

Accounting for cryptographic assets and related transactions

Auteur : Mounis, Meryam

Promoteur(s) : Schumesch, Patrice

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Accounting for Cryptographic Assets And Related Transactions

Jury:

Promoter:

Patrice SCHUMESCH

Reader:

Pauline DEPRAETERE

Dissertation by

Meryam MOUNIS

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List of Abbreviations

AAR: Australian Accounting Review

AASB: Australian Accounting Standards

AcSB: Canadian Standards Board

AICPA: The American Institute of Certified Public Accountants

AML: Anti-Money Laundering Act

ARTs: Asset-Referenced Tokens

ASC: Accounting Standard Board

ATM: Automated Teller Machine

BaFin: Federal Financial Supervisory Authority

BASB: the Belgian Accounting Standard Board

BE GAAP: Belgian Generally Accepted Accounting Principals

BIS: Bank of International Settlement

CASPs: Cryptographie Assets Services Providers

CBDC: Central Bank Digital Currency

CFA: Chartered Financial Analyst Institute

CIMA: Chartered Institute of Management Accountants

CNC: Commission des Normes Compatibles

DLT: Distributed Ledger Technology

EC: European Council

ECB: European Central Bank

EFRAG: European Financial Reporting Advisory Group

EIOPA: European Insurance and Occupational Pensions Authority

ELMIR: European Market Infrastructure Regulation

EP: European Parliament

ESBA: Executive Sounding Board Associates

ESMA: European Securities and Markets Authority

EU: European Union

FASB: Financial Accounting Standards Board

FCA: Financial Conduct Authority

FINMA: Swiss Financial Markets Authority

FSB: the Financial stability board

FSMA: Financial Services and Markets Authority

FT: Financial Terrorism

GAAP: Generally Accepted Accounting Principals

GASB: Government Accounting Standards Board

IASB: International Accounting Standards Board

IASC: International Accounting Standards Committee

IAS: International Accounting Standards

ICOs: Initial Coin Offerings

IFRIC: International Financial Reporting Interpretations Committee

IFRS: International Financial Report Standards

IMB: International Management Board

IMF: International Monetary Fund

IOSCO: International Organization of Securities Commissions

IPO: Initial Public Offering

IRS: the Internal Revenue Service

ISSB: Sustainability Standards Board

KYC: know-your-customer

LHoFT: Luxembourg House of Financial Technology

MICA: Markets in Crypto-assets

MiFID II: Markets in Financial Instruments Directive

MROS: Money Laundering Reporting Office Switzerland

MSBs: Money Service Businesses

NCAs: Relevant National Competent Authorities

NYDFS: New York State Department of Financial Services

OMFIF: Official Monetary and Financial Institutions Forum

SAR: Suspicious Activity Report

SEC: Securities and Exchange Commission

SMEs: Small and Medium-sized Enterprises

TFRS: Thai Financial Reporting Standards

Introduction:

Cryptographic assets are digital representations recorded on a distributed ledger known as Blockchain¹ (EY, 2018). They provide an alternative means of exchange not backed by central banks or sovereign governments (Todorova, 2019). In many cases, they also represent claims on future goods or services or even digital ownership in a particular crypto business (EFRAG, 2020). Consequently, this unique nature can be considered confusing, risky, and unreliable. Which raises concerns about their regulations and appropriate accounting treatment (Procházka, 2018).

During the last years, cryptographic assets have gained the attention of investors and governmental regulators. The increase in interest in cryptographic assets and related products results mainly from the growth that these assets have experienced in recent years. In 2021 the total market capitalization of the cryptographic assets reached nearly 2.5 million dollars which makes it an attractive investment (IMF,2021). Moreover, there are many different types of cryptographic assets on the market, with around 20,538 cryptographic assets exchanged and traded. However, cryptocurrencies, the first subset of crypto assets to be created in 2008, dominate the market (CoinMarketCap,2022).

The wide choice of cryptographic assets available in the market makes this emerging asset class suitable for both individual and institutional investors. Cryptographic assets can be held for investment purposes just as they can be owned for investment. Seven out of ten institutional investors worldwide plan to invest in cryptographic assets in the future (Fidelity Digital Assets, 2021). Furthermore, the growing interest by individuals and companies in cryptographic assets has not gone unnoticed by regulators. On the contrary, a lot of questions have been raised by different financial regulators regarding the digital native of cryptographic assets, volatility, the risk to financial stability, and the degree of investor protection generated by this relatively new type of asset (ECB,2021).

With regard to the regulation of cryptographic assets, government bodies and various financial regulators around the world have decided to establish local regulatory frameworks for cryptographic asset service providers to oversee their financial activity. Nevertheless, due to the digital nature of these assets, service providers operate across borders, making local regulation and regulation of cryptographic asset activities ineffective (FSB, 2022).

Coming back to the financial reporting of cryptographic assets. No accounting standard body has developed accounting standards that cover the recognition, measurement, and disclosures of cryptographic assets and their related transactions. Indeed, the FASB² and IASB³ weren't established to cover digital innovative business. However, the two bodies are now asked to consider the digital-based economy (Forbes,2021). Meanwhile, in the absence of specific accounting guidance for cryptographic assets and related transactions, holders and issuers of these assets are required to

¹ Blockchain: is a distributed, immutable ledger that makes it easier to record transactions and track assets in a trading network (IBM,2022).

