse identified from the data. These two discourses; crypto governance and crypto-crime we shall see are heterogeneous, as narratives from each cross-over. The 'disruption' narrative is for example prevalent in both discourses, which are characterised by risk or anarchy. The debates around disruption are pervious, due to the real-world consequences of a global adaption to digitalisation. As with all new technologies, the acceptance of them is dependent upon societal consensus of their application to offer new opportunities or solve existing social and economic problems.

How the public perceive cryptocurrency can be based upon saliency and media effects as discussed in the last chapter, and the crypto crime discourse can also contribute to this perception. The crypto crime discourse is then the focus of this chapter, which explores how the crypto crime discourse has been constructed by the media, the media portrayal of crime and disorder, and the media amplification of cryptocurrency and crime. In this chapter, I discuss how cryptocurrency is often associated with money laundering activities and as a payment tool for illicit goods on the dark web, by the news press. There is a key cryptocrime disorder present within the international news media which the data supports. I argue that the abuse of digital currency for criminal efforts works to reduce its agency and undermine its legitimate uses; which are not given a fair balance of reporting nor contextualised within international news media.

This pervasive crypto crime discourse, encompasses persistent narratives of disorder which have been socially produced by news media outlets and state institutions, demonstrating cryptocurrency not simply as an economic or technological phenomenon, but a discursive phenomenon too. Media amplification and sensationalism of crypto feeds these narratives of disorder, reinforcing the crypto-crime discourse. Building upon the last chapter where I argued that there is a disruptive populism at work in the public sphere from news media and institutions through the crypto governance discourse, this chapter shows that the heterogeneous narratives of risk also permeate the crypto-crime discourse too.

The Data Results – The Cryptocurrency Crime Discourse

Just as described in the methodology chapter, this crypto study took a grounded inductive stance to a computational discourse analysis to address two key research questions 1. What are the key cryptocurrency discourses? and 2. By whom are the discourses created? This methodology allowed for topics to emerge out of the data, a priori to theoretical assumptions linked to historical or current debates upon monetary discourse, of which lack empirical evidence. The study adopted unsupervised machine learning methods to aid in the process of working with big data; a corpus which contained articles from over 60 countries and 5 continents. Quantitative probabilistic prediction models were built, including LDA and CorEx models to predict topics. The CorEx model was chosen for its topic quality as explained in the methodology chapter.

The table below (table 1) displays the CorEx output from this cryptocurrency study (the code can be accessed here: https://github.com/kellyann88/Crypto_Corex). This chapter focuses on the theme of cryptocurrency and crime, which was a clear prevailing theme in the topic model output. This is discussed in more detail below.

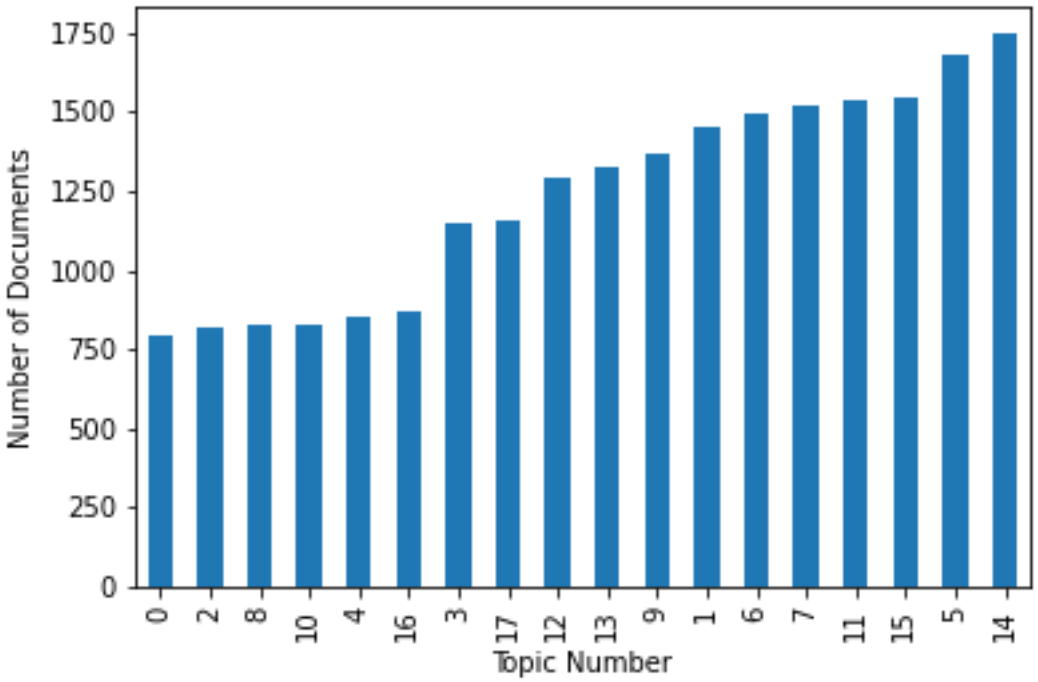
1: wetsuit,meal,phil,family_history,wellness,south,rotary,middleton,st_augustine,building_vh
2: way,like,thing,good,time,work,think,change,people,want
3: eat,sign,book,wealthy,blue,door,farm,correspondence,performer,plate
4: life,man,home,leave,old,child,write,live,family,spend
5: court,police,arrest,quadrigacx,investigation,accuse,cotten,nova_scotia,court_document,allege
6: need,build,new,create,use,system,future,business,provide,opportunity
7: bank,financial,regulation,regulator,issue,government,risk,regulate,transaction,central_bank
8: year,high,big,buy,end,start,rise,cent,day,investment
9: art,town,train,compass,nursery,hall,club,foot,gardens,institute
10: challenge,industry,develop,solution,artificial_intelligence,lead,datum,bring,application,internet
11: petro,venezuela,maduro,bolivar,venezuelan,sovereign_bolivar,hyperinflation,venezuelans,caracas,minimum_wage
12: security,online,information,user,company,case,account,website,include,access
13: china,country,economic,chinese,state,oil,national,president,south_china,morning_post
14: attack,travel,threat,group,malware,describe,american,check,campaign,visit
15: investor,market,price,bitcoin,value,trade,exchange,crypto,trading,asset
16: technology,blockchain,blockchain_technology,innovation,global,development,enable,potential,benefit,sector
17: politic,america,class,bridge,welcome,road,exercise,chamber,coach,worship
18: australian,wright,mark_zuckerberg,nakamoto,zuckerberg,facebook,satoshi_nakamoto,craig_wright,australia,scandal

Table 1: CorEx Output

The graph below (graph 1) shows the number of documents that each topic is represented in, from the CorEx analysis. Topic 5 as seen in the table above, contains terms which relate to crime and cryptocurrency. Specifically, the topic refers to a criminal event in which funds were stolen from the QuadrigaCX exchange. It can be seen in the graph below that topic 12 (which is represented as topic 11 in the graph below due to python indexing is interpreted as a

theme of crypto crime) is a prevalent topic, appearing in over 1500 documents (news articles). Further, other substantive topics interrelate to crime and disorder, as for example topics 14 and 18 (shown on the graph below as topics 13 and 17) which contain news articles reporting on security, hacking and malware crimes, as well as crypto scandals. Topic 7 was also a prevalent topic (shown as topic 6 in the python graph below) whilst relating to governance, is indirectly related to crypto crime as many of the discussions around crypto crime and disorder centre around debates of lack of governance leading to criminal opportunities. This chapter is therefore dedicated to exploring the cryptocurrency related crime in the crypto-crime discourse within international news media.

Graph 1: Topic Distribution Across Total Number of Documents



The Media Portrayal of Crypto Crime and Disorder

Crime Affiliations and the Disorder Narrative

Crime and disorder have been a key feature of media representation throughout history. The way the media influence the public's understanding of crime and justice is well documented

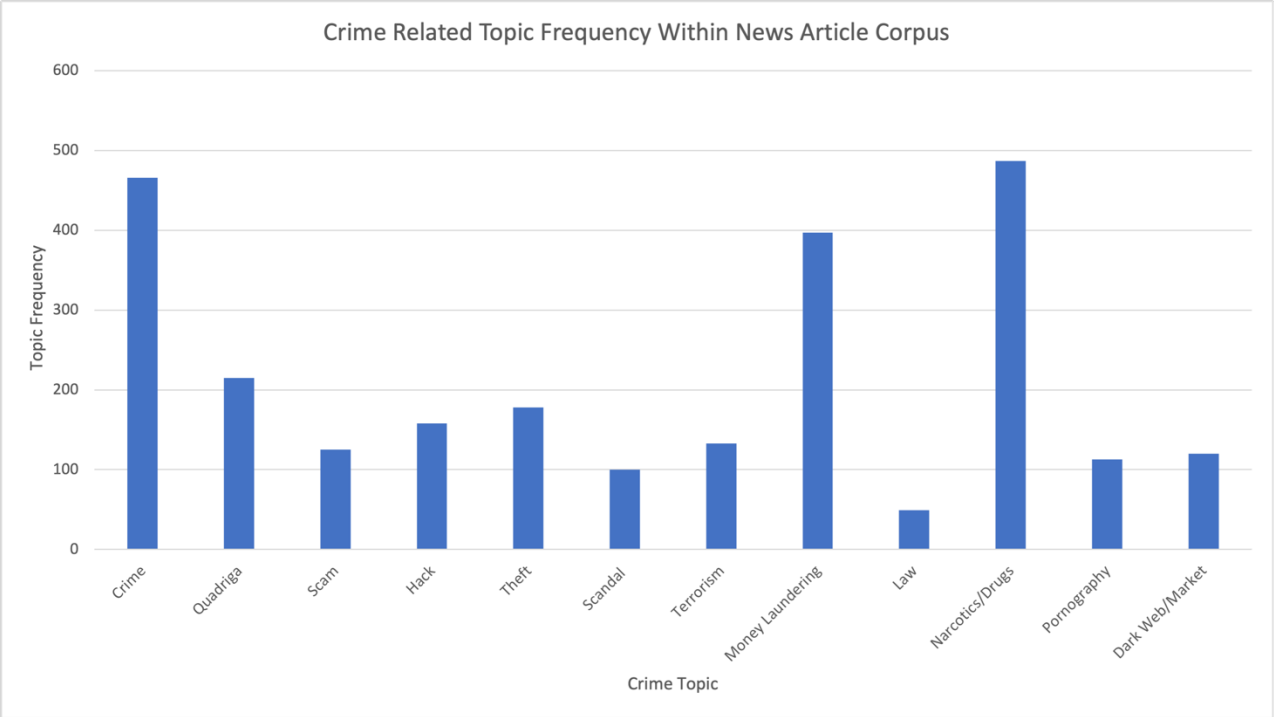
(Baranauskas and Drakulich 2018; Mastrorocco and Minale 2018; Katz 2016); as is the collective meaning making in response to crime events (Powell, Overington, and Hamilton 2018). Contemporary questions have been raised over the 'dogma of neutrality' of the media (Iggers 2018), and historical debates have argued about the extent of effect that the media has on audiences.

Early psychological behaviourist approaches from the first world war era, have been replaced by sociological functionalist approaches in studies of mass communication, of which, deny the deterministic accounts of the audience being a passive homogeneous and undifferentiated mass that previously characterised behaviourism (Carrabine 2008). The sociological structural view therefore considers media articles as;

"forms of representation that are commercially produced commodities, which circulate as culturally meaningful objects and are actively interpreted by audiences in diverse settings" (Carrabine 2008, 12).

This section applies the empirical findings of this crypto study of such 'cultural commodities' (i.e., the news media articles) which portray a link between cryptocurrency and crime. The crypto crime discourse comprises of various narratives, which broadly relate to themes of crime, disorder, and (lack of) security or governance. These themes emanate from a culmination of key stories which were reported on by international news press and collected during this study, which formed distinct but related narratives centred on key events in the crypto economy. The CorEx topic model identified topics relating to crypto crime in topics 5, 12, 14 and 18. See Table 1.

The findings of this study from these specific topics and more broadly throughout the dataset, show clear affiliations between the presence of cryptocurrency and criminal activity and/or events. Broadly across the entirety of the news corpora in the dataset, the crypto-crime discourse can be described as a category which contains news media articles which refer to cryptocurrency related crime. These are for example news coverage on cryptocurrency exchange hacks, scams, scandals, and money laundering incidents, or which can be interpreted as 'crime events' for analysis purposes. See graph 2 below for crime topic frequency i.e., mentions of these topics within the news article corpus.



Graph 2: Crime Topic Frequency

Particularly of note for example, were news stories reporting on QuadrigaCX, Canada's largest former cryptocurrency exchange. In 2019, the exchange ceased operations and the company was declared bankrupt with C$215.7 million in liabilities and about C$28 million in assets, with the FBI and Royal Canadian Mounted Police investigating due to the mysterious death of Quadriga's CEO-Gerald Cotton (36). There were numerous media reports (specifically, 215 mentions of Quadriga as seen in the graph above) on this case in this study's news corpora which led it to become an important topic within the crypto crime discourse. This is demonstrated in Graph 2 above.

Another important event within the crypto crime discourse was the theft from Coincheck. Coincheck was one of Japan's largest digital currency exchanges and because of the hacking attack on its network, it reportedly lost $534m (£380m) worth of virtual assets (BBC World 2018). Similarly, in another crypto crime hacking event that was featured in the crypto crime discourse was the crypto exchange attack, on Seoul-based Bithumb. News media coverage reported that 35bn won (£24m; $31.6m) worth of cyber-cash had been "seized" overnight (BBC News 2018). Further on the topic of crypto-crime reporting, on 30/06/2019, the Financial Times reported a warning on crypto scams. This story simultaneously occurred alongside another crypto crime news reports of the Iranian Authorities shutting down crypto mining farms.

Through Stuart Hall's lens, the media representations of cryptocurrency in these articles can be understood as an attempt to attach 'preferred' fixed meanings onto normative discourses around cryptocurrency. This normative discourse read through the preferred meaning, conjoins cryptocurrency with crime, where the mere presence of cryptocurrency also infers the likelihood of criminal activity. This association of crypto with crime may be a fixed preferred (and potentially biased) meaning around cryptocurrency as a digital technology, to create a 'disorder narrative' in the public domain.

This disorder narrative could have the effect of undermining confidence of cryptocurrency, due to widespread concern about the security and the trustworthiness of Bitcoin and other cryptocurrencies and may cause their legitimacy to be brought into question when linked to criminal activity through international media reporting. Concerns about Bitcoin's reputation as a reliable payment tool or safe investment vehicle may affect buyers and seller's preconceptions about the digital money and change their market behaviour in relation to that sentiment, as research has shown that the function of the media, is a source of information and sentiment in the financial market (Walker 2016). Further research has identified that the interaction between media sentiment and the Bitcoin price exists where there is a correlation between the abnormal returns of Bitcoin and the amount of news media articles published daily (Tjärnfors and Wikman 2018). With consistent news articles published on crypto crime with the pervasive disorder narrative displayed as the data shows, this is likely to then have a sentiment effect on the crypto markets-particularly so by negative news sentiment (Coulter 2021).

This 'disorder narrative' is not unique and follows earlier seminal work on how illicit drugs are often reported in the media, which is usually heavily distorted towards crime and deviance framings (Hughes, Lancaster, and Spicer 2011; Murji 2020). Deviance framings such as these often culminate in public moral panics, a term which Stanley Cohen defined, but which as a general theory of moral panics, has been applied to the media and policy rhetoric framing of drugs (Hawdon 2001; Baerveldt et al. 1998; Singer 1998; Altheide 2009). Various worldwide moral panics around drugs, has led governments to take a staunch stance against drug related crimes such as drug trafficking, dealing and abuse through political means via reactionary policy. In many instances, this has been wrapped up in socio-political discourse, often referred to as the so-called 'the war on drugs' in the public agenda (Vitiello 2020; Whitford and Yates 2009).

As the polemic 'war on drugs' discourse is so central to government agenda and policy rhetoric, public interest is a key factor in the dialogue on combatting drugs. Moral panics through the framing of stories in the news media contribute to this dialogue, and thus as institutions they become stakeholders in generating and maintaining rhetoric around drugs in the public realm. As this study shows, this contribution to the rhetoric holds true for drug related crypto stories too, where the news media frame stories of digital currency centred around where drugs are bought and sold illegally on dark web markets. The development of illicit online trade platforms such as dark markets, is the reason why some digital crime is sometimes symbiotically dependent on the existence of digital currencies.

Cryptocurrency's close association with crime, for example, is seen in an article published in 2019 from Latin America which reported on the closing of the 'Wall Street Market' (an infamous dark web marketplace). The article specifically emphasised the point that cryptocurrency was not only linked to crime but integral to the platform's business model, stating:

"The dark web, where online black markets operate, selling weapons, drugs, stolen personal data or child pornography……To pay, Bitcoin and Monero were used and site administrators took a commission of between 2% and 6% of the value of the product sold" (*CE Noticias Financieras English* 2019, 1).

Further, an article in the Daily Telegraph in Australia reported on how crypto had been used for dark web crimes, reporting that;

"a man is in the hands of the courts having been arrested after allegedly attempting to collect guns and ammunitions he'd purchased through the dark web using cryptocurrency" (The Telegraph 2018, 1).

These articles demonstrate how cryptocurrency is firmly positioned alongside the illegal activities of international drug offenses, where drugs are digitally bought and sold illegally on online dark markets, using crypto as a payment method. Moreover, it reveals how crypto is represented by news media as being integral to the dark market platform, pointing to the immorality of digital currencies. Cryptocurrency then coalesces with dark markets, which as

a platform supports illegality activities, and as a result crypto becomes an extension of the moral panic[30] around online drug markets. This immorality and disdain for crypto, is a result of the crypto crime discourse. Although it is important to note that when crypto is used in the public sphere legitimately, whether as an investment or payment mechanism and is not linked to dark market activity, use of cryptocurrency is acceptable. Cryptocurrency for example as a payment method, is not illegal in any of the countries in Western Europe, including many internationally.

In a similar vein, this study shows how the dark web is represented as a threat to societal values, but importantly, highlights how the narrative is stylised with cryptocurrency being closely interconnected to the threat of dark markets. Thus, cryptocurrency itself becomes part of the threat that dark markets pose, purely because of its association with its stereotype for being the digital tool of choice for drug (and other criminal) transactions. It is important to note that in other circumstances where criminal activity is undertaken on platforms for illicit transactions using the cultural 'standard and accepted currency' i.e., British Pounds, Euros or Dollars, the media are unlikely to represent the use of this paper technology (even in its digital form) as an accomplice, or in other words as a tool for crime, such as crimes or illicit drug activities.

Very few media news outlets recognise crypto's legitimacy and detail how in the dark markets, crypto is abused in this way. In contrast however, state justice institutional discourse is very distinctive. The US Department of Justice's language for example is different to the news media's normative stance and instead of vilifying crypto, it principally recognised that crypto itself is not a threat, but how it as a disruptive technology is susceptible to abuse, stating in 2020 that;

"Innovations in technology often change the world for the better. And yet, criminals, terrorists, and rogue states can use those same innovations for their own illegitimate ends, imposing great costs on the public. Today, few technologies are more potentially

[30] Stanley Cohen defines moral panics as; *"a condition, episode, person or group of persons emerges to become defined as a threat to societal values and interests, its nature is presented in a stylized and stereotypical fashion by the mass media"* (Cohen 2011, 1).

transformative and disruptive—and more potentially susceptible to abuse—than cryptocurrency" (U.S. Department of Justice 2020, 1).

Cryptocurrency utilisation as a condition for successful concealment of identities for illicit drug activities on the dark market are not however unwarranted, particularly with the development of technology infrastructure and secure browsing technology such as the TOR network[31]. For example, the United Nations Office on Drugs and Crime has expressed concerns about cryptocurrencies, due to the pseudonymity of transactions, the ability for law enforcement to identify and track transactions and the ability to transfer substantial amounts of value devoid of government oversight (United Nations Office on Drugs and Crime 2017).

Money laundering has been found to be the common denominator in most cryptocurrency-based crime (Chainalysis 2021). Laundering therefore, has been the subject of focus for news articles by media institutions who capture public attention with cover stories donning headlines, such as these examples in this study's corpora;

- 'Money laundering: vulnerable activities and their combat' (CE Noticias Financieras English 2020)
- 'Bank of Ireland quizzed on (EURO)273m One Coin 'laundering'; US prosecutors call in current and former officials at lender to testify in cryptocurrency case' (Carey 2019)
- 'North Korea continues to face tightest sanctions for money laundering' (Kyung-min 2019)

[31] Developments in the technology infrastructure that supports use of dark markets including encryption software, and secured browser technology such as TOR (The Onion Router), have facilitated the use in dark web markets (Weber and Kruisbergen 2019). As a result of the anonymity that such technologies provide, online markets have specialised in 'black' market goods, including narcotics (Lokala et al. 2018; Christin 2013), trafficked goods (Broséus et al. 2017), pornography and child sexual exploitation material (Haasz 2016; van der Bruggen and Blokland 2021) and weapons (Rhumorbarbe et al. 2018; Weimann 2016).

