Bitcoin – Its Economics for Financial Reporting

Tan, Boon Seng; Low, Kin Yew

2017

Tan, B. S., & Low, K. Y. (2017). Bitcoin – Its Economics for Financial Reporting. Australian Accounting Review, 27(2), 220-227.

<https://hdl.handle.net/10356/83781>

<https://doi.org/10.1111/auar.12167>

© 2017 CPA Australia. First published in the Australia Accounting Review –

<http://onlinelibrary.wiley.com/doi/10.1111/auar.12167/abstract;jsessionid=4D5E8BDF6793B4FEB5142CEEED3ED4>

Used with permission.

Downloaded on 26 Apr 2023 11:16:59 SGT

Bitcoin - Its Economics for Financial Reporting

Tan Boon Seng*, Ph.D.
Institute of Singapore Chartered Accountants
60 Cecil Street, ISCA House, Singapore 049709
Tel: (65) 6749-8060. Fax (65) 6749-8061
Email: boonseng.tan@gmail.com

Low Kin Yew, PhD
Associate Professor
Nanyang Technological University - Nanyang Business School
S3-B2a-18, Nanyang Avenue, Singapore 639798
Tel: (65) 6790-4903. Fax: (65) 6792-4217
Email: alowky@ntu.edu.sg

*corresponding author

Summary at a Glance

There is yet any official guidance on the financial reporting of Bitcoin transaction from the standard setters as tax accounting guidance begins to appear in 2014. We argue that the accounting principle of faithful representation requires interpreting the economic substance for financial reporting that varies with reporting entity: trading firms recognize Bitcoin like a foreign currency and measure the revenue, or expense, at the equivalent amount of the reporting currency; digital currency exchanges recognize Bitcoin as goods in line with tax accounting treatment. An *Economica* paper describing cigarette being used as commodity money in a POW camp has alluded to this economic basis. This paper contributes to the thinking process which may help standard setter issue an interpretation

Abstract

There is yet any official guidance on the financial reporting of Bitcoin transaction from the standard setters as the crypto-currency become increasingly popular. Tax accounting guidance began to appear in 2014. Designed as a decentralized currency, Bitcoin will not become a reporting currency and will instead complement fiat money. We argue that the accounting principle of faithful representation requires interpreting the economic substance for financial reporting that varies with reporting entity: trading firms recognize Bitcoin like a foreign currency and measure the revenue, or expense, at the equivalent amount of the reporting currency; digital currency exchanges recognize Bitcoin as goods in line with tax accounting treatment. An *Economica* paper by Radford (1945) describing cigarette being used as commodity money in a POW camp has alluded to this economic basis. This paper applies accounting principle to a practical issue and contributes to the thinking process which may help standard setter issue an interpretation.

Key Words: Bitcoin, Reporting Entity, Faithful Representation, Financial Reporting

JEL Classification: JEL: M41 (Accounting); M48 (Government Policy and Regulation)

1. Introduction

The origin of digital currencies can be traced to the 1990s during the dot.com bubble. Until recent years, digital currencies remain as a part of specialized payment systems linked to the fiat money system. For example, Amazon Coins which can be bought from Amazon.com using a credit card and be used for purchasing goods on Amazon's e-commerce platform. The existence of these digital currencies is largely unnoticed until Bitcoin comes into the picture with the innovation of using cryptography and the block chain technology in its implementation. The size of the Bitcoin economy is unprecedented by previous digital currencies. On 24 March 2015, Bitcoin is the largest crypto-currency by market capitalization (USD 3.7b at a price of USD 266 for 13.97m Bitcoin) and trade volume (about USD 20m/day) using data from <http://coinmarketcap.com/> which tracks market capitalization and trade volume of crypto-currency. A major digital currency exchanges (DICE) <https://coinbase.com> alone has more than 2.6m Bitcoin users. If these users were the population of a country, this country will rank around 141 (Jamaica) out of 247. In 2014, Overstock.com becomes the first major retailer to accept Bitcoin as an alternative payment mode, and is followed by several major companies such as Microsoft, Dell Computers and Expedia. The rising significance of Bitcoin attracts the attention of tax regulators to release tax guidance on digital currencies in 2014. We argue that the use of digital currencies in business is becoming material.