2 FASB: Financial Accounting Standards Board

3 IASB: International Accounting Standards Board

refer to existing accounting standards as suggested by the IFRS⁴ interpretations committee and the AICPA⁵ in 2019. Nevertheless, the cryptographic assets are very diverse, innovative, and have different characteristics. Consequently, they don't easily fit with the existing accounting methods (EY, 2018).

The aim of this paper is straightforward: *Analyse the accounting treatment for cryptographic assets and related transactions in the absence of accounting standards that deal specifically with cryptographic assets.*

To have a good understanding of cryptographic assets, **Chapter 1** defines cryptographic assets, their types, and the classification of cryptographic assets. Moreover, it also discusses the regulatory framework for cryptographic assets. **Chapter 2** addresses the accounting standards applicable to cryptographic assets under IFRS, Belgian GAAP, and US GAAP. **Chapter 3** presents a sample of companies that recognize cryptographic assets in their financial statements. At the end of the chapter, results from the collected sample are analyzed. **Chapter 4** outlines the limitations of accounting for cryptographic assets under existing accounting standards. Finally, after the literature review and the analysis of companies' reporting of cryptographic assets, this paper comes to a conclusion by summarizing the research and answering the research question.

4 IFRS: International Financial Report Standards

5 AICPA: The American Institute of Certified Public Accountants

Methodology & Research questions

As mentioned before, this thesis aims to understand the accounting of cryptographic assets under IFRS, US GAAP, and Belgian GAAP. Currently, there is no accounting standard dealing with cryptographic assets. Therefore, companies recording cryptographic assets on their financial statements are required to apply existing standards to their holdings of cryptographic assets. However, accounting for these assets under existing accounting rules is very challenging due to their diversity, different rights and conditions, and digital nature. In the absence of specific guidance, companies are required to exercise judgment on the appropriate accounting classification of cryptographic assets, including cryptocurrencies, utility tokens, security tokens, and related transactions.

To achieve the aim of this study, the research was mainly conducted by referring to the existing literature, different approaches taken by big accounting firms, and other scientific publications. Moreover, to extend this study to include a balance between documentary analysis and practical cases, data regarding the accounting policies applied by companies were collected from a sample of 38 public companies reporting under IFRS and US GAAP.

- Literature review

The paper cleared up the confusion surrounding cryptographic assets by highlighting the differences between the types of cryptographic assets that are usually mistaken for cryptocurrencies, discussing the different use cases of cryptographic assets, their pros and cons, and reviewing the regulatory framework. Furthermore, the paper analyzed the adequacy of existing IFRS, US GAAP, and Belgian GAAP accounting frameworks for cryptographic assets.

- Selection of companies

The objective of this thesis is to analyze the accounting for cryptographic assets under IFRS, US GAAP, and Belgian GAAP. Therefore, the data supporting this objective was collected from the published financial statements of publicly traded companies reporting under these accounting standards. The data collected was available in the companies' financial statements published on their websites. Moreover, the accounting policy adopted by these companies to account for cryptographic assets is disclosed in the notes to the financial statements. However, the data has been summarized and organized into tables in order to present it effectively to the readers of this paper. The criteria used to select the companies are:

- ✓ The company is a public traded company.
- ✓ Holds cryptographic assets as an operating or investment activity;
- ✓ the company discloses sufficient information regarding the judgment used to account for cryptographic assets under specific accounting standards.
- ✓ the company reports under generally accepted accounting standards, including IFRS and US GAAP.
- ✓ the location of the company is not important for this selection as most public companies prepare their consolidated financial statements under IFRS.

Research Questions

- What is the context of cryptographic assets?
- What are the accounting and reporting rules applicable to such assets and related transactions (including ICOs) under IFRS, US GAAP, and Belgian GAAP?
- How are companies reporting cryptographic assets?

Chapter 1: Overview of cryptographic assets and related transactions

1. Understanding cryptographic assets and related transactions :

1.1 What are cryptographic assets

Cryptographic assets are digital representations recorded, transferred, and traded on a distributed ledger technology, often referred to as the blockchain. A blockchain is a database that maintains a record of transactions that take place across a peer-to-peer network⁶ without the need for a central party like a central bank (KPMG,2019). Cryptographic assets take their name from the cryptographic security mechanism that prevents their copying and replication (EY,2019).

The ECB adopted a narrower definition of cryptographic assets, classifying them as a new type of digital asset that is not and does not represent a financial right on, or financial liability of, any natural or legal person, and does not embody a proprietary right against.

Cryptographic assets could also be considered as a digital representation of value that can be used for payment purposes and held as long-term investments of centralized and decentralized forms (FATF,2019). It can serve as an alternative asset to cash or an investable asset class depending on if it is held on the company's balance sheet or not (Deloitte,2021).