- ‘Money laundering: Peter German urges cities to review 'vulnerabilities' (The Vancouver Sun (British Columbia) 2020)
- Top bankers 'failing to tackle money laundering'; Serious Fraud Office chief thinks executives are afraid of consequences if clients turn out to be criminals (Wallace 2018)
- ‘Revolut reports suspected crimes. Authorities told of possible money laundering. Questions over fintech's rapid growth’ (Arnold 2018)
- ‘Swiss banker pleads guilty in $1.2bn Venezuelan money laundering scam’ (Chapman 2018)

While most of the public only ever experience money laundering through news stories, and not as part of their daily lives, ‘dirty’ money is a hot topic in mass media as crime and technology share a complex and sometimes innovative relationship that is often interesting to be entertained by. Greater media attention on money laundering has led to number of TV shows and movies focusing on the crimes that lead to money laundering, including for example, Breaking Bad, Narcos, Ozark, The Infiltrator, and McMafia. News articles offer a particular perspective though, as they represent true events reported in real time, where readers may have a closer relationship with the medium by being a daily reader, providing an implicit trust in the news they receive.

The first experience for those who receive information about laundering, may well have been through newspaper entertainment, through stories of cryptocurrency and money laundering. As cryptocurrencies are still a new concept for the public, and laundering does not touch their lives personally, the connection between money laundering and cryptocurrency may not have been obvious or explicit. Digital payment methods in the form of cryptocurrency such as Bitcoin for example, are however increasingly used by criminals to launder money obtained through cyber enabled and assisted crime (van Wegberg, Oerlemans, and van Deventer 2018; Albrecht et al. 2019; Nica, Piotrowska, and Schenk-Hoppp 2017).

As cryptocurrencies are not issued by governments or central banks, they are subsequently not supervised by public authorities, rendering them appropriate to use for illegal purposes (Teichmann 2018). Cryptocurrency can act as a vehicle for cybercriminals to hide stolen funds, or funds that have been accepted as payment for illicit goods on the darknet, obfuscating the source of the funds from law enforcement (Dyntu and Dykyi 2018; Chainalysis 2021). This is in part because fiat currency can be easily converted to cryptocurrency (either on a centralised or decentralised exchange, peer to peer, or via a crypto ATM), where there is a risk of criminal proceeds from illicit activity being converted from fiat to crypto, fulfilling the first stage of 'classic' money laundering (Chuen 2015). Various transactions where Bitcoin are sent to new Bitcoin addresses per transaction, amounts to a transaction layering technique (Levi 2002; Chuen 2015; Albrecht et al. 2019). Finally in the laundering process, the illicit funds can be converted back into fiat currency, laundered, and incorporated back into the real economy. Capital then, both fiat and crypto are requisites for dark market illicit activities such as money laundering, drug distribution, and terrorist financing.

Recent technological developments in encryption and anonymity methods have supported the use of cyberspace dark markets by terrorists for nefarious activities. Weimann (2016) for example, has argued that the Dark Web and terrorism are a perfect match, as terrorists need an anonymous and hidden network that is freely available, yet generally inaccessible invisible. Cryptocurrencies are a popular method among terrorist groups to use for terrorism financing because they can obfuscate identities, as well as transaction details. According to the United Nations (2012), the way in which terrorists use the internet and dark web to raise and collect funds and resources may be classified into four broad categories: direct solicitation, e-commerce, the exploitation of online payment tools and through charitable organizations. The capital needed for dark markets then determines the presence of online crimes[32].

The extent to which international news media focus is on bad human actors leveraging crypto (as a technology requiring human intervention/application) is often ignored or underplayed with the news media repeatedly reporting crypto as the standard tool for online crime related

[32] There are three factors that determine the presence of organized crime on the dark web: the estimation of risks, existing distribution channels (offline) and the types of capital needed to succeed in dark web criminal markets (Weber and Kruisbergen 2019).

activity. This statement from a Nigerian newspaper article sums this sentiment up neatly, in how it describes crypto as a potential threat to society;

"a new avenue for criminal activities and evasion of social responsibility" (The Nation 2018, 1).

These articles afford crypto an agency, where the media are quick to point out drug, money laundering, and terrorist financing are a risk which develops from the existence of crypto and acts as an 'evasion of social responsibility'. This clearly identifies illegal activity but more importantly also delineates a moral boundary which it presents crypto as crossing.

Agency is seen again in another news media article, for example this time from The Korea Times, reporting on the FATF (Financial Action Task Force), detailing how they were urging all jurisdictions including North Korea to apply effective countermeasures and targeted financial sanctions to protect their financial sectors from money laundering, financing of terrorism and weapons of mass destruction (WMD). Key to the article, was a focal reference to digital currency in the form of stable coins, which they highlighted as digital currency posing a serious crime risk, rather than the focus on the bad human actors who abuse crypto. They claimed;

"Emerging assets such as so-called global stable coins, and their proposed global networks and platforms " could have serious consequences for our ability to detect and prevent money laundering and terrorist financing" (Kyung-min 2019, 1).

Likewise, a Russian outlet focused their article on the risk of money laundering posed by cryptocurrency as a technology too, rather than recognising the bad actors who implement crypto for illicit means;

"The Bank of Russia has not shifted its stance on cryptocurrencies: the regulator sees potential and huge risks from the standpoint of consumer rights protection and prospects for money laundering" (No Author 2018, 1).

London's business focussed newspaper - City AM reported on the technology in a similar way. City AM identified the cryptocurrency as the risk, this time however, it emphasised its

threat as ‘innovative’ using the contemporariness of crypto as a threat justification in the language the spokesperson used, in describing it as being ‘the first of its kind’;

“Describing it as the "first of its kind", a spokesperson for City of London Police confirmed the addition of a cryptocurrency course at their Economic Crime Academy in response to officer’s concerns that they are ill-prepared to cope with the new technology” (Hignett 2018, 1).

The tone of the articles shares the disorder narrative, by framing crypto as a threat to society with the news media’s representation of inextricable links to money laundering and terrorist financing. All three articles originate from different countries, North Korea, Russia, and the United Kingdom respectively, who differ in political and social regime, but all represent crypto in a comparable manner, and vitally sharing the same institutional news media ‘disorder’ narrative. This representation feeds into a wider discourse of moral panic, due to its infusion with crime narratives around cybercriminal activity and ideologies of morality.

In addition, particularly in the City AM article the author highlights how the state police are ‘ill-prepared to cope with the new technology’, which gives the impression that society is in a state of disorder. If state-sanctioned law enforcement is viewed as unable to ‘cope’ due to the new threat, this representation indicates a level of lawlessness, and the threat is real and inevitable, with no protection from the police for public protection. In line with paradox of the fear of crime i.e., why often the fear of crime does not match up with actual chances of victimization[38], the level of threat is not considered, nor discussed contained in the article, only to say that new police training has been implemented for officers. In this way, the state’s legal protections are undermined and consequently the disorder narrative is upheld, with the news media’s projection of risk and amplification of digital crimes.

Whilst there is no denying that law enforcement face challenges of policing the dark web[39] (Ciancaglini et al. n.d.), law enforcement and intelligence communities can however utilise the anonymity of the dark web, adopting it as a tool for research and sting operations[40], to support law enforcement efforts in attempts to combat dark web crimes (Finklea 2017). Further successful virtual currency litigation has showed how law enforcement has

productively used the dark web to trace, track and monitor illegal activity and bringing criminals to justice[33]. Such insight and balanced representation are missing from articles in the corpus, that attempt to portray a disordered and dysfunctional society, amass with digital crime anarchy. This leaves the public oblivious to the intelligence and law enforcements efforts to combat dark web crimes. It can be argued therefore that there is misrepresentation of cryptocurrency, where contextual information is purposefully omitted by news media institutions. Institutional news media discourse differs to US justice agency discourse where state organisations/departments take pain to represent an 'ordered' narrative where the agency seeks to protect the public. For instance, the. US department of Justice continue to reassure the public and corporations, that digital crimes do not pose such a great threat. This news bulletin from the US Dept. of justice makes the public protection narrative explicit, stating;

"There is no place beyond the reach of the FBI (Federal Bureau of Investigation) to conceal illicit funds that will prevent us from imposing risk and consequences upon malicious cyber actors," said FBI Deputy Director Paul Abbate. We will continue to use all of our available resources and leverage our domestic and international partnerships to disrupt ransomware attacks and protect our private sector partners and the American public."(US Department of Justice-Office for Public Affairs 2021, 1).

Much of the institutional news media rely on the narrative of fear of crime with anecdotal evidence of digital crimes to amplify the threat. However, a few organisations have attempted to measure objectively the real level of threat crypto market pose, with blockchain analysis company Chainalysis, claiming that scams and dark net markets being the most profitable of all illicit crypto activity (see Figure 1 below), and reporting that illicit activity represents 2.1% of all cryptocurrency transaction volume - $21.4 billion worth of transfers (see Figure 2 below). Much of this illicit activity is undertaken on dark markets, where the Dark Web can perform a host of roles in malicious activity (Finklea 2017).

[33] Virtual currency litigation on the dark web has resulted in effective legal cases, such as US v Colldock, where law enforcement agents used their own intelligence about the way vendors operate on dark web marketplaces to track illicit activity. In this case, agents were able to identify the accused, by linking his Silk Road username '"Dr White", to his real life identity from messages he had sent to customers requesting that funds be sent by mail to his home address, as well as by intercepting messages which referenced his financial account, which was associated with Colldock' s full name, date of birth and his address (US Department of Justice 2020). Similarly in cryptocurrency litigation, in the case of US v Michell, a chemical weapon purchasing activity, FBI Special Agent explained how the accused, Mr. Michell used a dark marketplace to solicit the purchase of potassium cyanide and dimethyl mercury from the undercover agent, by using Bitcoin to purchase the chemicals (US Department of Justice 2018).

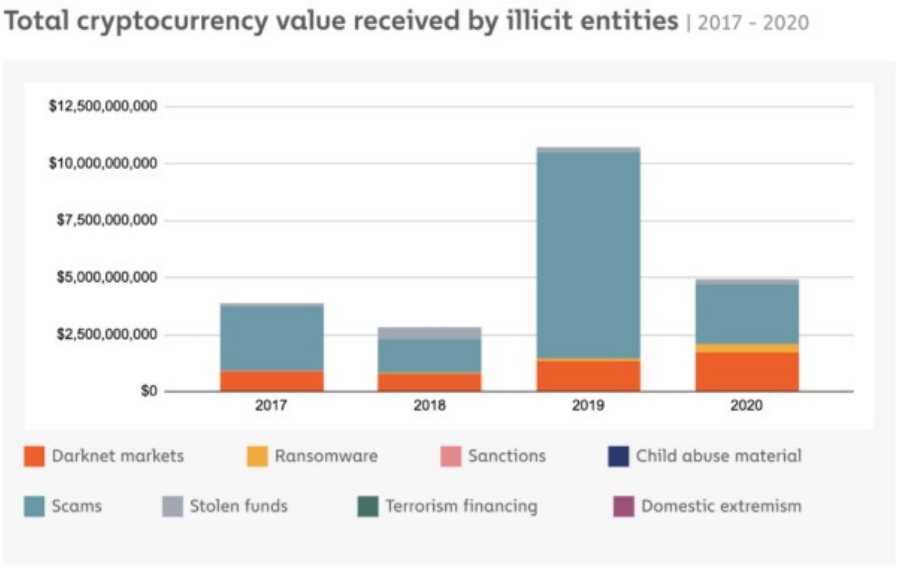


Figure 1. Source: (Chainalysis 2021)

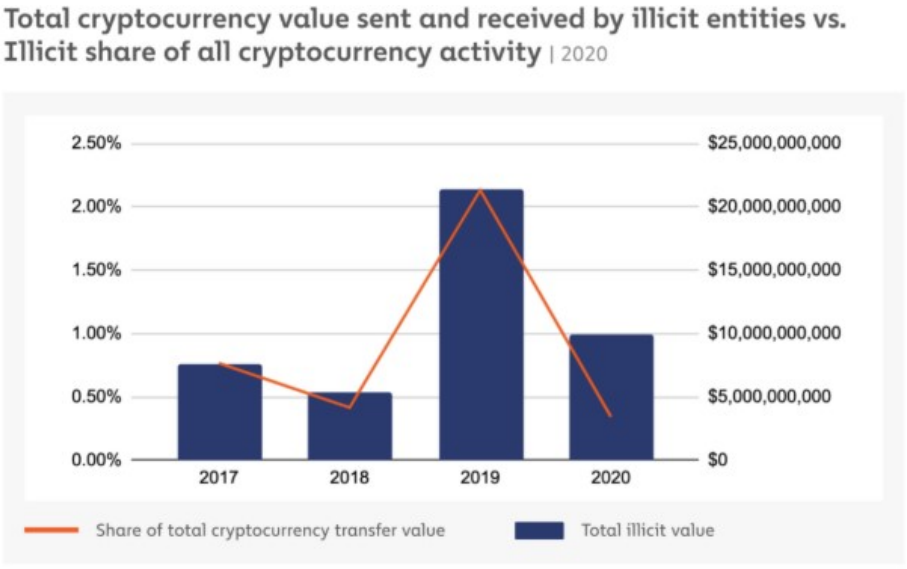


Figure 2. Source: (Chainalysis 2021)

Bitcoin, along with other cryptocurrencies have suffered with the close association with these notorious dark web markets hosted on the dark web, such as 'Silk Road'[34] (Greenberg 2020),

[34] Silk Road was an online marketplace that accepted Bitcoin as a payment mechanism for to anonymously buy and sell illicit goods and drugs, and other illegal services. Dread Pirate Roberts, a pseudonym used by website founder Ross Ulbricht, was eventually charged, and arrested in October 2013 on counts of narcotics conspiracy, conspiracy to commit computer hacking, and money laundering conspiracy. Along with a prior seizure of approximately 29,655 Bitcoin, federal law enforcement agents seized a total of approximately 173,991 Bitcoin i

'Alpha Bay' (Redman 2018) and 'Wall Street Market' (Coldewey 2019). For example, this article in Australia's Canberra Times made the explicit link between the Silk Road marketplace and cryptocurrencies for its readers, extending beyond Bitcoin to other crypto's;

"For payment, the Silk Road and Silk Road 2 only accepted Bitcoin, but Silk Road Reloaded processes transactions in one of the nine established cryptocurrencies, including Anoncoin, Darkcoin, Dogecoin, Feathercoin, and Litecoin, converting them into Bitcoin for a lucrative 1 per cent conversion fee" (Williams 2016, 1).

In a similar article, another author makes the relationship between dark marketplaces and crypto for its readers, stating how crypto was tarred with illegality from the beginning;

"Its original use was far from legal, Cryptocurrencies first took off with the illegal online bazaar Silk Road, which had a short life between 2011 and 2013. A marketplace for drugs and other goods and services hosted on the dark web, it only accepted payment in Bitcoin - anonymous, secure, and able to be traded by anyone with an internet connection" (Swan 2018, 1).

The dark marketplace, Alpha Bay, was also reported on by the Nation in Thailand, for its relationship to crypto transactions where;

"Alpha Bay was shut down on July last year after two years in operation, and transactions in Bitcoin and other digital currencies worth more $1 billion" (International Cybercriminals and Thailand's Porous Border 2018:1).

Silk Road and other lesser-known dark marketplaces thus have received much international press in raising public awareness of the dark web and its relationship with crypto. The dark web has often been a mystique, a secretive, anonymous place where shadowy users access hidden services, but by the raising of public awareness of dark web markets, the news media have taken a significant role in amplifying the nefarious activities of criminals operating on the Dark Web. Coverage of the black-market 'Silk Road' by the UK's news media outlet, the Times, revealed to the public, the seriousness of the crimes committed on the platform

including drug distribution, hacking, and money laundering, as well as the punishments related to the charges; the most serious sentence amounting to life imprisonment;

"An Irish man being held in New York accused of helping to run Silk Road, the dark web black market, has begun negotiations with prosecutors on a plea deal. Gary Davis, 29, was extradited to the United States in July after the Supreme Court approved the request. Mr Davis, from Kilpedder, Co Wicklow, is charged with conspiracy to distribute narcotics, which can carry a life sentence, conspiracy to commit computer hacking and conspiracy to commit money laundering".

Using the seriousness of the charges as well as the mystique of the dark web, the news media can sensationalise dark market crimes and crypto, instilling a fear of crime, as they do traditional crimes. Technology topics have been found to be treated sensationally by the news media, just as often as traditionally sensationalized categories like crime (Kilgo et al. 2018). This article from the Derry Journal (Irish newspaper) captures this sensationalism around Silk Road and the dark web, using emotive language to describe it as the 'normal internet's evil twin';

"We've all heard of the dark net, the normal internet's evil twin. A place where wicked endeavour thrives; drugs, weapons, counterfeit money, and stolen information are some of the milder products up for grabs on the dark web. The internets under belly was made famous by Silk Road; the first modern dark net market of our time and for them it's still very much business as usual, as I write" (Sullivan 2018, 1).

Use of divisive language such as 'evil', 'wicked' and the 'under belly' of the internet, obviously conjures up images in a reader's mind that are negative and hostile, again demonstrating how this newspaper depicts crypto as criminal while upholding the disorder narrative; which proliferates the international news media normative discourse on crypto and more widely, the dark web.

The sensationalist nature of dark web market crimes and subsequent frequent reporting in the international news media, have afforded the media space to frame a normative discourse through a 'preferred' (in Stuart Hall's sense of the word) reading or understanding of the discursive phenomena of crypto. This has been characterised by use of a disorder narrative,

steeped in a state view that crypto is an accomplice tool for criminals to pseudonymously undertake and transact for crimes and illicit activities on dark web platforms. In this way, the reader receives the news media's normative discourse through the institutional 'preferred' way, which is in its media representation is quite negative in its sentiment about crypto, due to its amplification of implicit and explicit links to crime in news media rhetoric. The resulting risk is that there is possibility that perception of digital crimes may be skewed by such rhetoric which may be ill-informed and/or uncontextualized. The following sections therefore explore this institutional amplification and the relational power this confers to news media institutions.

Media Amplification and Power

News media coverage of crime topics which implicitly or explicitly relate to cryptocurrency, is a choice for media institutions, as is the ability to choose which political, economic, and social elements of the crypto economy they wish to amplify. Jungherr et al (2019) bring this to light in their writings on discursive power in contemporary media, stating;

"By selecting which topics to cover, frames to feature, and speakers to recognize, contributors to the political communication space are exercising discursive power. In their decisions about which elements of politics to cover, they also decide about the elements and actors in political discourse of which the public becomes aware" (Jungherr, Posegga, and An 2019, 405).

The media in this sense, through their decision making on which topics to feature, hold social power to frame stories that entrench ideologies of anarchy surrounding crypto. The consequence is that a fear of crypto crime is amplified, as the topic of media and crime continues to be shaped by our changing technological landscape (Hayes 2015). The crime related articles in this study[43] illustrate that they succeed in this, by actioning this framing through a disorder narrative. Teun van Dijk further explains the social power that news media institutions hold, and the influential effects this can have on its readers;

"Media power is generally symbolic and persuasive, in the sense that the media primarily have the potential to control to some extent the minds of readers or viewers, though not their actions" (Van Dijk 1995, 11).

Teun van Dijk therefore acknowledges media power but limits it to regulating the audiences mind through persuasion. Correspondingly, Hall argues that those audiences who are not persuaded, feeling that the story does not reflect their own belief system, may decode the story in a 'negotiated' way. Through the 'negotiated' way, the audience agree with the meaning of institution but negotiate the values and opinions of the story to adapt to their own beliefs. Finally, those readers who disagree with the way the story has been represented by the news media, will reject it in its entirety perhaps because they disagree with both the objective facts and subjective form. The next section then explores Hall's normative framings (or mental representations), among those who they are communicated to – the readers.

Public Understandings of Crypto and Crime

In the study of mental representations, Dijk (1995) considers that an analysis of social power and its symbolic dimensions requires extending the constricted social or political approach to power. He argued that an analysis should include social cognitions such as attitudes and ideologies shared by readers, to have a deeper understanding to media power, by claiming that;

"If we are able to relate more or less explicitly such mental representations, as well as their changes, to properties of news reports, important insights into media power can be gained" (Van Dijk 1995, 11).

To relate to mental representations of crypto by readers, it is essential to comprehend how the public think about cryptocurrency through the construction of media framings, and the cognitive modes of reference (for example whether 'Tarzan' or 'Mowgli' using Brett Scott's analogies of orthodox or unorthodox frames of reference in the previous chapter) they use to relate to it, as a new phenomenon in the public domain. The public understanding of cryptocurrency can be first considered by Tarzan orthodox - normative accounts, or what Hall would consider the 'preferred' meaning as defined by the news media's perspective of the 'right' way of thinking or feeling about it. This would according to the disorder narrative, as set out above, therefore be based upon an acknowledgment and acceptance of the association

between cryptocurrency and crime. This social cognition consequently produces a negative conception (or in other words an initial thought or idea) about crypto, in the mind of the reader.

This idea that is produced may be understood better by Philosopher David Hume's work on human understanding. Hume details how a social cognition process occurs within an individual, where a mental representation (or conception) is produced due to a conscience rise of connection between one idea with another, he explained this process;

"In all instances of the operation of bodies or minds, there is nothing that produces any impression, nor consequently can suggest any idea, of power or necessary connexion. But when many uniform instances appear, and the same object is always followed by the same event; we then begin to entertain the notion of cause and connexion. We then feel a new sentiment or impression, to wit, a customary connexion in the thought or imagination between one object and its usual attendant; and this sentiment is the original of that idea which we seek for" (Hume, Nidditch, and Selby-Bigge 1975, 78).

Adopting Hume's insight on human understanding to crypto, it is useful to imagine the idea of crypto as the event, and the news media presence of criminal activity as the object, which always appear to follow in uniform. This establishes the rational process where individuals think about crypto as the digital object, along with the usual attendant of crime stories, with effect on the reader making a logical association between both phenomena. Subsequently, this customary connexion becomes in part a sentiment toward cryptocurrency, that evokes negative connotations around crime, and toward an impression of the prevalence of 'crypto-crime'. The individual readers projection of a media's representation is then reinforced (akin to a stereotype) by further uniform instances of a 'disorder narrative', as a distorted representation of crypto crime in the news media.

