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Thinking Allowed

Cryptocurrency: Financial reporting implications

Cryptocurrencies have attracted the attention of many. From individuals who are interested in Blockchain and related processing activities or who want to invest in them, to retailers, corporate investors and investment funds, securities regulators, the banking sector, the accounting profession and Governments.

The idea of a virtual currency that has no links to a jurisdiction and that exists in a public network, maintained on computers operated by a myriad of individuals, was not something that was anticipated when the International Accounting Standards Board (IASB) developed its current set of financial reporting requirements.

In this paper we make some observations about cryptocurrencies and the current accounting requirements for those issuing, acquiring or holding cryptocurrency.

Thinking allowed is a series that focuses on issues related to corporate reporting, whilst also providing insights and thought provoking commentary on a broad range of everyday matters that affect those preparing general purpose financial reports.


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Introduction

Bitcoin came into existence in 2008. It was created to facilitate peer-to-peer exchanges, using Blockchain technology. Its use of cryptography to control how it is created and managed led to it being called a cryptocurrency. Bitcoin was the first use-case of the Blockchain and this has led to further developments in cryptography.

The first value attributed to a Bitcoin was in October 2009 when one Bitcoin had a price of US$0.00076. In November 2017 one Bitcoin was priced at over US$19,000, and at the time of writing it was just under US$6,000.[1] The number of corporates willing to accept Bitcoin in exchange for their products has also grown.

Bitcoin is not the only cryptocurrency. The increased use of, and exposure to, cryptocurrencies raises issues about the financial reporting implications for those who receive, hold, issue or trade in them.

In this paper we identify some of the questions currently facing the different parties dealing with cryptocurrencies, including holders, issuers and miners. We also explain how the current requirements in International Financial Reporting Standards (IFRS) apply to cryptocurrencies.

The features of cryptocurrencies vary, and it is important to understand the attributes of each cryptocurrency. Also, as we explain in the next section, the label cryptocurrency can sometimes be misleading.

1. Many websites track prices of cryptocurrencies. See for example https://www.coindesk.com/price/ or https://www.cnbc.com/quotes/?symbol=BTC=.

Fiat money and cryptocurrency

Fiat money/fʌlat mʌni/

Inconvertible paper money made legal tender by a government decree.

Origins

Fiat - late Middle English: from Latin, 'let it be done', from fieri 'be done or made'.

Money - Middle English: from Old French moneie, from Latin moneta 'mint, money', originally a title of the goddess Juno, in whose temple in Rome money was minted.

Oxford English Living Dictionary

Fiat money

Money has existed for thousands of years, and in various forms. It facilitates trade beyond what would be possible were traders merely to barter goods directly with one another. Money has taken some primitive forms, including shells and stones and has evolved to be represented by notes and coins.[2]

There was a time when money was backed by a precious metal such as gold or silver (commodity or representative money). However, many central banks have relinquished much of the gold they once held in reserve and we live in a world of 'fiat' money, which is one where the money derives its value from government regulations or laws. Its value is affected by supply and demand, and the confidence in the economy of the issuing government, rather than the physical material the money is made of or convertible into.

The laws and regulations that support fiat money also give the coins and notes in a particular currency 'legal tender' status. Although this has limited practical implications, it is a feature that is unique to notes and coins and is important because it adds to the confidence in fiat money.[3]

Payment systems have also evolved. Consumers are using notes and coins less and less and are instead using credit or debit cards and mobile payment apps (including those involving biometrics). A person might never need to withdraw notes or coins from the bank. Some central banks are even considering creating their own virtual money, which could be legal tender.

2. Not all currencies have notes and coins. In 1969 the IMF created the SDR (Special Drawing Right) as an international reserve asset that supplements the official reserves of IMF member countries. It serves as the unit of account of the IMF and some other international organisations, so has some features of a currency. However, the IMF states that the SDR is not a currency, or a claim on the IMF. Rather, it is a potential claim on the freely usable currencies of IMF members. SDRs can be exchanged for these currencies. The SDR has no notes or coins. The value of the SDR is based on a basket of five currencies—the U.S. dollar, the euro, the Chinese renminbi, the Japanese yen, and the British pound sterling. Another example was the ECU (European Currency Unit), which was created in the 1970s and was the predecessor to the euro. The ECU's value was a function of the underlying currencies it represented, which officially became a currency in a non-physical form on 1 January 1999. Euro notes and coins only came into circulation three years later, in January 2002. The euro was, however, linked to the existing currencies of the countries adopting the euro, each of which had notes and coins in circulation. Interestingly, the IASB acknowledged that the euro was "a currency in its own right" from 1 January 1999 (SIC-7 *Introduction of the Euro*), preceding the existence of euro notes and coins.

