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Report on the challenges which digital assets pose for tax systems with a special focus on developing countries

Vincent OOI
Singapore Management University, vincentooi@smu.edu.sg

Report on the Challenges which Digital Assets Pose for Tax Systems with a Special Focus on Developing Countries

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Prepared by:

Vincent Ooi

(vincentooi@smu.edu.sg)

MA (Oxon), PhD Candidate (Cantab);

Advocate and Solicitor of the Supreme Court of Singapore;

Lecturer, Yong Pung How School of Law, Singapore Management University;

PhD Candidate (Tax Law), Faculty of Law, University of Cambridge;

Specialist Counsel (Tax and Trusts), Legal Ink LLC, Singapore.

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1. Introduction

Digital assets are becoming increasingly important in business and commerce, given their growing adoption by institutions, businesses, and individuals around the world.[1] The potential scope of a 'digital asset' is extremely wide and can include any rights that exist in digital form that the law is willing to recognize and protect.[2] This Report focuses on a subset of digital assets known as 'crypto assets'. Such assets are generally characterized by their reliance on distributed ledger technology ('**DLT**'),[3] which allows them to be stored and transferred using a decentralized system spread over multiple computers, as opposed to a more traditional centralized system. Crypto assets are a relatively new form of digital asset, with Bitcoin being the most prominent example.[4] This means that there has been relatively little time to study crypto assets and their impact on tax systems.

Apart from the relative novelty of crypto assets, they also exist in systems which are decentralized, making them much more difficult to regulate. This may even pose difficulties when it comes to determining issues such as 'source', 'situs', 'residence' or 'permanent establishment' for the purposes of domestic and international taxation. In a centralized system, the starting point is that it will generally be possible to subject the system to at least the regulations of the jurisdiction in which the system is physically based. A decentralized system may mean that no jurisdiction hosting such a 'physical base' can be identified, raising the possibility of a lack of regulation. Further, traditionally, both domestic and international tax laws generally have in mind an identifiable jurisdiction where activities can be said to be primarily carried out. A decentralized system may mean that it is not possible to identify such a jurisdiction, presenting new problems for domestic and international tax laws which they may not currently be well-placed to deal with.

The impact of crypto assets on tax systems has become all but impossible to ignore. As the number of transactions involving crypto assets continues to rise, so does the need for governments to establish a clear policy position on how such transactions should be taxed. In such a context, the absence of a deliberate policy position is a policy decision in itself with consequences for tax systems. There are several reasons for this, which this report submits can be understood through the lens of four main classes of tax risks which crypto assets pose.[5] Firstly, crypto assets and crypto transactions can act as 'functional substitutes' for traditional assets and transactions. In many cases, existing tax law will treat these 'functionally equivalent transactions' in the same way as traditional transactions and produce the same tax result. However, since existing tax laws were drafted without crypto assets in mind, this can produce a host of unintended tax consequences and produce opportunities for tax arbitrage.

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1 Tim Davis *et. al.*, 'From next-generation to now: Digital assets' (*Deloitte*) (April 2022) <https://www2.deloitte.com/us/en/pages/center-for-board-effectiveness/articles/from-next-generation-to-now-digital-assets.html> accessed March 7, 2023.

2 Digital assets are described in detail in A1.1. Definitions, below.

3 Jean Bacon, *et. al.*, 'Blockchain Demystified: A Technical and Legal Introduction to Distributed and Centralised Ledgers' (2018) 25(1) Richmond Journal Law & Technology 1.

4 Satoshi Nakamoto, 'Bitcoin: A Peer-to-Peer Electronic Cash System' (2008) <https://bitcoin.org/bitcoin.pdf> accessed March 7, 2023.

5 See Chapter 2, below.

Secondly, the values of crypto assets exhibit significant volatility, with extreme swings in the values of tokens on average.[6] There are also issues of potential instability in crypto markets, as evidenced by the recent 'crypto winter'.[7] As such, there is a considerable risk of investors and businesses suffering massive crypto-related losses. In the absence of appropriate safeguards and ring-fencing, these losses could potentially be used to set off income from other sources, resulting in a significant erosion of the tax base. Thirdly, crypto assets give rise to certain events which may not have a traditional equivalent, such as mining and forging. As such, there may be opportunities to tap into new potential sources of tax revenue from such activities.

Fourthly, crypto assets can be used for tax evasion. The main issue here is that most crypto assets exist in systems which offer pseudonymity.[8] Essentially, while it is possible to monitor movements in crypto assets from 'wallet' to 'wallet',[9] it is not possible to determine the identity of the ultimate beneficial owners behind the 'wallets' just from looking at the system and transactions alone. The pseudonymity offered by crypto assets and the opportunities to conduct transactions outside of the traditional banking system inherently poses the risk of tax evasion, both premeditated and incidental (for example, through the shadow economy).

1.1. Aims of the Report

Crypto assets pose significant risks (and some opportunities) to tax systems. These risks are likely to erode the tax base unless governments and tax authorities take steps to adapt their tax systems to take crypto assets into consideration. The broad aims of this Report are to lay out the risks posed by crypto assets in detail and inform governments and tax authorities of the need to make active policy decisions on crypto taxation.

Apart from identifying and discussing the risks, this Report will address a range of substantive and procedural challenges which crypto taxation presents. This will be analyzed together with a cross-jurisdictional review of the examples of the challenges faced by developing countries in taxing crypto assets. The aim is to produce a comprehensive summary of the theoretical and practical challenges faced by developing countries in this area. Once all the relevant challenges have been identified, this Report will propose some recommendations which the United Nations Committee of Experts in International Cooperation in Tax Matters (UN Tax Committee, '**UNTC**') might consider, should it decide to take up work on crypto taxation in the future.

One thing that is expressly not the aim of this Report, is to provide any recommendations on broader crypto policy beyond taxation. Decisions relating to the regulation of crypto assets are beyond the scope of this Report. Taxation can be used as a tool of public policy, to provide

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6 Dirk Baur and Thomas Dimpfl, 'The Volatility of Bitcoin and its Role as a Medium of Exchange and a Store of Value' (2021) 61 Empirical Economics 2663.

7 See Chapter 2.3, below.

8 Pseudonymity and the potential issues which it can cause are discussed in detail in Annex A1.2.3, below.

9 A 'wallet' is a device which stores the private keys which are necessary to control crypto assets. For more on this, see Annex A1.1.4, below.

incentives and disincentives and shape behavior. However, unless otherwise stated, this Report will make recommendations that neither favor nor disfavor crypto assets. The aim is to make recommendations that are, as far as possible, tax neutral and unlikely to have distortionary effects on the market.

1.2. Background

While a detailed analysis of the nature of crypto assets and the relevant terminology is available in Annex A1,[10] it is sufficient to briefly lay out the key concepts for now. The term 'digital assets' is extremely broad in its scope. While there is no consensus on what it precisely means,[11] it can include any rights that exist in digital form that the law is willing to recognize and protect. 'Crypto assets' is the generic term for representations of value which rely on DLT for their existence and transfer, with the term 'digital tokens' (technically, a subset) being synonymous with 'crypto assets' in most cases. The 'blockchain' is a subset of DLT and is a form of technology which records transactions and thus enables crypto assets to be 'held' and 'transferred'. 'Cryptocurrencies' are a subset of digital tokens which are intended to be used as a medium of exchange and thus, are also known as 'payment tokens'.[12] These 'payment tokens' are one of three main classes of digital tokens, with 'utility tokens' and 'security tokens' being the other two main classes.

Payment tokens are used as mediums of exchange but virtually all jurisdictions do not recognize them as fiat currency or legal tender. Utility tokens confer upon their holder specified rights to use or benefit from goods or services when redeemed at a later date. They can be understood as reflecting the purchase of a future good or service provided by the issuer[13] and may be likened to vouchers. Security tokens confer rights to physical or financial assets and may be viewed as analogous to traditional forms of securities such as equities, bonds, or derivatives.[14] Security tokens can also be further sub-classified into exogenous security tokens (representing value outside of itself) and endogenous security tokens (not representing any external value). The former are also known as 'asset-backed tokens' and are sometimes designed to maintain a stable value (in which case, they are commonly known as 'stablecoins'). The three main classes of digital tokens are neither mutually exclusive nor mutually exhaustive. There are additionally other classes of tokens such as Non-Fungible Tokens ('**NFTs**'). NFTs are a form of crypto asset which certify digital files such as photos or sound files to be unique. A token may also exhibit characteristics indicating that it should fall into more than one class and be classified as a 'hybrid token'.

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10 Digital assets are described in detail in Annex A1.1, below.

11 Rachel Pinch, 'Protecting Digital Assets after Death: Issues to Consider in Planning for Your Digital Estate' (2015) 60 Wayne Law Review 545.

12 Technically speaking, most cryptocurrencies would be 'coins' rather than 'tokens', see Annex A1.1.4, below.

13 Aurelio Gurrea-Martínez and Nydia Remolina, 'The Law and Finance of Initial Coin Offerings' in Chris Brummer, (ed.), *Cryptoassets: Legal, Regulatory, and Monetary Perspectives* (OUP) (2019), 120.

14 Christophe Waerzeggers and Irving Aw, 'Difficulties in Achieving Neutrality and Other Challenges in Taxing Cryptoassets' in Brummer (n 13), 220.

As the field of crypto taxation is extremely broad, this Report provides several tools to help the reader get a general overview of the subject matter.[15] Firstly, it lays out five general principles for the taxation of digital assets: 1) digital tokens are not a monolithic asset class existing outside the tax system; 2) the common trichotomous division of digital tokens is not set in stone; 3) focus on the surrounding circumstances, less on the asset; 4) 'functionally equivalent' crypto assets and transactions do not necessarily result in similar tax treatment; and 5) similar classes of tokens and tax events tend to produce similar tax results.

Building on the fifth principle, the second and third tools which this Report provides are a summary of taxation patterns sorted by the class of token in a crypto transaction and the relevant tax events in the 'life-cycle' of a digital token. Whether a token is a payment token, utility token, security token, NFT or hybrid token, it is likely to be subjected to a similar tax treatment as the other tokens in its class. That said, the abovementioned third and fourth principles urge caution in relying too much on general patterns. There are certain common tax events that take place during the 'life-cycle' of digital tokens. Digital tokens are commonly created through mining, forging, issue and purchase, airdrops, and forks. They are often transferred through exchange for goods and services, other tokens, or fiat currency. They are also commonly disposed of through redemption, token burning and loss. As noted above, there tends to be some correlation between the class of digital token in question and the tax treatment under these common taxable events.

1.3. Overview of Report

This Report is divided into two main Sections and the Annexes. Briefly, Section A deals with 'Risks and Challenges Faced by Tax Systems'. Within Section A, Chapter 2 makes clear and maps out the various risks that crypto assets pose for tax systems. Chapter 3 then discusses the various challenges as far as substantive tax law and policy is concerned. It looks at technical aspects of tax law such as those in domestic and international taxation, transfer pricing, and valuation and accounting. Chapter 4 goes on to look at procedural tax administration and enforcement. Even if tax authorities have a strong technical foundation in substantive tax law, they will still need to have sound administration and enforcement capabilities in order to meet the challenges posed by digital assets.

Section B deals with 'Proposals to Manage Risks and Challenges'. Chapter 5 emphasizes the need for basic guidance on a variety of important issues relating to crypto taxation such as the domestic and international tax positions on common crypto transactions, and more technical issues such as specific taxes, losses, transfer pricing and valuation. The chapter also explores how training and assistance can assist tax authorities with ensuring that they have a sound technical foundation in crypto taxation and the accompanying procedural matters such as tax administration and enforcement. Chapter 6 then contains the results of a desk research of approaches across jurisdictions. It summarizes the findings and then presents examples of challenges faced by these jurisdictions and examples of tax policy approaches taken by developing countries. Chapter 7

[15] See Annex A1.4, below.

suggests concrete steps which the UNTC may wish to consider in moving forward to assist developing countries in dealing with crypto taxation. The Annexes contains technical information that are referenced throughout the main body of the Report. Annex A1 provides a comprehensive overview of crypto assets and their taxation, while Annex A2 describes the methodology of the cross-jurisdictional study and lays out the data collected.

A: Risks and Challenges Faced by Tax Systems

As stated in the Introduction to this Report, crypto assets are having a growing impact on tax systems, giving rise to several wide-ranging risks and challenges. Section A of the Report starts off with Chapter 2, which classifies potential tax risks into four main categories that individually and collectively may destabilize tax systems if left unchecked. The risks can be briefly described as: 1) crypto asset substitution; 2) crypto losses; 3) crypto opportunities; and 4) crypto-enabled crime. Chapter 3 then deals with issues of substantive tax law and policy. In order to understand the impact of crypto assets on tax systems, it is helpful to look at how various taxes treat crypto assets in common situations. Issues of international taxation also arise as crypto assets, by their nature, pass easily across national borders. Finally, issues of transfer pricing and valuation also pose challenges for tax systems dealing with digital assets. Chapter 4 addresses issues of procedural tax administration and enforcement. Administration challenges relate to the determination of tax liability while enforcement challenges relate to the collection of revenue.

2. Classification of Tax Risks

2.1. Overview

Crypto assets have a wide-ranging impact on tax systems, making it difficult for tax authorities to ignore them. This chapter will demonstrate that the impact of crypto assets is often not limited to 'purely crypto' transactions. Instead, they act as functional substitutes for traditional transactions, creating a risk of revenue loss in at least three situations: where 1) tax authorities do not tax crypto assets and transactions; 2) 'functionally equivalent' crypto assets and transactions attract a more favorable tax treatment than their traditional counterparts; 3) tax authorities incorrectly apply tax law to crypto assets and transactions. The impact on the tax system may be felt in the tax revenue relating to the crypto transaction itself, and potentially in the forgone revenue from traditional transactions that would have taken place instead.

Crypto assets can also influence tax systems through what has been termed 'crypto contagion'.[16] When crypto values plunge (as happened in the recent 'crypto winter'), other asset classes and financial institutions will also be affected, even those with more limited exposure to crypto assets.[17] Such a plunge can very easily lead to the incurrence of massive losses by a whole range of investors and businesses. Without proper safeguards to 'ringfence' these crypto losses, taxpayers may use them to offset income from other sources, eroding the tax base. The cost to the tax system may be felt in the forgone revenue from other (possibly non-crypto related) transactions.

The pseudonymity offered by crypto assets and the opportunities to conduct transactions outside of the traditional banking system inherently poses the risk of tax evasion, both premeditated and incidental (for example, through the shadow economy). Jurisdictions that are already resource-constrained and face issues in taxpayer compliance and audits will find these difficulties enhanced as more and more transactions become harder to trace. The adoption of adoption of DLT systems and crypto assets in the banking system can sometimes help enhance efficiency in tax collection. However, if not optimally executed, it can lead to further erosion of the tax base to tax evasion.

Crypto assets do bring with them new opportunities for taxation that traditional transactions do not. For example, mining and forging are activities that would simply not take place but for the existence of crypto assets.[18] Governments might consider whether they wish to tap into such new potential sources of revenue.

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[16] Bo Li and Nobuyasu Sugimoto, 'Crypto Contagion Underscores Why Global Regulators Must Act Fast to Stem Risk' (IMF) (January 18, 2023) <https://www.imf.org/en/Blogs/Articles/2023/01/18/crypto-contagion-underscores-why-global-regulators-must-act-fast-to-stem-risk> accessed March 7, 2023.

[17] See Chapter 2.2, below.

[18] See Annex A1.2.1, below.

2.2. Substitution with 'Functionally Equivalent Transactions'

2.2.1. Substitutions Where Tax Treatment Remains Unchanged

One of the general principles for the crypto taxation proposed by this Report is that tax law generally focuses on the surrounding circumstances of a transaction rather than on the asset in question.[19] In many situations, crypto transactions which are designed to be 'functionally equivalent' to their traditional counterparts will also attract the same tax treatment. In such cases, a government who does not tax crypto assets and transactions will risk losing tax revenue from traditional transactions that have been foregone as a result of the adoption of crypto transactions. Such an approach also creates an incentive for tax arbitrage. Examples of this are as follows.

2.2.1.1. Transfer

The transfer of crypto assets used as a functionally equivalent substitute for a traditional transaction is very likely to produce the same tax result for income tax purposes. Particularly in the case of transfers of assets, tax law predominantly focuses on the surrounding circumstances of the transactions rather than the nature of the asset itself. Whether digital tokens are transferred in exchange for goods and services, other tokens, or fiat currency, most jurisdictions are likely to treat such a transfer as a realization event and tax it accordingly.[20] The transfer is likely to be treated as a barter exchange,[21] with the need to value the token in question.

The position is potentially different with respect to goods and services taxes ('**GST**')/ value-added taxes ('**VAT**'), where the nature of the asset being transferred is of much greater importance. Generally, unless a specific exemption exists for certain classes of digital tokens, the exchange of digital tokens will be taken to be a form of barter trade, where GST/VAT will need to be accounted for both in respect of the digital token being supplied and the goods, services or digital tokens being received in exchange.[22] However, many jurisdictions have exemptions for payment tokens being used as a medium of exchange[23] and (security) tokens that fall into the category of 'financial supplies/services'.[24] However, if the 'functionally equivalent' role that the crypto asset is playing in the substitution of the traditional asset falls within these exemptions, then it would be consistent with those exemptions and there would be no difference in tax treatment.

2.2.1.2. Issue and Purchase

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19 See Annex A1.4.1.3, below.

20 Organisation for Economic Co-operation and Development ('**OECD**'), *Taxing Virtual Currencies: An Overview of Tax Treatments and Emerging Tax Policy Issues* (2020), 30.

21 NZIRD, 'Questions & Answers: Cryptocurrency and Tax', <https://perma.cc/N442-TWYV> accessed March 7, 2023; IRAS, IRAS e-Tax Guide: Income Tax Treatment of Digital Tokens (9 October 2020), para 5.1.

22 OECD (n 20), 30.

23 OECD (n 20), 37. Also see *Skatteverket v Hedqvist (Case C-264/14)* [2015] BVC 34; Australian Treasury Laws Amendment (2017 Measures No 6) Act 2017 ('**ATLA 2017**'), Schedule 1; Singapore Goods and Services Tax Act 1993 ('**SGSTA**'), Fourth Schedule, Part I.

24 Waerzeggers and Aw (n 14), 226; SGSTA (n 23), Fourth Schedule, Part I.

When digital tokens are issued and purchased, their tax treatment tends to correlate to their traditional asset equivalents, regardless of whether the tokens in question are payment, utility or security tokens. As a centralized process of token-creation, the tax issues here center around the identifiable issuer of the tokens, rather than the purchasers. The purchase of any class of digital token tends to be a non-tax event for the purchaser for income tax purposes. For the issuer, the class of token being issued correlates with the income tax treatment of the proceeds received. For payment tokens, income tax will likely be payable on such receipts, generally classified as income from the carrying on of a business or trade.[25] For utility tokens, as discussed above, their issuance is likely to be seen as akin to the issuance of vouchers and thus, any resultant receipts are likely to be taxable as income. For security tokens, as discussed above, since they are akin to debt or equity securities, proceeds from their issuance are likely to be non-taxable for income tax purposes. For GST/VAT purposes, similar issues to those discussed above under 'Transfer' are likely to arise.

2.2.1.3. Redemption

Digital tokens are generally designed to exist indefinitely, with the main exception being those intended to be redeemed at some point. Utility tokens make up a considerable majority of such tokens, since they oblige the issuer to provide some agreed-upon goods or services in the future, when the token is redeemed. The tax treatment in the case of redemption of crypto assets is unlikely to differ from that of its traditional counterparts.

2.2.1.4. Theft

If digital tokens are stolen, the question is whether the losses suffered by the victim should be tax deductible. Generally, such losses will only be deductible if they were incurred in connection to a trade or business.[26] Individuals are unlikely to be able to deduct their losses from theft. This is likely to be the same test for crypto assets as it is for traditional assets, resulting in similar tax treatment. However, in light of the fact that cybersecurity is at present much weaker[27] than physical security for most individuals and businesses, governments may wish to consider whether special rules for the deductibility of losses from theft should be enacted to ring-fence crypto assets from the rest of the tax system.

2.2.2. Tax Differentials from Application of Existing Tax Law

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25 IRAS (Income Tax), (n 21), p 14.