Separately, both the phenomena of crypto and crime, are socially constructed and involve complex socio-economic, political, and legal factors which inform perceptions that individuals create in their mind culminating in a presented social reality. Objectively, it is difficult to simplify and contentious to determine that crypto is decidedly a 'bad technology which only serves crime'. The danger of this oversimplification becomes more reasonable if the 'disorder narrative' framed by the news media, succeeds in convincing the public of the

impression that cryptocurrency's close association to crime is one that is morally justified, useful in utility, and certain in frequency. These factors may appear to make the subjective nature of crypto appear more objective in the readers' mind. Sometimes, this may be less of an explicit thought pattern of reasoning than implicit, as attitudes and stereotypes have been shown by social psychologists Greenwald and Banaji (2020; 1995) to have more implicit modes of operation. They explain implicit cognition by stating;

"the identifying feature of implicit cognition is that past experience influences judgment in a fashion not introspectively known by the actor" (Greenwald and Banaji 1995, 1).

When considering the news media's readers past experiences of crypto, discourse may have an effect here with the uniformity of media reporting on crypto, consistently framed by the disorder narrative. The disorder narrative can act to compel the reader to stereotype the digital currency with embedded biased ideologies of crime and deviancy; as well as immorality when ethics are applied to online drug markets. Just as the media can engender deeply entrenched ideologies of race, gender, class, and ethnicity, the media can become powerful active agents in 'othering' certain outgroups (Kellner 2011), it too can 'outgroup' of what it considers deviant actors and immoral behaviours. As drug crimes are often framed by the media as deviant behaviour (Young 2018; Blumberg 1973; Zozula and Lavin 2020), it is an easy feat to paint a picture of crypto being an immoral and deviant technology that should be 'outed' from a moral and ordered society.

Research has shown then that the media assist with shaping the public's perception of who is a criminal, and who is a victim and of the underlying situational notions surrounding criminal activity and the criminal justice system (Hayes 2015). Cryptocurrency is framed as criminal through the disorder narrative that the mainstream news media disseminate. Specifically, audiences' attitudes toward crypto therefore can be based merely on the feeling of the technology (framed by the news media) rather than direct experience, where often attitudes are centred around an affective 'good-bad dimension' evaluation (Eagly and Chaiken 1993). As shown in the last chapter on crypto governance and the regulation discourse, the framing, and representations of crypto engaged by the news media, are therefore paramount in forming public attitudes and sentiment toward crypto. This chapter has shown how the news media have done this through deployment of the disorder narrative steeped in orthodox framing.

This crypto crime framing has been socially constructed with entrenched immoral and illegal ideologies dressed in a negative frame of a disorder narrative, which is situated cross sectionally, within the broad crypto discourse across international news media.

The most obvious oppositional stance to the crypto crime discourse, is the opinion that cryptocurrency and crime are not related, but coincidental which may fall under all four of Hacker's cognitive responses. This view may be taken if the preferred meaning that crypto poses a threat to society for its links to crime are denied by the readers, particularly under the criticism and resistance cognitive responses. The articles may be for example, criticised, resisted by crypto aficionados by as an attempt by the state and corporate powers to undermine crypto for several reasons. It is likely that this ideology will be present among those with libertarian political ideologies, as for example Bitcoin has been acknowledged as containing right wing ideologies (Golumbia 2015).

Further, through the cognitive response of deconstruction, those who subscribe to cyberlibertarian ideals of technological determinism, may see that the negative discourse around freedom to trade on the web (even on dark web marketplaces) and to transact crypto, as an attack on the individual's liberty to act on the internet. Such news articles linking crime to crypto, may be perceived as an attempt by elites to control a narrative where the internet is viewed as a dangerous and chaotic place that needs to be ordered, and governed. The 'Disorder narrative' identified in this study would fulfil this perception and could be seen from this perspective as an assault on technological determinism and more broadly cyberspace as a digital common.

Technological determinism therefore as a world view is very much a central characteristic of the political ideology of cyber-libertarianism, where the ideology holds that technology should be embraced, as it remains our 'true destiny' (Winner 1997). Beliefs of free market radicalism and radical individualism proliferate this outlook and can be witnessed in cyberlibertarian views of the internet, and how cyberspace itself should be governed. In the cyberlibertarian train of thought, cyberspace should not in fact be governed by the state, but ungoverned. An opportunity to impose ideas of radical individualism leads this political stance to resist the state, but in doing so, to completely exit from any social contract with the state that exists in the non-virtual world. The internet therefore offers those with a

cyberlibertarian persuasion, to believe that the internet *"creates a new world and changes social relations, which renders existing regulations obsolete"* (Chenou 2014, 213). In this way, cyberspace is a virtual common; where one can be free and equal without the constraint of physical jurisdictional laws or norms.

The international news media's disorder narrative identified in this chapter, threatens these cyberlibertarian ideals. This is witnessed most clearly where the crypto-crime related anarchy is portrayed in cyberspace through the framings of mainstream news media. For those who have an opposing perspective, these mainstream framings aim to convince the public and policy makers to believe that more policing and governance is required in cyberspace, for online markets and blockchain activity to curb illegal and illicit activity. As we have seen in the last chapter, there is a disruptive populism at work in the public sphere which emanates not only from the news media, but state institutions too. This discourse encompasses narratives of risk, and global financial uncertainty can intensify risk debates (chapter 6 for example deconstructs this point, in the case study of crypto use in Venezuela's failing economy). If cryptocurrency can be perceived to be a 'risk', then requirement for more governance then legitimises the ideology that the internet (and crypto as a networked technology - a by-product of the internet) is a place of anarchy.

The UK's left-wing outlet the Guardian, explored this idea of anarchy with an article referencing a book, which considered the sovereignty of the individual in an increasingly chaotic world, where disorder featured as an explicit narrative of a digital world;

"The Sovereign Individual: The Coming Economic Revolution and How to Survive and Prosper in It opened with a quote from Tom Stoppard\'s play Arcadia: "The future is disorder". Lord Rees-Mogg and a co-author, James Dale Davidson, an American investment guru and conservative propagandist, predicted that digital technology would make the world hugely more competitive, unequal, and unstable" (Beckett 2018, 1).

The article moves onto to explain how the book has become associated with another disruptive tendency in modern politics, the right-wing libertarians of Silicon Valley. Another article from the UK's Financial Times backs this assertion, linking both libertarian thought with anarchic ideals, claiming that cryptocurrencies;

"roots lie in anarchistic libertarianism…this ideology also beats in the hearts of many Silicon Valley entrepreneurs." (Wolf 2019, 1).

Meanwhile, aside from the billionaire gods and their technology empires of Silicon Valley[35], fuelled by disruptive ideologies and technology fanaticism, the crypto craze appeared to spread among other social and political groups as the Independent pointed out;

"The booming price of Bitcoin over the last year has created a buzz around cryptocurrency that goes far beyond technology enthusiasts and free market libertarians" (Cuthbertson 2018, 1).

This study has identified that attitudes from budding entrepreneurs in the United States echoed some disruptive ideologies from their Silicon Valley gods, but differed in their background and account of crypto, of which, a content example was covered in a 2017 article. The story traced the founder of Bloktek Capital who invested in digital currencies and assets after leaving from investing in the traditional stock market. While there was an admission of crypto-crime in accounting for crypto from the founder, he claimed that this served to 'disrupt' the internet. This acknowledged the crypto crime discourse, but actively neutralised it, by brushing it off to constitute a 'stigma'. Thus, inferring that the crypto-crime phenomena is merely a label (that of a 'stigma') lightens the language and reduces some agency of crypto related crime. The article stated;

"By contrast, digital currencies " his preferred term to cryptocurrency, which he says carries the stigma of black-market money laundering " have disrupted the internet and created a major opportunity for those willing to jump in early, Berg believes. "At first it was an internet of information," he said. "Then it evolved to an internet of things " social media, I

[35] This refers to Alexandra Wolfe's title of her book 'Valley of the Gods: A Silicon Valley Story" in which how Amazon explains she traces the American cultural transformation: a move away from the East Coast hierarchy of Ivy Leagues and country clubs toward the start-up life and a new social order. See https://www.amazon.co.uk/dp/1476778949?linkCode=gs2&tag=slate01-21.

can buy this, I can sell stuff. Now it's the internet of value. In his view, cryptocurrency left the "dark ages" six months ago, when it was still the domain of" a lot of people who believed in anarchy." (Wayne 2017, 1).

Using language in this way to describe crypto being in the 'dark ages', also conjures up images of an uncivilised and disordered society, which feeds into and gives credence to the disorder narrative. The article above quotes that the entrepreneur considered that cryptocurrency 'left the dark ages', which they consider, was a time when crypto was in an anarchical space. This example shows a resistance to the preferred narrative that crypto continues to be the anarchical space but demonstrates how the investor modifies it to suit their own agenda. This modification is likely to reflect his occupation as an investor, for economically, it is not rational for an investor to risk their money in an unreliable and chaotic environment where reward is enormously low, and risk is tremendously high – this would be a reckless investment decision. Using a contested interpretation, the investor can rationalise his investment into a digital currency company, while simultaneously justifying the decision by accepting the preferred reading as a past truth, and adapting it to his interests, which in this case are economic.

Anarchy then characterises the crypto economy, according to the mainstream press. It is a thread which runs through the disorder narrative and is encompassed within the crypto-crime discourse, which proliferates international news media. The failure of Libra (Facebook's pilot cryptocurrency project) was well suited to use as the prime candidate of anarchy in the system. As discussed in the previous chapter, the failure of the Libra project to materialise into a working digital currency, was used by the press to 'prove' just how messy and volatile the crypto economy really was. This article from the UK's the Telegraph shows this anarchic and crime ridden characterisation;

"The new Libra is more likely to secure permission from governments and financial supervisors to launch, which it still hopes to do this year. It is also a far less ambitious proposal. One global currency may have been an idea that disturbed monetary policymakers, but at least it was an interesting one. The climbdown illustrates the major problem with cryptocurrencies in general, not just Facebook's. They all sit on a line between anarchy and pointlessness. Bitcoin, which is wildly volatile and has become a tool of online crime and terrorism, edges towards the former end" (Titcomb 2020, 1).

For other social groups some ‘contest’ the mainstream news media’s framing of crypto, i.e., having criminogenic tendencies in an anarchic digital world. In such cases often efforts are made to ‘contest’ such a message to audiences. For example, this article discloses how the billionaire Winklevoss brothers (early Bitcoin investors and founders of Winklevoss Capital Management) recognise how crypto has been vilified by a crypto-crime discourse and compounded with narratives of disorder and anarchy. The comments show how this discourse could have a real impact and negatively affect their business, to which they have gone to great lengths to contest in the banking and investment institutional space to legitimise Bitcoin. The articles explain how;

“Mezrich charts the Winklevi's efforts to make Bitcoin respectable and mainstream, in smooth prose. They buy a payment processing company called BitInstant and try to make it as legit as possible; they do their best to distance Bitcoin from the notorious dark net markets; and spend untold hours convincing Wall Street bankers and financiers that Bitcoin is a serious investment opportunity, not some weird anarchist fantasy” (Bartlett 2019, 1).

This article highlights how important prose is vital to not only understanding cryptocurrency discursively but how through different audience receptions, discourse can be interpreted contrarily in a contested way. The real-world effects of discourse and news media framing are established here as a good example where the Winklevoss brothers try to convince other audiences that the preferred meaning is misunderstood, as they attempt to influence other audiences to decode Bitcoin discourse in a diverse way to match their own contested readings.

Conclusion

As crime and disorder have been a key feature of media representation throughout history, this chapter showcased how news media articles perceived as ‘cultural commodities’ (Carrabine 2008) continue to inform and build understandings of the digital phenomena of cryptocurrency. This study has therefore dedicated time and attention to media

representations of cryptocurrency, researching the key cryptocurrency discourses found in the global news media; identified through natural language processing methods. From the study data, I identified a key crypto-crime disorder present within the international news media. This chapter which focused solely on the crypto crime discourse, identified a heterogeneous selection of cryptocurrency narratives of disorder and risk, which mirrored those found in the crypto financial governance discourse, which were discussed in detail in the previous chapter.

This chapter specifically demonstrated the socially constructed relationship between cryptocurrency and crime, to expose the 'preferred' news media's institutional framing, of the inextricable affiliation between crypto and crime. The news media's framing of crypto was explored employing Stuart Hall's (2003) media theory to apply encoding elements to the analysis i.e., how the news media construct the crypto crime discourse through the disorder narrative. I argued that the abuse of digital currency for criminal efforts works to reduce its agency and undermine its legitimate uses; which are not given a fair balance of reporting nor contextualised within international news media.

The first section validated the establishment of a crypto crime discourse through establishing the affiliation made between crypto and crime through news media article examples. The chapter showed that explicit links were made repetitively to the dark web markets and cryptocurrency, and cryptocurrency being used as a digital tool for money laundering and terrorist related activity. In the dark market examples, drugs narratives were employed by the news media (as they have historically) to convey an idea of social disorder and lawlessness. It was demonstrated that this can lead to the effect of moral panics such as those witnessed in the media around online drug markets, with cryptocurrency being treated by the media in a similar way to demonise digital currency. This idea of anarchy was seen to be amplified by the news media, to fix a preferred meaning to the content of their articles. Further, it was explored how such framings could be contested by readers dependent upon their own personal attributes, such as attitudes and stereotypes but also by their socio-economic interests such as occupation - (this was prominent for example in the investor examples in the last section).

The focus on narratives of 'disorder' was also discussed in chapter 4, where it considered narratives of crypto financial regulation within the crypto-governance discourse. Media

amplification and sensationalism of crypto feeds these narratives of disorder, reinforcing both the crypto-crime discourse and financial governance discourse. Both crypto-crime and financial-governance discourses are closely related, as the regulation of cryptocurrency can have a real-world effect on both the prevalence and type of crypto crime. Moreover, the financial governance discourse that impacts policy decisions, affect not only the dark market economy but also the wider economy as legitimate financial services and the public adapt to new payment technologies, and digital currency legislation or regulatory frameworks.

To synthesize the key finding that there is a crypto crime and crypto governance discourse which characterise international news media reporting on crypto, the next chapter considers two cases where such discourses have a real-world impact. The next chapter therefore analyses how cryptocurrency as a technology can be weaponised and harnessed by state antidemocratic media to drive discourses which achieve social, political, and economic goals, that fit a government's agenda. The news medias' use of discourse with 'fixed' meanings can promote a propaganda government-backed agenda, which is subtlety hidden in layers of biased narratives and underlying unquestioned assumptions. In this way, opposing perspectives are silenced and a distorted reflection of the reality of cryptocurrency and the digital economy is (re)presented to the public. Two case studies of China and Venezuela are discussed in detail that used state sponsored media to drive an anti-crypto sentiment through a disruption discourse encompassing narratives of risk and disorder, to suit the political will and to pave the way for the introduction of their own state conferred digital currency counterparts.

CHAPTER 5: Weaponizing Cryptocurrency – Case Studies from China and Venezuela

Contents

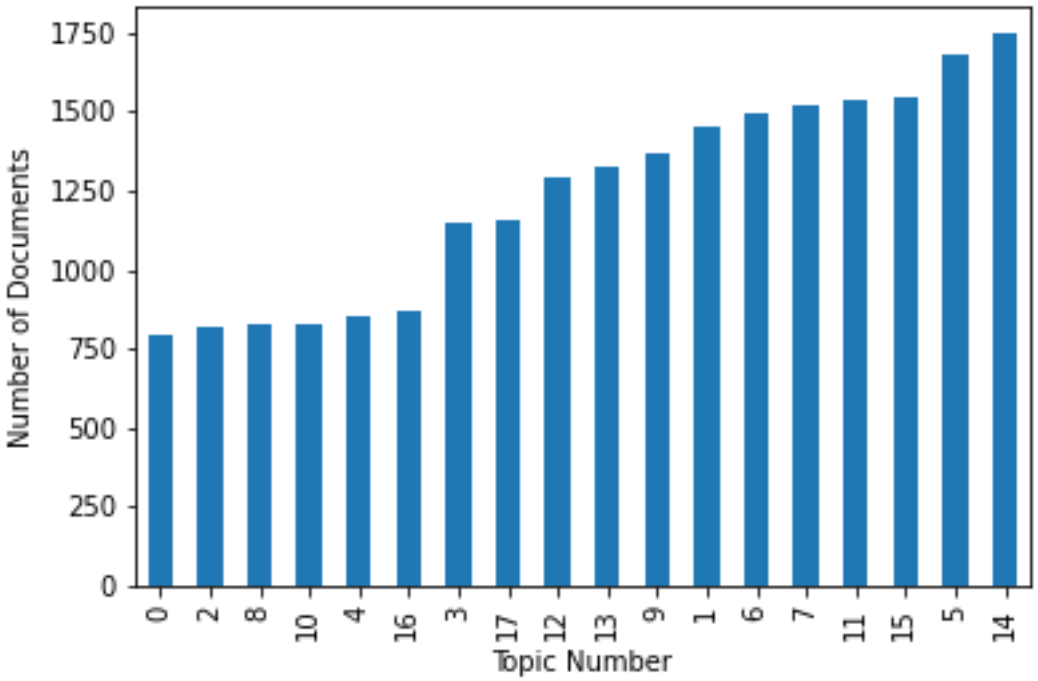
Introduction

Just as described in the methodology chapter, this crypto study took a grounded inductive stance to a computational discourse analysis to address two key research questions 1. What are the key cryptocurrency discourses? and 2. By whom are the discourses created? This methodology allowed for topics to emerge out of the data, a priori to theoretical assumptions linked to historical or current debates upon monetary discourse, of which lack empirical evidence. The study adopted unsupervised machine learning methods to aid in the process of working with big data; a corpus which contained articles from over 60 countries and 5 continents. Quantitative probabilistic prediction models were built, including LDA and CorEx models to predict topics. The CorEx model was chosen for its topic quality as explained in the methodology chapter. The table below (table 1) displays the CorEx output from this cryptocurrency study (the code can be accessed here: https://github.com/kellyann88/Crypto_Corex/).

1: wetsuit,meal,phil,family_history,wellness,south,rotary,middleton,st_augustine,building_vh
2: way,like,thing,good,time,work,think,change,people,want
3: eat,sign,book,wealthy,blue,door,farm,correspondence,performer,plate
4: life,man,home,leave,old,child,write,live,family,spend
5: court,police,arrest,quadrigacx,investigation,accuse,cotten,nova_scotia,court_document,allege
6: need,build,new,create,use,system,future,business,provide,opportunity
7: bank,financial,regulation,regulator,issue,government,risk,regulate,transaction,central_bank
8: year,high,big,buy,end,start,rise,cent,day,investment
9: art,town,train,compass,nursery,hall,club,foot,gardens,institute
10: challenge,industry,develop,solution,artificial_intelligence,lead,datum,bring,application,internet
11: petro,venezuela,maduro,bolivar,venezuelan,sovereign_bolivar,hyperinflation,venezuelans,caracas,minimum_wage
12: security,online,information,user,company,case,account,website,include,access
13: china,country,economic,chinese,state,oil,national,president,south_china,morning_post
14: attack,travel,threat,group,malware,describe,american,check,campaign,visit
15: investor,market,price,bitcoin,value,trade,exchange,crypto,trading,asset
16: technology,blockchain,blockchain_technology,innovation,global,development,enable,potential,benefit,sector
17: politic,america,class,bridge,welcome,road,exercise,chamber,coach,worship
18: australian,wright,mark_zuckerberg,nakamoto,zuckerberg,facebook,satoshi_nakamoto,craig_wright,australia,scandal

Table 1: CorEx Output

Topic 13 of the output above in table 1 lists a theme referring to China and the topics broadly refer to the economic state of the country. This topic was the most prevalent occurring across all international news articles in the news corpus, which is evidenced in graph 1 (shown below as topic 14 due to python indexing from 0).



Graph 1: Topic Distribution Across Total Number of Documents

This result shows how China has been central to debate and discourse around cryptocurrency, particularly during the period 2018-2020. China ranked as number 4 on the Global Crypto Adoption Index, indicating that crypto uptake in China is also growing fast, in a similar way to Venezuela[36]. The importance of this finding is that Chinese citizens are expressing an interest in crypto and are actively looking for solutions around the state control of their heavily surveyed social, political, and economic lives. This can be interpreted as a desire for financial freedom, or in another way an emancipation from the authoritarian regime they reside under; where state surveillance purveys their private activities (Hoffman, 2018).

China themselves have been a central actor in such discourse and have taken an active role in attempting to control the coverage of cryptocurrency in their state backed press. This is

[36] It is important to note that there is a limitation that the report data was gathered before the China ban on crypto and therefore these figures are likely to change over time.

examined in the next section, which also draws comparisons with South American state backed press, who also have attempted to control and manipulate the discourse on cryptocurrency.

The Portrayal of Cryptocurrency of In State Sponsored Media

In Cromwell and Edwards book 'Propaganda Blitz', the authors discuss media manipulation and explain how attacking and discrediting 'enemies', often prepares the way for action or intervention of some kind. As they explain, propaganda blitzes;

> *"are fast moving attacks intended to inflict maximum damage in minimum time"* (Edwards, Cromwell, & Pilger, 2018: 1).