3. Legal tender has a very narrow and technical meaning which relates to settling debts. Having the status of legal tender does not oblige a retailer, for example, to accept a particular currency in exchange for goods or services. Although some cryptocurrencies are legally recognised by some governments, that does not make them legal tender.

Cryptocurrency/krɪptəʊˌkʌr(ə)nsi/

A digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank.

Origin

Early 21st century: from crypto- + currency.

Oxford English Living Dictionary

Cryptocurrency

Cryptocurrencies were developed to facilitate peer-to-peer transactions, independently of banks.

Cryptocurrencies also have coins, but they are digital rather than physical coins. You cannot withdraw a cryptocurrency. You can only transfer a coin, or fraction of a coin, to another party.[4] The only evidence of a cryptocurrency, and its ownership, is the record of the cryptocurrency transactions on its Blockchain. That record is a public record (or ledger) that exists in a distributed and open cryptocurrency Blockchain. (See **Blockchain**).

A person who owns some cryptocurrency might want to buy a product from a business willing to accept the cryptocurrency as payment. Rather than having a bank facilitate the transfer of the currency, that transfer takes place through the public ledger system.

New cryptocurrencies

The inception of a new cryptocurrency typically comes about when a company plans to launch a new product and is seeking funding to develop it. The company creates its own virtual currency, and issues newly created coins or tokens by way of an Initial Coin Offering ('ICO').

Although the term Initial ***Coin*** Offering implies that it is the initiation of a cryptocurrency, not all ICOs involve cryptocurrencies.

Different labels have begun to be used to describe the different types of tokens or coins issued.

4. Cryptocurrencies are usually divisible into smaller units, like dollars into cents. For example, a Bitcoin is divisible to 8 decimal places. Each fraction is called a Satoshi—i.e. each Bitcoin comprises 100,000,000 Satoshis.

Payment tokens are synonymous with cryptocurrencies, such as Bitcoin or Ether.[5] They have no function or purpose other than as a means of exchange (or store of value).

Utility tokens (sometimes called user tokens or app coins) are used in a future exchange for future goods or services of the issuer. The holder might therefore be entitled to redeem the coins for the issuer's products—the ICO pricing might give the subscribers a price incentive on the goods or services. Accordingly, it could have the characteristics of a prepayment, much like a prepaid gift card or crowd-funding of a product. Utility tokens are not designed to be investments.

Asset tokens are backed by physical assets such as real estate, art, money, or renewable energy assets.

Security tokens have the characteristics of a securities issue.

A careful evaluation of the ICO terms is necessary, including considering the legal rights attached to tokens and the related corporate rights of investors and whether the holder is entitled to redeem the coins or tokens, or is entitled to dividends or other assets. There might also be restrictions on what a holder is able to do with the coins or tokens. Some tokens will not sit neatly under a particular label. Sometimes they will be a hybrid, perhaps giving the holder some rights to future services and with some features of a security.

Some offerings are described as ICOs in an attempt to avoid regulations that are designed to protect investors. Securities regulators have intervened in cases where the ICO is creating a security. The U.S. Securities and Exchange Commission has highlighted that "while touted as replacements for traditional currencies, (cryptocurrencies) lack many important characteristics of traditional currencies, including sovereign backing and responsibility, and now are being promoted more as investment opportunities than efficient mediums for exchange."[6]

The main focus of this paper is on payment tokens—cryptocurrencies that are a general medium of exchange, such as Bitcoin and Ether.

Cryptocurrency transactions

Once a Cryptocurrency (payment token) is in circulation, there are many ways to obtain it. Many can be bought through exchanges or at a specially designated ATM.[7] Some individuals receive it because their employers allow them to elect to be paid in a cryptocurrency. Some retailers accept cryptocurrencies as payment for their goods and services.[8] The people, or organisations, who maintain the Blockchain for a cryptocurrency are generally rewarded with that cryptocurrency. (See **Blockchain**).

5. Ether is the currency of the Etherium Blockchain.

6. https://www.sec.gov/news/public-statement/statement-clayton-stein-piwowar-010418

7. At the time this publication was prepared there were just over 2,000 ATMs worldwide for cryptocurrencies, compared to just over 2.2 million ATMs for fiat money. Some credit card companies do not permit the acquisition of cryptocurrencies on their credit card, because of concerns about price volatility and the ability of the consumers to settle the amounts if the value of the cryptocurrency falls.