In contrast, the accounting standard setters (the Financial Accounting Standards Board and International Accounting Standards Board) have no pronouncement, nor have started any project leading to a pronouncement, on digital currencies even by the end of 2015. The tax guidance confuses some accountants looking for guidance on financial accounting for Bitcoin. For example, the US Inland Revenue Services stated in 2014 that "Virtual Currency Is Treated as Property for U.S. Federal Tax Purposes" to mean that virtual currency is not treated as currency for tax purpose. However, some accountants contemplate the holdings of Bitcoin as possibly coming under IAS 16: Property, Plant and Equipment, or IAS 38: Intangible Asset. The economic substance of how Bitcoin is used will preclude the application of these two standards to account for Bitcoin holdings even if tax accounting refers to Bitcoin as a property. The use of Bitcoin does not lead to the production of goods or services which is required of assets for IAS 16. The use of Bitcoin also does not lead to future economic benefit other than being a medium of exchange or investment which means IAS 38 is also not applicable. Monetary authorities generally do not recognize Bitcoin as money, and companies generally have not considered Bitcoin to be a viable financial instrument for investment yet due to its volatility. Hence, there is no consensus yet that Bitcoin is a financial asset or money. Therefore, without guidance from standard setters, increasing use of digital currency in business poses a potential challenge to financial accounting.

This paper contributes to clarify the financial accounting for Bitcoin and advocates the case for an interpretation from standard setters. We argue that the conceptual framework should provide the basis for accountants to make judgement on appropriate accounting treatment on the basis of the economic substance. We further argue that there are two cases to consider. Our analysis requires accountants to understand the economics of money, Bitcoin and its ecosystem, and the accounting principle of faithful representation embodied in the conceptual framework.

2. A Concise Economic Perspective on Money

We argue later in the paper that the economics of using Bitcoin differs between two user groups – one group use Bitcoin as money and the other group use it as a commodity. This section gives a concise background about the economic concept of money.

The need for money arises from the economic efficiency of the exchange of goods and services (hereafter goods for brevity): it is more efficient to specialize in producing goods which we have a comparative advantage in producing, and then exchange the goods with others to obtain what we need, than to produce everything by ourselves. The problem of such an exchange, called barter trade, is to find someone who want our goods and have the goods we want. This problem is elegantly called the “coincidence of want” problem. A solution to the problem is to use money (or currency) as the intermediary: goods are sold for – and bought with – a sum of money. Money, instead of goods, then becomes the common medium of exchange.

There are two subtle economic consequences when money comes into play. First, the value of any goods can be determined with reference to money instead of countless other goods: Money becomes a numéraire, i.e. a unit of account. Second, money is generally not physically perishable and can be saved for spending later, making it a store of value. Perishability does occur in the sense that we have inflation and currency depreciation. Central banks today work hard using monetary policy to preserve the stability of their national currencies against inflation and foreign currency movement.

Therefore, the three main functions of money are as medium of exchange, unit of account and store of value. Conceptually, any token serving these three functions is considered money. Over time, the token used as money evolved from commodity (barley, cowry shell, gold, silver and so on) to paper notes guarantee by government (fiat money) and now even virtual data (digital currency). The distinction between money and commodity is a fine line: [Radford \(1945\)](#) analyses the economy of a prisoner-of-war (POW) camp that generates spontaneously using cigarettes as the token for money. The Radford paper is well discussed about the desirable characteristics of the token for money: the token should be standardized, portable, durable, divisible and widely accepted for payment.

The value of fiat money lies in the government guarantee, and the reserved banking system multiplies the effect of money in modern economies. Both facts taken together mean that financial intermediation, such as banking, and money supply must be regulated to ensure financial stability which consequently affects investment, employment and economic growth. With fiat money as its foundation, the modern financial system invents financial instruments for debt, currency futures and options.

3. A Concise Lesson on Bitcoin: Its Ecosystem and History

Bitcoin is an online peer-to-peer payment system invented in 2008 ([Nakamoto, 2008](#)) and released as open-source software in 2009. Each Bitcoin is sub-divided into parts of thousand (milli-Bitcoin), million (micro-Bitcoin) and 100 million (Satoshi). With just internet access and a Bitcoin address,

anyone can send and receive Bitcoin all over the world. Users obtain a Bitcoin address either by installing a suitable offline software client – on a computer or a smartphone – or using an online service. Whether online or offline, an electronic wallet is created where data are stored

The wallet contains a private key which is used to generate public keys forming a matched-pair each time. A public key is then hashed (i.e., abbreviated using a technical procedure) to form an address which is available to others for receiving payment. The private key is also needed to sign a transaction to send payment, which is a message to transfer value among wallets. The authenticity of the signature is validated with the signer's public key which is widely available. The logic of the match-pair is that the public key can be widely distributed for validating the signing by private key while keeping the private key secured.

