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EDITORIAL NOTE

It has been now more than fifteen years since the launch of Bitcoin in January 2009, led by the mysterious and elusive figure of Satoshi Nakamoto. Since then, various cryptocurrencies and an even broader class of cryptoassets—including the non-fungible tokens (NFTs)—have transformed the global financial landscape. Some key features of cryptoassets, particularly the use of a distributed ledger technology (e.g. blockchain) and quasi-anonymity of the transactions, posed difficult questions for governments and regulatory bodies around the world, including tax authorities. A particularly salient line of argument in the tax-related debates about cryptoassets has been that they may facilitate tax non-compliance, including large-scale tax evasion. Therefore, in recent years, we have seen a number of unilateral and multilateral efforts aimed at adapting the tax regulatory framework to the new "crypto environment".

This special issue of the *Journal of Tax Administration* seeks to explore the multifaceted issues surrounding the taxation of cryptoassets, with the general aim to offer new theoretical and practical insights relevant for policymakers, tax authorities, legal professionals, and taxpayers themselves. With their diverse subject-matters, and a variety of perspectives and methodological approaches, the papers included in this special issue make a significant addition to the already burgeoning literature on the taxation of cryptocurrencies.

Four academic papers and two commentary pieces are brought together in this special issue. In the first paper, Elizabeth Morton and Michael Curran tackle the income tax aspects related to NFTs, with a particular focus on Australian tax legislation and practice. The authors first emphasise how NFTs—as one sub-category of cryptoassets—raise issues distinct from those raised by more traditional cryptocurrencies, such as Bitcoin. They continue by exploring the unique features and characteristics underpinning NFTs, such as non-fungibility. The main part of the paper is devoted to the characterisation of NFTs in light of Australian tax legislation and guidance provided by the Australian Taxation Office (ATO). More specifically, the authors explore how NFTs fit the capital gains tax regime for both business and non-business taxpayers, drawing important parallels with the tax treatment of more traditional assets (e.g. personal use assets).

The second paper, authored by Vincent Ooi, deals with the proper tax treatment of so-called "crypto losses", i.e. losses incurred by the investors in crypto markets. Focussing on the case of Singapore and its tax legislation, the author makes the point that that tax authorities and policymakers should step up their scrutiny of the deductibility of crypto losses. The key issue is how to restrict the deduction of crypto losses from other sources of taxpayers' income, like the so-called "source matching" requirement commonly used in many jurisdictions.

The paper by Sergio Avalos provides an overview of some of the most recent legislative efforts addressing the fundamental issue of cryptoassets' "pseudonymity", i.e. the relative ease by which users of cryptoassets hide their real identities behind a pseudonym. This, of course, poses a problem for tax authorities, who may have access to the information that is stored on the blockchain, but still be unable to link the user's account (public key) with their real identity and thus assess the level of tax compliance. In this respect, the author analyses two pieces of legislation that have tried to tackle this issue: the European Union's Anti-Money Laundering Directive 5 (AMLD5) and the United States' Foreign Account Tax Compliance Act (FATCA). He argues that the relevant rules of both AMLD5 and FATCA have limitations in respect of their coverage of all of the stakeholders involved in the cryptoasset market.

Andreas Thiemann's paper falls out of the ambit of legal research. Rather, the paper takes on an empirical approach in investigating the challenges of imposing a capital gains tax on cryptocurrencies, with a specific focus on Bitcoin. The importance of this paper is that it is, to the author's knowledge, the first to empirically assess the tax revenue potential of capital gains from Bitcoin in the European Union using disaggregated country-level data. Based on novel data from Chainalysis, a company providing blockchain analytics, the paper estimates the tax revenue potential of realised capital gains from Bitcoin within the European Union in 2020. The total estimated Bitcoin capital gains in the EU amount to €12.7 billion in 2020, including €3.6 billion of realised gains. Applying national tax rules for capital gains from shares to capital gains from Bitcoin yields a simulated tax revenue of about €850 million in 2020.

In his commentary, Manohar Samal examines the difficulties challenges related to the levying and collection of Indian goods and services tax (GST) on virtual digital asset transactions. The author uses the examples of cryptocurrencies, NFTs, security tokens, and other blockchain service providers to illustrate the abundance of interpretative issues in applying Indian GST legislation.

Tarun Jain's commentary also focusses on regulatory framework for cryptoassets in India, as one of the emerging crypto markets in the world. The author traces the evolution of both direct tax legislation and indirect tax legislation pertaining to cryptoassets. The emphasis is put on the most important provisions, such as the definition of a "virtual digital asset" (VDA) included in the Indian Income Tax Act (ITA), or the so-called "special charging provision" of the ITA. The author also highlights how some of the developments and new proposals received mixed reactions from the representatives of "crypto industry" and other stakeholders, leading to the conclusion that the current state of play in the tax treatment of cryptoassets in India is still very much a work in progress.

In combination, the papers included in this special issue make a significant and timely contribution to the ongoing debate on the taxation of cryptoassets. Even if one takes an extreme crypto-sceptic position, seeing in the rise of cryptoassets only a bubble deemed to explode, this phenomenon still holds salience for any enthusiast in tax policy and tax design. As pointedly presented in the contributions to this special issue, the advent and the rise of cryptoassets are about much more than the technical minutiae of tax legislation and practical application of the law; the debate on taxation of cryptoassets immediately raises important arguments related to the fundamental principles of tax law, like equity, efficiency, and administrability. Moreover, this special issue serves to illustrate how the genuine international debate is of vital importance, since international administrative co-operation and the search for common standards on a global level are key for taxing cryptoassets in a coherent and fair manner.

Finally, I want to thanks the authors for their worthy contributions, as well as for their co-operation and patience during the review and publication processes. Special thanks go to Dr. Stephen Daly, Managing Editor of the *Journal of Tax Administration*, for inviting me to assume the role of a guest editor of this special issue. A last word is reserved for Justine Davis, the journal's Editorial Assistant, for her diligent and meticulous assistance throughout the entire journey of producing this special issue.

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UNDERSTANDING NON-FUNGIBLE TOKENS AND THE INCOME TAX CONSEQUENCES

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Abstract[3]

The explosion of non-fungible token activity in 2021 highlighted a growing prevalence of a form of cryptoasset with functionality distinct from cryptocurrencies such as Bitcoin. Rather than being limited to a means of payment or investment, non-fungible tokens (NFTs) offer a broad variety of use cases which, in turn, requires further understanding of the principles of Australian taxation law. This paper examines a multitude of income tax issues that can arise in respect of NFTs, both on capital and revenue account. It examines the characterisation of NFTs pursuant to the capital gains tax regime for both business and non-business taxpayers, with particular focus on the applicability of the regime's "collectables" and "personal use assets" categories. The paper then raises a number of issues specific to business taxpayers and the issues therein.

Keywords: Cryptoassets, Non-Fungible Tokens, Capital Gains Tax, Collectables, Personal Use, Trading Stock, Depreciation, Royalties.

1. INTRODUCTION

Increasingly, we are seeing hype cycles of newly minted NFTs. In the first half of 2021, for example, we saw Jack Dorsey, founder of Twitter, turning his first message from March 2006 into an NFT (Reichert, 2021); we saw numerous pieces of artwork sell via Christie's, as well as artists selling albums as NFTs (Reichert, 2021), and then, "Charlie's last bite", a viral YouTube video, was removed from YouTube and sold as an NFT for US$760,999 in May 2021 (Telford, 2021). However, NFTs have been in existence since 2017 with, for example, CryptoPunks (Larva Labs, n.d.)[4] and CryptoKitties (CryptoKitties, n.d.-a) yielding substantial media attention and trading activity. Khezr and Mohan (2021) define NFTs as "units of data stored on a blockchain to certify the originality of various digital properties, such as music, digital art and video" (p. 2). More simply, they can be described as data that is stored on a digital ledger (Australian Taxation Office [ATO], n.d.-e), is unique, and lacks interchangeability when compared to Bitcoin and other altcoins. Khezr and Mohan (2021) describe NFTs as enabling "new versions of traditional market institutions" (p. 2). NFTs are a form of virtual property.

With the growing interest in and use of blockchain tokens beyond cryptocurrencies, there is a need to clarify the tax treatment in terms of their characterisation, not merely as a digital means

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[3] The initial analysis was conducted in 2021 for an earlier draft of this paper. The paper was accepted by the Journal of Tax Administration in March 2023.
[4] In August 2021, the media reported that Visa purchased a CryptoPunk as part of their collection of commerce artefacts (Chipolina, 2021).

of payment or investment, but as something that carries intrinsic meaning and utility. Until a couple of years ago, Australian taxation guidance has been silent about NFTs (ATO, n.d.-d). This paper explores the Australian income tax consequences arising from NFTs, particularly in terms of the distinction between Capital Gains Tax (CGT) assets that fit the definitions of "collectable" and "personal use asset" found in the Income Tax Assessment Act 1997 (Cth) (hereafter "ITAA97"), as well as a number of issues pertaining to business taxpayers. To do so, however, requires an appreciation of *what* NFTs represent and to *whom*.

The relevance of examining NFTs is threefold. Firstly, substantial focus has been given to cryptocurrencies such as Bitcoin. This can be contrasted with NFTs, which can capture anything from comparable investments to gaming and artwork. Without considering blockchain technology specifically, the ATO has already been concerned with whether CGT consequences for collectables and artwork are being captured correctly.[5] Moreover, there has been substantial growth in crypto-related activities by Australian taxpayers. In 2019, the ATO estimated that between 500,000 and one million Australians were investing in cryptoassets (ATO, 2019) and, in 2021, in what is known as the Bragg Report, the Select Committee on Australia as a Technology and Financial Centre noted that as many as 25 per cent of Australians may have held or be holding cryptoassets (Commonwealth of Australia, 2021). According to the Bragg Report, these figures make Australia one of the biggest crypto adopters per capita (Commonwealth of Australia, 2021). Regardless of the specific number of crypto adopters in the nation, the government has crypto-related activities on its radar as an area of concern and has questioned whether taxpayers are meeting their tax compliance requirements (ATO, 2019; see, for example, ATO, n.d.-c).

There is an increasingly broader—or infinite—treatment and series of use cases for NFTs. Virtual worlds offer alternative realities where NFTs can be utilised in a range of ways, whether for displaying artwork in digital galleries, in gaming (such as via "Axie Infinity" creatures), or through trading (for example, "NBA Top Shots"), to name a few. With this ability to offer a unique, potentially valuable digital asset, we need to appreciate more specifically the activity and treatment of NFTs, as well as the consequential variation in income taxing implications. As such, this examination explores the shift towards digitally native assets.

Such an exploration will offer insight into policy directions in terms of taxing regimes, with a particular focus on Australia. This approach is in line with Cooper's (2015) caution about adding to an already complex "jigsaw" of tax regimes that may already be unnecessarily over-engineered.[6] Reflecting on Cooper's (2015) work, this paper contemplates the balance between existing provisions adequately capturing the tax consequences of novel digital assets, i.e. being fit for purpose, and whether there are points of difficulty that can be resolved through targeted reform. This reflects Cooper's (2015) position comparing broad overlapping regimes with focussed rules that resolve gaps or absences in the law, or that reverse or supplant existing law, that may be considered inappropriate.[7] In doing so, this paper aims to appreciate differences, exemptions, and priorities.[8] This reflects the Bragg Report, which recommends that "the Capital Gains Tax (CGT) regime be amended so that digital asset transactions only create a

[5] See, for example, ATO (n.d.-d); Commissioner of Taxation, Australian Tax Office (2016); C. Evans et al. (2018).
[6] See Cooper (2015), at pp. 783 and 786. He outlines six structural "flaws" in tax reform, particularly with respect to regimes such as CGT and fringe benefits tax (FBT) and the potential overlapping and excessively broad approach (p. 788).
[7] See Cooper (2015), pp. 789–90.
[8] See Cooper (2015), p. 799.

CGT event when they genuinely result in a clearly definable capital gain or loss" (Commonwealth of Australia, 2021, vii). This could be via a new category of CGT asset or new CGT event. To do so requires an understanding of the variety of *what* NFTs are, how they may be constructed, and to *whom* they belong.[9]

This paper is structured as follows. In section 2, the context in which NFTs operate is outlined. This includes key attributes of NFTs as distinct to other cryptoassets, with particular focus on the NFT standards and metadata. In section 3, the Australian income tax issues for NFTs are detailed. Firstly, an overview of the levels of complexity experienced by taxpayers is provided, then the ATO guidance is detailed. The paper then goes on to examine income tax issues with respect to those taxpayers who would characterise their holdings as being on capital account and those who would characterise their activities as business activities. The analysis is brought to a close with final considerations in section 4.

2. NFTS CREATE UNIQUENESS AND SCARCITY THROUGH BLOCKCHAIN TECHNOLOGY

NFTs, unlike traditional cryptocurrencies, are not simply seeking to operate as a form of digital, programmable "money" or "currency". They enable a broad range of pursuits and activities, whether for speculation or investment, or for hobby, artistic, recreational, or gaming pursuits. This is because they are cryptographic tokens which represent something unique rather than being homogenous (i.e. fungible) like the more traditional forms of cryptocurrency.

The Ethereum blockchain was the first blockchain to create the ability for NFTs to be issued through the introduction of smart contracts (Chevet, 2018; Srinivasan, 2017). NFTs such as CryptoKitties gamify some of the key features of blockchain (i.e. decentralisation, transparency, and immutability) and the use of smart contracts to keep track of the mechanics of a game, program, or campaign to create a safe digital display case for "collectibles". Moreover, NFTs enable fractional ownership of assets, therefore broadening the scope of ownership of art and collectables.[10]

In the following subsections, we explore the characteristics underpinning NFTs that are necessary to understand and interpret the income tax implications. In particular, we outline what NFTs represent, their dynamic and unique nature, the ways in which metadata storage can operate, and how NFTs can break down the traditional walls of virtual reality and gaming. These factors impact the way in which we characterise NFTs on capital account (i.e. CGT assets and CGT events) and on revenue account.

2.1. Provenance and Protection

Blockchain technology enables the provenance, scarcity, and protection of digital assets. Traditionally, digital goods have suffered from lack of scarcity due to copy and paste, and P2P capabilities, resulting in pervasive copyright infringements (T. M. Evans, 2019). T. M. Evans

[9] We largely restrict our examination to income tax consequences rather than those issues that arise beyond, such as goods and services tax (GST) issues, the interpretation of money and currency, sales to offshore consumers, electronic distribution platforms, and so forth. A multitude of such taxing implications have been examined. See, for example, Cameron (2020); de Zilva (2018); Emery (2016); Morton and Curran (2022a); Ram (2018); Richter et al. (2015).

[10] See, for example, Xie (2021).

(2019), for example, notes the ability of blockchain technology to enable "new ways to create, adapt, distribute, display, and perform literary and artistic works" (p. 230). Additionally, the second-hand market bolsters the adoption and retention of value of NFTs (Chevet, 2018).[11] The original NFT creator receives a return on the secondary market.[12]

This highlights the core benefit frequently associated with blockchain technology: provenance. NFTs create the ability to ensure the origins behind digital art, for example, thereby building credibility—or community.[13] Note, however, that this does not entirely prevent fraudulent versions being minted on blockchain nor illegitimate copies being spread across the internet (for example, someone may obtain a screenshot of an NFT or may possess a JPEG of a piece of artwork off-chain). What blockchain does enable, however, is the establishment of a certified original version of an artwork within a community (Khezr & Mohan, 2021). Khezr and Mohan (2021) summarise the value of NFTs as continuing:

> the time-honoured tradition of attributing value to artwork through the involvement of the artist, and an acknowledgement of the artist's creativity, rather than in the mechanical reproduction of the end product. The artist's cryptographic digital signature then replaces the traditional pencil or ink signature as the certifier of an original print. (p. 9)

However, as detailed further in subsection 2.4 of this paper, there is a need to appreciate what a purchaser acquires when buying an NFT, including the location of the metadata and control of access to that data (Khezr & Mohan, 2021). For example, at the time of analysis, Rarible (2020) stated within its terms and conditions that it retained the right to terminate access or use for any reason and did not commit to the endorsement of the quality or legitimacy of the work minted,[14] including its uniqueness and authenticity.[15]

As such, there is concern not only over the quality of the data itself, but also about the reliance of the provider managing the NFT, which is subject to alterations in both its offerings and the software that it deploys (Rarible, 2020).[16] It is necessary to understand not only the terms and conditions underpinning each unique NFT but also the community in which the NFT operates and the interoperability between communities.[17]

[11] At the time of analysis, OpenSea was the largest marketplace through which to buy and sell NFTs. Other platforms include Rarible, SuperRare, and Nifty Gateway.

[12] For example, at the time of analysis, in the Rarible marketplace, the creator could set the royalty percentage for secondary sales (Rarible, 2020). Please note that terms and conditions are subject to change. Royalties are discussed in subsection 3.4 of this paper.

[13] Marketplaces can also rely on verified badges to add a layer of authenticity to creators. See, for example, Rarible (n.d.).

[14] See, for example, Condition 3.5 (Rarible, 2020). Please note that terms and conditions are subject to change.

[15] See also Condition 2.3 and Condition 9.4 (Rarible, 2020). Please note that terms and conditions are subject to change. See also ATO (2019); Commonwealth of Australia, (2021).

[16] According to Rarible's (2020) terms and conditions, alterations to the DEX system, which is the software that it deploys on Ethereum, are subject to change (Rarible, 2020). However, it did indicate that it would respond to notices of alleged copyright infringement in accordance with the United States' Digital Millennium Copyright Act (1998)*:* see paragraph 4. It also outlined that the creation, selling, buying, or use of a "Collectible" that infringes on copyright, trademark, patent, trade secret, or other intellectual property rights is a prohibited use: paragraph 7.

[17] For example, NFTs created on Rarible can be viewed and managed on Opensea.io.

2.2. Non-Fungibility

Fungibility relates to interchangeability: one coin is equivalent to another (Shorish et al., 2021). Each NFT offers intrinsic and extrinsic value that is unique.[18] Of particular relevance to this paper are those akin to artwork or collectables, including those used within gaming contexts. An NFT can represent a unique still, moving, programmable,[19] or audio asset—often within a particular "universe"[20]—with a particular set of *attributes*. These have varying degrees of rarity and utility. Often, the universe or collection can make use of fungible tokens (i.e. cryptocurrencies), for example, to purchase add-ons to the particular NFT or to trade. Whilst being cryptographically secure,[21] the non-fungible nature—*uniqueness*, *scarcity*, and *demand*—drives value.[22]

For example, Hashmasks are a collection of 16,384 unique digital portraits (NFTs) on the Ethereum blockchain that went on sale at the beginning of 2021.[23] More than 70 artists globally were involved in their creation.[24] The portraits are of masked figures randomly distributed[25] to purchasers with five basic *explicit* characteristics varying in rarity (character, eye colour, item, mask, and skin colour) and *implicit* rarity (easter eggs, e.g. backgrounds, shirts, hairstyles, colours).[26] In addition, Hashmasks have an additional layer of uniqueness in the form of each portrait's name. The portraits are initially acquired unnamed (unless via a secondary market). Owners can name their portrait using a *name changing token* (NCT).[27] Hashmasks were one of the biggest contributors to NFT growth in January 2021, topping the list of collectables when they were launched (DappRadar, 2021).

In contrast, CryptoKitties is a blockchain-based game which was launched on the Ethereum blockchain platform in 2017. At launch, 50,000 "cats" were stored on the Ethereum blockchain—"Gen 0" or "Clock Cats" (The CryptoKitties Team, n.d.). Additionally, special ranges of CryptoKitties are available. For example, "Fancy Cats" allow for collaboration with influencers in order to create CryptoKitties incorporating custom art (The CryptoKitties Team,

[18] See, for example, Finzer (2020).
[19] Whereby the piece of artwork incorporates on-chain data that is programmable, thereby changing colours or other features: see Xie (2021).
[20] Such as the CryptoKitty universe, the "KittyVerse" (CryptoKitties, n.d.-c).
[21] CryptoKitties are a new category of intellectual property (IP), since they cannot be copied and therefore reduce the need for the courts of law. See Berg et al. (2018); Berg et al. (2019).
[22] See T. M. Evans (2019) on p. 219.
[23] All Hashmasks were sold within four days, making more than 7,600 in ether (approximately $10M). See Avan-Nomayo (2021); SaladChefs (2021).
[24] All identities are unknown (Hashmasks, n.d.-c).
[25] Owners only knew what they had received after the sale via a random mechanism on-chain (Hashmasks, n.d.-a).
[26] For example, Sanskrit, Moby Dick, and pieces of a jigsaw puzzle. See Hashmasks (n.d.-e); Malwa (2021). See also Twitter discussion feeds such as Nerd (2021) and spencecoin.eth (2021).
[27] An ERC20 token. When the portrait is initially purchased, 1,830 NCTs are received for a name change, but secondary market buyers rely on NCTs accumulating. The rate at which this occurs is 10 NCT per day, which can be saved and then spent on renaming the portrait (1,830 NCT per name change), i.e. half a year. See Hashmasks (n.d.-d). Some examples include "Satoshi Nakamoto", "Vitalik Buterin", "CSW is not Satoshi", "Eleven", "Blur", "COVID Economy", "XAEAXii", and "Mbappe": see 'Hashmasks (n.d.-b). The distribution of NCTs ends after approximately ten years, after which NCTs can only be burnt. Once there are no NCTs left, the artwork is considered "complete".

n.d.). There are now in excess of 15,000,000 CryptoKitties (The CryptoKitties Team, n.d.).[28] Each digital cat has a unique combination of common and rare attributes (Berg et al., 2018). Purchases and sales occur via smart contracts using ether and, once acquired, new cats can be bred "with exciting traits and varying levels of cuteness" (The CryptoKitties Team, n.d., p. 6). Each time a cat breeds, it takes longer for it to rest before it can do so again, therefore reducing the utility of that particular cat over time (The CryptoKitties Team, n.d.).[29] Once users have CryptoKitties, they can utilise extensions to add accessories or engage in the "KittyVerse" where community members have built a range of experiences (CryptoKitties, n.d.-c).

CryptoKitties is described as a self-sustaining community with scarcity and utility. By December 2017, sales had exceeded US$12 million (Young, 2017). Numerous high value trades were reported, some in excess of US$100,000 (CryptoKitties, 2018), and there were anecdotes of substantial amounts of money being made.[30] Furthermore, in the months after its release, CryptoKitties was reported to have slowed down trading on Ethereum ("CryptoKitties craze slows down transactions on Ethereum", 2017). However, this level of activity was short-lived and, throughout 2018 and 2019, usage dropped significantly.

From an income tax perspective, the ability of NFTs to offer unique, potentially valuable (and volatile) digital assets raises significant implications that are distinct from those raised by the more traditional cryptocurrencies, such as Bitcoin. Although traversing both capital and revenue considerations, we see it as pertinent to consider thoroughly the appropriate capital characterisation of NFTs as either CGT assets, collectables, or personal use assets. This could be from taxpayer activities relating to artistic interests or gaming interests, and could relate to young people. For the latter, this could be inadvertent because they do not understand that CGT assets are being acquired and disposed of, and therefore could cause tax compliance (and associated liability) issues for them. In this regard, there are core consequences for both the taxpayer and the revenue raising objectives of the government, such as exemptions and special rules with respect to cost base elements and losses.

2.3. Blockchain Standards for NFTs, Crypto Composables, and Dynamic Smart Contracts

NFTs can be viewed across different wallets due to their interoperability (Finzer, 2020). NFTs rely on unified standards relating to ownership, transfer, and access. Additional layers can then be added to this basic position (Finzer, 2020). This means that the basic operation of NFTs will

[28] The creators earn a percentage from each transaction conducted in the marketplace (3.75%) and, as a user, revenue from their own cat sales (The CryptoKitties Team, n.d.). It is estimated that Clock Cats are released every 15 minutes via CryptoKitty smart contracts (The CryptoKitties Team, n.d.).

[29] However, breeding is not free. According to CryptoKitties, breeding "two of your own cats together costs a flat rate of 0.04 ETH plus the transaction fee. Breeding with another player's Kitty costs the siring price set by that player, plus the 0.04 ETH breeding charge and the transaction fee" (CryptoKitties, n.d.-b). Such fees are subject to change. A transaction fee (or "gas") reflects payments made to miners on the Ethereum network to verify the transaction. The higher the price a user is willing to pay, the quicker the processing takes place.

[30] For example, see Liao (2017), where it states that one user acquired a CryptoKitty for 12 Ether (approximately US$4,800).

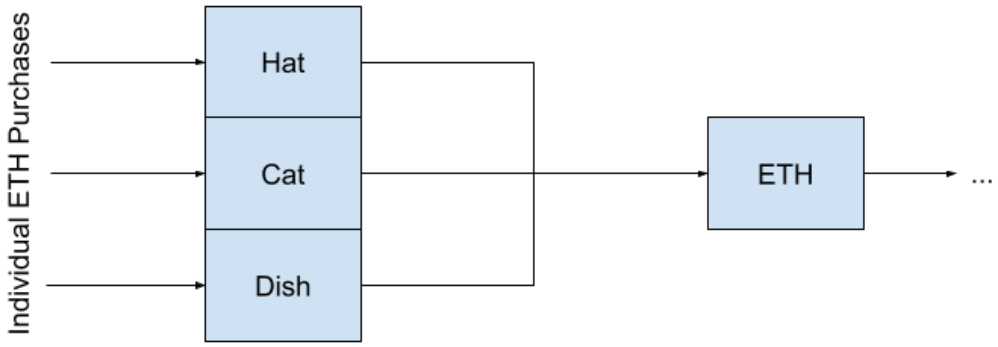
be consistent. The core standards for NFTs on the Ethereum blockchain include ERC721, ERC1155, and ERC998.[31]

ERC721 is the first NFT standard and the one on which CryptoKitties operates. It provides, among other things, a way in which to check who owns the NFT and a way to transfer that ownership (Finzer, 2020). For other pieces of digital art, NFTs are minted[32] through the unique pieces or series being uploaded onto platforms such as OpenSea or Nifty Gateway. Once "minted", the data is immutable through the entry onto the blockchain. ERC1155 enables semi-fungible tokens via classes of assets—for example, when there are 100 copies of a particular print available, each numbered 1/100, 2/100, 3/100 etc. (Finzer, 2020).[33]

The ERC998 standard enables NFTs to own their own cryptoassets (whether NFTs or fungible tokens), known as crypto composables (Chevet, 2018). This can be exemplified by CryptoKitties. NFTs can not only create child assets (breed new CryptoKitties), but can also be composed into complex sets and traded in a single transfer: "For example, a cryptokitty may own a scratching post and a feeding dish; the dish may contain some amount of fungible "chow" tokens" (Lockyer, 2018c).[34]

This adds a layer of complexity in terms of transacting (see Figure 1). The creators of CryptoKitties are powerless to prevent independent developments offering composables from being associated with their particular NFTs (Leland, 2018).

Figure 1: Crypto Composable Transactions



Source: Authors' depiction

The user must firstly acquire cryptocurrency to purchase NFTs (for example, as depicted in Figure 1, Ether is required in order to purchase CryptoKitties and their composables). Although these are separate tokens, the CryptoKitty represents the parent token, which has subsequently

[31] Note that NFTs are also emerging outside of the Ethereum blockchain. To add complexity and highlight the unique environment of blockchain, NFTS such as CryptoKitties can be turned into cryptocurrencies (i.e. fungible cryptoassets) as well. For example, Wrapped Kitties (WCKs) are "ERC20 tokens backed 1:1 by an ERC721 CryptoKitty" (Wrapped Kitties, n.d.). See also CoinGecko (n.d). Note: the ERC20 token standard is the Ethereum standard for fungible tokens (Smith et al., n.d.).

[32] Minting refers to tokenisation of the piece of work, i.e. creating the NFT on the blockchain. This is not, in itself, a sale but it is a creation. In contrast, the destruction of tokens is coined "burning".

[33] On pp. 9–10 of their paper, Khezr and Mohan (2021) discuss the superstition related to the ordering of editions, e.g. whether or not one of 50 is more valuable that two of 50. Note that ERC721 NFTs can be built with the ERC1155 standard (Finzer, 2020).

[34] At the time of analysis, composables could be purchased from, for example, *KittyHats*, which offered hats, apparel and accessories for CryptoKitties. As these are separate community developments, they are not necessarily lasting in line with the core CryptoKitty offerings.

obtained child tokens (a hat or dish). These three tokens now represent a set that can be transferred (or sold) in a single transaction: "You sell someone the cat? They also get the hat. Because the cat owns the hat. There's probably a Dr. Seuss poem in there somewhere" (MH10K, 2018).

This ultimately provides the ability for decentralised gaming (Lockyer, 2018b), although gaming on blockchain is generally seen as limited for the most popular game genres because of the relatively slow verification process (Sihvonen et al., 2019).

Other examples include "Loot", which is a series of 8,000 NFTs that are each made up of a number of items that a player may need in a game that does not yet exist. The "loot" simply lists random items, such as "Silk Hood" or "Shoes", without images or statistics (Russell, 2021). Subsequent to Loot's release, other developers have created visualisation tools, price monitoring tools, and "Realms" for the loot (Russell, 2021).

The programmability of blockchain smart contracts further enables NFTs to change. These are described as "dynamic" NFTs (Khezr & Mohan, 2021). Khezr and Mohan (2021) describe, for example, the artwork "Crossroad" that was sold on Nifty Gateway prior to the U.S. election, with its ultimate irrevocable depiction that would depend on the outcome of the election. The dynamic nature of this NFT was a function of the NFT code written into its smart contract (Khezr & Mohan, 2021).

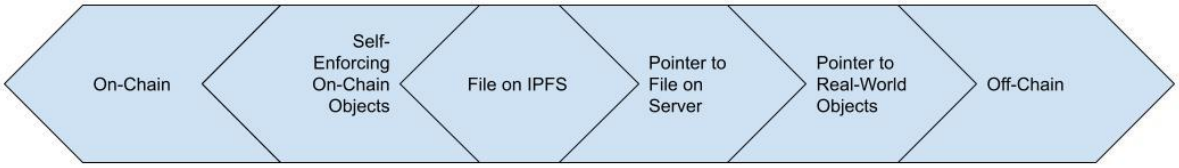
The programmability and composability of NFTs further highlight the need to understand both *what* NFTs represent and to *whom*. There is a broadening use case for NFTs. With this ability to offer a unique, potentially valuable, digital asset, the question arises as to whether the existing tax provisions are able to adequately capture the tax consequences of novel digital assets or whether there are points of difficulty that can be resolved through targeted reform, such as those recommended by the Bragg Report (Commonwealth of Australia, 2021). The report indicated that reform could be by way of a new category of CGT asset or new CGT event. However, we take heed of Cooper's (2015) caution about adding to an already complex "jigsaw" tax regime that may be overengineered.[35] Could the appropriate characterisation of NFTs as personal use assets and collectables, and the consequential application of their special rules, resolve some of the complexities of blockchain technology-related tax compliance?

2.4. NFTs and Associated Metadata

It is important to note what is being acquired when NFTs are traded. The NFT itself offers the certificate of authenticity that is permanently attached or associated with the digital artwork or other creation (Khezr & Mohan, 2021). However, beyond authenticity and unlike traditional cryptocurrencies, the value (and uniqueness) may not simply be the quantity held in the blockchain ledger entry itself. A consideration of the metadata, which can be on-chain or off-chain, is required: (see Figure 2).

[35] Cooper (2015) outlines six structural "flaws" in tax reform, particularly with respect to regimes such as CGT and FBT and the potential overlapping and excessively broad approach (p. 788).

Figure 2: Metadata Location Continuum



Source: Authors' depiction

According to Finzer (2020):

> Metadata provides descriptive information for a specific token ID. In the case of the CryptoKittty, the metadata is the name of the cat, the picture of the cat, a description, and any additional traits (called "cattributes", in the case of CryptoKitties).

To be on-chain, the metadata needs to be built directly into the smart contract: the metadata is within the token itself. As such, the metadata is permanently recorded in the NFT and is, therefore, not reliant on any other application (Finzer, 2020). Thus, in theory, by virtue of its on-chain location, it offers a long-lasting existence and enables the NFT to change as per the logic of smart contracts—such as breeding rates for CryptoKitties being dependent on their generation (Finzer, 2020). "Avastars" and "BlockHorses" store their metadata on-chain.[36] As such, the artwork does not depend on a private server to exist; however, it requires a more complex smart contract in order to run and is, therefore, more expensive to establish. Moreover, on-chain storage requirements create limitations in terms of storage capacity (Finzer, 2020).

Despite the benefits offered by on-chain storage, it is common to store metadata off-chain, with on-chain data limited to proof of ownership (Chevet, 2018). The ERC721 standard achieves this through including a tokenURI (a public URL), which is an address that directs the owner to the metadata's location (Finzer, 2020). For example, the on-chain metadata for each CryptoKitty includes a unique number (the cat's "DNA") which needs to be read by the CryptoKitties' private (and centralised) servers for the appearance of the cat to be established and the image to be displayed (Chevet, 2018; Sedgwick, 2018). Extensions to the ERC721 allow developers to display metadata in the marketplace, such as via OpenSea—e.g. traits, animations, and colours (Finzer, 2020).

It is the private server that holds the value—the rarity of the CryptoKitty. This means that if the CryptoKitty universe (private server) no longer exists, the cat's image would no longer exist (Sedgwick, 2018). As such, without that image—without the private server—the unique token owned (NFT) on the blockchain becomes valueless (Sedwick, 2018). Similarly, the metadata is not safe from changes being made by those in control of the server.[37]

An alternative for centralised, private servers is Amazon Web Services and the InterPlanetary File System (IPFS). The IPFS enables permanent links to be used as it "eliminates the need for websites to have a central origin server, making it perhaps our best chance to entirely re-

[36] See, for example, the following: NFT42 (https://www.nft42.com); Avastars (https://avastars.io/); and BlockHorses (OpenSea, n.d.-a).
[37] OpenSea mitigates this via a cache of the metadata on its servers (Finzer, 2020).

architect the Internet—before its own internal contradictions unravel it from within" (Case, 2015).

The IPFS is growing in popularity. Like blockchain itself, the IPFS is a peer-to-peer storage system that enables metadata to be immutable and persistent over time (Finzer, 2020). Hashmasks, for example, rely on IPFS URLs.[38] However, the IPFS is still dependent on the nodes that host the files staying online (Hashmasks, 2021; Kahan, 2021). There are further decentralised storage solutions that work with IPFS, such as Airweave, Filecoin, and Pinata (Hashmasks, 2021; Kahan, 2021).

At the time of analysis, when a "Collectible" was created through the Rarible application, for example, the metadata was generally stored on the IPFS, for which the Rarible Company operated an IPFS node (Rarible, 2020).[39] However, it did not commit to the guaranteed persistence and integrity of IPFS data (Rarible, 2020). At the time of analysis, in its terms and conditions, Rarible (2020) stated that it had complete discretion to, from time to time, remove or restrict the creation of "Collectibles". Similarly, it confirmed that it would not be liable for a lack of support for trading via its application (Rarible, 2020).

As such, whether or not the IPFS is utilised, there are inherent risks as to the continued availability of metadata associated with NFTs. The metadata file could be stored on the IPFS but may similarly point to a file stored elsewhere. Aspects of the metadata could be stored on-chain whilst other elements are stored off-chain. Within a single marketplace, a multitude of approaches will be taken by creators when creating and managing the metadata. This raises the question of whether the purchaser is truly acquiring anything beyond the NFT itself. Even if they are, the purchaser is still dependent on applications continuing to provide services. This has clear implications from a tax perspective, particularly with reference to *what* the assets are, *when* the assets are, and the potential for those assets to come to an end if the underlying metadata is impacted. Critically, not all NFTs are equal with regard to the associated metadata.

2.5. Virtual Worlds and Gaming

NFTs enable ownership of digital property within the metaverse. Virtual realities can be anything from digital galleries to avatars and virtual realities. Although blockchain technology is driving this activity, virtual reality and virtual property have been around for a long time, particularly in the gaming community. Virtual property can be defined as "persistent computer code stored on a remote source system, where one or more persons are granted certain powers to control computer code, to the exclusion of all other people" (Blazar, 2006, as cited in Macrae, 2008, p. 324). This includes game characters and digital commodities (Macrae, 2008).[40]

NFTs are creating increasingly interoperable communities and economies. For example, *F1® Delta Time* was one of the first NFT play-to-earn car games (Lane, 2022).[41] Its in-game assets

[38] Hashmasks are now on-chain, so do not rely on their website for the images, but still rely on the Hashmask node (Hashmasks, 2021). See also Kahan (2021).

[39] However, the metadata can be stored elsewhere, depending on how the collectible is created (Hashmasks, 2021; Kahan, 2021).

[40] He notes that a "single copy of the code defining these details is maintained and the database links to this code whenever the player uses that item. Significantly, the transfer of virtual property is undertaken in a manner akin to the transfer of funds between bank accounts, in that it involves the modification of each player's database listing" (Macrae, 2008, p. 325).

[41] In 2022, the offering shut down. The website is no longer active.

were ERC-721 NFTs (Animoca Brands Corporation Limited, 2019). They reflected primary NFTs (cars and drivers), component tokens (parts and gears) that could attach to primary tokens, as well as stand-alone tokens that operated independently and which were not subject to composition logic (e.g. tacks and trophies) (Animoca Brands Corporation Limited, 2019).[42] Depending on the NFT and its attributes, it could impact performance or reflect more cosmetic elements in the platform. Metadata could relate to visual elements (2D thumbnail/images, 3D models) and non-visual elements, (such as name, description, team, track, rarity, collection, or racing stats) (Animoca Brands Corporation Limited, 2019).