8. For example, the website www.spendbitcoins.com lists over 100,000 merchants that accept Bitcoin.

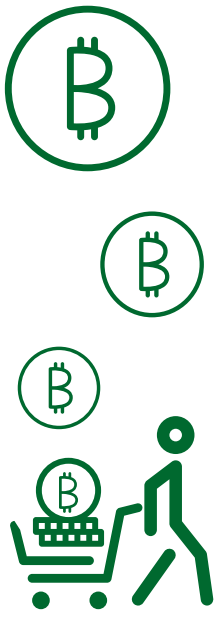
Fiat Money	**Cryptocurrencies**
Physical notes and coins	Virtual coins
Notes and coins are legal tender	Cryptocurrency virtual coins are not legal tender
Backed by government regulations and laws	Governed by public operating protocols and an algorithm
Value affected by the economy of the issuing government	Value is affected by overall confidence in the currency and the algorithm
Creation and distribution of notes and coins determined by central banks	Number of coins determined by the currency protocols
Banks and other financial institutions hold currency on behalf of depositors and keep a record of those deposits	Ownership of the currency is recorded in a distributed public ledger
Electronic transfer of currency is managed mainly by banks	Peer-to-peer transfers, managed by a network that records them in the public ledger

Blockchain

For a cryptocurrency to function as a means of peer-to-peer exchange a ledger needs to be maintained, tracking ownership of the cryptocurrency. For cryptocurrencies this electronic ledger is maintained using Blockchain.

There are many copies of this ledger and many ledger keepers. Distributing the processing allows many users to each play a small part in the maintenance of the ledger system and means that the security of the system does not rely on a few individuals.

The cryptocurrency is usually governed by a set of protocols that determines how many coins can be created, how they are created and how the integrity of the ledger is protected.[9] These protocols are intended to be the equivalent of the government regulations and laws that support fiat money, and their strength will affect the confidence in the cryptocurrency and therefore its supply and demand. Generally, cryptocurrency Blockchains are set up so that it is difficult, or impossible, to change their operating protocols.



Miners are not mining cryptocurrency. They are mining for unique identifiers that meet the criteria set by the particular Blockchain.

Mining

The parties maintaining the ledger are usually called miners. They validate transactions, acting as a clearing house and, like bookkeepers, update the ledger. These parties keep a record of all transactions undertaken in the cryptocurrency, called full nodes. This means that many parties hold an identical copy of the ledger, rather than a single party as is the case with a bank holding a customer's funds.

New transactions are recorded in newly created blocks, which are then added to the chain. The most common way that blocks are created for cryptocurrency Blockchains is by using what is called a "proof-of-work" approach. The parties maintaining the ledger (the miners) use their computers to run an algorithm that randomly generates a unique identifier (called a HASH-value).[10] The first machine to generate a HASH-value that meets defined parameters (as evidenced by their proof-of-work) is entitled to add a new Block, with that identifier, to that Blockchain. Bitcoin and Ether use this approach.

Some currencies, such as Emercoin, use a proof-of-stake approach. This method requires the miners to have a stake in the currency and the algorithms are designed to provide a return on those stakes.[11]

Importantly, whether by proof-of-work or proof-of-stake, miners are not mining cryptocurrency. They are mining for identifiers that meet the criteria set by the particular Blockchain.

Rewards

The party that has generated the next Block to be added to the chain is normally awarded a number of newly 'minted' coins in that cryptocurrency, as well as any fees that the parties to the transactions have paid to have their transactions processed and confirmed.

9. For example, the Bitcoin protocol specifies that a maximum of 21 million Bitcoins can be issued.

10. An example of a valid Bitcoin HASH is 00000000000000001e8d6829a8a21adc5d38d0a473b144b6765798e61f98bd1d.

11. There are many reports of Ethereum planning to move from a proof-of-work model to a proof-of-stake model.

Rewards for mining

Each cryptocurrency will have its own mechanism for determining how many new coins they pay to a successful miner. At the time of writing, a miner on the Bitcoin Blockchain receives 12.5 Bitcoins for being the miner to add the next Block. Bitcoin halves that reward after 210,000 Blocks have been added to the Bitcoin Blockchain, which happens approximately every four years. The reward will eventually fall to zero when all of the Bitcoins have been issued. Ethereum issues new coins to miners at a constant rate. For Emercoin, the rewards are designed to give a return to miners, from their efforts on proof-of stake minting, of approximately 6% per annum on their holding of Emercoin.[12]

Most cryptocurrencies have a finite limit on the number of coins that can be issued. This means that fewer coins will be available as a reward for finding a new Block.