26 *Allen v Farquharson Bros & Co.* (1932) 17 TC 59, 64.

27 World Economic Forum, 'Global Cybersecurity Outlook 2023' (January 2023) <https://www3.weforum.org/docs/WEF_Global_Security_Outlook_Report_2023.pdf> accessed March 7, 2023.

Another of the general principles for the taxation of crypto assets proposed by this Report is that 'functionally equivalent' crypto assets and transactions do not necessarily result in similar tax treatment.[28] This may arise due to tax legislation being drafted without crypto assets in mind. Tax differentials between crypto and traditional transactions tend to be correlated with how broad the concepts referred to in tax legislation are. As a 'functionally equivalent' crypto asset or transaction serves the same purpose as its traditional counterpart, one would expect tax arbitrage to take place where taxpayers would shift their behavior based on what is more tax efficient. In some cases, the tax differential will be in favor of the tax authority, while in others it will favor the taxpayer. Governments who are not aware of these tax differentials and do not take steps to correct them risk erosion of the tax base as taxpayers favor the more tax efficient 'functional equivalents'. This Report will now go through some of these examples.

2.2.2.1. Token Burning

This Australian example involves a tax differential created due to the narrow scope of a term defined in a tax statute. Token burning is a somewhat unusual practice in which token issuers may acquire their tokens from the open market and permanently take them out of circulation, typically as a means to return value to investors without the payment of dividends.[29] With a decrease in the supply of tokens in the market, this theoretically increases the value of the remaining tokens in circulation.[30] Thus, token burning may be seen as 'functionally equivalent' to share buybacks.

Australia has a specific share buyback regime where capital gains tax is imposed on share buybacks.[31] However, the definition of a 'share' in the Australian (Commonwealth) legislation is quite specific, being 'a share in the capital of the company, and includes stock…'[32] The question is therefore whether a digital token meets this definition, which will determine its tax treatment when it is burned. It is arguable that most digital tokens will not be able to meet this definition, resulting in such token burning transactions falling outside the scope of the share buyback regime in Australia. If so, Australia would lose potential revenue from share buybacks if taxpayers decided to use crypto assets to raise capital rather than traditional shares.

2.2.2.2. Trade or Business Income

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28 See Annex A1.4.1.4, below.

29 Nathan Reiff, 'What Does It Mean to Burn Crypto? Practical Applications', (Investopedia) (June 2, 2022) <https://www.investopedia.com/tech/cryptocurrency-burning-can-it-manage-inflation/> accessed March 7, 2023.

30 Waerzeggers and Aw (n 14), 239-240.

31 Australian Income Tax Assessment Act 1936 (Cth) ('**AITAA 1936**'), Div 16K.

32 AITAA 1936 (n 31), s 6, referring to Australian Income Tax Assessment Act 1997 (Cth), s 995-1(1).

This example involves a tax differential created due to the application of a common law concept, which may not occur in non-common law jurisdictions. In many jurisdictions, it is not possible to engage in a 'trade or business of gambling' unless one is providing a gambling service.[33] This generally means that such gains are not taxable, nor are losses which result from such activities deductible. The issue is that the values of crypto assets exhibit significant volatility, with extreme swings in the values of tokens on average.[34] It has thus been suggested that they are akin to gambling in some situations.[35] The closest analogy in the case law comes from the buying and selling of shares, which has been said to constitute gambling in some English and Hong Kong cases.[36]

One of the key factors for determining if a taxpayer is gambling is the extent to which the outcome is affected by chance or skill.[37] While not every crypto asset will exhibit random and unpredictable fluctuations in value, the fact that crypto assets tend to be less stable than traditional assets may well indicate the greater influence of random chance on a transaction. This would likely militate towards a finding that a taxpayer buying and selling crypto assets is engaging in gambling and thus, there is no trade or business in crypto assets. Jurisdictions with a global rather than a schedular system might not think it particularly important to establish a trade or business, given that income in general can be assessed and taxed. However, all tax systems have their own way of dealing with the deduction of losses and it can be very important to separate out those losses incurred in the course of a trade or business and those from other sources.[38] Thus, the issue of determining if a trade or business exists will tend to be relevant to most tax systems. Tax authorities may consider issuing guidance on the appropriate classification of crypto transactions and activities. Governments may wish to pass legislation to ringfence crypto losses.

2.2.2.3. Deductibility of Borrowing Costs

Another example involving a tax differential created due to the application of a common law concept is that of the deductibility of borrowing costs. Typically, the carrying costs of equity financing are not typically tax-deductible, whereas the carrying costs of debt financing typically are.[39] This means that there are likely to be a whole range of carefully-drafted tax provisions governing the deductibility of borrowing costs in debt financing.[40] This is an area that has traditionally lead to tax avoidance opportunities, so one can be sure that the statutory provisions here are tightly-drafted, specific and likely to be cautious.

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33 Vincent Ooi, 'The Taxation of Cryptocurrency Gains' (2021) 75(7) Bulletin for International Taxation 323 ('**Ooi BIT**'), 323.
34 Baur and Dimpfl (n 6).
35 Ooi BIT (n 33), 332.
36 See Ooi BIT (n 33), 327.
37 See Ooi BIT (n 33), 332.
38 See Chapter 2.3, below.
39 See Michael Overesch and Dennis Voeller, 'The Impact of Personal and Corporate Taxation on Capital Structure Choices' 66(3) Public Finance Analysis 263, 268-269.
40 See, for example, Singapore Income Tax (Deductible Borrowing Costs) Regulations 2008 (No. S 115).

In Singapore, a tax provision states that borrowing costs incurred 'upon any money borrowed' are tax deductible. However, presently, most Commonwealth jurisdictions would generally not consider crypto assets to be 'money'.[41] Borrowing costs paid on loans of crypto assets which are 'functionally equivalent' to 'money' will nevertheless not fall under the borrowing cost deduction provision listed above, resulting in a serious impact on the way that debt financing involving crypto assets will need to be structured. This example works in favor of the tax authority, although taxpayers will likely opt to use traditional rather than crypto debt financing once they become aware of the non-deductibility.

2.2.2.4. Loss

The final example involves a tax differential created due to the contrast between what has 'functionally' and 'actually' happened. Digital tokens can be 'lost' where access to a 'wallet' (or the entire 'wallet' itself) containing private keys is misplaced or forgotten.[42] While the 'lost' tokens are effectively taken out of circulation as the owner has no way of accessing them, nothing has happened to the tokens themselves. There remains a theoretical possibility that as technology develops, it might become possible to 'crack open' the 'wallet' and bring the tokens back into circulation. The theoretical possibility of this happening might be remote to the point of which the tokens may be said to be 'functionally' lost. However, one can see a strong legal argument for saying that any losses should not be deductible for tax purposes as the tokens have not actually been 'lost' in the literal sense. This problem will feature more prominently in jurisdictions where deductibles are possible in the first place and tax authorities there may consider issuing guidance accordingly.

2.2.3. Difficulties with Application of Existing Tax Law to New Contexts

The examples above illustrate the difficulties in applying existing tax law correctly to determine the proper tax treatment of crypto transactions. Application of the law requires a strong understanding of fundamental tax concepts and a similarly deep knowledge of the nature of crypto assets and transactions. As crypto assets are relatively new, such knowledge and understanding may be lacking for both tax authorities and taxpayers. Such gaps in knowledge can have serious consequences for tax systems. Intuitively, taxpayers who are uncertain about their tax obligations are more likely to 'under-declare' rather than 'over-declare' their income. This may lead to a widening of the tax gap. Tax authorities who do not have a good grasp of crypto taxation may either under or over-collect revenue from taxpayers. The former obviously eats into the tax base,

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41 For a detailed analysis of this issue, see Vincent Ooi, 'Tax Challenges in Debt Financing Involving Digital Tokens' (2022) 17:4 Capital Markets Law Journal 564. See *Moss v Hancock* [1899] 2 QB 111, adopting the definition laid out in Francis Walker, *Money, Trade and Industry* (Holt) (1879), 4.

42 OECD (n 20), 30.

but the latter is also a problem, since it may lead to tax disputes that can be expensive, lengthy, and resource-intensive to resolve.

The challenge of equipping taxpayers and tax authorities with the relevant knowledge about crypto taxation may not be as difficult as it first seems. In many cases, crypto taxation will apply the exact same orthodox tax rules. While the tax treatment may sometimes differ when crypto assets and transactions are involved, this is often something that can be discerned from an accurate application of the orthodox tax rules. Once taxpayers and tax authorities have a basic understanding of the nature of crypto assets, they may well be able to navigate crypto taxation using their existing tax knowledge. This could be further enhanced if guidance is provided to them, highlighting the key areas where the tax treatment of crypto assets differs from that of traditional assets.

2.3. Deduction of Tax Losses Against Traditional Income Sources

2.3.1. Background to the 'Crypto Winter'

A brief discussion of recent developments in the crypto markets is necessary to set the context for the following discussion on the deductibility of tax losses. The crypto market has suffered setbacks since May 2022, when TerraUSD (UST), a 'stablecoin' failed to maintain its 1:1 peg with the US dollar. This triggered a massive sell-off by investors[43] and the fallout started to spread to numerous other crypto related businesses.[44] In November 2022, FTX Trading Ltd, a major cryptocurrency exchange, started bankruptcy proceedings.[45] The fallout from these bankruptcies continues, leading to what has been termed as 'crypto contagion', as financial difficulties spread throughout the financial system.

2.3.2. Issues With Unrestricted Deductions of Losses

With this unprecedented amount of losses spread amongst taxpayers, there will naturally be pressure on tax systems. In some tax systems, crypto losses may be deducted against income from other profitable sources of income, adversely affecting the tax base.[46] This can be seen as a form of 'cross-subsidy' of crypto losses by other non-crypto related sources of income. There are a few reasons why crypto losses have the potential to do more damage to the tax base than losses from

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[43] Steven Ehrlich, 'Unstable Stablecoin: How Crypto's Crash Broke The Buck For TerraUSD' (Forbes) (May 10, 2022) <https://www.forbes.com/sites/stevenehrlich/2022/05/10/unstable-stablecoin-how-cryptos-crash-broke-the-buck-for-terrausd/?sh=3aa95b976ff4> accessed March 7, 2023.

[44] Notably, Three Arrows Capital, Celsius Network and Zipmex.

[45] Thomas Conlon, *et. al.*, 'The Collapse of FTX: The End of Cryptocurrency's Age of Innocence' (2022) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4283333> accessed March 7, 2023.

[46] In most tax systems, the rules are different for individuals and companies, with a tendency for private taxpayers to have stricter rules.

traditional financial markets.[47] Firstly, the massive fluctuations in the value of crypto assets and its overall volatility eclipses that of traditional financial instruments.[48] This may at least in part be to a general lack of investor protection and education owing to the relative novelty of crypto markets.[49] 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 stabilize, crypto losses should be of particular concern to tax systems.

2.3.3. Utilizing Losses

Most tax systems will allow for losses to be set off against future income in some way. There are often a range of safeguards in tax legislation to regulate the setting off of losses from one source against income from another independent source. Some systems prevent losses from certain sources from being used to set off income from other sources. For example, losses incurred from non-commercial 'hobby' activities cannot generally be set off against employment income. Some tax systems will prescribe that only trade or business losses can be set off against other sources of income. Yet other systems will have source matching, where losses from one source can only be set off against gains from that exact same source.[50]

A tax system may face different levels of risk depending on how strict its loss deduction rules are. For tax systems which allow for trade or business losses to be set off against other sources of income, the test for whether a taxpayer's crypto activity can constitute a trade or business, or is simply gambling, will once again become important.[51]

Income tax is generally paid on the assessable income earned over a year. The starting point is that income must be assessed in the time period when it accrues or is received and cannot be 'shifted' from year to year. However, many systems provide for losses to be 'carried forward' or 'carried back' if certain conditions are met. Naturally, allowing for losses to be carried forward or carried back has the potential to adversely affect revenue collection. The former may decrease future revenues, as they can be used to absorb future income, including income from other (non-crypto related) sources. The latter can absorb income from other sources which may have been generated even before the taxpayer started crypto investments. One particular situation that tax systems should watch out for is the use of companies which have incurred a large amount of crypto

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47 For a detailed exploration of this issue, see Vincent Ooi, 'The Case for Stronger Scrutiny of the Deductibility of Crypto Losses' (2023) (Forthcoming) ('**Ooi Forthcoming**').

48 Baur and Dimpfl (n 6).

49 Dave Michaels and Andrew Ackerman, 'Crypto Tumult Highlights Lack of Investor Protections' (Wall Street Journal) (7 July 2022).

50 See, for example, Lee Burns and Richard Krever, 'Taxation of Income from Business and Investment', Victor Thuronyi (ed), *Tax Law Design and Drafting: Volume 2* (1998), 590-591 and 631.

51 See Chapter 2.2.2.1, above.

losses (which are carried forward) to run otherwise profitable businesses and using the crypto losses to offset income from the businesses.

Many countries also have the concept of fiscal unity, where companies are considered as sufficiently linked such that they are treated as one entity.[52] This can also be achieved through the granting of group relief, where losses may be transferred to and utilized by companies in a group that are related by substantially sharing the same shareholders. A company may join the group after the losses were incurred, raising the possibility of the potential 'sale of losses', where a company may be purchased in order to utilize its losses. As this is a classic tax avoidance technique, many tax systems will already guard against this. In the absence of any safeguards, one might expect companies which have incurred considerable crypto losses to be acquired for the purpose of utilizing those losses.

2.3.4. Safeguards

Some common safeguarding mechanisms use include a 'shareholding test' requiring the shareholders of a company to be substantially the same when carrying forward or carrying back losses.[53] There may be limitations on the number of years which losses can be carried forward or back, and even limits on the amount of losses that can be carried. For group relief, the main safeguard is typically 'common shareholding', which requires that companies that wish to transfer losses to each other must have a certain percentage of their shares held by the same shareholders.

2.3.5. General Commentary

The tests and mechanisms for assessing what kinds of losses are deductible and how these losses can be transferred should be carefully re-examined. Governments may wish to tighten the conditions or restrictions on the transfer of losses. A potential idea might be restricting the deductibility of losses from one source against the income from another source unless both sources carry on a broadly similar trade or business or have some kind of nexus with each other. The key idea is to prevent losses being deducted against income from entirely different trades or businesses which have no connection to each other. Another potential idea might be to enact legislation specifically dealing with crypto losses and restricting their deduction against other (non-crypto related) sources of income. Given that the issue of losses is often a complex one, with far-reaching ramifications for the economy and commerce as a whole, it may be much easier to identify crypto losses as more likely to pose a risk to the tax base and pass specific legislation to avoid this problem by placing special restrictions on their deductibility.

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[52] Jurgen Bachle, 'Tax Unity - Shaping International Business Activities' (Artax) (2021) <https://www.artax.com/en/tax-unity-for-the-organization-of-international-business-activity/> accessed March 7, 2023.

[53] For a detailed exploration of this issue, see Ooi Forthcoming (n 47).

2.4. Loss of Opportunities to Tax New Transactions

2.4.1. New Tax Events

The rise of crypto assets does not only bring risks for tax systems, but potential opportunities to raise additional revenue as well. In some cases, there may be certain crypto transactions that give rise to tax events that may not otherwise have occurred. Some of these transactions will be taxable under existing tax laws and there may not be a need to pass specific laws to tax these transactions. It will simply be a matter of applying existing tax principles to these new crypto transactions. This Report will now go through some examples.

2.4.1.1. Mining

Mining refers to the process in some distributed-ledger protocols by which transactions of digital tokens are verified and are added to the blockchain-based ledger recording the transactions.[54] Computers in a network provide this 'service' and are 'rewarded' with freshly generated tokens for their efforts. Essentially, mining is a mechanism put in place to 'pay for' the running of the distributed ledger system and the 'costs' are spread amongst the existing owners of the digital token as an increased supply of the token leads to a devaluation of the existing tokens, in a manner akin to inflation. The tokens received by the miners can be viewed as compensation for providing the service of mining to the network. As such, there seems to be little reason why tokens received through mining should not be considered income. However, many countries (including Australia and Singapore) have taken a more generous position, holding that such receipts should only be taxed as income where the mining takes place for business (or habitual) rather than personal (or occasional) purposes.[55]

2.4.1.2. Forging

Digital tokens may also be created through forging, which issues tokens to reward forgers that verify transactions in the blockchain in a manner similar to mining, but through a different mechanism. Most jurisdictions treat gains from either mining or forging in the same way for the purposes of income tax.

2.4.1.3. Airdrops

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[54] For more details, see Annex A1.2.1.1.

[55] OECD (n 20), 24 and 26; IRAS (Income Tax) (n 21), p 10.

An airdrop is the distribution of digital tokens for free or for nominal consideration such as to publicize something on social media.[56] This generally is undertaken as a marketing tool to increase awareness of a new token and to increase liquidity in the early stages of issuance.[57] Most jurisdictions treat gains from airdrops as not taxable, though this may be influenced by the fact that airdropped tokens are typically given for free or are of minimal value,[58] and therefore represent limited taxable amounts. Nevertheless, there seems to be no conceptual reason why they cannot be considered to be income. While in most situations, the gains from airdrops are minimal, it is not inconceivable that in some cases, their value can be quite large and potentially present lost revenue opportunities for tax authorities if they remain untaxed.

2.4.1.4. Forks

A hard fork is a change in the protocol code of a token to create a new token that operates under the rules of the amended protocol, co-existing with the original token that remains under operation of the existing protocol.[59] There will thus potentially be two tokens after the hard fork. This is also known as a 'permanent chain split.' This would be akin to a situation of a company setting up a subsidiary and making an *in specie* distribution of shares in the subsidiary to their existing shareholders. It is arguable that gains derived from hard forks should be considered to be income. Just as with airdrops, gains from hard forks are typically not particularly large and therefore represent limited taxable amounts. As such, it may not be worthwhile for tax authorities, especially those under resource constraints, to seek to tax hard forks. That said, there may still be revenue opportunities in some cases.

2.4.2. Difficulties with Application of Existing Tax Law to New Contexts

Apart from airdrops, most of the new tax events discussed in this section are highly technical and not easily understood. The application of existing tax law to these contexts will thus be extremely difficult as one must both understand tax law and also have a deep understanding of the technology and processes in question. These processes are also not entirely uniform and may have very different specific mechanisms, making it necessary to analyze each situation individually before being able to determine the tax treatment. While they do present opportunities to collect additional revenue in some situations, the scale of the activities must be sufficiently large in order to justify the resources of a tax authority being spent on taxing these activities. While this might conceivably

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56 Waerzeggers and Aw (n 14), 234.
57 IRAS (Income Tax), (n 21), 11.
58 Carol Goforth, 'It's Raining Crypto: The Need for Regulatory Clarification When It Comes to Airdrops' (2019) 15:2 Indian Journal of Law and Technology 321, 324.
59 OECD (n 20), 15.

be possible in the case of mining and forging, it is probably not worth the effort to do so for airdrops and forks.

There is also a broader policy dimension here. While there may be some revenue opportunities in taxing these new crypto activities, these have to be weighed against the economic costs and benefits of influencing taxpayer behavior with respect to crypto activities. A jurisdiction wishing to attract more crypto players may well decide not to tax such new sources of revenue, while one wishing to take a more conservative stance may well decide to tax such new sources in principle, even if no revenue is actually collected.

2.5. Tax Evasion

2.5.1. Problems of Pseudonymity and Reporting

The fact that many crypto assets can be held and transferred under the cloak of pseudonymity[60] creates considerable opportunities for tax avoidance and evasion. The fact that the record of crypto asset transactions is available in the public domain is of little assistance to tax authorities if it is not possible to identify the individuals or companies behind the 'wallets'. Attributing the 'wallets' to real world individuals or companies is a difficult task. This is a familiar challenge in the world of exchange of information, where tax (and other) authorities have difficulties identifying the actors, leading to the development of the concepts of the 'controlling person', 'beneficial owner' and 'ultimate beneficial owner', and international cooperation on these issues.[61]

Many tax authorities in the developing world report facing difficulties in ensuring accurate reporting of income and payment of taxes.[62] There is often a lack of resources to be able to conduct detailed audits on taxpayers,[63] which affects overall tax morale in a society.[64] This problem may be exacerbated by the use of crypto assets for commerce and the pseudonymity which comes with it. Tax authorities will face even greater difficulties trying to conduct a crypto audit. Another issue is that crypto adoption amongst residents tends to be high in countries with weak traditional banking systems.[65] Such countries may find it difficult to find the resources to effectively conduct crypto audits.