Macrae (2008) notes that, in off-chain gaming, licence agreements curtail intellectual property rights and the property interests of players; however, blockchain offers decentralisation and markets beyond game play. These are perhaps more akin to the unscripted worlds off-chain that are more heavily reliant on player-created content and therefore allow significant property rights over the virtual property created (Macrae, 2008). With respect to *F1® Delta Time* described above, for example, players could use, trade, or sell the NFTs, and it used a fungible token as its in game primary currency—"REV"—which was an ERC-20 token. REVs are used for trading/purchasing the NFTs, as well as rewards for achievements and for completing actions, fees to compete in races, and rewards for racing (Animoca Brands Corporation Limited, 2019). NFTs for the game could also be traded on secondary markets, such as OpenSea. As such, they could be used for gaming on the platform, earning ERC-20 tokens, and purchasing NFTs that can then be traded openly. However, following the shutdown of the project, the NFTs were impacted, raising fundamental questions about their underlying property rights and the true nature of such endeavours breaking down the walls of a traditional gaming platform (see, for example. Lane, 2022).

2.6. Summary

Explicit examination of the underlying characteristics of NFTs is warranted in order to appropriately determine the Australian income taxation consequences. This includes appreciating the construction of the NFT, including the nature of any crypto composables, any dynamic coding involved, and the location of the metadata. As with most taxation issues, it is necessary to extend this examination to include the relevant taxpayers' facts and circumstances. The unique and bespoke nature of NFTs means that they can be anything from recreational collectables, artwork, or gaming assets to assets held for business or speculative purposes. Moreover, the connection with the greater crypto community is equally relevant. Virtual worlds offer alternative realities where NFTs can be utilised and traded, whether for displaying artwork in digital galleries or for gaming (such as via Axie Infinity creatures or through trading NBA Top Shots). The authors now turn to the established rules of statutory interpretation in order to consider the way in which an NFT can be characterised for tax purposes.

3. TAXING NFTS

We summarise that there are three core levels of complexity required or anticipated in transacting with NFTs:[43]

[42] The concept of crypto composables is explained in more detail in subsection 2.3 of this paper.
[43] Ignoring further complexities, such as when decentralised finance (DeFi) protocols are involved.

1. Transactions between fiat currency ($) and ether (ETH) (Level 1).
2. Transactions between Ether (ETH) and crypto-collectables (NFTs) (Level 2).
3. Transactions between NFTs (Level 3).

Level 1 simply reflects the transition from fiat currency (i.e. the Australian dollar) and the fungible cryptocurrency (e.g. ETH). From here, taxpayers are not dealing with the Australian dollar. Level 2 and 3 transactions are not associated with fiat money and should therefore be considered in terms of the market value of the property. Level 2 creates dual CGT events (the disposal of ETH and the acquisition of NFT or vice versa).[44] Table 1 presents a selection of examples using CryptoKitties' Kittyverse transactions.

The tax treatment of the transactions will be dependent on the particular facts and circumstances. Core issues are considered in the following subsections, based on whether the taxpayer is a non-business or business taxpayer.

Table 1: Example Transactions within the Kittyverse (CryptoKitties)

Level		Item	Event	Transaction Flow	Inflows	Outflows
Level 1		1	Acquisition of ETH	$ → ETH	ETH	Fiat $ Transaction fee (*gas*)
Level 2	Level 3	2	Acquisition of NFT	ETH → NFT_t	NFT	ETH (to seller, 3.75% to creator)* Transaction fee (*gas*)*
		3	Acquisition of composable NFT	ETH → $NFT_{composable}$	NFT_c	ETH (to seller/creator)* Transaction fee (*gas*)*
		4	Breeding of NFT	NFT_{parent} → NFT_{child}	NFT	Birthing fee (ETH) Transaction fee (*gas*)*
		5	Acquisition of NFT via activity	Gift/Services → NFT_t	NFT	Nil (Transaction fee imposed on transferor)
		6	Disposal of NFT	NFT_t → ETH	ETH ↓ Inflows represents new acquisition of ETH	NFT ETH (3.75% to creator)* Transaction fee (*gas*)*
		7	Disposal of NFT set	$NFT_{1,2...t}$ → ETH	ETH ↓ Inflows represents new acquisition of ETH	NFT ETH (3.75% to creator)* Transaction fee (*gas*)*
		8	Disposal of NFT via gifting to user	NFT_t → Gift	-	NFT ETH (3.75% to creator)* Transaction fee (*gas*)*
		9	Loss of NFT via loss of private server	Nil (NFT_t still held)	-	-
Level 1		10	Disposal of ETH	ETH → $	Fiat $	ETH Transaction fee (*gas*)*

* Outflows represents partial disposal of ETH (parcel selection options).

Source: Authors' depiction using data from CryptoKitties (n.d.).

[44] Focussing on the non-business taxpayer. Whether they fall within the scope of the CGT provisions or the trading stock provisions is dependent on factors such as intention and business characteristics.

3.1. The Australian Taxation Regulatory Context

Australia operates under a common law system, where law is derived from the legislature (the parliament) and the judiciary's (court's) application of the doctrine of precedent for decision making (Heydon, 2015). This common law system lives and breathes as society evolves over time—it is dynamic, not static.[45] According to Morton et al. (2021):

> [T]he complexity that arises through the diversity in circumstances to which law must be applied. This includes changing factors and/or circumstances over time, as well as the way in which community standards influence law. The judiciary fulfils an important role in addressing the boundless circumstances that may arise that cannot be captured by legislation, responding to novel circumstances, extending existing rules as necessary, and establishing the limits or validity of legislation. (p. 85)

While common law can provide stability, predictability, and flexibility,[46] tax compliance yields a particular administrative focus and has the ATO at its centre. Irrespective of uncertainty and consultation processes underway that contemplate the need for law reform, tax practitioners and taxpayers must continue to meet their tax obligations. As such, the role of the ATO in providing sufficient guidance on the crypto economy has become particularly critical.

Australia was one of the earliest jurisdictions to introduce formal tax guidance for the emerging crypto economy (PwC, 2021). In 2023, the Treasury of the Australian Government (hereafter "Treasury") reported that more than one million taxpayers in Australia were expected to lodge a 2022 tax return that included crypto activities (Australian Government, The Treasury, 2023). This follows previous campaigns concerned with compliance and the disclosure of crypto activities, including writing to 100,000 taxpayers with regard to potential activities in 2019 as part of their data-matching programme (ATO, n.d.-c; 2019).

Despite this, there are many areas of the crypto economy in which there is not yet formal tax guidance or in which, at least, the tax guidance is not yet robust. Formal tax guidance is enshrined in a series of tax determinations released in 2014, for which the Commissioner of Taxation is legally bound:

> • "Income tax: is bitcoin a 'foreign currency' for the purposes of Division 775 of the Income Tax Assessment Act 1997?"—TD 2014/25 (ATO, n.d.-f).
> • "Income tax: is bitcoin a CGT asset for the purposes of subsection 108-5(1) of the Income Tax Assessment Act 1997?"—TD 2014/26 (ATO, n.d.-f).
> • "Income tax: is bitcoin trading stock for the purposes of subsection 70-10(1) of the Income Tax Assessment Act 1997?"—TD 2014/27 (ATO, n.d.-f).
> • "Fringe benefits tax: is the provision of bitcoin by an employer to an employee in respect of their employment a property fringe benefit for the purposes of subsection 136(1) of the Fringe Benefits Tax Assessment Act 1986"—TD 2014/28 (ATO, n.d.-f).

Public rulings such as these express the Commissioner of Taxation's interpretation of how the law (legislation and judiciary outcomes, i.e. case law) applies generally. Such rulings can be

[45] See Morton et al. (2021) at pp. 81 and 84.
[46] See Kirby (2005) at pp. 1 and 16. See also Morton et al. (2021) at p. 84.

relied on by relevant taxpayers and the Commissioner of Taxation must also apply the law set out in the ruling (unless they are satisfied that the ruling is incorrect and that it disadvantages the taxpayer). The rulings and reliance thereon protect taxpayers from underpaid tax, penalties, and interest if, ultimately, the ruling is incorrect—for example, following a subsequent judiciary outcome (ATO, n.d.-f).

Legally binding ATO guidance is generally limited to that relating to Bitcoin or similar traditional cryptocurrencies (ATO, n.d.-f). Since the release of the tax determination series in 2014, the ATO has regularly updated its website with more bespoke guidance—web guidance (ATO, n.d.-a), which does not yield the same level of protection and, therefore, relies more generally on trust in the ATO (see ATO, 2022a; Morton et al., 2024).

Despite the continuing development of web guidance, the ATO's overarching position on crypto activities remains relatively unchanged. A significant amount of web guidance is directed towards activities that are characterised as being on capital account and for "cryptocurrencies", with more recent guidance expanding the terminology used from "cryptocurrency" to "crypto asset" (ATO, n.d.-a). Whilst the former Australian Government set in place numerous reviews with regard to policy frameworks on licensing and custody, decentralised autonomous organisations (DAOs), taxation, token mapping, and central bank digital currency (CBDC) viability, there has been a slight shift in focus and the prioritisation of, in particular, investor protection since mid-2022, when a new government was elected.[47] This has similarly resulted in the delay of some planned consultations. The current government, however, has continued with planned consultations around token mapping, and the taxation of digital assets and transactions. There has been a focus on token mapping and the development of a licensing framework during 2022 and 2023.

With respect to tax specifically, despite the Bragg Report's recommendation to amend the CGT provisions within the income tax legislation in order to ensure that CGT events are only triggered once they "genuinely result in a clearly definable capital gain or loss" (Commonwealth of Australia, 2021, p. vii), the former government merely noted this, and instigated a formal and broader review of the taxation of digital asset and transactions in Australia by the Board of Taxation [BoT] (Australian Government, 2021).

This was due to be released at the end of 2022, but delays were again observed following the change of government. The BoT consultation began in September 2022 with the due date for the final report revised to September 2023, then again to February 2024 (BOT, n.d.).

At the time of writing, there is no bespoke taxing regime for the crypto economy. Whilst there have been amendments, for example, to the goods and services regime in order to prevent double taxation when the crypto economy is used to buy and sell goods, it is expected that taxpayers will interpret how the existing principles of tax law apply to their activities themselves. The tax determinations and web guidance outlined above assist in that process. They are not, in themselves, a regulatory framework for the crypto economy. Similarly, the definition of foreign currency was revised to ensure that cryptoassets such as Bitcoin will not fall within the scope of the foreign currency regime despite the fact that they are recognised as legal tender in foreign jurisdictions such as El Salvador (Morton & Curran, 2022b). The Australian government has been clear about its intention to amend the law: it will seek to retain the status quo as set out in TD 2014/25 (Chalmers & Jones, 2022). However, the proposed

[47] See the summary on p. 25 of PwC (2021). See also the Bragg Report (Commonwealth of Australia, 2021).

amendment carves out CBDCs from the exclusions, thereby implicitly acknowledging the place for CBDCs and, therefore, the technology (Treasury Laws Amendment [Measures for Consultation] Bill 2022; see also Morton & Curran, 2022a).

One of the key elements of complexity that the crypto economy brings is the move away from fiat currency. This requires principles of bartering to be enacted: see ATO (1992b).[48] This has also led to questions being raised with respect to employee remuneration, in that, depending on whether or not the employee has a valid sacrifice arrangement in place, crypto remuneration may be treated either as ordinary income or as a fringe benefit. If it is treated as the latter, this triggers the application of the fringe benefits regime rather than the income tax regime. This, in turn, has implications in terms of whether or not superannuation obligations are impacted (Bevacqua et al., 2022; Cameron, 2020).

More broadly, the characterisation of DAOs raises significant issues, not only for taxation regimes but, more broadly, for the legal and moral obligations that can arise for participants (see, for example, Pirovich, 2021; Tse, 2020). The current position of DAOs in Australia has been compared to the status of corporations prior to the introduction of limited liability companies:

> Prior to limited liability companies, it was untenable for individual shareholders to have 'moral culpability' for the actions of corporations, as they lacked the power and control mechanisms to discipline errant management.
>
> It is equally untenable for individual stakeholders of decentralised systems, such as decentralised financial applications, to have moral culpability for the actions of those decentralised systems, because the individuals lack the power and control mechanisms to discipline errant decision-making. (Commonwealth of Australia, 2021, p. 76)

The Australian tax law definition of a company excludes partnerships but includes unincorporated associations (ITAA97, section 995.1). The Bragg Report recommended the establishment of a new legal entity for DAOs (Commonwealth of Australia, 2021). However, no major developments have yet to occur.

3.2. ATO on Cryptoassets

As per TD 2014/25 (ATO, n.d.-f) and TD 2014/26 (ATO, n.d.-f), the ATO takes the stance that Bitcoin is a CGT asset (ITAA97, section 108.5[1])—where the taxpayer is not carrying on a business of cryptocurrency trading—rather than money or foreign currency.[49] A CGT asset is defined as "(a) any kind of property; or (b) a legal or equitable right that is not property" (ITAA97, section 108.5(1)). More specifically, CGT assets fall within the notion of property pursuant to the following:

[48] In some instances, non-cash transactions may lead to the application of section 21A of the Income Tax Assessment Act 1936 (hereafter "ITAA36"), which deems non-cash benefits to be treated as if they were convertible to cash.

[49] TD 2014/25 (ATO, n.d.-f). See also *Seribu Pty Ltd and Commissioner of Taxation (Taxation)* [2020] AATA 1840 (16 June 2020) and, more generally, a consideration of the Commissioner of Taxation's position in, for example, de Zilva (2018) on pp. 372–374.

(1) A CGT asset is:
  (a) any kind of property; or
  (b) a legal or equitable right that is not property.
(2) To avoid doubt, these are CGT assets:
  (a) part of, or an interest in, an asset referred to in subsection (1);
  (b) goodwill or an interest in it;
  (c) an interest in an asset of a partnership;
  (d) an interest in a partnership that is not covered by paragraph (c). (ITAA97, section 108.5[1][1])

This means that transacting with traditional cryptocurrencies will likely result in specific tax consequences, depending on the taxpayer's intentions and activities (for example, if the cryptocurrency is held for investment or business use). In terms of investing and/or transacting other property, using cryptocurrency will result in the standard CGT consequences, exemptions, and reductions (CGT events, personal use $10,000, 50% discount, etc.). As with physical assets and shares, a CGT event occurs when cryptocurrency is disposed of, i.e. when it has been sold, gifted, traded, exchanged, converted to fiat currency, or used to acquire goods or services (ATO n.d.-b). This can be compared with that of a trader or speculative investor, where transactions will be on revenue account and be subject to the trading stock provisions (ITAA97, division 70).

The Commissioner of Taxation is of the opinion that guidance on Bitcoin and similar cryptocurrencies is also applicable to NFTs (ATO, n.d.-e; see also ATO, 2020). The ATO extends the established guidance to NFTs, with the particular tax treatment dependent on the use and reasons for holding and/or transacting with them (ATO, n.d.-e). The ATO summarises, in the guidance that it provides, that income tax may be due on an NFT:

- as a CGT asset under the capital gains tax (CGT) regime
- on revenue account as trading stock
- as part of a business

as a profit-making scheme (ATO, n.d.-e).

The ATO provides several examples to explore the consequences of NFTs (ATO, n.d.-e).

3.3. Capital Account: Personal Use Assets and Collectables

Outside of the tax system, we speak of collectables as including anything from basketball or baseball cards, Pokémon, or Beanie Kids. However, the principles of statutory interpretation require us to look at the language within the context of legislation as a whole (James et al., 2019). For both collectables and personal use assets, this begins with the definition of those terms proffered by ITAA97, division 108, thereby considering a meaning that may not necessarily equate with the ordinary meaning of either term.

In particular, ITAA97, subsections 108.10(2) and (3) state that:

> (2) A collectable is:
>
> *(a) artwork, jewellery, an antique, or a coin or medallion; or* [emphasis added]
>
> (b) a rare folio, manuscript or book; or
>
> (c) a postage stamp or first day cover;
>
> *that is used or kept mainly for your (or your associate's) personal use or enjoyment* [emphasis added].
>
> (3) These are also collectables:
>
> (a) an interest in any of the things covered by subsection (2); or
>
> (b) a debt that arises from any of those things; or
>
> (c) an option or right to acquire any of those things.

Of particular relevance to NFTs is paragraph (a), which covers "artwork" and includes the requirement that the item "is used or kept mainly" for "personal use or enjoyment" (ITAA97, section 108.10[2]). Artwork is defined in ITAA97 as: "(a) a painting, sculpture, drawing, engraving or photograph; or (b) a reproduction of such a thing; or (c) property of a similar description or use" (section 995.1).

The authors argue that the digital nature of NFTs is not an issue here either in terms of them being interpreted as *property* in line with guidance on traditional cryptocurrencies[50] or in terms of the artwork's ability to be digitally native (or to be a digital reproduction of a physical piece of art). It therefore does not matter whether the "art" packaged within an NFT is original or a reproduction. Although the NFT offers an ability to certify that a piece of artwork is original, it can equally certify reproductions as being one of a series (semi-fungible).

In relation to the latter, the authors argue that a *digitally constructed* piece of work falls (if not within paragraph [a][51]) within paragraph (c), being a property of a similar description of use (ITAA97, section 995.1[1]). The fact that paragraph (b) of ITAA97, section 995.1(1) includes reproductions means that the definition is broad. As Chevet (2018) notes:

> Digitized art refers to art pieces created, stored, used and delivered digitally. This definition encompasses every piece of art that can be put in a digital format: image, sound, video games, video, etc [citation omitted]. The definition also entails that a physical art piece, such as a painting, can be digitized and stored in digital form separate from the first one, the digitized version is considered a different version of the physical asset, with its own properties. (p. 44)

Khezr and Mohan (2021) similarly explore the notion of digital art in contrast to more traditional conceptions of art and, further, the subset of digital art distributed via crypto art galleries or channels using blockchain technology.[52]

Following the same process of interpretation that concludes that Bitcoin is property and is therefore a CGT asset,[53] the authors accept that NFTs can equally be characterised as property given the breadth of what "property" entails—i.e., as stated in *Yanner v Eaton* (1999) 201 CLR 351, 365-7 [19], the term "property", in law, "does not refer to a thing":

[50] See, generally, ATO (n.d.-f).
[51] For example, a drawing can be digitally created using drawing tools and a digital camera produces digital photographs.
[52] See also Franceschet et al. (2019)
[53] TD 2014/26 (ATO, n.d.-f).

> the High Court accepted that property refers not to a thing but to a description of a legal relationship with a thing; and, more specifically, to the degree of power that is recognised in law as permissibly exercised over the thing. Noting the difficulties in determining what is meant by 'property' in a thing, their honours quoted Professor Gray who stated '[a]n extensive frame of reference is created by the notion that 'property' consists primarily in control over access' [citation omitted]. (ATO, n.d.-g, [6])

The interpretation that establishes proprietary right in TD 2014/26 (ATO, n.d.-g) is also equally applicable to NFTs (such as CryptoKitties or Hashmasks). For example, in TD 2014/26 (ATO, n.d.-g), the Commissioner of Taxation identifies a number of approaches that could be taken in order to decide whether something amounts to property[54] but concluded that it is a weighing up of a range of factors, none definitive, that is necessary to determine this (ATO, n.d.-g). We can also consider the New Zealand judgement on whether cryptocurrencies are items of property under English common law (*David Ian Ruscoe & Malcolm Russell Moore v Cryptopia Limited (in liquidation)* [2020] NZHC 728), in which Gendall J found that the criteria established in Ainsworth could be satisfied for cryptocurrencies and these, therefore, were property.[55]

One area of concern for NFTs is the complexity that arises through the metadata where it is stored off-chain (including via IPFSs), as this off-chain element results in questions over (i) whether the notion that an NFT reflects a bundle of rights, and thus the asset reflects more accurately as a bundle of licensing or contractual rights that outweighs the categorisation of "artwork"; and (ii) of the true control and right to the artwork itself.

The Commissioner of Taxation has already highlighted, in terms of Bitcoin, the importance of the relationship between the digital representation of value arising from the crypto token[56] and the bundle of rights ascribed to those with access—in particular, the right to control and therefore trade (ATO, n.d.-g). However, for NFTs off-chain, there is some concern that the artwork itself (which could simply be a JPEG file on a private server) is problematic. The owner of the NFT has a right (ITAA97, section 108.10[3][c]) but does not truly have control—nor can the blockchain software (smart contract) stop a private server from going offline. However, marketplaces such as OpenSea and the use of the IPFS do provide further safety mechanisms to ensure that the NFT holders' rights are upheld (as discussed in section 3 of this paper).

Despite some concerns, it is accepted that NFTs would be captured as property in the same way as Bitcoin[57] or, at a minimum, a right to property (ITAA97, section 108.10[3][c]). This

[54] For example, the "Ainsworth Test"—reflecting the right being "definable, identifiable and capable of assumption by third parties, and permanent or stable to some degree" (ATO, n.d.-g) in *National Provincial Bank Ltd v. Ainsworth* [1965] AC 1175 at 1247—8; "excludability" (ATO, n.d.-g) in *Milirrpum v. Nabalco Pty Ltd* (1971) 17 FLR 141 at 272; *Potter v. Commissioners of Inland Revenue* (1854) 156 ER 392 at 396; "commercial value" (ATO, n.d.-g) in *Halwood Corporation Ltd v. Chief Commissioner of Stamp Duties* (1992) 33 NSWLR 395 at 403; and "enforceability" (ATO, n.d.-g) in *Wily v. St George Partnership Banking Ltd* (1999) 84 FCR 423 at 426. See also Morton and Curran (2022b) on p. 145.

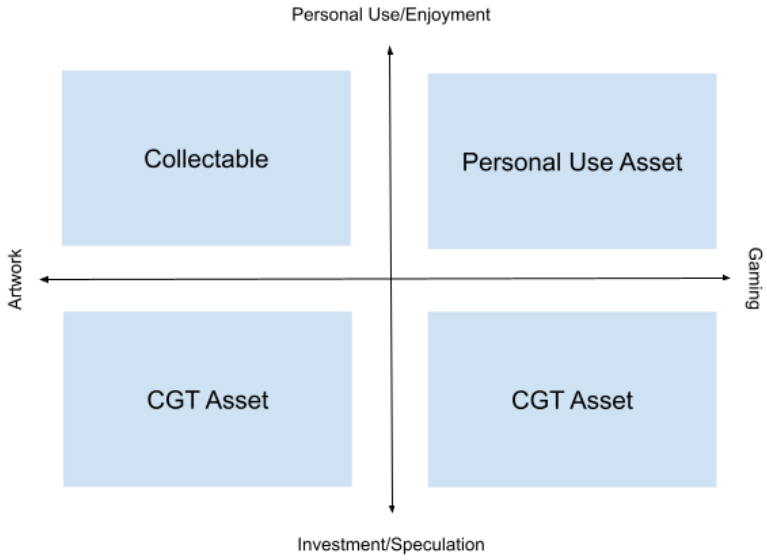
[55] See also Morton and Curran (2022b), who examine the four criteria where the private key is lost.

[56] For example, the "Bitcoin address; the holding or balance in that address; and the public and private keypair associated with that address" (ATO, n.d.-g, [8]).

[57] See paragraph (c) of the definition of artwork found in paragraph 995.1(1) of ITAA97.

assumes, however, that the NFT (if artwork) is kept for personal use and enjoyment, and relies on the taxpayer's intention of holding the NFT based on its artistic qualities rather than some other personal use. Therein lies the contrast with something that holds artistic qualities but is used for gaming purposes (which do not meet the threshold of professional gaming).[58]
For example, Hashmasks more readily reflect the ordinary meaning of art: they are a series of unique portraits without further immediate utility. CryptoKitties, on the other hand, although reflecting varying levels of "cuteness"—being cartoon cats—can be used for tournaments, trading, or breeding. Alternatively, they could simply be held for long-term speculative gains, rather than for their artistic or gaming qualities. In the latter case, they would reflect general CGT assets, rather than collectables or personal use assets (see Figure 3).

Figure 3: Comparing Primary Characterisation



Source: Authors' depiction

Both collectables and personal use assets rest on the notion that the holding or use is for personal use or enjoyment; however, the latter excludes the former. Specifically, *personal use assets* are defined as:

> (a) a CGT asset (except a collectable) that is used or kept mainly for your (or your associate's) personal use or enjoyment; or
> (b) an option or right to acquire a CGT asset of that kind; or
> (c) a debt arising from a CGT event in which the CGT asset the subject of the event was one covered by paragraph (a); or
> (d) a debt arising other than:
>
> (i) in the course of gaining or producing your assessable income; or
> (ii) from your carrying on a business. (ITAA97, section 108-20[2])

Numerous assets can be personal use assets. Prior examples considered by the ATO include items held for hobby or recreational use—such as a horse used by a taxpayer who races horses

[58] In which case, the CGT provisions would not be the point of reference. The activities could instead, for example, amount to business activities invoking the trading stock provisions (ITAA97, division 70).

as a hobby (ATO, 1990)—[59]or gold nuggets arising from hobby activities (ATO, 2003). Additionally, according to the ATO (2002), unused marble floor tiles that were originally acquired for laying in a taxpayer's residence were not "used", however they were nonetheless "kept" for personal use.

Bitcoin itself can be a personal use asset by virtue of the purpose of its acquisition in the event that it was acquired in order to facilitate the purchase of personal goods, such as clothing or music.[60] In *Favaro v FCT* [1996] ATC 4975, Branson J accepted the Commissioner of Taxation's position over the contrast between personal use and business/profit purpose: "the expression "personal use" is used in s 160B of the ITAA [ITAA 1936] in contradistinction to use for business or profit making purposes" (at 4987). Whilst this was covered in withdrawn guidance, the Commissioner of Taxation reflected on this position as one of mutual exclusivity between the two categories (ATO, 2011a).

There is, arguably, a broader set of circumstances that can apply to NFTs than to Bitcoin or other traditional cryptocurrencies. Unlike Bitcoins, NFTs such as Hashmasks and CryptoKitties do not yield the same primary objective as a means of exchange. Although NFTs can function as a means of exchange (as with any barter transaction) or speculative investment, they offer something additional: a unique right to property. If an NFT points to a digital piece of art and the intention behind holding that art was of a personal nature, the NFT would be a collectable—and so would the cryptoasset disposed of to acquire it. If an NFT points to a digital gaming item and the intention behind holding the item was for personal gaming, the NFT would be a personal use asset—and so would the cryptoasset disposed of to acquire it.[61]

Critically, it is necessary to consider the individual facts and circumstances when deciding whether something is kept or used for personal use or enjoyment (see paragraph 15 of *Favaro v FCT* [1996] ATC 4975). However, we argue that the mere act of acquiring NFTs as opposed to their real-world equivalents is not in itself sufficient to argue a lack of private use or intention. What needs to be recognised is that blockchain has created, and is evolving, a vast digital metaverse and what you may have traditionally done in your private home, such as collect Beanie Kids and Pokémon cards, is now occurring in a digitally enhanced, virtual reality. Just because something potentially has value and can be readily commodified, it is not precluded from being a collectable or personal use asset. Within the blockchain metaverse, there are communities upon communities that are created through shared interests, whether participants enter to play or to share their interest. The issue is that blockchain technology is breaking down barriers. The amassing of gaming equipment is no longer restricted to within the four walls of the game and owned collectables are no longer restricted to your childhood toy shelf. Although the *Favaro v FCT* [1996] ATC 4975 decision suggests that there is mutual exclusivity, on-blockchain participants cannot escape the notion that cryptoassets are commodified. However, this does not preclude the participants' main use of those cryptoassets being personal use or enjoyment.

There is clear uncertainty around what may, in fact, constitute artwork. The authors reflect, in particular, on the gaming environment, where there is a blurring of artistic creations within the

[59] Now withdrawn due to the particular example examined within Taxation Ruling IT 2585 (ATO, 1990) being considered a "straightforward application of the law" (ATO, 2017b, at paragraph [2]).
[60] See ATO (n.d.-g), paragraph 20.
[61] Consistent with the Commissioner of Taxation's interpretation: see TD 2014/26 (ATO, n.d.-g).

growing digital marketplace[62] and gaming activities.[63] In that sense, we could argue that a CryptoKitty could be artwork if held for its aesthetic appeal. The wording of section 108.10 of ITAA97 takes precedent over section 108.20 of ITAA97 in that we posit that if it is a collectable (e.g. artwork kept mainly for personal use or enjoyment), it is not a personal use asset (even if that asset is used within the context of gaming). However, what constitutes artwork is grey, with perhaps the utility and attributes of how the token is written into the code being a factor in determining its characterisation. For example, if an NFT code articulates that the core utility is a tool, this may sway the interpretation towards a personal use asset, whereas if the code has a core focus on visual attributes, this may sway the interpretation towards collectables. However, even this can be debated.

T. M. Evans (2019), for example, describes CryptoKitties as being "unique digital assets [that] are literary or artistic creations fixed in a tangible medium" (p. 219)—creative digital works. Adajian (2018) philosophically considers the various definitions of "art", from those provided by classical philosophers to contemporary/historical definitions. For example, Adajian (2018) speaks of Plato's interpretation being representational or mimetic (imitative) and how Hegel's incorporates beauty, being "the sensuous/perceptual appearance or expression of absolute truth." Many NFTs may be seen as such expressions or, more simply, as akin to a Beanie Baby, My Little Pony, or Pokémon card (Tepper, 2017). However, it is suggested that toys are not likely to meet the definition of artwork (C. Evans et al., 2018). Any characterisation therefore comes down to the particular use:

> Unfortunately it remains unclear whether this definition [artwork] would embrace items such as Persian carpets, tapestries and laser displays. They may come within the phrase "property of a similar description or use". Perhaps it depends upon whether the Persian carpet is on the floor or the wall. Falling back on an overused tax phrase "depending upon the facts", it is suggested that each of the items mentioned could be an artwork. (C. Evans et al., 2018, p. 51)

This can be reflected within the definition of artwork itself, being "property of a similar description or use" (ITAA97, section 995.1(1), paragraph c of the definition of artwork).

Importantly, what is well accepted is that a collectable is an item that is expected to appreciate over time. The value is likely to do so (or decline) in response to market forces rather than due to a taxpayer owning and using the particular asset (Cooper et al., 2020). This can be compared with personal use assets, which are likely to depreciate:

> A combination of policy and administrative concerns explain the separate identification of these assets and the special rules that apply to them. The policy concerns relate to the fact that most personal-use assets depreciate in value due to use. To allow a taxpayer to recognise a capital loss on the decline in value of her or his refrigerator, stove, bed, and so forth would be tantamount to allowing a tax deduction for personal consumption; that would violate fundamental principles of income taxation. The administrative concerns arise mostly because of the relatively small cost of many personal assets. Taxpayers are unlikely to retain records of cost

[62] For example, see "MakersPlace" (https://makersplace.com) for digital art collections that are backed by blockchain technology. The website describes these works as "truly unique digital creations" (MakersPlace, n.d.).
[63] For example, "Neon District" (https://portal.neondistrict.io/) offers a cyberpunk role-playing adventure, where players strategise and fight to progress through a dystopian world, collecting characters and gear: see JTobcat (2021). See also Thurman (2020).

> or sale price and it is unlikely that any paper trail will be available for auditors; in any case, the amount of tax imposed on the small gains would probably not equal the cost of administering CGT with respect to these assets. (Cooper et al., 2020, p. 104)

As such, one could argue that when CryptoKitties are held for their aesthetic qualities, rather than for gaming or speculation, does it matter that the founder describes it as a game?: "CryptoKitties is a game centered around breedable, collectible, and oh-so-adorable creatures we call CryptoKitties!" (CryptoKitties, n.d.-d). Simply put, no, it does not matter that assets may be mainly held or used in a manner contrary to their actual use: what is relevant is the intention of the purchase, as well as what they *have* mainly been kept or used for (ATO, 2002). Nor is it a single point of time that is relevant in assessing the predominant use (ATO, 2011b). One must consider the entire ownership period (ATO, 2011b). If the intended purpose of holding CryptoKitties is to sell them in a few years' time, when the value has increased, rather than for their aesthetics or gaming functions, the NFT will not be a personal use asset (nor a collectable). This was the case in *Favaro v FCT* [1996] ATC 4975.

3.3.1. Some implications for characterisation as a CGT asset

3.3.1.1. Special rules for CGT asset categories

Depending on the categorisation of the CGT asset, special rules apply, such as the threshold in treating CGT events as taxable, the inclusion or exclusion of element 3 costs, and the treatment of losses. The threshold for taxation is markedly lower for collectables—$500 element 1 (ITAA97, section 108.10), making it more likely to be caught within the taxpayer's taxable income. Relevantly, this assessment is based on element 1 costs. As such, the characterisation of transactions fees is important. For example, the Ethereum blockchain has experienced high transaction fees in the last couple of years, which can substantially increase the total cost base of an NFT acquisition. In this regard, we interpret transaction fees paid to miners as potentially being element 2 costs (ITAA97, section 110.25[3]). We interpret that this may fall within the cost of transfer (ITAA97, section 110.35[3]), in that the fee is paid in order for the miners to verify and commit the transfer of ownership onto the blockchain from one address to another. This occurs for both the acquisition and the CGT event, i.e. disposal (ITAA97, section 110.35[1]). Alternatively, when NFTs are disposed of, it may fall within the tenth incidental cost, being termination or other similar fees incurred as a direct result of ownership coming to an end (ITAA97, section 110.35[11]). As such, the transaction fees paid to miners would not contribute to the threshold.

Similarly, the turbulent and volatile nature of many NFTs (which experience hype at their release and experience significant drops thereafter) mean that many taxpayers may experience substantial tax losses. Accurate characterisation is critical, as losses from personal use assets are disregarded (ITAA97, section 108.20), collectable losses are quarantined (ITAA97, section 108.10), and general CGT asset losses are available to be applied against any capital gain or carried forward. The potential for NFTs to create substantial tax losses may pose a concern for the government over tax revenue leakage.[64]

[64] The risk of tax revenue leakage occurring was raised, for example, in the Bragg Report (Commonwealth of Australia, 2021).

3.3.1.2. Asset v. NFT creation: Part 1

Taxpayers can purchase NFTs but can also create NFTs. The creation of NFTs gives rise to further complexities from a tax compliance point of view. One key issue of note is where the metadata relates to an underlying asset off-chain. We argue that following section 109.10 of ITAA97, which interprets the time of creation of the asset, requires us to look further back than simply to the time when the NFT was minted. The date of creation can impact on the availability of the 50% discount (ITAA97, division 115.) as well as the issues of what is the asset and whether there are multiple assets.

There are, in essence, two to three points of note relating to the creation of NFTs, depending on whether the underlying asset is a physical or digital asset to begin with. For example, consider a piece of artwork by an artist who works with acrylic paints and who is not in business (e.g. a hobby artist):

> 1. The artist starts to create the piece of artwork by beginning to apply the acrylic paint to the blank canvas. This artwork is physically located in the artist's studio (item A).
>
> 2. Once completed, the artist scans the physical artwork with a high-quality scanner, and undertakes formatting and retouching work to ensure the quality of the digital version. The artwork is physically located in the artist's studio (item A) and there is a digital version on the artist's computer as, for example, a JPEG file (item B).
>
> 3. Once completed, the artist tokenises the digital version of the artwork by uploading a copy of the digital reproduction onto the blockchain platform (for example, OpenSea), creating the NFT. The artwork is physically located in the artist's studio (item A), digitally stored on the artist's computer (item B), and tokenised into an NFT on blockchain, which points to a file stored, for example, on IPFS (item C).

For items A and B, there are two separate assets, the physical artwork and the reproduction of that artwork. Both are CGT assets and could easily meet the definition of a collectable pursuant to ITAA97, section 108.10 (if held or used for personal enjoyment). Given that the CGT asset (whether a collectable or otherwise) is created and not acquired via a CGT event, section 109.10 of ITAA97 is likely to apply. This means that the CGT acquisition date is the date on which the asset's construction or creation started (ITAA97, section 109.10, item 1). For item A, this would likely be when the artist first began to work on the physical acrylic artwork. For item B, this could be the point that the artwork was scanned in order to generate the JPEG that produces a reproduction). For both items, the acquisition date is not readily available through perusal of the blockchain transactions.

The issue with item C is that it is necessary to determine whether it is a separate CGT asset distinct from item B, as discussed further below. Given that it points to the existence of a further reproduction (a copy of the file stored in a server, whether a private server or IPFS), it is likely to be a third asset of note. As such, the asset's point of creation is likely to be the time when the file (item B) was uploaded to the platform, even if the minting itself occurred at a later date.

Even if the NFT is completely on-chain, it is likely that the point of creation is contentious. Take, for example, the NFT BlockHorses (OpenSea, n.d.-a). Each horse is created by code. Interpreting section 109.10 of ITAA97, we argue that the acquisition of this NFT may point to when the code began to be created by the programmers or when they began to use an NFT standard. In both cases, it is arguable that it will not be the date of minting. Thus, it is not necessarily determinable by the ledger records on blockchain.

However, where NFTs are created due to the code within existing NFT smart contracts, the blockchain will more accurately identify the creation date. For example, CryptoKitties can "breed" from "parent" NFTs (i.e. two other CryptoKitties). Here, a new NFT is created at the time of "birth". In this case, a "birthing" fee is charged (a transaction fee).[65] This may reflect the date of creation for tax purposes.