Signing an unconfirmed transaction is a proof that the transaction originates from the sender address, but does not prove that the Bitcoin is available for spending. Confirmation occurs when the transaction is written into a shared public database of all confirmed Bitcoin transactions – the block-chain – via the process of mining. Mining maintains the integrity of the block-chain while extending it with blocks, one at a time, when a group of transactions are confirmed.

Transactions are broadcasted by wallets and processed by nodes in the Bitcoin network into unconfirmed blocks. Each unconfirmed block contains some or all of the yet-to-be confirmed transactions, a reference to the confirmed block immediately before it, and the solution to a cryptography problem¹ unique to the unconfirmed block. Miners compete to be the first to solve the cryptographic problem (i.e., to confirm the block which is chained to the last confirmed block). Hence, mining extends a database (block-chain) containing all the Bitcoin transactions that have ever occurred by extending the “old” database by one block containing the latest transactions. The successful miner is rewarded with Bitcoin for confirming the block into the block-chain. Appendix A provides an illustration of a Bitcoin transaction using a hypothetical example of an online trade.

The innovation introduced by Bitcoin is the use of cryptography embodied in the block-chain technology with the following effects: Firstly, transactions are not reversible. Secondly, transactions in blocks deeper away from the block that is currently being confirmed are more secured. In fact, a wallet generally considers a transaction with six confirmations (i.e., the transaction is in a block that is six-blocks deep) as secured enough for accepting payment. Thirdly, the supply² of Bitcoin is determined by the program at a decreasing rate with a cap of 21m Bitcoin. Specifically, the program generate a block every 10 minutes, rewards 50 Bitcoin for each confirmed block when the network started in 2009 but will reduce the reward by 50% after confirmations of sets of 210,000 blocks iteratively, i.e. halving the reward approximately every four years. The declining reward means that the incentive for mining will gradually shift, from reward of Bitcoin for confirming blocks, to transaction fee. Finally, since all Bitcoin transactions are recorded in the block-chain which is publicly available, the transparency allows establishing a decentralized trusted relation for trade using

¹ Finding a value that when hashed twice with SHA-256 begins with a number of zero bits.

² For clarity, the total amount of Bitcoin “in circulation” is only derived from mining just as all the fiat money is produced by the central bank. However, consumers who are not miners can obtain Bitcoin from DICE, which are ultimately traced to Bitcoin created through mining.

Bitcoin. However, the transparency is at the wallet level, but the identity of the person involved in the trade is anonymous.

The significance of the Bitcoin innovation is the creation of the decentralized trusted relation, which contrasts with the centralized trusted relation systems used in fiat money payment – mediated via financial institutions (bank transfer and credit card) – and the digital currencies that comes before Bitcoin. The Bitcoin whitepaper ([Nakamoto, 2008](#)) states:

‘Commerce on the Internet has come to rely almost exclusively on financial institutions serving as trusted third parties to process electronic payments. While the system works well enough for most transactions, it still suffers from the inherent weaknesses of the trust based model.’

Bitcoin is superior to centralized trust based system in four aspects: Firstly, the transaction cost is lower for business – credit card processing fee and bank transfer is around 3-5% of sales, while Bitcoin can be converted to local currency from digital currency exchanges (hereafter, DICE) for a fee at around 1% (FutureInc, 2014). This difference partially reflects the operating cost in the trusted relation system, which in the Bitcoin case is provided free by the miners, but can increase when transaction fee becomes significant. However, unlike fee charged for financial transaction, the Bitcoin transaction fee is independent of the size of transaction because the mining effort is independent of size. There is also no merchant setup fee or termination fee for transaction equipment as Bitcoin wallets are freeware. Secondly, the trusted relation model requires sellers to obtain personal information (such as credit card information) that need to be secured, and become a business liability when that security is breached. Thirdly, Bitcoin payment is generally faster than a bank transfer, but can be slower than credit card payment due to the time required for miners to confirm the transaction.³ Alternative crypto-currency such as Litecoin has been designed for quicker processing of transaction. Finally, crypto-currency might be the only feasible alternative when trading involves jurisdictions with fragile financial institution and currency controls.