2.5.2. Tax Evasion

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60 Pseudonymity entails being able to know that the same (unidentified) party is carrying out activities, but not the true identity of the party. For more on this, see Annex A1.1.2.3, below.

61 See for instance OECD, *Building Effective Beneficial Ownership Frameworks* (2021).

62 See generally, Richard Bird and Oliver Oldman, *Taxation in Developing Countries* (John Hopkins University Press) (1993).

63 See generally, Bird and Oldman (n 62).

64 See generally, Bird and Oldman (n 62).

65 Dimitris Drakopoulos, *et. al.*, 'Crypto Boom Poses New Challenges to Financial Stability' (International Monetary Fund Blog) (October 1, 2021) <https://www.imf.org/en/Blogs/Articles/2021/10/01/blog-gfsr-ch2-crypto-boom-poses-new-challenges-to-financial-stability> accessed March 7, 2023.

The line between tax avoidance and tax evasion is one of legality. While both may involve under-reporting of income, the latter is characterized by dishonesty. Pseudonymity facilitates tax avoidance since it impedes the ability of tax authorities to track and uncover tax avoidance schemes. Without knowledge of such schemes, tax authorities are unlikely to be able to take action to counter that tax avoidance. However, pseudonymity poses a far greater risk of tax evasion instead, facilitating cases where taxpayers may decide not to declare their income at all.

There are, of course, premeditated tax evasion cases, where large businesses may elect to receive payments in crypto assets, submit fraudulent accounts and simply not declare those payments in their tax returns. Pseudonymity certainly makes uncovering such evasion extremely difficult, particularly where technologically savvy perpetrators are involved. The ability to largely stay out of the traditionally regulated banking sector greatly contributes to the ability of such perpetrators to stay undetected and is also predicated on regulatory oversight in a jurisdiction. Considerable resources will need to be expended to track down and audit such taxpayers.

However, not all tax evasion cases will involve large businesses or premeditated attempts. There can be considerable erosion of the tax base simply from individuals in day-to-day transactions using crypto payment mechanisms rather than cash or traditional banking facilities. Such transactions may form part of the shadow economy and remain virtually undetected by the tax authorities. Such 'incidental tax evasion' differs from large premeditated tax evasion because the perpetrators may not have actually set out to evade tax. They may adopt crypto payment systems because they are easier to use, more readily available, more reliable, or cheaper than traditional payment systems in a country. However, once the transactions are made on the crypto payment systems, taxpayers who realize that there is little chance of being caught may decide not to declare the income received through such mechanisms.

In sum, crypto assets pose serious tax risks which can potentially result in an erosion of the tax base. Governments may wish to conduct a careful risk assessment and formulate a clear policy position on crypto assets. Additionally, governments may consider reviewing their legislation to ensure that existing tax statutes adequately cover crypto assets and transactions. Virtually all tax statutes currently in force were drafted without the Parliamentary draftspersons having crypto taxation in mind. As such, there may be instances where an unintended result is arrived at when applying existing tax laws to crypto assets and transactions. A review can be conducted to uncover these potential situations, allowing governments to make an active decision on whether to amend the legislation. In particular, governments may wish to focus on reviewing legislation relating to loss deductions to ensure that there are proper safeguards against excessive claiming of deductions against crypto losses. The 'crypto winter' has exposed the considerable risk of losses to crypto investors and businesses, which may seek to deduct these losses against their income from other sources. This has the potential to seriously erode the tax base. While not a pressing matter, governments can consider looking into the tax treatment of new crypto activities without a close existing equivalent under existing tax law, and make an active policy decision as to whether to tax such activities.

3. Substantive Tax Law

3.1. Overview

Having laid out the main risks which crypto assets pose to tax systems, this Report will now go on to consider the challenges which may arise and how ready existing tax systems may be to face them. This chapter begins by exploring the different ways in which crypto assets and transactions can interact with a whole range of specific taxes. It then goes on to consider how crypto assets and transactions fit into existing international taxation and transfer pricing frameworks. Difficulties in valuation will also be briefly covered. Each of these areas relate to substantive tax law, in the sense that they affect tax liability itself, rather than the ability of a tax authority to administer and enforce tax laws.

3.2. Challenges and Specific Taxes

3.2.1. Corporate Income Taxes (Encompassing Capital Gains Taxes)

Income tax tends to be an area where the law primarily focuses on the circumstances surrounding the taxable event, and only secondarily on the asset in question (if at all).[66] As such, other than in some special situations,[67] orthodox tax principles can be applied to crypto transactions and their income tax treatment is likely to be similar to those of their traditional counterparts. In many situations, for companies, capital gains will be administered under the corporate income tax regime. The key concerns for tax systems relate to the ring-fencing of crypto losses, since there is the possibility that the common shareholders of the loss-making company have other profitable businesses or that they may wish to 'sell the losses' to someone else.[68] It should be noted that companies buying and selling crypto assets may be less likely to be found to be gambling.[69] It appears that there is a *prima facie* presumption that individuals buying and selling shares are unlikely to be trading, and a corresponding converse presumption for companies doing the same. This may make it easier for companies to establish that they have a trade or business in crypto assets and thus, potentially the right to deduct crypto losses against their income from other sources. This issue may be something that has to be dealt with expressly with legislation.

3.2.2. Personal Income Taxes (Encompassing Capital Gains Taxes)

While personal income taxes face many of the same issues as corporate income taxes, there are several important differences. It is very unusual for individuals to be permitted to carry their losses forward or back, and highly unlikely for them to be able to transfer their losses to someone else.

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66 See Appendix A1.4.1.3, below.
67 See Appendix A1.4.1.4, below.
68 See Chapter 2.3, above.
69 See Ooi BIT (n 24).

The risks associated with crypto losses are thus correspondingly lower.[70] Capital gains taxes and personal income taxes are often considered separately and in the majority of cases, any crypto transactions are likely to fall under the capital gains tax regime rather than the personal income tax regime, providing a natural 'ring-fencing' of crypto losses. An individual who wishes to bring crypto losses out of the capital gains tax regime and into the personal income tax regime will often have to establish that there was a trade or business in crypto assets. However, there appears to be a presumption that individuals buying and selling shares are unlikely to be trading and the same logic may possibly be extended to crypto assets.

3.2.3. Wealth Taxes (Inheritance Taxes, Gift Taxes, Transfer Taxes, Net Wealth Taxes)

Many jurisdictions have some form of wealth taxes, that may come in the form of an inheritance or estate tax, often coupled with gift or transfer taxes. Net wealth taxes on the overall assets of a person are relatively rarer but do exist in some jurisdictions.[71] Wealth taxes tend to be based on the value of the assets rather than the nature of the assets (though notable exceptions may apply, such as for example in relation to the family home or businesses). Thus, orthodox tax rules are likely to apply to crypto assets as they would to traditional assets. The main issue that is likely to be of concern to tax authorities is that of valuation, but that is a known challenge for these types of taxes though it may just be a little more difficult to value crypto assets as compared to traditional assets.[72] A significant tax administration risk is that of assets being surreptitiously passed to others without being officially declared. As the 'private keys' which grant access rights to crypto assets are easily stored and transferred without the knowledge of the authorities,[73] it may be difficult to prevent this form of tax evasion.

3.2.4. Indirect Taxes

Crypto assets and transactions pose a number of difficulties for the administration of indirect taxes such as GST or VAT. The starting point is that such taxes are based on 'supplies' of 'goods or services'. Thus, it is necessary to pin down issues like the identity of the supplier, the recipient, the place of supply and even whether there could be a dual supply. The idea that indirect taxes are supposed to be based on the place of supply does not apply well to a system where digital goods and services can cross jurisdictional boundaries easily. While there is some existing guidance on this topic,[74] some tax authorities may not have implemented it yet and may find it hard to apply

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70 However, individuals pose a greater risk of tax evasion in not declaring their income as they are harder to track and audit.

71 For example, Switzerland. Wealth taxes in Switzerland are levied at the canton level upon the balance of the tax resident's worldwide gross assets minus debt, as opposed to the value of the transferred gift or inheritance. See Marius Brulhart, *et. al.*, 'Behavioural Responses to Wealth Taxes: Evidence from Switzerland' (2022) American Economic Journal 14(4) 111 – 150.

72 See Chapter 3.5, below.

73 See Annex A1.2.2, below.

74 See OECD, *International VAT/GST Guidelines* (2017); and OECD, *The Role of Digital Platforms in the Collection of VAT/GST on Online Sales* (2019).

such guidance to crypto transactions. Further, the decentralized nature of the blockchain can complicate findings of the place of supply.

The next issue is that it is necessary to identify the 'good or service' in question for indirect taxes to apply. This is not difficult to do in principle as most indirect tax legislation tends to specify that any supply which is not a supply of a good is a supply of services. The difficulty arises where different rates are to be applied based on the nature of the supply. This is where the fact that the asset or service in question may be crypto related comes into the picture. It is not uncommon for indirect tax systems to provide for some supplies to be 'standard-rated', 'zero-rated' or exempt. Many jurisdictions have several bands of rates. The classification of a crypto asset or service into the pre-existing categories may not be an easy task and is probably why several jurisdictions have already made specific provision for certain kinds of crypto assets in their indirect tax legislation.[75] This is a highly complex and fact-specific area, requiring deep knowledge of both indirect tax law and crypto technology and may pose challenges for tax authorities.

3.2.5. Transaction Taxes

There are a whole range of taxes that do not fit into the abovementioned categories. This Report will cover transaction taxes that may be more common across jurisdictions. Transaction taxes come in many forms such as financial transaction taxes and currency transaction taxes. But one of the more common forms is that of stamp duty. Traditionally, stamp duties are imposed on certain legal instruments or documents, usually involving the transfer of property or assets. There is thus the need for a physical instrument that is to be stamped and for the instrument to fall into one of the pre-defined categories under the legislation. The first factor creates a problem for crypto transactions. In most cases, there will not be a physical instrument when crypto assets are transferred. Thus, tax authorities wishing to impose stamp duty on crypto transactions will either need to ensure that their stamp duties regime is based on transactions and not instruments[76] or have legislation that provides that electronic instruments will be stampable in the same way that paper instruments are.[77]

The second factor is identifying which (if any) category of instrument the transfer or agreement instrument of a crypto transaction falls under. It is by no means clear that just because a security token, for example, performs a 'functionally equivalent' function to shares, that it should be considered to be a share for stamp duty purposes. This explains the cautious approach taken by some jurisdictions. For example, His Majesty's Revenue and Customs ('**HMRC**') of the United Kingdom note in their guidance that while one ultimately needs to look at the characteristics and nature of the crypto asset, 'existing exchange tokens would not be likely to meet the definition of

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75 ATLA 2017 (n 23), Schedule 1; and SGSTA (n 23), Fourth Schedule, Part I.
76 Like the UK's Stamp Duty Land Tax and Stamp Duty Reserve Tax regimes.
77 See, for example, Singapore Stamp Duties Act, s 60C.

'stock or marketable securities' or 'chargeable securities'.'[78] This is a complex area and if it is indeed the case that crypto transactions would not be subject to stamp duty in a way that traditional transactions are, this would be a natural opportunity for tax arbitrage. It may be easier in that situation for the tax authorities to invoke an anti-avoidance provision rather than enter into a legal discussion of whether a crypto transaction would fall under an existing stamp duties regime.

3.3. International Taxation

This Report focuses on a particularly important part of international taxation; that of the application of Double Tax Treaties ('**DTTs**') to crypto assets and transactions.[79] The main difficulties here have to do with classifying income from crypto assets and transactions such that they fall under the appropriate article in the DTTs. The issues of 'source', 'residence' or 'permanent establishment' are likely to emerge in crypto taxation and can be dealt with in the same way as for digital economy taxation. In the area of international crypto taxation, the most relevant articles in DTTs are likely to be Articles 10 (Dividend), 11 (Interest), 12 (Royalties), 12A (Fees for Technical Services), and 12B (Income from Automated Digital Services). Given the very wide variety of digital tokens and their functions, there may be situations where a crypto asset performs a 'functionally equivalent' role to a traditional asset. Examples include situations where cryptocurrency is paid by a company or paid as compensation for a loan of other cryptocurrency. The question would arise whether they could be considered to be 'dividends' and 'interest' respectively, notwithstanding that cryptocurrencies would probably not meet our current definition of 'money'. There could also be situations where cryptocurrency is paid for the right to exhibit an NFT. The question would arise whether such a payment would be in the nature of 'royalties'. There would be similar issues with determining if crypto-related payments for technical services could fall under Article 12A, and whether functions performed using smart contracts on the blockchain might produce income that might fall under 'automated digital services', caught by Article 12B.

Owing to the novelty of this field, there are numerous open questions and uncertainties.[80] One important issue that will have to be determined is the application of the beneficial ownership concept to crypto transactions under the abovementioned articles. There will be questions on whether it is possible to beneficially own a crypto asset in the first place, and if so, what the test for it might be. Further, the various ways in which the concept could apply to a myriad of crypto financial instruments that serve 'functionally equivalent' roles to traditional financial instruments will also have to be considered. One might expect that in accordance with the requirement on

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[78] HMRC, 'CRYPTO24000 - Cryptoassets for individuals: Stamp Duty, Stamp Duty Reserve Tax and Stamp Duty Land Tax' (March 30, 2021) <https://www.gov.uk/hmrc-internal-manuals/cryptoassets-manual/crypto24000> accessed March 7, 2023.

[79] All references to Articles in this Report are to Articles in the United Nations, *United Nations Model Double Taxation Convention between Developed and Developing Countries* (2021) ('**UN Model Tax Convention**').

[80] Although, there is some excellent early literature on the subject. See Shaun Parsons, *Taxing Crypto-Asset Transactions: Foundations for a Globally Coordinated Approach* (2023) (IBFD); and Daniel Gomes and Eduardo Gomes, 'International Tax Issues Related to Bitcoin and Other Cryptoassets in Double Tax Treaties' (2022) The Lisbon International & European Tax Law Series (No.6/2022).

parties to a DTT to interpret the treaty 'in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose'[81] 'functionally equivalent' crypto assets and transactions would be accorded the same tax treatment as their traditional counterparts, but as has been seen in the context of domestic tax law, this may not be the case in every situation and things will have to be handled on a case-by-case basis.

3.4. Transfer Pricing

3.4.1. Limited Market Activity

Crypto assets generally exhibit three characteristics that complicate transfer pricing analyses.[82] Firstly, many crypto assets have very little trading activity, making it extremely difficult to arrive an arm's length price, especially when applying the comparable uncontrolled price ('**CUP**') method.[83] In some situations, tax authorities may have to acknowledge that existing transfer pricing methods may lead to inaccurate results for crypto transactions. They may thus wish to focus less on determining what an arm's length price might be and instead devote their attention to the reasonable effort undertaken by the taxpayer to arrive at an arm's length price at the time of the transaction, which should be evidenced by contemporaneous documentation.

3.4.2. Extreme Volatility

Crypto markets are extremely volatile and there can be extreme swings in the value of tokens.[84] Such fluctuations make it difficult to find comparable uncontrolled transactions and raises issues on how to conduct a comparability analysis while accurately making comparability adjustments to account for the differences in the risk of price volatility. Risk is something that needs to be carefully considered in determining transfer prices, for a functional analysis would be incomplete otherwise. The assumption of risks typically influences the prices and other conditions of transactions.[85]

3.4.3. Pseudonymity

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81 Vienna Convention on the Law of Treaties between States and International Organizations or between International Organizations, Vienna, 1986, Article 31(1).

82 For a detailed discussion of this area, see Vincent Ooi and Ilka Ritter, 'Crypto Assets: What Issues do they Pose for Transfer Pricing?' (2023) (Forthcoming).

83 United Nations Department of Economic & Social Affairs, *United Nations Practical Manual on Transfer Pricing for Developing Countries* (2021) ('**UN Manual**'), 3.38.

84 Baur and Dimpfl (n 6).

85 UN Manual (n 83), 9.9.

Pseudonymity also poses an issue for transfer pricing.[86] In short, the main way in which the pseudonymity issue raises challenges for transfer pricing is that associated enterprises may be able to conduct transactions not applying an arm's length price and escape scrutiny, due to the inability of tax authorities to identify them as the parties holding the 'wallets' with which the transfers of crypto assets are made.

3.5. Valuation

The ease of valuing crypto assets depends on the frequency with which they are traded. Highly liquid crypto assets such as Bitcoin will have a readily ascertainable market value, while crypto assets which are rarely or never traded will be much harder to value. To ensure the reliability of the valuations, tax authorities may wish to prescribe guidelines for valuation of crypto assets that can be used for tax purposes.

[86] See Annex A1.1.2.3, below.

4. Procedural Tax Law

4.1. Overview

While the previous chapter dealt with issues of substantive tax law, this chapter addresses the practical challenges faced by tax authorities in ensuring good tax administration. This chapter is divided into two main sections: administration and enforcement. Generally, administration addresses issues that pertain to working with taxpayers to ensure that tax returns are filed in a timely and accurate manner, and that any taxpayer disputes are resolved. It may be viewed as all activities of the tax authorities up to the point that the notice of assessment is finalized. On the other hand, enforcement relates to the steps taken by the tax authorities to ensure that tax owed by the taxpayers to the government is duly paid. The two are conceptually distinct and raise different (but sometimes overlapping) issues.

4.2. Administration Challenges

4.2.1. Tax Morale

Most income tax systems operate on a self-assessment basis,[87] where taxpayers will complete their tax returns themselves, which will then be (selectively) audited by the tax authorities. As it is impossible to monitor every taxpayer, tax morale is crucial for the stability of tax systems. Taxpayers are more likely to fail to file their returns, or if they do so, under-declare their income if they think that other taxpayers are doing the same without repercussions.[88] This is particularly the case in a relatively new field such as crypto taxation, where the social norms of reporting and paying tax on such income are arguably not yet firmly established. Taxpayers may well feel that it is entirely 'normal' not to have to pay tax on crypto gains if everyone they know holds the same view. There are a variety of ways to manage tax morale, but in the case of crypto taxation, where audits are difficult to successfully conduct, the most obvious means of doing so is to ensure that there is a credible risk of getting caught if one evades tax. Further, the penalties imposed on getting caught have to be severe enough to dissuade would-be tax evaders.[89] Such measures should be accompanied by sufficient taxpayer education to inform taxpayers of their duties.

4.2.2. Taxpayer Guidance

Even if tax morale is high and taxpayers are willing to try to file their returns accurately, there will still be difficulties if they do not have the knowledge required to complete this task correctly. Crypto taxation is a very new field for most taxpayers. Few taxpayers will be able to understand tax rules well enough to be able to apply them to this new context without detailed guidance. Thus, it is recommended that the tax authorities provide detailed guidance on crypto taxation. Such

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87 Parthasarathi Shome, *Taxation History, Theory, Law and Administration* (Springer) (2021), 441.
88 Shome (n 87), 441-442.
89 Shome (n 87), 441-442.

guidance should be simple enough for the vast majority of taxpayers to be able to understand and apply. Tax authorities may wish to consider administrative concessions (or extra statutory concessions) for crypto taxation[90], where it is clear that the tax likely to be collected is less than the administrative costs involved. Such positions could be periodically reviewed and subsequently changed if the potential revenue collection increases significantly. While tax authorities can always quietly choose not to actively enforce certain tax provisions, administrative concessions assist the taxpayers, who would otherwise be compelled to pay the expenses and report such income in their tax returns otherwise. Administrative concessions can have the effect of making some aspects of crypto taxation simpler than they would otherwise be.

4.2.3. Staff Training and Management

Even if the taxpayers have been given proper guidance and their tax returns are substantially correct, a tax system will still struggle if tax auditors lack specialty knowledge and skills to be able to accurately assess the returns. Crypto taxation remains a relatively new field with complex underlying technologies. For tax authorities with limited resources, it may not be possible or advisable to create a separate department specializing in crypto taxation. In such cases, it is important to ensure that at least some tax auditors have basic knowledge on crypto taxation, so that they can handle crypto tax cases as they arise.