Often this is accompanied by allegedly new evidence indicating that the enemy should be considered as 'despicable' and 'actively targeted'. Propagandists, the authors argue, are aware that media attention will speedily move on from claims of dramatic new evidence usually backed by 'expert testimony', so that the strength of claim is not a key concern to consumers (Edwards et al., 2018).

Propaganda has often been used as a tool by governments through state media, particularly being synonymous with war, but also peacetime. Most information that society is presented with is pre-packaged by 'information managers' in accordance with their own interest and agendas (Hughey, 1996). For example, propaganda itself according to Oddo (2019) is more than just misleading rhetoric generated by one person or group; it is an elaborate process that relies on recontextualization, on a massive scale, to keep it alive and effective. The state as one of these 'information managers' has been most prevalent among authoritarian governments, with a rich history and development in Soviet Russia, communist China, and Nazi Germany. However regardless of political stance, propaganda has continued to breed as governments act as information managers, particularly in countries where the state has tight control on the media news press, and which adopts propaganda as a tool for mass persuasion. In this way, a 'propaganda blitz' can be carried out by the media, in line with their own political agendas.

One clear example of this propaganda blitz was the coverage of cryptocurrency in the international press between 2018 and 2020, specifically by Chinese and South American state backed press. Both used propaganda of cryptocurrency to; 1. Frame cryptocurrency as an enemy of the state and 2. Used carefully prepared discourse to prepare the way for economic action to suit the state agenda. In the first instance, cryptocurrency as evidenced in chapter 5, was closely associated to crime in a crypto-crime macro discourse that pervaded the international press. This discourse then prepared the way for state 'action' to attempt to take control of the private currency situation which threatened state backed currency (by being an alternative option for consumers who for various philosophical and economic reasons would channel their fiat currency into peer to peer crypto), by utilising a governance discourse and enforcing various bans and regulations suited to the state economic and political agenda.

In this chapter, I therefore argue that the news medias' use of discourse with 'fixed' meanings promoted a propaganda government-backed agenda, which was subtlety hidden in layers of biased narratives and underlying unquestioned assumptions. In this way, opposing perspectives were supressed and a distorted reflection of the reality of cryptocurrency and the digital economy was (re)presented to the public. Cryptocurrency as an innovative technology can be understood in this way as being politicised. Two case studies of China and Venezuela are discussed in detail to argue that both countries used state sponsored media to drive an anti-crypto discourse to suit the governmental political will, to introduce their own state backed versions of digital currency - in the form on central bank digital currencies. As argued in chapter 2, governance of cryptocurrencies can include controlling digital money markets not just by regulation and bans but offering alternative modes of (state) currency that can work to eliminate, or reduce the power of private money, in a particular geo-political space.

As we will see in this chapter, the commonality of both countries is the biased nature of crypto framing, as well as exposed the propagandised versions of digital currency economics. This informed skewed discourses on crypto crime and governance may have mislead the public. This propaganda I argue was deployed in the state media, with the full intention to pave the way for the introduction of their own state conferred digital currency counterparts. Where both states diverged in their approach was that Venezuela, instead of vilifying crypto, focused their propaganda efforts on persuading the public how crypto could 'save' the failing

economy and political structure. This was achieved by allowing crypto to be widely used in the country as a payment method whilst simultaneously innovating their own state digital currency. This was unlike China, who through their state press adopted a regulatory determinism and general disdain for crypto (in which led to an eventual ban on crypto). Cryptocurrency became more than an economic tool in this way and was politicised for government agenda in both China and Venezuela.

Politicising Cryptocurrency

This politicising of technology can be thought in a similar way to how China has been criticised for politicising health news and information through state backed media by criticising democracies as corrupt and incompetent, praising their own leadership and policy choices of international organisations (Bright et al., 2020). On 24th September 2021, the Financial Times revealed that *"China has expanded its crackdown on cryptocurrencies by declaring that all activities related to digital coins are illegal"* (Olcott & Szalay, 2021: 1). This ban on cryptocurrency activity was not a sudden, out of the blue event conducted by the Chinese government where decisions were taken swiftly by state official decision makers, but instead followed two years of media reporting by Chinese and International press, on the need to 'act' i.e., to supress or regulate the innovative digital currency market, due to its links to crime. The crypto-crime discourse was extremely prevalent in international media as has been shown in the previous chapter, and in the Chinese case, was no different.

Writing in 2018, the China Daily newspaper brought to light the fact that cryptocurrency in many cases is linked to criminal activity. For example, the findings of this study identified that the China Daily reported on the hacking crime of crypto jacking[37], that had been reportedly occurring in Malaysian companies. In 2018, the China Daily reported a sensational crypto mining story with a sub-headline:

> *"Principle fired for cryptocurrency mining" (China Daily, 2018: 1).*

[37] Crypto-jacking (also called malicious crypto-mining) is an online threat that hides on a computer or mobile device and uses the machine's resources to "mine" cryptocurrency.

This incident highlighted how supposed crypto mining was being undertaken in the education sector using public resources where non experts, in this case a school Principal, were able to commit such a crime with little professional, or technical expertise. This suggested low level entry into crypto mining and gives the impression to a reader that anyone who has access to a computer can and is likely (providing they have the technical skill) to undertake illegal crypto mining, inspiring a feeling of condemnation toward cryptocurrency using a sensational story. At the heart of the narrative was the emotion of fear and most likely with its sensationalist headline, it was attempting to elicit the shock factor that a trusted public official could act in such an unethical manner. In reality, this isolated incident is unlikely to represent the broad educational sector or public officials, who are unlikely to have extensive technological skills to illegally or unethically mine cryptocurrency.

The findings of this study show that The China Daily (Hong Kong Edition) newspaper – the only English-language newspaper in China (China Daily, n.d.) and owned by the Publicity Department of the Chinese Communist Party, covered similar stories claiming also that the cybercrime of crypto-mining in the region was a rising trend. An expert of a company called 'Cybercrime Malaysia' backed this story by claiming that while relatively new, "*malicious crypto mining is one of the rising cybercrime trends this year"* (The Star/ANN, 2018: 1). However, with a more balanced and rigorous research approach to crypto crime investigatory research, the Chainalysis crypto crime reports revealed that in fact from 2019 onwards, cryptocurrency crime fell - in which they claim crypto crime:

"remains a small part of the overall cryptocurrency economy, and it is comparatively smaller to the amount of illicit funds involved in traditional finance" (Chainalysis, 2021: 5).

As a state-sponsored newspaper, China Daily readers may regard this as an official account, with an implicit trust that this news coverage is a legitimate discourse, providing a fair and balanced representation of cryptocurrency as a financial technology. This public trust is likely to be engendered through the government's position, as in their view, a legitimate state institution. For example, previous research has shown that Chinese citizens have often strongly agreed that they should trust and obey their government, for it acts in their interests (Wang, 2005).

The producers of the state sponsored China Daily articles are likely to be influenced by China's leaders' rhetoric whether informally through culture and ideology, or formally through control of censorship and editing processes and therefore narratives are likely to be informed and guided in the interests of the state. Further, research has shown how state backed newspapers in China are void of the freedom of press impartiality and that market competition has affected the political bias of government-owned newspapers (Qin, Strömberg, & Wu, 2018). This has only added to the complexity of authoritarian political bias and cultural discourse framing in state sponsored media in China and beyond its borders.

According to Andrew Nathan (2016), the authoritarian resilience in China can be summed up in the context of institutionalisation. One of four aspects of the CCP regime's institutionalization, Nathan argues is *"the establishment of institutions for political participation and appeal that strengthen the CCP's legitimacy among the public at large"* (Nathan, 2016: 87). This can be extended to incorporate the state backed media, where the China Daily as a state backed institution, provides a vital information communication channel to Chinese citizens and a global audience. Therefore, cryptocurrency discourse will tend to represent the state's official view on the innovative technology, providing sentiment on cryptocurrency in what Hall would consider the 'preferred' way of the producer (i.e., the readers decoding meaning as the producer intended). In this case, the preferred way would involve perceiving cryptocurrency through a criminogenic lens, due to explicit links of cryptocurrency to crime stories in the dataset of this empirical study.

For Lim and Bergin (2018: 1), China's leaders, consider the press as;

"the eyes, ears, tongue and throat of the Communist party and that the idea of journalism depends upon a narrative discipline that precludes all but the party-approved version of events".

If the presumption is that all content is party approved by China's leaders, and that the content is factual[38], the 'preferred' meaning behind the text can be inferred that; 1. That

[38] Mitch Moxley has recounted how as a journalist he arrived in Beijing in 2007 to work for the China Daily and stated that many of the articles run in the newspaper were not factual. He claimed that "many of the articles weren't so many arguments supported by fact, but rants supported by nothing. Many violated everything I had ever learned about journalistic ethics, including China Daily's own code: "Factual, Honest, Fair, Complete." (Moxley, 2013: 1).

China as a political nation state acknowledges cryptocurrency as a formal (or recognised) digital alternative asset; 2. That they accept the potential threats that crypto hacking crimes pose to Chinese businesses and Chinese economy; and 3. That they believe that cryptojacking as an adaption of traditional crime to crypto-crime, is a real threat, due to the instances of past reported crypto-jacking occurrences against Asian businesses.

By the China Daily connecting the presence of cryptocurrency in the country to a crime related hacking event, a crypto-crime narrative is portrayed, with the authoritative framing of cryptocurrency posing a real financial threat to the Chinese economy. This narrative can have a number of consequences. Firstly, as the Chinese public have generally been found to trust the state media (Xu, 2012), they are likely to trust the official state nature of the China Daily newspaper. If this is the case, they may be persuaded that cryptocurrency is only associated with criminal activity and perceive it with negative connotations because of the lack of other balanced crypto related stories and in the face of the denied contextualisation of the complexity of cyber, information and software security issues[39].

Secondly, how much of a threat crypto-jacking as a crypto-crime in China is unknown as there is a lack of official data, while there is some evidence to show that it is a relatively prevalent crypto crime internationally (Musch, Wressnegger, Johns, & Rieck, 2018). However, 'what makes crime news in the China Daily?' is a pressing question, when there are a host of alternative crypto-related stories that could have been selected and published, in the so-called 'public interest'. For example, in this study's dataset there are other thematic crypto stories which can be perceived as optimistic, such as stories of crypto innovation and entrepreneurship, which have had positive effects on individuals lives and their social and economic situation. These types of articles, which could inspire the public, are absent in the China Daily's official crypto discourse.

[39] For the complexity of cybersecurity issues, see (Tisdale, 2015).

The question of why media organisations focus on particular events and/or privilege particular interpretations, leads to an examination of the dynamics of news production processes, and ultimately to the fine line between informing the public and entertaining them (Carrabine, 2008). This has been the source of much debate since Cohen and Jock's classical text on manufacturing the news[40], in which they outline the substantive media debates between the 'mass manipulative model' where the public are considered as passive receptors of information from hegemonic groups, to the 'commercial laissez-faire model' as a critique of the manipulative nature of the latter (Hall, Cohen, & Young, 1973).

Those news outlets which are state sponsored, it would seem on the surface to subscribe to the 'mass manipulative' model due to their close ties to the state, where views are likely to mirror those in powerful state positions, or indeed push a state sponsored agenda. The China Daily itself admits that the intention for the paper is that it is an *"essential reading for decision makers including HKSAR government officials, CEOs and senior executives, scholars and academics in Hong Kong"* (China Daily, n.d.: 1), thus emphasising the political and influential nature of Chinese media in China, but particularly also in Hong Kong. The politicisation of crypto in China has not been marginal, and CNBC's coverage of crypto in China unveils the disdain Chinese officials have had for cryptocurrency since its implosion into international economies.

CNBC headlined an article in 2021 *"China's war on Bitcoin Just Hit a New Level With its Latest Crypto Crackdown"*, in which it outlines the statement issued by the Beijing office of the Peoples Bank of China, which *"warned institutions not to provide other services related to virtual currency"* (Sigalos, 2021). Language like this example used by the US media, such as 'war' and 'crackdown', has connotations of violence, oppression, and a need for social order, which feeds into a generalised narrative that cryptocurrency is the enemy and needs to be fought against in an extreme manner by Chinese officials. In comparison, other articles in the corpora show how South African media used more moderate language to claim that crypto needed to be curtailed and brought into line, with headlines such as 'regulate cryptocurrency call' and 'cryptocurrency regulation frameworks needed". However, the moderate narrative of crypto regulation in China did not prevail, and the 'war' which the US

[40] See (Hall et al., 1973)

promoted as a narrative, referred to an impending crackdown instrumented by an outright ban on crypto by China.

The Chinese ban of cryptocurrency was discussed by both Chinese press and international press, with specifically 2973 mentions of a ban. Reports considered the regulatory landscape, identifying the fact that China and Vietnam have taken steps to ban cryptocurrency, Japan had taken a 'friendlier' attitude to crypto, while the United States and the United Kingdom had taken a 'wait and see' stance. The ban had not been a surprise for observers in the crypto communities (Chandler & Gordon, 2021; Xie, 2019), especially with China's continued adversarial stance towards cryptocurrency, clearly identified in this study's findings, which eventually culminated in a ban of Bitcoin where institutions, including banks and online payments channels, who are not allowed to offer clients any service involving cryptocurrency, such as registration, trading, clearing and settlement, according to three industry bodies within China (Reuters, 2021). The ban also came with a backdrop of increased crypto mining in China, which after the ban, has led to an exodus of crypto miners out of the country. This was reported on with 644 mentions of the topic of mining.

In an economic environment where private digital currency was potentially thriving and perceivably threatening the financial system, China has announced that it will create its own digital currency controlled by its central bank, a cyber yuan, which is expected to give the government new tools to monitor both its economy, and its people (Areddy, 2021). It does not seem plausible for a state to want to support or promote a competitive currency, that is outside the Chinese governments control. Similarly, China having its own digital currency could change the economic order of the international markets. In this case, if China were able to dominate the international markets with their own currency, much of the power nexus that currently stands could shift, giving China increasingly more political and economic power in international trade. As this 2020 article, published in an online South American newspaper contends:

"The success of The Chinese digital currency means that it is contesting the U.S. global financial power, particularly because it has announced that it would not be related to the US dollar" (CE Noticias Financieras, 2020: 1).

Negative discourse around cryptocurrency may well have been adopted as a propaganda tool by the government to frame its competitor for having criminogenic attributes (whether fair and accurate or otherwise), to persuade the Chinese public not to trust private versions of digital currency, such as Bitcoin, in an attempt to undermine their reputation as they grew in popularity around the world. Particularly, it is clear to see how a political will for a lack of competition of digital currency could place China in a stronger economic and political position by developing their own state backed digital currency.

The crypto-crime hacking discourse in China therefore driven in its state sponsored media in the China Daily[41], may in part explain how the narrative of crypto-jacking (and other elements of crypto crime) has been appropriated by the state to push an anti-cryptocurrency political and economic agenda to the Asian world. This is an example of the politicisation of the crypto digital asset class. In economic terms, crypto can be considered merely as a functional alternative asset or currency, but in the case of China crypto has been politicised and construed as a powerful digital weapon by the state backed media.

Cryptocurrency as a Political and Cultural Tool for Increased Social Control

Growth of state surveillance is China is replete in the literature (Cassiano, Haggerty, & Bernot, 2021; Liang, Das, Kostyuk, & Hussain, 2018; Qiang, 2019), however, it is important to point out that the act of surveillance is only a means to an end, and not the end itself. To take China's social credit program as an example, the wholesale big-data collection and analysis, to monitor, shape and rate individual's behaviour is only part of the activity, where the insipid feed of ideology and censorship form the darker social control activities. Hoffman (2018: 42) explains this process as 'social management';

"While advances in artificial intelligence (AI), and the growth of the surveillance state are all noteworthy on their own, China's social credit program explicitly links them as parts of a broader political control process known as "social management".

[41] And in other Chinese state sponsored news media.

China's adoption of its own state digital currency as legal tender is an indication of increased state surveillance over Chinese society's micro-level finances. This level of social control; denying private currencies access to the market through the use of legal system; promoting a centralised version of the digital yuan where state surveillance will be increasingly extended and normalised; and the state criminalisation of the economic labour activities associated with cryptocurrency (crypto mining), is a clear manifestation of the political nature of cryptocurrency in China and an expression of the social management of Chinese citizens.

The way the Chinese government (the Communist Party of China (CPC)) has responded to cryptocurrency serves as a reflection of the country's political system, where centralised state planning and governance is aligned with so-called 'social market forces' for social, economic and political control. As Fan (2020: 107) explains;

Article 15 of the Constitution states "The state practices socialist market economy. The state strengthens economic legislation and improves macro-regulation and control. Therefore, the central authorities are granted the power of macroeconomic regulation and control in order to improve the socialist market economic system with Chinese characteristics."

The results of this study find that prior to the crypto ban in 2021, the news space had been laced with an engendered propagandised Chinese state macroeconomic discourse, channelled through the state sponsored media from 2018. For example, the China Daily reported that:

"China now has a chance to replace the current chaotic mass of global money based on physical constants that don't change, and it's an important opportunity for the Chinese mainland to lead a money policy as the existing monetary system begins to sputter" (Kaiyki, 2018: 1).

By laying claim that the global economy is in 'chaos' due to a mass of global money, is to insinuate that the global financial system is wreak with havoc due to currency issues. The idea is that floating currencies that fluctuate is a norm for most economies, and while there may be a valid debate for more economic stability through fixing value by money supply as a hedge against inflation and deflation (as is the case for Bitcoin where proponents argue its fixed supply of value is based on the restriction to 21 million coins in circulation), the news article discloses a more political nature to the states position on monetary reform. The same

article leads onto quote George Gilder[42] speaking at the Hong Kong Stock Exchange where he revealed that the currency issue was actually related to "*the current trade dispute between China and the US"* (Kaiyki, 2018).

The dispute therefore centres not only on the economic function of the currency itself but in fact depends on a structural dyadic political relationship between the China and US political institutions acting on behalf of both geo-political states. However, this fact is not acknowledged in the article, and instead focuses upon how China can save the day with their idea of sound monetary policy, which itself is both characterised by economic and political Chinese characteristics.

As sociologists are acutely aware, any social process such as the development of monetary policy is not built within a social vacuum, where policy makers are unbiased and free from dominant thought patterns within the social, economic, and political discourse and processes. Instead, the implicit hegemonic state ideologies which inform proposals and policies can become explicit through outcomes of the policies, but also can be deduced implicitly from discourse emanating from state backed media. The choice of narratives that are pedalled through state media therefore are a key clue to China's state ideology (and ultimately) agenda on monetary policy and specifically digital assets, including cryptocurrency.

Techno-Utopian Narrative

The representation of cryptocurrency from official sources such as the China Daily becomes key here particularly for China's influence on Hong Kong's decision makers. For example, the above article quotes George Gilder's speech at the Hong Kong Stock Exchange, who as a known blockchain aficionado (Uncommon Knowledge, 2018) in line with his Discovery institute has vested interests in pushing a techno-utopian agenda for so called socio-economic 'progress'. It would seem the China Daily would use this testimony in the public domain to implicitly justify adopting a similar techno

[42] George Gilder is techno-utopian advocate, investor, ex speech writer for several US candidates and US president Richard Nixon and co-founder of the non-profit Discovery Institute.

utopian stance for Hong Kong's (including China's) progress in preparing the public for and creating a digital currency with future blockchain projects on the horizon.

In 2018 for example, the China Daily headlined a story 'Shaping the Future with Blockchain' covering a roundtable event co-organised by the China Daily and the University of Hong Kong, which according to them;

"highlighted opportunities this increasingly influential technology has continued to generate" (Ho, 2018: 1).

Use of language such as 'influential technology' supports the state media's techno utopia vision that state political leaders, as well as academic scholars and business trail blazers envision for the future of China and Hong Kong. More importantly though, aside from the content and specific above language used in narratives pursued by the Chinese state media, the institution of the state news media also plays a vital role in developing and advocating preferred discourse through practices.

The China Daily newspaper's practices are not limited to media communication of cryptocurrency and blockchain by print (or online print) but are actively involved in event organising. This event organising activity allowed for the platforming of what Hall would consider the 'preferred' discourse (in this case the techno utopia discourse) to explicitly inform and influence investment and business processes with banks and other corporations, involved in actively supporting both the discourse and influencing future financial practices in the Asian economy. By the China Daily state media 'linking' with the university to co-host an event, this could be considered as an ingratiation technique designed to encourage blockchain investors to invest in Chinese and Hong Kong technology ventures which informed by university research and attention gains legitimacy and provides support to techno utopia discourse.

This techno vision that China appears to push is interesting, for crypto proponents would argue that such an ideology would give legitimacy and support to the argument for decentralised crypto markets to take their place in the Chinese economy. Certainly, this

techno-utopia attitude was promoted though the China Daily when in 2019 the paper claimed that:

"*China is actively embracing blockchain, an underlying technology with a wide range of applications, and sees it as the new frontier of innovation in industries ranging from finance to manufacturing and energy"* (Shijia & Jia, 2019: 1).

China's ban on privatised cryptocurrency proves the techno-blockchain utopia discourse only works for the state under certain circumstances – in their case only for state digital currency and commercial blockchain applications, over peer-to-peer blockchain projects such as decentralised cryptocurrency. Democratizing finance through the option for a regulated cryptocurrency to be available as a consumer choice on the socialist market economy therefore appears not to be on the agenda for the CPC, who assume majority control of governing and surveying the finances of Chinese citizens.