With just wallets, the block-chain and miners, the Bitcoin economy would be small because non-miners cannot have Bitcoin. With digital currency exchanges (DICE) – firms that change Bitcoin (and other digital currencies) to fiat money and vice versa – internet savvy buyers who are not miners can obtain Bitcoin for spending, and sellers can accept Bitcoin without holding the crypto-currency for long period. The role of DICE is a game changer, both for better and for worse⁴, for the Bitcoin ecosystem.

The Bitcoin ecosystem is the foundation to its success. While Bitcoin is significant for online transactions, it clearly will not replace fiat money in any national economy: it is simply easier for most people to transact with fiat money than meddling with electronic wallets.

Besides fiat money being easier to use and more widely adopted than Bitcoin, several other hurdles reduce the users’ confidence to adopt Bitcoin. Firstly, Bitcoin is transparent at the wallet level but anonymous at the personal level, making it potentially useful for paying illicit goods, money

³ Bitcoin transaction is instant but unsecured if one accepts payment without transaction confirmation.

⁴ DICE increase Bitcoin liquidity for the better of Bitcoin, but also attract regulatory attention in cases involving Mt Gox and Silk Road.

laundering and terrorism finance. In 2013, the black market website Silk Road, which accepted Bitcoin to trade illicit goods like narcotics and weapons, was seized. Secondly, in stark contrast to strict regulation for financial intermediaries globally, regulation of DICE began only in recent years (e.g., US in 2011, UK in 2015) and mainly focused on the problem of money laundering. Given that major exchanges also host online wallets for consumers – analogous to taking deposit by banks – there is a risk that the closure of an exchange results in significant consumer loss. In 2014, Mt Gox the largest exchange then, went bankrupt with 850,000 Bitcoin missing. Thirdly, the volatility of Bitcoin against major currency is remarkable, plunging from the USD1,100 peak in 2013 to USD350 in the late 2014. The volatility is due to fluctuating demand from regulatory announcement and events.⁵ As the crypto-currency matures and regulatory framework stabilizes, this volatility is likely to diminish. Meanwhile, the volatility is likely to limit Bitcoin investors (or speculators) to individuals instead of firms because Bitcoin is not an investment grade asset. Bitcoin derivatives are starting to enter financial market in 2015 to help users manage volatility risk⁶.

Nothing is certain except death and taxes – and both have been asked about Bitcoin. A common argument predicting the death of Bitcoin is the inevitable deflation in the Bitcoin economy arising from the following equation from the quantity theory of money:

$$\text{Money base} * \text{Velocity} = \text{Price} * \text{Aggregate Demand}$$

The money base for Bitcoin at anytime is fixed by the program, and the velocity of circulation is roughly fixed by the transacting Bitcoin technology. The left hand side of the equation is fixed. From inspecting the equation, if the demand for Bitcoin as a medium of exchange increases, the price of the transacting goods in terms of Bitcoin must fall (i.e., deflation occurs).

For the case of fiat money, deflation reduces the incentive to invest and consume: a falling price gives lender the incentive to hoard cash in expectation of higher future purchasing power – and reduces capital stock in the long run and aggregate demand in the short run. The economy is not sustainable under perpetual deflation. However, the fly in the ointment for the case of Bitcoin is that Bitcoin will at most be a complement to fiat money in the existing financial system. The reasons are: fiat money is easier to use for most consumers, most government will only recognize fiat money as legal tender⁷, and there is substantial legal hurdle for Bitcoin to be part of the existing financial system. The deflation in Bitcoin is simply reflected as appreciation against fiat money because there is no economy wide deflation that result in postponing investment or consumption.

At least four jurisdictions (US, UK, Australia and Singapore) have released tax guidance on treatment of Bitcoin by 2014 – unanimously treating Bitcoin as goods or assets, and not as currency, for tax purpose. This outcome is not surprising because most jurisdictions do not consider Bitcoin as a legal tender – the honor goes to the fiat money issued by its central bank.

⁵ Given the short run supply is a vertical line the price of Bitcoin in USD only depends on demand curve shifts.

⁶ See <http://blogs.wsj.com/moneybeat/2015/02/27/bitcoin-swaps-exchange-gets-public-listing-via-reverse-merger/> (accessed 24 March 2015)

⁷ In 2015, Germany is the rare exception to recognize Bitcoin as legal tender.