It will be much easier to train tax officers and assist them with their work if they are provided with detailed internal guidance on crypto taxation. Such guidance should differ from that given to the taxpayers because it might contain highly classified information such as whether the tax authorities will actively seek to audit and tax certain kinds of transactions. Practically speaking, tax authorities are likely to have an internal policy that recognizes that resources are limited and that it is necessary to prioritize auditing and taxing certain kinds of transactions over others. An example would be the collection of stamp duty on transfers of security tokens. Given that this is a highly complex area, it might not be worthwhile for tax authorities to actively audit this area. However, obviously the taxpayers should not be made aware of these internal guidelines.

4.2.4. Domestic Collection of Information

As with traditional audits, in order for tax auditors to be able to effectively check if a taxpayer's returns are correct, they must have information of the transactions conducted by the taxpayer. Such information may be obtained from banks and other financial institutions, which are generally regulated and required to submit information to the tax authorities at regular intervals.[91] In the case of crypto assets and transactions, such information should be collected from crypto service providers as well, which means that such intermediaries will have to be regulated. If successfully

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[90] See Vincent Ooi, 'Administrative Concessions and the Efficient Taxation of Digital Tokens in Singapore' (2023) Banking & Finance Law Review (Forthcoming).

[91] Shome (n 87), 99 and 434-439.

done, this would go some way towards solving the pseudonymity issue. It would be possible to match 'wallets' to their owners because such information would be collected by the crypto exchanges and other intermediaries used by taxpayers.

However, one of the main selling points of crypto assets is that it is technically not necessary to go through any intermediary to access the crypto market. Tokens can be freely transferred between individuals without having to go through any banks, for example. As such, there could be some 'wallets' which were never registered with intermediaries, making it impossible to identify their owners. At the present moment, at least, the proportion of crypto traders who are technologically savvy enough to navigate the holding and transfer of crypto assets themselves, without the need for intermediaries, is rather low. The vast majority of traders holding or using crypto assets will still need to use intermediaries and thus can be identified by the international exchange of information systems. Further, crypto assets are fundamentally useless if they cannot be traded for something tangible or real world financial assets. At some point, crypto assets must interface with the traditional banking system to be worth anything. Tax authorities will be on the lookout for and carefully monitor sudden inexplicable inflows of funds, which could suggest that crypto assets have been exchanged for fiat currency.

4.2.5. Exchange of Information

There are a range of international initiatives[92] in place to facilitate exchange of information which aid tax authorities in getting a clearer picture of the natural persons behind structures and transactions. The OECD's CRS is currently one of the most influential models, with other initiatives adopting their standard of reporting and exchanging information.[93] Until relatively recently, most of these initiatives were not prepared to deal with the sudden increase in popularity of crypto assets, often not applying to crypto assets. However, the international community has become aware of the importance of crypto assets and thus, has started certain initiatives to bring crypto transactions within the existing international exchange of information framework.[94]

4.2.6. Conducting a Crypto Audit

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[92] There are a range of reporting and exchange of information initiatives currently in force around the world, most of them modelled on the OECD's Common Reporting Standard ('**CRS**'). Examples include the European Commission's DACs and the United States' Foreign Account Tax Compliance Act ('**FATCA**') regime. Also running in parallel to these initiatives but in the area of anti-money laundering and terrorism financing rather than tax, is Finance Action Task Force ('**FATF**') Recommendations. Until fairly recently, none of these initiatives specifically dealt with crypto assets.

[93] For example, the European Commission's DACs refer to the CRS.

[94] See OECD, *Crypto-Asset Reporting Framework and Amendments to the Common Reporting Standard* (2022) ('**CARF**'); European Commission, *Proposal for a Council Directive Amending Directive 2011/16/EU on Administrative Cooperation in the Field of Taxation* (2022) ('**DAC8**'); and FATF, *Updated Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers* (2021) ('**FATF**').

A crypto audit is much more complex than a regular audit due to a variety of reasons.[95] The auditors must have a practical understanding of how crypto transactions work, including how to trace transfers of digital tokens from one 'wallet' to another. They must be able to match the details of the 'wallet' against the information obtained from crypto service providers or other tax authorities to be able to identify the taxpayer in question. They must be able to assess whether the valuation of crypto assets for tax purposes was undertaken correctly. In many cases, the information available will not be sufficient to allow the auditors to trace the crypto transactions back to an actual taxpayer. This entire process requires specialist training and is greatly facilitated by the use of special software. As such software is expensive, tax authorities will have to evaluate if it will be a worthwhile investment.

4.3. Enforcement Challenges

4.3.1. Debt Collection

Assuming that it is possible to identify and issue an assessment to a taxpayer, there remains the difficulty of ensuring that the tax assessed is actually paid. There are a range of traditional measures of enforcing a debt. However, should those measures fail, tax authorities should be ready to seize the crypto assets themselves. This would be particularly difficult in the case of an uncooperative debtor and the authorities may need to obtain a court order to compel intermediaries such as crypto service providers to transfer the crypto assets to the government. In situations where only the debtor has the relevant private keys, it may be virtually impossible to gain access to the crypto assets without the debtor's cooperation.

4.3.2. Cross-Border Enforcement

In many cases, the crypto assets will be held by an intermediary that may not be based in the same jurisdiction as the tax authority. If so, the tax authorities may need to take an additional step of getting the judgment of its local court recognized in the jurisdiction where the intermediary is based. The expense of doing so may mean that it is prohibitively expensive in most cases and can only be done in situations where the potential revenue is extremely large. Further, there will need to be some kind of international agreement to facilitate this, such as a DTT between the two jurisdictions which provides that the parties will assist each other in the collection of the others' taxes,[96] or if the jurisdictions are member of the Convention on Mutual Administrative Assistance

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[95] Wolters Kluwer, 'Internal Audit Introductory Guide to Cryptocurrency and Blockchain Auditing' (December 6, 2022) <https://www.wolterskluwer.com/en/expert-insights/internal-audit-introductory-guide-to-cryptocurrency-and-blockchain> accessed March 7, 2023.

[96] UN Model Tax Convention (n 79), Art 25.

in Tax Matters.[97] Otherwise, the revenue rule from private international law will typically prevent a court from recognizing a foreign court's order that has the effect of collecting tax.[98] While this is not the most pressing concern, it is a matter of time before taxpayers will start making significant claims for relief under DTTs. Governments should review how common crypto transactions will be treated under such agreements and assess whether the agreements will need to be renegotiated.

4.3.3. Receiving Crypto Assets

There is the possibility that crypto assets will have to be seized from an uncooperative debtor. In such a case, the assets will first have to be valued before it can be determined how much they should count towards the debt. This may not always be easy in the case of crypto assets which have a limited market, and which are rarely traded.

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97 OECD, *The Multilateral Convention on Mutual Administrative Assistance in Tax Matters: Amended by the 2010 Protocol* (2011) ('**CMAAT**'). Article 6 of CMAAT requires the competent authorities of parties to the convention to enter into a Multilateral Competent Authority Agreement on Automatic Exchange of Financial Account Information ('**CRS MCAA**').

98 See Adrian Briggs 'The Revenue Rule in the Conflicts of Laws: Time for a Makeover' (2001) Singapore Journal of Legal Studies 280 – 299.

B: Proposals to Manage Risks and Challenges

While Section A of this Report looked at the risks and challenges from crypto assets facing tax systems, Section B will discuss how these risks and challenges can be managed and mitigated. In doing so, it will also consider the current experience of several developing countries in addressing these risks and challenges. Some of the approaches taken by the developing countries can serve as positive examples for other jurisdictions to follow. Section B of this Report starts off with Chapter 5, which submits several proposals for how countries can take certain steps to manage the risks and challenges. The proposals are sorted into three main categories: 1) guidance, 2) training; and 3) assistance. Chapter 6 then presents the results of desk research of 18 jurisdictions, approximately 90% of which are developing countries. The official approaches of these jurisdictions together with information on their approach towards crypto taxation was collated. A qualitative analysis was then conducted and paired with quantitative data from the Chainalysis Global Crypto Adoption Index (the '**Index**'). This study looked for patterns and general trends in the approaches of these jurisdictions towards crypto taxation and also considered if there were any best practices or areas for improvement in these approaches.

5. Proposals

5.1. Overview

Resource constraints are a practical fact that all tax authorities face. However, these constraints tend to be particularly acute in developing countries. Common issues include a shortage of funding, qualified personnel, training, and equipment.[99] It is unlikely that tax authorities of a developing country will have a dedicated department specifically to deal with crypto taxation. Depending on the estimated potential revenue that crypto taxation may be able to bring in, it may not be worthwhile for a country to assign many staff members to work on this area either. However, it is important for all jurisdictions to assess the tax risks posed by crypto assets and make policy decisions on what steps to take. A consequence of limited resources is that the tax authorities of developing countries are unlikely to be able to devote significant resources to addressing crypto tax issues where there are other important tax matters to attend to within the jurisdiction.

5.2. Guidance

5.2.1. Guidance on Tax Risks

Crypto assets pose significant tax risks which should be carefully assessed by all (developing) countries. Arguably the most important risk to look at is the treatment of crypto losses, followed by the need to prevent crypto tax evasion. The next risk to be considered is that of substitution with 'functionally equivalent' transactions. Finally, in some situations, tax authorities may wish to consider potential new sources of revenue from crypto transactions.[100] Such a risk assessment would benefit greatly from a tool or framework that could subsequently be used as a basis for an assessment. The UNTC could consider developing such a framework to assess the tax risks from crypto assets. The foundations of such a framework have already been laid in this Report,[101] but could be further simplified and refined through a dedicated Subcommittee. This area may also profit from capacity building and/or technical assistance in the form of dedicated crypto tax experts assisting countries in risk assessment. Once the risk assessment has been conducted and governments are clear on their policy positions towards crypto taxation, steps can be taken to mitigate and manage the risks.

5.2.2. Internal Guidance

Moving on to the challenges posed by crypto assets, it is proposed that guidance for tax auditors is prepared for internal use within tax authorities. Such guidance should set out the foundations of crypto technology and deal with common applications of tax law to crypto assets and transactions. Separate guides may be prepared to address different issues, though the need for

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[99] Shome (n 87), 10 -11.
[100] See Chapter 2.4, above.
[101] See Chapter 2, above.

guidance on a particular area may depend on the priorities of the countries' tax administration. Domestic tax guidance should ideally cover each of the taxes imposed in the jurisdiction, dealing with common situations and highlighting potential difficulties. The UNTC can consider developing model tax guidance for the internal use of tax authorities. As this guidance is very specific to countries' domestic tax systems, some technical assistance to ensure that the guidance is tailored to the needs of each specific jurisdiction would be helpful.

Guidance on international tax, exchange of information, transfer pricing, and valuation issues could also be considered, though these areas would not be a priority due to their complexity and, potentially, limited revenue potential. There are considerable difficulties in finding an arm's length price for certain kinds of crypto assets due to a lack of information on the market price and volatility in their values. To prevent future disputes over transfer pricing, the UNTC may consider drafting high level guidance in all of these areas through a dedicated Subcommittee if there is interest from countries. As to valuation, crypto assets can be difficult to value and it is possible that the assessments of different valuers may produce starkly different results. Tax authorities could possibly issue guidance clearly starting what the minimum standards are for valuation reports to be considered in tax proceedings.

5.3. Training and Assistance

While internal guidance for tax authorities will certainly help tax officials manage crypto tax issues better, for maximum effectiveness, they should also be receiving dedicated training in this area. Tax auditors will require a basic understanding of the underlying technology behind crypto assets and also the common situations and difficulties that can arise when dealing with crypto assets and transactions. Another good form of training is for tax auditors from developing countries to attend courses or visit tax authorities in other jurisdictions which have expertise in crypto taxation. There, they would be able to experience first-hand on-the-job training and gain practical experience which they can then impart to their colleagues when they return. There are taxpayer privacy and national security issues that need to be kept in mind.

It is crucial that the training of tax auditors includes training on how to conduct crypto audits. This is quite a technical field and requires specialist training. Unless there are some tax officials in a jurisdiction that can effectively conduct crypto audits and uncover incorrect tax returns, there will be little risk to taxpayers in getting caught for tax evasion, which may lead to impunity and a subsequent decrease in tax morale. Furthermore, crypto tax audits often require specialized technology in order to be efficiently conducted.[102] Such technology is often expensive and requires special training to use. Funding should not only be directed towards employing additional manpower, but also towards acquiring such technology. Perhaps tax authorities may reach out and work with the developers of such technology to see if they can secure access. Another opportunity for tax officials to work together and share their knowledge would be joint audits. In some situations, there may be cross-border elements involved in crypto taxation. Tax

[102] Wolters Kluwer (n 95).

officials from the two countries involved may be open to the idea of working together on the audit and exchanging relevant information.

6. Review of Approaches Across Jurisdictions

6.1. Introduction

The aim of this Report is not only to lay out the theoretical risks of crypto assets for developing countries and propose recommendations accordingly, but also to explore the real-world responses of tax systems to the increasing adoption of digital assets. As such, desk research of 18 jurisdictions was conducted gathering information from each jurisdiction with respect to their approach towards the taxation of crypto assets. Thereafter, the information was collated and subsequently analyzed to determine if any patterns in their approaches exist. It should be noted that the outcomes of the desk research are solely based on information publicly available (for example publications about legislative initiatives or academic articles, etc.). To further aid this analysis, the Chainalysis Global Crypto Adoption Index (the '**Index**') was used well. The Index is a publicly-available ranking of 146 countries based on their usage of different types of cryptocurrency services.[103]

6.2. Analysis of Jurisdictions

6.2.1. Policy Approaches

Half of the jurisdictions in this desk research had policies that were largely crypto-indifferent. The remaining jurisdictions were roughly split down the middle, with half possessing largely crypto-receptive policies, and the other half adopting policies aiming to delay or hinder the adoption of crypto within their jurisdictions. It should be noted that this report doesn't want to stipulate that countries should be adopting crypto and / or be open to its use; rather, this report analyzes different policy paths with a view to securing a country's tax base.

The desk research may be considered alongside a recent report, which has noted that nearly 70% of the countries in Sub-Saharan Africa currently take an indifferent or uncertain policy approach to cryptocurrencies, i.e., no explicit position on accepting or rejecting cryptocurrencies and no regulation in place.[104] The Report also noted increasing interest in and application of cryptocurrencies in the Sub-Saharan Africa region, particularly in countries like Nigeria, South Africa, Kenya and Ghana.[105] Nigeria and Kenya are in the top 20 of ranked countries in the Index. Seven of the 18 jurisdictions in this study appear in the top 20. There appears to be a fairly high crypto adoption rate in developing countries on average.

6.2.2. Relevance of Official Actions on Crypto Adoption

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[103] The full methodology and collated information about the jurisdictions in the study is available in Annex A2, below.

[104] Ankun Liu, *et. al.*, *Cryptocurrency in Africa: Alternative Opportunities for Advancing the Sustainable Development Goals?* (UNDP Global Policy Network) (December 2022), 14, 2.1.

[105] Liu *et. al.* (n 104), 14, 2.1.

There is a wide variation in the reception of crypto assets across the jurisdictions in the study. Two jurisdictions have made Bitcoin legal tender while three jurisdictions have either effectively banned or proposed a ban on crypto assets. Major official actions such as these may have limited impact on crypto adoption. El Salvador, which has made Bitcoin legal tender, ranks at 55th on the Index,[106] while there is no data on the Central African Republic, which is unranked. Barbados, which has a government very supportive of crypto assets and which has backed the launch of a digitized Barbadian dollar on the Bitcoin blockchain, is ranked 101st on the Index. The three jurisdictions who have effectively banned or proposed a ban on crypto assets, Egypt, Morocco, and Pakistan, rank 24th, 14th and 6th on the Index respectively. It would thus appear that the official position taken by governments is not strongly correlated with crypto adoption in a jurisdiction. Factors such as a lack of infrastructure can potentially hinder crypto adoption.

There are many international crypto exchanges which are easily accessible even from jurisdictions which have technically banned crypto assets. Local regulations are unlikely to be very effective, as those interested in crypto assets can seek out foreign-regulated intermediaries. This is not to say that local regulations will have no impact on crypto adoption. For example, an amendment to Indian tax law is currently being proposed that would bring overseas crypto providers who have Indian customers under the Indian regulatory framework. Some crypto service providers have indicated that they might disable their offerings to Indian customers as a result.[107] It is true that there will always be some overseas intermediaries that may blatantly ignore local regulations. However, the larger platforms will generally comply with such regulations or decide to stay out of jurisdictions with onerous regulations.

6.2.3. Crypto-Specific Legislation

12 jurisdictions (two-thirds) in the study have either tax or non-tax legislation for crypto assets while six (one-third) do not. In jurisdictions that have specific legislation, it is rare for a statute to be entirely about crypto assets or transactions and far more common to make slight amendments to existing legislation to expressly mention crypto. There does not necessarily appear to be a correlation between whether a jurisdiction has specific legislation for crypto assets and the crypto adoption rate. In any case, with global initiatives developing to include crypto in international exchange of information frameworks,[108] it may be a matter of time before most countries will have legislation specifically referencing crypto assets.

6.2.4. Crypto-Specific Guidance

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[106] To recapitulate, the Index measures economies on five factors, namely: 1) centralized service value received ranking; 2) Retail centralized service value received ranking; 3) P2P exchange trade volume ranking; 4) DeFi value received ranking; and 5) Retail DeFi value received ranking.

[107] Lipsa Des, 'The State of Crypto Taxation in India: Past, Present and Future', (CoinDesk) (November 14, 2022) <https://www.coindesk.com/layer2/2022/11/14/india-cryptocurrency-tax-laws/> accessed March 7, 2023.

[108] See fn 94.

Several countries have no specific crypto tax legislation, resulting in a need to apply existing tax law to crypto assets and transactions.[109] However, a lack of guidance can also be an issue for jurisdictions which have enacted specific crypto tax legislation, as such legislation is typically broadly drafted, and it can be difficult to determine how it will be interpreted and enforced by the authorities.[110]

Table 1. Summary of Jurisdictions in the Study

	General Policy Sentiment	**Specific Legislation**	**Crypto Adoption Index**
Africa			
North Africa			
Egypt	Effectively bans crypto	Yes	0.361 (24th)
Morocco	Has lifted ban, but is not fostering its adoption	Yes (Soon to be enacted)	0.507 (14th)
Central Africa			
Central African Republic	Crypto-Receptive (allows crypto as a legal tender)	Yes	NA
East Africa			
Kenya	Crypto-Indifferent	Yes (Soon to be enacted)	0.397 (19th)
Southern Africa			
South Africa	Crypto-Indifferent	Yes	0.309 (30th)
West Africa			
Nigeria	Crypto-Indifferent	Yes (Soon to be enacted)	0.521 (11th)
Asia			
East Asia			
Malaysia	Crypto-Indifferent	No	0.319 (29th)
Philippines	Crypto-Indifferent	No	0.753 (2nd)
South Asia			
India	Taxes crypto	Yes	0.663(4th)
Pakistan	Proposed a ban on crypto	No	0.609 (6th)
Western Asia			

[109] Thabo Legwaila, 'Income tax and value-added tax implications of cryptocurrencies in South Africa' (2018) Annual Banking Law Update (Juta) 23.

[110] India Cryptocurrency and Regulation of Official Digital Currency Bill, 2021.

United Arab Emirates	Crypto-Receptive	Yes	NA
Saudi Arabia	Crypto-Indifferent	No	0.199 (67th)
Latin America and the Caribbean **Caribbean**			
Barbados	Crypto-Receptive	No	0.136 (101st)
Mexico and Central America			
Mexico	Crypto-Indifferent	Yes	0.323 (28th)
El Salvador	Crypto-Receptive (allows crypto as a legal tender)	Yes	0.225 (55th)
South America			
Colombia	Crypto-Receptive	No	0.496 (15th)
Europe **EU-13**			
Poland	Crypto-Indifferent	Yes	0.299 (33rd)
Hungary	Proposed EU ban on crypto	Yes	0.147 (91st)

6.3. Responses by Developing Countries

6.3.1. Overview

While it is clear from the previous section that governments can face numerous challenges in regulating crypto assets and transactions in general, this section will focus on those challenges which are related to taxation.