In the case of Bitcoin, the maximum supply of 21 million Bitcoins is forecast to be fully issued by around 2040. As the rewards for adding Blocks diminish the transaction (processing) fees will become an increasingly important part of the reward structure to provide incentives for miners to continue to mine for unique identifiers.

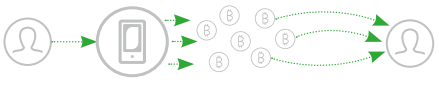
Transaction fees

The transaction fees are the equivalent of debit and credit card processing fees, and are charged to those making cryptocurrency transactions. Again, the mechanisms vary. Bitcoin limits the number of transactions that can be processed and recorded in a new Block. A party wishing to have their transaction processed quickly has to outbid other users. Bitcoin transaction fees therefore vary depending on the level of demand. They have been as low as US$ 0.09, but in December 2017 the median fee was US$23 for a single transaction. Ethereum uses a different mechanism to set its transaction fees.[13] During the same period that the median processing fee for Bitcoin was US$23, the processing fee for Ether was US$0.33.

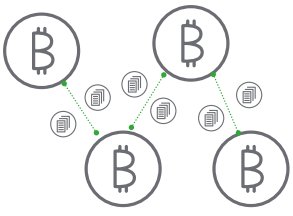
Illustration of Bitcoin

A Bitcoin holder wishes to transfer Bitcoin fractions to a retailer, in exchange for some goods or services.

The Bitcoin holder creates the transaction details using an App. The transaction will specify the number of Bitcoins the holder wants to transfer to the retailer. The Bitcoin holder signs the transaction using their private key, creating a digital signature which is broadcast to the Bitcoin network for verification.



The Bitcoin network checks that the Bitcoin holder has sufficient Bitcoins associated with that key to make the transfer and validates the transaction using the digital signature and the public key. The transaction is included in the new Block, along with transactions from other Bitcoin holders, and added to the Blockchain.



The transfer is complete and the record becomes part of the public Blockchain.

12. The chances of finding a HASH-value is based on the number of Emercoins held by the miner and the length of time the miner has held them.

13. The fees depend on computational complexity, bandwidth use and storage needs.

Financial Reporting

An entity that holds cryptocurrency during or at the end of a financial reporting period will need to assess how to report the related transactions and balances in the financial statements.

There is no doubt that a cryptocurrency is an asset, but what type of asset? Is it cash (or a cash equivalent), another type of financial asset, an intangible asset, a commodity or something else?

Cryptocurrency holdings

Cash and cash equivalents

The most obvious initial question is whether a cryptocurrency meets the definition of cash in IFRS.

Cash is defined in IAS 7 *Statement of Cash Flows* as "cash on hand and demand deposits." IAS 32 *Financial Instruments: Presentation* explains that a demand deposit gives the depositor a "right to obtain cash from the institution." It also states that "Currency (cash) is a financial asset because it represents the medium of exchange and is therefore the basis on which all transactions are measured and recognised in financial statements." [14]

Cash is notes and coins and the right to obtain notes and coins.

The holder of a cryptocurrency does not have notes or coins or the right to notes or coins. They hold a key to an address in a Blockchain that can be used to facilitate peer-to-peer exchanges. Although it is possible to convert a cryptocurrency into cash, perhaps through a Cryptocurrency Exchange, the holder does not have a right to cash.

The holder of a cryptocurrency does not have cash or the right to cash.

Cryptocurrencies, likewise, do not meet the definition of cash equivalents in IAS 7. They are not readily convertible to "known amounts of cash."[15] Additionally, the volatility of cryptocurrency prices is inconsistent with that requirement that cash equivalents can be subject only to insignificant risk of changes in value.

Thinking ahead

In many jurisdictions the amount of physical cash used to settle transactions has been falling as electronic transactions reduce the role of notes and coins. It is possible that central banks will phase out notes and coins or develop their own digital currencies, combining their infrastructure with the trust inherent in existing fiat money. It is also conceivable that some cryptocurrencies could become more stable and more widely used to buy goods and services, with the goods or services priced in a cryptocurrency. If that happens, a widely used cryptocurrency might come to share more and more features of a central bank currency.