The democratic position to debate cryptocurrency and its potential merits for the Chinese people has not been an option. The people of China have seemingly had no representation on this front. Even in the form of the political party system of 'socialism', the democratic parties in the political life of the state and the relations between them are tightly controlled by the positions and functions of the CPC (Fan, 2020). This extract provides the Chinese state perspective on this:

"the CPC is the ruling party, and the democratic parties are the participating parties. We must not only uphold the leadership of the CPC, but also give full play to the role of the democratic parties in participating in and discussing state affairs and democratic supervision".

In other words, democratic parties will be tolerated by the CPC, providing they submit to the authority and leadership of the CPC, and its values, but have the option to discuss state affairs. This seems like an omission to perpetuate growing authoritarianism (an allegation often directed toward China from democratic nation states[43]); the government will 'allow', or 'tolerate' other democratic parties to discuss issues but not to dissent in any way from the

[43] See (Weiss, 2019).

CPC's principles and values. This position also applies to the press, where having the autonomy to dissent in the public realm via the media is not tolerated and therefore freedom of the press is not granted, nor supported[44]. Freedom House have explained how any freedoms that were once available in China have been eroded over time, claiming that;

"the regime in China has worked to close off the last remaining avenues for accessing uncensored information by increasing pressure on private technology companies to police the content on their platforms more assiduously" (Repucci, 2019: 1).

Social control has been one such issues which has plagued China from a global political and humanitarian stance, with many western political nations condemning China's lack of regard for human (Human Rights Watch, 2021a; Paul et al., 2017) and civil rights (Amnesty International, 2020); particularly for example China's use of its social credit system as an 'Orwellian' type system of social control and complete policy disregard for citizenry privacy (Chorzempa, Triolo, & Sacks, 2018; Creemers, 2018).

There emerges a denial by the CPC for freedom of thought for citizens, along with the curtailment of freedom for consumer rational choice, under this system of Chinese socialist market economy. By adopting cryptocurrency as a political and economic tool, the CPC have been able to push an anti-crypto agenda while still upholding a techno-utopian blockchain ideology, through state media framing and narratives funnelled through predominately China Daily dissemination in both China and Hong Kong. This has resulted in extending government power over the changing economic environment through macro-policy, as well as further empowering the state over citizen's social and economic lives at a micro-level.

The implications of state sanctioned Chinese discourse on crypto crime may dissipate beyond the country's borders. It is clear from this study's findings that Chinese media seeks to report and disseminate media in Hong Kong through its cross-border outlets, but the expansion of the CPC's foreign media influence may transmit continents in part of a global campaign. The Guardian wrote of China's dissemination tactic for global propaganda arguing:

[44] China's news media reforms introduced in 2003, "prohibit the publication of newspapers or magazines with 'incorrect politics' " (Graber, 2017: 335).

"China is trying to reshape the global information environment with massive infusions of money – funding paid-for advertorials, sponsored journalistic coverage and heavily massaged positive messages from boosters".

A specific example comes from Freedom House, a US non-profit and non-governmental organisation, who have argued that Western democracies including the United States is among China's targets for media influence. Cao Changqing, a Chinese-American commenter who currently works for a Taiwanese broadcaster, explained how this is being achieved, declaring:

"China has money and force now, and so in our time its media penetration of western countries, especially [Britain], Germany, the US and Canada, has increased," (Feng, 2018: 1).

More than 200 Chinese-language publications reprint content from state media (Feng, 2018) and international concern is that the;

"*varied and aggressive ways in which the CCP seeks to influence media narratives abroad undermine democratic governance and electoral competition in other countries*"[45] (Repucci, 2019: 17).

This influence will remain a challenge for democratic countries to contend with which has effects beyond China's borders. The breadth of crypto coverage and its dissipation throughout the world media, leads to grand narratives on an international scale which echo China's political and economic will but assiduously as each crypto story appears disconnected from each other. Yet when the narratives are brought together and discourse is analysed as in this study's methodology, the results show a complex web of interdependent narratives but all with a common thread of political will behind them, revealing the biased nature of the crypto framing, as well as the propagandised versions of digital currency economics.

[45] Note on the difference between CPC and CCP. Used interchangeably, i.e., both refer to the same party however the ruling party of China is used to calling itself the Communist Party of China, but the Chinese Communist Party is more commonly used in English media.

As this study's findings empirically show, China is not the only country to adopt an anti-crypto agenda or to weaponize crypto as a social, political, or economic tool by nation state governments. In the next section, in a similar vein to the current section, the news construction of Cryptocurrency in South America and how consequently it is politicised, is discussed, and analysed from the results of this cryptocurrency study.

The Portrayal of The Economy and Cryptocurrency in State Sponsored Media: The Case of Venezuela

This study's findings demonstrate social issues being discussed in the media in relation to the social and economic disorder of the national economy of Venezuela. For example, there were 87 mentions of hyperinflation in the news corpora. The majority of these stories relate to the economic instability and primarily how hyperinflation issues (Hanke, 2019) and rising crime rates in the country (Avila Keymer, 2020), has led to over three million Venezuelans reportedly leaving the country seeking refuge in neighbouring countries (Di Salvo, 2019). Amnesty International (2019: 1) has echoed these concerns and themselves expressed how serious the crisis is, stressing how the social, economic, and political rights of citizens' in Venezuela have been violated on a mass scale, confirming that;

"Venezuela has suffered a major crisis of massive human rights violations for years, with shortages of food, medicines, hyperinflation, violence and political repression".

The findings of this study show that international news outlets reported specifically about the troubled Venezuelan economy 81 times, during the period from 12/03/2018 to 01/09/2019. 45 of the 81 articles were sourced from Mexican press outlets, with the remainder being published from news outlets in the United Kingdom, China, Iran, and Canada. This highlights the interest in Venezuela's economic (in)stability from other central and southern American countries news outlets particularly Mexico, but also evidences it as a global interest of political international concern. This political interest in Venezuela is often expressed through official discourse, which is channelled and disseminated via state backed media and corporate media moguls on the international stage.

Venezuela has had political friction with the US, due to the history of US relations with Venezuela being strained, after Venezuela accused the President Bush administration of supporting the failed coup attempt in 2002 against former Venezuelan leader Chávez (Vulliamy, 2002) with documents showing that the CIA had knowledge of the coup plot (Forero, 2004). Of the back of this history, Venezuela was of more recent international political concern to former US President Trump, when in 2017 he said that he would not rule out a "military option" to quell the chaos in Venezuela, which followed Trump's earlier threat to expand US sanctions (from the Obama administration) against Venezuela if Maduro created a new 'Constituent Assembly'.

The New York Times reported on the friction between Trump and Maduro:

"Today, Nicolas Maduro requested a phone call with President Donald J. Trump," the White House said. "President Trump will gladly speak with the leader of Venezuela as soon as democracy is restored in that country." (The New York Times, 2017).

Trump himself had been villainised by the media for the charges of his 'dangerous isolationism weakening the USA' (Lehnert & Kelly, 2020) with the decoupling of 'American leadership abroad from fundamental American values' (Burns, 2019). However, as Seymour (2017: 1) points out:

"The Trump administration's stance is not only a more belligerent version of Obama's, but it is not a million miles away from that of U.S. press reporting on Venezuela. From these newspapers, we have had headlines like, "Venezuela's Maduro decried as a 'dictator' after Congress annulled," and "Venezuela burns as dictator Maduro turns his back on the people," while the New York Times editorializes about Maduro's "drive to dictatorship."

Other press headlines featured 'the drive to dictatorship', such as this one by the Carnegie Endowment for International Peace – "Venezuela: A Dictatorship Masquerading as a Democracy" (Naim, 2015), and "How Venezuela went from a rich democracy to a dictatorship on the brink of collapse" from Vox (Aleem, 2017).

The international news media's line that Trump would only communicate if democracy was restored in Venezuela, implies the presence of an authoritarian government which lends credibility to the assertions of a drive to a dictatorship. Such headline above can only promote the dictatorship regime discourse and narratives of social and economic failures within countries only serve further to support the discourse.

In the US news for example, the Washington Post exposed the hyperinflation situation with a stark illustration of state economic failure:

"In fact, as Venezuela sinks deeper and deeper into the first hyperinflation the Western Hemisphere has seen in a generation, bolivar banknotes have come to be worth basically nothing: Each bill is worth about $0.0001 at the current exchange rate, meaning you need to have 100 of them to equal one penny" (Toro, 2018: 1).

Hyperinflation can be viewed, not as a determinant, but at the very least a factor to governments who lose control of their economies through inadequate monetary policy, and/or increasingly troubling social and political issues. For example, Robert Mugabe's Zimbabwe was engulfed in a hyperinflation since March 2007, and under Slobodan Milosevic's rule, Yugoslavia recorded the second-highest monthly inflation rate in history, a whopping 313 million percent in January 1994 (Hanke, 2008). And Maduro's Venezuela is an example of this too, where it too now faces similar inflation problems linked to economic, social, and political instability. All three leaders have a commonality, in that they all have been described by the international press as 'dictators' in a similar fashion, linked to narratives of hyperinflation and inextricably weaved into economic instability discourse.

News reporting in this study shows economic measures to curb inflation was reported on by the South American press during July of 2018, when Venezuelan President Nicolás Maduro ordered a monetary restructuring take place in August to remove five zeros from the Bolivar. Reported in a newspaper, Maduro explained the Venezuelan sentiment behind this monetary reconversion:

"We are going to dismantle the perverse war of capitalism to install a virtuous, balanced economic system" (CE Noticias Financieras, 2018a).

A local paper reported on the issue, stating Maduro's plans;

"Nicolás Maduro hopes that this measure will serve "to stabilize and change the monetary and financial life of the country," in a way that he described as "radical." He also said that his government's plan is to build a "productive, diversified and sustainable economic model", for which the reconversion and anchoring to Petro are "a great hope"." (CE Noticias Financieras, 2018b: 1).

In contrast however, the controversial economic measures taken by Maduro did not seem popular in the international press, with the UK's Guardian reporting on the radical plans that:

"Measures to tackle the crisis were announced by Nicolas Maduro, the country's president, last Friday came into force on Monday. The chances of the emergency package working do not look good" (Elliot, 2018: 1).

In agreement that the outlook did not look promising for Venezuela, with scepticism, 'Iran news' summarised the economic reforms taken by Maduro as;

"desperately grasping at straws to try to fix the country's economic meltdown" (Iran News, 2018: 1).

With a more citizen centred approach, the Mexican press instead focused on the social impact of the financial effect on the Venezuelan population with an emotive empathetic headlined article:

"Maduro, willing to deepen the misery and anomie, removes five zeros from the bolivar" (CE Noticias Financieras, 2018c: 1).

Later in August 2018, followed another emotive article from Mexican press which started to change in tone using language which would undermine Maduro by use of insulting language. The article stated:

"The New Stupidity of Maduro that will sink Venezuela forever. Maduro now proposes to rewrite economic history" (CE Noticias Financieras, 2018d: 1).

The UK's Financial Times headline an article which summarized this general international consensus of Maduro's controversial reforms, setting the tone with a fatalistic outlook;

"The Desperate plight of Maduro's Venezuela" (FT, 2018).

These international headlines contain narratives that contend that these radical measures have increased Maduro's control leading to a damaging effect on the country's stability, which in reality is difficult to argue against, in light of the humanitarian crisis that the Venezuelan people continue to face under his leadership (Amnesty International, 2019; Briceño-Ruiz, 2019; Human Rights Watch, 2021b). However, while many other countries face similar economic problems, Venezuela appears to take centre stage in the international press. The framing of the economic crisis in Venezuela by different country's news outlets has followed an escalating demonization of the Venezuelan government in the international media. The findings of this study show that this has been presented through a combination of narratives of negative sentiment, relating to themes of anti-democratic social, political, and economic measures being taken by President Maduro.

The international exposure and representation of dire socio-economic issues, frames Maduro with the labelling of an anti-democratic, populist, and authoritarian leader, who increasingly uses dictator style tactics to curtail any opposition to his rule (Corrales, 2020; Oner, 2021). In the most extreme example, this is witnessed through the governments use of extrajudicial executions and short-term forced disappearances, as well as jailing opponents and prosecuting civilians in military courts (Amnesty International, 2019).

The authoritarian labelling in its mildest form (and the definition which it holds in comparative politics) refers to a regime that does not organise periodic free and fair elections (Glasius, 2018), which has been a criticism (among others) of Venezuelan politics under Maduro's rule from the international community. The findings of this study confirm this presupposition, revealing that the anti-Maduro narratives stem from the international criticism Maduro faces, which is founded upon claims of the Venezuelan elections lacking legitimacy

(BBC, 2020; Ghersi, 2019; Secretary Pompeo, 2020), the country's humanitarian and poverty crisis (Amnesty International, 2019; O'Boyle, 2019) and increasing crime and social disorder rates (Avila Keymer, 2020).

The level to which western governments view Venezuela as a legitimate concern, actively speak out against Maduro's regime (including taking formative action through the use of economic sanctions), and bring the topic into the public arena via the United States media in particular, is conveyed by Briceno-Ruiz (2019), where he states that;

"It is an important topic on the Trump administration's political agenda, and the highest government officials such as Mike Pence, Mike Pompeo, and John Bolton speak out daily against Venezuela. The topic is also discussed on different news programs on U.S. networks, such as Fox News, MSNBC, CBS, and CNN, which makes it better known in public opinion" (Briceño-Ruiz, 2019: 182).

In Venezuela during the time of the Trump administration prior to Maduro's presidency, these humanitarian matters were not a priority for national Venezuelan press compared to the international media coverage, which frequently has labelled the situation in Venezuela as a 'humanitarian disaster' (Malhotra, 2017). Indeed, Freedom House (Repucci, 2019) reported that media repression has increased since the opposition-controlled National Assembly designated Juan Guaidó as acting president.

The host of international discussion of the humanitarian and economic issues compared to local press in this study's findings, implies that the media suppression has been somewhat successful in closing national debate on such divisive issues, giving some evidential weight to Freedom House's report. The Venezuelan government has extended and abused its power to regulate the media and has shut down dissenting outlets, with Human Rights Watch stating that freedom of expression has declined for more than a decade as;

"the government can suspend websites for vaguely defined "incitement," prosecute "disrespect" for high government officials, revoke media licenses if "convenient for the interests of the nation," and has blocked websites critical of the government. While a few newspapers, websites, and radio stations criticize authorities, fear of reprisals has made self censorship a serious problem" (2021b: 1).

This state backed media suppression appears to be a similar tactic used by the Chinese Communist Party (CPC), who as discussed in detail in the previous section, use censorship to control discourse and to place themselves to 'fix' a preferred meaning to a narrative in a hegemonic state backed discourse, particularly with relation to the political economy and monetary policy on Fintech projects like cryptocurrency.

Citizenry Reactions to Tech Resolutions for Social and Economic Plight

The international community has not ignored such human and civil rights violations and numerous governments have imposed targeted sanctions on Venezuelan officials implicated in abuses and corruption. Since 2014, 43 unilateral, coercive measures have been applied against Venezuela by the US government which have impeded an already fragile economy, obstructed oil exportation globally, and frozen Venezuelan financial assets abroad while prohibiting access to international financial systems (Zakrison & Muntaner, 2019). However, far from punishing the Maduro and his government, the impact of the sanctions has had a disproportionate effect on civilians, making life more difficult for them compared to officials, with Venezuela suffering an increase of disease and mortality (for both adults and infants) and a displacement of millions of Venezuelans (Bahar, Bustos, Morales-Arilla, & Santos, 2021; Weisbrot & Sachs, 2019).

Those who are left in Venezuela that have not been exiled (or left in search of political asylum) (Ghersi, 2019), are reportedly finding creative ways to live under such repressive and inadequate conditions to circumvent such challenging political, economic, and social circumstances. To add to the complexity of the nation's problems are the fact that these conditions are enforced both nationally within and by their own state government but also internationally from external government administrations; thus, victimising civilians further. The findings of this study taken from media reports shows that some Venezuelans are reportedly turning to cryptocurrency as an alternative option to the failing state currency-the Bolivar, to mitigate the effects of the hyperinflation fuelled deteriorating economy and social disorder (Di Salvo, 2019; Hanke, 2019). One report detailed for example how Bitcoin influences the crippled Venezuelan economy;

"The Bitcoin has burst with force in the economy of diverse countries, as in the concrete case of Venezuela. The South American country became in 2018 the second nation in the world to buy Bitcoin, as well as its commercialization in general. In this way, faced with the spectacular existing demand, Bitcoin purchase transactions were made 10% more expensive than their real international value" (CE Noticias Financieras English, 2019: 1).

The following article reports how normalised Bitcoin is, and goes some way to explain the demand when considered as a currency hedge against hyperinflation for a Venezuelan resident going about their daily activities;

"On Tuesday, I went shopping for milk. With the chronic food shortages in Venezuela, that errand already is very complicated, but there's an extra layer of difficulty for me: I don't own bolivars, Venezuela's official currency. I keep all of my money in Bitcoin. Keeping it in bolivars would be financial suicide" (Hernandez, 2019: 1).

The economy itself is geared toward cryptocurrency use, with this article reporting on the scarcity of cash and how the economy is adapting to digital money;

"Because the country cannot afford to print its own banknotes, they are now a commodity on their own. In the cities, coffee shops accept Bitcoin and other cryptocurrencies as payment, while informal traders rely on mobile money apps because cash is increasingly scarce" (Hunter, 2019: 1).

Cryptocurrencies are therefore being used as a survival tool as outlined in this excerpt from a media article in the dataset, which demonstrates the ways in which Venezuelans are forced to endure continued existence;

"Venezuelans are constantly seeking new means of survival: buying dollars on the black market or through digital exchange houses, buying cryptocurrencies, working as freelancers for employers abroad, or travelling to work and returning to the country with foreign currency" (CE Noticias Financieras English, 2018: 1).

Chainalysis, a company that researches blockchain transactions, in a 2020 report quantitatively conferred such reports of Bitcoin demand, ranking Venezuela third on its

Global Crypto Adoption Index, only behind Ukraine and Russia (Chainalysis, 2020). This demand for crypto in Venezuela could be in part because cryptocurrency is bringing hope to everyday Venezuelans who have suffered under an abhorrent economic situation of hyperinflation. The following heartfelt story taken from a media article in the corpora, demonstrates how Bitcoin is central to the social and economic activity of professionals, and which is often entrenched in citizens daily lives much more so than their western counterparts who do not need to rely on an alternative monetary tool;

"The teacher was lucky; she found a freelancer job who pays in Bitcoin. And this allows you to earn enough money to support your family and to try to make your salon classes are getting more and more filled up. Today we ask Isabela what is your opinion of Bitcoin? she with express happiness, "I don't have to tell you, all I need to do is see my students' eyes, full of desire to progress and the light of hope. My living room is full, and I'm not leaving it. Bitcoin is certainly freedom, no matter its price, or if the big regulators say it has no value, come to my classroom, and talk to my students, Bitcoin is in each of them." Isabela, 49, is trying to get her students to understand cryptocurrencies and Bitcoin as a way to fight Venezuela's repression today, as well as a source of hope for all her young students" (CE Noticias Financieras English, 2020: 1) .

The Venezuelan State Digital Currency project – the Petro

In response to the failing social structure, and in an attempt at economic recovery, the National Constituent Assembly (ANZ) of Venezuela advanced the construction of legal projects to strengthen and promote the newly formed cryptocurrency -the Petro, at the national and foreign level during 2018 ("Venezuela Petro Cryptocurrency (PTR)," 2018)[46]. According to the official whitepaper, the Venezuelan Petro cryptocurrency has its origin;

"In the idea of President Hugo Chavez of a strong currency backed by raw materials. Its background dates back to proposals for global financial and monetary coordination prior to the hegemony of the US dollar, which resurfaced after the financial crisis of the late 1990s". ("Venezuela Petro Cryptocurrency (PTR)," 2018: 1)

[46] Maduro announcing the introduction of the Petro see: (Luigino Bracci Roa desde Venezuela, 2017).

The above statement is the opening set out in the official Petro whitepaper. It indicates the need for a stronger currency by former President Hugo Chavez, who himself recognised the need to alleviate poverty within Venezuela. The Chavez government carried out a series of social programs known as the 'Bolivarian Missions'; anti-poverty, health and education projects aimed at alleviating the largest socio-economic problems in Venezuela, which to a degree had some success due to high participation rates (Hawkins, 2010). However, while Maduro claims Chavez desired a 'strong' currency, the Petro was not one of these projects, and did not surface until much later under Maduro's government when in 2017 he announced its implementation live on television (Luigino Bracci Roa desde Venezuela, 2017).

Far from seeing Bitcoin as a freedom (as conceived in the previous teacher example and general population) but instead considering Bitcoin as a threat, the Maduro regime originally contemplated that a decentralized network to create and move money, where no authority was in charge would not fit his political agenda (Popper & Herrero, 2020). But Mr Jimenez founder of Venezuelan start up 'Social Us' and hired developer for the Petro project, stated that the government had a change of heart regarding cryptocurrency. He claimed that whilst initially there were initial fears about the lack of state control of cryptocurrency governance, suddenly;

"Some members of the government noticed that this cut both ways. Cryptocurrency could also be a way for Venezuela to escape sanctions levied by the United States and international organizations" (Popper & Herrero, 2020: 1).

For Jimenez, this was the most likely deciding factor which led to Maduro's government to sponsor the state digital currency project, which they employed him to build. This study's findings show that the international media covered the topic of the Petro 31 times between 15/08/2018 to 05/05/2020. For a near two-period this reporting was not prevalent especially on an international scale and indicates the extent of which the project was (un)successful. Whilst Maduro reportedly had big plans to take the Petro to Turkey and Qatar to sell to investors, the project was affray with debates between the 'Social Us' employees including Jimenez himself and government officials (Popper & Herrero, 2020). Further to inhibit the project's success, US president Trump signed an executive order barring Americans from buying the Petro (Davis & Popper, 2018) in a bid to starve investment from US sources.