Using the case of Australia for illustration, payment using Bitcoin can result in capital gain tax from realizing profit from selling an asset (exemption for individual if the cost base for Bitcoin does not exceed AUD10,000). Payment using Bitcoin can attract goods and services tax (GST) if the firm is a GST-registered entity. Receiving Bitcoin has no immediate tax implication but spending the Bitcoin later does. The tax payer has to keep track of the historical exchange rates when each Bitcoin payment is received, and an inventory policy (e.g., first-in, first-out or weighted average), to determine the capital gain/loss, or the GST payable, when the Bitcoin is spend. Tax guidance for paying employee using Bitcoin is provided, but the easier way of using fiat money is more likely to be adopted by firms.

In summary, the key innovation in Bitcoin – more accurately the class of cryptocurrency starting from Bitcoin – is that it operates by its own demand-supply system and not administered by a central authority. This implication produces three corollary facts: Bitcoin is not tied to any specialized payment system and can be more widely adopted than previous digital currencies; Bitcoin is not backed by any government who may manage its volatility through monetary policy; private parties issue Bitcoin which is then used by other users for payment. The corollary facts make Bitcoin a self-sustained system in contrast to prior digital currencies. However, the self-sustained Bitcoin economy is limited to a small group of technologically competent users linked to original issuers. The market for Bitcoin is tremendously expanded by DICE that arise because of digital currencies that exist before Bitcoin.

4. Conceptual Issue of the Financial Accounting of Bitcoin

We classify the ownership of Bitcoin into three groups: individuals, trading firms and DICE. There are two sub-groups of individuals – miners (few individuals) and non-miners (most individuals). Individuals may need to submit a tax return but do not need to prepare any financial statements. There are also two groups of trading firms – most are business-to-consumer (B2C) firms that accept Bitcoin as an alternative payment to fiat money from consumer, and a few are business-to-business (B2B) firms that use Bitcoin together with fiat money to buy and sell goods.⁸ The final group is the DICE. Some trading firms (excluding sole proprietors and some partnerships) and DICE need to prepare financial statements.

Two fundamental qualitative characteristics of financial information are specified in the IFRS Conceptual framework: relevance and faithful representation. Faithful representation means that financial information represents the substance of an economic phenomenon rather than merely representing its legal form.⁹ For example, in the accounting of a capital lease, even if the legal

⁸ A rare B2B example is Tomcar Australia, see <http://www.coindesk.com/bitcoin-b2b-payments/> (accessed 26 March 2015), that reported the difficulty of finding supplier that accept Bitcoin despite the low transaction costs.

⁹ The pre-2010 IFRS Conceptual Framework captures this concept as “Substance over Form” which is subsumed in the subsequent framework by the concept of “Faithful Representation”. The basis of conclusion to the current framework on Chapter 3 (at BC3.26) explains that substance over form is not considered a separate component of faithful representation because it would be redundant. Accounting for something in accordance with its legal form rather than its economic substance could not result in a faithful representation.

ownership of the asset does not belong to the lessee, the lessee recognizes the asset in its books together with a corresponding lease liability. The economic substance in a capital lease is that the lessee, even without legal ownership, essentially controls the use and obtains the benefit of the lease asset over its lease term.

The demand for tax computation is one of the major drivers for financial reporting historically, but tax accounting and financial accounting use different reporting concepts. Furthermore, taxable income is applied to individuals and firms, while financial accounting is applicable to a narrower group of firms. As of 2015, the tax guidance by several jurisdictions is unanimous in treating Bitcoin as property (i.e., not a currency but an asset) but there is yet any official guidance on financial accounting. We argue that although tax accounting treats Bitcoin as a financial asset – meaning tax entities are subjected to capital gain tax – financial accounting of Bitcoin transaction should use the Conceptual Framework to determine the appropriate accounting treatment.

5. Economics of Bitcoin for Financial Accounting

It is easy to recognize Bitcoin as an asset – its holder can derive future economic benefit from it and the amount is easily measured. Examining the property of Bitcoin as a medium of exchange, unit of account and store of value, Bitcoin qualify as a token serving these three functions and be considered as money, possibly as “Cash or Cash Equivalent”. Given the high potential returns and volatility associated with Bitcoin historically, Bitcoin can be considered a financial asset used for investment. Tax guidance in fact considers Bitcoin as a financial asset subjected to capital gain tax. However, Bitcoin investors or speculators are generally individuals, who pay taxes but are not financial reporting entities, because Bitcoin is not an investment-grade financial asset due to its volatility. The tax treatment is an additional disincentive for a reporting entity to hold Bitcoin for investment. The user groups that need to prepare financial statements are therefore trading firms and DICE.