It could become increasingly important for regulators and standard setters to monitor the specific characteristics of current and emerging forms of cryptocurrencies. This will help them determine if changes in the characteristics and market conditions would cause any to be considered cash, for financial reporting purposes, or whether the relevant financial reporting standards need to be reviewed.

Other financial assets

If a cryptocurrency is not cash, is it another type of financial asset?

An essential feature of a financial instrument is that it is a financial asset of one party and a financial liability (or equity instrument) of the other party. The definition of a financial asset in IAS 32 refers to cash or a contractual right to receive cash or another financial asset from another entity. Cryptocurrencies do not give the holder a right to cash or to another financial asset.

14. IAS 32:AG3

15. IAS 7:6

Intangible assets

IAS 38 *Intangible Assets* defines an intangible asset as "an identifiable non-monetary asset without physical substance." A cryptocurrency has no physical attributes and will be in the scope of IAS 38, unless it is being held for sale in the ordinary course of business (see **Cryptocurrency held for sale**).

Initial measurement

IAS 38 requires that an intangible asset be measured initially at cost.

When an entity pays cash, or an equivalent, to acquire cryptocurrency the measurement of cost is straightforward. However, often the currency is received in exchange for goods or services or another cryptocurrency.

When an entity accepts cryptocurrency in exchange for goods or services, the entity will need to assess the requirements in the relevant Standard. For example, when a retailer accepts cryptocurrency as payment, it is likely that the retailer will have made a sale in accordance with IFRS 15 *Revenue from Contracts with Customers*. IFRS 15 states that when a customer promises consideration in a form other than cash, an entity measures the non-cash consideration (i.e. the cryptocurrency) at fair value. If an entity cannot reasonably estimate the fair value of the non-cash consideration, the consideration is measured indirectly by reference to the stand-alone selling price of the goods or services delivered to the customer.

A cryptocurrency has no physical attributes and will be accounted for as an intangible asset with an indefinite life, unless it is being held for sale in the ordinary course of business.

Subsequent measurement

IAS 38 has two models for the subsequent measurement of intangible assets—the *Cost model* and the *Revaluation model*. Neither model allows a cryptocurrency to be measured at fair value through profit or loss.

Cost model

When the cost model is applied, the cryptocurrency is carried at cost, less any accumulated impairment losses. Because a cryptocurrency is an indefinite-life intangible asset it would not be amortised.

Impairment is assessed by comparing the carrying amount with its recoverable amount. Recoverable amount is the higher of the asset's fair value less costs of disposal and its value in use. A cryptocurrency such as Bitcoin has no 'use' other than as a medium of exchange. Hence, the impairment assessment will involve comparing the carrying amount with fair value less costs of disposal. That assessment must be made whenever there is an indication that it may be impaired, and at least annually.[16] The practical implication is that if the fair value of a cryptocurrency is below its carrying amount at a reporting date, an impairment loss would be recognised in profit or loss.

IAS 38 requires the disclosure of the gross carrying amount of the cryptocurrency held at the end of the reporting period, along with any accumulated impairment losses.

If the fair value of a cryptocurrency is below its carrying amount at a reporting date, an impairment loss would be recognised in profit or loss.

16. IAS 38:108

IAS 38 requires an assessment, at the end of each reporting period, of whether there is any indication that an impairment loss recognised in prior periods may no longer exist or may have decreased. If any such indication exists, the recoverable amount of that asset is estimated. For a cryptocurrency this will, again, involve measuring the cryptocurrency at fair value.

A reversal of an impairment loss for a cryptocurrency would be recognised in profit or loss and the accumulated impairment losses would be reduced. Impairment loss reversals are just that—they can only be recognised to the extent that they reverse accumulated impairment losses for a particular asset. Increases in value above the carrying amount that would have been determined had no impairment loss been recognised for the asset in prior years are not recognised. For a cryptocurrency this means that an increase in value above cost is not recognised. It is only when a cryptocurrency is sold that the entity will be able to recognise any gain on disposal.

An entity will need to establish a basis for determining the carrying amount of the cryptocurrency to derecognise when it sells or transfers some cryptocurrency to another party. Because cryptocurrency is a fungible asset that is likely to be on the basis of a formula such as first-in, first-out or weighted average. As well as affecting the measurement of the consequences of a sale, that accounting policy will affect the measurement of impairment losses.