The Petro Discourse

Media coverage of the Petro within this study's findings shows an overwhelmingly dissatisfaction to the introduction of the state digital currency, to heal the country's economic woes. Headlines such as "*The Petro is Shipwrecked*" and "*Doubts and Sanctions Overshadow Petro's First Year*", offer a flavour of the doubt and discontent of Petro's ability to help the financial stability of the country. In this case, both articles came from Mexican press, which in part make up a host of international negative narratives around the Petro.

One mocking headline within topic 14, shows how the negative narrative is even infused with amusement, titled; "*Venezuela; The Laughable Launch of the Petro, Maduro's new Cryptocurrency".* The Mexican press attempt to ridicule Maduro may be an attempt to undermine his power and presidency. For example, in the context of political satire, while exposure to satire has not been shown to directly influence vote choice, the effect of the humour can shape attitudes toward government institutions and the likelihood of voting for a particular candidate or party (Baumgartner, 2013; Becker, 2020). These mocking headlines seem to be an extension of anti-Maduro discourse, and the economic instability discourse pedalled by the international media, as discussed earlier in this section.

Like China's concern around cryptocurrency, Venezuela acted in a reactive way to the perceived threat of crypto to state political and economic stability. However, instead of politicising and criminalising cryptocurrency, Venezuela explicitly adopted the terminology of 'cryptocurrency'; actively referring to the Petro being defined as a 'sovereign crypto asset' ("Venezuela Petro Cryptocurrency (PTR)," 2018). China on the other hand, have used the identity of their traditional currency, the Yuan, as their identification basis for their state 'digital currency' which will be known as either - Digital Currency/Electronic Payments (DCEP) or the Digital Chinese Yuan (DCNY) (Bram, 2021), in order to distance the state project from the decentralised private digital currencies alternatives on the market.

Conclusion

This chapter has firstly demonstrated that China is an important actor in the cryptocurrency discourse, by being central to the discussion around and the subject of discourse, proven by the CorEx results showing it to be the top topic across international news articles. Further, the chapter showed that China is also the object of cryptocurrency discourse, by attempting to control the discourse and obscure debate, by using its authoritative position to deny opposing perspectives through state sponsored press. Cryptocurrency as a technology in this way had been weaponised and harnessed by state anti-democratic media to drive tech-utopian discourses which achieved social, political, and economic goals, that fitted the CCP government agenda. Chinese state backed press appropriated a crypto-crime-discourse with narratives of disorder, chaos, and subsequent regulatory determinism, to achieve the political goal of persuading Chinese society that cryptocurrency is inherently criminal and dangerous, to gain support for the government's own state backed digital currency. This discourse was supported by various political actions, including the banning of cryptocurrency in China, which had economic effects that rippled through the global crypto markets sending the price of Bitcoin spiralling downwards.

The importance of this study exposes how the use of language and narrative framing is vital in the production of discourse in the context of the political, economic, and social nature of cryptocurrency. The findings of this study in particular show how digital currency through the cryptocurrency discourse has been politicised by China (and Venezuela as a comparison through case examples) and how this has been represented by their respective global and local news press outlets in a 'propaganda blitz'. This propaganda I argued was deployed in the state media, with the full intention to pave the way for the introduction of their own state conferred digital currency counterparts in the form of CBDCs. This governance of cryptocurrencies included the state controlling digital money markets not just by regulation and bans but offering the CBDC as an alternative mode of (state) currency that had the potential to eliminate or reduce the power of private money. Where both states diverged in their approach was that Venezuela, instead of vilifying crypto, focused their propaganda efforts on persuading the public how crypto could 'save' the failing economy and political structure.

The consumption of these propagandised news articles as ‘products’ or ‘cultural commodities’, are consumed and interpreted by audiences, where media outlets are empowered through their role as information managers to convey stories. As a result, attitudes toward crypto related crime and cryptocurrency more generally as an alternative ungoverned asset, can result in reproducing various media effects of cryptocurrency public ideology, which inform corporate and state investment practices. This was explored deeply in chapter 4, where I argued that the financial governance macro discourse takes upon normative narratives of disorder due to lack of crypto regulation.

As outlined in earlier in this chapter, comparatively Chinese citizens now do not have the option to retreat to an alternative private currency compared with Venezuelan citizens, due to the impeding ban the Chinese government has put on holding cryptocurrencies. The Chinese ban has been part of a larger governance discourse which has only strengthened the normative stance on the need to govern the so called ‘wild west’ of cryptocurrencies, as evidenced in chapter 4 proving the financial governance discourse and the pervasive disorder narrative. Chinese citizens only options now are the current CCP approved bank accounts and potentially the forthcoming digital yuan – which will also be state led.

Venezuelans by contrast, will have more options available to them with the creation of the Venezuelan state digital currency-the Petro but still can use Bitcoin and other private currencies as the market has adapted for and subsequently previously permitted. Venezuelan local news discourse supports this economic innovation of their self-proclaimed ‘sovereign crypto asset’, while pushing back other global discourse (chiefly Mexican press) which often berates the political establishment (Maduro’s government) and everything it stands for, including its sovereignty over its money. Thus, proving the political nature of this digital currency where the reaction to cryptocurrency technology reflects a government’s wider political goals. State backed news media can reveal these goals, by illuminating how meaning has been ascribed to cryptocurrency through discourse appropriation in news stories on digital money.

This chapter has demonstrated how both case studies have revealed the biased nature of crypto framing, as well as exposed the propagandised versions of digital currency economics. China and Venezuela have therefore ascribed diverging meaning to cryptocurrency

technology, offering audiences varied images of what cryptocurrency is. This was enacted through discourse appropriation of crypto governance to support crypto regulation (and to promote the public acceptance of a CBDC in the case of China). The next chapter considers the competition and regulation of digital currencies regarding the UK response to cryptocurrencies in the form of Central Bank Digital Currencies (CBDCs).

CHAPTER 6: The United Kingdom State Response to Digital Currency Disruption: Will Central Bank Digital Currencies Eliminate the Need for Cryptocurrency?

Contents

Introduction

Innovation is one of the most influential factors which have emanated from cryptocurrencies, forcing central banks to face an adaptive, fast paced global financial market with blockchain adoption. As cash declines and digital payments rise in society, it is inevitable that payment infrastructures need to accommodate global commerce transactions, at a low cost and fast speed, therefore requiring interoperability. In the UK case for example, The Bank of England are considering the introduction of a sovereign backed Central Bank Digital Currency (CBDC) (Bank of England 2021c) setting up a task force to coordinate efforts (Bank of England 2021a). This would give the central bank the ability to build on their traditional centralised role in the economy, ensuring stability by providing certainty and liquidity in the financial system, as the UK's monetary and fiscal policy manager, against a tide of 'private' digital money production.

Due to this decentralised nature and absence of legal standing of cryptocurrencies as UK, US or EU legal tender, opponents of crypto argue against supporting the use of it as a medium of exchange, or investment instrument within the UK's free market. However, the regulatory landscape is changing with many governments such as the US and the EU including the UK, taking a firmer approach to regulating cryptocurrencies, through instruments such as the UK's crypto-asset regulatory framework (Treasury Committee 2018) which has informed financial governance debate.

The European Central Bank (ECB) have described how a CBDC could be considered as;

> *"a third form of base money, next to (i) overnight deposits with the central bank, currently available only to banks, specific non-bank financial firms, and some official sector depositors; (ii) banknotes, being universally accessible but arguably of limited efficiency and relying on old technology. Some publications distinguish the case of "wholesale" and "general purpose" CBDC, the former being only accessible to certain firms, while the latter universally accessible to all households"* (Bindseil 2020, 2).

For the purposes of this chapter, the discussion takes a similar stance and is centred around a general purpose CBDC offered in the form of deposit accounts, with central bank money open to all households and corporations[47]. However, the evaluation takes more of a user

[47] For a full technical review of two prominent arguments against CBDC, namely (i) risk of structural disintermediation of banks and centralization of the credit allocation process within the central bank and (ii) risk of facilitation systemic runs on banks in crisis situations and a tiered proposal solution, see (Bindseil 2020).

centred perspective, in focusing on a Bank of England retail CBDC, and its potential impact on the financial system. It considers the central banks contemporary role as operators and supervisors, and their ability with a CBDC to achieve their aim to pursue key public interest objectives in the payments sphere: safety, integrity, efficiency, and access (Bank of England n.d.).

This chapter considers the governance of virtual currencies and the disruption of money markets. For instance, dependent upon the societal consensus of virtual currencies, whether cryptocurrency for example, can substitute as a real economic alternative to fiat currency, is questionable. If cryptocurrencies do have a place in the traditional money markets, this is likely to cause disruption, affecting institutions and individuals alike, as payment infrastructures will need to adapt to new monetary instruments. This means that traditional institutions such as the Bank of England and retail banks will have to adjust to cater for interoperable systems such as blockchains with new organisations, such as challenger banks and payment service providers, and potentially in the future DAO's (Decentralised Autonomous Organisations) (Coulter 2022).

This chapter therefore focuses on the extent that a central bank digital currency will eliminate the need for cryptocurrencies from a governance perspective in three separate but related sections. First, the historical role that the Bank of England has taken as the state authorised central bank will be discussed, analysing the former and contemporary rights and privileges which have dictated their historical operational monetary and fiscal policy activities. This is important as any new money markets that are likely to disrupt the economy, will be considered by the Bank of England (as the UK's central bank) as to their role in governing it, in terms of their monetary and fiscal policy scope.

The second section of the chapter will then move on to assess the competencies (including the potential benefits and challenges) of crypto coins including stable coins, and a CBDC. Rising out of the economic disruption of cryptocurrencies and digital coins, questions are naturally raised as to the need of new monetary technology, and what it can offer over fiat and other money alternatives.

Finally, the third part of this chapter concludes by evaluating the necessity for decentralised cryptocurrencies as non-state conferred currency, compared to the proposed centralised sovereign backed CBDC, controlled by the Bank of England. Most importantly, it contextualises the central banks governance and power with relation to digital currencies, and how their position may affect public understandings of digital currency. This understanding informs discussion and debate of digital currency governance in the public space. In turn, this can affect the policy implications on the digital currency markets, and wider financial economy. Overall, this chapter contributes to the thesis by providing a United Kingdom case study (where this researcher resides) to show how debates about cryptocurrency governance and regulation are often framed, mirroring debates explored earlier in the thesis.

A Brief History of the United Kingdom's Financial Governance

The Bank of England Charter and its Role in Central Banking

Since the Bank of England's charter by Parliament in 1694, monetary policy in the United Kingdom has typified the way in which the political and economic activity of fiat currency creation has been undertaken and legally enforced. Key decisions on how much currency and what types of currency are in circulation, are predominate examples of the ways in which powers are exerted through monetary policy by this central authority (The Bank of England 1969; Bank of England n.d.). Currency creation can then be considered a highly political and economic activity, with the Bank of England having the ability to explicitly set monetary policy around this activity. They do so, in their own words *to "promote the good of the people by maintaining monetary and financial stability"* (The Bank of England n.d., 1).

Whilst it is not entirely clear how the bank should achieve such an ambiguous aim, Morgan (1965, 1) provided further guidance on the broad category of 'maintaining monetary and financial stability' suggesting that the functions of a modern central bank are "*four- fold: to act as a manager of National Debt and banker to the government; to regulate the currency; to be a bankers bank, and to act as lender of last resort"*. However, in terms of currency formation, the specific function of determining the quantity of money in circulation seemed not be part of the Banks initial role, when in 1832, John Palmer the Governor of Bank of

England made no mention of controlling money supply. Instead, he stated that the chief functions of the Bank were to:

"Furnish the paper money with which the public act around them, and to be a safe place deposit for the public money, and for the money of individuals who prefer a public body like the Bank to private bankers" (Abel Monitor 1841, 57).

The Parliamentary Act as the legal mechanism utilised to set up the Bank of England, was however vague in its wording, and did not explicitly specify a power for the Bank of England to issue notes per se (The Bank of England 1969). Enacting upon the 'bills or notes' section[48] within the Act, the bank interpreted the guidance and was consequently able to issue notes in the form of a sealed bill; an interest-bearing promissory note to cash (gold and silver) depositors or borrowers. Promissory notes were just one of three forms of paper money the Bank of England were issuing upon their formation, with the other two forms of paper money comprising of the running cash note payable to the bearer, and the accomptable note. The former note surviving the test of time being *"in fact, the true forerunner of the modern Bank note"*[49] (The Bank of England 1969, 211), thus eventually becoming the fiat currency that is the hallmark of the traditional British national legal tender.

In May 1696, the government allowed the Bank of England to suspend specie payment so that it was released from its contractual duty to redeem notes for gold (Duryea 2010). However, the government gave the Bank freedom to continue business as usual, in its activity of issuing bank notes and enforcing payment upon its own debtors. Additionally, imposing an heir of authority to the currency as nationally legitimised, any person who was found to have counterfeited Bank of England notes could be sentenced to death (HMSO 1830).

Currency Issuance

Sir Theodore Janssen, one of the first Directors of the Bank of England, acknowledged the distinct nature that public banking was taking, particularly the historical unconventional business practice of regularly issuing notes as currency. He noted that *"the giving out Notes*

[48] Section 28 provided that "…all and every bill or Bills obligatory and of Credit under the Seal of the said Corporation…" shall be assignable by endorsement. (see The Bank of England, 1969).

[49] The earliest running cash notes were completely hand written and it was probably not until sometime between 1696 and 1699 that partly printed notes came into regular use. (see The Bank of England, 1969).

payable to Bearer, a practice that he thought as liable to many dangers and inconveniences" was a peculiarity – among public banks – and of the new Bank of England. A year later in 1697 Janssen recognised the banks increasing dependence on note issuing, admitting that *"…the custom of giving Notes hath so much prevailed amongst us that the Bank could hardly carry on Business without it*" (The Bank of England 1969, 211).

Sir Janssen's warning does not appear to have altered the banks practices as centralisation of the money supply was further consolidated in 1708, when parliament conferred another privilege to the Bank of England by making it unlawful for any corporate body, other than the Bank, to issue demand notes. This also added a similar prohibition of any partnership of a bank of no more than six persons (The Bank of England 1969). Competition for the Bank of England was restricted as competitors were constrained by the new rules by being proscribed from issuing bank notes redeemable on demand, and not being able to make short term loans under a six-month period. Thus, the competitors were small banks with less than seven partners who were severely limited in their operations. This imposed a great advantage on the Bank of England as a corporation with the opportunity to capitalise on their legalised privileges on issuing interest bearing currency.

The South Sea Company newly created in 1711, led by Prime minister Robert Harley, was however one such example as a significant competitor for the Bank of England. Yet, this corporate competition was short lived, and after nine years collapsed under the weight inflationary monetary expansion and stock speculation. Due to the 'South Sea Bubble crisis', the Bank of England was allowed by the British government to suspend specie payments on an indefinite basis. The Bank of England's bank notes therefore successfully railed against economic pressures of the Jacobite rebellions of 1715 and 1745, and the South Sea crisis in 1720. With around £3 million notes in circulation during 1720 (The Bank of England 1969), the bank held its rank as the leading corporation in the English banking system.

During the late eighteenth century, a few small, private partnerships formed to issue notes in response to the Bank of England's policy of monetary expansion. 'Country banks' as they were known, would use Bank of England notes as reserves and pyramided their own notes on top of them, and by 1793 there were nearly 400 fractional reserve banks of issue in England (Rothbard 2012). By 1833, the Bank of England Act was established. This Act granted the

Bank of England's notes as legal tender status in England and Wales for the amount stated on the note with the provision that *"the Bank continued to pay on demand notes in legal coin*" (an obligation from which they were released by the gold standard of 1925) (The Bank of England 1969). Country banks could now redeem their notes into Bank of England notes as opposed to in specie. This furthered and consolidated the Bank of England's power to functioning as the central bank of England. The centralisation of monetary supply and the responsibility for the management of monetary policy, therefore, has remained stable key features of the Bank of England's history, in its role as a financial governor of the economy.

Central Bank Digital Currencies (CBDCs): What is the Future of State Money?

Centralisation and Innovation of Digital Currency for Financial Stability

The four UK financial authorities – the Bank of England, HM Treasury, the Financial Conduct Authority and the Prudential Regulatory Authority – work together to make sure the UK financial sector runs smoothly, efficiently, and effectively (Bank of England n.d.). In addition to cash and reserves, financial instruments, the policy that accompanies them and the banks' role, have inevitably developed over the period since the Bank of England's charter; particularly so in the 21st century with digitalisation and transformation of financial services (Dow 2017).

The Bank of England supply the ultimate means of payment for banks (bank reserves), and a highly convenient and visible one for the public (cash). Cash however is currently the only means by which the public can hold central bank money (Borio et al. 2017), however, use of cash has significantly decreased over time (BBC 2019). With the potential introduction of national central bank digital currencies in the 21st century (Bank of England 2021c), the Bank of England can build on their traditional centralised role in the payment system, ensuring stability by providing certainty and liquidity in the financial system as the UK's manager of monetary policy. A CBDC could present several opportunities for the way that the Bank achieves its objectives of maintaining an open and innovative but safe competitive monetary system, whilst upholding vital financial stability in serving the public interest (Bank for International Settlements 2021a).

Technology has changed the future of money tremendously (Maurer 2015). Innovative digital products and services such as cryptocurrency, smart contracts and blockchain are everchanging the economic landscape (Deloitte 2019; Vadgama and Tasca 2020), where the number of blockchain and smart contract projects hosted on GitHub from January 2013 to April 2018 rapidly increased (Cong and He 2018). Smart contracts are being deployed across the private and public sector, across a range of industries including supply chain management, automobile, real estate, insurance, and health care (Alliance 2016; Cong and He 2018; Hu et al. 2018). With the rise in blockchain services, advanced features such as smart contracts will ultimately be the basis of the future of financial services (V. Chang et al. 2020). This demand to adapt to the market and modernise financial services, will drive the Bank of England to foster innovation in their supervisory role of Financial Market Infrastructures (FMI's) (Bank of England n.d.). As the organisation faces a change in external environment, fostering innovation should encourage greater competition by the Bank of England.

The case of Sweden and how the Riksbank have encouraged innovation in the retail payments market is a prime example of how a central bank has responded to a changing fintech economy. Sweden is already a low cash society and with the Riksbank innovation, this has resulted in over half of the Swedish population having downloaded the fast payments app (Swish) on their smart phone, leading it to become a prominent feature in the retail payment landscape, providing a substitute for cash in person to person (P2P) payments (Skingsley 2017). In the modern economic landscape where banks face competition from global economy and a plurality of private technology companies offering monetary services, it is necessary for the Bank of England to adapt itself to the changes in the digital economy as Sweden have done with the Riksbank innovation.

The ultimate benefits of adopting a new payment technology will depend on the competitive structure of the underlying payment system and data governance arrangements (Bank for International Settlements 2021a). A particular benefit of the implementing a CBDC by the UK central bank is that it could enhance existing payments infrastructure for both wholesale and retail (Bank of England 2021a). This could increase the speed and efficiency of payments, while reducing costs and generally support a resilient payments landscape (Bank of England 2020). This is ever important as meeting future payment needs in the digital

economy becomes increasingly vital in light of usability, stability and security challenges that are associated with global ecommerce activity (Manyika 2016; Singh et al. 2020; Karpunina et al. 2020; Gilderdale 2017).

Encouraging greater competition can reduce barriers to entry and boost access to global markets through increased interoperability. Co-ordinating interoperability is particularly essential in the payments sector (Lammer, Garcia, and Polverini 2016). The growth of cross border payments has been influenced by factors including; manufacturers expanding their supply chains across borders; cross-border asset management and global investment flows; international trade and e-commerce; and migrants sending money via international remittances (Committee on Payments and Market Infrastructures 2020). However cross border payments can be complex. They can provide more challenges than domestic ones involving various intermediaries, time zones and jurisdictions limiting operating hours, capital control regulations, resulting in long transaction times associated with high fees (Bank of England n.d.; Cojocaru and Cojocaru 2015; Pablo, Pacheco, and Lozano 2021). CBDCs built on digital identification present the opportunity to improve cross-border payments and limit the risks of currency substitution (Bank for International Settlements 2021a).

A CBDC can assist in the efforts to coordinate interoperability among cross border payment structures, which while improving payments market efficiency also promotes financial inclusion by increasing access to financial services for unbanked and under banked populations and enhance peer to peer international payments (Bank of England 2021a). Mobile banking has commonly been viewed as a tool for an alternative to traditional forms of banking for the unbanked and under banked economically disadvantaged citizens, with initiatives (for example M-Pesa (Jack and Suri 2011)) most prevalent in Africa and the developing world (Asongu and Odhiambo 2019; Maurer 2008; Asongu 2015; Donner and Tellez 2008; Batista and Vicente 2020). Mobile financial services tend to offer a level of convenience and affordability that low-income earners require, whereas the basic bank accounts offered to the unbanked poor are expensive to maintain (Makore, n.d.).