From its side, the IMF defines cryptographic assets as digital assets that use cryptography mechanisms⁷ for security purposes and are divided into two subsets: coins and tokens of a publicly distributed public ledger. The different subsets are utilized for various reasons, including means of exchange, storing of value, access to specific goods or services, and a new method for raising funds (PWC, 2019).

In conclusion, given cryptographic assets' diversity, unique characteristics, and use cases, there is no legally accepted definition of cryptographic assets.

1.2 Main classification of cryptographic assets

In the absence of an internationally accepted definition of cryptographic assets, regulators couldn't identify a legal classification of these different types of assets. There are approximately 10,000 cryptographic assets available on the market today (Statista,2022), associated with various rights and conditions and designed to be flexible. Therefore, creating specific classifications of cryptographic assets seems to be complicated. Financial regulators, local authorities, and the largest accounting firms have used different terminologies to classify cryptographic assets.

This paper will discuss some of the different approaches taken to classify cryptographic assets into similar types:

⁶ Peer-to-peer network: an information technology (IT) infrastructure that allows two or more computer systems to connect and share resources without requiring an intermediate software or server software.

⁷ Cryptography mechanisms: the process of encoding data to make sure that only the recipient of a message can understand and use it.

PWC proposed in its August 2021 publication a broader classification of cryptographic assets based on their function and inherent value into five main categories: cryptocurrencies, asset-backed tokens, utility tokens, and security tokens.

However, According to the European Parliament and the Council on Markets in Crypto-assets, Cryptographic assets can be distinguished into three categories, namely: Payments tokens, Security tokens, and utility tokens.

While IMF and the European Parliament established another distinction based on the function when they proposed two major types of cryptographic assets: coins and tokens.

1.2.1 PWC classification by cryptographic assets main function:

PWC suggested that cryptographic assets can be classified based on their primary function into five types:

Cryptocurrencies:

IFRIC defines cryptocurrencies as digital or virtual currencies recorded on a blockchain that use encryption for security purposes, which are not issued by any central bank, and don't give rise to a contract between the holder and any other party. In other words, cryptocurrencies are a form of cryptographic asset that functions as a medium of exchange and store of value and operates separately from any central bank (PWC,2021). Their functionality is limited to the purpose of value exchange that is native to a distributed ledger (Deloitte,2018).

Cryptocurrencies were the first type of cryptographic assets to emerge when Satoshi Nakamoto conceptualized Bitcoin back in 2008 and then launched it in 2009. Since then, different kinds of cryptocurrencies have emerged, each different in terms of security, transaction speed, and energy consumption. However, Bitcoin remained a dominant cryptocurrency with a market cap of \$391,954,510,669 as of July 7th, 2022 (CoinMarketCap, 2022).

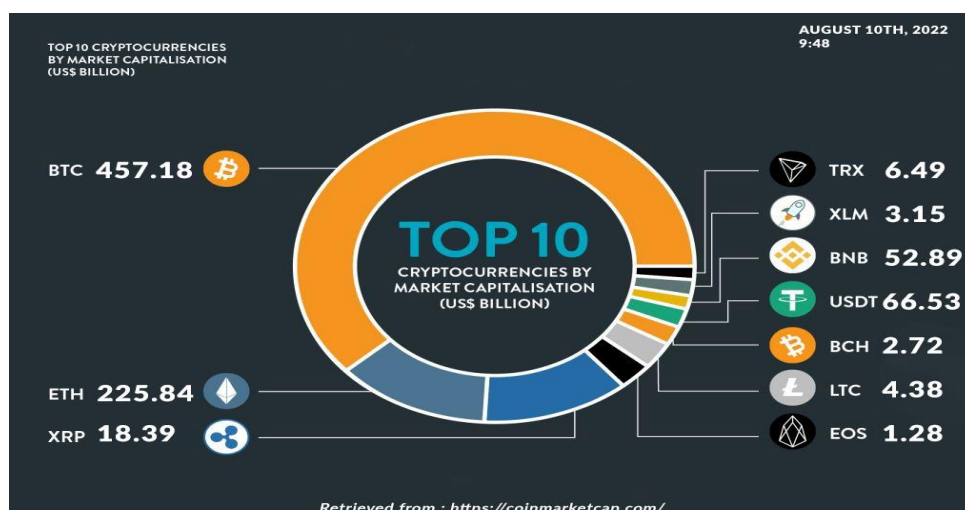


Table 1 - Top 10 cryptocurrencies by Market Capitalization

Source: Personal creation based on the information provided on CoinmarketCap Website

Even though cryptocurrencies like Bitcoin, Ether, Litecoin, or Ripple have been designed to function as a currency and a substitute for the government's legal tender, they failed to meet the properties of a currency (European Parliament, 2020). Mainly because they are not issued or backed by any sovereign, their value is derived from the supply and demand in the crypto market. Furthermore, cryptocurrencies are incapable of fixing prices for goods and services; their prices are traded on exchange platforms like Coinbase and are always translated into other fiat currencies like euros or US dollars (PWC, 2019).