3.3.1.3. Asset v. NFT creation: Part 2

Importantly, we argue that the different forms of the artwork would be characterised as separate CGT assets. That is, the artist has created three forms of assets: (item A) a physical artwork, (item B) a digital reproduction, and (item C) an NFT. This will impact the characterisation of the elements of cost (ITAA97, section 110.25). For example, if we see the process of tokenisation as a creation of a new asset, the minting cost could arguably be an element 1 cost (ITAA97, section 110.25[2]). However, if we see the digital artwork and NFT as a single CGT asset, the minting cost may be an element 2 or an element 4 cost (ITAA97, sections 110.25[3] and [5]).[66]

As to whether item C is a distinct asset, we argue that the process of tokenisation does not result in CGT event D1 applying, as the action of minting the NFT does not create a contractual right or other legal or equitable right in another entity (ITAA97, section 104.35[1]). You may create licensing criteria within the NFT, but you are not signing a contract, restraint of trade, or otherwise. We argue that it reflects the creation of the reproduction of the artwork (for example) and that artwork has restrictions of use akin to licensing. For example, MakersPlace (n.d.) states that:

> A unique digital creation is a digital creation (art, photograph, song..) that's been digitally signed by the creator and uniquely identified on the blockchain. In a world where anything digital can be infinitely copied, a unique digital creation can only owned [*sic*] by a single individual.

It adds that:

[65] If one of the NFTs is not owned by the taxpayer, a siring fee is also charged.

[66] It is debatable whether the cost of minting would meet the definition of incidental costs pursuant to ITAA97, section 110.35. However, the *lazy minting* could be more aptly described as a cost incurred to increase or preserve the asset's value or relating to the installation or moving of the asset (ITAA97, section 110.25[5]). Here, the minting could be described appropriately as installing the digital image on the marketplace and an act of preserving the value within the marketplace. However, given that it is only payable on sale, it is not likely to be considered incurred until the sale takes place. Identifying the cost base elements is important, as it impacts on the $500 and $10,000 element 1 thresholds applicable to collectables and personal use assets respectively. A further element 2 cost may be payable on OpenSea by the taxpayer selling the item where the taxpayer accepts an offer for sale as opposed to when the buyer simply purchases a fixed-price item (OpenSea, n.d.-c). Note that users also incur an account initialisation/set up fee, which is a one-off cost (OpenSea, n.d.-c). This is quite costly, dependent on the gas fee fluctuations. For example, it may have cost $90 in early 2021 but cost a few hundred dollars in late 2021. On Rarible, the only upfront costs are paid when you want to deploy a custom smart contract.

> Upon purchase, you'll be given the right to use, distribute and display the creation for non-commercial purposes. Since you own this unique creation, you can also re-sell the same non-commercial use rights, to the creation, on a secondary market or even directly on MakersPlace. (MakersPlace, n.d.)

As such, the NFT (item C) reflects a separately identifiable CGT asset—in particular, a collectable if held for personal use or enjoyment (ITAA97, section 108.10). Upon purchase, you can access the high-resolution digital file, which you can display on any digital device or even print out for personal use, all while knowing that you have the authentic piece verifiable on the blockchain.

There is no receipt on tokenising the NFT using the digital asset, rather a transaction cost incurred. This thereby impacts the asset's cost base.[67] At the time of analysis, OpenSea, for example, did not charge the user for minting the NFT up front but charged a 2.5% fee on the final sale price. This was referred to as "lazy minting" (OpenSea, n.d.-c).[68] As such, CGT event H2 is unlikely to apply (ITAA97, section 104.155). The reason for this is that the NFT was not transferred on-chain until the first purchase, or the first transfer is complete. Note, however, in October 2023, lazy minting ceased to be offered. Thus, these issues are restricted to minting activities prior to this date (OpenSea, n.d.-b).

On disposal, it will likely be either CGT event A1 or CGT event C1 (if, for example, the asset is destroyed). We argue that NFTs (item C) will not give rise to a situation of composite assets unless they relate to digital twins, where the NFT relates directly to a physical asset, such as the NFT assigning licensing and other rights or information (e.g. relating to quality or provenance) about item A. Where the NFT represents a form of digital twin, complex taxation issues can arise, as flagged by the UK Jurisdiction Taskforce (2019):

> Some cryptoassets are intended to represent or are linked to conventional assets external to the system, for example money or debt obligations, tangible goods or land, a share or unit in a company or fund, or a contractual right of some kind; those assets are sometimes referred to as *tethered*, *exogenous* or *off-chain*. Such an external asset is certainly property but what, if any, rights in it are conferred on the holder of the corresponding cryptoasset will depend on the contractual structure or legal rules of the system. (p. 11[33])

The contractual structure of the NFT will usually be found in the smart contract embedded in its computer code. These smart contracts can set out the terms and conditions, and any appropriate licence agreements pertaining to the use of the NFT. These, in turn, impact on the taxation treatment of the NFT. The UK Jurisdiction Taskforce considered the legal nature of smart contracts and noted, at paragraph 18, that:

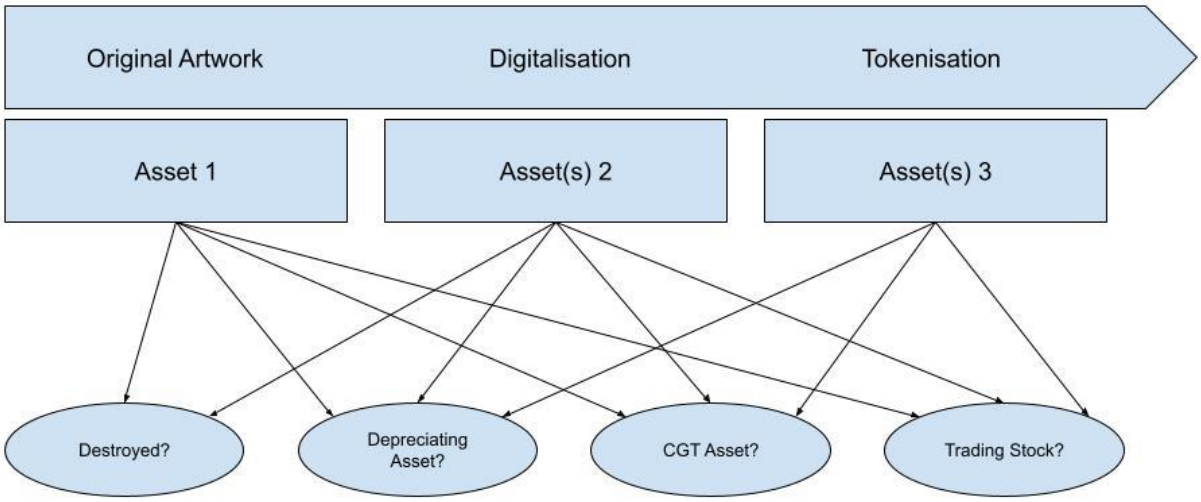
[67] As detailed in the next subsection, there are costs to mint and sell NFTs: see also OpenSea (n.d.-c).
[68] Other platforms charge up front. Please note that OpenSea stopped allowing lazy minting in October 2023 (OpenSea, n.d.-b).

> There is a contract in English law when two or more parties have reached an agreement, intend to create a legal relationship by doing so, and have each given something of benefit. A smart contract is capable of satisfying those requirements just as well as a more traditional or natural language contract, and a smart contract is therefore capable of having contractual force. (p. 8)[69]

The alternative here is that the NFT may be interpreted primarily as a bundle of licensing rights and, therefore, fall outside the scope of collectables. However, we argue that this is less likely to be the case. It is not unusual for any artwork to have certain licensing and use rights assigned, and the coding of the smart contract is the method by which they are inscribed for a particular piece of artwork, i.e. the primary or fundamental asset being created or transferred is the visual depiction or attribute encoded in the smart contract, which attaches certain rights or freedoms. The simple existence of terms and conditions does not preclude it from being artwork (although one must consider intention for it to be a collectable). Artwork can, after all, encompass an interest or right in artwork derived from NFT ownership (for example, ITAA97, sections 108.10[2]and [3]), a reproduction, or property of a similar description or use (ITAA97, section 995.1).

As such, the difference between the creation of the underlying digital asset and the minting may result in varying interpretations of what assets exist, when they exist, the cost base elements, and further considerations surrounding special rules and discounting eligibility (ITAA97, division 115). Moreover, it is also critical to appreciate what the artist then does with the original acrylic artwork (item A) and the digital version thereof (item B)—see Figure 4.

Figure 4: Possible Asset Mapping



Source: Authors' depiction

This will be discussed further in subsection 3.4 of this paper, which considers the situation in which a taxpayer is operating a business.

[69] It should be noted that the committee's recommendations about the characterisation of cryptoassets are not binding on a court of law in Australia. Nonetheless, its views were referred to at length by Gendall J in the recent NZ High Court decision *David Ian Ruscoe & Malcolm Russell Moore v Cryptopia Limited (in liquidation)* [2020] NZHC 728. See Morton and Curran (2022b).

3.3.1.4. Crypto composables and CGT "sets"

NFT standards enable add-ons, described as crypto composables, to be acquired. These cannot be separated from the main NFT but they can be transferred to other NFTs (i.e. a parent and child token):

> Imagine an in-game item like a shield, with 5 mounts for special gemstones. You find a few stones, mount them, and decide to sell the shield. You can take this composition to a decentralized market. Thanks to the composable interface all the assets can be enumerated for the sale. Only a single purchase is needed to trade the shield to it's [*sic*] new owner. Once received, the new owner can transfer the stones from the shield, perhaps equipping them to special armor where the combination is more powerful than it was with the shield. Lots to ponder. (Lockyer, 2018a)

This raises questions from a tax compliance point of view as to their treatment as separate CGT assets or, alternatively, as enhancements to existing CGT assets. When an NFT is sold, so too are the composables attached. If they are treated as separate CGT assets, their acquisition costs would be element 1 costs (ITAA97, section 110.25[2]) and they would likely be treated as collectable or personal use asset "sets" (ITAA97, sections 108.15 and 108.25 respectively). This will have implications for the $500 or $10,000 threshold respectively (ITAA97, section 118.10). If they are not treated as separate assets, they would likely be characterised as element 4 costs (ITAA97, section110.25[5]). Importantly, due to interoperability, they can be assigned to other NFTs. The purchaser can sell them as a different set. This shifting "set" will then need to be understood, as it will have varied implications, such as affecting the costs that will be included in the cost base of that set.

3.3.1.5. Loss or destruction

Can a capital gain or loss arise with respect to an NFT where the underlying asset is destroyed, such as when the private key to the wallet is lost, the private server on which the JPEG file is stored fails, some other loss of access to the metadata occurs, or the underlying physical asset is destroyed? In these circumstances, the issue that arises is whether CGT event C1 applies to bring to account the capital gain or loss in respect of the NFT. Morton and Curran (2022b) describe, in detail, the argument for cryptoassets to be lost and therefore come within the scope of CGT event C1. We look to the ordinary meaning of the words "to lose" or to be "destroyed".

The meaning of "destroyed" can be either voluntary or involuntary (ATO, 1999). Destruction can be defined as "to reduce to pieces or to a useless form; ruin; spoil; demolish" (The Macquarie Dictionary [3rd ed.], as cited in ATO, 1999, p. 2). If the metadata is off-chain, such as on a private server and the server fails, the NFT is still intact. However, it becomes seemingly meaningless, as it points to something that no longer exists. Is this sufficient for it to be considered wholly destroyed or wholly lost, rather than just damaged (ATO, 1999), where this utility is destroyed? The Commissioner of Taxation's view is that it can be a destruction of a discrete and identifiable part:

> This is not to say, however, that CGT event C1 cannot happen to a discrete and identifiable part of a CGT asset – being a CGT asset in its own right – if the part is wholly lost or wholly destroyed and not just damaged. (ATO, 1999, p. 2)

In that way, we argue that the metadata could, in practice, be seen as a discrete and identifiable part, and therefore be destroyed whilst the NFT itself remains intact. This would require apportionment of the reduced cost base in order to determine the extent of the destruction (we assume that no compensation is available). The taxpayer can then continue to own the NFT, which points to nothing more than a dead pathway with minimal value.

This assumes that there is a permanence to the destruction—i.e. if the server failed, it would need to be to the extent that the NFT would never be able to reconnect with that underlying image. If the server was only temporarily down, this would not be sufficient. This is a question of fact. Importantly, the NFT coding cannot be altered—the blockchain is immutable. As such, if a new location was provided for the image, this would still not be captured within the NFT, as the NFT would include the original link. The timing of such an event is the time that the destruction is discovered or the destruction occurred, again assuming that no compensation is available (ITAA97, section 104.20[2]).

We argue, in contrast, however, that where the underlying asset continues to exist independently, there may be two CGT event C1s. Referring to our earlier example, if it is the server that has been destroyed, the reproduction, i.e. the digital version (item B), and the NFT (item C) have been destroyed. The loss of the NFT could also occur in other ways, such as via the loss of a private key or the hacking of the account.[70]

3.4. Revenue Account

Irrespective of whether or not an NFT retains artistic or gaming merits, if a non-business taxpayer does not retain the asset for mainly personal use and enjoyment, it is a CGT asset. However, we must also recognise that the activities may amount to a business, going beyond the capital account and being considered to be on revenue account.

3.4.1. Hobby v business distinction

The normal proceeds of activities that constitute a business will take on the nature of ordinary income and are consequently assessable. The existence of a business is a question of fact. The circumstances of each taxpayer have to be compared to the criteria set out by the courts in leading cases such as *Ferguson v FCT* 79 ATC 4261 and *FCT v Walker* 85 ATC 4179. Furthermore, whether activities constitute a business is also relevant in determining whether an isolated transaction is assessable. Where an isolated transaction is a normal incident of the taxpayer's business and it gives rise to a profit, it may be assessable as a result of the decision in *FCT v Myer Emporium Ltd* 87 ATC 4363.[71] However, the courts have had difficulty in determining whether isolated transactions that are outside the normal activities of the business are assessable. The decisions in *FCT v Cooling 90 ATC 4472* and *FCT v Montgomery* (1999)

[70] This is discussed further in Morton and Curran (2022b).
[71] However, not all business receipts are assessable.

198 CLR 639 show that this can depend on how widely or narrowly the courts define the normal activities of the business.[72]

With respect to the hobby/business distinction, there has been a greater focus on the analysis of a taxpayer's crypto activities as an activity of crypto trading, i.e. the equivalent to share trading. A number of taxpayers have sought clarification about whether their trading activities amounted to a business of trading cryptocurrency.[73] TR 97/11 (ATO, 1997) is relied upon in considering the indicators of carrying on a business, including, in particular, the following factors:

- "whether the activity has a significant commercial purpose or character" (ATO, 1997, paragraph 13);
- "whether the taxpayer has more than just an intention to engage in business" (ATO, 1997, paragraph 13);
- "whether the taxpayer has a purpose" and "a prospect of profit from the activity" (ATO, 1997, paragraph 13);
- "whether there is repetition and regularity of the activity" (ATO, 1997, paragraph 13);
- "whether the activity is of the same kind and carried on in a similar manner to that of the ordinary trade in that line of business" (ATO, 1997, paragraph 13);
- "whether the activity is planned, organised and carried on in a businesslike manner such that it is described as making a profit" (ATO, 1997, paragraph 13);
- "the size, scale and permanency of the activity" (ATO, 1997, paragraph 13); and,
- "whether the activity is better described as a hobby, a form of recreation or sporting activity" (ATO, 1997, paragraph 13).

However, for NFTs, the comparison will not always be with share trading. NFTs can amount to more than just an investment vehicle.[74] As already described, NFTs can represent unlimited use cases, including artwork and gaming. As such, the business in question may be a micro business relating to the arts or retail sectors. It could be a professional artist, a gallery, or a professional sportsperson[75]—or a professional gamer. The level of activity will be more varied. An art studio may not need to have the same turnover as a share trader to be regarded as a business. Virtual property within the gaming context has previously been considered by Macrae (2008).

[72] The decision in *FCT v Myer Emporium 87* ATC 4363 also indicated that the proceeds from an isolated and unusual transaction are assessable if entered into in the course of the business for the purpose of making a profit from the transaction. See also *Greig v FCT* [2020] FCAFC 25. The second stand of *FCT v Myer Emporium 87* ATC 4363 applies where there is an assignment of a right to future income and the consideration received for the assignment is based on the present value of the income stream. In this situation, the consideration will be treated as revenue and not as capital, notwithstanding that the consideration is paid in a lump sum. However, the decision in *Westfield v FCT* 91 ATC 4234 illustrates that it does not follow from the first stand of *FCT v Myer Emporium 87* ATC 4363 that every profit made in the course of a taxpayer's business activity will be of an income nature. It is necessary to show that the taxpayer had the purpose of profit-making at the time of entering the particular transaction that produced the profit.

[73] For example, private binding rulings (PBRs) PBR7910123934223 (ATO, 2018b) and PBR5010050065720 (ATO, 2018a).

[74] See, for example, *London Australia Investment Co Ltd v FCT* (1977) 7 ATR 757; *AGC (Investments) Ltd v FCT* (1992); *Smith v FCT* [2010] AATA 576; *AAT Case 4083* [2011] AATA 545.

[75] See, for example, *Stone v FCT* (2005) 59 ATR 50; *Spriggs v FCT* [2007] FCA 1817*; Riddell v FCT* (2009) 72 ATR 148.

We can contemplate other technological developments in recent years in respect to the sharing economy, such as Airbnb, Uber and eBay, all of which may result in taxpayers either needing to recognise assessable income from personal services or, alternatively, from conducting a business. Sadiq et al. (2021) suggest that, along with the ATO's Black Economy Taskforce, the use of such facilitating websites make it difficult to argue that activities amount to a hobby.

However, for the blockchain's metaverse, as earlier described, we argue that it is not so simple. Recall that the metaverse is expanding into more and more virtual realities and communities. We argue that, again, simply entering the NFT space is not in itself enough to indicate a profit motive or intent, although we know that the lack of a profit motive is also not a line in the sand (*Stone v FCT* [2005] 59 ATR 50). Table 2 presents the list of significant business characteristics arising firstly from extant precedent[76] applied to the sharing economy as described by Sadiq et al., (2021), which we then compare with the blockchain metaverse.

Whether or not a taxpayer's activities constitute a business also has a bearing on the deductibility of losses or outgoings incurred in the course of conducting these activities. The second limb of ITAA97, section 8.1 enables a taxpayer to deduct losses or outgoings necessarily incurred in carrying on a business.[77] We now consider depreciable assets and trading stock.

3.4.2. Depreciating assets

The provisions dealing with depreciating assets are contained in division 40 of the ITAA97. A depreciating asset is "an asset that has a limited effective life and can reasonably be expected to decline in value over the time it is used" (ITAA97, section 40.30[1]). The first issue that arises is whether an NFT would fall within this definition. For example, if the taxpayer was a professional gamer,[78] would the NFTs that represented the equipment used in battle fall within division 40?

Given that the equipment is intangible, it could be argued (not withstanding obsolescence and gaming lifecycles) that it will continue to exist indefinitely and not decline in value with use. However, intangibles are explicitly included, for example, where the intangible is intellectual property, such as a patent or registered design.[79] As such, there is potential for division 40 to apply. Given that artwork and intangible intellectual property can be treated as depreciating assets, we argue that there is support for our view that an NFT can also be treated as a depreciating asset. If the NFT takes on the nature of plant[80] and it is used in the production of assessable income, it can be depreciated. The effective life could be calculated on the basis of the underlying asset that the NFT represents, although if the gamer also undertook recreational activities, rendering a portion of the use private use, this would create complexities in any claim.[81]

[76] For example, *Stone v FCT* [2005] 59 ATR 50; *FCT v JR Walker* [1985] 16 ATR 331; *Ferguson v FCT* (1979) 9 ATR 873; *FCT v JR Walker* (1985) 16 ATR 331.
[77] See *Spriggs v FCT* [2007] FCA 1817; *Riddell v FCT* (2009) 72 ATR 148.
[78] Comparable to a professional sportsperson. See *Stone v FCT* (2005) 59 ATR 50; *Spriggs v FCT* [2007] FCA 1817; *Riddell v FCT* (2009) 72 ATR 148.
[79] See ITAA97, section 40.30(2)(c). This is similarly noted by Macrae (2008) on pp. 331–332.
[80] See *Wangaratta Woollen Mills FCT* (1969) 119 CLR.
[81] Discussed in Macrae (2008) on p. 333.

Table 2: Comparing the Sharing Economy with the Blockchain Metaverse

Factor	Sharing Economy Factor	Blockchain Metaverse
Profit Intention	"pricing of the services on offer would indicate an intention to profit" (Sadiq et al., 2021, p. 247).	Tokenisation, marketisation, secondary markets, and royalty stream capabilities indicate an intention to profit.
Scale and Businesslike Manner	"the scale of the operation may be small, but this does not exclude the activity from being a business if it is conducted in a businesslike manner. Conducting the activity through a sharing economy website would be evidence of a businesslike approach" (Sadiq et al., 2021, p. 247).	Scale of activity varies, from micro to macro. Scale does not preclude characterisation of a business. Open-source nature, gamification, and experimentation, mean that activities do not necessarily reflect a businesslike manner. They can reflect gaming, community, and cultural activities. Token standards and marketplaces (such as OpenSea) enable businesslike activity to be carried out and could be evidence of a businesslike approach.
Commercial Approach	"a commercial approach is evident as the sharing economy websites require a level of detail and professionalism in the offering of the service. For example, Air BNB requires details of the facilities offered in the accommodation, and they require a certain level of standard" (Sadiq et al., 2021, p.247).	Significant choice and autonomy exist. Token standards enable interoperability and standardised features. However, platforms vary in requirements and the decentralised nature of the technology generally means that, beyond terms of use and codes of conduct, there are not detailed prescriptive requirements regarding what an NFT contains, nor the level of professionalism expected in operating or participating in these platforms. Often a platform's terms of use make it clear that it does not assure the quality or standards of works produced by creators. Whether or not a platform can be considered to be taking a commercial approach is dependent on the situation. Engaging with the metaverse requires a broader set of circumstances to exist than with, for example, Uber.
System, Organisation and Methods	"the provider is required to be organised and satisfy the requirement of the sharing economy website. For example, an Uber driver is required to meet certain requirements including a vehicle inspection" (Sadiq et al., 2021, p. 247).	Significant choice and autonomy exist. Token standards enable interoperability and standardised features. However, platforms vary in requirements and the decentralised nature of the technology generally means that, beyond terms of use and codes of conduct, there are no detailed prescriptive requirements regarding either what an NFT contains or the level of professionalism expected when operating or participating in these platforms. Often, a platform's terms of use make it clear that it does not assure the quality or standards of works produced by creators. Evidence of system and organisation will be established through the use of facilitating websites, which may extrapolate into the metauniverse. However, ad hoc activities can occur, as participants can utilise the metaverse for a variety of purposes and experimentation.
Sustained, Frequent Activity	"there may or may not be sustained and frequent activities, but when these activities are undertaken, they show many of the characteristics of a business" (Sadiq et al., 2021, p. 247).	Sustained activity may still only amount to a hobby, as participants may regularly engage with a community, such as a community of gamers. The characterisation of the interactions themselves are necessary in order to establish meaningful business characterisation from frequent activities in this space.

Source: Compiled from Sadiq et al. (2021) and extended by authors.

Recall, however, in our earlier example of the artist, that the NFT may not be the only relevant asset. There could be physical or digital assets that underly the NFT that was minted. Here, we can reflect on the Commissioner of Taxation's viewpoint that artwork can also be a depreciating asset with an effective life of 100 years (ATO, 2022b). This reflects the fact that its utility does not usually decline rapidly, if at all. As such, looking to a professional artist that reproduces their physical artwork as an NFT, the underlying artwork may be a depreciable asset (or alternatively trading stock or a CGT asset).[82]

We can extend the above artwork example and assume that an art gallery creates or acquires an NFT of digital artwork and imbeds the artwork in its web page in order to enhance the page's appearance. The purpose of the web page is to market the art gallery and generate new sales. It is suggested that, in this scenario, the NFT has taken on the nature of a depreciating asset and could be depreciated over 100 years, as the NFT represents a piece of artwork (ATO, 2022b). CryptoKitties create further curious questions, as they operate in a comparable way to livestock in their ability to "breed", but would not fall within the ordinary meaning of "animal" for the purposes of primary production (ITAA97, section 995.1). If they are not held for the purpose of trading, they could, similarly, fall within the capital allowance regime. Note here that the crypto composables will again need attention, this time with respect to separately identifiable assets that may form composite items.[83] Each situation would be unique and require individual analysis.

3.4.3. Trading stock

The provisions dealing with trading stock are contained in division 70 of ITAA97. Trading stock is defined as "(a) anything produced, manufactured or acquired that is held for the purposes of manufacture, sale or exchange in the ordinary course of business and (b) live stock" (ITAA97, section 70.10). This division specifically includes the disposable proceeds from trading stock as an item of ordinary income (ITAA97, section 70.80). Could an NFT be brought to account as trading stock? The answer is yes.

An NFT can be produced or acquired by a business for the purpose of sale or exchange in the ordinary course of business. In the above artwork example, the taxpayer created an NFT over a piece of artwork and sold it to a purchaser who keeps it for personal use. If the artist was a professional artist conducting a business, it would be trading stock:

[82] The artist may also destroy the original artwork to increase the value and authenticity of the NFT.

[83] A matter of fact and degree, considering all circumstances (ITAA97, section 40.30[4]). See also ATO (2017a), now withdrawn, which considered factors such as "use", "degree of integration", "effect of attachment" and "system" (paragraph 6). Note that the tax ruling made the following statement regarding intangible depreciating assets:

> While an intangible asset may consist of a number of rights, those individual rights cannot themselves be depreciating assets unless they are capable of separate existence and listed in subsection 40.30(2). A right that forms part of an intangible asset typically cannot be separated from that intangible asset. It follows that an entity cannot hold 'part' of an intangible asset as if it were a depreciating asset. Entities can only jointly hold (that is, have a share in), the entirety of the depreciating asset. (ATO, 2017a, paragraph 20)

> • In doing so, the taxpayer may create or acquire an NFT in respect of a piece of artwork and sell it within a business setting (e.g. gallery). Through its creation, absorption costing could be applied.[84]
> • If the NFT is sold to an art gallery, the acquiring art gallery will characterise the NFT as trading stock provided it was purchased for sale or exchange in the ordinary course of art gallery business.[85]

The purchase price would be deductible[86] and the proceeds from the sale of the NFT would be assessable as ordinary income.[87]

A further issue that will arise here is the calculation of the value of closing stock (ITAA97, section 70.35). The taxpayer has a choice of valuing closing trading stock at either cost, replacement, or market value (ITAA97, section 70.45). The taxpayer can ascertain the cost of an NFT, whether as a manufacturer or purchaser. However, replacement cost is only used if replacement items are readily available and substantially the same (ATO, 1997). A problem may also arise with respect to market value given that the NFT market is immature, volatile, and reflects unique property.[88] Furthermore, obsolescence could play a bigger part, as NFTs could easily become obsolete with changing market fads.[89]

3.4.4. Royalties

It is also relevant to note that smart contracts can enable the creators to receive a percentage of subsequent sales, and track and regulate the use of their art (Chevet, 2018). In particular, this offers the potential for a second income stream following the initial sale and with respect to the secondary markets.[90] In the context of this paper, the issue arises as to whether an NFT can give rise to royalty payments. The authors suggest that the answer is yes.

For taxation purposes, the term "royalty" is defined in two ways. Firstly, the ordinary meaning of the word and, secondly, the extended statutory meaning as defined in section 6(1) of ITAA36. The ordinary meaning of royalty is based on usage. That is, a royalty at common law is a payment made by one party to another, which gives that party the right to use or exploit

[84] See ATO (1986). See also *Phillip Morris v FCT* 79 ATC 4352. The core issue here is determining what shares of fixed and variable overheads are appropriate, as well as which direct labour costs ought to apply. Contemplating our artist example, where the creation of items A, B, and C need to be clarified, if we expand our discussion beyond NFTs to cryptoassets generally, the issue of costing mined crypto coins that become trading stock becomes critical.

[85] For the gallery in receipt of the NFTs, the concept of "on hand" becomes relevant. What can be inferred from the smart contract with respect to dispositive power (i.e. being on hand)? Consider, for example, the facts and circumstances in *All States Frozen Foods v FCT* (1990) 20 ATR 1874.

[86] According to section 8.1 and subject to the conditions outlined in section 70.15 of ITAA97.

[87] According to section 6.5 and section 70.80, and subject to timing conditions outlined in section 70.5(2)(b) of ITAA97.

[88] Although note that semi-fungible tokens may be marginally better placed here.

[89] See also ATO (1993). Similarly, due to the unregulated nature of blockchain technology and its emergent stage, it is likely to be at a higher risk of loss or destruction, such as via hacks and server breakdowns etc. See the ITAA97, section 70.115 operation with respect to compensation in the event of loss or destruction. Otherwise, the effect of section 70.35 of ITAA97 means that the year-end adjustment will implicitly account for these stock reductions.

[90] Assessable either under ITAA97, section 6.5 or section 15.20. See also, more generally, Chevet (2018). The United Kingdom has a droit de suite (subject to maximum rates for the creator), whilst the United States' first sale doctrine precludes authors from benefitting from droit de suite. Australia has the Resale Royalty Right for Visual Artists Act 2009, allowing for a 5% royalty in relation to the sale price when the price is $1,000 or more (Copyright Agency Resale Royalty, n.d.).

intellectual property of physical assets of another party, and the payment is directly or indirectly based on the usage or exploitation (*McCauley v FCT* [1944] 69 CLR 235; *Stanton v FCT* [1955] 92 CLR 630). The extended statutory definition is designed to recharacterise some types of payment as royalties when they may not be royalties according to the ordinary meaning of the term. The definition of royalty or royalties:

> includes any amount paid or credited, however described or computed, and whether the payment or credit is periodical or not, to the extent to which it is paid or credited, as the case may be, as consideration for: [for example]
> (a) the use of, or the right to use, any copyright, patent, design or model, plan, secret formula or process, trade mark, or other like property or right;
> (b) the use of, or the right to use, any industrial, commercial or scientific equipment;
> (c) the supply of scientific, technical, industrial or commercial knowledge or information…(ITAA36, section 6[1]).

The Commissioner of Taxation has taken the view that the right to use has taken on a wide meaning but that it does not include a contract for service (ATO, 1991). The purpose of this extended definition is to bring certain payments into the tax system for international tax purposes. Australia has entered into international double tax agreements that provide it with the right to impose withholding tax on royalty payments to non-residents. The section 6(1) definition is designed to expand the type of payments that are subject to a royalty withholding tax. It could be noted that section 6C of ITAA36 deems royalties that fall within the statutory definition to have an Australian source, therefore, to be subject to withholding tax when paid to a non-resident.

4. CONCLUDING REMARKS

NFTs create a broad range of complex tax issues and have the potential to make both unexpected gains and losses. Depending on their characterisation, vastly different outcomes can ensue. Particular consideration is required in regard to the special rules for collectables and personal use assets in contrast with general CGT assets in Australia; or, where the activities may amount to the carrying on of a business. Adequate record keeping beyond ledger entries of buying/selling activities is required in order to ensure that the tax implications can be adequately ascertained: i.e. the *who*, *what*, *how*, and *when*.

The Bragg Report (Commonwealth of Australia, 2021)'s push towards tax reform seeks an expansion of targeted treatment for certain categories of CGT assets or events, whilst the Board of Taxation completed a broader review of the taxation of digital assets and transactions, which was delivered to the government in early 2024. The outcomes of these reviews are yet to be published, but even if reforms are swiftly enacted, there is potential for them to occur without retroactive application and, therefore, lead to persisting issues via grandfathering, or a failure to adequately capture the pervasiveness of the crypto economy. We anticipate that there would be a continued period of complexity and challenge for taxpayers and tax practitioners alike. Any reform will need to balance the protection against revenue leakage and simplification of the compliance burden, whilst reflecting an understanding that the metaverse is an *alternate* digital universe to the one that we are so used to perceiving.

The traditional counterpart has facilitated neither the same capacity for ATO oversight or monitoring, nor necessarily led to the same level of complex tax compliance that the digital

metaverse is creating. Although collectable activities, such as CryptoKitties, appear somewhat trivial, we can, as can be seen through trading, experience a sudden shift in high value and high loss activities, which for the Australian tax system can lead to (perhaps unintended or unexpected) tax implications for taxpayers. Critically, for the next generation of "gamers", this can lead to the unintended trading of CGT assets resulting in realised taxable gains and losses. Tax compliance issues, whether consisting of the failure to disclose (intentionally or simply through lack of knowledge) or the incurrence of unexpected tax debts, could lead to both practical and social issues for the next generation embracing digitalised economies.[91]

Moreover, the interaction between on-chain and off-chain cannot be dismissed—and will not always be captured by the transparency of the technology. Blockchain offers a snapshot but cannot adequately capture the context—which is critical. With this in mind, we see, contemporaneously, a potential blurring or difficulty in conceptualising these tokens as either artwork or games, which again stems from the shift towards digitally native assets. Underpinning blockchain technology is the commodification of traditionally private—and personal—goods. Blockchain technology enables personal items to become transparent, on tax authorities' radar and, therefore, scrutinised. This is a stark contrast to their traditional counterparts—the ATO does not look through the walls of a taxpayer's house and review the dynamic blend of personal use assets, such as the knick-knacks on the walls that may include a taxpayer's gaming merchandise. The traditional tax system reflects this and recognises the balance involved in establishing the compliance burden and meeting its objectives.

Traditionally, equivalent activities would not have incurred the same sense of scrutiny. Transactional data was not so readily available to blur the lines between investment and personal usage. This reflects the inherent nature of this technology, of Web3, and of a digitalised, decentralised economy. However, the core issue here is whether the ability of a taxpayer to yield value from assets, together with the increasing ease at which commodification can occur, ought not to preclude these assets from being considered as personal use assets (or collectables)? The introduction of blockchain technology marks a clear distinction from the traditional notion of personal assets and collectables. It breaks down barriers. Buy, swap, and sell websites, such as eBay, were early examples demonstrating the ability to commodify, and gain from, personal use assets.

Within the blockchain metaverse, there are communities upon communities that are created through shared interests, whether participants enter to play or share their interests. As already noted, we recognise that *Favaro v FCT* (1996) ATC 4975 and the Commissioner of Taxation suggest that there is mutual exclusivity: with blockchain technology, participants cannot escape the inherent commodification. However, this does not preclude cryptoassets' main use from being personal use or enjoyment.

From one perspective, we recognise that NFTs have the potential to result in cracks in government revenues through the volatility in values and, therefore, the risks of tax losses. Taxpayers risk losses through participating in uncertain and novel ventures, and could succumb to scams and rug pulls. Yet, we are on the cusp of the tax system inadvertently discriminating between the digital and traditional means of being and thus risk the erosion of something that is mainly for personal use or enjoyment. We must recognise that policy reform will be truly challenged as the (crypto) environment reflects participation at a dynamic and individualistic level.

[91] This is an issue regularly raised within blockchain circles. See also Morton et al. (2023).

Part of this digitalised economy is, perhaps, the increasing capacity to yield value from what traditionally would have been seen as assets that depreciate. The ability of blockchain technology to erode the fundamental expectation of depreciation of value in personal use assets, combined with the complexity in compliance and capacity of the tax authority to scrutinise, is central to the dilemma of tax *compliance* with respect to NFTs. Recall the words of Cooper et al. (2020):

> A combination of policy and administrative concerns explain the separate identification of these assets and the special rules that apply to them. The policy concerns relate to the fact that most personal-use assets depreciate in value due to use. To allow a taxpayer to recognise a capital loss on the decline in value of her or his refrigerator, stove, bed, and so forth would be tantamount to allowing a tax deduction for personal consumption; that would violate fundamental principles of income taxation. The administrative concerns arise mostly because of the relatively small cost of many personal assets. Taxpayers are unlikely to retain records of cost or sale price and it is unlikely that any paper trail will be available for auditors; in any case, the amount of tax imposed on the small gains would probably not equal the cost of administering CGT with respect to these assets. (p. 103)

Blockchain technology—NFTs—are fundamentally challenging this premise. Blockchain technology, despite its growing virtual alternative to physicality, erodes the personal use concept through the very characteristics that yield so much attention: its transparency and capacity for scrutiny. This is a conundrum that policymakers must recognise when contemplating tax reform.

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THE CASE FOR STRONGER SCRUTINY OF THE DEDUCTIBILITY OF CRYPTO LOSSES

Vincent Ooi[1]

Abstract

Crypto losses have the potential to adversely impact the tax base, particularly if they are deducted against income from other profitable sources. There is a key question of fairness as to whether crypto losses should be cross-subsidised by income from other sources that may have nothing to do with cryptoassets at all. This article argues for stronger scrutiny of the deductibility of crypto losses at the stage of determining whether such losses can be set off against income from other sources or at the stage of the shifting of the losses across time and between companies. It explains why crypto losses are of particular concern to tax systems and considers how safeguards can be put in place at both stages to safeguard the tax base. In particular, it suggests that specific crypto legislation should be enacted in order to impose a loose "source matching" requirement on crypto losses. Crypto losses from the carrying on of a trade or business should only be deductible against crypto income. That said, there is probably no need to strictly require that the source of the crypto losses must exactly match the source of the crypto income which is sought to be deducted.

Keywords: Crypto Losses, Cryptoassets, Crypto Taxation, Digital Assets.

1. INTRODUCTION

The issue of crypto taxation has grown in importance in recent years, with many tax administrations around the world stepping up their enforcement activities and providing guidance to taxpayers in this area.[2] Thus far, the focus has very much been on the taxation of crypto gains, with not much discussion having taken place about the tax implications of crypto losses until fairly recently.[3] On the part of taxpayers, there appears to be a considerable amount of (often irrational) exuberance in the crypto markets, which is perhaps most obviously manifested in the mantra of "HODLing" (sic).[4] At the core of this "strategy" is the belief that any falls in the value of cryptoassets are temporary and the market will recover in the long

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[2] For example, see OECD (2020) and HM Revenue & Customs (2023).

[3] For example, according to King (2022), the Australian Tax Office (ATO)'s Deputy Commissioner, Tim Loh, highlighted that it would not be possible for most taxpayers to deduct their crypto losses against their income. Loh went on to state that a taxpayer who wished to offset losses against income "would have to persuade the ATO that their crypto trading was a business activity" (King, 2022).