If for example a retail CBDC is aiming to increase access to financial services for the unbanked and under banked populations, a requisite should be for the central bank to address the needs of those at the bottom of the pyramid in financial inclusion strategies. Financial

intervention for these populations who use alternative financial services therefore needs to address the needs of the excluded populace, found by the FDIC unbanked and under banked survey to differ widely, but common among lower-income households, less-educated households, younger households, black and Hispanic households, and working-age disabled households (Burhouse et al. 2016). The elements of socio-economic status as well as education, are key to promoting financial inclusion and challenges that CBDC intervention will have to address, if they are to act as an intervention tool for the poorest in society. It must therefore offer interoperability with open payment platforms and have the opportunity to provide financial inclusion measures for the public good (Bank for International Settlements 2021a).

Design and implementation of a CBDC by the Bank of England will not only stand as an intervention tool but also secure the central banks sovereignty over monetary policy. This market power could work to legitimise attempts at financial reform and increase its governance. Given the bank's main role as the UK's monetary policy maker who are a publicly accountable institution, this puts them in the ideal position to maintain financial stability and confidence in the UK banking system; a pivotal responsibility of the Bank of England. The stability of the financial system is dependent upon the operational resilience of the system's ability to absorb and adapt to economic shocks and disruptions (Bank for International Settlements 2021b; Bank of England n.d.; Financial Stability Board 2020). The extent to which a CBDC can fulfil financial and economic stability will therefore rest on the success of it as an intervention policy tool for reform providing conditions such as settlement finality, liquidity, and integrity (Bank for International Settlements 2021a).

Cryptocurrencies: Cyberspace Money Without Flags?

Bitcoin as the Leading Cryptocurrency

Bitcoin was the original blockchain which stands as the virtual currency with the most popularity and highest market capital to date (Coinmarketcap n.d.); representing a benchmark for the crypto markets. This represents a challenge to a central bank digital currency, for Bitcoin was the first of a peer-to-peer digital currency that eliminated the need for a third party, such as a central bank to validate transactions, by utilising a distributed ledger system

where the decentralised consensus mechanism - Proof of Work - ensured validity and trust within the network (Nakamoto 2008; Hileman and Rauchs 2017).

Due to the distributed, global nature of cryptocurrency that is not bound by geo-political borders, Bitcoin can be described as cyberspace money without flags, requiring no issuance from any state government or central authority. Regardless of lacking legal tender status, cryptocurrency can function like any other currency - to buy and sell goods or services or be traded as an asset or currency in global markets. Trading as an asset or currency can be conducted on crypto platforms, for example in a similar way to a foreign exchange currency. Coinbase (2021), Binance (2021), and Huobi (2021) are examples of centralised crypto exchanges and decentralised peer to peer exchanges such as Uniswap (2021) or Tokenlon (2021) offer similar services.

Bitcoin as a digital currency has faced a problem of currency definition, which in part serves to undermine public reassurance with debates over its role as a currency, or asset in the financial markets (Yermack 2015; HMRC 2014). Proponents have argued that Bitcoin currently does not fulfil the criteria of being a currency, because it does not function as a medium of exchange, a unit of account, or a store of value (Cermak 2017). Bornholdt and Sneppen (2014) have analysed the market forces driving Bitcoin, specifically the perception of the value of Bitcoin. They concluded that *"perception of value in a social system is generated by a voter-like dynamic, where fashions form"* (ibid. p1). These 'fashions' are based on perceptions, such as attitudes and values toward Bitcoin which in a social system, can then influence positively or negatively on the crypto market. Dependent upon the societal consensus of Bitcoin's definition, whether Bitcoin can substitute as a real economic alternative to fiat currency, has therefore been fiercely debated (Dodd 2018).

The academic literature is rich in discussion on economic debates over Bitcoin's value (Bornholdt and Sneppen 2014; Hayes 2015; Ciaian, Rajcaniova, and Kancs 2016). Economists have predominately reported on the value of Bitcoin, with research focusing on the rising price of Bitcoin and its volatility (Ciaian, Rajcaniova, and Kancs 2016; Hileman and Rauchs 2017). Excess volatility is an impediment for digital currency, leading Baur and

Dimpfl (2018) to conclude that Bitcoin cannot function as a currency. However, Cermak (2017) claimed that the volatility of Bitcoin has been steadily decreasing throughout its lifetime.

Bitcoin's potential technological vulnerabilities are well documented (Barber et al. 2012; Eyal and Sirer 2018; Courtois, Song, and Castellucci 2016), with many scholars in the information technology sector also probing the notion to whether Bitcoin will ever be an option for a stable, and sustainable main currency (Courtois, Song, and Castellucci 2016; Eyal and Sirer 2018; Barber et al. 2012). The security of Bitcoin has attracted much attention in this area, as it is essential for market stability that any sustainable currency remains stable, safe, and secure for users[50]. The usefulness and security reassurance is an issue for noncrypto end users, who found these reasons a barrier to Bitcoin adoption, as they questioned the value and security issues (Presthus and O'Malley 2017).

Operational challenges for end users such as technological barriers, structural vulnerabilities, and access issues, are compounded with Bitcoin's ubiquitous legal character and regulatory challenges (Perkins and Enwezor 2016; Kakavand, Kost De Sevres, and Chilton 2017; Ioannou 2020). Its reputation has been tarnished by its close association with illicit ecommerce activities on dark markets, such as Silk Road (Greenberg 2020), as well as illegal activities such as money laundering (van Wegberg, Oerlemans, and van Deventer 2018) and terrorism financing (Greenberg 2020; Teichmann 2018; Amiram, Jorgensen, and Rabetti 2020; Chainalysis 2020). Chapter 5 of this theses for example, will argue how cryptocurrency has been labelled as criminogenic by institutions, due to its close association of crime within the international news media.

It is important to consider that cryptocurrency privacy features can be appealing to criminals (Kottasova 2018; Chainalysis 2021). On the other hand, cryptocurrencies can provide a complementary currency, offering a host of economic benefits (Nica, Piotrowska, and Schenk-Hoppp 2017). Low transaction costs, a low level of entry, worldwide speed, and pseudo-anonymity of the transactions, are often posited as the main advantages of cryptocurrency use, making it an attractive transaction tool particularly for example in

[50] For an insightful and developed technical analysis of Bitcoin's properties and stability, see (Bonneau et al. 2015).

African countries (Nseke 2018). Further, Bitcoin has been reportedly used as an alternative currency option, particularly in South American countries to avoid rising hyperinflation (Di Salvo 2019). Venezuela's success in driving crypto adoption as number 3 in the global crypto adoption index (Chainalysis 2020) for example, illustrates a logical response to how citizens use cryptocurrency to mitigate economic instability and political government mistrust (discussed in more detail in the following chapter). Sayfang (2010) concluded that complementary currencies;

"Are a creative, innovative, and increasingly mainstream policy tool with an important role to play in the development of localities, alongside national and international currencies. Whether one adopts an orthodox or an alternative perspective on money, economic activity and society, there are strong justifications for their use" (Seyfang 2010).

Despite the Bitcoin hype and a decade of growth as the leading cryptocurrency, this has not yet led Bitcoin to become a stable global cryptocurrency for the purchasing and exchanging goods and services online, or to conduct business swiftly, without access related issues and the financial burden of high transactional costs (Taskinsoy 2019). The inefficiency of Bitcoin as a medium of exchange, has resulted in Bitcoin becoming predominately used as a speculative asset (A. D. Lee, Li, and Zheng 2020). More generally it is used for investment purposes, as opposed to a medium of exchange, for day-to-day transactions to buy and sell lower priced goods and services as an alternative currency, (D. G. Baur, Hong, and Lee 2018; Ghysels and Nguyen 2019).

Alternative Currencies, Stability and Stable coins

To tackle some of the technical barriers (such as high transaction fees and volatility), some private non sovereign backed altcoins have addressed these issues by being developed with technical stability features to solve these barriers. Once for example the high transaction fees issue is resolved, altcoins can position themselves as an alternative currency. There are several cryptocurrencies which have lower transaction fees than Bitcoin (Nasdaq 2018), including Dash (Marley 2018), Ethereum (Buterin 2013), Litecoin (Lee 2011), Bitcoin Cash (Bitcoin Cash n.d.) and Ripple (Ripple n.d.); whilst some such as Nano (Nano n.d.) claim to offer fee-less transactions (Lemahieu, n.d.). Open competition from a plethora of cryptocurrencies and stable coins gives users options for alternative currencies modelled with user friendly payment systems and stability features, providing a medium of exchange for consumption in the real economy.

The stability of a cryptocurrency can be driven by its volatility and is often a key feature. The volatility dynamics in the crypto market are clearly acknowledged (Katsiampa 2019; Catania, Grassi, and Ravazzolo 2018; Yi, Xu, and Wang 2018; Abakah et al. 2020). Examining the relationship between volatility and returns of leading cryptocurrencies, to investigate spill overs within the cryptocurrency market, Liu and Serletis (2019) found statistically significant transmission of shocks and volatilities among the leading cryptocurrencies. Conversely, seeking properties of crypto stability, Elbahrawy et al. (2017) considered the history of the entire crypto market by analysing the behaviour of 1469 cryptocurrencies introduced between April 2013 and May 2017, revealing that several statistical properties of the market have in fact been stable for years. These included for example the number of active cryptocurrencies, market share distribution, and the turnover of cryptocurrencies (Elbahrawy et al. 2017).

Volatility in the crypto market leads to price fluctuations (Sovbetov and Sovbetov 2018; Katsiampa 2019; Yi, Xu, and Wang 2018), putting it at odds with the requirement for currency to remain a stable unit of account and good store of value (from an orthodox economic perspective). Whilst there are tools using trading volume for instance, to predict volatility in the crypto markets (Bouri et al. 2019), stable coins offer a reliable source of stability. Price volatility around Bitcoin and other top market capital cryptocurrencies therefore illustrates the necessity for stable coins. Bolstered by the Decentralised Finance (DeFi) markets, stable coins can provide lower volatility crypto assets which can be pegged to fiat currency. Tether is an example of this, which serves as an option to use cryptocurrency as a fiat alternative, where it aims to offer consumer confidence that the value of the instrument will be consistent from one day to the next (Tether n.d.).

The adoption of stable coins as stable crypto assets is particularly useful for emerging blockchain applications, such as DeFi. These can act to welcome retail and institutional investors into the market who are seeking cash flow and income generation through crypto yields. Particularly in the DeFi space, staking and yield farming using decentralised platforms such as Compound (2021), BlockFi (2021), or alternative platforms (SourceForge 2021), or taking advantage of decentralised lending and borrowing of crypto collateralised

stable coins, can provide potential passive income (Rapoza 2021), and help to stabilise volatility in the crypto markets (Kahya, Krishnamachari, and Yun, n.d.).

CBDCs vs Cryptocurrency: Will Central Bank Digital Currencies Eliminate the Need for Cryptocurrencies?

Consumer Protection

Consumers are protected in the free market from anti-competitive behaviours from traditional companies (McMahon 2020), however crypto projects are often organisations which are communally decentralised in their structure, with no central organisation or authority to regulate (Lianos et al. 2019; Herian 2018; Walch 2019). This raises legal challenges for regulators to address, in light of dispute resolution and enforceability issues (Kaal and Calcaterra 2018). Further, as Dupont and Maurer (2015, 1) point out *"blockchain systems occasion a reconsideration of two of the central legal devices of modernity: the ledger and the contract"*. An independent set of rules, a subset of law known as 'Lex Cryptographia' (Wright and De Filippi 2015), could displace court enforcement by code enforcement. However, in practice it is likely that this would involve incorporating cryptocurrency into existing frameworks (Ferreira 2021), or implicate an extension to existing legal doctrines (Agnikhotram and Kouroutakis 2018).

Cryptocurrencies including Bitcoin, with their absence of legal standing as UK legal tender (HMRC 2014; Department of Treasury 2021), could be considered a case against supporting the use of it as a medium of exchange within the UK's free market. Bitcoin is not circulated for public use by the UK's central bank – the Bank of England. Bitcoin is only able to be issued once mined on the network and acts as a decentralised and distributed cryptocurrency (Nakamoto 2008). This is in stark contrast to fiat currency, which is controlled and regulated by the Bank of England as a central authority in the UK (Bank of England 2021b). Operationally, the centralisation and decentralisation feature are an important distinction to make between fiat currencies and cryptocurrencies, the latter which can evoke different levels of decentralised permissioned and permissionless blockchain features (Hileman and Rauchs 2017). The very nature in the way they are designed and operate, is therefore politically and

socially influenced to varying degrees, and this has its own governance consequences for users (Golumbia 2016; Dodd 2018; Filippi and Loveluck 2016; Nabilou 2020).

Financial Governance

The concern of financial governance within society raises questions of who should create and control monetary policy, and to what extent. Fiat money in society has had a long history of political support by governments with its bestowed legal tender status, economic regulatory frameworks protections, and legal mechanisms in place for arbitration and dispute resolution. As a result of cryptocurrencies falling outside the remit of the state's governance including the Bank of England's monetary policy (including its regulatory safeguards), has led some critics to argue that crypto poses a threat to the stability of the financial system by destabilising the economy (Jopson 2016; Inman 2014).

Concerns about cryptocurrencies are echoed by those who highlight the link of cryptocurrency to criminal funding and illicit activities (Teichmann 2018; Amiram, Jorgensen, and Rabetti 2020; Kottasova 2018). However, whilst digital currency is a recent monetary development in the last decade, it is clear that illegal drug markets existed before Silk Road and did not emerge in a vacuum inventing an online drug trade where none had existed before, and nor did it invent the technologies upon which it is dependent (Martin, Cunliffe, and Munksgaard 2019). Illicit cryptocurrency transactions have risen, both in total value and as a share of all cryptocurrency activity, however, illicit transactions still constitute a small share of all cryptocurrency activity at just 1.1% (Chainalysis 2021). The Chainalysis report of the low prevalence rate, could be considered a relatively low risk to financial stability. Further, as crypto assets increasingly become regulated (Department of Treasury 2021) both in the crypto currency exchange and DeFi markets (Wintermeyer 2021; Dale 2021), concerns about illicit activity may be allayed with the inception of a regulatory framework applied to digital currencies (Perlman 2019; Treasury 2020).

Structural issues of cryptocurrencies such as security and the risk of technical vulnerabilities, may be addressed by development of smart contracts. Smart contracts have seen significant efforts to improve security by introducing new programming languages and advance verification methods, with new verification tools and methods available for smart contract

and distributed ledgers (Harz and Knottenbelt 2018). Functional problems such as crypto volatility and its associated risk of price fluctuations, is circumvented via stable coin volatility harvesting. Adoption of a weighted risk contribution index can serve volatility harvesting, where an index which combines a basket of five crypto assets with an investment in gold, aims to improve the risk profile of the resulting portfolio (Koutsouri et al. 2020). Cryptocurrency market returns can accordingly have hedged and safe-haven properties, but the responses of cryptocurrency markets depend on the type of uncertainty (Colon et al. 2021).

Considering the governance issues of cryptocurrency and given their structural and functional properties, a CBDC could share some characteristics that can positively influence monetary policy. Innovation is one of the most influential factors which have emanated from cryptocurrencies, forcing the central bank to face an adaptive, fast paced financial market with blockchain adoption. As cash declines and digital payments rise in society, it is inevitable that payment infrastructures need to accommodate global commerce transactions, at a low cost and fast speed, therefore requiring interoperability (Lammer, Garcia, and Polverini 2016). With the explosion of smart contracts and other blockchain projects, this has proven that consumers want to contract in a fast and efficient way, obviating third party intermediaries, who slow the process and cause more cost to the end user. This is most observed from a financial inclusion perspective, where a retail CBDC interoperability mechanism can work to increase access to financial services for unbanked and under banked populations, by enhancing peer to peer cross border payments (Bank of England 2021a). Cryptocurrencies can already offer this advantage of precluding third party intermediaries from their transactions, through their decentralised properties. However, this benefit comes at a cost for non-custodial accounts, which is that the users must take responsibility in acting as their own bank (Dingle 2018).

Trust in the System

One specific benefit of a CBDC over cryptocurrencies, is the reputation of their creator. The Bank of England as the UK's central bank historically, has taken the role in directing monetary policy and maintaining financial stability, for the public good. This implicit trust by the public is grounded in knowing that the Bank of England as an accountable public

institution will not suddenly fail, liquidate, or disappear with their money, as was the case for example with the cryptocurrency 'Onecoin' (Cellan-Jones 2019).

Notably, Bitcoin as the original blockchain was borne incidentally of the back of the 2008 financial crisis, at a time when public faith was low among public institutions allowing it to gain legitimacy (Weber 2015). Due to the perceived failings of the financial system, this helped drive Bitcoin adoption (Saiedi, Broström, and Ruiz 2021). Consumers, particularly those that have lost trust in their financial institutions, may wish for a safe place deposit for their money. They may prefer a public body like the central bank, compared to a private commercial bank. This was in fact, a chief function of the central bank according to John Palmer, Governor of the Bank of England during 1832 (Abel Monitor 1841), much before the financial crisis of 2008 occurred.

The cryptocurrency markets could be considered a strong hedge against geopolitical risks in most cases, but it could be considered a weak hedge and safe haven against economic policy uncertainty during a bull market (Colon et al. 2021). Cryptocurrencies including stable coins could pose as competition for the central bank, and under certain geo-political conditions drive adoption particularly in Venezuela, where Venezuela's success in driving crypto adoption as number 3 in the global crypto adoption index for example, has illustrated a logical response to how citizens use cryptocurrency to mitigate economic instability and government mistrust. (Chapter 5 of this thesis followed this debate in the case of Venezuela).

Competition in money markets, however, is not a new phenomenon and the Bank of England have faced a history of competitors, including the South Sea Company and country banks (The Bank of England 1969). Despite this, they have used their legal privilege to their advantage which has reduced competition for currency issuance; this is likely to continue to be the case. Most money in the modern economy is in the form of bank deposits, which are created by commercial banks (McLeay, Radia, and Thomas 2014) and therefore competitive currency issue becomes less of an issue. In any case, as cryptocurrency continues to be regulated as a crypto asset class, currency issuance becomes less of a threat to the bank as more people use it as an investment vehicle, rather than a medium of exchange (D. G. Baur, Hong, and Lee 2018).

For consumers who are concerned with privacy of transactions, privacy focused cryptocurrencies can play a role (Li et al. 2019). Similarly, those who wish to speculate on crypto assets, can do so on volatile coins (McCoy and Rahimi 2020). Consumers who have a need for income generation assets can consider private stable coins and their volatility harvesting options (Koutsouri et al. 2020). The most economically challenged in society could also contemplate stable coins for their value stability benefits (Calabia 2020). Alternatively, those who are unbanked or under banked may consider a retail CBDC for the accessibility it could offer over crypto coins and consequential responsibility, commitment and challenges that are associated with managing their own decentralised bank, in terms of usability and security (Dingle 2018).

Conclusion

The centralisation of monetary supply, and the responsibility for the management of monetary policy, have remained stable key features of the Bank of England's history. In its role as the central bank since receiving its charter from Parliament in 1694, the Bank of England can make use of its historical reputation, and sovereignty of currency policy, to engender trust in the UK financial system. Facing competition from external environmental factors, has diminished in the past, by levying their currency issuing privileges (Kynaston 1995). However, with the invention of the internet and technological developments in payments systems, digital tokenisation and smart contracts, the central bank is now confronted with tackling the issue of sustaining financial certainty, stability, and growth in a transformed global financial system.

This disruption of money markets presents a contemporary challenge in the digital currency economy, that currently operates as a largely under-regulated market. It is a market that is out of the banks centralised control, even considering their respective position of operational monetary and fiscal policy management of the economy. If the public accept cryptocurrency as a new money in society, this is likely to have a real-world macro effect on traditional money markets. This disruption will call for the adaption of legacy technologies (or implementation) of new ones, that can accommodate interoperable systems such as blockchains from traditional institutions such as the Bank of England and retail banks. New

partnerships with innovative organisations like challenger banks, payment service providers and decentralised organisations may be required. The micro effects of this disruption will be seen at the individual level in society, where the public adapt to new forms of currency and ways of dealing with digital money online – for example interactions with blockchains. This calls into question what forms of governance will be available to regulate these new forms of currency and the organisations which monitor them. The financial governance debate is one that is followed in chapter 4.

By fostering innovation and learning from other countries successes', the Bank of England can adapt to the challenges in the everchanging digital infrastructure and can attempt to govern the digital currency space. Innovative products such as a CBDC, can assist the bank to meet its objective - which have remained throughout its history to 'promote the good of the people by maintaining monetary and financial stability'. Introduction of a CBDC has the potential to promote financial inclusion (Bank of England 2020), for those who are currently unbanked or underbanked. In this regard, a retail CBDC would work well for end users who require low cost, fast transactions, and easy accessibility (Calabia 2020). Interoperability with current payment infrastructure will be a necessary requisite for a retail, or wholesale CBDC, as an intervention tool for financial inclusion (Committee on Payments and Market Infrastructures 2020).

As smart technology develops in the economy (Y. Chang, Iakovou, and Shi 2020; Vadgama and Tasca 2020) and the debate persists on governance of blockchain (Nabilou 2020; Poncibò 2021; Kakavand, Kost De Sevres, and Chilton 2017), regulation will inevitably follow as regulators, policy makers and law professionals apply digital currency to existing and developing legal frameworks (Ferreira 2021; Agnikhotram and Kouroutakis 2018). This will work to legitimise cryptocurrency as crypto assets positioned in their own asset class (Perlman 2019). The extent to which they will be an appropriate option of alternative finance, may depend on the level of appropriate consumer protection available. Stable coins may be part of this class, which provides the consumer with more choice, specifically related to instruments with low volatility (Kahya, Krishnamachari, and Yun, n.d.).