6.3.2. Tax Reporting

Several jurisdictions in the study appear to have issues with their residents conducting crypto transactions using foreign crypto service providers which do not necessarily submit information on their customers and their transactions to the tax authorities of the residents' jurisdictions. As a result, there is often an information gap and inability to accurately determine whether taxpayers have correctly filed their tax returns. The experience of Egypt and Morocco, jurisdictions which have banned crypto assets, shows that there are foreign crypto service providers who are servicing residents of these jurisdictions despite domestic bans.

This inability to collect customer transaction information from foreign (or sometimes, even local) crypto service providers has implications beyond domestic tax administration. The absence of such information at a domestic level naturally means that the tax authorities will be unable to send such information to other jurisdictions under exchange of information initiatives, making it difficult for other jurisdictions to ensure that their taxpayers are correctly declaring their

income. Further, if jurisdictions are unable to obtain customer transaction information, regulatory efforts to address important issues such as money laundering and terrorism financing are likely to be ineffective.

Government may wish to consider bringing crypto service providers under the local regulatory framework and require them to share customer information with the authorities. If there are concerns about residents making bad investment decisions and suffering crypto-related losses, warnings can be issued by the authorities, as has been done in many jurisdictions. There is a proposal in Kenya to empower the Capital Markets Authority to ensure that digital currency transactions in Kenya are recorded in a single, centralized computerized register and also to regulate crypto intermediaries.[111] Actively working with crypto intermediaries and receiving transaction information from them might yield positive results.

6.3.3. Tax Certainty

It may not be easy providing clear guidance to taxpayers on the tax treatment of crypto assets and transactions. While many jurisdictions in the study have specific legislation for crypto assets, quite often these statutes deal with regulatory and not tax issues. Even where there are tax statutes specifically addressing crypto assets and transactions, tax guidance will not necessarily be provided by the authorities. For jurisdictions with no specific crypto tax legislation or guidance, the existing tax rules will apply, but taxpayers without specialist tax training are unlikely to know how these tax rules would apply to crypto assets and transactions. This creates a risk that taxpayers will apply the rules incorrectly and (more likely than not) under-declare their income, resulting in the widening of the tax gap. The provision of taxpayer guidance that is easily understandable and which lays out key concepts and provides examples, as Malaysia has done,[112] would assist taxpayers in accurately reporting their income. The provision of detailed guidance is common amongst developed countries,[113] but not generally widespread in developing countries at the moment.

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[111] Camomile Shumba, 'Kenya proposes bill to tax crypto' (CoinDesk) (November 22, 2022), <https://www.coindesk.com/policy/2022/11/21/kenya-proposes-bill-to-tax-crypto/> accessed March 7, 2023.

[112] LHDN Malaysia, 'Guidelines on Tax Treatment of Digital Currency Transactions' <https://phl.hasil.gov.my/pdf/pdfam/GUIDELINES_ON_TAX_TREATMENT_OF_DIGITAL_CURRENCY_TRANSACTIONS.pdf> accessed March 7, 2023.

[113] ATO, 'Tax Treatment of Cryptocurrencies', <https://www.ato.gov.au/general/gen/tax-treatment-of-crypto-currencies-in-australia---specifically-bitcoin/>: NZIRD, 'Cryptoassets' <https://www.ird.govt.nz/cryptoassets>; HMRC, 'Cryptoassets Manual', https://www.gov.uk/hmrc-internal-manuals/cryptoassets-manual; and Canada Revenue Agency, 'Virtual Currency' <https://www.canada.ca/en/revenue-agency/programs/about-canada-revenue-agency-cra/compliance/digital-currency/cryptocurrency-guide.html)> all accessed March 7, 2023.

6.3.4. Tax Morale

Taxpayers are less likely to be compliant if they feel that tax avoiders and evaders in their jurisdiction are getting away with such activities without getting caught.[114] This is particularly the case in a relatively new field such as crypto taxation, where the social norms of reporting and paying tax on such income are not yet firmly established. In Colombia, tax evasion is said to account for 6 to 8% of GDP.[115] Thus, it becomes very important to keep an eye on tax morale to ensure that perpetrators are caught and appropriately dealt with. This may be a reason for the announcement by the Colombian tax administration that it conducts inspections of crypto transactions.[116] Again, tax authorities in many developed countries[117] have emphasized that crypto tax evasion will be prosecuted, but this is rarer in developing countries. A credible threat of enforcement is recommended if crypto assets and transactions are to be reliably reported, and this should be communicated to the taxpayer base.[118]

6.3.5. A Real World and Theoretical Analysis of Challenges

The issues highlighted by this study suggest that many challenges observed in the real world are similar to those produced from a theoretical analysis. Difficulties in gathering sufficient information and ensuring accurate tax reporting were highlighted as potential challenges in both this study and the theoretical analysis. The suggestion in the theoretical analysis that the pseudonymity problem with crypto assets could be resolved by requiring intermediaries to collect and submit customer transaction information to the authorities similarly appeared in this study in an example from Kenya.[119]

The need for clear guidance to be provided by tax authorities was discussed in detail in the theoretical analysis. Indeed, this study has shown that many jurisdictions do not have sufficient crypto tax guidance, leading to problems of tax certainty amongst the taxpayer base. Jurisdictions such as Malaysia which have released detailed crypto tax guidance show that technical concepts in

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[114] OECD, *Tax Morale: What Drives People and Businesses to Pay Tax?* (OECD) (2019) ('**OECD (Tax Morale)**'), Chapter 1.1.

[115] Helen Partz, 'Colombia to prevent tax evasion with national digital currency: Report' (CoinTelegraph) (August 17, 2022), <https://cointelegraph.com/news/colombia-to-prevent-tax-evasion-with-national-digital-currency-report> accessed March 7, 2023.

[116] Alfredo Collosa, 'What are Tax Authorities Doing to Manage the Crypto Assets?' (Centro Interamericano de Administraciones Tributarias) (December 1, 2022) <https://www.ciat.org/ciatorg-que-estan-haciendo-las-administraciones-tributarias-para-gestionar-los-criptoactivos/> accessed March 7, 2023.

[117] For example, see Phillip Lasker, 'The Taxman Is After Your Bitcoin Profits – Though the Law Is a Grey Area' (ABC News) (January 30, 2018) <https://www.abc.net.au/news/2018-01-30/bitcoin-cryptocurrency-tax-avoidance-profits/9374224>; IT Brief New Zealand, 'Got Crypto? Pay Tax – A Quick Look at IR's New Crypto-Asset Guidance' (September 8, 2020) <https://itbrief.co.nz/story/got-crypto-pay-tax-a-quick-look-at-ir-s-new-crypto-asset-guidance>; and Luisa Scarcella, 'Exchange of Information on Crypto-Assets at the Dawn of DAC8' (Kluwer International Tax Blog) (March 29, 2021) <http://kluwertaxblog.com/2021/03/29/exchange-of-information-on-crypto-assets-at-the-dawn-of-dac8/> accessed March 7, 2023.

[118] OECD (Tax Morale) (n 114), Chapter 2.2.

[119] Shumba (n 111).

crypto taxation can be broken down and simplified.[120] The relationship between tax morale and the need to ensure a credible threat of enforcement in cases of crypto tax evasion, coupled with a heavy penalty was discussed in the theoretical analysis. Issues of tax morale also appeared in this study, for example, in the express declaration by the Colombian tax administration that it conducts inspections of crypto transactions.[121] The recommendations in this report will address challenges drawn from both the theoretical analysis and this desk research, with a special focus on those challenges that have appeared in both.

[120] See generally, Securities Commission Malaysia <https://www.sc.com.my/regulation/guidelines/digital-assets> accessed March 7, 2023.

[121] Collosa (n 116).

7. Recommendations

The UNTC issues authoritative and influential guidance on a variety of (international) tax topics. The work of the Committee is generally undertaken by Subcommittees – acting under the guidance of the Committee and its Members – many of which have participants with different backgrounds and expertise. This Report lists some possible steps which the UNTC might consider pursuing, through a dedicated Working Group or Subcommittee, should it decide to take up such work in future.

7.1. Recommendation 1: Developing a Toolkit for Evaluation and Mitigation of Tax Risks

This Report has highlighted the importance of conducting an assessment of the risks posed by the rise of crypto assets to tax systems. Policy decisions can then be made as to crypto taxation and how to mitigate tax risks. The UNTC may wish to consider developing a toolkit that could assist countries with evaluating the crypto tax risks which their tax systems face. The foundations of such a framework have already been laid in this Report, but could be further simplified and refined through work carried out by a dedicated Subcommittee. The toolkit could contain questions that could guide an analysis of the four classes of tax risks discussed above: 1) crypto substitution of 'functionally equivalent transactions', 2) deduction of tax losses; 3) loss of opportunities to tax new transactions; and 4) tax evasion.

Countries could use the toolkit to go through their tax legislation and identify the extent to which such risks are present in their tax systems. Further, the toolkit could help countries assess tax risks across different kinds of taxes (income tax, capital gains tax, VAT, etc.) and also in their tax administration procedures. On the whole, the toolkit could form the basis of how countries could determine challenges in their substantive and procedural tax law to allow them to effectively address them.

7.2. Recommendation 2: Drafting of Model Guidance for Internal Tax Authority Use and for Taxpayer Use

The UNTC may wish to consider drafting high level model guidance on crypto taxation to facilitate the preparation of internal guidance for tax authorities. The idea is for the high-level model guidance to assist tax authorities in understanding how crypto taxation fits into their existing tax system so that they can then produce their own guidance which is tailored to the local context.

The subject matter of the guidance will significantly affect how the content will have to be presented. Fundamental crypto concepts apply uniformly to all jurisdictions and can simply be factually presented. Tax administration guidance will also cover many common issues across jurisdictions, such as staff management and international initiatives to support tax enforcement.

While there are a wide range of different tax systems in use throughout the world, the high-level guidance can still be drafted in such a way as to be useful to tax authorities. For example, the

guidance can state that generally, crypto trading will be considered to be akin to gambling due to the extremely volatile nature of the assets in question. Thus, losses from crypto trading will not generally be deductible. The reasoning for this position can be set out in detail. The guidance can then provide a few examples of tax systems where this is the case, such as in systems following the UK tax model (as in the UK and many former colonies), or civil law systems (as in France). If the tax authorities agree that this is an accurate representation of the tax law in their countries, they can adopt this as part of the guidance that they will eventually issue for internal use. The high level guidance provided will naturally have to be presented at a broad level of generality, but can still serve as a starting point for tax authorities in each jurisdiction to draft and issue their own guidance.

7.3. Recommendation 3: Training and Capacity Building

Training of tax auditors in crypto taxation is necessary if a jurisdiction intends to collect taxes from crypto assets and transactions. Officials should undergo specialized training which would allow them to effectively apply existing and new tax laws to crypto assets and transactions. They should be trained to answer taxpayer queries on crypto taxation and also pick up practical skills, such as the ability to conduct a crypto audit and engage with the international exchange of information initiatives on crypto assets.

In countries where no new crypto-specific laws have been passed, tax auditors essentially have to apply the existing laws, which they are already familiar with, to new situations involving crypto assets. Training on the fundamental nature of crypto assets and how they interact with the tax system will enable tax auditors to apply their existing knowledge of the tax system to crypto assets and transactions. The Capacity Development Section of the Financing for Sustainable Development Office may wish to consider how capacity development on crypto taxation can be provided to tax authorities in various (developing) countries.

The UNTC issues authoritative and influential guidance on a variety of (international) tax topics. The work of the Committee is generally undertaken by Subcommittees – acting under the guidance of the Committee and its Members – many of which have participants with different backgrounds and expertise. This Report lists some possible steps which the UNTC might consider pursuing through a dedicated Subcommittee, should it decide to take up such work in future.

Annexes

A1. Background to Digital Assets

The focus of this Report is on the challenges which crypto assets pose for tax systems and how these challenges can be met. It would thus be distracting for a lengthy discussion on the background on the taxation of crypto assets to be placed in the main body of the Report. However, the taxation of crypto assets is a highly technical field, and it is necessary to lay out its key features in some detail in order to understand the nature of crypto transactions and how orthodox tax rules apply to them. To this end, this Annex will start off by clarifying the definitions of the various technical terms used throughout the Report. It will then explore the underlying DLT and how such technology is applied to enable crypto assets to be held and transferred. This section will also discuss the precise nature of a 'token'. Following from that discussion, this chapter will look at attempts to classify various kinds of crypto assets into different 'token classes'. The Annex will conclude by laying out some general principles for the taxation of crypto assets and consider the common tax events that generally take place over the 'life cycle' of a digital token.

A1.1. Definitions

A1.1.1. 'Digital Assets'

The term 'digital assets' is potentially extremely broad in its scope. While there is no consensus on what it precisely means,[122] it can broadly include any rights that exist in digital form that the law is willing to recognize and protect. The term was initially used from the 1990s to refer to trade secrets and intellectual property in digital form.[123] Since then, it has been used to describe rights ranging from traditional intellectual property assets such as digitized music or pictures,[124] to online game and social media accounts, to electronic representations of money in a bank, and even digital representations of value in a decentralized system.

A1.1.2. 'Crypto Assets'

Crypto assets are a subset of digital assets. The term 'crypto assets' is generally used to refer to digital financial assets (also known as digital tokens) which are based on distributed ledger technology,[125] though there is no universally accepted definition at the moment. Guidance may be taken from the definitions offered by several leading international exchange of information initiatives. The Organization for Economic Cooperation and Development ('**OECD**')'s Crypto-Asset Reporting Framework ('**CARF**') defines 'crypto assets' as 'a digital representation of value

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122 Pinch (n 11).
123 Pinch (n 11).
124 Lilian Edwards and Edina Harbinja, 'What Happens to My Facebook Profile When I Die?': Legal Issues Around Transmission of Digital Assets on Death. In: Cristiano Maciel and Vinícius Pereira (eds) *Digital Legacy and Interaction: Human–Computer Interaction Series* (Springer) (2013).
125 Bacon, *et. al.* (n 3).

that relies on a cryptographically secured distributed ledger or a similar technology to validate and secure transactions.'[126] The European Commission's Directive on Administrative Cooperation ('**DAC8**') defines them as 'a digital representation of a value or of a right, which is able to be transferred and stored electronically, using distributed ledger technology or similar technology'.[127] Finally, the Financial Action Taskforce ('**FATF**') uses the term 'virtual assets' instead, defining them as 'a digital representation of value that can be digitally traded, or transferred, and can be used for payment or investment purposes.'[128] It is noted that all three definitions are broadly framed and not restricted to representations of value using distributed ledger technology specifically. The CARF and DAC8 definitions refer to 'similar technology', while the FATF Recommendations do not refer to any specific technology at all.

A1.1.3. 'Distributed Ledger Technology' and the 'Blockchain'

The 'blockchain' is a subset of DLT and is a form of technology which records transactions and thus enables crypto assets to be 'held' and 'transferred'. This will be discussed in detail in the following section of this Report.

A1.1.4. 'Digital Tokens'

Technically a subset of 'crypto assets', 'digital tokens' are generally synonymous with the former in most cases. 'Cryptocurrencies' are a subset of digital tokens which are intended to be used as a medium of exchange and thus, are also known as 'payment tokens'. These 'payment tokens' are one of three main classes of digital tokens, with 'utility tokens' and 'security tokens' being the other two main classes. This Report will shortly discuss the features of each of these classes of digital tokens and explain that there may be more than three classes.[129] The terms, as used above, are consistent with the general understanding of the concepts for the purposes of securities regulation and guidance issued by tax authorities. However, in a strict technical sense, the ways the terms are used in these two contexts are not exactly correct.

A 'token' is technically a form of digital asset that is built on the infrastructure of an existing blockchain (using what is 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'). Given these highly technical definitions, 'digital tokens' are arguably much more restrictive in their scope as compared to 'crypto assets'. Further, most cryptocurrencies are actually 'coins' rather than 'tokens', making the label 'payment token', strictly speaking, inaccurate. That said, this Report approaches the issue from a policy and pragmatic standpoint rather than a strict technical one. As

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126 Section IV(A)(1) of the CARF (n 94) Rules. See CARF (n 94), 73.
127 Recital 5 of the proposed DAC8 (n 94), 16-17.
128 Glossary of the FATF Recommendations. See FATF, (n 94), 109.
129 See Annex A1.3, below.

much of the existing regulatory frameworks[130] (in securities regulation) and guidance from tax authorities[131] does not draw a hard distinction between coins and tokens,[132] this Report will also not maintain that hard distinction. It is noted that some jurisdictions (such as Singapore) have even defined the term 'digital payment token' in their tax legislation to clearly include cryptocurrencies.[133]

A1.1.5. 'CBDCs'

Central Bank Digital Currencies (CBDCs) are government-issued digital currencies that are not backed by physical commodities such as gold or silver.[134] As CBDCs have no associated liquidity or credit risks, it is a stable and low-risk currency. Other benefits include financial inclusion and transparent transactions. On the other hand, CBDCs are subject to the stabilities of national financial systems, as well as technological barriers. Certain governments have also deemed the infrastructure too costly to develop in return for insubstantial rewards.[135]

A1.2. The Underlying Technology

A1.2.1. Distributed Ledger Technology

Crypto assets rely on DLT, which involve a network of connected computers which each individually maintain a record of transactions, and all partake in establishing the current state of the network.[136] This differs from a centralized system, where one main computer is responsible for maintaining a definitive record. As multiple computers on the network are involved, there needs to be a way in which any potential differences in the record are resolved. This is known as a 'consensus mechanism' and lies at the heart of crypto transactions. There are two main categories

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130 Swiss Financial Market Supervisory Authority ('**FINMA**'), Press Release: FINMA Publishes ICO Guidelines (16 February 2018), 2.

131 See, for example, OECD (n 20); NZIRD (n 113); and HMRC (n 113).

132 The ATO does expressly note that 'a token is a unit of value on a blockchain that usually has some other value proposition besides just a transfer of value'. See ATO, 'Crypto Assets Glossary', <https://www.ato.gov.au/general/gen/tax-treatment-of-crypto-currencies-in-australia---specifically-bitcoin/> accessed March 7, 2023.

133 See SGSTA (n 23), s 2A.

134 Victoria Masterson, 'What are Central Bank Digital Currencies?' (World Economic Forum) (August 31, 2022) <https://www.weforum.org/agenda/2022/08/what-are-central-bank-digital-currencies/> accessed March 7, 2023.

135 McKinsey, 'What is Central Bank Digital Currency (CBDC)?' (March 1, 2023) <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-central-bank-digital-currency-cbdc> accessed March 7, 2023.

136 Vincent Ooi, Kian Peng Soh and Jerrold Soh, 'Blockchain Land Transfers: Technology, Promises, Perils' (2022) 45 Computer Law & Security Review 1, 3.

of consensus mechanisms currently in use (Proof-of-Work ('**POW**') and Proof-of-Stake ('**POS**') Schemes), though a wide range of other more uncommon mechanisms also exist.[137]

A1.2.1.1. Mining

The precise mechanism of a POW Scheme is extremely complex,[138] but essentially, computers in the network compete to solve mathematical equations that are difficult to solve but whose solutions can be easily checked.[139] Miners make calculations to verify the transactions and share their results with the network, with the fastest correct miner receiving tokens.[140] Essentially, mining is a mechanism put in place to 'pay for' the running of the distributed ledger system and the 'costs' are spread amongst the existing owners of the digital token as an increased supply of the token leads to a devaluation of the existing tokens, in a manner akin to inflation. The requirement to expend significant computing power in order to update the ledger makes it uneconomic for a party to simply control the majority of the nodes in the network and make fraudulent amendments to the ledger (in what is commonly-known as a 51 percent attack).[141] The process of solving mathematic equations as a node in the network under a POW mechanism is known as 'mining' and successful 'miners' will receive freshly generated tokens as compensation for their efforts.

A1.2.1.2. Forging

The highly resource-intensive nature of POW Schemes led to the creation of less computationally expensive POS Schemes. Once again, the precise mechanism is extremely complex,[142] but essentially, existing holders of tokens 'vote' to validate transactions by placing a 'deposit' and thus 'staking' their tokens. The 'deposit' can be forfeited if the node is found to have engaged in errant behaviour that threaten the integrity of the ledger.[143] While the nodes still maintain and verify the ledger, no mathematical equations need to be solved. This process is known as 'forging' and successful 'forgers' will likewise receive freshly generated tokens as compensation for their efforts.