Governments deal differently with cryptocurrencies. The Bank of England has concluded that cryptographic coins don't meet the definition of money. Similarly, the European Central Bank has refused to treat digital currencies as money. However, the German Federal Financial Supervisory Authority accepted bitcoin as a unit of measure similar to foreign exchange (Olha Holovatiuk, 2020). At the same time, in 2021, El Salvador becomes the first country in the world to enable Bitcoin as a legal tender (The Guardian, 2021).

Asset-Backed token:

An asset-backed token is a digital token based on blockchain technology that signifies and derives its value from a physical asset like natural resources, including gold, oil, or real estate. The inherent value of the token is driven by the underlying asset and not by something that exists on the blockchain. In effect, an asset-backed token digitizes a tangible or intangible asset and saves its related information on a blockchain (Mason Nystrom, 2022).

Unlike cryptocurrencies such as Bitcoin and Litecoin, asset-backed tokens are more stable as their value is directly affected by the underlying asset. Therefore, any appreciation or depreciation of the asset is reflected in the token's value. The owner of the asset backed-token has ownership over the stable asset, which means these digital tokens can be considered as investments and not as a medium of exchange (Johannes Schweifer, 2020).

The gold, Pax gold, and Tenset are examples of asset-backed tokens. Cusdc, a stablecoin backed by the U.S dollar which was created in September 2018 has the largest market capitalization with a cap of \$906,276,008 as of the 9th of July 2022 (CoinGeko).

Utility tokens:

A utility token is a cryptographic token that allows its holder access to a particular network and entitles him to goods or services within that specific ecosystem. The utility token's value is consequently restricted to use within a particular blockchain ecosystem (PWC, 2019). These tokens are viewed as contributions to the launch of new platforms, the development of cryptographic projects, and the growth of existing platforms. Once the new network is established, the utility tokens serve as a network currency. Investors can use the tokens and exchange them for goods and services (IFRAG, 2020). They are designed in a way to serve the interests of the users and owners of the network (Hence, 2019).

The following examples show numerous cryptographic projects that have made use of a utility token: Basic Attention Token (BAT), Chainlink (LINK), Ox (ZRX), and Binance Coin (BNB).

Security tokens :

Security tokens are cryptographic assets similar to traditional securities such as stocks, bonds, or options contracts. They provide an economic stake in a legal entity and entitle the holder to dividends based on the entity's future profit or the ability to vote over the entity's strategic decisions. In other words, investors that purchase these tokens become shareholders in the company that issued the tokens (EY,2021). The value of the token is based on the success of the issuing company or the worth of the underlying financial instrument since the holder is entitled to future profits and the right to receive cash flow from the underlying asset or another financial asset (PWC,2019).

According to the July 2020 EFRAG publication, security tokens are considered to be the most regulated cryptographic assets. Certain jurisdictions consider these tokens as securities. Hence, more regulations are applied. As noted in the UK FCA guidance issued back in 2019, security tokens should be regulated under British security regulation on a case-by-case basis. The Netherlands has also provided guidance for cryptographic assets that qualify as securities. From its side, the U.S. Securities and Exchange Commission (SEC) also regulates these tokens.

Examples of security tokens are BCap, BitCar, and Token Estate.

Stablecoins:

Stablecoins are another type of cryptographic asset that ties their value to traditional assets. The link between the cryptographic asset and a stable asset helps to protect against the impact of price volatility and aims to encourage trust in these coins as a means of payment (EY,2021). As outlined in the March 2020 IOSCO (International Organization of Securities Commissions) publication, there are different groups of stablecoins, such as fiat currency-backed stablecoins, cryptocurrency-backed stablecoins, and asset-backed stablecoins.

In addition, the 2019 Binance article differentiates between two generations of stablecoins; the first generation aims primarily to hedge against price volatility, whereas the second generation aims to increase the transparency of the first generation of stablecoins.

According to Delphi Digital, stablecoins have grown explosively in supply. The supply of the top five stablecoins by market capitalization, including Tether's USDT, Centre's USD Coins, Binance's BUSD, Terra's UST, and MakerDAO's DAI, has increased by \$20,000,000 in 2022. As a result, the IMF (International Monetary Fund) analyzed in its publication the risks that stablecoins may pose to the financial stability of countries if growth trends continue.

Central bank digital currencies:

A central bank digital currency (CBDC) is a digital representation of a country's fiat currency that is developed by a central bank for payment and settlement purposes in retail or wholesale transactions. It can be used as a digital extension of cash by retailers and institutions (OMFIF and IMB 2019). CBDCs have been under discussion for a long time by certain central banks, including France, Sweden, and Switzerland, due to the negative impact on credit creation, control over international payments, and financial crimes that these digital sovereign coins might create. However, as reported by the Bank of International Settlement (BIS), there are already three retail CBDCs and twenty-eight projects.

In 2020, the Bahamas becomes the first country to launch a CBDC. Nigeria followed in October 2021 by launching E-Naira. From its side, China conducted a public trial in 12 Chinese cities by accepting the

digital Yun (e-CYN) as a payment method during the 2022 winter Olympics. On the other hand, the US administration placed research on the development of a potential US CBDC, while Jamaica and Thailand are expected to follow this year (The 2022 PwC CBDC Global Index).