[4] This intentional misspelling of "holding" includes an initialism representing "Hold On for Dear Life" (HODL), a "strategy" employed by some crypto investors that involves them refraining from selling their cryptoassets regardless of the paper losses suffered.

term.[5] The result of this is that crypto investors may fail to consider that they might realise their losses someday and that this could have tax implications. At the moment, the tax authorities are, understandably, more focussed on the potential of cryptoassets as a source of revenue rather than on the risks of excessive losses hurting the tax base. However, all this appears to be set to change. In November 2021, the total market capitalisation of the global cryptocurrency market alone peaked at over US$2.9 trillion (CoinGecko, 2024). By the end of 2022, this figure had fallen to just US$798 billion (CoinGecko, 2024).

This article submits that the issue of crypto losses may be a much bigger problem for tax authorities than it may first appear. If crypto losses are permitted to be deducted against income from other profitable sources, this would result in less revenue being collected from those sources, adversely affecting the tax base. While crypto losses can pose issues for tax systems when incurred by individuals and when incurred by companies, individuals pose a much smaller problem than companies in this context. As such, this article will focus more on companies. Recent developments in the crypto markets, such as the "crypto winter" have brought the issue of crypto losses to the forefront. While tax systems have always had to deal with (sometimes massive) losses, this article gives several reasons as to why crypto losses are of particular concern.

It is submitted that tax systems, as they are currently designed, may face considerable difficulties in protecting the tax base from the problem of a massive increase in crypto losses. This article considers the case of Singapore as an example, although it is anticipated that many other jurisdictions may face similar issues. In particular, former British colonies which base their income tax legislation on the Model Colonial Territories Income Tax Ordinance, 1922 (HM Government, 1922) or more broadly on the United Kingdom's tax system[6] are most likely to face similar issues, although the issues discussed in this article are likely to be common to most tax systems. At its core, the normative question that has to be addressed by national legislatures is the extent to which crypto losses should be deductible against income from non-crypto-related sources. For some legislatures, the answer might well be "not at all". While some jurisdictions may already have safeguards in place to regulate the deductibility of losses, none of these safeguards were enacted with crypto losses in mind and it is an opportune time for national legislatures to review their tax systems on this point.

2. A BRIEF INTRODUCTION TO CRYPTOASSETS AND CRYPTO LOSSES

Cryptoassets

While there is no universally accepted definition of cryptoassets, they are generally understood to be digital financial assets that are based on distributed ledger technology (DLT)(Bacon et al., 2018). Multiple computers work together to maintain records of such assets on a decentralised network, as opposed to a more common centralised system involving only one computer that is responsible for maintaining a definitive record. Cryptoassets are representations of value in the record which may be held and transferred by persons holding a

[5] Proponents of this "strategy" often point to, inter alia, the idea that certain cryptocurrencies have a "hard cap" on the supply of tokens and that this supply limitation will ensure that the value of the tokens is preserved. The maximum limit of 21 million Bitcoins that can be issued, present in Bitcoin's source code, is commonly used as an example.

[6] See Harris (2002); Thuronyi (1998) on pp. 484–485.

string of code that permits them to make changes to the record—a "private key" (Ooi et al., 2022).

Depending on the functions performed by cryptoassets, they are often divided into three main categories, although such a classification is neither exclusive nor exhaustive. Cryptoassets that are intended to be used as a medium of exchange are known as "payment tokens" (or cryptocurrencies", while those intended to be redeemed for goods or services at a later stage are known as "utility tokens", and those analogous to traditional forms of securities are known as "security tokens" (Swiss Financial Supervisory Authority FINMA, 2018). Other categories of cryptoasset include those backed by some kind of asset such as precious metals or other currencies (known as "asset-backed tokens") (Garcia-Teruel & Simón-Moreno, 2021) and units "of data stored on a blockchain (ie an immutable and transparent public digital ledger) that certifies any digital file to be unique"—known as "non-fungible tokens (NFTs) (Lim, 2021, p. 70).

Technically speaking, a "token" is a form of digital asset that is built on the infrastructure of an existing blockchain (using what are colloquially known as "smart contracts"), while a "coin" is a form of digital currency that often has its own blockchain (the term in common usage is "native to a blockchain"). As such, most cryptocurrencies are actually "coins" rather than "tokens", making the label "payment token", strictly speaking, inaccurate. That said, guidance from the tax authorities of many jurisdictions does not always draw this distinction. It is noted that, in Singapore, the term "digital payment token" is clearly defined in the tax legislation to include cryptocurrencies (see section 2A of the Singapore Goods and Services Tax Act, 1993).

Crypto Losses

As there are many different kinds of cryptoasset available, there are various ways in which gains or losses can be made on them. For example, it is possible to engage in the creation of cryptoassets through processes known as "mining'" or "forging"[7] and make either gains or losses depending on how successful one is. Alternatively, one could engage in the borrowing and lending of cryptoassets in a similar manner to what a bank might do with fiat currency and potentially make gains or losses that way. However, it is far more common for people to speculate or trade in cryptoassets, acquiring them in the hope of disposing of them later for a gain. It is this activity of buying and selling cryptoassets that will be the focus of this article and any references to "crypto losses" will largely focus on the kinds of losses that can result from the sale of cryptoassets at lower prices than those for which they were acquired.

3. THE ISSUE WITH CRYPTO LOSSES

Background: Recent Developments in the Crypto Markets

There have been several recent events in the crypto market that may have shaken the confidence of even the staunchest "HODLer" (sic). Arguably, the 2022 "crypto winter" started in May 2022, when TerraUSD (UST), a "stablecoin" (Clements, 2021) failed to maintain its 1:1 peg with the U.S. dollar, resulting in a loss of confidence in the stablecoin and a massive sell-off by investors. Stablecoins are designed to maintain parity in value with currency or assets. The most straightforward way in which to do this is to ensure that the stablecoins are backed by underlying assets. However, TerraUSD (and many other stablecoins) are "algorithmic

[7] See OECD (2020) on p. 13.

stablecoins", meaning that they attempt to maintain their peg using a combination of financial engineering, algorithms, and market incentives. This model has been heavily criticised as being inherently unstable (Ehrlich, 2022).

TerraUSD plunged to less than 1% of its value before the crash. This was not the first stablecoin failure,[8] but it had a much more catastrophic effect on the crypto markets, as TerraUSD was "the fourth-largest stablecoin" at the time, "with USD $18 billion in market capitalisation" (Briola et al., 2023, p. 1). There were considerable spill-over effects as other cryptocurrencies also suffered from a massive drop in value (Bettes, 2022; Hammer, 2022). Those suffering from collateral damage from the fallout included funds,[9] crypto lending platforms,[10] and crypto exchanges,[11] some of which filed for bankruptcy protection. In November 2022, FTX Trading Ltd, a major cryptocurrency exchange, started bankruptcy proceedings (Conlon et al., 2023). The fallout from these bankruptcies led to what has been termed as "crypto contagion", as financial difficulties spread throughout the financial system.

Why Crypto Losses are of Particular Concern

It is not uncommon for taxpayers to suddenly claim huge losses, particularly after some kind of catastrophic market crash. The issue of crypto losses should, therefore, not be a totally foreign one. The distinctiveness of crypto losses is more one of degree than of kind. As a starting point, both stock market and crypto market crashes pose problems for tax authorities where taxpayers seek to claim the resultant losses against income from other (non-market-related) sources. This reduces the tax payable on the income from these other sources and thus adversely affects the tax base.

There are a few reasons why crypto losses have the potential to do more damage to the tax base than losses from traditional financial markets. Firstly, the massive fluctuations in the value of cryptoassets and their overall volatility eclipse those of traditional financial instruments (Baur & Dimpfl, 2021). Compared to standard financial assets, cryptoassets display much higher dispersion in their returns (Elender et al., 2018), and there is a much greater divergence in the gains and losses between the various tokens. This may, at least in part, be a result of the next reason, which is the general lack of investor protection and education owing to the relative novelty of the crypto markets. Finally, crypto markets are considerably easier to access than traditional financial markets, with generally lower minimum portfolio size requirements, and trading platforms that can be accessed quickly and conveniently. At least until crypto markets stabilise and are better regulated, there is a case for saying that crypto losses should be of particular concern to tax systems.

4. TAX SYSTEMS AND HOW THEY REGULATE THE DEDUCTIBILITY OF LOSSES

The Concept of Source Matching

Tax systems can exhibit significant variation depending on the tax policy choices made by the jurisdiction in question. It is true that virtually no tax system directly subsidises taxpayers for

[8] Just about a year before, a stablecoin named "IRON" similarly failed to maintain its peg to the U.S. dollar (see Adams & Ibert (2022).
[9] For example, Three Arrows Capital (Sigalos, 2022).
[10] For example, Celsius Network (Lennon, 2022). .
[11] For example, Zipmex (Loh, 2022).

their losses. If losses are to be allowed at all, they must typically be claimed against income or capital gains. At first glance, it may appear that if crypto losses are claimed against prior or future crypto gains, there would not be any net loss to the tax base. The amount of crypto gains would serve as a natural cap to the amount of crypto losses that could be deducted. However, not all tax systems require that losses be deducted against gains from the same source (source matching). Thus, it is possible that crypto losses may be deducted against income or capital gains from other profitable sources that tax would otherwise have had to be paid on. This potentially results in adverse impacts on the tax base.

Tax systems are designed to recognise losses in order to accurately assess net income from, inter alia, trades and businesses. However, if losses from one source are claimed against income from another source where the two sources are completely independent of each other, it is questionable as to whether the losses should be cross-deductible in such a manner. This logic also applies to crypto losses. Tax systems that do not adequately prevent crypto losses from being deducted against income from other (non-crypto) sources expose their tax bases to considerable risks. There are a range of ways in which tax systems can regulate the deductibility of losses and this article evaluates the effectiveness of such mechanisms in the context of crypto losses.

A tax system which has a strict requirement of source matching across the board will certainly be well-protected against the problem of crypto losses. However, few tax systems have such a broadly applicable requirement. It is more common to have a source matching requirement in specific situations instead.

Examples where Source Matching is Required

Singapore does not tax capital gains and does not allow for capital losses to be deducted in any case. However, it is common for tax systems that tax capital gains to apply some kind of source matching requirement when it comes to the deductibility of capital losses. At the very least, there is likely to be legislation which ring-fences the part of the tax system that deals with capital gains from the rest of the general income tax regime. As such, it is often difficult to deduct capital losses against income.

In the case of Singapore, a strict source matching requirement is imposed on losses incurred from all sources other than a trade or business.[12] The source of the losses must exactly match the source of the income which is sought to be deducted against. In addition, such losses cannot be carried forward, carried back, or transferred under the group relief regime (*JD v Comptroller of Income Tax* [2006] 1 SLR(R) (SGHC) at [45], as cited in Ooi, 2019). This requirement is not present for losses from a trade or business, meaning that such losses may be deducted against income from other sources as well. Thus, the question of whether losses originate from the carrying on of a trade or business becomes a very important one, since the impact of other losses on the tax system will likely be quite limited due to the source matching requirement.

It is noted that this article focusses on tax systems that largely adopt the structure of the 1922 Ordinance (HM Government, 1922), which is a schedular system of taxation. In such a system, which head of charge a source falls under is a very important question. As in the case of Singapore, the fact that the source is a trade or business has considerable implications in terms of whether the losses incurred can readily be deducted against income from other sources.

[12] Or a profession or vocation. See Income Tax Act 1947 (Rev. Ed. 2020) (Singapore), s 10(1)(a).

However, any jurisdiction that has a global system of taxation rather than a schedular system might not find it as relevant to focus on this question, since all forms of income are generally taxable.

Provisions Governing the Shifting of Losses

In addition to the issue of whether losses can be deducted against income from other sources, there is a question as to whether they may be shifted in any way. Common ways in which losses can be shifted include carrying them forward, carrying them back, or using them for group relief. The two issues are technically distinct, since it may be possible for a tax system to permit the shifting of losses but only within the same income source, or for losses to be deducted against income from other sources, but not shifted in any other way. In Singapore, only losses from the carrying on of a trade or business can be deducted against income from other sources or shifted. This makes the question of whether losses originate from the carrying on of a trade or business more important. If a trade or business of crypto investment can be established, not only can the resulting crypto losses be deducted against income from other sources, they can also be carried forward, carried back, or utilised for group relief. Under such a tax system, the risk posed by crypto losses to the tax base increases exponentially. Mechanisms designed to safeguard the tax base from the problem of crypto losses can either be targeted at the issue of whether such losses can be set off against income from other sources ("the first stage") or at the issue of how such losses can be shifted ("the second stage").

5. DETERMINING WHETHER CRYPTO LOSSES ARE FROM THE CARRYING ON OF A TRADE OR BUSINESS

Establishing the Existence of a Trade or Business of Crypto Investing

In most jurisdictions that follow the 1922 Ordinance (HM Government, 1922), the "Badges of Trade" will generally be used to determine the existence of a trade of buying and selling of crypto assets. The "Badges of Trade" are used as a guide when attempting to determine whether or not a taxpayer has engaged in a trade. The traditional six "Badges of Trade", as laid out in the Final Report of the Royal Commission on the Taxation of Profits and Income (Cmnd. 9474) (1955) are: 1) "the subject matter of the realisation"; 2) "the length of period of ownership"; 3) "the frequency or number of similar transactions by the same person"; 4) "supplementary work on or in connection with the property realised"; 5) "the circumstances that were responsible for the realisation"; and 6) "motive. (Royal Commission on the Taxation of Profits and Income, 1955, paragraph 116). However, this set of indicia has never been thought to be exhaustive and other indicia considered in later cases have included: 7) the "accounting treatment of assets"; 8) "objects in memorandum of association"; 9) the "separate legal personality" of a "company and lifting the corporate veil"; 10) the "formation/winding up of [the] company" and 11) the "method of financing" (Teo, 1996, pp. 52–73).[13]

To determine whether or not there is a business, the common law test is whether there is a "wide group of activities that are not purely recreational, that are commercially undertaken and usually, but not necessarily, for profit" (*Mitsui Soko (MSI) Pte Ltd v Comptroller of Income Tax* [1997] MSTC 5221 [Income Tax Board of Review], p. 5225),[14] and whether this business

[13] Teo (1996)'s discussion of the Badges of Trade was cited in *NP and Another v Comptroller of Income Tax* (2007) 4 SLR(R) 599 (SGHC), paragraphs 9–10.

[14] See also the leading case by the Privy Council of *American Leaf Blending Co v Director-General of Inland Revenue* (1978) 3 WLR 985.

is "carried on" in the sense of "habitual and systematic operation, a continuity or repetition of acts or similar operations" (*DEF v Comptroller of Income Tax* [1961] 27 MLJ 55 [Income Tax Board of Review], p. 59). Looking at the two tests for the existence of a trade or business, it would appear that a taxpayer who makes at least a few cryptoasset transactions (i.e. buying and selling cryptoassets with an intention to make a profit) would readily be able to establish that they had a crypto investment/dealing trade or business.

However, Ooi (2021) has argued that, due to the volatile nature of the value of cryptoassets, the determination of whether or not there is a trade or business must also take into consideration whether the taxpayer can be said to be engaging in gambling activities, as that may negate the finding of a trade or business. Thus, in addition to the base tests for determining whether or not there is a trade or business, a further test must be applied, considering: 1) whether the "outcome [is] affected by chance or skill"; 2) the "level of skill of the taxpayer"; 3) the "level of organisation"; and 4) the "nature of the entity" (Ooi, 2021, pp. 328–330).

This complicates the analysis, not least because the case law in this area appears to suggest that a taxpayer buying and selling shares (and, by extension, cryptoassets) would find it very difficult to show that they were trading and not gambling.[15] The bars for establishing the level of skill of the taxpayer and the level of organisation, in particular, appear to be set very high. This is particularly the case where individuals, rather than companies, are involved. In Case No. D74/00, a decision of the Hong Kong Board of Review, it was held that "private individuals would rarely be considered as carrying on a business of trading and securities unless there were other associated activities" (paragraph 41)[16]

In contrast, there appears to be support for the position that a company is unlikely to be engaging in gambling activities. For example, Pennycuick J, sitting in the English High Court in *Lewis Emmanuel* reasoned that "in general it is much more difficult to bring the activities of a company within this class of gambling transactions" for "few companies can have power to enter into gambling transactions" (*Lewis Emanuel & Son, Ltd. v White [H M Inspector of Taxes])* [1963-1966] 42 TC 369, p. 378). He added that "[w]here a transaction can be brought within the scope of an authorised object - e.g., investment or dealing - one would not readily treat the transaction as having been carried out *ultra vires* in pursuit of an unauthorised object - e.g., gambling" (*Lewis Emanuel & Son, Ltd. v White [H M Inspector of Taxes]* [1963-1966] 42 TC 369, p. 378).

With respect to Pennycuick J, this line of reasoning is a little difficult to follow. The fact that whether a transaction is ultra vires as a matter of company law should have no bearing on whether or not it constitutes gambling as a matter of tax law. The modern reality is also that company constitutions are drafted to have a very broad scope, meaning that they are likely to be able to encompass almost all forms of activities and unlikely to expressly prohibit gambling. Thus, there does not appear to be much basis for a presumption that companies investing in cryptoassets are not gambling based on Pennycuick J's line of reasoning.

In determining whether a company is engaged in a trade or business of crypto investment, a holistic assessment of the situation should be conducted and the simple fact of incorporation or otherwise should not be determinative. Instead, more weight should be placed on the other

[15] See *Lee Yee Shing Jacky, Yeung Yuk Ching v Board of Review (Inland Revenue Ordinance) Commissioner of Inland Revenue* (2008) 2 HKC 436 (HKCFA) at pp. 104 and 107.

[16] See Hong Kong Board of Review, Published Decisions Vol 15, Second Supplement, Case No. D74/00 (25 October 2000), https://www.info.gov.hk/bor/en/decisions/decision-15-2nd-sup.htm.

three factors of the test, namely whether the outcome is affected by chance or skill, the level of skill of the taxpayer, and the level of organisation. A quick look at the crypto market may well suggest that some companies are engaging in such risky trading behaviour that they might be said to be gambling, regardless of what their company constitutions say on the matter.

Determining if the Crypto Investment Activities are Part of an Existing Trade or Business

Apart from the main question of whether crypto investment activities can independently constitute the carrying on of a trade or business, a sub-question that should also be considered is whether or not such activities can be considered to be part of an existing trade or business. One scenario that is likely to be common is that of an investment fund diversifying its existing investment portfolio by making crypto investments. The question is whether or not the main business of the investment fund would affect the determination of whether or not the crypto investments are part of a trade or business. A similar issue came before the Singapore Court of Appeal in *Comptroller of Income Tax v BBO* (2014) 2 SLR 609 (SGCA), which involved the determination of the nature of gains from the sale of shares by an insurance business. The court noted that prior cases had recognised that the nature of an insurance business made it more likely that the gains had arisen in the course of business and were income in nature,[17] but ultimately held that the nature of the gains was a question of fact and that no absolute or immutable principle of law applied just because the taxpayer in question was an insurer.[18] The court emphasised that it was "not discharged from its role as fact-finder solely by virtue of the fact that the taxpayer is engaged in the business of insurance or something similar" (*Comptroller of Income Tax v BBO* [2014] 2 SLR 609 [SGCA], paragraph 26).

However, the court also added that "as a matter of practicality, the nature of insurance (or similar) businesses would ordinarily give rise to an inference that the gains concerned arose in the course of trade or in the operation of business in carrying out a scheme for profit-making" (*Comptroller of Income Tax v BBO* [2014] 2 SLR 609 [SGCA], paragraph 40). Thus, the question arises as to what kinds of primary business would be capable of giving rise to such an inference in the context of crypto trading. For example, would it be sufficient for a fund manager to establish that it was carrying on a business of crypto trading due to the nature of its primary business? What if a fund manager with a primary business in trading in stable cryptocurrencies suddenly decided to invest in very volatile tokens instead? Would the investments in the very volatile tokens be considered to be part of the primary business or a secondary activity of gambling?

Unfortunately, the case law does not provide any clear answers, but it is arguable, at least, that in applying the tests to determine whether or not an activity can constitute a trade or business, or part of an existing trade or business, the other activities of a taxpayer should be taken into account as well. It is submitted that, while an existing trade or business can be a factor militating towards a finding that crypto investing is part of the primary business, it is, nevertheless, only one factor that should be considered as part of the test for determining whether or not a company is engaging in gambling.

[17] See *Comptroller of Income Tax v BBO* (2014) 2 SLR 609 (SGCA) at paragraphs 20–26, in particular, where *Commissioner of Inland Revenue v Sincere Insurance and Investment Co Ltd* (1973) HKCU 47 is cited.
[18] See *Comptroller of Income Tax v BBO* (2014) 2 SLR 609 (SGCA) at paragraph 25.

Is There an Additional Need to Ring-Fence Crypto Losses?

As noted above, in Singapore, once a taxpayer establishes that crypto investment activities constitute a trade or business, all the losses from this source may quite freely be deducted against income from other sources. There would be no further need to establish that the sources of income were connected to crypto activities in any way or that crypto activities were part of the trade or business generating that income. Furthermore, such crypto losses might be shifted by being carried forwards, carried back, or used for group relief.

Based on the tests for establishing the existence of a trade or business of crypto investing discussed above, there is a real possibility that many companies will succeed in showing that they were indeed engaged in such a trade or business, exposing tax systems to the problem of crypto losses adversely affecting the tax base. National legislatures may be of the view that this is somewhat unfair and that crypto losses should be ring-fenced such that they can only be claimed against income from sources that are connected to cryptoassets in some way. Otherwise, it might be argued that the crypto losses are being cross-subsidised by tax savings from other non-crypto-related sources of income. Such a cross-subsidy has the potential to adversely affect the tax base and may even encourage taxpayers to engage in riskier crypto investments if their losses can be claimed against their other sources of income.

How Should Crypto Losses be Ring-Fenced?[19]

There are a variety of methods by which crypto losses may be ring-fenced from income from other sources such that they will not be cross-subsidised. These methods can apply generally to all kinds of losses ("generally applicable methods") or specifically to crypto losses ("crypto-specific methods"). Many potential generally-applicable methods have already been discussed above and include: 1) restricting the deductibility of capital losses against income; 2) requiring source matching for capital losses to be deductible against income (or against capital gains); 3) restricting the deductibility of losses to income from the same head of charge; and 4) requiring source matching for losses. However, it is noted that making changes to the tax system that apply generally across all kinds of losses is a decision that must be carefully considered as there may well be unintended consequences. Ultimately, it may be more feasible to apply crypto-specific methods that are more targeted and present a lower risk of destabilising the tax system instead.

For crypto-specific methods to be successfully applied, it is first necessary to draft a definition of "crypto losses" that is broad enough to cover all relevant crypto-related losses. This is by no means an easy task, as there is no uniformly and universally accepted definition of a cryptoasset. Recent international initiatives relating to the exchange of information about cryptoassets may provide a good starting point on which to base such a definition. Section IV(A)(1) of the Crypto-Asset Reporting Framework (CARF) rules of the Organisation for Economic Cooperation and Development (OECD) defines a cryptoasset as "a digital representation of value that relies on a cryptographically secured distributed ledger or a similar technology to validate and secure transactions" (OECD, 2022, p. 73). The European Commission's Directive on Administrative Cooperation (DAC8) defines a cryptoasset as "a digital representation of a value or of a right, which is able to be transferred and stored

[19] The author is particularly grateful to the anonymous reviewers for their suggestions in relation to this part of the article.

electronically, using distributed ledger technology or similar technology" (European Commission, 2023, paragraph 5).[20] If a broader definition is sought, the Financial Action Task Force (FATF), uses the term "virtual asset" instead, defining this as "a digital representation of value that can be digitally traded, or transferred, and can be used for payment or investment purposes" (FATF, 2021, p. 109).

Having defined "cryptoassets", "crypto losses" can simply be defined as any losses incurred due to the realisation or accrual of a decrease in the value of a cryptoasset, whether directly or due to the operation of a cryptoasset derivative. This would be an intentionally broad definition which takes into account the possibility that taxpayers may not directly invest in cryptoassets but may enter into cryptoasset derivatives instead. With "cryptoasset" and "crypto losses" defined, the various crypto-specific methods can then be considered. Many of these methods will be variations of the generally applicable methods that are expressly defined to only apply to crypto losses. Thus, the methods include: 1) restricting the deductibility of crypto capital losses against income; 2) requiring source matching for crypto capital losses to be deductible against income (or against capital gains); 3) restricting the deductibility of crypto losses against income from the same head of charge; and 4) requiring source matching for crypto losses.

The current position in Singapore of allowing (crypto) losses to be freely deducted against income from other sources once it has been established that those losses are derived from a trade or business (in crypto investment activities) may be too generous in the context of crypto losses. However, requiring the kind of strict source matching that prescribes that the source of the losses must exactly match the source of the income which is sought to be deducted against may be considered to be too strict. Under such a requirement, a loss resulting from trading in cryptocurrency A would not be deductible against any income resulting from trading in cryptocurrency B. It is submitted that tax systems may well wish to consider a middle ground between these two extremes.

A potentially acceptable balance may lie in applying the source matching requirement more loosely. In a tax system that taxes capital gains, crypto capital losses should be deductible against crypto capital gains only. In a tax system that does not tax capital gains, crypto revenue losses should be deductible against crypto income only. This should not have the effect of making loss deductions more generous than under the existing tax system. Thus, for example, losses incurred from all sources other than a trade or business should still be subjected to strict source matching. However, crypto losses from the carrying on of a trade or business should be deductible against crypto income from other sources without the need for both sources to be exactly matched. This would ensure that taxpayers are not unfairly taxed on their crypto income while being denied deductions on their crypto losses, but also ensure that crypto losses cannot be freely deductible against income from non-crypto sources.

6. PROVISION GOVERNING THE SHIFTING OF LOSSES

Common Ways in Which Losses May be Shifted

The previous section discussed mechanisms regulating the issue of whether crypto losses can be offset against income from other sources ("the first stage"). This section will discuss mechanisms regulating the issue of how such losses can be shifted ("the second stage").

[20] Recital 5 of the proposed DAC8. See European Commission (2022), paragraphs 16–17.

Common ways in which tax systems allow losses to be shifted include the carrying forward of losses, the carrying back of losses, and the use of group relief.

If crypto losses are allowed to be carried forward, they may affect future revenue collection, since they have the potential to absorb future income (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 37[3]). If the source matching requirement for crypto losses applies at the first stage, such losses will not be deductible against income from other non-crypto sources. However, in the absence of such a requirement, if crypto losses are allowed to be carried forward, the risk of crypto losses being cross-subsidised by future income from other sources will be greatly increased. In some cases, the source of the losses may have completely ceased to exist by the time that the losses are claimed in a subsequent year of assessment (YA) (e.g. where a taxpayer stops investing in cryptoassets).

If crypto losses are allowed to be carried back, they can be used to absorb income from other sources which may have been generated even before the losses themselves were incurred (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 37D[5]). Once again, the source matching requirement for crypto losses at the first stage will determine the risk of crypto losses being cross-subsidised by income from other non-crypto sources. A highly questionable outcome would be one in which crypto losses are deductible against income from non-crypto sources that was generated even before the taxpayer started any crypto-related activities in the first place.

In the case of group relief, crypto losses can be transferred to, and utilised by, other related/group companies (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 37B[6]). Many "group relief qualifying provisions" are drafted on the basis of common shareholding between the members of the group of companies (tested by looking at beneficial ownership and beneficial entitlement). Group relief provisions may affect revenue collection because they allow the losses of one company to be deducted against the income of other members in the group. This creates a real risk of "sale of losses", where a company may be purchased solely because, by becoming a member of the group, its losses can be used to effectively reduce the income of the other members.

Many tax systems will already include some kind of safeguard against this because this is a classic tax avoidance technique. Once again, the risk of this occurring for crypto losses will depend on whether or not the source matching requirement is applied at the first stage. In the absence of such a requirement, there will be a high risk of crypto losses being "sold" or more generally being deducted against income from other non-crypto sources (of different companies).

Possible Safeguards

There are a range of possible safeguards that can be in place to restrict the shifting of losses at the second stage. In Singapore, the main safeguard for the carrying forward of losses is the "shareholding test". In order to claim such unabsorbed losses, the Comptroller of Income Tax must be satisfied that the shareholders of the company remained substantially the same on the last day of the year in which the loss was incurred and the first day of the year of assessment (YA) in which the loss would be deductible (see *Income Tax Act 1947 [Rev. Ed. 2020*][Singapore], section 37[12]). Generally, this means that not less than 50% of the total number of the issued shares of the company must be held by or on behalf of the same shareholders on both dates (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section

37[14]). Unabsorbed losses can be carried forward in full for an indefinite number of years (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 37[3]). However, countries such as Malaysia have imposed additional safeguards by limiting the number of years for which losses can be carried forward. Losses incurred prior to YA 2019 could only be carried forward for a maximum of seven consecutive YAs (see *Laws of Malaysia, Act 812, Finance Act 2018*, section 13) and losses incurred from YA 2019 could be carried forward for a maximum of ten consecutive YAs commencing immediately following the relevant YA (see *Laws of Malaysia, Act 53, Income Tax Act 1967*, section 44[5F]).

As for the carrying back of losses, Singapore imposes a range of restrictions. The primary limitation is that the maximum amount of qualifying deduction (which includes allowances, losses, and donations) that can be carried back and deducted for any YA cannot exceed S$100,000 (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 37D[5]). At the current headline corporate income tax rate in Singapore of 17%, this means that the maximum tax benefit that can be derived from the carrying back of losses per YA is S$17,000. Thus, the potential for this adversely affecting the tax base is probably limited at best. Further restrictions include the fact that losses can only be carried back to the immediately preceding YA, i.e. for one year only (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 37D[1]). A similar shareholding test applies (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 37D[12-13]).

For group relief, Singapore permits one member of a group of companies—the transferor company—to transfer losses to another member of the same group—the claimant company (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 37B[1]), if certain conditions are met (Ooi, 2017). According to Ooi (2017), two Singapore companies are members of the same group if: 1) "at least 75% of the total number of issued ordinary shares in one company" are "beneficially held, directly or indirectly by the other company" (p. 9);[21] or 2) "at least 75% of the total number of issued ordinary shares in each of the two companies are beneficially held, directly or indirectly, by a third Singapore company" (p. 9).[22] Where a company joins or leaves the group, the amount of losses that may be transferred is prorated accordingly based on the continuous period for which the shareholding condition is met up until the last day of the basis period of the YA in question (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 37B[9]). There is no express requirement that the shareholdings must be maintained, but this will naturally affect the prorating of the amount of losses that may be transferred. Other countries are less generous when it comes to group relief. For example, in Malaysia, a surrendering company may only transfer losses incurred in its first three years of operations.[23] Furthermore, only 70% of the losses of the surrendering company may be transferred, as opposed to 100% in Singapore.

[21] Section 37B(5) of the *Income Tax Act 1947 (Rev. Ed. 2020)*(Singapore) prescribes a mechanism for the computation of indirect ownership of shares.

[22] See section 37B(5) of the *Income Tax Act 1947 (Rev. Ed. 2020)*(Singapore). Ooi (2017) also states that there is an additional requirement that a company which beneficially holds the abovementioned shares must also be "beneficially entitled to at least 75% of any residual profits of the other company […] available for distribution to that company's equity holders" and of the residual assets of the other company available for distribution to that company's equity holders on a winding up (p. 9). See section 37B (4) of the *Income Tax Act 1947 (Rev. Ed. 2020)*(Singapore).

[23] See sections 44A(1) and 44A(1A) of the *Laws of Malaysia, Act 53, Income Act 1967*. This might be four years instead if the first basis period of the surrendering company since commencing operations is less or more than twelve months and the second basis period consists of a period of twelve months. In addition, there are transition provisions for surrendering companies that first commenced their operations in YAs 2015-2017 (see section 13 of *Laws of Malaysia, Act 812, Finance Act 2018*).

Analysing the Safeguards

The main concern is that while safeguards at the second stage may disincentivise the shifting of losses to cross-subsidise crypto losses, they still leave room for such cross-subsidisation of crypto losses at the first stage. If safeguards are absent at the first stage, it is still possible for crypto losses to be deducted against income from other non-crypto-related sources. If safeguards are in place at the second stage, they simply restrict the extent to which crypto losses may be deducted beyond the YAs in which they were incurred and against the income of other companies.

In contrast, if effective safeguards are in place at the first stage, they will significantly restrict the deductibility of crypto losses, meaning that there will not be many losses to shift in the first place. Thus, tax systems should concentrate on ensuring that the safeguards in place at the first stage are carefully and effectively crafted, with safeguards in place at the second stage being only a secondary (and more minor) concern.

It is also possible to utilise a "combined" test, which provides a safeguard that can operate at both stages. Tax systems that wish to ring-fence crypto losses such that they can only be deducted against crypto income can consider enacting a "same business test" that already generally applies to the carrying forward of allowances (see *Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 23[1]). Such a test generally requires that the taxpayer "continues to carry on the trade, profession or business in respect of the gains or profits of which the allowance falls to be made" (*Income Tax Act 1947 [Rev. Ed. 2020]*[Singapore], section 23[1]).[24]

7. CONCLUSION

This article submits that tax authorities and national legislatures should step up their scrutiny of the deductibility of crypto losses. Apart from the sheer volume of potential crypto losses that may adversely affect the tax base, there is a more fundamental question of fairness as to whether crypto losses should be cross-subsidised by income from other sources that may have nothing to do with cryptoassets at all. There are numerous options for safeguards at both the first and second stages that should be carefully considered. This article submits that safeguards at the first stage are of particular importance and proposes that a loose source matching requirement should apply to crypto losses. Crypto losses from the carrying on of a trade or business should only be deductible against crypto income. However, there is no need to require that the source of the crypto losses must exactly match the source of the crypto income which is sought to be deducted. Crypto losses not incurred from the carrying on of a trade or business should continue to be subject to strict source matching. Whatever policy decisions are made by the relevant authorities, we can be sure that, moving forward, the problem of crypto losses is only going to grow in importance.

[24] The corresponding test in Malaysia is contained in schedule 3, paragraph 75 of *Laws of Malaysia, Act 53, Income Act 1967* and appears to be stricter, in that the allowances cannot be deducted against the income from a different source (see the decision of the Malaysian Federal Court in *Director-General of Inland Revenue v A L B Co Sdn Bhd* [1975] 2 MLJ 26).

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CHALLENGES THAT CRYPTOASSET ANONYMITY CREATES FOR TAX ADMINISTRATION

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Abstract

The virtual currency market has grown significantly worldwide in the last decade. Innovations have made it necessary for the concept of cryptocurrencies to be broadened to include so-called "cryptoassets". Countries differ in their legal frameworks for the taxation of cryptoassets and in how they address the challenges that cryptoassets create for tax administration. The pseudonymity of cryptoassets presents the biggest challenge when tax administrations are attempting to properly enforce tax compliance and counter tax evasion. This article provides an overview of the existing legislation addressing the pseudonymity of cryptoassets with an emphasis on the European Union (EU)'s Anti-Money Laundering Directive 5 (AMLD5) and the United States' Foreign Account Tax Compliance Act (FATCA). It argues that both legislations have limitations in respect of their coverage of all stakeholders involved in the cryptoasset market, and provides insights into recent public consultations by the Organisation for Economic Development (OECD) and proposed legislation by the EU on the matter. Finally, it raises the question of whether or not a coordinated effort at the global level would be the best approach to take in order to address a problem that is common across tax administrations around the world: the pseudonymity of cryptoassets.

Keywords: Cryptoassets, Cryptocurrencies, Anonymity, Tax Administration, AMLD5, FATCA.

1. INTRODUCTION

1.1. The Problem

Since the invention of the first cryptocurrency, Bitcoin (BTC) in 2008, the virtual currency market has expanded worldwide. More than 10,000 cryptocurrencies exist today, with Ethereum (ETH), Ripple (XRP), Tether (USDT), BNB (BNB), and Solana (SOL) being among the best known.[2] There has been massive growth in the adoption of distributed ledger technologies in recent years and, naturally, new inventions and innovations have become a reality. The scope of the market is much wider than it was and includes so-called "cryptoassets". There are multiple definitions of the term "cryptoasset", with the European Central Bank (ECB), the International Organization of Securities Commissions (IOSCO), the Financial Stability Board (FSB), the European Securities and Markets Authority (ESMA), and the European Banking Authority (EBA) each having its own definition (Houben & Snyers, 2020). However, in general, use of the term allows cryptocurrencies and so-called "tokens" to fall within a common category.

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[2] Statement made on the basis of data derived from https://coinmarketcap.com/ Last visited on 31 August 2024.

In recent years, the number of cryptoasset transactions taking place in the world has increased dramatically. Cryptoassets are now used both as a means of payment and a means of investment. Their use as a means of investment is of particular public interest as this has resulted in the generation of large profits for their owners.

One of the problems that can be observed at country level is the fact that the cryptoasset market is only regulated to a limited extent and, in many cases, does not have a specific legal or regulatory recognition. In the case of cryptocurrencies, this happens because they are not a legal tender or equivalent, and are not considered to be foreign currencies as they do not have a specific central and territorial issuer that supports them. In most cases, local central banks do not support cryptocurrencies and have no power to regulate them.

Cryptoassets are based on cryptographic technologies that allow their issuance, validation, and registration in a decentralised manner. Although cryptocurrencies are not legal tender and do not have intrinsic value, they have begun to be used for commercial exchanges. Consequently, the acquisition, sale, use, or possession of cryptoassets is of undeniable tax significance. One of the main difficulties faced by the tax administration is the relative anonymity that cryptoassets such as Bitcoin offer to their users. This is because blockchain technology allows the user to hide their real identity behind a pseudonym, thanks to the double key system (consisting of a public and a private key) on which it is based. The anonymity provided by cryptoassets presents an important challenge for the tax administration, which must adapt the schemes and resources that it has traditionally used so that it can use them in its new fight against concealment and tax fraud. The concealment and fraud take place in an area beyond its control—that is, on a peer to peer (P2P) network of private users whose identity is unknown, and where there is no intervention by a centralised authority (such as the banking system, for example) which would be able to provide information to the tax administration.