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137 For a comprehensive explanation and evaluation of consensus mechanisms in blockchain see Christian Cachin and Marko Vukolić, 'Blockchain Consensus Protocols in the Wild' in Andrea Richa (ed), *31st Intl. Symposium on Distributed Computing* (DISC) (2017); Wenbo Wang, *et. al.*, 'A Survey on Consensus Mechanisms and Mining Management in Blockchain Networks' (2019) 7 IEEE Access 22328.

138 Ooi *et. al.* (n 136), 3-5.

139 OECD (n 20), 11.

140 OECD (n 20), 11.

141 See Cristopher Koch and Gina Pieters, 'Blockchain Technology Disrupting Traditional Records Systems' (2017) <https://ssrn.com/abstract=2997588> accessed March 7, 2023.

142 Ooi *et. al.* (n 136), 5.

143 To be precise, the staked tokens will be forfeited if a node violates either one of two 'slashing conditions' which are: 1) a validator must not vote simultaneously for two blocks at the same target height and 2) a validator must not vote within the span of its other votes. See Vitalik Buterin, 'A Next-Generation Smart Contract and Decentralized Application Platform' (Github) (June 23, 2020) <https://github.com/ethereum/wiki/wiki/White-Paper>; and Vitalik Buterin and Virgil Griffith, 'Casper the Friendly Finality Gadget' (Cornell University) (October 25, 2017) <https://arxiv.org/abs/1710.09437> accessed March 7, 2023.

A1.2.2. Nature of a Token

Thus far, the discussion of the underlying technology has focused on the record of holdings and transactions and how this record is maintained and updated. Essentially, tokens are representations of value in the records. They have been described as a 'chain of digital signatures' that carry information about previous transactions relating to the asset, the digital identity of the present owner, and a cryptographic lock tied to the present owner.[144] When an owner of a token wishes to transfer ('spend') that token, the owner will have to use a 'private key' that is associated with those tokens to make changes to the record and transfer 'ownership' of the tokens to another. The 'private key' is a string of code that represents and is required for 'ownership' of the corresponding tokens. Without the 'private key', no changes to the record can be made in respect to the corresponding tokens and the tokens are 'lost'.

A1.2.3. 'Wallets' and the Issue of Pseudonymity

There is an apparent contradiction with crypto assets in that while a public blockchain ensures that transaction records of crypto assets are generally replicated in a large number of ledgers on many different nodes, ensuring maximum transparency, there is also talk of difficulties in identifying the parties behind crypto transactions. How then can there be a challenge with identifying taxpayers if the transaction history of crypto assets is practically in the public domain? The answer lies in the pseudonymous nature of crypto assets. As a starting point, pseudonymity is conceptually different from anonymity. In the case of the latter, a party acts in a way that makes it unidentifiable. The same party could perform the same action multiple times and there would be no way of knowing that it was the same person. In the case of the former, however, a party acts in a way in which they can be identified, but there is a 'mask' or 'shield' which conceals their identity outside the system in which they are acting. So, everyone might know that the same person performed the same act thrice, but they have no information who that person might be.

The 'wallets' which store private keys (and thus, control over tokens) are unique and identifiable. It is public information what transactions a particular 'wallet' is involved in and it is also possible to trace the flow of tokens (i.e. the changes in ownership) from wallet to wallet. However, all this information is of little use in uncovering the ultimate beneficial owner behind a 'wallet'. The 'wallets' themselves do not contain any information that could identify their owners. Pseudonymity in this context means that one can know the entire transaction history of a particular 'wallet' but be unable to uncover the 'true identity' of the owner of the 'wallet'. Several global initiatives[145] are now underway to extend the current international exchange of information framework to crypto assets as well, placing the burden on intermediaries who assist with crypto transactions to conduct 'know your client' checks and collect information on the ultimate

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[144] Ooi *et. al.* (n 136), 3.

[145] For example, the OECD's CARF (n 94); European Commission's DAC8 (n 94); and FATF's Guidance on VASPs (n 94).

beneficial owners behind 'wallets'. However, the inherent pseudonymity of crypto assets means that there will inevitably be gaps in the information gathered, since not all users will go through a regulated intermediary.

A1.3. The Different Kinds of Digital Assets

A1.3.1. Introduction to the Classification of Digital Tokens

The potential scope of digital tokens is near limitless, it being possible to code them individually to serve different functions and have different characteristics. The full range of digital tokens can only be said to be similar at the broadest level, in that they all rely on DLT to function. One token may differ from another in the same way that one contract may differ from another; they may have very little in common indeed. The near limitless forms in which digital tokens can manifest themselves created a challenge for those seeking to create a comprehensive taxonomy. The earliest attempts at doing so were driven by a practical and urgent need to protect investors. In the field of securities regulation, attempts were made to circumvent existing regulatory frameworks by claiming that the things being marketed were not 'securities', but instead, 'tokens'. Regulators thus had to determine whether the 'tokens' in question should be regulated as 'securities' under the existing regulatory frameworks.

The Swiss Financial Market Supervisory Authority ('**FINMA**')[146] was one of the first-movers in this area, laying out a now widely-adopted classification based on their objective economic substance. Tokens could be broadly classified as payment, utility and security tokens depending on their features, with only security tokens being subjected to securities regulation. It is important to note that there is nothing intrinsic to the nature of digital tokens that means that they must be classified in a certain way. The FINMA classification was driven by the need to apply existing securities regulations to digital tokens and such a classification served that purpose effectively enough (for a while, at least). Classifications will inevitably be purpose-driven, with the frameworks being designed based on what they are intended to accomplish. Viewed from this perspective, there is no conceptual basis for directly transplanting the FINMA approach into tax law as arguably, the purposes of tax law differ from those of securities regulation.[147]

That said, the FINMA approach has nevertheless been influential in tax law,[148] perhaps due to its 'first-mover advantage'. It provides some kind of starting point with which to navigate the expansive sea of different kinds of digital tokens and is arguably better than nothing. Nevertheless, it ought to be remembered that such a framework cannot be set in stone and should be modified to suit the purposes of tax law where necessary. This is particularly the case in a rapidly-developing field such as crypto assets where both the underlying technology and the commercial use-cases keep changing. The original FINMA approach has arguably already been

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146 FINMA (n 130), 2.

147 See Vincent Ooi, 'A Framework for Understanding the Taxation of Digital Tokens' (2021) 50(4) Australian Tax Review 260 ('**Ooi ATR**'), 261-262.

148 See, for example, OECD (n 20); NZIRD (n 113); and HMRC (n 113).

superseded even in the context of securities regulation, by an approach which draws even finer distinctions. This will subsequently be discussed shortly.

A1.3.2. The Original Three Classes

The original FINMA approach classified digital tokens into three main categories: 1) payment tokens; 2) utility tokens; and 3) security tokens. Payment tokens are used as mediums of exchange but do not constitute fiat currency or legal tender in almost all jurisdictions. A fairly comprehensive definition of 'digital payment tokens' has been enacted in the Singapore Goods and Services Tax Act 1993 as follows: a DPT is 'i) expressed as a unit; ii) designed to be fungible; iii) is not denominated in or pegged to any currency; iv) can be transferred, stored or traded electronically; and v) is or is intended to be a medium of exchange accepted by the public.'[149] The definition of a DPT also does not include money, or anything which gives an entitlement to receive or direct the supply of goods and services from a specific person or persons, among other considerations. At the present moment, there are only two countries in the world which recognise payment tokens (specifically, Bitcoin) as legal tender: 1) El Salvador;[150] and 2) the Central African Republic.[151] Given that Bitcoin is now legal tender in at least two jurisdictions, questions as to whether it should be recognised as a foreign currency have arisen. But most jurisdictions still seem reluctant to grant Bitcoin the status of a foreign currency.[152]

Utility tokens confer upon their holder specified rights to use or benefit from goods or services when redeemed at a later date. They can be understood as reflecting the purchase of a future good or service provided by the issuer[153] and may be likened to vouchers. One notable use of utility tokens is to raise capital through what is known as an 'initial coin offering ('**ICO**')'. Under this arrangement, utility token holders effectively 'pre-pay' for goods and services which they will be entitled to receive when the business becomes operational. These arrangements have been subject to intense scrutiny by securities regulators since the line between getting customers to 'pre-pay' for their goods and services and selling them financial products can be a fine one. Especially in the earlier days of the adoption of crypto assets, a good number of businesses attempted to argue that their capital markets activities should not be regulated as such because they structured them as ICOs instead.

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149 SGSTA (n 23), s 2A.

150 El Salvador was the first in the world to do so, having passed a law on 8 June 2021 to recognize Bitcoins as legal tender. See BBC, 'Bitcoin: El Salvador Makes Cryptocurrency Legal Tender' <https://www.bbc.com/news/world-latin-america-57398274> accessed March 7, 2023.

151 Ryan Browne,' 'Central African Republic Becomes Second Country to Adopt Bitcoin as Legal Tender", (CNBC) (April 28, 2022) <https://www.cnbc.com/2022/04/28/central-african-republic-adopts-bitcoin-as-legal-tender.html> accessed March 7, 2023.

152 See, for example, Jim Chalmers, 'Crypto Not Taxed as Foreign Currency' (June 22, 2022) <https://ministers.treasury.gov.au/ministers/jim-chalmers-2022/media-releases/crypto-not-taxed-foreign-currency> accessed March 7, 2023.

153 Gurrea-Martínez & Remolina (n 13), 120.

Security tokens confer rights to physical or financial assets and may be viewed as analogous to traditional forms of securities such as equities, bonds, or derivatives.[154] There are an extremely wide range of traditional securities, since there are nearly limitless ways with which to structure financial products. Likewise, security tokens can come in many forms and it is not always sufficiently precise for the purposes of securities regulation or tax law to simply label a token as a security token. As security tokens became more sophisticated, the need for a more refined approach towards their classification became increasingly clear.

A1.3.3. Refinement and Development of the Original Framework

At the present moment, new ways of further sub-classifying security tokens have developed. A distinction has sometimes been drawn between exogenous and endogenous security tokens. An exogenous security token represents value outside of itself while an endogenous security token does not.[155] Endogenous security tokens typically play similar roles to traditional securities and are typically what is being referred to when the generic term 'security token' is used. As with traditional securities, endogenous security tokens can be divided into equity, debt or hybrid instruments. Where the holders of security tokens are entitled to some form of ownership or future returns of the company, they would be equity holders. However, where they are only entitled to a fixed return, they are more properly regarded as debt holders. [156]

Exogenous security tokens have become rather prominent of late. They are typically backed by some kind of asset such as precious metals or other currencies, giving rise to the term 'asset-backed tokens'.[157] As the values of crypto assets are generally extremely volatile, there was strong demand for a class of crypto asset that could maintain a 'stable value', leading to the invention of what are now known as 'stablecoins'. At its core, a 'stablecoin' is a digital token that is designed 'to maintain a stable value relative to a specified asset, or a pool or basket of assets.'[158] Initially, most stablecoins achieved this by backing the token with other real world assets, the idea being that the assets backing the token will ensure that fluctuations in the value of the token will be limited, or at least not exceed the fluctuations in price of the backing assets.

In time, however, a whole range of stablecoins with different mechanisms emerged. Bearing in mind that the core idea of a stablecoin is that of maintaining a pegged value, it is not always necessary to back a token with real world assets on a 1-1 basis, although the probability of the peg being maintained will naturally differ based on the mechanism used to ensure the peg. The key invention in this area was that of the 'algorithmic stablecoins' which are not backed by underlying assets but instead attempt to maintain their peg through the use of a combination of

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154 Waerzeggers and Aw (n 14), 220.

155 Jason Allen, *Cryptoassets and Property Law: Singapore Edition* (Ver 1.0b1) (Asian Business Law Institute and Singapore Academy of Law) (2022), 8-10.

156 Gurrea-Martínez & Remolina (n 13), 139.

157 See Rosa Garcia-Teruel and Hector Simon-Moreno, 'The Digital Tokenization of Property Rights – A Comparative Perspective' (2021) 41 (105543) Computer Law & Security Review 1, 4.

158 See Douglas Arner *et. al.*, 'Stablecoins: Risks, Potential and Regulation', BIS Working Papers No 905 (2020), 3.

financial engineering, algorithms and market incentives. Such 'algorithmic stablecoins' are arguably not as stable as those backed by real world assets, and in fact have been criticized as inherently unstable.[159] The 2022 collapse of TerraUSD (UST), a 'stablecoin' which failed to maintain its 1:1 peg with the US dollar, provides strong evidence of this. Any financial engineering or algorithms in UST's case was insufficient to offset the loss of market confidence in the stablecoin and a resultant massive sell-off by investors.[160]

To briefly lay out the spectrum of stablecoins which are currently in popular use, there are those which are: 1) backed by real world assets on a 1-1 basis; 2) backed by real world assets on a less than 1-1 basis; 3) backed by crypto assets (to varying ratios); and 4) not backed by any real world or crypto assets but which rely on financial engineering and algorithms. Of course, it is possible for a stablecoin to be supported by a mixture of any of the abovementioned mechanisms.

A1.3.4. Hybrid Tokens

The FINMA classification of crypto assets is neither mutually exclusive nor mutually exhaustive. That is, a digital token may fall into more than one category, and it may also fall into a category that is outside of the original three classes listed in the FINMA approach. As an example, a coin which is intended to be freely used as a medium of exchange may also confer voting rights on the holder for decisions relating to the coin. This may make that asset both a payment and security token. Significantly, the ability for a token to fall into more than one category was the main stumbling block for those seeking to argue that ICOs of utility tokens should not be subject to securities regulation. The mere fact that a token has the features of a utility token does not mean that it cannot also be a security token. In some cases, the character of a token might even change over the course of its lifetime (akin to how convertible securities may change).[161]

A1.3.5. Other Kinds of Tokens

As there are a near limitless number of forms in which digital tokens can take, it would be unrealistic to think that they could all be neatly classified into three categories. As global adoption of crypto assets has progressed, it has become increasingly common to see crypto assets which do not fall within these three categories. One prominent example is that of Non-Fungible Tokens ('**NFTs**'), which have become quite popular of late. NFTs are a form of crypto asset which certify digital files such as photos or sound files to be unique. As each NFT has a unique identifier, they are distinct from most crypto assets, which are mutually interchangeable with each other.[162] While NFTs can be used to represent ownership of another asset (and thus, be considered to be a form of security token), they can also sometimes have value in and of themselves, as in the case of a

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159 See Ryan Clements, 'Built to Fail: The Inherent Fragility of Algorithmic Stablecoins' (2021) 11 Wake Forest Law Review Online 131; and US Treasury, *Report on Stablecoins* (2021), 4.

160 Ehrlich (n 43).

161 OECD (n 20), 12.

162 See Wendy Lim, 'Taxation of Non-fungible Tokens' (2021) 50(4) Australian Tax Review 270, 270.

piece of unique digital artwork (which is the asset itself).[163] Viewed in this sense, some forms of NFTs may not fit neatly into the trichotomous classification as they are not payment, utility or security tokens, but something else entirely.

Another kind of token that has developed in the context of decentralized finance ('**DeFi**') is that of liquidity pool tokens. Liquidity pools are groups of digital tokens that are governed by smart contracts. Their role is to generate liquidity in the market for the particular kinds of digital tokens that are in the pool, by effectively performing a market-making function. In exchange for providing this liquidity by contributing digital tokens to the pool, the owners of the tokens are granted liquidity pool tokens, which enable them to collect a proportion of the 'transaction fees' imposed by the pool for its market-making function. An owner wishing to exit the pool may redeem the liquidity pool tokens and get back the tokens it originally contributed, plus its share of the 'transaction fees'.[164]

A1.4. Overview of the Taxation of Digital Assets

Given the virtually limitless possible ways in which digital asset transactions can take place, to attempt to comprehensively lay out the taxation of crypto assets is no easy task. Nor would it be a realistic task, as the field constantly evolves and changes. However, it is possible to grasp a general overview of the field of crypto taxation through the use of several frameworks that can aid our understanding of this area. This Report presents three frameworks that can serve as a good introduction to the taxation of digital assets: 1) General Principles for the Taxation of Digital Assets; 2) Token Classification and Tax Treatment; and 3) The 'Life-Cycle' of Tokens and Tax Events.

A1.4.1. General Principles for the Taxation of Digital Assets

This Report lays out five general principles[165] that serve as a good starting point for understanding the taxation of digital assets. Taken as a whole, they urge caution in assuming that crypto transactions can be treated in the same way based on superficial similarities, while recognizing the potential utility in spotting patterns in the taxation of crypto transactions. Such patterns can only be a rough guide and ultimately, each transaction will have to be individually examined and analyzed.

A1.4.1.1. Principle 1: Digital Tokens are Not a Monolithic Asset Class Existing Outside the Tax System

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163 Ethereum, 'Non-Fungible Tokens (NFT)' <https://ethereum.org/en/nft/> accessed March 7, 2023.

164 See Ooi (ATR) (n 147), 267; and Fabian Schär, 'Decentralized Finance: On Blockchain- and Smart Contract-based Financial Markets' (2021) 103(2) Federal Reserve Bank of St. Louis Review 153, 162-163.

165 These principles are a refinement of those laid out in Ooi (ATR) (n 147).

In the early days of the adoption of digital tokens in commerce, the dominance of certain major cryptocurrencies such as Bitcoin in the public's consciousness meant that there was a tendency to treat digital tokens as a single monolithic class, effectively synonymous with cryptocurrencies.[166] Some misguided narratives (probably tempered with some degree of wishful thinking) started to emerge that digital tokens were somehow 'different' and not subject to general legal rules. These narratives should have been roundly debunked by this stage, not least because of the extensive amount of guidance issued by tax authorities over time.[167]

A1.4.1.2. Principle 2: The Common Trichotomous Division of Digital Tokens Is Not Set in Stone

As discussed above, the FINMA classification of digital tokens into payment, utility and security tokens was developed for the very different purpose of securities regulation and not for tax law.[168] As such, it can only serve as a useful tool with which to conceptualize token classification in the tax law context. As the field has developed, the classification of tokens in securities regulation itself has been further refined beyond the original FINMA classification. Further, the common trichotomous division of digital tokens is neither mutually exclusive nor mutually exhaustive, meaning that a single token can fall into more than one category, or might not fall into any of the three categories. The classification of digital tokens is something that must be actively analyzed and constantly challenged as the field develops.

A1.4.1.3. Principle 3: Focus on the Surrounding Circumstances, Less on the Asset

The starting point when it comes to determining the tax treatment of crypto transactions is to understand that the fact that an asset is a digital token does not generally change its tax treatment in and of itself. This will still have to be determined through the application of orthodox tax principles, based on the surrounding circumstances of the relevant taxable event. Exceptions to this principle do exist,[169] but more often than not, no special treatment will need to be given to crypto transactions. The reason for this is that tax law primarily focuses on the circumstances surrounding the taxable event, and only secondarily on the asset in question (if at all).[170]

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166 Chris Dier-Scalise, 'ACCOINTING.com's Tracking Tools Aim To Change The Discourse In The Crypto Market' (Benzinga) (March 11, 2021) <https://www.benzinga.com/markets/cryptocurrency/21/03/20104778/accointing-coms-tracking-tools-aim-to-change-the-discourse-in-the-crypto-market>.

167 See, for example, OECD (n 20); ATO (n 113); NZIRD (n 113); HMRC (n 113); Canada Revenue Agency (n 113).

168 See Chapters A1.3.3- A1.3.5, above.

169 See Chapter A1.4.1.4, below.

170 This does depend on the tax in question. Income tax tends to place a lot less emphasis on the asset (or service provided) in question relative to GST/VAT, stamp duties and property taxes. But generally, all taxes take into account the surrounding circumstances, making a generalization of the tax treatment solely based on the asset in question untenable.