1.2.2 European Parliament classification:

According to the European Parliament (EP) and Markets in Crypto-assets (MICA) regulations, three categories can be distinguished among the cryptographic assets available in the market. The first category is payment tokens. From the name, we can conclude that this category of cryptographic assets can serve as a means of exchange as it is designed to be a digital representation of fiat currencies. This category includes cryptocurrencies, stablecoins, and the central bank's digital currencies. Furthermore, the EP suggested that cryptographic assets representing digital ownership in a crypto business should be considered security tokens. However, cryptographic assets that represent claims on future goods and services are utility tokens under the EP classification (EP, 2021).

1.2.3 IMF classification:

The IMF paper published in 2020 makes a broader classification for cryptographic assets, as it suggests distinguishing cryptographic assets according to their function into two categories: coins and tokens. Coins are a means of exchange and an alternative to fiat currency that operate on an independent blockchain such as Bitcoin and Ethereum. However, tokens have more purposes than coins. Tokens represent an ownership interest in an entity and the right to receive cash or other residual value. Therefore, they can be considered an alternative investment. Unlike coins, tokens do not operate on their independent blockchain. Rather, they operate on other cryptographic asset blockchains. For example, USDC stablecoin trades on the Ethereum blockchain. In other words, tokens represent what a holder owns in the present, while coins indicate future ownership, as their value is realized when exchanged for government currency.

1.3 Cryptographic assets market development:

The development of the blockchain market can be divided into three different stages.

The first generation:

In 2018, the Financial Stability Board qualified Bitcoin and variants of cryptocurrencies, including Litecoin and Dogecoin, as "first generation" cryptographic assets.

Bitcoin was the first cryptocurrency ever to come on the market in 2009 by Satoshi Nakamoto. By creating Bitcoin, Nakamoto developed a form of electronic cash based on a peer-to-peer network supported by a public distributed ledger accessible to network participants (JP Morgan Centre of Commodities, 2018). Nakamoto has introduced a revolutionary technology to the market that has inspired many imitators. Litecoin and Dogecoin are examples of cryptocurrencies that were created based on the Bitcoin source code.

The first generation of cryptographic assets is a digital representation of currencies that are designed to function as means of payment, process instant transactions, and store value for their holders. Yet, Bitcoin and alternatives are not used in day-to-day payments.

The second generation:

Ethereum is the second most notable development in the cryptographic asset world. Ethereum is a platform that was launched in 2015 to allow the creation of decentralized applications, holding cryptographic assets and communication without the need for a central authority.

Ethereum relies on Bitcoin's innovation, but it introduces big differences (ethereum.org). Notably, smart contract functionality enables the processing of automated flows, not just the recording of digital asset transactions, as was the case for the networks supporting the first generation of cryptographic assets. Since then, Ethereum has become the platform of choice for Initial Coin Offerings (ICOs) as it is the dominant network enabling smart contracts. Around 18 million USD were raised using the Ethereum fundraising network (EFRAG,2020).

The third generation:

The third generation of cryptographic assets is still only a concept, an expansion of the second generation that is yet to be developed to solve the problem of Bitcoin and Ethereum escalation. These coins remain constrained by the transaction's lengthy processing time, a user can only execute 3 transactions per second with Bitcoin and 12 with Ether when VISA processes thousands of transactions every second around the world. However, Cardano is a potential project on the market that attempts to implement a governance system that Bitcoin and Ethereum lack.

1.4 Use cases of cryptographic assets

Store of value :

On October 24, 2018, the IMF's statistics department published a paper where it classifies cryptocurrencies, namely Bitcoin (BTC), Tether (USDT), BNB, and Litecoin (LTC), as digital stores of value equivalent to traditional assets like gold or precious metals. In the same regard, the Chartered Professional Accountants of Canada (CPA) stated that the purpose of cryptocurrencies is to function as a store of value. As a store of value, cryptographic assets may retain purchasing power in the future rather than depreciate in value (Olha Holovatiuk, 2022). Hence, payment tokens such as cryptocurrencies, stablecoins, or CBDC may qualify as a store of value within the blockchain ecosystem (EFRAG,2021).

The CEO of Galaxy Digital Holdings Ltd. has defended Bitcoin's ability to function as a uniform store of value. He supported his opinion with the success of Bitcoin in creating a brand image in a short period of time. He added that the value of Bitcoin is derived from the trust that people have in the cryptocurrency. Credible people have recognized and believed in its potential. Therefore, he believes that people elected Bitcoin as a store of value. Similarly, Michael Sonnenshein, CEO at Grayscale Investments, highlighted that Bitcoin as a store of value is more suitable than gold in today's economy.

However, the Financial stability board (FSB) questioned the ability of cryptocurrencies to act as a store of value due to their high price volatility and low liquidity. Referring to the European Supervisory Authorities (ESMA, ESBA, and EIOPA) publication, the unexpected price movements of cryptographic assets mean that cryptocurrencies are not suitable as a store of value.