Revaluation model

IAS 38 allows intangible assets to be measured after initial recognition using a revaluation model, as an accounting policy choice, but only if there is an active market in the cryptocurrency.

An active market is defined in IFRS 13 *Fair Value Measurement* as one "in which transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis."[17] Cryptocurrency markets are still developing, and some currencies are more actively traded than others. The mere existence of a market or exchange is not sufficient to meet the definition of an active market. An assessment is needed to evaluate whether the frequency and volume of transactions of that market are sufficient to provide pricing information on an ongoing basis for a specific cryptocurrency.

Fair value is the price that would be received to sell the cryptocurrency in an orderly transaction between market participants. Price is not defined in IFRS, but the common meaning of price is the amount of money for which something is bought and sold, and money is notes and coins.[18] Some cryptocurrencies transact only in other cryptocurrencies—i.e. they have never been exchanged for cash. This raises a question as to whether it is necessary for the cryptocurrency to be actively traded for cash for the market to be active.

If the revaluation model is applied, increases in the fair value of a cryptocurrency above its cost are recognised in other comprehensive income (OCI). They are never reclassified into profit or loss, even if the cryptocurrency is sold. In contrast, if the fair value falls below cost any movements are recognised in profit or loss. The presentation is not symmetric.

17. Appendix A of IFRS 13.

18. Oxford English Dictionary.

If the revaluation model is applied, the cryptocurrency would be measured at fair value at the end of each reporting period. Any changes in fair value that result in the cryptocurrency being carried at above cost are recognised in other comprehensive income (OCI). The amounts recognised in OCI are never reclassified into profit or loss, even if the cryptocurrency is sold. In contrast, if the fair value falls below cost any movements are recognised in profit or loss. The presentation is not symmetric.

Thinking ahead

IAS 38 was written to apply to intangible assets that are not dealt with specifically in another Standard.

The accounting requirements it sets out assume that the asset will be used within the business to generate cash flows. This works well for intangible assets such as intellectual property held by pharmaceutical businesses or movie rights. Even less traditional intangible assets such as bandwidth rights, fishing quotas and emission credits give rights to the holder that they can exploit from using the assets.

Cryptocurrency has no such utility. It does nonetheless represent a store of value and as such has similar characteristics to art, antiques, precious metals and stones - items that also do not fit naturally into a specific standard.

The IASB has started to consider whether to provide better guidance for accounting for assets such as cryptocurrency. The challenge here is that these stores of value have different attributes. Some commodities such as gold and oil are fungible whereas works of art are unique. Some investments are intangible and others are tangible. Some assets have utility (gold has industrial purposes and is used in dentistry and jewellery) whereas others, such as cryptocurrencies, have no practical purpose other than as a means of exchange. So providing more guidance would not be an easy task.

Cryptocurrency held for sale

Intangible assets that are held by an entity for sale in the ordinary course of business are inventory. Instead of applying the financial reporting requirements in IAS 38, they fall within the scope of IAS 2 *Inventories*.

For IAS 2 to apply, it will be necessary for an entity to demonstrate that its business model for the cryptocurrency is consistent with holding it for sale in the ordinary course of business.

Inventory is carried at the lower of cost and net realisable value (the estimated selling price in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make the sale).

Any write-down to net realisable value is recognised as part of inventories expense (cost of sales) in profit or loss. Any reversal of a previous write-down is recognised as a reduction of the inventories expense. As with intangible asset impairment losses, the reversal of an inventory write-down is limited to the amount of the original write-down.

IAS 2 requires that the cost of inventory that is interchangeable, which holdings of a specific cryptocurrency clearly are, be assigned using either the first-in, first-out or weighted average cost formula.

IAS 2 requires the disclosure of the amounts written down and reversed.

Commodity broker-traders

IAS 2 has a scope exception for commodity broker-traders. If they measure their inventories at fair value less costs to sell, IAS 2 specifies that they also use this basis for financial reporting purposes and recognise changes in fair value less costs to sell in profit or loss in the period of the change.

The reporting entity would need to demonstrate that it is a broker-trader and that the cryptocurrency is held for sale in the ordinary course of business. IAS 2 describes broker-traders as those who buy or sell commodities for others or on their own account. So some judgment will be required. We have accepted that a cryptocurrency can be a commodity.

If the cryptocurrency is being held as a longer term investment, or as a hedge against another instrument, it is not being held for sale in the ordinary course of business.