A1.4.1.4. Principle 4: 'Functionally Equivalent' Crypto Assets and Transactions Do Not Necessarily Result in Similar Tax Treatment

While the previous principle noted that in most cases the fact that an asset is a digital token does not generally change its tax treatment, this is subject to a major caveat that there are some cases where the nature of the asset does matter. Apart from the obvious (and relatively rare) case where there is legislation specifically referring to crypto assets,[171] the most common situations where the nature of the asset matters are those involving the application of a narrowly scoped concept. To give an example, the concept of 'income' in tax law is very broadly-scoped, particularly in jurisdictions which have a global rather than schedular system of income taxation. As a result, laws relating to the taxation of income are likely to be applicable to crypto transactions as well, as the concept of 'income' is broad enough to encompass gains from crypto transactions without being stretched too much. In contrast, the concept of 'foreign currency' is arguably much more narrowly scoped, leading to cases where most jurisdictions are unwilling to grant Bitcoin the status of a foreign currency despite the fact that it is now legal tender in at least two jurisdictions.[172]

Depending on the legal system adopted by a jurisdiction, the concepts to be applied may be referred to in the relevant legislation (where they may be expressly defined) or may come from the common law. It should be noted that virtually all legislation currently in force (and cases decided by the common law courts) was passed before crypto assets even existed. As such, it will often be difficult to apply a process of purposive statutory interpretation to determine whether a crypto transaction should fall within an existing tax law provision. A brief observation may be made in that there is a natural and obvious tendency for provisions imposing or increasing the incidence of taxation to be very broadly drafted, and a converse tendency for provisions granting deductions, exemptions, reliefs, or other reductions in the incidence of taxation, to be much more narrowly drafted. Extra caution should therefore be taken when applying the latter kind of provisions and one should not assume that just because a crypto asset is 'functionally equivalent' to a traditional asset, or a crypto transaction is 'functionally equivalent' to a traditional transaction, that the tax provision will apply to give the same result as for a traditional (non-crypto) transaction.

A1.4.1.5. Principle 5: Similar Classes of Tokens and Tax Events Tend to Produce Similar Tax Results

Bearing in mind the need to guard against generalizing the tax treatment of digital tokens, there is utility in spotting general patterns in tax treatment across various classes of digital tokens and various tax events. The reason for this is that digital tokens in the same class and tax events of the same type tend to have similar surrounding circumstances. As such, broadly speaking, one would expect them to lead to similar tax results. These patterns are not a substitute for a comprehensive application of existing tax rules, but may provide a useful framework for an introductory

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171 OECD (n 20), 16. For example, Australia and Singapore have exempted Payment Tokens from GST/VAT (ATLA 2017 (n 23), Schedule 1; and SGSTA (n 23), Fourth Schedule, Part I, respectively). See also, Julie Cassidy *et. al.*, 'A Toss of a (Bit)coin: The Uncertain Nature of the Legal Status of Cryptocurrencies' (2020) 17(2) eJournal of Tax Research 168.

172 See, for example, Chalmers (n 152).

understanding of the taxation of digital tokens. For example, utility tokens generally entitle the owner to redeem goods or services. As such, it is relatively rare for them to be made obtainable by mining as compared to payment tokens, since there must ultimately be someone who is willing to underwrite the utility tokens through the provision of such goods or services. Tax issues relating to mining are thus likely to be rare for utility tokens. Instead, since they are akin to vouchers, such tokens are likely to be issued for a similar purpose, with the result that when they are sold, there are likely to be income tax and GST/VAT implications on the basis that payment is received for the future delivery of goods or services. However, ultimately, it is the surrounding circumstances that will determine the tax treatment of utility tokens, not the nature of the tokens themselves. One should be cautious about broad and simplistic generalizations with respect to digital tokens. One cannot say with certainty that just because a digital token falls into a particular class or is subject to particular tax events, it must necessarily be subject to a particular kind of tax treatment.

A1.4.2. Token Classification and Tax Treatment

As noted above, the different classes of tokens do tend to feature more prominently in certain kinds of transactions than others. As a result, they tend to raise different kinds of tax issues.

A1.4.2.1. Payment Tokens

In many jurisdictions, payment tokens are regarded as intangible property as opposed to currency. Where used as payment for goods or services, the transaction is generally characterised as barter trade and taxed accordingly for the purposes of income tax. The difficulties posed by payment token transactions tend to be in the area of valuation since their values can be highly volatile and sometimes difficult to establish at any given point of time. As for GST/VAT, the European Union treats payment tokens as akin to fiat currencies and thus supplies of payment tokens in exchange for goods or services (or other payment tokens) are generally considered to be non-taxable events for GST/VAT purposes.[173] Both Australia and Singapore initially took the position that following first principles, transactions using payment tokens were akin to barter trade for GST/VAT purposes and thus these taxes were payable. These positions were soon reversed by statute and supplies of payment tokens are no longer considered to be taxable events for GST/VAT purposes in these countries.[174] In the absence of such express legislative provisions, supplies of tokens may

[173] OECD (n 20), 37. Also see *Skatteverket v Hedqvist* (n 23).

[174] ATLA 2017 (n 23), Schedule 1; and SGSTA (n 23), Fourth Schedule, Part I. Also see, generally, Anne Fairpo, 'Taxation of Cryptocurrencies', in David Fox and Sarah Green (eds.) *Cryptocurrencies in Public and Private Law* (OUP) (2019) at 10.65.

well still be considered to be taxable events for GST/VAT purposes. Inheritance and gift taxes will generally apply to payment tokens as they would to any other intangible asset.

A1.4.2.2. Utility Tokens

The tax treatment of utility tokens is generally analogous to vouchers for the future redemption of goods or services. For income tax purposes, proceeds from the issuance of a utility token constitute consideration for the payment of the service, and will generally be taken to be deferred revenue and taxable accordingly.[175] Depending on the precise tax rules in the jurisdiction in question, the revenue may be recognized at different points, including sometimes only when the performance obligation is fulfilled (e.g. services are performed, goods delivered).[176] For GST/VAT purposes, the sale and issuance of utility tokens will generally be taken to be akin to that of vouchers, with similar tax treatment accorded.[177] Again, the taxing point will differ depending on the precise tax rules in the relevant jurisdiction, with some kinds of vouchers subject to GST/VAT immediately upon sale and others only upon redemption. It is unlikely that utility tokens are intended to be passed down to other beneficiaries, but nevertheless, inheritance and gift taxes will generally apply to them as they would to any other intangible asset.

A1.4.2.3. Security Tokens

There is potentially a very wide variety of security tokens, making it difficult to say what their general tax treatment should be. However, broadly speaking, security tokens are likely to most closely resemble the traditional forms of securities which they are modelled after.[178] So, for example, for income tax purposes, proceeds from the issuance of a security token are generally capital in nature, since they are akin to proceeds from the issuance of either debt or equity, and hence are non-taxable.[179] For GST/VAT purposes, in many jurisdictions, traditional securities (falling under the category of some kind of 'financial supplies/services') would typically be exempt from GST/VAT.[180] Security tokens, being akin to such traditional securities are also likely to be generally exempt in the same way.[181] As with traditional securities, inheritance and gift taxes will generally apply to security tokens. Depending on how the relevant statutory provisions are drafted, some security tokens may be subject to transaction taxes such as stamp duties.

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175 IRAS (Income Tax), (n 21), para 8.2.
176 IRAS (Income Tax), (n 21), p 14.
177 IRAS e-Tax Guide: GST: Digital Payment Tokens (19 November 2019), para 5.11.
178 Waerzeggers and Aw (n 14), 220.
179 IRAS (Income Tax), (n 21), para 8.2; Peter Reeves and Georgina Willcock, 'Australia' in Josias Dewey (ed.) *Blockchain & Cryptocurrency Regulation* (1st Ed) (GLI) (2019), p 202.
180 Waerzeggers and Aw (n 14), 226.
181 SGSTA (n 23), Fourth Schedule, Part I.

A1.4.2.4. NFTs

The most common forms of NFTs are those of art and music. Like their traditional counterparts, NFTs are basically treated as any other intangible asset and will be taxed according to the underlying transaction for the purposes of income tax. For example, an NFT which is acquired and sold may generate trade income. For GST/VAT purposes, NFTs will generally be considered to be digital goods (i.e. services) and taxed accordingly. As they are not used as mediums of exchange their tax treatment will generally be different from those of payment tokens. NFTs will generally be taxed in the same manner as for traditional artworks for the purposes of inheritance and gift taxes.

A1.4.2.5. Hybrid Tokens

As noted above, it is well possible for a digital token to exhibit diverse characteristics and thus fall into more than one category. In the case of income tax the focus is generally on the surrounding circumstances of a transaction rather than the asset in question. Thus, hybrid tokens will simply be taxed according to the underlying transaction. For GST/VAT purposes, the classification of the token becomes important since it is necessary to determine what kind of supply it is in order to apply the correct rate. Complications may arise here because it is sometimes possible to construe a transaction as giving rise to a 'dual supply', that is, two different kinds of supplies potentially attracting different tax rates. It may be necessary to apportion the values of the supplies accordingly. Inheritance and gift taxes are often based on the value of the asset transferred and thus, this should not pose problems for the taxation of hybrid tokens. Transaction taxes such as stamp duties tend to be payable once certain conditions are triggered and it is rare for the duty to be waived simply because the instrument (or transaction, depending on the type of duty) in question has other additional characteristics. As such, one need only see whether the hybrid token falls into the category of dutiable instruments (or transactions).

A1.4.3. The 'Lifecycle' of Tokens and Tax Events

Despite the considerable variation in potential digital token transactions, there are a range of common taxable events that can be organised according to the three main stages of the life-cycle of digital tokens: creation, transfer and disposal.[182] Digital tokens are commonly created through mining, forging, issue and purchase, airdrops, and forks. They are commonly transferred through exchange for goods and services, other tokens, or fiat currency. Digital tokens are also commonly disposed of through redemption, token burning and loss. As noted above, there tends to be some correlation between the class of digital token in question and the tax treatment under these common taxable events.

[182] Ooi (ATR) (n 147), 264.

A1.4.3.1. Creation

Creation events may be generally divided into situations where tokens are created and issued in a centralised or decentralised manner. In cases of mining and forging, a decentralised algorithm awards tokens to the miners and forgers who perform certain tasks. Unlike in cases of issue and purchase, there is no single individual who is tasked with creating the tokens. Tax issues arising from the creation of digital tokens thus tend to centre around the issuing individual in the case of centralised processes, and around the recipient individuals in the case of decentralised processes.

Mining and forging are the processes through which transactions of crypto assets are verified in some distributed ledger protocols. Such a mechanism must exist to ensure that the record of transactions is accurate. Miners and forgers are compensated for their efforts by being issued fresh tokens by the system. Issue and purchase are the straightforward processes of a crypto venture creating tokens and selling them to purchasers. Airdrops are distributions of tokens, usually for free or minimal consideration, generally undertaken as a marketing tool with a view to increase awareness of a new token and increase liquidity in the early stages of a new token project.[183] Forks involve the creation of a new 'spin-off' token, where owners of the 'old' token are typically issued with a corresponding number of 'new' tokens.[184] All of these events could potentially give rise to taxable gains for the purposes of income tax.

A1.4.3.2. Transfer

As digital tokens have become more popular, they have been increasingly traded as valuable assets. Digital tokens are often exchanged for real world goods and services, with a notable use being the payment of salaries in cryptocurrencies in some cases. They are also exchanged for other tokens and fiat currency. In many jurisdictions, a transfer would constitute a realization event, where any gains or losses would be taken into account for tax purposes. Regardless of what is received in exchange for the digital token, the tax treatment for tokens in the same class tends to be broadly similar (though the valuation methods applied may differ). Tax treatments largely differ based on the class of token being exchanged. It is noted that many jurisdictions exempt supplies of payment tokens where they are used as a medium of exchange (i.e. as traditional currency).[185] That said, it is often only the supply of the payment token itself that is exempted; the goods or services supplied in exchange will often still be taxable.

A1.4.3.4. Disposal

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183 IRAS (Income Tax), (n 21), p 11.
184 Waerzeggers and Aw (n 14), 236.
185 OECD (n 20), 37. Also see *Skatteverket v Hedqvist* (n 23); ATLA 2017 (n 23), Schedule 1; and SGSTA (n 23), Fourth Schedule, Part I.

There are several ways in which digital tokens may be (effectively) permanently taken out of circulation, for example, redemption, token burning and loss. These ways are conceptually diverse. Redemption involves tokens which are intended to be disposed of in this way from the beginning. They typically involve utility tokens which oblige the issuer to provide pre-agreed goods or services when the tokens are redeemed. Redemption is distinguished from transfer in that once redemption occurs, the crypto assets are permanently taken out of circulation. Token burning is a practice that shares many similarities with share buybacks. Token issuers may acquire their tokens and permanently take them out of circulation for similar reasons to why a company would buy back its own shares. Typically, this is done to allow the token price to increase as there would be fewer remaining tokens in the market. Loss is (almost always) unintentional and only 'effectively permanent', since there remains the remote possibility that the tokens could be retrieved in the future as technology advances.

A1.5. Conclusion

As this Annex has shown, crypto assets and their taxation is an extremely broad field with quite technical concepts and terminology. Things are made more complex by the fact that the field is constantly evolving quickly. The only practical way of navigating this field is to bear in mind general principles and a broad map while constantly being alive to the possibility of changing technologies and commercial use-cases. The technical details in this Annex have intentionally been excluded from the main body of the Report, which will make reference to this where necessary instead.

A2. Study of Jurisdictions

A2.1. Methodology

A2.1.1. Selection of Jurisdictions

This desk research intends to provide a representative overview of the challenges and initiatives which jurisdictions around the world have faced or implemented, with a special focus on developing countries. The United Nations World Economic Situation and Prospects 2022 Report (the '**UN Report**').[186] provides good preliminary data to assist with the selection of the jurisdictions for the study. Tables A, B and C of the Statistical Annex of the UN Report lists 36 countries as 'Developed Economies', 17 countries as 'Economies in Transition', and 126 countries as 'Developing Countries'.[187] This makes a total of 179 jurisdictions listed in the UN Report. To form a representative sample of jurisdictions, this study will select 10% of the total number of jurisdictions listed in the UN Report, rounding up this number to 18 jurisdictions.

This Report has a special focus on developing countries. As such, 16 jurisdictions which are the subject of this study will be drawn from the pool of developing countries listed in the UN Report. To better expand the scope of the sample, the remaining two jurisdictions (comprising about 10% of the subjects of the study) will be drawn from Europe, from the EU-13 group. Table C of the Statistical Annex of the UN Report divides developing economies by region.[188] There are three broad regions: 1) Africa; 2) Asia; and 3) Latin America and the Caribbean. These regions are further sub-divided as follows: 1) Africa: (a) North Africa, (b) Central Africa, (c) East Africa, (d) Southern Africa, and (e) West Africa; 2) Asia: (a) East Asia, (b) South Asia, and (c) Western Asia; and 3) Latin America and the Caribbean: (a) Caribbean, (b) Mexico and Central America, and (c) South America.

The study selected at least one and up to two jurisdictions for each of the regions listed by the UN Report. In total, six jurisdictions from Africa were chosen, six from Asia, four from Latin America and the Caribbean, and two from Europe:

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186 United Nations Department of Economic and Social Affairs, *United Nations World Economic Situation and Prospects 2022* (2022).

187 UN Report (n 186), Statistical Annex, 153-154.

188 UN Report (n 186), Statistical Annex, 154.

Table 2. Jurisdictions Chosen for the Study

Africa		**Asia**	**Latin America and the Caribbean**	**Europe**
North Africa Egypt Morocco	**Southern Africa** South Africa	**East Asia** Malaysia Philippines	**Caribbean** Barbados	**EU-13** Poland Hungary
Central Africa Central African Republic	**West Africa** Nigeria	**South Asia** India Pakistan	**Mexico and Central America** Mexico El Salvador	
East Africa Kenya		**Western Asia** United Arab Emirates Saudi Arabia	**South America** Colombia	

A2.1.2. Crypto Adoption Index

The Chainalysis Global Crypto Adoption Index (the '**Index**') is a publicly available ranking of 146 countries based on their usage of different types of cryptocurrency services.[189] The five metrics used are: 1) centralized service value received ranking; 2) retail centralized service value received ranking; 3) P2P exchange trade volume ranking; 4) DeFi value received ranking; and 5) retail DeFi value received ranking. This study uses the quantitative data from the 2022 Index to supplement the qualitative data gathered on the jurisdictions in the study.

A2.2. Data on Jurisdictions

This study involved a desk review of publicly available news reports, statutory materials and other information on each of the jurisdictions chosen for the study.[190] The study focused on four main questions, for which information (where available) was collated for each jurisdiction: 1) are the policies in a jurisdiction largely crypto-receptive, crypto-indifferent, or crypto-resistant; 2) is there any specific (legal and, where available, tax) legislation for crypto assets; 3) what are some of the difficulties faced with crypto taxation; and 4) what are some of the exemplary approaches towards crypto taxation?

A2.2.1. North Africa

[189] Chainalysis Team, 'The 2022 Global Crypto Adoption Index: Emerging Markets Lead in Grassroots Adoption, China Remains Active Despite Ban, and Crypto Fundamentals Appear Healthy' (September 14, 2022) <https://blog.chainalysis.com/reports/2022-global-crypto-adoption-index/> accessed March 7, 2023.

[190] This study collated publicly available information. Although every attempt was made to search for information from official sources, the information has not been independently verified.

A2.2.1.1. Egypt

In 2018, the *Dar al-Ifta*, the primary Islamic legislator, issued a *fatwa* (religious decree) stating that cryptocurrencies were *haram* (prohibited under Islamic law).[191] Following this, the Central Bank of Egypt issued a press release in 2018 making a 'stern warning against trading in all kinds of cryptocurrencies, mainly Bitcoin, due to the extremely high risk associated with them.'[192] In 2020, the Central Bank and Banking System Law (Law No. 194 of 2020) created a new licensing regime for crypto-related activities.[193] In late 2022, the Central Bank of Egypt renewed its warning against crypto assets, stating that the law 'prohibits issuing, trading, or promoting cryptocurrencies, creating or operating platforms for trading it, or carrying out related activities' and stated that there were heavy penalties for those who violated the law.[194] General legislation passed in relation to crypto assets in Egypt, though no tax-specific legislation was found when conducting this study. Despite the effective ban on crypto assets, several international crypto trading platforms have reported significant user growth in the country in recent years.[195] Easy access to such online trading platforms mean that local regulations are unlikely to be of much use as those interested in crypto assets can simply seek out foreign-regulated intermediaries.

A2.2.1.2. Morocco

Crypto assets were initially banned in Morocco. In November 2017, the Office des Changes (Foreign Exchange Authority) of Morocco issued a statement banning the use of cryptocurrencies in transactions within Morocco as such conduct would reportedly directly violate Morocco's current legislation.[196] This was supported by the Bank Al-Maghrib, the country's central bank.[197] In December 2022, the Governor of the central bank announced that the draft law regulating the crypto market in Morocco is 'ready' and will be presented to the various stakeholders within the market in the following days. The focus of the draft law would be on investor protection.[198] As such, legislation is about to be passed in relation to crypto assets in Morocco, although no tax-

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[191] Fatwa on Cryptocurrency by Grand Mufti Shawky Ibrahim Allam of Egypt's Dar Al Ifta Year 1437 (2017). <https://beta.shariasource.com/documents/4450> accessed March 7, 2023.

[192] Central Bank of Egypt, 'Bitcoin Press Release' <https://www.cbe.org.eg/en/Pages/HighlightsPages/Bitcoin%20Press%20Release.aspx> accessed March 7, 2023.

[193] Egypt Central Bank and Banking System Law (Law No. 194 of 2020).

[194] Central Bank of Egypt <https://drive.google.com/file/d/11E4fn0YIszRMSAMbkmEmdQWIsmiEHTIh/view> accessed March 7, 2023.

[195] Sandali Handagama, 'Egyptians are Buying Bitcoin despite Prohibitive New Banking Laws', (CoinDesk, 5 March 2021) <https://www.coindesk.com/business/2021/03/05/egyptians-are-buying-bitcoin-despite-prohibitive-new-banking-laws/> accessed March 7, 2023.

[196] Office Des Changes, <https://www.oc.gov.ma/portal/sites/default/files/actualites/communiqu%C3%A9%20monnaies%20virtuelles.pdf> accessed March 7, 2023.

[197] Office Des Changes (n 196).