Medium of exchange:

Cryptographic assets such as stablecoins like Tether (USDT) and USD Coin (USDC) and cryptocurrencies like Bitcoin (BTC) and Ethereum (ETH) are intended or expected to function as a currency, a peer-to-peer alternative to legal tender, and, as such, as a means of exchange (C. BROWN, T. DOLAN, and K. BUTLER, 2019). In the same way, a research paper (Hu, Parlour& Rajan, 2019) states that cryptocurrencies are used mainly as a medium of exchange. While the Internal Revenue Service (IRS) notice 2014-21 states that virtual currencies are digital representations of value that function as a medium of exchange, another publication by the IMF noted that the purpose of coins, including cryptocurrencies, is to serve as currency and a means of payment.

Overstock, an American online furniture retailer, began accepting Bitcoin as a payment method in 2014. Similarly, Home Depot, the largest hardware store chain in the U.S., allows its customers to buy materials using Bitcoin via Flexa's⁸ checkout systems installed in the stores. At the same time, people can shop for groceries using Bitcoin, Litecoin, or Gemini dollars. Moreover, Tesla accepted bitcoin for the purchase of its famous electric car from February 20, 2021, to May 13, 2021.

However, we cannot say that cryptocurrencies are widely accepted and exchangeable for all available goods and services (Olha Holovatiuk, 2019). The high volatility nature associated with the non-backed cryptocurrencies makes it difficult for them to truly perform the role of a medium of exchange (Hubert de Vauplane, 2019). Besides, nowadays, cryptocurrencies and stablecoins haven't gained acceptance within all the jurisdictions to function as a means of exchange (KPMG, 2018).

According to an academic paper (Kim et al., 2018), cryptocurrencies are a medium of exchange for cryptographic assets. For instance, a Bitcoin holder can exchange its holding for another cryptocurrency such as Litecoin. Furthermore, cryptocurrencies generally referred to as tokens, entitle their holders to the right to pay for goods or services available on a specific issuing platform. In other words, tokens are a platform-dedicated medium of exchange (EFRAG, 2020).

New Investment Class:

The Chartered Financial Analyst Institute (CFA) analyzed the performance of Bitcoin as an investment opportunity in a publication written by Matt Hougan and David Lawant. The institute's research foundation comes up with the following results :

- Bitcoin is the best-performing investment of the last 11 years and the best-performing publicly available investment opportunity ever. The results are explained by the rise in value that bitcoin has recorded in 9 of the 11 years since its inception.
- By studying the impact that Bitcoin can have on a traditional asset portfolio, it was concluded that adding Bitcoin to a portfolio has had a positive impact on portfolio returns. For instance, a quarterly 2.5% allocation to Bitcoin would have increased the portfolio's returns by 23,9% and volatility would have slightly increased from 10,3% to 10,5%.
- Although Bitcoin volatility is above the volatility of the riskiest assets, such as stocks, bonds, commodities, and emerging currencies, its positive impact on returns exceeded its negative contribution related to volatility risk.

Furthermore, Michael Sonnenshein, the CEO of Grayscale Investments, discussed the evolution of the digital economy and the main reasons that explain the growing interest in institutions in this new space. He claimed that institutional investors are attracted to investing in cryptographic assets because of the diversification benefits of adding such an asset to their portfolios. Moreover, he stated that cryptocurrencies such as Bitcoin can hedge against the high rate of inflation and currency depreciation. Consequently, investors are beginning to understand that cryptographic assets like Bitcoin might be profitable investments.

⁸ Flexa: a blockchain payment processor.

1.5 The pros and cons of cryptographic assets

Cos of cryptographic assets:

▪ Price Volatility :

Many cryptographic assets, such as cryptocurrencies, have shown high price fluctuations since the release of Bitcoin in 2009. Their historical market value swings rapidly from extreme highs to extreme lows, which makes the cryptographic asset market the most volatile market available to retail and institutional investors (Young Li, 2021).

The ECB pointed out that the historical volatility of cryptographic assets surpassed the volatility of all the European stocks and bonds markets, as well as the volatility of the most unsteady commodities like oil and gold. Furthermore, the ECB calculated the average volatility of the highest five cryptographic assets by market capitalization and come up with the following results: Bitcoin Cash is the most volatile cryptocurrency with 117%, 100% for XRP, 96% for Litecoin, 91% for Ether, and finally 69% for Bitcoin, which makes it less volatile than most cryptographic assets.

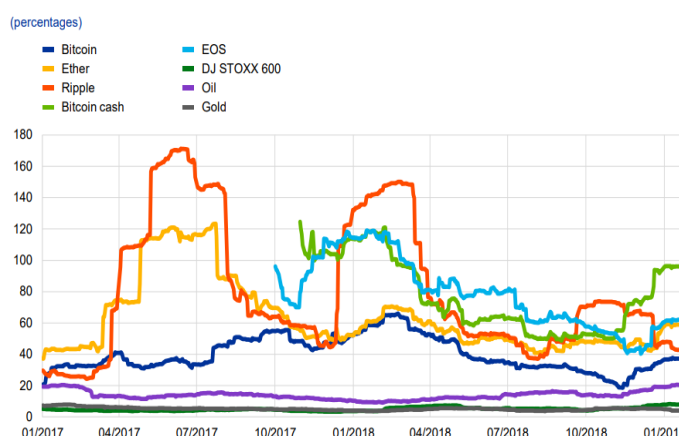


Table 2 - Historical average return volatility of cryptocurrencies

Source: ECB publication

Similarly, Goldman Sachs analyzed cryptographic assets' daily returns compared to traditional assets and securities. As a result, it concluded that Ether and Bitcoin are not only more volatile than commodities including oil, silver, and gold, but also more volatile than stock markets like Nasdaq and the S&P 500.