5.1: The Trading Firm Case

Anecdotal evidence from trading firms – such as Overstock.com (B2C) and Tomcar (B2B) – shows that Bitcoin is used as an alternate mode of receiving payment and is quickly converted to local currencies through a DICE. The firms do not hold Bitcoin for long periods and avoid two problems for themselves: exposure to volatility and messy tax accounting. For Bitcoin payment in the B2B case, the firms can easily obtain Bitcoin from a DICE instead of holding them, and avoid the same two problems stated earlier. Therefore, the economic substance in both cases is the use of Bitcoin as a medium of exchange: we just need to recognize revenue or expense at the transacted exchange rate. There is no balance sheet item if there is no holding of Bitcoin.

For example, suppose Overstock.com (reporting in USD) sells a widget for one Bitcoin, equivalent to USD200 today, and Coinbase.com (a DICE) charges 1% commission for conversion. For a cash sale, Overstock credits Revenue USD200 and debit Cash USD198 and Currency Exchange Expense USD2 immediately. For a credit sale, Overstock credits Revenue USD200 and debit Account Receivable USD200 immediately. However, the price of Bitcoin will change when the receivable is realized.

Suppose that the rate is USD100 per Bitcoin when the receivable is duly paid 30 days later. Overstock then credits Account Receivable USD200 and debits Cash USD99, Currency Exchange Expense USD1, and Gain/Loss from Exchange Difference USD100. The same principles for accounting of cash and credit sales can be applied to cash and credit purchase. These principles are well understood by accountants when dealing with foreign currencies.

The above example highlights the exchange rate risk when offering credit for selling goods in foreign currencies. The usual solution for hedging with forward or future contracts does not yet exist substantially with Bitcoin in 2015, despite the fact that Bitcoin swap is beginning to appear in the market. Hedging receivable is difficult, but hedging payable – that arises from purchase on credit – is technically possible by holding Bitcoin from the date of purchase until the payment date.¹⁰ We argue that because the economic substance of the transaction is using Bitcoin as a medium of exchange for trading goods, the temporary holdings of Bitcoin should be classified as ‘Cash or Cash Equivalents’.

However, FutureInc (2014) raises two possible objections to treating Bitcoin as ‘Cash or Cash Equivalents’: the lack of general level of acceptance of Bitcoin as a currency and significant level of volatility. The counterargument is that the size of Bitcoin users is similar to the population of small countries with fiat money as currency. There also does not appear to be any problem with Bitcoin-fiat money conversions via DICE. The appearance of acceptability problem occurs when we expect an online currency to have the same acceptability offline in a jurisdiction. Many fiat monies also have low acceptance outside the issuing jurisdictions.

It is very hard to rebut the volatility objection unless we compare Bitcoin to the most volatile currencies. The following is the plot of the daily change in the exchange rate of Bitcoin and Russian Rouble against the USD in the last 180 days to 27 March 2015.

Fig 1: Plot of daily percentage fluctuation of USD/ Bitcoin and USD/Rouble from Sep 9, 2014 to Mar 27, 2015

Source: <http://www.oanda.com/currency/historical-rates/>

There is no doubt that stability is a desirable characteristic of a currency used as a store of value and Bitcoin performs badly. Volatility may dampen as the crypto-currency matures. We argue that

¹⁰ Doing so will subject the buyer to cumbersome tax accounting, and the seller to volatility, during the credit term period. The alternatives such as using fiat currency or not offering credit term should make this arrangement a rare transaction.

Russian accountants would consider the rouble a currency despite Figure 1 showing its volatility is close to the Bitcoin. Low volatility is a desired characteristic (for store of value) for a currency but not an indispensable characteristic. A similar point is made by Cuadras-Morató (1997) using a search-theoretical model for perishable medium of exchange in a provocatively titled paper: “Can Ice Cream be Money?”

5.2: The DICE case

While trading firms use Bitcoin as a medium of exchange and hence the financial accounting is essentially the familiar case of foreign currency accounting, the economics of DICE is very different.