There is a lack of doctrinal opinion, or extended judicial or administrative jurisprudence, that discusses or clarifies these points. There is also no specific regulatory framework in each country that allows for the specification and classification of the operations and activities carried out with cryptoassets within the current tax legislation. The lack of consensus when dealing with the anonymity behind cryptoassets has generated discussion, caused controversy, and raised a number of questions for both tax administrations and those investing in this type of digital and virtual asset.

There is currently no consensus at the country level about how to solve the problem generated by anonymity in cryptoassets when attempting to determine and control taxes, although this the most important problem to solve if tax evasion is to be minimised.

From a technological perspective, this anonymity prevents cryptoasset transactions and operations from being properly monitored. The traditional system used by tax administrations to obtain information, which ensures tax compliance by taxpayers, is based on a centralised structure of intermediaries. These are banks, employers, and various institutions that are obliged to obtain information from taxpayers and transmit it to the tax authority, so that the tax authority has sufficient information to demand compliance and impose fines, add interest, or even initiate legal action if the taxpayer does not voluntarily comply with their tax obligations within the relevant term. The emergence of cryptoassets disrupts this scheme.

The anonymity provided by cryptoassets to their users makes it difficult, if not impossible, for tax administrations to be able to ascertain their true ownership. This undermines the current

protocols for obtaining information and leaves tax administrations without their most effective tool for ensuring tax compliance, whether that compliance is voluntary or coercive.

The research question that this article will try to answer is the following: What challenges does cryptoasset anonymity create for tax administrations?

From an anonymity perspective, the challenges presented at the cryptoasset level are the same as those presented at the cryptocurrency level (the most popular cryptoassets), which allows us to focus this article from a cryptocurrency perspective and, at the same time, to extrapolate the conclusions to cryptoassets.

The author aims to contribute to the literature by providing a detailed investigation and analysis of the problems that cryptoasset anonymity generates from a tax administration perspective. Anonymity is the major issue related to the cryptoassets market when it comes to tax evasion. If a tax authority cannot access information about the parties involved in a cryptoasset transaction because of the pseudonymity of those parties, it cannot take action over any tax compliance breach or tax evasion that occurs. This could create a tax gap.

The research question will be addressed by analysing: the main concepts behind blockchain technologies; the different treatments that countries give to cryptocurrencies within their regulatory approaches; the theoretical framework, definition, and origin of cryptoassets; cryptoassets' characteristics and uses; the types of cryptocurrency available; who the participants in the cryptocurrency market are; the regulations in force in the European Union and in the United States regarding the anonymity behind cryptocurrencies; the difficulties that anonymity in cryptocurrencies generates from a tax perspective; current public consultations, and potentially forthcoming legislation and guidance from the European Union and the OECD with regard to the matter; and topics that could be interesting to investigate in any future research conducted in order to enrich the debate from a public policy perspective so as to solve an important problem—how to fight tax evasion involving the use of cryptoassets.

This article begins with a discussion about prior research into cryptoassets and taxation, with a focus on cryptocurrencies. This is followed by a detailed explanation of the theoretical framework and environment of blockchain, cryptoassets, and cryptocurrencies (section 2). Section 3 clarifies the actual regulatory and taxation approaches that some countries have adopted, and discusses the approaches that the European Union and the United States have taken in respect of cryptocurrencies and their anonymity. In addition, section 3 provides an overview of recent and proposed public consultations and legislation, such as the EU's Directive on Administrative Cooperation 8 (DAC8) and 6th Anti-Money Laundering Directive (AMLD6), and the OECD's Cryptoasset Reporting Framework and Amendments to the Common Reporting Standard. Section 4 broadens the discussion and considers which topics could be interesting to investigate in future research in order to enrich the debate from a public policy perspective. Finally, section 5 provides some conclusions.

1.2. Prior Research into the Taxation of Cryptoassets

Prior research into the taxation of cryptoassets has focussed primarily on the nature of cryptocurrencies from legal and financial perspectives, and on whether or not they should be considered to be fiat money or financial assets for regulatory purposes. A great deal of attention has been paid to the tax consequences that these different approaches may have. To date, the vast majority of studies have investigated Bitcoin and its treatment by various countries in

respect of its character either as property, or as private money or foreign currency, and/or the tax consequences of conducting transactions with cryptocurrencies, and how to determine the tax costs and value of cryptocurrencies at the time that they are alienated, sold, or exchanged in order to determine whether there was a capital gain of a greater value.

Bal (2013), for example, examines the phenomenon of virtual money, looking at the tax consequences arising from its use and distinguishing it from electronic currency. The study discusses two prominent virtual currency schemes: Bitcoin and virtual world money. The author outlines the most common income tax problems faced by virtual currency users and regulators in order to present the tax implications of conducting virtual currency exchanges. The main research question is whether or not virtual currency constitutes taxable income (Bal, 2013).

The same author details Bitcoin's main characteristics and discusses "whether Bitcoin should be regarded as money in the economic and legal sense, and whether income in the form of virtual currency should be subject to tax" (Bal, 2014a, p. 1). The study reflects on whether or not it would be a "right and good policy" to tax virtual income (Bal, 2014a, p. 1). The author bases their analysis on "the main four axioms upon which a tax system ought to be based" as detailed "by Adam Smith in *The Wealth of Nations*", i.e. "equity, certainty, convenience and efficiency" (Bal, 2014a, p. 9). They state that there is a strong case against taxing virtual income because of "illiquidity, valuation and compliance difficulties" (Bal, 2014a, p. 15). One of the key reasons why the author arrives at this conclusion is that, in the case of Bitcoin, the "online marketplace is an anonymous marketplace where individuals can easily conceal their identities and locations" and, as a result, "tracking virtual income of taxpayers is well beyond the capacity of tax authorities" (Bal, 2014, p. 15). Bal (2014a) states that, in this case, "voluntary compliance is not a workable solution since taxpayers have little incentive to report something that is not likely to be detected" (p. 15). The author concludes, therefore, that "the general principles of taxation imply that virtual income should remain tax free" (Bal, 2014a, p. 15).

Bal (2015) examines "the treatment of Bitcoin for [Value-Added Tax] VAT and financial reporting purposes" from a regulatory perspective, particularly in relation to the European Union (p. 1). The main research questions posed in the study were "whether exchanges of bitcoins constitute taxable supplies under the VAT Directive (2006/112) [footnote excluded] and, if so, whether a VAT exemption may be applied" (Bal, 2015, p. 1). The author concludes that the "tax authorities of different countries have diverging views on whether bitcoin transactions are subject to VAT" (Bal, 2015, p. 10) and that, "in many EU Member States, such transactions have been declared exempt" (Bal, 2015, p. 3).

Bal (2019) provides an overview of virtual currency regulations at that time in Australia, Germany, the Netherlands, the United Kingdom, and the United States, and proposes "a methodology for creating an effective regulatory framework for the taxation of virtual currencies" (p. 219). This methodology consists of four steps: (i) conducting "a data driven assessment" which includes investigating the concept of virtual currencies, their definitions, and their usage in order to regulate them (Bal, 2019, p. 225); (ii) selecting a "method of regulation"—the author highlights the differences between approaching this by means of legislation and by supplementing legislation with more detailed administrative guidelines (Bal, 2019. p. 225); (iii) ensuring that the regulatory framework is sound from an informational and communicational perspective—tax administrations should "provide comprehensive guidance to help taxpayers comply with their tax obligations resulting from the use of virtual currency" (Bal, 2019, p. 228); and (iv) ensuring that a sound approach to monitoring and governance is

taken—the author briefly highlights the threat that anonymity generates for tax compliance, recommends that the compliance effort is focussed on a small number of exchange service operators and wallet providers, and suggests that these efforts should be aligned with the Anti-Money Laundering Directives.

A recent study conducted by the OECD (2020) provides an overview of the approaches taken to cryptoasset taxation (in the form of income tax, value added tax [VAT], and property taxes) by multiple countries. The report states that "G20 Leaders and Finance Ministers have asked international organizations to analyse the risks created by crypto-assets", since they are "in rapid development and tax policymakers are still at an early stage in considering their implications" (OECD, 2020, p. 3).

As previously discussed, most of the previous research into cryptocurrencies has been based on analyses of Bitcoin and its tax qualification. This article focusses on a broader concept by analysing cryptoassets and the tax administration issues related to the anonymity that surrounds them.

2. THE THEORETICAL FRAMEWORK OF BLOCKCHAIN AND CRYPTOASSETS

2.1. What is Blockchain?

Blockchain is the technology behind the large variety of cryptoassets currently in circulation. It is a distributed, decentralised, secure database in which transaction blocks are signed with digital signatures using private keys, and functions as a large ledger of accounts in which each entry is called a block (Bal, 2014a; Hellani et al., 2018). It becomes a chain because each new block is linked and encrypted with the previous block to ensure that transactions are private and secure (Natarajan et al., 2017). Each block has a timestamp which details the day and time that the record was created and which cannot be modified retroactively. There must be several users within the chain who are responsible for verifying those transactions in order to validate them and so that the block corresponding to each transaction is recorded in that large ledger of accounts (Houben & Snyers, 2018).

Contrary to popular belief, blockchain technology does not need to be private and anonymous. In the specific case of cryptocurrencies, this was the design that was implemented, but blockchain applications without anonymity, and where all information is public, can exist.

2.2. The Definition and Origin of Cryptoassets

According to a study conducted by the European Parliament, a cryptoasset is

> a digital asset that:
>
> (a) is recorded on some form of a digital distributed ledger secured with cryptography,
> (b) is neither issued nor guaranteed by a central bank or public authority, and
> (c) can be used as a means of exchange and/or for investment purposes and/or to access a good or service [footnote removed]. (Houben & Snyers, 2020, p.17)

In general, scholars exploring cryptoassets differentiate between cryptocurrencies and tokens. A cryptocurrency is a virtual or digital currency which, unlike fiat money, is not in a physical form (such as paper or metal) but which still has the characteristics of a currency, such as being a means of exchange, a unit of account, or a store of value (Bal, 2014a). Cryptocurrency's origins begin with Satoshi Nakamoto, a pseudonym for one or more still unidentified people, who proposed a new electronic money system—Bitcoin—that would allow direct payments to be made between users without the intermediation of a financial institution (Nakamoto, 2008). No traditional regulatory body issues, administers, or guarantees a cryptocurrency so these functions are only fulfilled by the mutual agreement of the cryptocurrency's user community. A completely decentralised system is utilised for transfers between users, with no intermediaries involved, and the generation and use of the cryptocurrency is based on cryptographic principles so as to guarantee the safety and protection of the operations (Grinberg, 2011) .

Tokens, on the other hand, are cryptoassets that "offer their holders certain economic and/or governance and/or utility/consumption rights [footnote removed]" (Houben & Snyers, 2020, p. 18). They are digital representations of rights or interests to products, services, or assets (ESMA, 2019), and it is common to see the issue of tokens to raise funds for different projects or start-ups (Annunziata, 2020). There are subcategories of token, such as utility tokens, security tokens, and non-fungible tokens (NFTs) which, for the purposes of this article, all share the same properties from an anonymity perspective.

2.3. Why Do People Use Cryptoassets?

Among the questions that have been asked by regulators worldwide is why users choose to utilise cryptoassets instead of traditional currencies or securities. Are cryptoassets better payment or investment alternatives than other currencies or securities? What advantages do cryptocurrencies offer in terms of their transaction and payment systems that are not provided by traditional markets? What advantages do cryptoassets have in terms of investment that cannot be found in the financial market for stocks, bonds, or other asset classes?

There is a great variety of cryptoassets. Although some are similar to each other, there are some variations in terms of the way in which they are structured, the technology used for their operation, and the degree of anonymity involved.

Cryptoassets can be compared using a number of parameters: their decentralised nature; whether they run on permissioned or permissionless technology; whether or not they were initially offered by an identifiable person or entity; whether or not they are electronically traded; whether or not they can be directly converted into fiat money; whether or not they can be used as a medium of exchange; and whether they are anonymous or pseudonymous (Houben & Snyers, 2018). Four common properties that have probably been key to the success of a large number of cryptoassets are: pseudonymity, decentralisation, the ability to be electronically traded, and the ability to be directly convertible into fiat money (Houben & Snyers, 2018).

Among the arguments regarding the attractiveness of cryptocurrencies is the fact that they allow transactions and payments to be made instantly, even when these are being made between people or companies located in different countries. In the international banking system, it can take several days for a Society for Worldwide Interbank Financial Telecommunications (SWIFT) transfer—an international transfer between financial institutions—to be made. Local currencies also need to be converted into dollars or other primary currencies and the recipient

must then convert the amount transferred into their preferred currency. Fees are charged both in respect of the SWIFT transfer and the currency exchanges. Cryptocurrency transactions can be fast and cheap alternatives, with both buyers and sellers benefiting because the transactions do not incur bank or credit card fees. On the other hand, cryptocurrencies are not subject to the monetary policy of any central bank, so their price is always determined by the market in terms of supply and demand.

Concerns have been raised by the main central banks about the risks that could arise within the financial system as a result of, for example, the volatility and illiquidity of cryptocurrencies (ECB, 2015). Cryptocurrencies can also be used as investment mechanisms and converted into fiat money or other cryptocurrencies at a value that constantly varies in the cryptocurrency market according to the rules of supply and demand. In addition, when buying and selling cryptocurrencies, once a transaction has been executed and validated, it cannot be reversed, therefore providing a full collection guarantee.

From an investment point of view, cryptoassets are in a different asset class from the traditional assets, such as stocks, fixed income assets, commodities, and real estate, which, in theory, could be used to diversify an investment portfolio.

A relevant factor to consider is that there is no clear regulatory framework at country level regarding the treatment or nature of cryptoassets. In some countries, they are considered to be a currency like any other, while in others, they are considered to be assets. There is no unanimity in the criteria as to whether their increase in value generates capital gains or not, which leads to the creation of various opportunities that are not present in other asset classes in terms of generating tax-free profits (Cumming et al., 2019). Another characteristic that makes cryptocurrencies attractive is their anonymity, whereby even if the profits derived from them were taxable, it is, in practice, almost impossible to determine who was behind the transactions and, therefore, to detect tax evasion or tax fraud.

Blockchain technology, in the case of cryptocurrencies, was designed to be anonymous. For what purpose is a question that remains open. What is clear is that while this has benefits, it also presents dangers which are of great concern for the authorities, not only at the tax level, but also in relation to money laundering and the financing of terrorism.

2.4. The Issue of Anonymity

It is generally interpreted that cryptocurrencies use systems that guarantee the anonymity of their users due to two characteristics: first, internally, cryptocurrencies are not necessarily related to real identities, and second, from a cryptographic perspective, the keys used to make transfers do not contain the users' real identities.

According to a report by the Financial Action Task Force [FATF], "cryptocurrency relies on public and private keys to transfer value from one person [individual or entity] to another, and must be cryptographically signed each time it is transferred" (FATF, 2014, p. 5). Each of these transfers is registered in a blockchain, and prepared and distributed among peers via a decentralised system. The organisation notes that "the safety, integrity and balance of cryptocurrency ledgers is ensured by a network of mutually distrustful parties (in Bitcoin, referred to as miners) who protect the network in exchange for the opportunity to obtain a randomly distributed fee" (FATF, 2014, p. 5).

The cryptographic systems used in cryptocurrencies can broadly be classified as symmetric and asymmetric. When a symmetric or private key encryption system is used, both the sender and the receiver of a message must use the same key to encrypt and decrypt that message respectively. On the other hand, when an asymmetric key system is used, only one key (the public key) is distributed, eliminating the problem of transmitting a secret key between sender and receiver. The public key can be utilised by any user who wishes to communicate with its owner and the private key can be used exclusively by its owner to decipher and sign messages.

The use of asymmetric key cryptography or an anonymous public key system ensures anonymity because although each node in the system has access to the blockchain, it only contains information about the amount involved in and the timing of the operation, together with the participants' public keys. It does not contain any additional information of a personal nature. Therefore, the anonymity in the system lies in the impossibility of linking any public key with its user. The identity of the person involved in the operation could only be known if a particular subject is somehow identified by way of an address or public key. In this case, it would be easy to track all the operations that had been performed by this subject within the blockchain.

On the internet, anonymity can be understood in two different ways: in a literal way (i.e. acting without any name or identity), or in a relative way (i.e. operating by means of a pseudonym or false name). In the case of cryptocurrencies, users publicise a public key or address. Their real identity is not known and they use a pseudonym (i.e. anonymity is relative rather than absolute). This is what is commonly referred to as pseudonymity and does not, per se, ensure the anonymity of the users. In some cases, it is possible to establish a relationship between the public key or address of the cryptocurrency and the real identity of the user. However, anonymity can be achieved if the system has an operative unlinkability property, something that is achievable thanks to blockchain technology (Koshy et al., 2014; Ober et al., 2013; Reid & Harrigan, 2013). The term "unlinkability" refers to the idea that any user who accesses the information contained in the blockchain will find it impossible to obtain more information than is contained in those records. It is also worth mentioning that, in addition to the intrinsic anonymity enabled by blockchain technology in respect of cryptocurrencies, there are tools that exist that allow users to intentionally eliminate the traceability of their cryptocurrency operations. Some examples of this are the use of several accounts by the same user (each with a different public key), the use of software or services known as mixers or tumblers that mix cryptocurrencies from multiple addresses in order to make it difficult or impossible to track the user who performed the operation, or the exchange of one cryptocurrency for another cryptocurrency (Herrera-Joancomartí, 2014).

In the case of cryptocurrencies, due to the decentralised nature of blockchain technology and the relative anonymity provided by the system, it is not possible to know the true identity of the user behind the public key. However, since all operations are collected in the blockchain openly, the tax administration could, by using appropriate software, track all operations carried out by a specific account by identifying it via its public key. As a result, the tax authority could ascertain the account's cryptocurrency balance and a record of all transactions that have been made to or originated from that account, but without knowing who owns it.

2.5. Participants in the Cryptoasset Market

The players involved in the cryptoasset market include cryptoasset users, miners, cryptocurrency exchanges, wallet providers, trading platforms, coin inventors, token inventors, coin offerors, and token offerors (ECB, 2015).

According to the FATF (2014),

> a user is a person/entity who obtains virtual currency and uses it to purchase real or virtual goods or services (or send transfers in a personal capacity to another person (for personal use), or who holds the virtual currency as a (personal) investment. (p. 7)

The FATF (2014) notes that there are several ways in which cryptocurrencies can be obtained. Users can buy cryptocurrencies using fiat money via an exchange or directly from another user, receive them as payments in exchange for, for example, goods or services, or generate them through a process called coin mining (FATF, 2014).

A miner is someone who validates blockchain transactions by solving cryptographic puzzles. The process of mining relates to cryptocurrencies that are based on a consensus mechanism known as Proof of Work (PoW). The miners maintain the cryptocurrency network and keep the registry up to date and secure. They can work in isolation or establish unions in order to achieve a much greater computing power. The work that they perform is of high complexity and, at the same time, incurs a high cost because of the energy used, so they receive compensation in the form of cryptocurrencies.

Cryptocurrency exchanges provide users with cryptocurrencies in exchange for fiat money, funds, or other forms of cryptocurrency in exchange for a fee or commission (FATF, 2014). The FATF (2014) notes that exchanges "generally accept a wide range of payments, including cash, wires, credit cards and other virtual currencies" (p. 7). The FATF (2014) adds that they can function in the same way as a stock exchange or exchange office, and that users often utilise exchanges "to deposit and withdraw money from cryptocurrency accounts" (p. 7). Many cryptocurrency exchanges also "act as wallet providers" (ECB, 2015, p. 8).

Wallet providers furnish cryptocurrency users with digital wallets "which are used for holding, storing, and transferring coins" (Houben & Snyers, 2018, p. 27). A wallet provider will usually convert a "user's transaction history into an easily readable format, which looks much like a regular bank account" (Houben & Snyers, 2018, p. 27).

Trading platforms differ from cryptocurrency exchanges in two aspects. First, "they do not buy or sell coins themselves" (Houben & Snyers, 2018, p. 27). Second, "they are not run by an entity or company that oversees and processes all trades, but they are operated exclusively by software (i.e. there is no central point of authority)" (Houben & Snyers, 2018, p. 27).

Coin inventors develop "the technical foundations of a cryptocurrency and set the initial rules for its use" (Houben & Snyers, 2018, p. 28). The identities of some coin inventors are known but this is not always the case (ECB, 2015). Coin offerors are "individuals or organisations that offer coins to cryptocurrency users upon the coin's initial release, either against payment (i.e. through a crowdsale) or at no charge (i.e. in the framework of a specific (sign-up) program…)"

(Houben & Snyers, 2018, p. 28; see also OECD, 2018; Spagnuolo et al. 2014). The terms inventors and offerors can also be applied in respect of tokens.

3. CRYPTOASSET REGULATION AND TAXATION

3.1. Cryptoasset Regulatory Framework

When it comes to cryptoassets, it is important to highlight that existing legislation is restricted to cryptocurrencies and does not cover the broader category of cryptoassets, which includes tokens. This limits the regulatory analysis in this article to cryptocurrencies.

Since the use of cryptocurrencies began to increase, their regulation has been debated around the world. Regulators from across the globe are looking at whether and how to regulate cryptocurrencies, and there is currently no consensus about how to do it. The rise of cryptocurrencies has created interesting tax issues. The two most visible and controversial of these are whether cryptocurrencies should be considered to be currencies or standard property for tax purposes, and how their cost and value must be calculated when determining a capital gain. Their taxation as property makes their everyday use impractical because every transaction forces the taxpayer to recognise gains and losses. On the other hand, calculating the cost of a cryptocurrency is a complex task in the case of a mining process, because the cost related to the energy used by a computer when solving cryptographic puzzles has to be considered as part of the total costs for tax purposes. Countries are taking a decentralised approach to cryptocurrency regulation; they treat cryptocurrencies differently. In the case of the United States, the Internal Revenue Service (IRS) views cryptocurrencies as property that is similar in nature to traditional assets, while China does not recognise cryptocurrencies and has banned their trading as well as Initial Coin Offering (ICO) issuance (Cumming et al., 2019). India does not consider cryptocurrencies to be legal tender and considers growth in capital from them to be capital gains (Cumming et al., 2019).

Countries within Europe also have different views on how cryptocurrencies should be treated. Langer (2017) notes that the United Kingdom takes a case-by-case approach to cryptocurrencies and treats them as either assets or private money. Germany considers cryptocurrencies to be private money and their sale does not incur capital gains tax, but cryptocurrency investments are subject to income tax if they are held for less than a year (Langer, 2017). In Switzerland, cryptocurrency sales are not subject to capital gains tax, but residents' cryptocurrency holdings are subject to income tax, profit tax, and wealth tax (Langer, 2017).

Undoubtedly, the previous questions regarding the treatment of cryptocurrencies are relevant as they could create mismatches and tax planning challenges, but they are not the most crucial problems to solve from a tax perspective. The most important topic related to cryptocurrency that needs to be addressed is anonymity. According to Houben and Snyers (2018), "anonymity prevents cryptocurrency transactions from being adequately monitored, allowing shady transactions to occur outside of the regulatory perimeter" and "is also the major issue when it comes to tax evasion" (p. 51). They state that "when a tax authority does not know who enters into the taxable transaction, because of the anonymity involved, it cannot detect nor sanction this tax evasion" (Houben & Snyers, 2018, p. 53). The United States, via the Foreign Account Tax Compliance Act (FATCA), and the European Union, via the Anti-Money Laundering

Directive 5 (AMLD5), are leading the fight against cryptocurrency anonymity by taking different approaches.

3.2. Cryptocurrency Anonymity

Although the tax authority may have access to the information that is stored on the blockchain, it is still necessary to be able to somehow link the user's account (public key) with their real identity to ensure that they comply with their tax obligations. The tax authority could take various approaches in order to collect the necessary information. It may attempt to obtain this information on its own, may consult other tax authorities based on the increasing exchange of information within the tax authorities, or may wait for the taxpayer involved to provide such information. To identify the holders of cryptocurrency accounts, tax authorities can resort to complex methods based on techniques for the deanonymisation of cryptocurrency users by grouping cryptocurrency addresses controlled by the same user together, attempting to determine patterns of behaviour, and eventually using models to determine their identity. Another key challenge that tax authorities face in the fight against cryptocurrency-related tax evasion is that there is often no central intermediary, such as an issuer, who would normally be the target of regulation. Therefore, in such cases, the question of which cryptocurrency market players regulation should be attached to is an important one. The relative anonymity offered by cryptocurrencies is easy to maintain as long as the user does not leave the system but is no longer guaranteed when the user leaves it (for example, by converting the cryptocurrencies into legal tender). A possible action to consider in response is to broaden the concept of a financial intermediary to include exchangers within the cryptocurrency market.

The legislative approach taken by the European Union and the United States requires users to provide their personal information in order to acquire cryptocurrencies or exchange them for fiat money using an exchanger. The exchangers must pass their users' personal information to the tax authorities.

3.3. The European Union: AMLD5

The regulatory approach taken by the European Union has been to address cryptocurrencies and the participants of the cryptocurrency market within the rules on money laundering and terrorist financing. The aim of Directive 2018/843, commonly referred as AMLD5 and which modified Directive 2015/849 (AMLD4), is: to increase transparency about the ownership of legal entities in order to prevent money laundering and terrorist financing via opaque arrangements or structures; to give financial regulators better access to information via centralised bank account registers; to tackle terrorist financing, money laundering, and tax evasion risks linked to the anonymous use of cryptocurrencies; and to improve the exchange of information between anti-money laundering supervisors and the ECB.

Unlike FATCA, AMLD5, which came into force on 10 January 2020, clearly defines cryptocurrencies within its scope. The commission took the approach of including both cryptocurrency exchanges and custodian wallet providers within the scope of AMLD5 and stated that they are obligated entities. In addition, the directive requires them: to conduct customer due diligence controls when exchanging cryptocurrencies, ending the anonymity associated with such exchanges and such wallet providers; to register with the relevant authorities; and to prepare suspicious activity reports when the situation warrants it. One remarkable aspect of AMLD5 is that it places greater emphasis on transparency in relation to

ultimate beneficial ownership (UBO). Under AMLD5, European Union member states are asked to maintain interconnected, publicly available, national UBO registries which, in combination with the due diligence, the reporting of suspicious activity, and the registration of the cryptocurrency exchanges and wallet providers, provides them with access to valuable data that will help the tax authorities to mitigate risks and improve tax compliance in cryptocurrency transactions.

Article 2(1)(3) of AMLD5 includes the providers of virtual currency exchange for fiat currency services and the providers of custodian wallet providers as obligated entities that are within the scope of the directive, while Article 3(d)(18) and (19) provide definitions of the terms "virtual currencies" and "custodian wallet providers" (Directive 2018/843). Consequently, and based on Articles 10 and 11 (Directive 2018/843), virtual currency exchange services and custodian wallet providers are subject to customer due diligence requirements. In addition, according to Article 47(1) (Directive 2018/843), they need to be licensed or registered. They are also obligated to report suspicious transactions to financial intelligence units. Article 13 states that they must identify the customer and verify their "identity on the basis of documents, data or information obtained from reliable and independent source" (Directive 2018/843). AMLD5 targets users indirectly if they utilise the services of a custodian wallet provider or enter into a cryptocurrency transaction via a cryptocurrency exchange platform. These users can no longer be anonymous because of the customer due diligence requirements applicable to custodian wallet providers and cryptocurrency exchange platforms that are detailed in the directive (Vandezande, 2018). At the same time, the information obtained during the process can be used by tax authorities to combat tax evasion. Articles 30 and 31 of AMLD5 (Directive 2018/843) list tax authorities among the competent authorities that must be granted access to the beneficial ownership register. This means that when transactions occur via a cryptocurrency exchange platform, the information will be available to the tax administration.

3.4. Problems with the European Union's AMLD5

The existing European legal framework detailed in the AMLD5 (Directive 2018/843) does not cover the broader concept of cryptoassets—it just covers cryptocurrencies. Consequently, some participants in the cryptoasset market, such as token inventors and token offerors, are not within the scope of AMLD5 (Directive 2018/843). In addition, the directive fails to deal with the issues related to the identification of some of the participants behind cryptocurrency transactions and operations. There are no rules that unveil the anonymity of all stakeholders in the cryptocurrency market. As stated before, the key players in the cryptocurrency market are users, miners, cryptocurrency exchanges, trading platforms, wallet providers, inventors, and offerors. A number of these key players are not obligated entities under AMLD5 (Directive 2018/843). The greatest weakness of the approach taken in the directive is that suspicious transactions using cryptocurrencies made by stakeholders that are out of the directive's scope are not well monitored by the authorities because they are unable to link identities and transactions in such cases (Houben & Snyers, 2018). Consequently, more substantive rules that could already have cryptocurrencies in their scope are not effective. This is especially true for the legal framework for the exchange of information in the field of international taxation. As an example, the EU's framework on tax evasion relating to exit taxes is ineffective when it comes to cryptocurrencies because of their anonymous and easy-to-hide nature, something which is not solved by AMLD5 (Directive 2018/843). Users and miners are not obligated entities under the directive. Houben and Snyers (2018) state that, when proposing AMLD5, the European Commission submitted an impact assessment. They note that, according to this assessment, there are two main reasons for not considering miners to be obliged entities. The

first one is that miners are considered to be providers of technical services instead of "gatekeepers" between the cryptocurrency market and the real world (Houben & Snyers, 2018, p. 76). The second is that, for the majority of cryptocurrencies, "miners are mostly located in China which would make any initiative largely impossible to enforce" (Houben & Snyers, 2018, p. 76). In relation to cryptocurrency exchanges, they are classed as obliged entities under AMLD5 (Directive 2018/843). However, pure cryptocurrency exchanges are out of the scope of AMLD5 (Directive 2018/843) because they do not deal with fiat money. This means that atomic swaps, which are cryptocurrency for cryptocurrency exchanges, are out of the directive's scope (Houben & Snyers, 2018).

Houben and Snyers (2018) note that, in the case of trading platforms, no entities process or oversee the transactions that take place on them. In most cases, "they are operated exclusively by software (*i.e.* there is no central point of authority)" and this "makes it very hard to regulate them" (Houben & Snyers, 2018, p. 77).

They also distinguish three types of wallet provider: "hardware wallet providers", "software wallet providers" and "custodian wallet providers" (Houben & Snyers, 2018, p. 78). They point out that, of these, only custodian wallet providers "are obliged entities under AMLD5" (Houben & Snyers, 2018, p. 78). Finally, they state that coin offerors "are clearly not obliged entities under AMLD5" (Houben & Snyers, p. 78).

One may, therefore, ask if the AMLD5 (Directive 2018/843) framework achieves its goal to make cryptocurrency users and transactions transparent? Apparently not. As the mining business can be used for illegitimate purposes, pure cryptocurrency exchanges and, in most cases, trading platforms are out of its scope. Software and hardware wallet providers are also out of its scope as long as they do not exchange cryptocurrencies into fiat money, and coin offerors are not within its scope, leading to "blind spots" in the European Union's fight against tax evasion in relation to cryptocurrencies (Houben & Snyers, 2018, p. 79).

After analysing all of those problems and inconsistencies, the main question remains: how anonymous can transactions taking place within the cryptocurrency market still be after the implementation of AMLD5 (Directive 2018/843)? Should the directive be modified to incorporate the above-mentioned cryptocurrency market stakeholders as obligated entities in Article 2(1)(3) of the directive? Or would it be a better idea to ask them to take part in a voluntary registration scheme? Perhaps one of the biggest assumptions and lines of action that AMLD5 takes is to regulate the interaction between the so-called "virtual world" and the "real world" by trying to capture the jumps that users make between these worlds by exchanging cryptocurrencies for fiat money (or vice versa) in cryptocurrency exchanges, or the traditional storage of these currencies using wallet providers. A good starting point when attempting to improve the directive is to realise that, given the level of acceptance and the increasing use of cryptocurrencies, it is not necessarily true that users will want to exchange their cryptocurrencies for fiat money at some point. In fact, it is perfectly possible that they would prefer to keep them as cryptocurrencies and, perhaps, exchange them for other cryptocurrencies or use them as means of payment in the future. Incorporating this into the philosophy behind a future AMLD would lay the groundwork for including the actors that have so far been outside of the directive's scope. On the other hand, although AMLD5 (Directive 2018/843) seeks to target users through the compliance requirement of cryptocurrency exchanges and wallet providers, it could be an interesting starting point to improve the directive to include pure cryptocurrency exchanges and atomic swap transactions within its scope, while also including software and hardware wallet providers as obligated entities. With these two incorporations,

the directive would fulfil its intended scope since it would cover all possible types of cryptocurrency exchange and wallet provider. Houben and Snyers (2018) also suggest that a mandatory registry for all cryptocurrency users, miners, coin inventors, and coin offerors, whether individuals or legal entities, could be introduced. This would allow for a double check by the tax authorities. The regulation of miners and trading platforms seems to be a more complex task since, as mentioned before, most miners are outside of the European Union and trading platforms are operated by software and not by a central authority. From this point of view, a roadmap could start by including the stakeholders that are within the competences and inspection capabilities of the European Union while, at the same time, seeking to address the complex cases that have been mentioned through the exchange of information and coordination with different countries (Houben & Snyers, 2018).

3.5. United States: FATCA

FATCA has been the regulatory framework used by the United States to address the anonymity surrounding cryptocurrencies. Approved in March 2010, FATCA established an information communication regime for financial institutions in respect of certain accounts owned by U.S. citizens and residents. The approximation relies on the IRS's broad definition of the concept and understanding of what a foreign financial institution. FATCA's amended version of chapter 4, section 1471(d)(4) of the Internal Revenue Code of 1986 defines the term "foreign financial institution" as "any financial institution which is a foreign entity. Except as otherwise provided by the Secretary, such term shall not include a financial institution which is organized under the laws of any possession of the United States". The revised version of section 1471(d)(5) of the same chapter defines the term "financial institution" as:

> any entity that–
>
> "(A) accepts deposits in the ordinary course of a banking or similar business,
>
> "(B) as a substantial portion of its business, holds financial portion of its business, holds financial assets for the account of others,
>
> "(C) is engaged (or holding itself out as being engaged) primarily in the business of investing, reinvesting, or trading securities (as defined in section 475(c)(2) without regard to the last sentence thereof), partnership interests, commodities (as defined in section 475(e)(2)), or any interest (including a futures or forward contract or option) in such securities, partnership interests, or commodities."

The amended reporting requirements in Chapter 4, section 1471(b)(1) of the code, which apply "to any foreign financial institution if an agreement is in effect between such institution and the Secretary"[3], state that the institution must agree, amongst other things:

> "(A) to obtain information regarding each holder of each account maintained by such institution as is necessary to determine which (if any) of such accounts are United States accounts,

[3] Secretary refers to the U.S. Secretary of the Treasury. The IRS is an agency within the U.S. Department of the Treasury.

> "(B) to comply with such verification and due diligence procedures as the Secretary may require with respect to the identification of United States accounts,
>
> "(C) in the case of any United States account maintained by such institution, to report on an annual basis the information described in subsection (c) with respect to such account.

FATCA's amended version of Chapter 4, section 1471(c)(1) of the code details what a foreign financial institution has to report in respect of each U.S. account that it maintains. This information includes the U.S. account holder's name, address, Tax Identification Number (TIN), account number, and balance.

The United States uses FATCA to obtain information about the cryptocurrency accounts that its nationals have abroad, relying on the broad definition of the concept of foreign financial institution that is present in FATCA and makes it possible to accommodate the inclusion of cryptocurrency exchanges and wallet providers (Valeriane, 2016).

3.6. Problems with the United States' FATCA

Although FATCA provides definitions for concepts such as U.S. account, financial account, and financial institution, its scope is broad and allows for different interpretations. The ambiguity and inaccuracy of FATCA in respect of the terms used and the lack of clarity on this aspect by the IRS has generated a climate of uncertainty among U.S. taxpayers. FATCA does not explicitly require cryptocurrency exchanges and wallet providers to report U.S. accounts (Valeriane, 2016). Valeriane (2016) notes that scholars and professionals are, in fact, unable to agree about whether the virtual market is included in FATCA or not. She states that "some argue that virtual wallets or exchanges would never enter into an agreement with the IRS because the virtual market is too different from the financial system" (Valeriane, 2016). Others argue "that there are certain exchanges that might be subject to reporting, while others assume that certain government agreements already include virtual currency exchanges" (Valeriane, 2016). In addition, there is no clarity about whether the broader concept of cryptoassets, particularly as it relates to tokens, falls within the concept of security and, consequently, within the scope of FATCA (European Commission, 2021).

On the other hand, the application of FATCA in its current wording generates a double legal qualification for cryptocurrencies, as the IRS qualifies them as property for the purposes of tax legislation but assimilates them to financial assets to enable the application of FATCA. The complexities that this interpretability can generate includes not only the fact that agreements based on cryptocurrencies may not materialise, but also that governments or financial institutions that already have agreements with the IRS may not be sure about their cryptocurrency reporting responsibilities.

The United States has, to date, taken the approach of obtaining data through appropriate exchange of information procedures with other tax authorities and financial institutions, and intends to use these intergovernmental agreements to implement FATCA as a mechanism via which to obtain information related to the use of cryptoassets held by other tax authorities and financial institutions. The fact that the terminology used in FATCA does not expressly refer to cryptoassets could pose an obstacle to the effectiveness of that instrument. It would be advisable to modify the regulation and make a concrete reference to cryptoassets. It would be desirable for the IRS to dispel the ambiguity by explicitly including the cryptoasset market

within the scope of the regulation, by making express references to cryptocurrency exchanges and wallet providers, and by considering the stakeholders of the cryptoasset market who, until now, have been excluded, such as miners, coin inventors, coin offerors, and trading platforms.