The fair value option in IAS 38 has a higher hurdle for the use of fair value than IAS 2. A broker-trader would be permitted to use fair value (less costs to sell) for a cryptocurrency even if there is not an active market in that particular cryptocurrency.

Miners

We emphasised in the section on Blockchain that miners are not mining a cryptocurrency. They are looking for unique identifiers that enable them to add a Block to the chain. The computing is complex, but it comes down to miners being rewarded for the services they perform for a particular Blockchain.

A miner joins the Blockchain based on the general rules of this network. There is no guarantee that a miner will be the one to receive the fees (for adding a new Block and for verifying the transaction). However, the terms of the protocol mean that if the unique identifier found by a miner meets the criteria the miner will receive a specified amount of cryptocurrency.

It is clear that the miner is receiving income from generating the new Block and processing the cryptocurrency transactions. Revenue or income will be recorded if it can be measured reliably. Because the consideration is not cash it would be measured initially at the fair value of the cryptocurrency received. The miner needs to have a contract with the Blockchain to be able to recognise revenue in accordance with IFRS 15 *Revenue from Contracts with Customers*.

The costs the miners incur, which can be substantial, cannot be related to a particular transaction for which the miner will receive consideration-the process to create a new Block uses a random process. Mining costs will not meet the asset recognition criteria and so will be expensed as incurred. Property, plant and equipment (such as the computer equipment) would be depreciated over its useful life and recognised as period costs rather than associated with particular transactions.

Payment for goods or services

An entity could pay for goods or services using a cryptocurrency. Some companies offer to pay their employees in cryptocurrency.

Generally, these non-monetary transactions will need to be recognised at fair value. For example, IAS 16 *Property, Plant and Equipment* states that when plant and equipment is acquired in exchange for a non-monetary asset the cost of the item of property, plant and equipment is measured at fair value. A Standard might indicate that an entity should look to the fair value of the thing being acquired, such as in the plant and equipment example, or to the fair value of the consideration paid (which would be the cryptocurrency) such as for employee remuneration.

ICOs

If an entity is able to create a genuine cryptocurrency (a payment token), the proceeds it collects through an ICO would be income. However, the creation of pure payment tokens is rare. It is much more likely that the holder has issued utility tokens that give the holder the right to acquire future goods or services from the entity or a security token, potentially bringing it within the scope of securities regulations.

Disclosure

Disclosure requirements for intangible assets, and inventory, do not capture many of the attributes of cryptocurrencies. Cryptocurrencies are also outside of the scope of the financial instrument disclosure requirements in IFRS 7 *Financial Instruments: Disclosures*.

However, the general principles of accounting disclosure remain relevant: sufficient information should be provided to understand the economic event or phenomena. IAS 1 *Presentation of Financial Statements* requires the disclosure of information about significant accounting policies and the judgements made in applying the accounting policies that have the most significant effect on the amounts recognised in the financial statements. That Standard also requires information to be disclosed about the assumptions the entity has made about the future, and other major sources of estimation uncertainty, that have a significant risk of resulting in a material adjustment to the carrying amounts of assets within the next financial year.

19. There are some exceptions if fair value is not determinable.

Corporate Governance

We live in a connected world. Directors and senior management need to understand the broader implications of being involved with cryptocurrencies, whether that is through accepting them as payment for goods and services, investing in them or having their entity create a cryptocurrency.

Financial and regulatory risk

The anonymity of cryptocurrency transfers and holdings has raised many concerns about cryptocurrencies being used in illicit activities or to evade tax. One study estimates that half of all Bitcoin transactions have been associated with illegal activity.[20] This could make cryptocurrencies more susceptible to regulatory action, and possibly confiscation if they are deemed to be illegal as a result of past transactions.

Many tax authorities are also reviewing cryptocurrency activities more closely. As well as creating financial risk for the holder of the currency, it raises issues about the appropriateness of being involved with cryptocurrencies that are known to facilitate illegal activities. Those charged with governance should consider the adequacy of the policies they have in place to prevent their entity being involved with illegitimate use of the cryptocurrency, such as money laundering, or transacting with inappropriate parties.

Bangladesh, Bolivia, Ecuador and Morocco have banned cryptocurrencies completely. China has banned exchanges, financial institutions and payment processors from handling cryptocurrencies. Some major banks will not allow cryptocurrencies to be acquired on credit cards they issue. Changes in how cryptocurrencies are regulated or restricted can affect their value and access to them.