Both a potential CBDC and crypto assets, therefore present a range of opportunities and challenges to contribute to an inclusive, globalised financial system. Singularly, neither can

exclusively bring the entirety of benefits to users, or individually overcome the obstacles required for guaranteed future stability in their totality. But both CBDCs and crypto assets can satisfy different properties and the utility of money – a unit of account, store of value and medium of exchange, to various extents for the public good - a key objective for the Bank of England. In such a system, there are both advantages and opportunities, as well as disadvantages and challenges for both CBDCs and cryptocurrencies.

This chapter has demonstrated how the governance of virtual currencies can affect the disruption of money markets. If virtual currencies prove popular either for financial inclusion purposes, convenience for users, or other benefit, this is likely to have consequences for the entire economy of financial services. The success of digital currency projects is therefore key to financial stability within the economy in the global context. One of the facilitators for success of a digital currency project that acts as an intervention tool for financial inclusion (whether it be the case of state or private money), may be the authority of the issuer, and the role they have with the public and society. For example, a central bank such as the Bank of England who has had a long history of being the sovereign issuer of state currency, not only have the explicit rights and privileges to 'print' or 'create' money but also the implicit trust and accountability of a state entity. Therefore, the historical governance role that the Bank of England has taken as the state-authorised central bank, considering the contemporary rights and privileges which have dictated their historical operational monetary and fiscal policy activities, should be considered as a key facilitator in a potential CBDCs success.

'Crypto governance' public discourse is one example of the social and political processes that generates and drives ideologies of economic crypto regulation. Chapter 4 explores the financial governance discourse, in considering the 'who' and 'what', in terms of the news media's role in public discourse on financial regulation of digital currency. If the Bank of England are successful in developing a popular CBDC, their financial governance can be extended in the ever-changing digital currency economic landscape in which their governance is slowly being eroded. The extent of the erosion of governance of new money will depend on the public attitude toward more state control over their financial assets. The central bank's decision to legitimise digital currencies through their creation and governance will affect how digital currencies are perceived by the public and centres on how much trust they can confer to them. The central bank's position on CBDCs can therefore affect public understandings of digital currency. One specific benefit of a CBDC over cryptocurrencies thus, is the

reputation of their creator. The Bank of England as the UK's central bank historically, has taken the role in directing monetary policy and maintaining financial stability, for the public good. This implicit trust by the public is grounded in knowing that the Bank of England as an accountable public institution will not suddenly fail, liquidate, or disappear with their money, as was the case for example with the cryptocurrency 'Onecoin'.

Yet, for all the failed cryptocurrencies and illegitimate projects that make the headlines, it would be unwise to suggest all cryptocurrency projects are doomed to fail, while Bitcoin and Ethereum (among many others) strive for more market capital, legitimacy, and nation state legalisation. The competencies of crypto coins including stable coins should not be overlooked or understated here. Low transaction costs, a low level of entry, worldwide speed, and pseudo-anonymity of the transactions, are often posited as the main advantages of cryptocurrency use, making it an attractive transaction media, particularly for example in developing countries.

Bitcoin as this chapter has outlined, has been reportedly used as an alternative currency option, particularly in South American countries to avoid rising hyperinflation. Venezuela's success in driving crypto adoption as number 3 in the global crypto adoption index for example, has illustrated a logical response to how citizens use cryptocurrency to mitigate economic instability and government mistrust. This can be perceived as a crypto protectionism. However, what happens when conversely, state governments use digital currency projects against their populace, instead of the populace using crypto for protectionism against governments? Chapter 5 addresses this question and analyses how cryptocurrency as a technology can be weaponised and harnessed by state anti-democratic media to drive discourses which achieve social, political, and economic goals, that fit a government's agenda. The news medias' use of discourse with 'fixed' meanings can promote a propaganda government-backed agenda, which is subtlety hidden in layers of biased narratives and underlying unquestioned assumptions. In this way, opposing perspectives are silenced and a distorted reflection of the reality of cryptocurrency and the digital economy is (re)presented to the public. Two case studies of China and Venezuela are discussed in detail that used state sponsored media to drive an anti-crypto discourse to suit the political will, to pave the way for the introduction of their own state conferred digital currency counterparts.

CHAPTER 7: Conclusion

Contents

Conclusion

This thesis central research question was 'What are the key cryptocurrency discourses that exist in the crypto space?' These macro discourses were identified through topic modelling methodology as crypto-crime, and crypto-governance. The thesis considered how international media outlets can produce meaning toward cryptocurrency by deploying various narratives across discourses. Vitally, this study is the first to demonstrate both theoretically and empirically how news media in different countries ascribe diverging meaning to cryptocurrency technology, offering audiences varied images of what cryptocurrency is, through discourse appropriation. As each media outlet has its own agenda, cryptocurrency reporting is done through the selection of crypto-focused topics and timing of publication. This framing entails concentrated implicit messages wrapped up in narratives, which themselves are part of broader discourses. Results showed that the co-constitution of discourse was strong across the UK and US whose news media appropriated the crypto-crime and crypto-governance discourses to different degrees.

With an increase in prevalence and applicability of blockchain solutions that are often associated with crypto tokens, has arisen a range of social, political, and economic debates. The importance of studying cryptocurrency and the rise of virtual currencies in an increasingly cashless society, is not only applicable to economic and political debate, but also public debates around social acceptance of technologies, which alter social connections and shape financial relationships in the digital society. These have included considering for example, if there is a need for private money in society, how this decision should be made, and who should be held accountable for such decisions.

As members of civil society are consumers in the market economy and citizens of states, they are key stakeholders for technology adoption, as money is a requirement to survive in a capital economy. A new monetary form that offers digital currency therefore can transform state macro-economic structures for consumers and workers in civil society, and likewise affect more specifically the micro-level stakeholders' interactions with digital currency and the wider price effects of the crypto market. Public opinion is central to the open conversation on how new forms of money could model new macro-economic structures in an adapted digital economy, based on open sharing systems such as decentralised and centralised blockchain projects. Public opinion can potentially affect what crypto projects are developed

in the future, and how blockchain is regulated by governments in future. For these reasons it was imperative to analyse how cryptocurrency is portrayed in the international news media.

The stereotype of crypto users consisting of political right-wing extremists or dark market criminals, may have come from misconceptions of cryptocurrency informed by television and the news media, as the way the public understands cryptocurrency can be heavily influenced by sensational and extreme crypto stories. It was then necessary to analyse how cryptocurrency are portrayed in the news media, to challenge commonplace assumptions and to provide some answers to this bigger sociological crypto puzzle. How cryptocurrency is socially constructed is then a theoretical tool for analysis to understand how the news media can portray cryptocurrency and inform public perception of the technology.

This project provides an original contribution to knowledge around the social construction of cryptocurrency technology, using discourse analysis. There has been some sociological analysis of digital currencies from esteemed scholar Nigel Dodd (2018), who claims that Bitcoin is part of a diverse future for money, however, it exacerbates the same inequalities of wealth and power that is found in the traditional financial system. I used a Social Construction Of Technology deconstruction to reveal how cryptocurrency technology can be complex both in its structural architecture and design functionality, and therefore concurred with Dodd, that Bitcoin may be not as decentralised and equitable as members of its community claim. I argued that the famous narrative that Bitcoin is a private money that anyone can enter without restriction, and transact in a private and uncensored manner, is a misnomer.

Where I differ from Dodd, is on the idea that there is a commonly held belief that Bitcoin has replaced social relations. Just because the technological feature of cryptography is parroted as a justification for Bitcoin, this ‘blind trust’ in cryptography, does not amount to a denial of the social sphere or social life of money. Moreover, many arguments that favour Bitcoin put an emphasis on a lack of trust with those in power (hence narratives of elite state and bank power often are presented), which is not necessarily a mere lack of trust in individuals in society alone – just those with unwielded or excessive power. Therefore, it seems this is a reductive and narrow argument.

Importantly, I have argued within this thesis that existing sociological accounts of blockchain have been somewhat reductive arguments and are based on a lack of reliable empirical evidence of cryptocurrency public perception and identity. I take a deviation from sociologists Nigel Dodd (2018) and David Golumbia (2015) on the understanding of crypto identity. For example, it is problematic to assume the ideology of separation of money from state, accompanied by a 'code is law' attitude is truly believed by those in the mainstream financial space such as institutional investors, who rely on state apparatus of the law and regulation for a secure and stable economic environment. The individuals' Nigel Dodd refers to (in a similar way to how David Golumbia refers to the same homogenous socio-political group – a group of right leaning ideologues) were likely the original community who as cyber libertarians, were politically motivated. This is true to some extent.

Yet, this thesis showed that Bitcoin as with other cryptocurrencies, are continually adapting their identity with heterogenous groups adopting the technology, in an evolving socially contested digital space. The heterogenous groups that participate in cryptocurrency cannot be ignored, and so to distinguish between them is very difficult to construct a fixed identity on a singular community cohesion based on social or political motivations, in a disorderly space. For example, as STS scholar Sheila Jasanoff (2004) puts forward, individual and collective identities play an important role in co productionist accounts of science and technology, and I have argued that blockchain technology is no exemption.

The exploration of the identified discourses of crypto-crime and crypto-governance discourse and the thesis arguments developed throughout the thesis building within each chapter to unfold how news media in different countries ascribe diverging meaning to cryptocurrency technology, offering audiences varied images of what cryptocurrency is, through discourse appropriation. Chapter 1 opened the thesis with the story of two crypto protagonists, Ross Ulbricht – aka Silk Road's 'Dread Pirate Roberts' pseudonym, and John Ratcliff – a unknown but early investor who became a millionaire from his crypto profits. The impact of Bitcoin on their lives had a tremendous effect in two different directions, of which are useful examples to see how their relationship with crypto shaped their real-world lives. Most importantly, these stories among many similar articles encompass many of the media narratives, that surround Bitcoin and other cryptocurrencies that have followed in its footsteps as private digital money. Narratives of crypto's dark side as an indispensable tool for criminal activity, as well as narratives of investment profiteering through enormous gains in the crypto markets, show two

sides of one coin. Put simply, crypto coins can, as with any other money, be used for good or bad purposes dependent on their use, and user.

The issue for the international news media has surprisingly not been whether cryptocurrency can serve as a legitimate alternative to fiat currency (as it has in the academic fields), but, whether crypto itself is a criminal entity. Concerns around Bitcoin's legitimacy and legality as a currency because of its so-called affiliation to crime and disorder (and subsequent lack of regulation) has provided it a criminogenic brand among some public and institutional groups.

The public confusion of what Bitcoin was, and what it now is, has not been helped by its history which has been shrouded in mystery with the creator Satoshi Nakamoto remaining anonymous. Further, the development in Blockchain technologies which have resulted in new crypto coins, that on the surface seem like Bitcoin, has muddied the waters of what crypto is and can achieve as a decentralised technology.

While Bitcoin is often presented by the news press as an innovative and cutting-edge technology, the truth is much more complex with a rich history of politically motivated internet architecture and software creation. The first chapter sketched this blockchain history, dating it back to cypher punk era, borne from libertarian ideals of freedom from state in cyberspace. Most pertinently this 'code is law' attitude was demonstrated in 1996, from John Perry Barlow's 'A Declaration of the Independence of Cyberspace', in which he claimed that the Electronic Frontier Foundation (EFF) were building a (virtual) world *"that all may enter without privilege or prejudice accorded by race, economic power, military force, or station of birth"* (Barlow, 1996: 1). The cyberlibertarians movement could gain traction on this front from traditional libertarians who generally held antigovernmental sentiment, which Lessig argued developed in post-communist Europe (Lessig, 2006).

The Californian Ideology of anti-capitalism and anti-statism in 1960's United States developed upon this and formed a counterculture with collaborative social projects emerging. New left movements broke the narrow politics of the post-Vietnam era with campaigns against militarism, racism, sexual discrimination, consumerism, and pollution (Barbrook & Cameron, 1996). As technology developed, a synthesized vision of technology as a countercultural force shaped many projects that Turner (2010) described as network forums. Such virtual forums

which bought people together in a new way, included mailing lists, which would be used as a methodology by Satoshi Nakamoto to bring together similar minded people who could help develop the Bitcoin software-this soon became the early Bitcoin community. From a small handful of enthusiastic developers on a mailing list to the strong community of developers, miners and users, Bitcoin is now worth more than traditional household names such as bank Goldman Sachs and Ebay. The cryptocurrency market as whole which includes Bitcoin, other cryptocurrencies and stablecoins, stands at around $2 Trillion (CoinGecko, n.d.).

Chapter 2 described the methodology of this crypto study and set the research agenda to answer the central thesis research question: 'What are the key crypto discourses and by whom are they created?'. Using a grounded theory for an inductive approach allowed for a systematic and through discourse analysis that was missing in the academic literature. The chapter described how a computational discourse analysis was conducted through the adoption of Natural Language Processing for text analysis purposes. As the utility of topic modelling for discourse studies is popular within the social sciences for automatically discovering thematic information in large collection of texts, this was chosen as the appropriate methodology. Therefore, use of author-built NLP Latent Dirichlet Allocation (LDA) and Correlated Explanation (CorEx) topic models were deployed on the data set of articles texts and compared, to produce a set of topics that were qualitatively coherent to a human reader in terms of topic interpretability i.e., to compare the quality of the topics. The result of this comparison confirmed recent findings of Gallagher et al (2017) which was that the CorEx approach yielded better (less junk topics) topic clusters than the LDA model. An 18-topic model provided a reliable framework to explore the 'top' topics which included cryptocurrency related themes such as financial innovation and investment, economic sentiment, regulation, and governance and/or criminal events such as hacks or thefts.

Financial governance then became the focus for chapter 3, which presented data which evidenced the key narratives that were adopted in public discourse on crypto governance in the international news media, which acted as a disruptor in the crypto economy. The evidence suggested that there was a pervasive risk discourse and an interrelated consumer protection narrative, which formed the news debates surrounding state digital currencies. How a state responds to cryptocurrency based on this public discourse of crypto gives an indication to what role public discourse pedalled by the news media and public and private institutions has taken in regulating and governing them. In this vein, I argued that there was a regulatory determinism

within global disruptive populist discourse, that was reflected in both governance discussions of both private decentralised cryptocurrency projects and state digital currencies CBDCs. To explore the differing perspectives on how money is a governed commodity in society and is conventionally understood, I adopted Brett Scott's (2021) Jungle Book Analogy. This amplified two competing schools of thought - conceived as the 'Tarzan' and 'Mowgli' suite, acknowledging money's social and political nature from opposing perspectives. I then attempted to understand the form of regulation and the public policies which shape governance, by considering the differing belief perspectives that are taken (as Scott does with the Tarzan and Mowgli suites), which served to inform and maintain the key narratives that are formed and adopted in public discourse on crypto governance.

It was no surprise that the regulatory discourse centred around discussions of crime and disorder which appear through the lens of the international news media to characterise the crypto economy. Chapter 4, as the second data chapter focused on the crypto crime discourse, which identified a heterogeneous selection of cryptocurrency narratives of disorder and anarchy which depicted the crypto economy. It specifically exhibited the socially constructed relationship between cryptocurrency and crime. This was achieved by analysing the articles within this study, to expose the 'preferred' news media's institutional framing, of the inextricable affiliation between crypto and crime.

The news media's framing of crypto was explored employing Stuart Hall's (2003) media theory to apply encoding elements to the analysis i.e., how the news media construct the crypto crime discourse through the disorder narrative. The first section validated the establishment of a crypto crime discourse through establishing the affiliation made between crypto and crime through news media article examples. The chapter showed that explicit links were made repetitively of the dark web markets and cryptocurrency, and cryptocurrency being used as a digital tool for money laundering and terrorist related activity. In the dark market examples, drugs narratives were employed by the news media (as they have historically) to convey an idea of social disorder and lawlessness. I reasoned that this idea of anarchy was seen to be amplified by the news media, to fix a preferred meaning to the content of their articles.

Chapter 4 also contributed to the thesis by showing how the narratives of 'crime and disorder' seen in the crypto articles, were also related to the crypto-governance discourse discussed in chapter 4. The crypto-crime and financial-governance discourses were proven to be closely related, as the regulation of cryptocurrency has a potential impact on both the prevalence, and type of crypto crime. Moreover, the financial governance discourse that impacts policy decisions, affects not only the dark market economy but also the wider economy as legitimate financial services as the public adapt to crypto legislation or regulatory frameworks. The who, what and where questions of crypto governance in the eyes of the media were important to distinguish, and this thread was followed through in the development of this thesis.

The crypto governance discourse was a key finding in answering this crypto study's central research question of what key crypto discourses were in international media during the period of analysis. The data showed that cryptocurrency coverage was prominent in Chinese and South American backed media, which was the attention for chapter 6, which portrayed case studies of China and Venezuela. The chapter considered state responses to crypto governance through both the crypto crime and crypto governance discourses. More precisely, chapter 6 analysed how cryptocurrency as a technology has been harnessed as a weapon by state antidemocratic media to drive populist discourses which achieve social, political, and economic goals that fit a government's agenda.

I showed in chapter 5 how Chinese state backed press appropriated a crypto-crime-discourse with narratives of disorder and chaos, to achieve the political goal of persuading Chinese society that cryptocurrency is inherently criminal and dangerous, to gain support for the government's own state backed digital currency. This discourse was supported by various political actions, including the banning of cryptocurrency in China, which had economic effects that rippled through the global crypto markets sending the price of Bitcoin spiralling downwards. A fair balance of crypto reporting was not witnessed in the Chinese press, compared to European press who for example reported some 'success' stories of investors who made millions from crypto investing such as the protagonist John Ratcliffe discussed in chapter 1.

Central to my argument in chapter 5 was the proposition that the news medias' use of discourse with 'fixed' meanings promoted a propaganda government-backed agenda, which

was subtlety hidden in layers of biased narratives and underlying unquestioned assumptions. In this way, opposing perspectives have been silenced and a distorted reflection of the reality of cryptocurrency and the digital economy has been (re)presented to the public. Both countries – China and Venezuela, I argued therefore used state sponsored media to drive an anti-crypto discourse to suit the governmental political will, to pave the way for the introduction of their own state conferred digital currency counterparts in the form of CBDCs.

Chapter 6 argued that innovation has been one of the most influential factors which have emanated from cryptocurrencies. This innovation has been used for legitimate purposes such to explore digital currency products and services but also its illegitimate uses for crime for example as a payment tool in the dark markets. This has forced governments in particular central banks to face an adaptive, fast paced global financial market with blockchain adoption. As cash declines and digital payments rise in society, it is inevitable that payment infrastructures need to accommodate global commerce transactions, at a low cost and fast speed, therefore requiring interoperability. Therefore, some aficionados have such high hopes for blockchain projects which offer a 'social good' promise, that is to bring financial inclusion to unbanked communities. One of these state projects is CBDCs and the consideration by states including the UK's central bank -the Bank of England to implement them to improve financial inclusion. Many articles covered this topic of financial inclusion, and it appeared an important consideration in the cryptocurrency debate.

Chapter 6 further explored the literature on the benefits of Central Bank Digital Currencies over cryptocurrency and contended that cryptocurrency is a contemporary challenge as it operates in a largely under regulated market – however that is changing with increased attention from regulators around the world to tackle crypto governance as a pressing social and economic issue. For example, news coverage across the dataset, detailed Bitcoin's use as an alternative currency option in South American countries to avoid rising hyperinflation - demonstrating its use by citizens to mitigate economic instability and government mistrust in a step toward crypto protectionism.

In sum, this thesis has plugged this academic lacuna by presenting a theoretical Social Construction of Technology (SCOT) deconstruction of cryptocurrency, accompanied by empirical evidence of the key finding that there are two major discourses which characterise

news media communication about crypto: the 'crypto-crime' discourse and the 'financial governance' discourse.

The main argument held in this thesis is that in the media life of cryptocurrencies, these two discourses are appropriated by international media but often emanate and are echoed from institutional positions. The thesis has shown how institutional positions are considered and channelled through skewed news media narratives, from both from corporate (or organisational) economic rationale i.e., applying traditional views of money markets applied to crypto, and governmental control rationale i.e., how state governments can use digital currency for control. This control is enacted either through the state regulation of existing cryptocurrencies or complete bans as in the case of China, and/or innovation of their own state currencies for example the development of Central Bank Digital Currencies. The consequences of this distortion of crypto reality may vary over space and time, which has not been the focus for this study (which has been restricted in resource and time as a PhD study). However, now that this crypto study as a unique theoretical and empirical contribution to the understanding of the social phenomena of cryptocurrency as a new digital money has been grounded, it is a pressing issue and a topic worthy of future social science research.

Forthcoming social science research could consider, for example, the third identified discourse within this study – the crypto economic discourse (which covers market speculation and debate centred around pricing, volatility, and the promise of new crypto projects), which could be explored further, focusing on the signalling effects specific media narratives have on digital currency markets. Although beyond the scope of this thesis, this economic perspective could be interesting to economy and markets scholars who focus on asset pricing, investment generation, and market risk.

Moreover, this thesis has gestured that research into studies of the social and political dimensions of how states and institutions use digital currencies are warranted, as was outlined in chapter 6's analysis of China and Venezuela. For example, society could benefit from understanding the civil debates that arise as a consequence of private and public institutions controlling digital money markets. Specific themes of analysis could include investigation into digital currency surveillance and civil rights; including the right to privacy, and the right to financial inclusion. As we have seen throughout the thesis, where one lives dictates the economic sphere in which a citizen can exercise his or her state bestowed rights to economic

freedom and inclusion. As public and private currencies are on the rise in a globalised economy, these civil digital rights debates become even more pertinent to global citizens.

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