3.7. Recent Public Consultations and Proposed Cryptoasset Legislation

The proposed AMLD6 clarifies 22 "predicate offences" that constitute money laundering and illicit finance, and aims to harmonise EU law on the subject within EU member states. In addition, it proposes to extend the liability to include both legal persons and individuals. With this in mind, it expands the traceability requirements for cryptoassets, and puts pressure on custodian wallet providers and cryptoasset exchanges and their leaders to ensure that their staff are properly trained to identify the risks associated with money laundering and terrorist financing with regard to cryptoassets. At the same time, it increases the associated penalties and lays the groundwork for the creation of an EU-based authority to counter money laundering and the financing of terrorism.

On the other hand, the European Commission launched a public consultation in 2021 with the aim of strengthening the rules on administrative cooperation and expanding the exchange of information regarding cryptoassets. In order to create a comprehensive framework for the reporting of cryptoassets, the European Commission tried to engage all cryptoasset market stakeholders in its public consultation (European Commission, n.d.). The public consultation, which collected important information regarding the cryptoasset market and stakeholders involved, resulted in the DAC8 proposal. According to Ahmed (2021), the aim of DAC8 is to "shed light on the virtual world", where "cryptoassets remain excluded from the purview of tax authorities" (p. 492). In its wording, the proposed DAC8 states that local tax authorities must be able to access the information so that they can share it with other tax authorities to enable domestic and cross-border cooperation (European Commission, 2022). DAC8 seeks to address cryptoasset anonymity from a tax administration perspective and proposes a coordinated set of rules in order to do so. In that context, DAC8 tries to solve the important challenges seen in AMLD5 by imposing mandatory reporting requirements for all relevant cryptoasset stakeholders and ensuring that they are classed as obligated entities.

If adopted, DAC8 will enhance the current framework at European Union level but will not address the anonymity issue from a global perspective in a virtual world where cryptoassets don't have borders.

A similar approach has been taken by the OECD with its 2022 public consultation, in which it is stated that the main purpose of the Cryptoasset Reporting Framework (CARF) is to "modernise the tax transparency of instruments available to tax administrations" (OECD, 2022, p. 3). The OECD (2022) intends to develop "a new global transparency framework which provides for the automatic exchange of tax information on transactions in Crypto-Assets in a standardised manner" (p. 3). In addition, it is taking the opportunity to propose changes to the common reporting standard (CRS) in order to better reflect the reality of the cryptoasset market when it comes to new financial assets and products (OECD, 2022).

Time will tell if the proposed legislation or the outcome of the public consultation will be adopted but what is clear is that, again, there is no unified approach to cryptoassets at the global level or how to approach the anonymity that surrounds them. The European Union is leading the regulatory efforts but the OECD is preparing what might be a global approach.

4. DISCUSSION

As has been addressed in this article, there is no single approach when it comes to regulating cryptoassets. Countries have taken different regulatory approaches with respect to cryptocurrencies, both in the way in which they are classified (either as property, private money, or foreign currency) and in terms of the tax consequences of cryptocurrency transactions (how to determine the cost and value at the time of alienating, whether or not there are capital gains, whether or not they are within the scope of VAT, or whether or not they are tax exempt). This undoubtedly creates tax planning opportunities as a result of hybrid mismatches within different jurisdictions, which can allow taxpayers to find schemes that allow them to avoid tax. On the other hand, until now, the approaches taken have depended on national legislation, which means that there is no consensus on how to solve the biggest problem that cryptocurrencies generate from a tax perspective: anonymity.

The different approaches taken by countries to regulate the anonymity of cryptocurrencies, together with initiatives such as those introduced by the United States through FATCA and the European Union through the AMLD5—regulations that, as previously discussed, leave key stakeholders out of the regulatory framework when it comes to covering the entire spectrum of the cryptocurrency market and bringing anonymity to transparency—added to the fact that the vast majority of countries lack regulations that seek to attack the anonymity of cryptocurrencies, generates a problem of great proportions which enables tax evasion.

In that sense, the heterogeneity within cryptocurrency regulations generates a two-layer problem. On the one hand, from a tax planning perspective, it is possible for taxpayers to find tax planning structures that allow them to minimise the tax base based on the mismatches between countries in terms of the characterisation and classification of cryptocurrencies. This can, undoubtedly, be a problem from a tax justice and tax collection perspective, but it is far from being the biggest problem that exists. On the other hand, the central and critical problem—the lack of regulation and coordination within and between countries with regard to how to address the anonymity of cryptocurrencies in particular, and cryptoassets in general, enables (or makes it nearly impossible to detect) tax evasion in specific countries and between different jurisdictions.

What could the solution to this tax evasion be given the lack of regulation and coordination? Could asking taxpayers and cryptocurrency market participants to take part in a voluntary register scheme in order to declare their activities be an alternative? Or would it be better to make participation in such a scheme mandatory? Trusting in a voluntary register scheme to achieve the unveiling of anonymity is not a workable solution. Taxpayers have little to no incentive to voluntarily report something that is not likely to be detected. So, in such a scenario, how can the tax authorities detect a breach if there is no coordination between countries and the cryptoasset market is an electronic worldwide market without borders? Is this at all possible when pseudonymous cryptoassets are concerned and different regulations fail to cover all stakeholders in the cryptoasset market? Does it make sense to ban cryptoassets and declare them illegal? On the one hand, it is possible to argue that it is not, since it would not be possible to know who owns them anyway. On the other hand, it is possible to argue yes, since there would be an inhibiting factor and laws in place with which to prosecute cryptoasset market participants.

Every tax administration faces more or less the same problems with regard to the anonymity of cryptoassets, but they take different approaches to solving them, which creates the

opportunity for misunderstandings, mismatches, arbitrages, tax evasion, and tax planning to take place. So why the use of different solutions? What is clear, at least, is that if every country takes its own regulatory approach to the characterisation of cryptoassets and how to deal with their anonymity, the problems mentioned so far will continue to exist. Does it make sense then to take a common approach? Since cryptoasset transactions and the stakeholders of the cryptoasset market are not bound by borders, at which level should this issue be tackled? Is there space for international coordination in the matter? If yes, what are the options? Are the efforts made by the European Union, with the proposed DAC8, and the OECD, with its public consultation about the CARF, the right approach? Should this be expanded to have as many countries involved as possible? All these questions allow for further and required research.

5. CONCLUSIONS

During the past few years, there has been a dramatic increase in the use of cryptoassets worldwide. Today, there are more than ten thousand different cryptocurrencies, and technological progress and innovation has led countries to broaden the concept of cryptoassets, and to question their treatment from regulatory and tax perspectives. Currently, there is no consensus at the country level on the regulatory treatment of cryptoassets. Countries have taken different regulatory approaches with respect to cryptoassets such as cryptocurrencies, both in respect of how they classify them (either as property, private money, or foreign currency) and in terms of the tax consequences of cryptoasset transactions (e.g. how to determine their cost and value at the time of alienating, whether or not there are capital gains, whether or not they are within the scope of VAT, or whether or not they are tax exempt).

This article focusses on a broader concept by analysing cryptoassets and the tax administration issues related to the anonymity surrounding them. From a tax perspective, the biggest challenge posed by cryptoassets is anonymity. When a tax administration does not know who is behind a transaction due to the anonymity that surrounds cryptoassets, it loses its role as a tax compliance watchdog and cannot sanction such tax evasion. Every tax administration faces more or less the same problem, but they take different approaches. In the case of the United States, the IRS decided to use FATCA to address the anonymity behind cryptocurrencies, but this has caused problems due to legal uncertainty. FATCA does not explicitly require cryptocurrency exchanges and wallet providers to report U.S. accounts. In fact, scholars and professionals are unable to agree about whether the virtual market is included in FATCA or not. On the other hand, the application of FATCA in its current wording generates a double legal qualification for cryptocurrencies, as the IRS qualifies them as property for the purposes of tax legislation but assimilates them to financial assets to enable the application of FATCA. The European Union, for its part, through AMLD5, has tried to combat the anonymity of cryptocurrencies in order to prevent money laundering, terrorist financing, and tax evasion but, as was shown in this article, that legislation has not covered all cryptocurrency market stakeholders and does not cover the broader concept of cryptoassets, making its effectiveness questionable.

Does it make sense for countries to take a common approach to tackle this problem? Since cryptoasset transactions and cryptoasset market stakeholders are not bound by borders, as long as there is no single approach taken and the treatments that countries apply to cryptoassets differ as much as they do today, there will always be ways to arbitrate, evade taxes, and take non-legitimate advantages through the use of cryptoassets. At which level should this issue be tackled? Is there space for international coordination in the matter? If yes, what are the options? Are the European Union's DAC8 and AMLD6, and the OECD's public consultation about the

CARF, the correct approach? Time will tell, but what is clear is that there is a need for a unified approach to be taken at the global level in order to tackle cryptoasset anonymity.

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CRYPTOCURRENCIES: AN EMPIRICAL VIEW FROM A TAX PERSPECTIVE

Andreas Thiemann[1]

Abstract

This paper investigates the taxation of capital gains from, the economic importance of, and the inherent challenges related to the taxation of cryptocurrencies. Based on novel data from Chainalysis, this paper simulates the revenue potential from taxing Bitcoin capital gains in the European Union (EU). The total estimated Bitcoin capital gains in the European Union in 2020 amounted to €12.7 billion, including €3.6 billion of realised gains. Applying national tax rules for capital gains from shares to capital gains from Bitcoin yielded a simulated tax revenue of about €850 million in 2020. This paper is, to the author's knowledge, the first to empirically assess the tax revenue potential of capital gains from Bitcoin in the European Union using disaggregated country-level data. The findings indicate that revenue from taxing cryptocurrencies is significant and will continue to increase if the cryptocurrency market continues to grow.

Keywords: Capital Gains Taxation, Cryptocurrencies, Bitcoin.
JEL Codes: G19, G23, H24

1. INTRODUCTION

Bitcoin, the first cryptocurrency (Nakamoto, 2008), experienced a turbulent price rally between 2017 and 2023. Starting with a unit value of less than €1,000 in early 2017, it soared to an all-time peak of €58,000 in November 2021, then declined. On 16 March 2023, one Bitcoin was valued at approximately €23,400. Largely because of the evolution of Bitcoin, the entire cryptocurrencies market also peaked in November 2021, reaching a value of nearly €3 trillion (the equivalent of France's gross domestic product [GDP]) for a brief period.[2] The surging value of cryptocurrencies, coupled with their increasing popularity as financial investments (including by mainstream financial institutions), raises significant policy questions. It challenges the roles of the public sector, including government and central banks, in terms of money supply, the banking system, and tax-raising capacity (Armstrong, 2021).

This paper aims to empirically investigate the importance and inherent challenges of capital gains taxation on cryptocurrencies, with a specific focus on the leading cryptocurrency, Bitcoin. Using the most comprehensive empirical estimate of capital gains from Bitcoin, shared

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[2] For instance, https://coinmarketcap.com/ tracks the evolution of Bitcoin's price and the market size of the entire cryptocurrencies market.

by Chainalysis, a company specialising in blockchain analysis, this paper estimates the tax revenue potential of realised capital gains from Bitcoin within the EU in 2020.

The Financial Action Task Force (FATF, 2019) defines a "virtual asset" as "a digital representation of value that can be digitally traded, or transferred, and can be used for payment or investment purposes" (p. 57; see also Organisation for Economic Co-operation and Development [OECD], 2020). Virtual assets are classified into "payment tokens…utility tokens, and security tokens" (OECD, 2020, p. 9). Security tokens are tradeable assets held for investment purposes, and are classified as security, while utility tokens typically provide access to specific goods and services. Payment tokens, or cryptocurrencies, are most similar to fiat currencies, and are intended to function as units of account and means of payment (OECD, 2020). This paper focusses on cryptocurrencies.

The empirical literature on the taxation of cryptocurrencies is in a nascent stage due to the scarcity of data. Furthermore, taxing income from cryptocurrencies is more challenging than taxing ordinary income. Bal (2015) suggests that tax authorities should provide clear guidance on taxpayers' obligations arising from cryptocurrencies in order to improve tax compliance. One challenge is whether to classify cryptocurrencies as currency or property (OECD, 2020; Ram, 2018; Wiseman, 2016). Most OECD countries "consider crypto-assets to be a form of property for tax purposes" (OECD, 2020, p. 15). The OECD (2020) shows that taxable events are defined substantially differently across OECD countries. For instance, exchanging one cryptoasset for another triggers a taxable event in most OECD countries, but not in France, where only transfers of cryptoassets into fiat money are taxable. In Italy, no tax is due on the realisation of capital gains from cryptocurrencies unless they are deemed to be speculative. The OECD emphasises that countries should provide clear guidelines that explain how cryptocurrencies fit into the existing tax framework (OECD, 2020).

Most empirical research on cryptocurrencies is based on time-series data regarding the price and market capitalisation of cryptocurrencies (see, for instance, Corbet et al., 2019). A notable exception is Makarov and Schoar's (2021) work. The authors empirically analyse Bitcoin's market structure using Bitcoin blockchain data (up to June 2021), which is linked to real entities using a large novel database. They find that Bitcoin ownership is strongly concentrated. Accordingly, the top 1,000 individual investors control about three million Bitcoins and the top 10,000 investors hold around five million Bitcoins, which is roughly about a quarter of all Bitcoins in circulation (Makarov & Schoar, 2021). Despite lacking information about the tax residences of top Bitcoin owners, their findings imply that potential revenue from the taxation of Bitcoin capital gains might also be concentrated (Makarov & Schoar, 2021).

This paper is motivated by the empirical knowledge gap relating to the taxation of capital gains from cryptocurrencies. There is scarce empirical evidence about who truly owns cryptocurrencies, what the related capital gains are, and how these are distributed. The primary contribution of this paper is twofold. First, I discuss the economic magnitude of cryptocurrencies and review the empirical evidence about crypto users. Secondly, I estimate potential revenue from the taxation of capital gains from Bitcoin in 2020 within the EU, using the unique and novel data provided by Chainalysis. In contrast to most empirical research on cryptocurrencies, I do not rely on aggregate time-series data but on disaggregated data regarding the estimated capital gains by country in 2020. Chainalysis estimates capital gains from Bitcoin by allocating transactions recorded on the blockchain according to the web traffic data of each country to the websites of service providers. The novel data has also been used for research such as that recently conducted by the World Bank (Feyen et al., 2022).

To estimate the revenue potential of realised Bitcoin capital gains taxation in 2020, I simulate two scenarios: (A) a uniform tax rate of 25%, and (B) the application of national capital gains tax rates according to capital gains from shares. The simulated tax revenue in the European Union amounts to €900 million (0.0068% of GDP) in scenario (A) and €844 million (0.0063% of GDP) in scenario (B). Expressing the estimates as a percentage of total tax revenue from property taxation in the European Union provides a more intuitive interpretation. In this light, scenario (A) would yield about 0.31% and scenario (B) would yield 0.29%. Given the methodological uncertainties, these estimates should be considered an upper bound. Nevertheless, if the cryptocurrencies market continues to grow, capital gains will rise.

The remainder of this paper is organised as follows. The next section discusses the economic scale of the cryptocurrencies market. Section 3 focusses on empirical evidence regarding cryptocurrency users and distribution of Bitcoins based on public blockchain information, while section 4 estimates the revenue potential of taxing capital gains from Bitcoin in 2020. Section 5 concludes.

2. THE EVOLUTION OF THE CRYPTOCURRENCIES MARKET

The evolution of the total cryptocurrency market highlights the potential for capital gains taxation, as capital gains mirror the appreciation of a cryptocurrency. Therefore, a growing cryptocurrency market indicates an increasing value of potentially taxable capital gains when investors sell cryptocurrencies and realise capital gains.

In March 2023, there were about 23,000 distinct cryptocurrencies with a market capitalisation of approximately €1 trillion, according to CoinMarketCap.[3] Bitcoin has dominated the cryptocurrency market since its inception in 2009. While Bitcoin constituted more than 75% of the total cryptocurrencies market until 2017, other cryptocurrencies gained in popularity subsequently. As of 16 March 2023, Bitcoin's market share stood at around 42%, with Ethereum's at 19%, and Tether's at 7%. A comparison of the market capitalisation of the world's largest companies on 17 March 2023 showed Bitcoin in 19th position, ahead of Taiwan Semiconductor Manufacturing Company Limited (€434 billion) and behind Berkshire Hathaway Inc. (€504 billion).[4] However, Chainalysis (2020) reports that approximately 20% of total Bitcoins are lost for various reasons.[5]

Cryptocurrencies are known for their extreme volatility. Cryptocurrencies did not hold significant prominence until mid-2017, when their market capitalisation began to surge. It reached its first peak in January 2018 at €600 billion, then declined and stagnated. However, total market capitalisation surged again from mid-2020, reaching a record peak of €2.9 trillion in November 2021 (an amount equivalent to France's GDP). This surge was primarily driven by the substantial increase in the Bitcoin price, which rose from under €10,000 in January 2020 to nearly €58,000 in November 2021. Nonetheless, by March 2023, the market capitalisation of cryptocurrencies had plunged, more than halving to approximately €1 trillion.

[3] https://coinmarketcap.com (accessed on 17 March 2023). The website provides information about cryptocurrencies, such as prices and market capitalisation. The following figures are based on data from CoinMarketCap.

[4] https://coinmarketcap.com (accessed on 17 March 2023).

[5] Chainalysis (2020) considers any Bitcoin lost if it has not been moved from its current set of addresses in five years or more. Other experts (Ojedokun, 2023) estimate that 3% of all Bitcoins are lost, although without furnishing an empirical basis.

3. WHO OWNS CRYPTOCURRENCIES?

The taxation of capital gains from Bitcoin and other cryptocurrencies requires tax administrations to obtain information about the incidence and distribution of cryptocurrency ownership. This section aims to summarise the scarce empirical evidence that exists about crypto users and the distribution of cryptoassets, focussing on potential sources: blockchain data, official tax statistics, and other sources, such as survey data.

Blockchain Data

Open or public blockchains, like Bitcoin, provide transparent records of all past transactions (Nascimento et al., 2019). Consequently, each blockchain transaction is public and traceable. While the distribution of Bitcoins across addresses can be inferred from the blockchain data, determining the distribution of Bitcoins at the individual level is challenging because cryptoasset service providers (CASPs), such as Binance or Coinbase, often manage a significant share of addresses and/or coins on behalf of their clients.[6] Given the cryptographic nature of cryptocurrencies, the actual owners of addresses remain unknown unless they share information with the public. Nevertheless, there are several ways to identify address owners ("pseudo-anonymity"). For instance, Bitcoin users can be identified by observing their transactions over time and analysing patterns (Fujiwara & Islam, 2021; Monaco, 2015). Juhász et al. (2019) identify IP addresses and link them to geographical locations. Their probabilistic approach exploits the time duration between messages sent and received by participating network computers. By combining this with publicly announced transactions, they can identify the IP addresses of the entities conducting transactions in the analysed period. Makarov and Schoar (2021) merge the Bitcoin's blockchain data with a novel database of real entities compiled from public and proprietary sources. They also develop algorithms to investigate the behavioural patterns of market participants. Their algorithmic findings suggest an extremely high degree of ownership concentration in relation to Bitcoin distribution. Specifically, the top 1,000 individual investors control around three million Bitcoins, while the top 10,000 investors hold approximately five million Bitcoins. This represents roughly a quarter of all Bitcoins in circulation (Makarov & Schoar, 2021).

Finally, while a public blockchain is a rich data source, it is impossible to capture off-chain transactions since they are not reported on the blockchain but are instead settled "off-chain". This includes transactions of users who hold accounts at the same CASP. A CASP's internal transactions are aggregated and the blockchain is solely used as a settlement mechanism for netting outstanding transfers. This, in turn, reduces the number of transactions that need to be recorded on the blockchain (Rauchs et al., 2018). Available estimates suggest that off-chain transactions significantly exceed on-chain transactions. For instance, in the first half of 2021, the total on-chain transaction volume reached US$2.8 trillion, while the industry estimates for "off-chain" transaction volume during the same period were US$16 trillion (Feyen et al., 2022). Therefore, data about off-chain transactions by CASPs could capture a substantial portion of global taxable capital gains from cryptocurrencies.

[6] On 24 March 2023, the Binance address 34xp4vRoCGJym3xR7yCVPFHoCNxv4Twseo, for instance, held approximately 1.3% of the total Bitcoin market, as reported on BitInfoCharts (n.d.).

Official Tax Statistics

Public tax statistics regarding taxpayers linked to cryptocurrencies are still scarce. In fact, in 2021, the United States' Internal Revenue Service (IRS) requested information from CASPs about U.S. citizens who held cryptocurrencies through so-called "John Doe summonses".[7] For instance, the IRS filed several John Doe summonses to obtain information about U.S. citizens who conducted cryptocurrency transactions between 2016 and 2020, where the total annual value exceeded $20,000 (Ferreira et al., 2021).

Moreover, the extent to which national tax auditors can request data on transactions involving cryptocurrencies from national service providers determines the quality of the data. For instance, if a national tax authority lacks the legal right to request transaction-by-transaction data from national exchanges, it cannot cross-check declared capital gains from cryptocurrencies by taxpayers holding accounts in national exchanges. Furthermore, individuals can possess multiple accounts on different exchanges located in different tax jurisdictions.

Other Sources

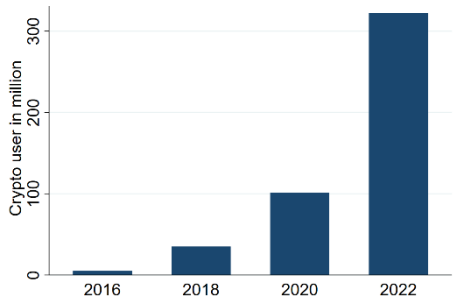
Another source of information is survey data. However, several surveys of cryptocurrency users seem to suffer from selectivity or small sample sizes—see, for instance, Polaski et al. (2015) or Jonker (2018)—raising questions about the extent to which findings can be generalised. A large-scale study conducted on behalf of Binance Research (2021) offers insights based on an online survey involving more than 60,000 crypto users across 178 countries and regions. The survey suggests that most crypto users are male (95%) and young, with an average age of 34 years. Approximately half of the respondents considered crypto investing to be a means of generating income rather than a hobby.

Academic studies using data from established surveys, rather than those specifically designed for crypto users, often face a common challenge. When the survey collects information about crypto, the number of respondents who own crypto remains quite low, which presents statistical difficulties. For example, Bonaparte (2022) relies on the 2019 Survey of Consumer Finance (SCF) for the United States and finds that only about 0.35% of respondents can be classified as crypto owners.

The total number of crypto users may be estimated by considering the total number of CASP clients, yet this estimation presents challenges due to the possibility that an individual may possess multiple accounts (Rauchs et al., 2018). In addition, individuals may use the blockchain payment systems without having a CASP account (Rauchs et al., 2018). Blandin et al. (2020) estimate that the number of ID-verified accounts increased from five million in 2016 to 101 million in Q3 2020, which is argued to be a lower bound estimate (Figure 1). For 2022, the total number of global crypto users is estimated to be 322 million according to Triple A (n.d.), a cryptocurrency payment company. While any estimation of global crypto users remains approximate, there is little doubt that crypto usage has steeply increased between 2016 and 2022.

[7] "A John Doe summons is an investigative tool that allows the IRS to gather information about unnamed taxpayers from a third party" (Ferreira et al., 2021).

Figure 1: Evolution of Crypto Users 2016–2022



Source: 2016 – 2020: Blandin et al. (2020); 2022: Triple A (n.d.).

4. THE DISTRIBUTION OF BITCOIN CAPITAL GAINS AND TAX SIMULATION

This section provides empirical evidence on the distribution of capital gains from Bitcoin across EU countries and simulates the taxation potential. The analysis is limited to Bitcoin due to its economic dominance within the cryptocurrencies market and data restrictions regarding other cryptocurrencies. In general, capital gains accrue when the price of a cryptocurrency exceeds its price at the time of purchase. Selling cryptocurrency realises the gain, which is equivalent to the difference between the selling price and the purchase price. Due to the decentralised and cryptographic nature of cryptocurrencies, the empirical evidence regarding the distribution of capital gains is limited. Nevertheless, in order to assess the taxation potential of Bitcoin capital gains, it is crucial to understand how capital gains are distributed across countries.

Data on the Distribution of Capital Gains from Bitcoin in the European Union

The empirical analysis focusses on EU member states, driven by the European Union's proposal concerning the exchange of crypto-related information between tax authorities within the EU (Directive on Administration and Cooperation [DAC8] proposal).[8] The data on annual capital gains from Bitcoin throughout 2020 was provided by Chainalysis (2021). Their estimation of capital gains from Bitcoin involves two steps: (1) the attribution of aggregate on-chain transaction volume to countries and (2) an estimation of realised and non-realised capital gains (Chainalysis, 2021).

Feyen et al. (2022) discuss the first step in detail. While transactions recorded on the Bitcoin blockchain are public, the geographic locations of the involved addresses remain unknown. According to Feyden et al. (2021), in order to attribute Bitcoin transactions to countries, "Chainalysis combines proprietary knowledge" about the owners of cryptoasset wallets "with web traffic data provided by SimilarWeb, a website analytics and traffic intelligence platform" (p. 14). Specifically, the transaction flow to on-chain addresses identified as belonging to a particular platform is linked to countries according to the corresponding country-specific web traffic (Feyen et al., 2022). To illustrate the approach, consider a crypto platform, "cryptoABC", which operates a website "cryptoABC.com". The Bitcoin transaction flow of

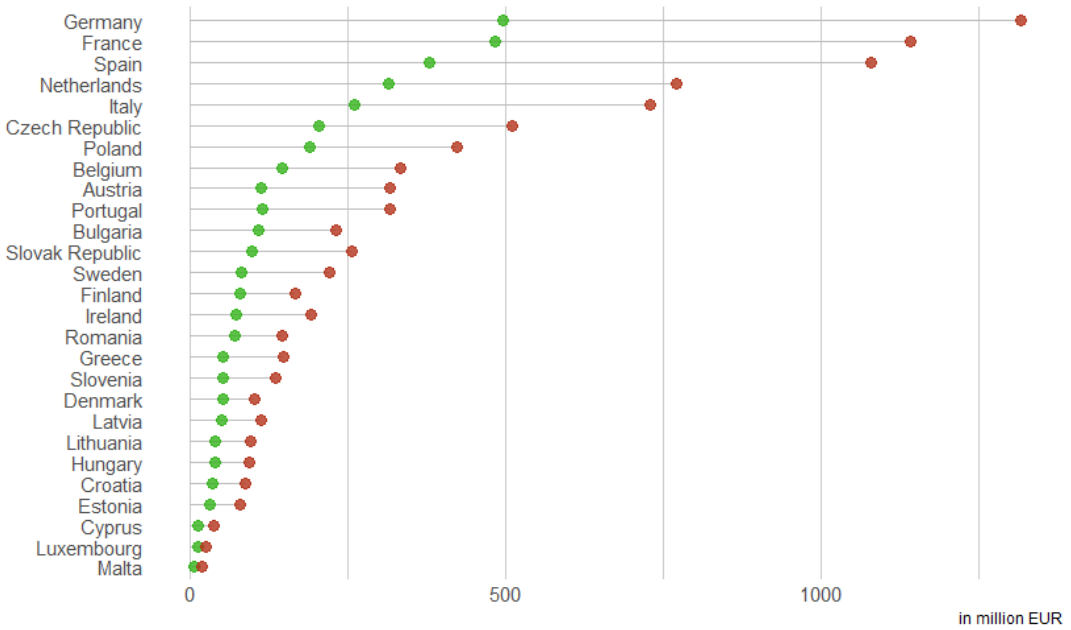
[8] The European Commission (2022) provides the impact assessment of the DAC8 proposal.

identified addresses associated with cryptoABC is assigned to countries based on the origin of the web traffic to "cryptoABC.com". Feyen et al. (2022) add that, in order to refine this country breakdown, Chainalysis considers additional factors, such as "time zones, fiat currency pairs offered, website language options, and the location of the service's headquarters" (p. 14). While facing limitations, such as the potential use of Virtual Private Networks (VPNs) to conceal the actual location of crypto users, Chainalysis conducted several crosschecks to validate the results (Chainalysis, 2021).

Secondly, in an ideal scenario, realised (unrealised) capital gains from Bitcoin would be calculated as the difference between the selling price (current price) and the purchase price for each investor. However, due to the absence of comprehensive data about these individuals, the figures need to be approximated. Chainalysis (2021) exploits the fact that each Bitcoin transaction carries a unique timestamp, enabling it to be linked to the corresponding Bitcoin price. Therefore, to compute capital gains at the platform level, Chainalysis (2021) compares the price of Bitcoins when they entered a platform with their current price (unrealised capital gains) or their price when they left a platform (realised capital gains).

By merging the first and second components, aggregate capital gains from Bitcoin can be attributed to each country.

Figure 2: Estimated Capital Gains from Bitcoin in 2020 Across EU countries, Realised (Green) and Unrealised (Red).



Note: Exchange rate as of 25 May 2021 (1€ = 1.2212 US$).

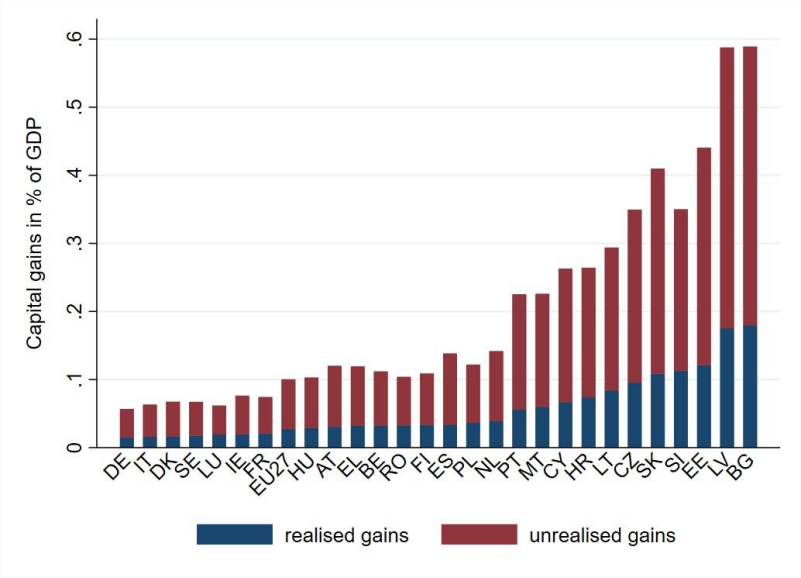
Source: Author's depiction

Figure 2 shows the estimated capital gains (realised and unrealised) from Bitcoin across EU countries in 2020. The total realised capital gains in the European Union amount to €3.6 billion, whereas the unrealised capital gains reach €9.1 billion. Germany ranks highest in terms of realised gains (€500 million), followed by France (€480 million), and Spain (€380 million). Figure 3 compares capital gains from Bitcoin to the GDP of each country. Central and Eastern

European (CEE) countries emerge at the top, with Bulgarian and Latvia leading at 0.6% of GDP. Conversely, Germany ranks at the lower end (below 0.1% of GDP), in contrast to its leading position when comparing absolute capital gains. Interestingly, the largest EU economies found themselves on the lower end of the Bitcoin capital gains distribution in 2020 relative to GDP. CEE countries seemed to benefit from a larger fraction of early crypto adopters, which could account for their strong relative position.

A sizeable fraction of capital gains remained unrealised in 2020. The proportion of realised capital gains to total gains, called the realisation share, ranged between 24% in Spain and 32% in Slovenia. These findings suggest that investors could be able to realise a sizable amount of capital gains in subsequent years. Naturally, forecasting future Bitcoin capital gains hinges on the unit price of a Bitcoin, which continues to exhibit high volatility.

Figure 3: Estimated Capital Gains from Bitcoin in 2020 in the European Union (in % of GDP).



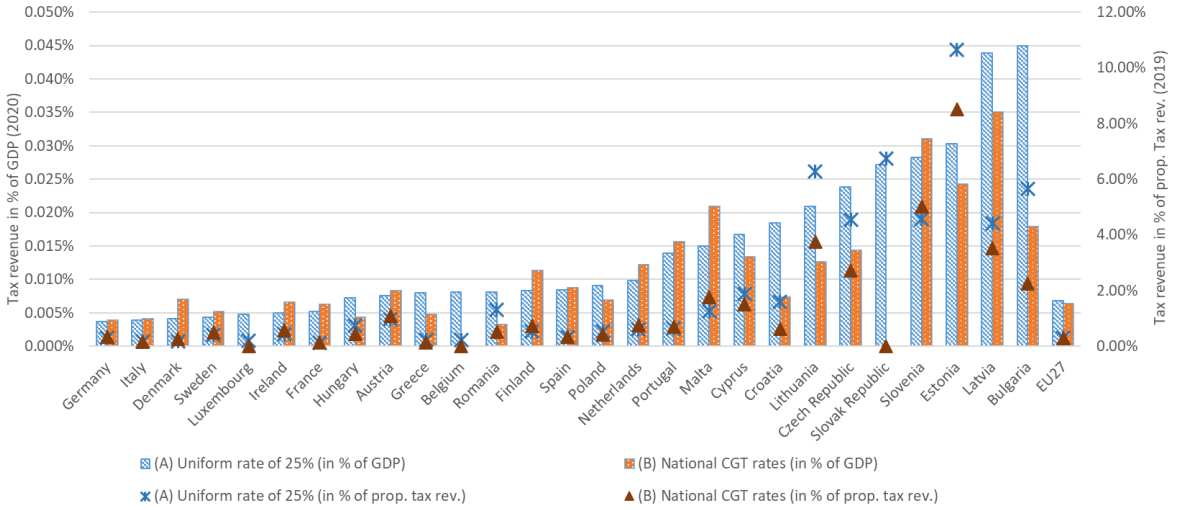
Source: Author's depiction

The Revenue Potential of Taxing Capital Gains from Bitcoin

To assess the revenue potential of taxing realised capital gains from Bitcoin in 2020, I simulate two different scenarios. Scenario (A) applies a uniform tax rate of 25% on realised capital gains from Bitcoin across all EU member states. In contrast, scenario (B) replicates the tax rules that member states impose on realised capital gains from shares held for at least one year, effectively exempting capital gains from taxation in some countries (see Table 1). Neither scenario considers individual tax provisions, which would actually be applied in scenario (B). Consequently, the tax simulation is equivalent to employing a single tax rate to aggregate realised capital gains. Whenever capital gains are subject to different personal income tax (PIT) rates, I apply the top marginal rate (in Malta and Spain). It is important to note that scenario (B) does not necessarily mirror the actual tax treatment of capital gains from Bitcoin. Firstly, it does not consider tax exemptions or tax credits. Secondly, realising capital gains from Bitcoin does not necessarily trigger a taxable event in all countries (OECD, 2020). Nevertheless,

scenario (B) reasonably approximates the revenue potential if countries adopt the tax rules akin to those for capital gains from shares.

Figure 4: Simulated Revenue from Bitcoin Capital Gains Taxation (CGT) in the European Union in 2020 (left-hand side: in % of GDP; right-hand side: in % of Property Tax Revenue).



Source: Author's depiction

Figure 4 illustrates the simulated revenue from the Bitcoin capital gains taxation (CGT) across countries and scenarios relative to GDP (on the left vertical axis), and relative to revenue from property taxation (on the right vertical axis).[9] Relative to GDP, CEE countries benefit the most from tax scenario (A) due to their accumulation of realised capital gains. However, when applying national CGT rates in scenario (B), the pattern becomes less clear. Latvia ranks highest, taxing capital gains at 20%, while several countries exempt capital gains from taxation (Luxembourg, Belgium, and the Slovak Republic). Total revenue in the European Union reaches €904 million or 0.0068% of GDP in scenario (A), and €843 million or 0.0063% of GDP according to scenario (B).

To offer a more intuitive interpretation, the right vertical axis of Figure 4 expresses Bitcoin CGT revenue in terms of revenue from property taxes. In scenario (A), EU-wide Bitcoin CGT revenue accounts for 0.31% of the total property tax revenue of 2019,[10] and in scenario (B), it accounts for 0.29%. However, significant variation exists among countries. In scenario (A), CGT revenue relative to property tax revenue ranges from 0.12% in France to 10.7% in Estonia. Under scenario (B), this range varies from 0.14% in France to 8.5% in Estonia, excluding countries where capital gains are exempt.

[9] Table 2 provides the detailed results. Property tax revenue is the total revenue from recurrent taxes on immovable property together with other property taxes, such as taxes on wealth transfers or on net wealth (European Commission, Directorate-General for Taxation and Customs Union, 2021)

[10] To deal with the different reference years (2019 and 2020), I compare revenue from Bitcoin CGT to tax revenue from property taxes, both in terms of GDP in the corresponding years.

Estimation uncertainty arises from the data on capital gains from Bitcoin, which is inherently an estimation itself. Further, the simulation implicitly assumes full tax compliance. As a result, the simulated potential tax revenue is likely an upper bound estimate. The taxation of capital gains from Bitcoin, as well as from other cryptoassets, poses challenges. Several countries fail to provide clear guidance about the accounting framework and taxation of capital gains from cryptoassets (Luo & Yu, 2022; OECD, 2020; Sixt & Himmer, 2019), and tax authorities might not possess the necessary means to adequately audit crypto-related tax declarations made by taxpayers in their jurisdiction. Cryptocurrencies have evolved into a novel asset class, characterised by a departure from the conventional financial sector, which typically facilitates income information through third-party reporting agreements. Cryptoasset service providers, which have only recently come under financial regulation, are often not obliged to report tax-related information about their clients. Moreover, individuals may be able to evade taxes by holding their cryptocurrencies in private wallets that are not associated with any CASP (OECD, 2022; Scarcella, 2021).