Innovations in how companies fund their activities will happen. ICOs are part of this innovation. Unfortunately, some ICOs have been used to by-pass securities law, tainting the concept. Regulators are also keeping a close eye on ICOs. Those charged with governance will need to consider very carefully the regulatory implications of undertaking, or participating in, an ICO.

Corporate responsibility

There is another dimension to cryptocurrencies. In the section on Blockchain we described how the computing efforts to maintain some cryptocurrency Blockchains increase as the solutions become harder to find. One of the consequences is that the amount of energy required to process some cryptocurrency transactions is significantly higher than for more traditional payment mechanisms. For example, the annual electricity consumption required to process the equivalent of 7 Bitcoin transactions per second (the current maximum rate) is estimated to be up to 52 terawatt hours, which is double the annual electricity consumption of Scotland. In contrast, the global Visa credit card network uses less than ½ of 1% of that amount of energy to process 9,000 times more transactions.[21] Those charged with governance should consider whether accepting Bitcoin or other cryptocurrencies as payment for its goods or services is consistent with the entity's desired environmental footprint and the entity's own energy consumption objectives.[22]

Those charged with governance should consider whether accepting Bitcoin or other cryptocurrencies as payment for its goods or services is consistent with the entity's desired environmental footprint and the entity's own energy consumption objectives.

20 A speech by Governor of the Bank of England to the inaugural Scottish Economics Conference (The Future of Money, Mark Carney, Edinburgh University, March 2018) refers to a 2018 study by Sean Foley, Jonathan R. Karlsen, and Tālis J. Putniņš 'Sex, Drugs, and Bitcoin: How Much Illegal Activity Is Financed Through Cryptocurrencies?' available at http://dx.doi.org/10.2139/ssrn.3102645.

21. This is also discussed in the Carney speech.

22. See also The Deloitte publication Thinking Allowed: Climate-related disclosure (Integrating climate-related information in the annual report).

Operating risks

Cryptocurrencies have different risk characteristics to other intangible assets. The Blockchain is a record of transactions. To be able to use the cryptocurrencies they own, the holder needs to have a key. If that key is lost the cryptocurrency associated with it is lost, forever. It will be important for entities to think about the adequacy of their back-up and recovery processes to prevent the loss of a key, and the loss of the related assets.

Access to the key gives the holder access to the associated cryptocurrency. Special procedures might have to be put in place such as encrypting the key or splitting it into components (shards) and having protocols that ensure only authorised people can reassemble the key.

You cannot simply ask a cryptocurrency Blockchain community to verify an entity's holding of cryptocurrency. That is not even a valid notion. The nature of these assets therefore brings new challenges around financial controls and auditability. For example, it might be necessary for management to recreate the balances for each key from the entire public Blockchain ledger to provide it with the assurance it needs that it has stated its holdings of cryptocurrency correctly. These are new challenges.

Final thoughts

When innovations come along, you can generally find financial reporting solutions within the requirements of IFRS Standards. This is the case with cryptocurrencies.

The current requirements in IFRS Standards classify cryptocurrencies as intangible assets, with an indefinite life. If the cryptocurrency is held for sale in the ordinary course of business it is inventory. However, a significant amount of judgement is required to apply the current Standards—whether the cryptocurrency is traded in an active market, measuring the fair value of a non-traded cryptocurrency, determining whether a cryptocurrency is "held for sale" and whether an entity is a commodity broker-trader.

There is no compelling argument for developing financial reporting requirements just for "cryptocurrencies". IFRS Standards should provide principles that are able to guide the financial reporting on the basis of the economic characteristics of the asset, or liability, and not be distracted by its form.

Creating new financial reporting requirements takes several years. By the time the IASB could develop a new Standard it is likely that cryptocurrencies will have evolved away from their current form. The IASB's research programme seems the ideal place to test the resilience of IFRS Standards in the new digital world.

Selected Deloitte resources

Digital Currency
Bitcoin: The new gold rush?

Initial Coin Offerings
Initial Coin Offering: A new paradigm

Blockchain
Bitcoin, Blockchain & distributed ledgers: Caught between promise and reality

Blockchain: A game changer for audit processes

Blockchain and Cybersecurity. Let's Discuss

Blockchain in Commercial Real Estate

Blockchain: Democratized trust - Distributed ledgers and the future of value

Blockchain Enigma. Paradox. Opportunity

Blockchain: Trust Economy

Impacts of the blockchain on fund distribution

Picture Perfect – A blueprint for digital identity

Taking blockchain live

Contacts

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Notes

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