[198] Jihane Rahhou, 'Morocco's Central Bank says Crypto-regulating Draft Law is Ready,' (Morroco World News) (December 21, 2022) <https://www.moroccoworldnews.com/2022/12/353154/moroccos-central-bank-says-crypto-regulating-draft-law-is-ready> accessed March 7, 2023.

specific legislation was found when conducting this study. As with Egypt, despite the official ban on crypto assets, Moroccans have a high level of crypto asset adoption. In 2022, Morocco became the fastest-growing crypto market in Northern Africa, going from 2.4% of the population owing digital assets in 2021 to 3.1% a year later.[199]

A2.2.2. Central Africa

A2.2.2.1. Central African Republic

The Central African Republic has adopted Bitcoin as an official currency and made it legal tender.[200] This makes it the first country in Africa and only the second in the world to do so.[201] Further, in January 2023, the country formed a committee of experts from several government ministries to draft crypto legislation, with the aim of broadening crypto adoption.[202] General legislation on crypto assets has been issued in the Central African Republic. Tax legislation has been issued as well.[203] While the Central African Republic has made Bitcoin legal tender, the internet penetration rate in the country is low, with 9 out of 10 Central Africans having no access to the Internet.[204]

A2.2.3 East Africa

A2.2.3.1. Kenya

In December 2015, the Central Bank of Kenya issued a public notice warning that Bitcoin and other cryptos are unregulated.[205] The Central Bank published a paper considering the suitability of a CBDC in February 2022.[206] Kenya appears to be considering passing a bill regulating and taxing crypto transactions. The Capital Markets (Amendment) Bill, 2022 would allow for the taxation of crypto exchanges, digital wallets and transactions.[207] Crypto investors in Kenya would have to pay

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199 David Attlee, 'Morocco Finalized Crypto Regulatory Framework: Central Bank' (CoinTelegraph) (January 3, 2023) <https://cointelegraph.com/news/morocco-finalized-crypto-regulatory-framework-central-bank> accessed March 7, 2023.

200 Judicael Yongo, 'Central African Republic Adopts Bitcoin as an Official Currency' (Reuters) (April 28, 2022) <https://www.reuters.com/world/africa/central-african-republic-adopts-bitcoin-an-official-currency-2022-04-27/> accessed March 7, 2023.

201 Yongo (n 200).

202 Camomile Shumba, 'Central African Republic Forms Committee to Draft Crypto Bill', (CoinDesk) (January 23, 2023) <https://www.coindesk.com/policy/2023/01/23/central-african-republic-forms-committee-to-draft-crypto-bill/> accessed March 7, 2023 ('**Shumba (CAR)**').

203 Law n°22.004 governing cryptocurrency in the Central African Republic.

204 BBC, 'Why the Central African Republic Adopted Bitcoin' (June 6, 2022) <https://www.bbc.com/news/world-africa-61565485> accessed March 7, 2023.

205 Reuters, Cryptocurrency Regulations by Country (2022) <https://www.thomsonreuters.com/en-us/posts/wp-content/uploads/sites/20/2022/04/Cryptos-Report-Compendium-2022.pdf> accessed March 7, 2023.

206 Central Bank of Kenya, 'Discussion Paper on Central Bank Digital Currency' <https://www.centralbank.go.ke/2022/02/10/discussion-paper-on-central-bank-digital-currency/> accessed March 7, 2023.

207 Shumba (CAR) (n 202).

capital gains tax to the Kenya Revenue Authority when they sell or use their crypto in a transaction.[208] The Bill would also require investors to inform the Capital Markets Authority – the government's financial regulator – on the details of their crypto ownership.[209] Thus, legal and tax legislation are expected soon. Under the Bill, the Capital Markets Authority would have the power to ensure that all digital currency transactions in Kenya are recorded in a single, centralized computerized register and also to regulate crypto intermediaries.

A2.2.4. Southern Africa

A2.2.4.1 South Africa

The financial sector regulators have recently published a policy position paper on crypto assets through the Intergovernmental Fintech Working Group (IFWG).[210] The IFWG paper provides specific recommendations on developing a regulatory framework for cryptocurrencies and also discusses legal status and tax application along with regulatory framework implementation for AML/counter-terrorist financing.[211] The South African Income Tax Act and Value Added Tax Act were amended in 2018 to expressly refer to crypto assets.[212] Guidance by the South African Revenue Service on the taxation of crypto assets has also been issued.[213]

A2.2.5. West Africa

A2.2.5.1. Nigeria

The Central Bank of Nigeria launched a CBDC, the eNaira, in 2021.[214] In April 2022, the Nigerian Securities and Exchange Commission issued new guidelines on crypto assets, requiring crypto intermediaries to obtain a license.[215] The Finance Bill 2022 includes express provisions for the taxation of crypto assets.[216] It appears that Nigerians have a high crypto adoption rate, with Nigeria

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208 Shumba (CAR) (n 202).
209 Shumba (CAR) (n 202).
210 South African Intergovernmental Fintech Working Group (IFWG), Crypto Assets Regulatory Working Group (2020). Position Paper on Crypto Assets (updated in 2021). <https://www.sars.gov.za/wp-content/uploads/IFWG-CAR-WG-Position-paper-on-crypto-assets.pdf> accessed March 7, 2023.
211 IFWG (n 210), 33.
212 South Africa Taxation Laws Amendment Act 2018 (Act No. 23 of 2018).
213 Legwaila (n 109).
214 Central Bank of Nigeria, 'eNaira' <https://www.cbn.gov.ng/currency/enaira.asp> accessed March 7, 2023.
215 Oluwaseun Adeyanju, 'Nigeria Issues Crypto Asset Rules In A Move That Could Boost Adoption' <https://www.forbes.com/sites/oluwaseunadeyanju/2022/05/14/nigeria-issues-crypto-asset-rules-in-a-move-that-could-boost-adoption/?sh=6360d11212e6> accessed March 7, 2023.
216 Securities Commission Malaysia (n 120).

ranking 11 on the Index,[217] but this may not extend to the eNaira. The Central Bank of Nigeria has banned banks and financial institutions from dealing in crypto assets other than the eNaira.[218]

A2.2.6. East Asia

A2.2.6.1. Malaysia

In October 2020, the Securities Commission Malaysia issued the Digital Assets Guideline, regulating crypto service providers and requiring them to obtain licenses.[219] In August 2022, the Malaysian Inland Revenue Board issued Guidelines on Tax Treatment of Digital Currency Transactions, which provides broad guidance on the tax treatment of crypto assets and transactions based on existing income tax rules.[220] The guidance is easily understandable and there are examples provided. No crypto-specific legislation was found when conducting this study.

A2.2.6.2. Philippines

In 2017, the *Bangko Sentral ng Pilipinas*, the Philippine's Central Bank, issued guidelines stating that crypto assets are not legal tender, and that crypto service provides must be registered and subject to regulation.[221] It has also announced that it intends to launch a CBDC in late 2022.[222] No tax-specific legislation was found when conducting this study. However, the Department of Finance has proposed that crypto assets should be taxed from 2024 onwards.[223] The Government has yet to make a decision on this.

A2.2.7. South Asia

A2.2.7.1 India

In 2019, the Banning of Crypto Asset and Regulation of Digital Currency Bill, 2019 was proposed, but was halted after discussions with the industry.[224] In 2021, the bill was heavily amended to

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217 Chainalysis (n 189).

218 Matt Smith, 'Cryptocurrency Usage Soars in Nigeria Despite Bank Ban' <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/cryptocurrency-usage-soars-in-nigeria-despite-bank-ban-70497781> accessed March 7, 2023.

219 Securities Commission Malaysia (n 120).

220 LHDN Malaysia (n 112).

221 Bangko Sentral ng Pilipinas, 'Frequently Asked Questions on Virtual Currencies' <https://www.bsp.gov.ph/Media_and_Research/Primers%20Faqs/VC.pdf> accessed March 7, 2023.

222 Ayman Medina, 'Philippines Central Bank to Launch Digital Currency Pilot Program' <https://www.bsp.gov.ph/Media_and_Research/Primers%20Faqs/VC.pdf> accessed March 7, 2023.

223 Bolder, 'Crypto may soon be taxed in the Philippines where a new admin is taking over' (May 27, 2022) <https://boldergroup.com/news/proposed-tax-crypto-ph> accessed March 7, 2023.

224 Samvad: Partners, 'Cryptocurrency in India: One Step Forward, Two Steps Back' (Lexology) (August 10, 2022) <https://www.lexology.com/library/detail.aspx?g=d8b27c01-6215-4dba-abe9-f1b0fba86073> accessed March 7, 2023

provide for a regulatory regime rather than a complete ban.[225] The Cryptocurrency and Regulation of Official Digital Currency Bill, 2021 is currently being considered. The Reserve Bank of India is looking into launching a CBDC, the e-rupee.[226] The Indian Income Tax Act was amended in April 2022 to provide for the taxation of gains derived from virtual digital assets.[227] Since the new tax has been imposed, there has been a considerable impact on the industry, with many businesses moving their operations out of India.[228] A further change to the tax law has been mooted, where crypto providers headquartered overseas would still have to comply with regulations and report customer information to the Indian government.[229] Some crypto service providers have indicated that they might disable their offerings to Indian customers as a result.[230]

A2.2.7.2. Pakistan

In 2018, Pakistan's Central Bank released a statement instructing banks to refrain from engaging in cryptocurrency in any capacity.[231] In November 2020, Pakistan's Securities and Exchange Commission released a paper outlining potential approaches for regulating cryptocurrency in their country.[232] In January 2022, Pakistan's Central Bank recommended a ban on crypto assets.[233] No crypto-specific legislation was found when conducting this study.

A2.2.8. Western Asia

A2.2.8.1. United Arab Emirates

Multiple cryptocurrency exchanges set up their headquarters in Abu Dhabi from 2022 onwards[234] and the government suggested that it wished to make the UAE a hub with crypto-friendly

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225 Chloe Cornish, 'India at crypto crossroads as New Delhi considers ban' (Mumbai, Financial Times) (December 3, 2021) <https://www.ft.com/content/0722918d-b0fe-4d27-b2ae-648298023787> accessed March 7, 2023.

226 Kunal Varma and Aashika Jain, 'What is Digital Rupee? How is it different from cryptocurrency?' (Forbes) (January 19, 2023) <https://www.forbes.com/advisor/in/investing/digital-currency-in-india/> accessed March 7, 2023.

227 India Finance Act 2022 (Amended Act). See also Suprita Anupam, 'Budget 2023: Crypto Industry Seeks Tax Relief, And Allowance to Offset, Carry Forward Losses' (Inc 42) January 17, 2023) <https://inc42.com/features/budget-2023-crypto-industry-seeks-tax-relief-clear-regulations/> accessed March 7, 2023.

228 Des (n 107).

229 Amitoj Singh, 'India Considers Taxing Crypto Income From Businesses Headquartered Elsewhere' (CoinDesk) (November 2, 22) <https://www.coindesk.com/policy/2022/11/02/india-considers-taxing-crypto-income-from-businesses-headquartered-elsewhere/> accessed March 7, 2023.

230 Des (n 107).

231 The Express Tribune, 'Pakistan Bans Cryptocurrencies', (April 6, 2018) <https://tribune.com.pk/story/1679446/2-pakistan-bans-cryptocurrencies/> accessed March 7, 2023.

232 Securities and Exchange Commission of Pakistan, 'Position Paper: Regulation of Digital Asset Trading Platforms' (November 6, 2020) <https://www.secp.gov.pk/document/position-paper-regulation-of-digital-asset-trading-platforms/?ind=1604993043472> accessed March 7, 2023.

233 Syed Hassan, 'Pakistan's central bank tells court cryptocurrency should be banned' (Reuters) (January 13, 2022) <https://www.reuters.com/article/fintech-crypto-pakistan-idUSL1N2TT0QT> accessed March 7, 2023.

234 PwC, *The UAE Virtual Assets Market*, (2022), 6.

policies.[235] There are also plans by the UAE Central Bank to issue a CBDC.[236] In 2022, Law No. (4) of 2022 Regulating Virtual Assets in the Emirate of Dubai was passed to regulate crypto assets.[237] UAE does not tax individuals and most companies and thus, there are largely no crypto tax issues. This may change as a new federal corporate tax is expected to be implemented in 2023.[238]

A2.2.8.2. Saudi Arabia

In July 2017, the Saudi Arabian Monetary Agency issued a warning against Bitcoin, stating that it is not being monitored or supported by any legitimate financial authority.[239] In 2019, the UAE and Saudi Arabia launched a bilateral CBDC pilot project called Project Aber.[240] No crypto-specific legislation was found when conducting this study.

A2.2.9. Caribbean

A2.2.9.1. Barbados

The country hosts a number of crypto exchanges[241] and in February 2016, the Central Bank of Barbados backed the launch of a digitized Barbadian dollar on the Bitcoin blockchain.[242] No crypto-specific legislation was found when conducting this study.

A2.2.10. Mexico and Central America

A2.2.10.1. Mexico

In September 2018, the Mexican Congress passed the *Ley para Regular las Instituciones de Tecnología Financiera* (Law to Regulate Financial Technology Companies), which regulates virtual assets in the country.[243] In December 2021, Banxico, the Mexican Central Bank announced that it was

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235 Dezan Shira & Associates, 'Cryptocurrency to Play a 'Major Role' in UAE Global Trade – Minister of Foreign Trade, (Middle East Briefing) (January 23, 2023) <https://www.middleeastbriefing.com/news/cryptocurrency-to-play-major-role-in-uae-global-trade-minister-of-foreign-trade/> accessed March 7, 2023.

236 Central Banking Newsdesk, 'UAE plans to launch CDBC by 2026' (Central Banking Newsdesk) (February 15, 2023) <https://www.centralbanking.com/fintech/7954506/uae-plans-to-launch-cbdc-by-2026> accessed March 7, 2023.

237 Dubai Law No. (4) of 2022 Regulating Virtual Assets in the Emirate of Dubai.

238 UAE Federal Decree – Law No. 47 of 2022 on the Taxation of Corporations and Businesses.

239 Saudi Arabian Monetary Agency, 'The Monetary Agency warns against dealing in digital currency' (Translated), (Twitter) (July 4, 2017) <https://twitter.com/SAMA_GOV/status/882190896967692288> accessed March 7, 2023.

240 Saudi Central Bank and Central Bank of U.A.E, 'Project Aber' (2019) <https://www.sama.gov.sa/en-US/News/Documents/Project_Aber_report-EN.pdf> accessed on March 7, 2023.

241 Alon Schvartsman, 'How to Buy Bitcoin in Barbados' (Bitrawr) (February 24, 2023) <https://www.bitrawr.com/barbados> accessed March 7, 2023.

242 Gertrude Chavez-Dreyfuss, 'Overstock invests $4 million in Caribbean firm working on digital currencies, (Reuters) (April 2, 2016) <https://www.reuters.com/article/us-overstock-com-investment-fintech-idUSKCN0WY5HI> accessed March 7, 2023.

243 Mexico Financial Institutions Act 2018 (*Ley para Regular las instituciones de Tecnologia Financiera*).

developing a CBDC, the digital peso, which would be launched around 2024.[244] While there is specific legislation to generally regulate crypto assets in Mexico, but no tax-specific legislation was found when conducting this study.

A2.2.10.2. El Salvador

El Salvador was the first country in the world to accept Bitcoin as legal tender in 2021 and remains one of only two countries to do so.[245] The government also announced that it will exempt foreign investors from taxes on profits on bitcoin speculation in the country.[246] The decision to accept Bitcoin as legal tender has attracted criticism from the International Monetary Fund (IMF), which stated in a report that 'underlying risks to financial integrity and stability, fiscal sustainability, and consumer protection persist' and that 'given the legal risks, fiscal fragility and largely speculative nature of crypto markets, the authorities should reconsider their plans to expand government exposures to Bitcoin, including by issuing tokenized bonds.' That said, the report also conceded that 'risks have not materialized due to the limited Bitcoin use so far.'[247]

A2.2.11. South America

A2.2.11.1. Colombia

Circular 29 of 26 March 2014, issued by the *Superintendencia Financiera de Colombia* (Financial Superintendent of Colombia), identified the risks relating to the use of crypto assets arising from the fact that related transactions are not subject to the surveillance of any governmental authority.[248] The Superintendent also confirmed that users are entitled to acquire, trade, and invest in crypto assets, at their own risk. In September 2020, the Ministry of Finance and Public Credit approved a regulatory sandbox known as 'LaArenera' for cryptocurrency companies wishing to operate in Latin America.[249] The authorities have also put into place regulations to guide cryptocurrency firms to anchor in Colombia.[250] To combat tax fraud and tax evasion, the

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244 Michael O'Boyle, 'Mexico's Central Bank Will Launch Digital Currency by 2024' (Bloomberg) (December 30, 2021) <https://www.bloomberg.com/news/articles/2021-12-30/mexico-s-central-bank-will-launch-its-digital-currency-by-2024> accessed March 7, 2023.

245 Al Jazeera, 'El Salvador Passes Law on Cryptocurrency Transfers', (January 12, 2023) <https://www.aljazeera.com/news/2023/1/12/el-salvador-passes-law-on-cryptocurrency-transfers> accessed March 7, 2023.

246 San Salvador, 'Foreign Investors Exempt from Tax on Bitcoin Profits : El Salvador' (France24) (September 10, 2021) <https://www.france24.com/en/live-news/20210910-foreign-investors-exempt-from-tax-on-bitcoin-profits-el-salvador> accessed March 7, 2023.

247 IMF, *El Salvador: Staff Concluding Statement of the 2023 Article IV Mission* (February 10, 2023) <https://www.imf.org/en/News/Articles/2023/02/10/el-salvador-staff-concluding-statement-of-the-2023-article-iv-mission> accessed on March 7, 2023.

248 Superintendencia Financiera De Colombia, Carta Circular 24 De 2014 (Marzo 26).

249 Mat Di Salvo, 'Colombia Advances Regulatory Framework for Local Crypto Industry', (Decrypt) (July 20, 2022) <https://decrypt.co/105497/colombia-advances-regulatory-framework-for-local-crypto-industry> accessed March 7, 2023.

250 Di Salvo (n 249).

Colombian Directorate of National Taxes and Customs is in the midst of creating a CBDC.[251] This is intended to resolve tax administration issues in an economy where revenue lost to tax evasion is said to contribute 6 to 8% of GDP.[252] The Colombian tax administration also announced that it conducts inspections of crypto transactions.[253]

A2.2.12. EU-13

A2.2.12.1. Poland

In March 2018, Poland amended the Act on Countering Money Laundering and Terrorism Financing to include express mention of crypto assets.[254] In January 2019, the Polish Corporate Income Tax Act and Personal Income Tax Act were amended and specific regulations relating to crypto assets were introduced.[255] As part of the European Union, Poland is required to comply with EU anti-money laundering and terrorism financing directives and will implement the European Commission's Directive on Administrative Cooperation ('**DAC8**') when it becomes functional later in 2023.[256]

A2.2.12.2. Hungary

In 2019, the chief of Hungary's central bank expressed their support towards banning cryptocurrency use in the EU, on grounds that it could 'service illegal activities'.[257] From 2022, Hungary has imposed a 15% flat tax on cryptocurrency income for private individuals (Act CXVII of 1995), but this only applies to exchanges of cryptocurrency for fiat currency and not exchanges between different kinds of cryptocurrencies.[258] As a member of the European Union, Hungary will be required to implement DAC8 but no crypto-specific exchange of information legislation was found when conducting this study.

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251 Shashank Bhardwaj, 'Colombia Planning to Prevent Tax Evasion with National Digital Currency: Report' (Forbes) (2022) <https://www.forbesindia.com/article/crypto-made-easy/colombia-planning-to-prevent-tax-evasion-with-national-digital-currency-report/79093/1> accessed March 7, 2023.

252 Partz (n 115).

253 Collosa (n 116).

254 Poland Act on Counteracting Money Laundering and Financing of Terrorism, March 1, 2018, art. 2, sec. 26.

255 Poland Corporate Income Tax Act, February 15, 1992; and Personal Income Tax Act, July 26, 1991.

256 Recital 5 of the proposed DAC8 (n 94), 16-17.

257 Nelson Wang, 'Hungary's Central Bank Head Calls on EU to Ban Crypto Mining and Trading', (CoinDesk) (February 11, 2022) <https://www.coindesk.com/policy/2022/02/11/hungarys-central-bank-head-calls-on-eu-to-ban-crypto-mining-and-trading/> accessed March 7, 2023.

258 Hungary 1995. Act CXVII of 1995 on Personal Income Tax Act.