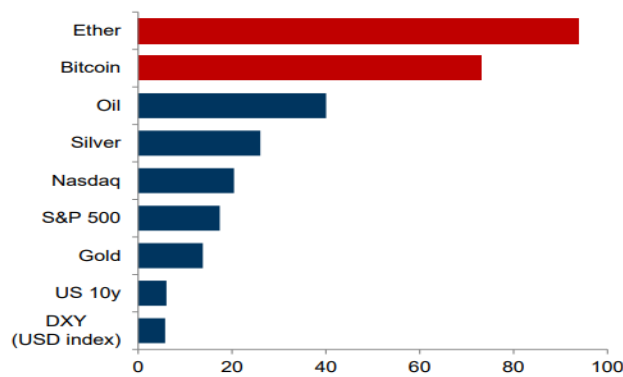


Table 3 - Average daily volatility in ann. terms, % since 2014 and since 2015 for Ether

Goldman Sachs GIR (2021)

Even if Bitcoin has proved to be less volatile than other cryptographic assets, any decline in its value results in bringing most of the other smaller cap cryptographic asset's prices down with it. There have been seven periods of significant falls in Bitcoin and other cryptocurrencies since Bitcoin's release in 2009. In 2011, Bitcoin lost 99% of its value. Its price fell from 32\$ to one penny. And, in August 2012, 700,000 bitcoins were stolen, which led Bitcoin to lose 56% of its high price. Also, in 2013, the volume of exchange reached its highest. The exchange platforms couldn't handle the volume, so the price of Bitcoin went from 260\$ to 50\$. In December 2013, when China banned Bitcoin, it fell 50 % from its high within a period of 24 hours. In 2017, Bitcoin broke all its records and its value reached nearly 20,000\$. Then, in the same year, the bubble crashed, sending the price to 12,000\$ losing 84 % of its market cap. 2020 was a tough year for cryptographic asset holders. Bitcoin lost 50% of its value in 2 days. It declined from 10,000\$ in February to 4,000\$ in March 2020. Volatility is not only associated with the fall of value; it also refers to a sudden, unexpected increase in the price of an asset. In 2021, the price of Bitcoin jumped to 64,000 USD, showing an increase of 70% in a period of 4 months. It didn't last too long, as Bitcoin and other major cryptocurrencies have lost \$1 trillion by November 2021. The value of 1 Bitcoin is equal to 43,000\$ (Andrew Lisa, 2021).

The Cryptographic assets volatility issue can be attributed to multiple reasons, mainly (starttrading, 2022):

- ✓ *Regulations:* Unlike fiat currencies, cryptographic assets are not backed by any institution like a central bank or monetary authority. Their price depends entirely on the trust that market players have in the blockchain ecosystem.
- ✓ *Investor behavior:* Cryptographic assets are relatively a new asset class, till now investors are not able to understand the elements that drive their value. They are attractive to risky investors who seek short-term gains which result in panic selling.
- ✓ *Fixed Supply:* Cryptographic assets have a fixed supply, some cryptographic assets such as Bitcoin have a limited quantity and the total number of Bitcoins that can be issued is 21,000,000. Therefore, their market capitalization is sensitive to the changes in supply and demand.

- ✓ *News and government decisions:* Cryptographic assets market crashed after the Chinese government's decision to ban Bitcoin and the suspension of Bitcoin as a means of payment by Tesla.

This high volatility has led to the perception of cryptographic assets as inherently risky, discouraging risk-sensitive investors. Furthermore, the price volatility decreases the trust in these assets and limits their acceptance as a substitute for cash as well as their ability to serve as a store of value or a unit of account.

- **Cybersecurity risks and risk of fraud :**

Considering the digital native of cryptographic assets and their high value, businesses that deal with these assets, such as wallet providers and crypto-trading platforms, are prime targets for cybercriminals. Hackers are able to breach an entity's crypto infrastructure and transfer their coins and tokens to external addresses, leaving the entity bankrupt (KPMG, 2018). By analyzing cybersecurity attacks that have impacted crypto service providers and crypto exchange platforms⁹, the CFA found out that cyber hackers use different techniques like SIM hacking and fishing attacks to steal funds.

Even well-known crypto-exchange platforms like Binance weren't spared from hacker attacks. In 2019, Binance, the largest crypto-exchange platform by trading volume, has been hacked and lost 7000 Bitcoin in one transaction. Also, Balancer, another trading platform, was involved in one of the largest cryptographic asset loss incidents. An attacker stole more than \$ 500,000 in Ether, Bitcoin, and Synthetix tokens (Bloomberg, 2019).