In response to these challenges, the OECD (2022) proposed a new Crypto-Asset Reporting Framework (CARF), with the aim of collecting and exchanging pertinent information about transactions involving cryptoassets. In a similar vein, the European Commission suggested the revision of the DAC8 to furnish tax administrations with the information needed to enable them to identify taxpayers investing in cryptoassets (European Commission, 2021, 2022).

5. CONCLUSION

Bitcoin's creation in 2009 marked the birth of the cryptocurrency market, which has since experienced dramatic growth. At the peak in November 2021, the market capitalisation reached a size equivalent to that of the French GDP. The increasing economic significance of the cryptocurrencies market presents new challenges to the public sector, including that of the taxation of capital gains from cryptocurrencies.

At the same time, empirical knowledge regarding the taxation of capital gains from cryptocurrencies is generally very limited. We often lack information about cryptocurrencies' true owners, capital gains, and distribution. This paper makes a first attempt to address this gap. Based on the only available comprehensive empirical evidence, shared by Chainalysis (2021), I analyse the distribution of capital gains from Bitcoin in 2020 across the European Union. Total gains amount to €12.7 billion in 2020, encompassing €3.6 billion in realised gains. The simulated potential revenue from taxing realised capital gains from Bitcoin ranges between €843 million and €903 million. To put these figures in context, Bitcoin accounted for about 60% (about 40%) of the cryptocurrencies market in 2020 (March 2023). Hence, the simulation results only capture a fraction of total potential tax revenue from capital gains from cryptocurrencies. Furthermore, the value of cryptocurrencies and the implied capital gains rose significantly between 2022 and March 2023, despite having experienced a large drop in 2022.

A pending question related to the taxation of capital gains from cryptocurrencies is the extent to which taxation can be enforced. Once tax authorities start to report tax revenue stemming from capital gains from cryptocurrencies, there will be an opportunity to delve into that question. Additionally, it would be promising to analyse how cryptocurrency ownership differs across the income and wealth distributions. It would be enlightening to determine whether cryptocurrency ownership is prevalent among the "traditional wealthy". The efforts being made by the IRS are likely to yield more comprehensive data on crypto activity among U.S. taxpayers, potentially providing a source for further research.

A promising way in which to improve tax enforcement would be the establishment of an automatic exchange of tax-relevant information between cryptoasset service providers and tax authorities on an international level. This would allow the global challenge of cryptocurrencies to be addressed through a global approach. Furthermore, our understanding of the global distribution of cryptocurrencies and their tax implications could greatly improve. The initiatives being taken at OECD (CARF) and EU (DAC8) levels on the matter seem promising.

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APPENDIX

Table 1: Capital Gains Taxation Scenarios

Country	A) Uniform	B) National capital gains taxation (2021)	
	Tax rate (%)	Tax rate (%)	Comments
Austria	25	28	Separate taxation of capital income.
Belgium	25	0	Not taxable, unless professional income.
Bulgaria	25	10	Subject to PIT.
Croatia	25	10	Tax rate of 12% before January 2021.
Cyprus	25	20	-
Czech Republic	25	15	Subject to PIT.
Denmark	25	42	27% up to DKK56,000 (in 2021) and 42% on any excess.
Estonia	25	20	Subject to PIT.
Finland	25	34	34% on excess above €30,000; 30% below.
France	25	30	12.8% tax and 17.2% social insurance contributions.
Germany	25	26	Separate capital income taxation, including solidarity surcharge.
Greece	25	15	-
Hungary	25	15	-
Ireland	25	33	-
Italy	25	26	Separate taxation of capital income.
Latvia	25	20	-
Lithuania	25	15	-
Luxembourg	25	0	No tax applies to the sale of shares held for more than six months.
Malta	25	35	Subject to PIT (max. rate = 35%, above €60,000).
Netherlands	25	31	31% tax rate, which is the maximum rate on the deemed return from capital.
Poland	25	19	-
Portugal	25	28	-
Romania	25	10	-
Slovak Republic	25	0	Capital gains are exempt from tax if shares held for at least one year.
Slovenia	25	28	Capital gains are exempt from tax if shares held for at least 20 years.
Spain	25	26	Rates vary between 19% and 26%.
Sweden	25	30	-

Notes: PIT refers to personal income tax. Note that, in these scenarios, the tax rate equals the average tax rate. Both capital gains tax scenarios disregard any basic exemption, which might lower the tax base. The national capital gains taxation scenario (B) is based on the tax rates that are applied to realised gains from the disposal of shares held for at least one year. Any specific exemption is disregarded.
Source: IBFD Tax Research Platform (accessed on 2 July 2021).

Table 2: Simulated Revenue from Bitcoin Capital Gains Taxation (2020)

Country	Realised capital gains	Bitcoin capital gains tax revenue					
		A) Uniform rate (25%)			B) National CGT rates		
	mio. EUR	mio. EUR	% of GDP	% of property tax revenue	mio. EUR	% of GDP	% of property tax revenue
Germany	497	124.3	0.004	0.316	131.1	0.004	0.333
Italy	261	65.2	0.004	0.167	67.8	0.004	0.173
Denmark	52	13.0	0.004	0.163	21.8	0.007	0.275
Sweden	83	20.7	0.004	0.406	24.9	0.005	0.487
Luxembourg	12	3.1	0.005	0.202	0.0	0.000	0.000
Ireland	73	18.3	0.005	0.441	24.1	0.007	0.582
France	484	120.9	0.005	0.116	145.1	0.006	0.140
Hungary	40	9.9	0.007	0.741	5.9	0.004	0.445
Austria	115	28.7	0.008	0.986	31.5	0.008	1.085
Greece	53	13.3	0.008	0.239	8.0	0.005	0.143
Belgium	147	36.7	0.008	0.231	0.0	0.000	0.000
Romania	71	17.8	0.008	1.306	7.1	0.003	0.522
Finland	80	19.9	0.008	0.538	27.1	0.011	0.732
Spain	379	94.8	0.008	0.329	98.6	0.009	0.342
Poland	190	47.5	0.009	0.540	36.1	0.007	0.410
Netherlands	316	79.0	0.010	0.617	97.9	0.012	0.765
Portugal	113	28.3	0.014	0.634	31.7	0.016	0.711
Malta	8	1.9	0.015	1.259	2.7	0.021	1.763
Cyprus	14	3.5	0.017	1.892	2.8	0.013	1.514
Croatia	36	9.1	0.018	1.600	3.6	0.007	0.640
Lithuania	41	10.3	0.021	6.283	6.2	0.013	3.770
Czech Republic	206	51.4	0.024	4.556	30.8	0.014	2.733
Slovak Republic	100	24.9	0.027	6.756	0.0	0.000	0.000
Slovenia	52	13.1	0.028	4.577	14.4	0.031	5.035
Estonia	33	8.2	0.030	10.656	6.6	0.024	8.525
Latvia	51	12.9	0.044	4.417	10.3	0.035	3.533
Bulgaria	109	27.2	0.045	5.646	10.9	0.018	2.259
EU27	3,615	903.7	0.007	0.310	847.0	0.006	0.290

Notes: CGT abbreviates capital gains tax; "mio." represents million. Scenario A) applies a uniform tax rate (25%), while scenario B) applies the CGT rates that EU member states apply to capital gains from shares (see Table 2). Property tax revenue is based on European Commission, Directorate-General for Taxation and Customs Union (2021). It includes revenue from recurrent taxes on immovable property and other property taxes, such as wealth transfers or net wealth. GDP is based on EUROSTAT data (nama_10_gdp), available from https://ec.europa.eu/eurostat/data/database, accessed on 5 July 2021.
Source: Own calculation, using data by Chainalysis (2021).

SOLVING CHALLENGES IN THE LEVY AND COLLECTION OF THE GOODS AND SERVICES TAX ON VIRTUAL DIGITAL ASSETS (CRYPTOASSETS) IN INDIA

Manohar Samal[1]

Abstract

The upsurge in cryptoasset transactions in India has led the Indian Government to introduce the concept of virtual digital assets for the purpose of levying direct taxes. Although a direct tax mechanism has been formulated, a robust mechanism for the levying and collection of the Goods and Services Tax (GST), India's unified indirect tax system, has not been introduced to date. This has resulted in tax administration-related challenges for authorities dealing with the GST and has created legal interpretational ambiguities for companies in the virtual digital asset industry, leading to the possibility of endless litigation occurring. Therefore, this paper has been written with the objectives of identifying the difficulties that arise when levying and collecting the GST on virtual digital asset transactions and providing possible routes that can be taken in order to counteract such difficulties from the Indian perspective.

Keywords: Goods and Services Tax, Cryptoassets, Virtual Digital Assets, Cryptocurrency, Non-Fungible Tokens.

1. INTRODUCTION

Taxation is one of the most ancient forms of sovereign function carried out by a nation. As technological innovations continue to create new opportunities in the economy, reforms in taxation systems must complement such changes to ensure the protection of both government revenues, and the interests of companies and enterprises involved in such activities. The upsurge in commercial activity relating to cryptoassets has created several dilemmas for jurisdictions across the world since it has exposed the ineffectiveness of centralized tax administration when applied to decentralized commercial activity using cryptoassets, and India is no exception to this. In the Indian scenario, some sort of clarity and tax formalization has been received through the introduction of direct taxes on virtual digital assets, including cryptoassets (Bhattacharjee et al., 2022). However, significant qualms exist in the sphere of India's unified direct tax system, the GST. This is because multiple issues pertaining to tax treatment, classification, valuation, and tax administration challenges exist due to the non-existence of both legislative clarity and tax administrative mechanisms for levying the GST on virtual digital assets.

This paper aims to detail the challenges that currently exist when levying GST on cryptoassets (known as virtual digital assets) in the Indian context and to suggest potential solutions to such challenges. The need for such a study arises from the fact that a robust and uniform indirect tax system is an integral part of prosperous commercial activity. This is true in the Indian context

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as well, since the GST is levied on supplies of goods and/or services in the course or furtherance of business.

2. VIRTUAL DIGITAL ASSETS FROM THE INDIAN PERSPECTIVE

From a layman's point of view, all classes of cryptoasset are included within the ambit of virtual digital assets. A legal definition of virtual digital assets has also been introduced through the Finance Act, 2022 for the purpose of levying direct taxes. Section 3 of the Finance Act, 2022 added a clause—Section 2(47A)—to the Income Tax Act, 1961, which provided a legal definition of the term "virtual digital assets". Since the nomenclature stipulated in the definition is plain and clear, it has been reproduced below:

> 2(47A) "virtual digital asset" means-
>
> (a) any information or code or number or token (not being Indian currency or foreign currency), generated through cryptographic means or otherwise, by whatever name called, providing a digital representation of value exchanged with or without consideration, with the promise or representation of having inherent value, or functions as a store of value or a unit of account including its use in any financial transaction or investment, but not limited to investment scheme; and can be transferred, stored or traded electronically;
>
> (b) a non- fungible [*sic*] token or any other token of similar nature, by whatever name called;
>
> (c) any other digital asset, as the Central Government may, by notification in the Official Gazette specify;
>
> Provided that the Central Government may, by notification in the Official Gazette, exclude any digital asset from the definition of virtual digital asset subject to such conditions as may be specified therein.
>
> Explanation.— For the purposes of this clause,—
>
> (a) "non- fungible [*sic*] token" means such digital asset as the Central Government may, by notification in the Official Gazette, specify;
>
> (b) the expressions "currency", "foreign currency" and "Indian currency" shall have the same meanings as respectively assigned to them in clauses (h), (m) and (q) of section 2 of the Foreign Exchange Management Act, 1999. (Finance Act, 2022 (India), Section 3, Chapter 3, p. 20)

When analyzing the definition of virtual digital assets provided above, it is quite clear that cryptoassets, such as non-fungible tokens, security tokens, and cryptocurrencies, are included. Since cryptocurrencies are not recognized as legal tender in India (Rahman et al., 2018), they do not qualify as "Indian currency" and, hence, would be included under the definition of a virtual digital asset. However, the Central Bank Digital Currency issued by the Reserve Bank of India has the status of a legal tender and is, hence, excluded from the ambit of virtual digital assets (Press Information Bureau, 2023). The Central Board of Direct Taxes has excluded a certain class of non-fungible tokens from the scope of virtual digital assets. Notification No.

75 of 2022 (Income Tax), dated 30 June 2022, excludes those non-fungible tokens from the scope of virtual digital assets where the underlying tangible asset's legally enforceable ownership is transferred during the sale or trading of such non-fungible token (Central Board of Direct Taxes, Department of Revenue, Ministry of Finance, 2022). In such circumstances, where the sale or trading of the non-fungible tokens results in a change of ownership of the underlying asset (legally enforceable), the tokens would not receive the tax treatment of a virtual digital asset but would receive the tax treatment of the underlying asset of the non-fungible token.

Albeit that the aforesaid is applicable for direct taxes, the GST laws in India can also be used with reference to their counterpart direct tax law, the Income Tax Act, 1961, to ensure uniformity in the definition of virtual digital assets for the purpose of levying GST. Legislative history in India has shown that such references to other legislations are often made in order to define particular words, terms, and phrases, thus could prove to be practical for assessees and indirect tax administration alike.

3. THE SCHEME OF THE GST LAWS IN INDIA

The GST is levied in India through five statutes: the Central Goods and Services Tax (CGST) Act, 2017, the State Goods and Services Tax (SGST) Act, 2017, the Union Territory Goods and Services Tax (UTGST) Act, 2017, the Integrated Goods and Services Tax (IGST) Act, 2017, and the Goods and Services Tax (Compensation to States) Act, 2017.

Section 9 of the CGST Act, 2017, Section 9 of the SGST Act, 2017, and Section 7 of the UTGST Act, 2017 provide the charging mechanism for the levy and collection of GST on intra-state supplies of goods or services or both. Intra-state supplies refer to supplies that are made within a provincial state or union territory. Where goods and/or services are supplied within a state, CGST and SGST are levied proportionately, and when goods and/or services are supplied within a union territory, CGST and UTGST are levied proportionately. The reason for such proportionate levy of GST is that it is inherently based on the principle of cooperative federalism between the central and the state governments (*Union of India & Anr. v. M/s Mohit Mineral Pvt. Ltd., Civil Appeal No. 1390 of 2022* [Supreme Court of India]).

Section 5 of the IGST Act, 2017 provides the charging mechanism for the levy of GST on inter-state supplies of goods or services or both. Since Article 269A of the Constitution of India (2022) only permits the central government to levy taxes on inter-state supplies, there is no concept of proportional levy and IGST is collected at the full rate.

Section 8 of the GST (Compensation to States) Act, 2017 levies a cess on the CGST or IGST value being paid for a specific number of goods that are notified by the central government. Generally, these goods include luxury or demerit goods, such as cigarettes, tobacco, aerated waters, motor vehicles, coal, yachts, and aircraft for personal use.

The substratum of GST is "supply" since it is the taxable event under the GST statutes. This is because a transaction will only be treated as a supply if it qualifies as a supply that is made in the course or furtherance of business. For this purpose, Section 7 of the CGST Act, 2017 envisages the scope of supply, which covers sale, transfer, barter, license, rental, exchange, lease, disposal, import, activities covered under Schedule I that may be made without consideration, and deemed supplies covered under Schedule II.

The classification of goods under the GST statutes are aligned to the First Schedule to the Customs Tariff Act, 1975, which, in turn, is aligned to the Harmonized System of Nomenclature (HSN) (Ministry of Finance, 2017). This is compliant with India's obligations under the International Convention on the Harmonized Commodity Description and Coding System (World Customs Organization, 2021). The classification of services is aligned to the United Nations Central Product Classification (GST Council, 2017). For the purposes of assigning specific rates of tax for goods as well as services, Section 9 of the CGST Act, 2017 and Section 5 of the IGST Act, 2017 permitting the central government to issue notifications and rate notifications prescribing the applicable rates of GST have been introduced accordingly. Currently, the rate of tax slabs under GST are 0.25%, 3%, 5%, 12%, 18%, and 28%. Where goods or services cannot be classified as per the rate notifications, the residuary rate of 18% applies.

Under the general scheme of GST, tax is levied on a forward charge basis. This means that a supplier of goods or services collects the amount of GST from the purchaser by raising an invoice and, after collecting the said amount, deposits the tax component in the Government Treasury and appropriates the consideration amount. However, under exceptional circumstances, and in the scenarios notified by the central government as per subsections (3) and (4) of Section 9 of the CGST Act, 2017, and subsections (3) and (4) of Section 5 of the IGST Act, 2017, GST can also be levied under the reverse charge mechanism. In this scenario, the supplier of goods or services is not authorized to collect the GST amount from its customers, and the purchasers have to declare such transactions in their returns and pay GST on them.

With regard to valuation, the general rule is that the value of goods or services shall be the transaction value ascertained by the price actually paid or payable. Such price actually paid or payable includes taxes, cesses, duties, fees, and charges that are statutorily levied, as well as incidental expenses, interests, late fees, and subsidies, but specifically excludes discounts to the price. There are few exceptions to the general mechanism for valuation and such instances are provided under the CGST Rules, 2017.

The fundamental objective of replacing the old indirect taxation system in India with GST was to eliminate the cascading effect of indirect taxes and to introduce a "seamless flow" of input tax credits (*Union of India & Ors. v. VKC Footsteps India Private Limited* (2022) 2 SCC 603 [Supreme Court of India], Part D, 14, iii). The "seamless flow" of input tax credits (*Union of India & Ors. v. VKC Footsteps India Private Limited* (2022) 2 SCC 603 [Supreme Court of India], Part D, 14, iii) has been given prime importance due to the fact that the GST statutes are value-added, destination-based taxes, and the ultimate burden of taxes is borne by the end consumer. This being said, Section 16 of the CGST Act, 2017 stipulates the conditions on the basis of which input tax credits can be availed, and Section 17 stipulates the list of instances known as blocked credits where input tax credits cannot be claimed. For business entities, the benefit of being able to claim input tax credits is that such credits can be directly utilized against future tax liabilities, resulting in reduction of the actual amount paid as taxes from their pockets.

4. CHALLENGES FACED WHEN LEVYING GOODS AND SERVICES TAX ON VIRTUAL DIGITAL ASSETS IN INDIA AND WAYS TO ELIMINATE THEM

There has been an absolute lack of clarity in respect of how GST is to be levied on and collected from the virtual digital asset (cryptoasset) industry. So far, crypto exchanges and non-fungible token marketplaces, including the various service providers related to the industry, have been

paying tax under protest as a result of investigation proceedings in which it has been alleged that they have engaged in tax evasion (Choudhary, 2022). Such levies of the residuary tax rate can threaten the long-term survival of the industry and, hence, it becomes necessary to discuss the various interpretational challenges that have stood in the way of the effective classification, valuation, levy, and collection of GST on virtual digital assets. Such challenges and potential solutions, with regard to cryptocurrency, non-fungible tokens, security tokens, and blockchain service providers, will be discussed in detail below.

4.1. Cryptocurrencies and Crypto Exchanges

In the Indian context, a cryptocurrency has so far been defined as unregulated digital money, the issuers and controllers of which are the developers themselves (*Internet and Mobile Association of India v. Reserve Bank of India, Writ Petition (Civil) No. 528 of 2018* [Supreme Court of India]). Blockchain technology is used by cryptocurrencies for the purposes of storage and transfer, and by crypto exchanges in order to execute trades (Rajput et al., 2019).

The significant challenge faced when levying GST on cryptocurrency in India is the ascertainment of a cryptocurrency's nature as goods, services, or money. Undoubtedly, the Central Bank Digital Currency issued by the Reserve Bank of India has the status of legal tender (Press Information Bureau, 2022). However, other cryptocurrencies are not legal tender since they are treated as unregulated digital money, the issuers and controllers of which are the development companies themselves. Under such circumstances, a cryptocurrency would not be treated as money as defined under Section 2(75) of the CGST Act, 2017 since the primordial requirement for it to be recognized as a legal tender or a foreign currency by the Reserve Bank of India is not satisfied. As far as goods are concerned, Section 2(52) of the CGST Act, 2017 defines them as:

> every kind of movable property other than money and securities but includes actionable claim, growing crops, grass and things attached to or forming part of the land which are agreed to be severed before supply or under a contract of supply.

Section 2(102) of the CGST Act, 2017 states that the word services:

> means anything other than goods, money and securities but includes activities relating to the use of money or its conversion by cash or by any other mode, from one form, currency or denomination, to another form, currency or denomination for which a separate consideration is charged.

Since cryptocurrency can have ownership assigned to it, and its inherent characteristics represent those of an intangible movable property, its nature, for the purposes of GST law, seems to lean towards the goods side (Bhattacharjee, 2022).

The difficulty with treating cryptocurrency as goods is that the classification of goods in India is aligned to the HSN, which does not recognize digital goods such as cryptocurrencies. This is because the World Trade Organization's Moratorium on Customs Duties on Electronic Transmissions (International Chamber of Commerce & International Trade Centre, 2023) prevents the levy of customs duties on digital and electronically transmitted goods. Therefore, recognition by the HSN would result in countries having to treat such transmissions as goods and levy customs duties on their import. This being the scenario, in the absence of a specific

treatment of cryptocurrency as goods or services, there is lack of clarity in respect of the true nature of cryptocurrency for the purpose of levying GST.

The next challenge which has arisen in this respect is to decide whether GST is to be levied on the entire transaction value or only on the service commission component in respect of the facilitation and trading services provided by the crypto exchanges. Currently, GST is collected from crypto exchanges at the rate of 18%, as the services that the exchanges provide are treated as financial services, which are covered under chapter heading 9971 of the rate for services (Ministry of Finance, Government of India, 2017). Such tax is only collected on the value of the commission earned by the crypto exchanges. However, there have been proposals to levy GST on the entire transaction value of the cryptocurrency (Sinha, 2022). Operational difficulties would arise when attempting to levy GST on the entire transaction value of the cryptocurrency due to inability to identify the taxable person. The crypto exchange cannot be made to pay tax on the entire value of the transaction since it earns only commission for conducting facilitation and trading services. In many instances, there may not be a registered cryptocurrency supplier or recipient carrying out such transaction in the course or furtherance of business, and transactions may even be related to personal investments and not associated with any business activity. In the absence of an identified taxable person under the GST statutes, where tax is to be levied on the entire cryptocurrency value, there is lack of clarity in this respect.

In respect of valuation, instances may arise where cryptocurrency is being presented as consideration in a barter transaction. There is an absolute lack of legal clarification as to which portion of the transaction should be treated as the subject matter of tax and which portion of the transaction is to be treated as consideration, since this is subjective.

Unless a specific mechanism is brought forth by the central government in consultation with the Central Board of Indirect Taxes & Customs for the levy of GST on cryptocurrency, the best possible way in which to classify and pay GST in the status quo of the GST statutes would be to continue to levy it at the rate of 18% on crypto exchanges on the portion of commission earned by them for providing the financial services of trading and facilitation under chapter heading 9971 of the rate notification for services (Ministry of Finance, Government of India, 2017). Furthermore, to ensure that tax is collected on the entire value of the cryptocurrency transaction, crypto exchanges can choose to be treated as electronic commerce operators for tax purposes.

Section 2(45) of the CGST Act, 2017 defines an "electronic commerce operator" as any natural or juridical person "who owns, operates or manages digital or electronic facility or platform for electronic commerce" and the term "electronic commerce" is defined under Section 2(44) of the same Act as "the supply of goods or services or both, including digital products over digital or electronic network". On a conjoint reading of sub-sections (44) and (45) of Section 2 of the CGST Act, 2017, a crypto exchange could fall within the ambit of electronic commerce operators for the purposes of GST since it hosts an electronic facility or platform for cryptocurrency trading and transfer on the blockchain, and the supply by the supplier to the recipient on such crypto exchange can be treated as a supply of a digital product, which is covered under the ambit of electronic commerce operators. The additional benefit of conferring the tax treatment of electronic commerce operators on crypto exchanges can help to resolve the dilemma about whether or not tax should be collected on the full value of the cryptocurrency. This is because electronic commerce operators often facilitate supplies between two persons who may or may not be registered under GST and may or may not be making such supplies in

the course or furtherance of business. In order to prevent people from escaping taxation, Section 52 of the CGST Act, 2017 introduced the concept of tax collected at source, where the electronic commerce operator is required to pay 1% on the entire value of the supply taking place on its electronic commerce platform by collecting such amount from the purchaser. When applied to the context of crypto exchanges, this would be a workable solution since the government would not only receive GST on the commission earned by the crypto exchanges, but also on the entire value of the cryptocurrency supplied on such crypto exchange.

As pointed out initially, the general mechanism for valuation is that the value on which GST is to be levied is the transaction value. Wherever the transaction value is recognized, Section 15(1) of the CGST Act, 2017 would be applicable and GST would be leviable on such transaction value. However, in instances where the value of the cryptocurrency cannot be ascertained merely based on the transaction value, such as in a barter transaction, Section 15(4) of the CGST Act, 2017 would become applicable and the valuation rule under Rule 27, which requires the open market value of such supply to be treated as the taxable value of such supply, will apply. Accordingly, the open market value ascertained by the value of a particular cryptocurrency on the crypto exchange on the day when such cryptocurrency is supplied would become the value of such cryptocurrency in a barter transaction. Where it cannot be ascertained whether the cryptocurrency is the subject matter being supplied for other goods in consideration or if the cryptocurrency itself is the consideration, the commercial intent can be deciphered from a contract or the conduct between the parties, and the correct tax treatment can be applied on this basis.

4.2. Non-Fungible Tokens and Marketplaces

A non-fungible token is a digital token that has an underlying asset with intrinsic value and is recorded on the blockchain (Kraizberg, 2023). As its nomenclature suggests, such a token is non-fungible and represents a unique underlying asset which cannot be interchangeable and can only be represented by such tokens. Under Indian law, non-fungible tokens that result in the transfer of ownership of underlying tangible assets which is enforceable in law are not treated as non-fungible tokens (Central Board of Direct Taxes, Department of Revenue, Ministry of Finance 2022). This means that only non-fungible tokens that have intangible underlying assets—for example, unique art products, such as books, music, paintings, drawings, videos, audio recordings, games, objects in the metaverse, and any other form of unique information—would be taxable as non-fungible tokens under the GST. Undoubtedly, clear demarcation between underlying tangible assets and intangible assets for the purposes of treating such tokens as non-fungible has been introduced under the direct tax mechanism, but it is likely that such definition may be adopted under the GST in the form of referential legislation.

Currently, GST is only levied on the commission received by those in the non-fungible marketplace for providing financial services, such as the facilitation and trading of non-fungible tokens, under chapter heading 9971, at the rate of 18% (Ministry of Finance, Government of India, 2017). However, when it comes to the actual value of the non-fungible token that is being traded or the ownership of which is being exchanged, there is no pristine mechanism by which to effectuate smooth levy and collection. The main dilemma associated with non-fungible tokens is whether or not their classification and valuation need to be made on their value or that of the underlying assets. If classification is based on the value of the underlying asset involved, the GST rate will differ in every transaction. For example, when a painter or a music composer sells their original work as a non-fungible token, it falls under

tariff entry 999693—Original works of authors, composers and other artists except performing artists, painters and sculptors"—and the rate of tax applicable would be 18% (Ministry of Finance, Government of India, 2017). However, when non-fungible tokens are being transferred in the course or furtherance of business with an e-book, which is being sold without the involvement of its original author, as an underlying asset, tariff entry 998431—"On-line text based information such as online books, newspapers, periodicals, directories and the like"—would apply, and the rate of tax charged would be 5% (Ministry of Finance, Government of India, 2017). Per contra, if the non-fungible token is to be taxed regardless of the underlying asset, it would be treated as an online information database access or retrieval service.

Section 2(17) of the IGST Act, 2017 defines "online information and database access or retrieval services" as those "services whose delivery is mediated over the internet or an electronic network and the nature of which renders their supply essentially automated and involving minimal human intervention and impossible to ensure in the absence of information technology". It also provides a list of examples comprising: firstly, "advertising on the internet"; secondly, the provision of cloud services; thirdly, the "provision of e-books, movie, music, software and other intangibles through telecommunication networks or internet"; fourthly, the provision of any "data or information, retrievable or otherwise, to any person in electronic form through a computer network"; fifthly, "online supplies of digital content (movies, television shows, music and the like)"; sixthly, "digital data storage"; and, seventhly, "online gaming" (IGST Act, 2017, Section 2(17), i-vii). The supply of non-fungible tokens can be seen as the supply of online information and database access or retrieval services since, in simple terms, unique information or artistic creation is being supplied through a token which is non-fungible over the blockchain network and, due to the inclusive and wide embracing scope of online information, database access, and retrieval services, the supply of non-fungible tokens can be covered under it. Thus, the applicable classification would be chapter heading 9984 of Ministry of Finance, Government of India (2017), which includes online content and information services.

This being said, levying GST on the non-fungible token itself instead of the underlying asset would be more suitable under the current scheme of the GST statutes and could help the industry to gain better clarity on the taxability of such tokens. However, this is subject to the requirement that the central government, in consultation with the GST Council, formulates a standard rate of tax applicable for the supply of non-fungible tokens.

If GST is levied at the full rate of the non-fungible token, as envisaged above, the question that needs answering is which taxable person is liable? This is because, as pointed out above, the non-fungible token marketplace pays 18% GST on the financial services of facilitation and trading provided by it to the supplier and the recipient. Generally, the marketplace does not collect the amount of consideration from the purchaser and, therefore, should not be subjected to GST on the full value of the non-fungible token. In the ordinary course of events, the supplier is often the creator of the non-fungible token and, therefore, the transaction would be treated as taking place in the course and furtherance of business, and tax can be collected from the recipient by the supplier and paid to the Government Treasury. Where the supplier is unregistered, the recipient of the non-fungible tokens can be specifically included under the reverse charge mechanism by way of an inclusion in the reverse charge notifications. In this manner, under the current mechanism, GST can be levied not only on the commission earned by the non-fungible token marketplace, but on the entire value of the transaction subject to the introduction of a uniform rate for non-fungible tokens.

4.3. Security Tokens

A security token is a digital token issued on the blockchain by an issuer company with either that company's equity or debt securities as its underlying asset (Deloitte, King & Wood Mallesons, University of Hong Kong, & HKbitEx, 2020). Although there is an absence of clear identification of security tokens as a "security" under Indian law, security tokens possess inherent characteristics of investment contracts and derivatives, and also satisfy the Howey Test as laid down by the Supreme Court of the United States of America (*S.E.C. v. Howey* (1946) 328 U.S. 293 [Supreme Court of the United States of America]). As the Allahabad High Court has accepted the Howey Test under Indian law as well (*Paramount Bio-Tech Industries Limited v. Union of India* (2004) All. L.J. 2552 [Allahabad High Court]), a security token, by implication, would also be treated as a security under the Indian law. Section 2(101) of the CGST Act, 2017, assigns the definition of securities as is provided under the Securities Contracts (Regulation) Act, 1956. Section 2(h) of the Securities Contracts (Regulation) Act, 1956 provides an inclusive definition of securities which includes "shares, scrips stocks, bonds, debentures, debenture stock or other marketable securities of a like nature", as well as derivatives, collective investment scheme units, security receipts, mutual fund scheme units, "government securities", "rights and interests in securities" and such other instruments that are declared by the Central Government to be securities. On a conjoint reading of the definition of securities under Section 2(h) of the Securities Contracts (Regulation) Act, 1956 and the principles affirmed by the Howey Test, security tokens, in substance, would qualify as a security under Indian law. This being said, security tokens can be excluded from the entire ambit of the GST accordingly.

As discussed above, the definition of goods under Section 2(52) of the CGST Act, 2017 and the definition of services under Section 2(102) of the CGST Act, 2017 specifically exclude securities and, therefore, render them to be outside of the purview of taxability under the GST statutes. Considering the inherent nature and role of security tokens, it is best kept out of the purview of the GST statutes and the ideal way of taxing such security tokens would be to collect Securities Transaction Tax on every executed trade as per its mechanism (Malik, 2014).

4.4. Other Blockchain Service Providers

There are a few types of service provider on the blockchain that are indispensable for undertaking the trading and transfer of cryptoassets. These include blockchain wallet service providers, blockchain miners, and blockchain validators. Due to an upsurge of payment wallet and payment aggregator companies in India, there is clarity in respect of the taxability of such services. Accordingly, even blockchain wallet companies would be subjected to tax at the rate of 18% under chapter heading 9971 of the rate notification for services (Ministry of Finance, Government of India, 2017).

Blockchain miners and blockchain validators conduct the crucial tasks of securing and validating nodes containing information on the blockchain, verification, and cryptographic hashing functions. They receive "gas fees" as a reward for the computational resources that they use when carrying out such tasks (Azzolini et al., 2019). There could be an interpretational issue with regard to how such gas fees are to be classified under GST. This is because blockchain miners and validators could be seen as providing general business support services or information technology services, each of which are classified in different ways. However, as per the explanatory notes issued by way of annexure to the rate notification for services, the activities carried out by blockchain miners and validators possess the characteristics of

information technology infrastructure and network management services and, therefore, would be classified under chapter heading 9983, attracting tax at the rate of 18% (Ministry of Finance, Government of India, 2017).

5. CONCLUSION

In pursuance of the discussions undertaken in the present paper, it is quite evident that even though a substantive recognition and method of classifying, valuating, and levying tax on virtual digital assets is possible, it is devoid of a concrete procedural and mechanical framework that renders such substantive recognition and the effective ability for the tax administration to levy GST on virtual digital assets otiose. In addition, prevailing ambiguities and the possibility that multiple interpretations will arise continue to risk an upsurge in disputes between the virtual digital asset industry and the tax administration, which could negatively affect the growth of the virtual digital asset (cryptoasset) industry and hamper the ability of the tax administration to collect GST in a structured manner. Therefore, the introduction of a detailed mechanism clarifying the classification, valuation, levy, and collection of GST on virtual digital assets in India is needed by this rapidly growing industry.

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THE TAXATION OF CRYPTOASSETS IN INDIA: A REVIEW OF EVOLVING TAX POLICY AND LAW

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Abstract

The evolution of cryptoassets has been an exasperating experience for tax administrations the world over and it is no different in India. Over the years, the Indian authorities have struggled to frame regulations delineating the acceptability and contours of cryptoasset transactions and the issue has been compounded by judicial involvement. Nonetheless, the Indian tax administration has shed its inertia in order to introduce a specific and high tax incidence regime for cryptoassets, which treats these assets as distinct from capital assets. The value-added tax (VAT) rules, however, are a work in progress. The purpose of this paper is to trace the evolution of the taxation of, and regulatory framework for, cryptoassets in India, which continue to be intricately intertwined.

The methodology employed in this paper is deliberately less analytical and more informative so as to inform the readers about contemporary developments, thereby highlighting the challenges faced by developing nations when framing tax policy and law for cryptoassets. The paper finds that the existing regulations are a work in progress, with larger concerns, such as money laundering and tax evasion, overwhelmingly dictating the evolution and enforcement of tax laws for cryptoassets. These findings have serious implications for the crypto ecosystem, because the initial reaction of the crypto market participants to these high tax incidence and strenuous withholding tax requirements reveals a clear inverse correlation between the tough tax and regulatory regime and crypto transactions.

Keywords: Virtual Digital Assets, Cryptoassets, Taxation, India.

1. INTRODUCTION

Like the evolving contours and technological applications of crypto[2], the policy and regulatory response of the Government of India (GOI) to tax and/or regulate these assets is a work in progress. Although there have been multifarious developments in the past few years, the GOI's final policy stance is yet to crystalise. Nonetheless Indian policy's tryst with crypto presents enough fodder for a researcher to chew on to help them to understand the competing priorities and intertwined variables affecting the regulation and taxation of crypto, especially in a developing country.

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[2] Throughout this essay—for ease of reference, consistency, and holistic coverage—the expression "crypto" is employed to refer to the amalgam of various technological innovations and financial products that are modeled on blockchain technology. Specific references are made where regulations refer to a specific blockchain technology product, such as cryptocurrencies or non-fungible tokens, etc.

This essay is an attempt to detail the priorities and policy considerations that Indian policymakers have engaged themselves in, together with the resultant regulations. This reveals the innate challenges associated with framing an appropriate response to an evolving technology. The scope of this essay is limited to the dissection of the tax policy and law in India relating to crypto technology and its products. Nonetheless, in as much as certain non-tax regulatory and policy variables are intertwined, a reference to these variables has been appropriately factored in. The underlying intent is to detail the holistic span of constituents that have caught the attention of the policy-framers for the reader. These constituents, which span beyond tax are, in any case, relevant, as they form both the context and the bedrock of the process employed to calibrate the tax system's response to the evolving contours of crypto.

2. REGULATORY SCEPTICISM AND JUDICIAL REBALANCE: INDIA's FIRST TRYST WITH CRYPTO

Cryptocurrency-related developments were taken cognisance of by the financial market regulator, i.e. the Reserve Bank of India (RBI), for the first time in 2013 (RBI, 2013). The RBI cautioned market players against using, holding, or trading cryptocurrencies (RBI, 2013). Perturbed by the growth in transactions, in 2018, the RBI outrightly and equivocally sought to ban cryptocurrencies. Exercising its wide powers, it issued statutory and binding instructions directing banking institutions, inter alia, not to deal in virtual currencies (VCs) "or provide services for facilitating any person or entity in dealing with or settling VCs" (RBI, 2018a).[3] These instructions were preceded by a policy statement which justified the measures as being introduced in a step towards "ring-fencing regulated entities from virtual currencies".[4] This response from the RBI was, inter alia, driven by "concerns of consumer protection, market integrity and money laundering" (RBI, 2018b, p. 5),[5] and reflected the views expressed by the GOI's finance minister, tax board, securities market regulator, and other officials in their earlier deliberations.[6]

Feeling aggrieved by the loss of opportunities in view of these restrictions, the prescriptive policy stance was challenged by crypto players before the Supreme Court of India (SCI). The challenge was made on rather technical grounds, whereby it was highlighted that cryptoassets

[3] The RBI (2018a) also clarified that such "services include maintaining accounts, registering, trading, settling, clearing, giving loans against virtual tokens, accepting them as collateral, opening accounts of exchanges dealing with them and transfer/receipt of money in accounts relating to purchase/sale of VC".