Suppose a DICE records its holdings of Bitcoin as Cash and Cash Equivalents, then what should it report as revenue? DICE mostly¹¹ acquire Bitcoin from miners, consumers and trading firms that have excess Bitcoin they do not want to hold. DICE then sell the Bitcoin to realise a profit either by a percentage commission or a bid-ask spread. The business model of the DICE is no different from a trader of goods like widget – the Bitcoin is the traded goods. Suppose the DICE only deals in Bitcoin and USD. Its revenue is the USD obtained from selling the Bitcoin, its cost of sales is the USD paid to acquire the Bitcoin sold, and the unsold Bitcoin becomes its inventory. Accounting for the holdings of Bitcoin in DICE as Cash and Cash Equivalents will cause inconsistent treatment with the other accounts in the financial statements. The accounting of Bitcoin for DICE is essentially a retail business model with Bitcoin as the traded goods. The applicable accounting standard is *IAS 2: Inventory*, which allows for holding of Bitcoin for sales¹² that is consistent with the tax accounting treatment.

DICE often host online wallets as a service for customers to encourage them to use their service instead of competitors'. Online wallets appear to be similar to bank deposits: The customer is at risk of losing the deposit (or Bitcoin in the online wallet) if there is a bank run (or the DICE becomes bankrupt like in Mt. Gox). Moreover, German regulations¹³ have recognized Bitcoin as financial instrument with implication on its Tax Code. These considerations may have implications to treat such Bitcoin in hosted wallets as financial instruments. For financial accounting, *IAS 32: Financial Instrument – Presentation* defines a financial instrument as ‘any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity’. Unlike banks that have rights to the deposits and aggregate them to lend out as loans, DICE do not have rights to the Bitcoin in hosted wallets and do not have access to participate in the loanable fund market. Therefore, the Bitcoin in wallets hosted by DICE involves transfer of ownership and not the creation of financial instruments. Therefore, *IAS 32: Financial Instrument – Presentation* and *IFRS 9: Financial Instruments* are not applicable to Bitcoin accounting as the economics do not satisfy the definition for financial instrument in DICE or trading firms. The hosting of online wallets for customers by DICE is analogous to the hosting of safe deposit boxes for customers by banks.

¹¹ DICE are also involved in mining and hosting wallets in practice, but their main activity is the trading of Bitcoin for a profit.

¹² IAS 32: Inventory also allows holding for used in the case of raw material inventory, this consideration is irrelevant here.

¹³ See Future inc (2014) p.36.

Our suggested treatment of Bitcoin appears paradoxical – it is a currency in trading firms and a good in DICE. It is useful to reflect on Radford's POW camp, where a cigarette is a good if you consume it and a currency if you use it as a medium of exchange. Seen in the light of faithful representation that reflects the economic substance rather than the legal form, the paradox appears sensible.

6. Conclusion

Making accounting judgement requires the accountant knowing not just the accounting standards but also the economics of the business. For a new phenomenon like Bitcoin, the difficulty faced by most accountants is to understand the underlying economics which requires a working knowledge of the Bitcoin ecosystem. This paper should be helpful but is not the authoritative guidance.

We conclude that no new accounting standard is needed for financial reporting of Bitcoin. Moreover, the due process would take several years even if new standards are issued. What is needed is an authoritative interpretation, through IFRS Interpretation Committees, of the relevant accounting standards with respect to Bitcoin. This paper could help the Interpretation Committee in its deliberation.

Reference

Cuadras-Morató, X. (1997) "Can Ice Cream be Money?: Perishable Medium of Exchange" *Journal of Economics*, 66(2): 103-125.

FutureInc (2014) "Digital Currencies: Where to From Here?" A Report by the Chartered Accountants Australia and New Zealand, retrieved at <http://www.charteredaccountants.com.au/futureinc/publications> (accessed 26 March 2015)

Nakamoto, S. (2008) "Bitcoin: A Peer-to-Peer Electronic Cash System," unpublished manuscript, retrieved at <http://pdos.csail.mit.edu/6.824/papers/bitcoin.pdf> (accessed 26 March 2015)

Radford, R.A. (1945) "The Economic Organisation of a POW Camp" *Economica*, 12(48): 189-201.

Appendix A:

A simple illustration of a cash purchase using Bitcoin

Source: <http://www.oanda.com/currency/historical-rates/>