[4] The following reasons were assigned as the rationale for the instructions:

> Technological innovations, including those underlying virtual currencies, have the potential to improve the efficiency and inclusiveness of the financial system. However, Virtual Currencies (VCs), also variously referred to as crypto currencies and crypto assets, raise concerns of consumer protection, market integrity and money laundering, among others.
>
> Reserve Bank has repeatedly cautioned users, holders and traders of virtual currencies, including Bitcoins, regarding various risks associated in dealing with such virtual currencies. In view of the associated risks, it has been decided that, with immediate effect, entities regulated by RBI shall not deal with or provide services to any individual or business entities dealing with or settling VCs. Regulated entities which already provide such services shall exit the relationship within a specified time. (RBI, 2018b, p. 5)

[5] Each of these variables has been regularly cited by the RBI as a larger policy objective with a view to insulating the market and investors.

[6] It is not out of place to point out that the GOI even mulled over multiple draft legislations, purportedly seeking to ban cryptocurrencies.

were not legal tender but were instead akin to ordinarily traded goods and, hence, it was beyond the regulatory prowess of the RBI to prohibit them, given its limited mandate to regulate the financial and credit market. The SCI accepted this challenge and quashed the RBI's circular in a detailed judgment (*Internet and Mobile Association of India v. Reserve Bank of India* [2020] SCC Online SC 275).[7] The key findings of the SCI are detailed below.

- Under the extant statutory framework governing the exercise of regulatory powers, the RBI is empowered to regulate any currency or instrument that affects financial markets in India. In view of the technological possibilities offered by cryptocurrencies and their contemporary usage, the SCI rejected the contention that they "are just goods/commodities and can never be regarded as real money" (*Internet and Mobile Association of India v. Reserve Bank of India* [2020] SCC Online SC 275, section 6.86, p. 107). Hence, cryptocurrencies are not beyond the regulatory purview of the financial market regulator (*Internet and Mobile Association of India v. Reserve Bank of India* [2020] SCC Online SC 275, section 6.87, p. 108). Accordingly, the RBI's instructions about cryptocurrencies are not ultra vires its powers (*Internet and Mobile Association of India v. Reserve Bank of India* [2020] SCC Online SC 275, section 6.88, p. 109).[8]
- The SCI further concluded that the apprehensions of RBI with regard to the possibility of cryptocurrencies affecting the functioning of the financial markets were not completely out of place and, hence, the exercise of regulatory power was beyond cavil.
- Nonetheless, the SCI disapproved the outright ban on market players accessing formal banking channels in order to trade cryptocurrencies. According to the SCI, the complete preclusion of banking platforms for cryptocurrencies violated the constitutional protection to right to carry out business as it failed the "test of proportionality" (*Internet and Mobile Association of India v. Reserve Bank of India* [2020] SCC Online SC 275, section 6.156, p. 152). Taking cues from the developments in other jurisdictions, the SCI highlighted the failure of the RBI to consider alternatives to an outright exclusion. It took note of the prevailing thought within the RBI itself that "a ban might be an extreme tool and that the same objectives can be achieved through regulatory measures" (*Internet and Mobile Association of India v. Reserve Bank of India* [2020] SCC Online SC 275, section 6.167, p. 173), which the SCI juxtaposed alongside the fact that "[t]ill date, RBI has not come out with a stand that any of the entities regulatory by it … has suffered any loss" (*Internet and Mobile Association of India v. Reserve Bank of India* [2020] SCC Online SC 275, section 6.172, p. 176). On this standalone ground of violation of the proportionality principle, therefore, the SCI quashed the RBI's instructions and permitted unrestricted access to banking facilities for trade in cryptocurrencies.

Even though the operative part of the SCI's decision was limited in scope and merely called upon the RBI to have a rethink, it was perceived by the market players as a judicial vindication

[7] https://main.sci.gov.in/supremecourt/2018/19230/19230_2018_4_1501_21151_Judgement_04-Mar-2020.pdf

[8] The SCI, inter alia, supplemented this rationale to observe that "if a Central authority like RBI, on a conspectus of various factors perceive the trend as the growth of a parallel economy and severs the umbilical cord that virtual currency has with fiat currency, the same cannot be very lightly nullified as offending" the fundamental rights of the citizens (*Internet and Mobile Association of India v. Reserve Bank of India* [2020] SCC Online SC 275, section 6.156, p. 152).

and legitimisation in India of crypto products in general and cryptocurrencies in particular.[9] The RBI's abstinence from taking remedial action after the SCI's decision added further credence to such market sentiments, resulting in the existence of more than 100 million crypto owners in India, the highest number in any country in the world (Livemint, 2021). This has been witnessed in form of increased citizenry participation in trade in Bitcoins and other digital currencies, the mushrooming of crypto exchanges, mass public advertisements, and the search for greater public participation.[10]

3. THE DIRECT TAX LANDSCAPE

Background

Regulations in the Indian direct tax laws relating to any class of cryptoassets have not been in place for long. On 1 February 2022, as part of the annual budget, the first specific tax policy proposals for the taxation of cryptoassets were unveiled by the GOI. These proposals were accepted by the Indian Parliament, which enacted the Finance Act, 2022 to amend the Indian Income Tax Act, 1961 (ITA), inter alia, to tax certain aspects of cryptoassets from 1 April 2022 onwards. This section explains the salient features of the new direct tax law governing cryptoassets in India.

Scope

In order to comprehensively address the taxability of cryptoassets, a new definition has been inserted into Section 2(47A) of the ITA. It refers to "virtual digital assets" (VDAs), a term which has three limbs: (a) cryptoassets[11] (which exclude "Indian currency or foreign currency")[12] (b) non-fungible tokens (NFTS)[13], and (c) "any other digital asset" which may be included in the scope of VDAs by the GOI through an official notification (ITA, Section 2[47A]). Thus, the definition appears to be forward-looking, which permits the GOI to address

[9] "There has been a massive increase in retail investors in India after the SCI ruled against the Reserve Bank of India ban of 2018, which prohibited all banks from allowing customers to trade in crypto transactions" (Sharma, 2022).

[10] "Around 15 million Indians are believed to have made investments in private cryptocurrency holdings. Cryptocurrency investments in the nation increased from $923 million in April 2020 to almost $6.6 billion by May 2021, a growth of about 400% in only one year" ("India among the global leaders for crypto adoption", 2021).

[11] Defined as "any information or code or number or token (not being Indian currency or foreign currency), generated through cryptographic means or otherwise, by whatever name called, providing a digital representation of value exchanged with or without consideration, with the promise or representation of having inherent value, or functions as a store of value or a unit of account including its use in any financial transaction or investment, but not limited to investment scheme; and can be transferred, stored or traded electronically" (ITA, Section 2[47a]).

[12] In the scheme of VDAs, these expressions have been linked to the foreign exchange controls of India. According to one author, this linkage creates a complex issue because

> [c]ountries such as El Salvador and recently, (with effect from April 27, 2022) Central African Republic have adopted Bitcoin as legal tender. Would that mean that Bitcoin is a foreign currency and therefore, transactions in Bitcoin would not have to be tested against the VDA taxation regime? (Jhunjhunwala, 2022, p. 111)

[13] In the scheme of VDAs, the GOI is required to specify the NFTs subject to tax in notifications (ITA, Section 2[47A], Explanation [a]). To this end, the GOI has specified all NFTs other than those "whose transfer results in transfer of ownership of underlying tangible asset and the transfer of ownership of such underlying tangible asset is legally enforceable" (Central Board of Taxes, Department of Revenue, Ministry of Finance, 2022a).

technological advancements without asking Parliament to amend the law each time in order to expand its scope. However, to avoid any unintended externalities, Parliament has empowered the GOI to "exclude any digital asset from the definition of virtual digital asset subject to such conditions as may be specified therein" (ITA, Section 2[47A]).[14]

Thus, under the incumbent regulations, Parliament has conferred wide discretion upon the GOI to define the scope of cryptoassets' taxability by giving it the flexibility to expand or prune the list of taxable cryptoassets.[15] This legal position appears to be a logical response by which to address the ever-changing dynamics and overwhelming technological variables that shape the contours of cryptoassets.

Special Charging Provision

The specific definition addressing the scope of cryptoassets within the ITA has been complemented by a special charging provision[16] which exclusively addresses the tax consequences arising from the transfer of VDAs (ITA, Section 115BBH). The provision is agnostic to the tax residence of the transferor and thus applies to income earned by both residents and non-residents.

All forms of transfer are taxed under this provision, which, given the width of the statutory provision, include transactions involving the barter or exchange of VDAs.[17] Income from such transfers is taxable at a fixed rate of 30%.[18] Only the cost of acquisition[19] is allowed as a deduction when determining the income earned from the transfer. The provision specifically precludes the deduction of any other expenditure or set-off of any loss from other income in order to determine the income (ITA, Section 115BBH[2][a]). In fact, each VDA is considered to be distinct for tax purposes because a loss on a sale of VDAs is not permitted to be set off to determine the income from the transfer of another VDA or to be set off against any other income.[20]

The salient features and consequences of the aforesaid scheme are as follows:

[14] Exercising this power, the GOI has excluded the following from the scope of VDAs: (i) gift cards/vouchers, (ii) loyalty/reward points, and (iii) subscriptions to websites/platforms/applications (Central Board of Taxes, Department of Revenue, Ministry of Finance, 2022b).

[15] However, official digital currency is excluded from the scope of VDAs (ITA, Section 2[47A].

[16] Chapter XII of the ITA is replete with such special provisions for the "determination of tax in certain special cases". To illustrate, Section 115BBF ("Tax on income from patent") and Section 115BBG ("Tax on income from transfer of carbon credits") precede Section 115BBH, which taxes cryptoassets.

[17] Section 115BBH(3) of the ITA, read with Section 2(47) of the ITA, which covers sales, exchanges, relinquishments, compulsory lawful acquisitions, etc.

[18] To be increased by applicable surcharge and cess, which would depend on which tax slab the income of the taxpayer concerned falls under.

[19] There is no guidance in law as to what constitutes the "cost of acquisition" of a VDA. Although Section 55 of the ITA contains a definition of the term, this is for the limited purpose of assessing capital gains and has not been specifically extended to include VDAs. This is potentially litigative. See generally, the GOI's Response in Parliament to Lok Sabha Unstarred Question No. 2800 (CoinSwitch, 2023) which, inter alia, states that "infrastructure costs incurred in mining of VDA (e.g. crypto assets) will not be treated as cost of acquisition as the same will be in the nature of capital expenditure which is not allowable as deduction as per the provisions of" the ITA (p. 49).

[20] This implies that "any loss from transfer of a VDA is a sunk cost and the seller is liable to pay tax on every profit made on transfer of a VDA" (Jhunjhunwala, 2022, p. 113).

- The introduction of a new scheme appears to be guided by the legislative intent to postulate cryptoassets as a distinct area of taxation.[21] This scheme also insulates cryptoassets from the application of the general provisions of the ITA.
- Due to a special provision, the ITA has obviated the issues relating to the characterisation of income from cryptoassets (such as business income versus capital gains etc.) and, thus, distanced itself from the debates about tax treatment in other countries.[22]
- The current scope of the tax law under the ITA is limited to the transfer of cryptoassets. Hence, the incumbent tax law is conspicuously silent on the tax consequences that arise from the origin/evolution/creation of cryptoassets. For illustration, certain activities qua VDAs, such as the mining of or the mere acquisition of crypto coins (without a subsequent transfer), appear to be outside of the scope of the ITA.
- Under the incumbent provisions, income from transfer of VDAs is taxed at the highest rate under the ITA. The GOI is on record acknowledging that the high tax incidence is intentional in order to discourage the trading of cryptoassets.
- Digital currency that constitutes legal tender is excluded from the scope of VDAs. Thus, while cryptocurrency is covered within the scope of tax as VDAs, the transfer of official digital currency is a carve-out and not taxed.
- There is no distinction in law between cryptoasset transactions that take place on centralised exchanges and those that take place on decentralised exchanges. Thus, there is parity in the tax law. However, the tax incidence and withholding obligations[23] may differ owing to differential factual transaction settings and the roles played by the participants.

Gifts of Cryptoassets are also Taxable

Like income from transfers, gifts of cryptoassets are taxable under the ITA. The provision governing the taxation of gifts (ITA, Section 56[2][x])[24] has been expanded to include gifts of VDAs.[25] However, in view of the general scheme governing the taxation of gifts, the generic exceptions (such as *de minimis* exemptions, gifts amongst relatives, gifts to charitable institutions, etc.) would also apply to gifts of VDAs.

The tax liability is different when gifts of cryptoassets are made than when cryptoassets are transferred. When cryptoassets are transferred, the tax incidence arises in the hands of the transferor, while when they are gifted, it arises in the hands of the transferee i.e., the recipient of the gift.

[21] In their 2022-2023 budget speech, the GOI's Finance Minister specifically stated that "the magnitude and frequency of these transactions have made it imperative to provide for a specific tax regime" (GOI, 2022a, paragraph 131, p. 23).
[22] For illustration, see IRS (2014), which treats virtual currency as property for federal tax purposes. See also Sharma (2022) for a summary of tax regulations in select jurisdictions.
[23] See, generally, Central Board of Taxes (TPL Division), Department of Revenue, Ministry of Finance, GOI (2022a; 2022b).
[24] It is noteworthy that a transfer with inadequate consideration is considered a gift for the purposes of this provision.
[25] ITA, Explanation to Section 56(2)(x).

Tax Withholding Obligation

"In order to widen the tax base from the transactions so carried out in relation to" VDAs (GOI, 2022b, p. 55), a special tax withholding provision has also been introduced in the ITA (ITA, Section 194S). The provision obliges both resident and non-resident buyers of VDAs to observe the withholding tax. However, the withholding is limited to transactions where the transferor is an Indian tax resident.

The withholding obligation applies irrespective of whether or not the transfer is against monetary consideration and obliges the buyer to ensure that appropriate tax on VDAs has been paid where the VDA is transferred on account of consideration in kind or in exchange for another VDA.[26]

The withholding is 1% of the consideration for the transfer of a VDA. However, certain *de minimis* exemptions have been stipulated which relieve the transferee from the need to observe the withholding obligation in certain situations.

By way of certain administrative clarifications, the GOI has issued guidelines to remove hardships in certain situations, especially in context of scenarios where there are multiple tax withholdings (Central Board of Taxes [TPL Division], Department of Revenue, Ministry of Finance, GOI, 2022a, 2022b).

A distinct reporting requirement—Form No. 26QF—has also been notified by the GOI to effectuate the withholding compliance (Central Board of Taxes, Department of Revenue, Ministry of Finance, 2022c).

Effective Dates

The provisions governing taxability on the transfer of VDAs came into force from 1 April 2022. The withholding obligation, however, was deferred and came into force from 1 July 2022.

Doubts continue to linger about the manner of taxability[27] of cryptoasset transactions that had taken place before the provisions applied (31 March 2022), as there is no clarity either in the law or by way of an official statement from the GOI. In such cases, it is possible that, depending upon their specific nature, different tax considerations may apply (cryptoassets may be taxed under business income provisions, investors may be taxed on capital gains, etc.).

Tax Treaty Relief

Owing to the peculiar status of income earned from cryptoassets, there are doubts about the availability of tax treaties for non-residents subjected to such tax in India. A view exists that cryptoassets are not treated as capital assets and their transfer does not result in business income

[26] It is argued that by extending the withholding obligation to such transactions, the withholding obligation may trigger "both, the buyer and seller, being mutually liable to pay consideration in exchange for transfer of a VDA" (Jhunjhunwala, 2022, p. 113).

[27] For illustration, a High Court is seized of the issue of whether withholding tax obligations under other provisions of the ITA are applicable to crypto exchanges in the wake of the tax department's actions against them on the alleged grounds that such transactions facilitate e-commerce activity. See Moneylife Digital Team (2022).

in view of the scheme for the taxation of VDAs.[28] Thus, in view of the domestic law characterisation in India, income from cryptoassets may be considered under the "other income" provisions of the tax treaties.[29] Such characterisation of income from cryptoassets can result in differential treatment for non-residents, as most Indian tax treaties permit India, as the source country, to tax such income that arises in India.[30] In such cases, at least double taxation relief can be claimed in the resident states, provided such states agree that the crypto tax in India is in accordance with the provisions of the respective tax treaties. However, there are some Indian tax treaties that do not have an "other income" provision altogether.[31] In such cases, the income may be subject to double taxation.

4. THE EVOLUTION OF DIRECT TAX POLICY: A RECAP

The aforesaid legal position on direct taxes came into force when the parliament approved the GOI's proposals. This process involved extensive parliamentary scrutiny and debates that provide illuminating insights into the rationale for the tax law as it stands.

According to the GOI (2022a), the two brief yet interlinked reasons that prompted it to change the status quo were (a) that there had been "a phenomenal increase in transactions" and (b) this meant that the "magnitude and frequency of these transactions have made it imperative to provide for a specific tax regime" (paragraph 131, p. 23).[32] Each of these received mixed responses from the members of Parliament, with some questioning the move while others supported the proposed changes. Some of the main observations are detailed below:

- According to Gaurav Gogoi (Lok Sabha Secretariat, 2022), the 30% tax rate "is intended to disincentive and discourage people from trading, occupying or holding" VDAs (p. 824).[33] Gogoi notes that this is despite a lack of clarity, particularly in relation

[28] A similar situation has arisen since 2016 with the introduction of the equalisation levy (and its expansion in 2020) in India on digital services provided by non-resident service providers to Indian residents.

[29] While the issue of the characterisation of income from the transfer of cryptoassets as "other income" may be debatable, such characterisation appears to be the most likely conclusion for income earned by way of a gift of cryptoassets.

[30] For illustration, see Article 23(3) of IRS (1999) and Article 23(3) of HM Revenue and Customs (2022).

[31] For illustration, see Ministry of Finance, GOI, Income Tax Department (1999).

[32] In the 2022-2023 budget speech (GOI, 2022a), the Minister of Finance stated that:

> Accordingly, for the taxation of virtual digital assets, I propose to provide that any income from transfer of any virtual digital asset shall be taxed at the rate of 30 per cent.
>
> - No deduction in respect of any expenditure or allowance shall be allowed while computing such income except cost of acquisition. Further, loss from transfer of virtual digital asset cannot be set off against any other income.
> - Further, in order to capture the transaction details, I also propose to provide for TDS on payment made in relation to transfer of virtual digital asset at the rate of 1 per cent of such consideration above a monetary threshold.
> - Gift of virtual digital asset is also proposed to be taxed in the hands of the recipient. (paragraph 131, pp. 23–24)

[33] Ritesh Pandey (Lok Sabha Secretariat, 2022) noted that "[i]n a single stroke, the Government has managed to hamper India's crypto currency future" as these tax changes "will greatly hamper India's Web 3.0 space" (p. 927). He stated that Web 3.0 is not just about "crypto currencies where there are movies, music, gaming, ticketing, and commerce" and that "[i]t intends to revolutionize the world with smart contracts and the metaverse" (Lok Sabha Secretariat, 2022, p. 926).

to cryptocurrencies, as the nuances of their regulatory treatment are yet to be spelt out by the GOI (Lok Sabha Secretariat, 2022).[34]

- The application of a high tax rate to VDAs indicates that the GOI wants to, as Gogoi (Lok Sabha Secretariat, 2022), describes it, "treat crypto as a sin" (p. 825),[35] an approach which is incongruent with the permitted trade in cryptoassets. Furthermore, banning versus regulating crypto transactions is a delicate balancing job, given that a ban may, as Gogoi (Lok Sabha Secretariat, 2022) notes, result in crypto becoming the "route for money laundering, illicit activities, drugs, or crime", whereas the international experience has revealed that its regulation is equally challenging (p. 825).
- Notwithstanding the tax policy outlined by the GOI, the status and asset class of crypto continue to be unclear. In any case, tax policy cannot precede a dispassionate determination of the crypto industry's employment generation capacity—its ability to, as Priyanka Chaturvedi puts it, "create an enabling eco-system" (Rajya Sabha Secretariat, 2022, p. 107)—and linkages with effects on Web 3.0 etc., which can only be addressed by way of a calibrated regulatory regime.
- Sunita Duggal notes that the imposition of a tax deduction obligation is appreciable as it would permit the tracking of crypto transactions, which would reveal the participants in this industry and demystify the source for its wide-spread growth (Lok Sabha Secretariat, 2022). However, when viewed from another perspective, the deduction of tax would take the sheen away from this attractive asset class, which is popular with the youth (see Pandey's speech in Lok Sabha Secretariat [2022]).

These observations notwithstanding, the GOI's original policy outline and the legislative proposals to tax VDAs were approved by the parliament with minor changes. These approvals were obtained after the GOI presented, inter alia, the following rejoinder to defend the tax policy on VDAs:[36]

- In Lok Sabha on 25 March 2022, Nirmala Sitharaman noted that while clarity is awaited on the formulation of the regulatory provisions, tax policy and law cannot stand still until such time because "there is a lot of reported activity happening: a lot of transactions are happening" and "people of putting money, people are taking money, people are creating assets, and assets are being sold and bought" (Lok Sabha Secretariat, 2022, p. 934).
- Sitharaman also stated that the tax deduction obligation "is more for tracking; it is not an additional tax, it is not a new tax, it is a tax which is going to help people to track it" and one "can always reconcile it with the total tax" by way of adjustment (Lok Sabha Secretariat, 2022, p. 934). She added that the tax deduction mechanism "is always a legitimate way through which we are tracking the transactions and, therefore, it is helpful to widen the tax base" (Lok Sabha Secretariat, 2022, pp. 934–935).

[34] The lack of clarity and absence of an official government vision for cryptocurrencies was also emphasised by others. For illustration, see Supriya Sadanand Sule's speech in Lok Sabha on 25 March 2022 (Lok Sabha Secretariat, 2022), in which she observes, inter alia, that "[t]he Government has to have a vision on crypto" and that it must "[h]ave some strategy and come clear" about its approach (p. 864).

[35] See also Pinaki Misra's speech in Lok Sabha on 25 March 2022 (Lok Sabha Secretariat, 2022), in which he observes, inter alia, that "[t]he Government has gone on to a 30 per cent slab on the basis that it [crypto] must be at a higher slab than equity gains, because it is some kind of a sin" and with this "notion of a sin activity has not sent the right message" (p. 889–890).

[36] See also Sitharaman's speech in Rajya Sabha on 29 March 2022 (Rayja Sabha Secretariat, 2022).

The aforesaid discussion clearly reveals the emphasis upon two key aspects i.e., (a) the intrinsic link between regulatory and tax policy vis-à-vis crypto, and (b) the perceived death knell for trade in crypto with high tax incidence on its transactions. These concerns continue to linger despite the approval and enforcement of a new direct tax landscape for crypto in India.

5. THE INDIRECT TAX LANDSCAPE

While there is clarity under the direct tax framework, albeit from a particular date, there is no such clarity under the indirect tax framework. The Goods and Services Tax (GST) law is the principal repository[37] for Indian indirect tax laws from 1 July 2017 and covers both domestic and cross-border transactions of all goods and services. The GST law is conspicuously silent on the treatment of cryptoassets.[38]

In the absence of formal clarity on the GST provisions, various disputes have arisen about the indirect tax consequences of cryptoassets. Based on commentaries,[39] the following issues can be culled out as requiring advertence:

- The classification of cryptoassets[40] as "goods", "services", or neither under the GST law,[41] and the concomitant consequences.
- The identification of "consideration", valuation issues, and the applicable rate of tax on crypto transactions (i.e., 18% standard rate versus 28% rate on sin activities).
- Issues relating to the taxability of crypto transactions qua rules contingent upon the location of the transacting parties and the transacting medium i.e., issues involving import, export, place of supply, special rules for e-commerce transactions, withholding tax obligations, extra-territoriality etc.
- As under the ITA, the application of GST laws is doubtful on situations other than the transfer of cryptoassets. Hence, in both the direct and indirect tax frameworks, the incumbent tax law is conspicuously silent about the tax consequences arising from the origin/evolution/creation of cryptoassets.
- Additional issues that arise in relation to the tax treatment of crypto exchanges and other intermediaries, given the lack of special rules for them such as are provided under the GST law in respect of e-commerce intermediaries.

It is understood that the formulation of the GST policy for crypto transactions continues to be a work in progress (Kannan, 2022). There are conflicting media reports about whether the GST Council, which is the highest policy recommendation body in respect of the GST, is considering a proposal where all activities and services related to cryptoassets may be subjected to 28% GST, i.e., the highest tax slab in the GST (Asoodani & Chaturvedi, 2022; FE Online,

[37] In addition, customs duties are imposed on the import or export of goods from the territory of India.

[38] It is noteworthy that, in an amendment to the Central Goods and Services Tax Act, 2017, to provide clarity to taxation of online gaming (The Central Goods and Services Tax [Amendment] Act, 2023), it has been provided in Section 2(80B) and Section 2(105) that payment in form of VDAs shall be considered as "consideration" for online gaming activity (p. 2).

[39] See, generally, Bhattacharjee et al. (2022).

[40] Unlike the ITA, GST law does not include a comprehensive definition that covers all cryptoassets, so classification issues are likely to arise distinctively for each class of cryptoassets. See also Gupta et al. (2022, pp. 13–16).

[41] Under the GST law, "services" is defined very widely to cover "anything other than goods, money and securities" (The Central Goods and Services Tax Act, 2017, Section 2 [102]). It therefore appears unlikely that cryptoassets would be outside of the scope of the GST law in India.

2022). Meanwhile, however, the GOI continues to apply the generic GST rules and this has resulted in substantive recoveries being made from multiple crypto exchanges (Department of Economic Affairs, Ministry of Finance, GOI, 2022) and individuals (Ohri, 2022).

6. ONCE BITTEN, TWICE SHY: EXPLORING THE POSSIBLE RATIONALE FOR A GO-SLOW ON IMPLEMENTING A DEFINITE REGULATORY FRAMEWORK

No standard approach to designing a crypto policy framework appears to emanate from a review of cross-jurisdictional practices. Hence, the GOI's delay in finalising its policy stance is unsurprising.[42] In fact, the delay is quite understandable because the regulatory policy must not impinge upon the citizens' constitutional rights, as emphasised by the SCI (*Internet and Mobile Association of India v. Reserve Bank of India* [2020 SCC Online SC 275]). Another reason for the delay is the change in stance of the GOI, which is seeking to abandon its earlier approach of establishing an administrative framework via which to regulate cryptoassets, preferring to find a legislative solution instead (Ministry of Finance, Government of India, 2021e).[43] One would hope that the law, once enacted, would holistically address the rights and liabilities of crypto transaction participants as well as delineating the empowerment and duties of the designated crypto regulator.[44]

Nonetheless, it is clear that the thrust of the GOI's actions lies in its increasingly closer scrutiny of crypto transactions. It has been well documented that the GOI's evolving policy stance appears to be heavily influenced by, in addition to concerns about tax evasion, the larger apprehensions about cryptocurrencies being used for nefarious designs, such as money laundering ("Biggest risk of cryptocurrency", 2022), the financing of terrorism,[45] drug trafficking and other illegitimate activities.[46, 47] In fact, the GOI is also pitching for regulation to be introduced at a global level to prevent the abuse of cryptocurrencies for illicit purposes (Shukla, 2022). Considerable effort has been made by the GOI to pioneer a multilateral solution under the aegis of the G20.[48] Thus, the GOI can be expected to ask the parliament for a law replete with granular detail about crypto technology and transactions, and call for an excessively empowered regulator.

While legislation on the subject is awaited, extensive regulatory action, which particularly targets cryptocurrencies, has been taken. The RBI has given repeated warnings seeking to

[42] The GOI has been invested in evolving a policy framework to regulate cryptoassets for a few years now. See, generally, Ministry of Finance, GOI (2021d). See also Ministry of Finance, GOI (2021c).
[43] The GOI has acknowledged that "a Bill on the Cryptocurrency and Regulation of Official Digital Currency is under finalisation for consideration of the Cabinet" (Ministry of Finance, GOI, 2021e, p. 1). See also Ministry of Finance, GOI (2021a). However, the GOI has clarified that, as a policy stance, it "has no plans for boosting the cryptocurrency sector in India" (Ministry of Finance, GOI, 2021b).
[44] It is interesting that, in a related technology context (data privacy), the GOI has withdrawn draft legislation from the Parliament, preferring to work on establishing a "comprehensive legal framework" in the wake of extensive stakeholder input (Barik, 2022).
[45] See Response in Parliament to Lok Sabha Unstarred Question No. 2864 (CoinSwitch, 2023, pp. 50–51).
[46] The GOI is on record that it "does not consider crypto-currencies legal tender or coin and will take all measures to eliminate use of these crypto-assets in financing illegitimate activities or as part of the payment system" (GOI, 2018, paragraph 112, p. 20).
[47] These aspects are in addition to investor protection concerns qua trade in cryptocurrencies. See, generally, Dash (2022).
[48] For illustration, see paragraph 58 of G20 (2023, p. 23).

discourage cryptocurrencies[49] and these appear to be taking their toll on cryptocurrency transactions (Rai, 2022). Effective from 7 March 2023, the GOI has designated certain persons as reporting entities within the scope of India's anti-money laundering (AML) legislation.[50] These are persons who, either for themselves or others, undertake:

> (i) exchange between virtual digital assets and fiat currencies;
> (ii) exchange between one or more forms of virtual digital assets;
> (iii) transfer of virtual digital assets;
> (iv) safekeeping or administration of virtual digital assets or instruments enabling control over virtual digital assets; and
> (v) participation in and provision of financial services related to an issuer's offer and sale of a virtual digital asset. (Department of Revenue, Ministry of Finance, GOI, 2023)[51]

In view of the applicable law,[52] these persons are obliged to record all transactions exceeding INR 1 million (Rule 3 of the Prevention of Money Laundering [Maintenance of Records] Rules, 2005). Additionally, they are required to undertake client due diligence, which requires them to collate details of their clients, including beneficial owners (Rule 3 of the Prevention of Money Laundering [Maintenance of Records] Rules, 2005). There are both civil and criminal penalties for failing to comply with the obligations. Crypto platforms and financial intermediaries facilitating crypto transactions would fall within the wide scope of India's AML legislation. Thus, pending crypto-specific regulatory legislation, crypto transactions have been made subject to AML regulations.

7. THE TAX AVOIDANCE/TAX EVASION PERSPECTIVE

The concerns set out in the earlier sections are not just theoretical, but are pragmatically alive for both the crypto-participants and the Indian tax administration. In fact, the prevailing scenario speaks volumes about the reasons for the GOI's scepticism and, in hindsight, perhaps also justifies the tax measures that have recently been introduced. However, to appreciate this aspect, which is closely linked to the tax avoidance/tax evasion perspective, one must necessarily traverse the regulatory landscape.

Given its wide mandate to pursue white-collar offences, the Indian AML regulator (i.e. the Directorate of Enforcement, or Enforcement Directorate [ED**]**)[53] has been in overdrive trying to unearth the rotten apples in the crypto trading arena ("ED now raids CoinSwitch Kuber", 2022). The rationale, as explained in an official press release by the ED, is the ease with which crypto participants can launder ill-gotten wealth and benefit from the anonymity offered by crypto exchanges. According to the ED, investigations have revealed, inter alia, that a "large amount of funds were diverted by the fintech companies to purchase Crypto assets and then

[49] For illustration, see Anand and Bhat (2022) and Business Today Desk (2022a). See also Ministry of Finance, GOI, Press Information Bureau (2023).
[50] See Department of Revenue, Ministry of Finance, GOI (2023), issued under Section 2(1)(sa)(vi) of the Prevention of Money-Laundering Act, 2002 (PMLA).
[51] For this purpose, "virtual digital asset" has been assigned the same expansive meaning as applicable under the ITA.
[52] Chapter 1, Section 2(wa) of the PMLA, read with the Prevention of Money Laundering (Maintenance of Records) Rules, 2005.
[53] The powers of the ED have recently received extensive judicial elocution by the SCI in its decision in *Vijay Madanlal Choudhary v. Union of India* (2022: INSC: 756).

launder them abroad" (ED, Department of Revenue, Ministry of Finance, Government of India, 2022). They add that these assets are still untraceable (ED, Department of Revenue, Ministry of Finance, GOI, 2022). These investigations have resulted in the seizure of sizable assets from those crypto exchanges that have been unable to provide details, most of which are very basic and expected to be readily available, such as lists of relevant crypto transactions, details of wallets and wallet holders, and blockchain ledger records, etc., to the ED (ED, Department of Revenue, Ministry of Finance, GOI, 2022).[54] More critical, it is abysmal to note, is the admissions by crypto exchanges regarding their non-maintenance of records relating to the bank accounts used for cryptoasset transactions and lack of verification of crypto participants etc., which, according to the ED, amounts to "encouraging obscurity and having lax AML norms" (ED, Department of Revenue, Ministry of Finance, GOI, 2022) and thus explains the expansion in the scope of AML regulations to include crypto transactions.[55]

To extrapolate the aforesaid developments in the tax law framework (which, as is well acknowledged, is not wholly insulated from money-laundering),[56] it is obvious that there is considerable tax leakage given such a state of affairs in the crypto world. In the absence of AML coverage, the lack of knowledge regarding the whereabouts of transacting parties, the non-recording of transactions, and the inability to link bank accounts with crypto participants etc., at the end of the crypto exchanges (which are the source of information for the tax administration) are significant roadblocks in the latter's quest towards enforcing the provisions of the fiscal laws. Thus, the unravelling of the crypto trade in India does not just reveal scope for tax avoidance opportunities. Instead, the tax administration does not appear to be totally off the mark in describing crypto as a hotbed of rampant tax evasion.[57] It is, therefore, unsurprising that the GOI has received legislative sanction to enforce a withholding tax which extends to almost all crypto transactions and is clearly intended as a step towards tracking the activities of crypto participants.[58] In addition, the GOI is also contemplating assigning mandatory tax identities to crypto participants (Choudhary, 2022).

The issues relating to cryptoasset transactions is particularly acute for India given that more than 7% of India's population owns digital currency, with the nation ranking seventh in the list of top 20 global economies for digital currency ownership as a share of population (United Nations Conference on Trade and Development, 2022a). Thus, there appears to be some merit in the GOI's approach of deploying a high tax incidence strategy as a deterrent in relation to crypto transactions[59] in the absence of a regulatory framework. While it is true that the immediate plunge in crypto transactions has been attributed to the new tax rules (Banerjee, 2022: Kumar, 2022: Mittal, 2022b; A. Sarkar, 2022; G. Sarkar, 2022), it is very likely that the totality of evidence would nonetheless be evaluated in due course to assess the appropriateness of the new distinct tax law framework for cryptoassets, given that the evidence on the ground has revealed that a significant number of crypto transactions take place under the cover of anonymity. For the time being, the working theory of the GOI appears to be that, at the very least until a specific regulatory regime for cryptoassets kicks in, the tax law measures taken

[54] See also Business Today Desk (2022b).
[55] It appears that the usage of crypto for money laundering is not limited to India. See, generally, Sigalos (2022). See also United Nations Conference on Trade and Development (2022b).
[56] In the context of cryptoassets and money laundering, see, generally, Grijseels and Spreutels (2001); Gruber (2013); Kemsley et al. (2022).
[57] See, generally, Business Today Desk (2022c); CNBCTV18.com (2022); Special Correspondent (2022).
[58] See section 3, "The Direct Tax Landscape", above.
[59] See section 3, "The Direct Tax Landscape", above.

have introduced some tranquillity into the wild, unregulated world of cryptoassets, even if that is with a high tax incidence regime for them.

8. CONCLUSION

The introduction of definitive rules to tax income arising from crypto transactions has received a mixed reaction. Notwithstanding the delayed introduction of these rules in 2022, the industry has welcomed the introduction of a formal tax regime, as this provides clarity about the applicable rules, thus introduces certainty into industry dealings.[60] At the same time, the high tax incidence and unavailability of loss set-off is being argued as killing the buzz and throttling this emerging industry (Banerjee, 2022; Mittal, 2022a). Nonetheless, propelled by the unveiling of the formal framework for direct taxation, the industry is imploring the GOI to expedite the finalisation of the GST rules and the regulatory framework to comprehensively address the crypto industry in order to obviate the intense tax investigations and permit the calibration of tax costs amongst the participants. Such qualms—ironical as they may be and tax lawyers may disagree—illustrate that ambiguity in tax rules is not always to the benefit of the citizens.

In any case, the tax policy relating to cryptoassets in India is a work in progress, with the incumbent tax policy of the GOI appearing to be overwhelmingly driven by regulatory concerns, inter alia, in relation to money-laundering, and directed towards the evolution of an effective framework with which to regulate the crypto players. At any rate, the developments in India support the hypotheses that cryptoassets and associated transactions (a) do not immediately fit into the existing tax law regulations and (b) have created formidable challenges for tax administrations, inter alia, in terms of bringing them within the ambit of tax regulations and monitoring tax compliance in relation to them.

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[60] Compare with Parsons (2022), who "highlights the harms Congress and Treasury are risking by not taking action on cryptocurrency taxation" and argues that "uncertainty and lack of guidance on the appropriate taxation of cryptocurrency is opening the door for a critical juncture in tax law to be decided via strategic litigation" (p. 1).

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