In some cases, compensation for loss can be fully paid out within months. Nevertheless, investors wouldn't be able to have access to their hacked tokens or coins for a long period of time. Therefore, some platforms are trying to minimize the cybersecurity risk by creating compensation funds, contracting insurance cover, and building specific cybersecurity programs (FINTEC, 2019).

- **Fragmented Regulation :**

The regulatory framework surrounding cryptographic assets is highly fragmented and does not ensure a sufficient level of investor knowledge and protection compared to other asset classes. Therefore, the lack of clearly established regulatory guidance negatively impacts the adoption of cryptographic assets in European countries. A market study published by PWC Luxembourg in collaboration with LHoFT showed that 37% of Luxembourg-based financial market participants believe that the absence of clear regulatory guidance is the main constraint to the development of the cryptographic asset market in Luxembourg and across Europe.

A January 2020 IMF publication noted that there is heterogeneity and often an absence of clarity in the regulatory framework adopted by jurisdictions regarding cryptographic assets, with 64% of regulators having recognized a gap in regulation, yet just 30% having addressed this gap.

Furthermore, the Cambridge Center for Alternative Finance publication (Cambridge CAF) has identified different approaches for regulating cryptographic assets across 108 jurisdictions. The approaches vary from a complete absence of formal regulation to outright banning, as it's the case in countries like China and Morocco.

⁹ Crypto exchange platforms are online platforms used to buy and sell cryptocurrencies. For instance, Coinbase is a crypto currency exchange platform.

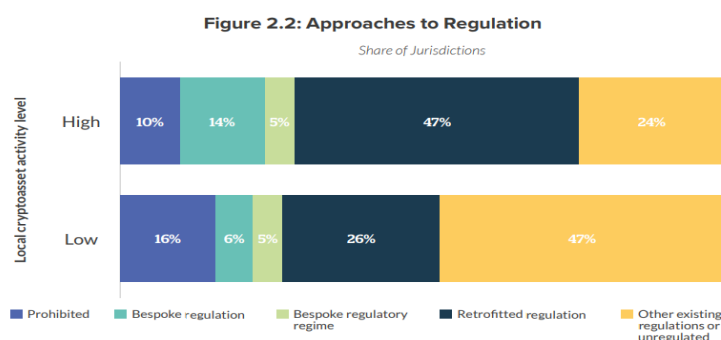


Table 4 - Average Approaches for cryptographic assets regulation around 166 country

Source: Cambridge CAF Publication (2019)

▪ **Environmental Impact:**

Several potential investors have raised concerns about the environmental impact of cryptographic assets. Based on the University of Cambridge's index as of November 2021, the crypto mining industry is energy-intensive. The Bitcoin ecosystem alone consumes 0,45% of the world's total energy, an equivalent of 130 Terawatt-hours of energy (TWh). This puts the Bitcoin network on the same level of energy consumption as small countries like Belgium, Jordan, or Chili.

The long-term sustainability of energy has caused some investors to fully close the door and focus on more sustainable, environment-friendly investment options. For instance, Elon Musk, the famous CEO of Tesla, suspended the acceptance of Bitcoin as a means of payment because of its high energy consumption.

Since investors are interested in hearing about the use of green energy or renewable energy resources in the cryptographic industry, some miners have switched to lower-cost energy sources, as in the case of Ethereum, which has decided to switch from a proof-of-work to a proof-of-stake mechanism, which will significantly increase the energy consumption of one of the biggest blockchain networks (University of Cambridge, 2020).

Cryptographic asset service providers will have to disclose information on their environmental and climatic footprint. The European Securities and Markets Authority (ESMA) is currently working on a draft regulatory standard related to the environment and climate impact. This regulation will introduce sustainability requirements to be respected by cryptographic asset businesses (Council of the European Union, 2022).

The pros of cryptographic assets :

▪ **Low transaction fees:**

One of the primary benefits of cryptocurrencies is their low transaction costs. Compared to other digital payment systems, such as banks and PayPal, which usually charge high transfer fees, cryptocurrencies have low transfer fees. For example, in April 2018, the equivalent of \$99 million was transferred using Litecoin (LTC) for a fee of \$0.40 (Business Insider, 2018).

A cryptocurrency holder can trade its holdings between the different crypto exchanges available on the market for a low transaction fee. For instance, Stellar has the lowest cryptocurrency transaction fee; it costs \$0.000002166 per transaction. IOTA and NANO don't charge any transfer fees; the transactions are validated within seconds. Lastly, Dash transaction fees range between \$0.2 and \$0.3 (KARIM AHMAD, 2021).

- **Company's growth:**

According to Deloitte (2021), cryptographic assets offer a variety of opportunities that can boost a business's operational growth. Cryptographic assets can help a business reach new demographic groups. These new customers who pay with cryptocurrencies tend to purchase more than those who use credit cards. A study confirmed that 40% of cryptocurrency users' purchases are twice as high as those of traditional means of payment users. Moreover, by adopting crypto, a business creates internal awareness and a good understanding of these new assets, which will help the company position itself in this important emerging market in the future, as more and more customers and vendors are engaged in using cryptographic assets.

- **Technological Advantages:**

The fundamental growth driver of cryptographic assets is the technology behind them. It allows the cryptographic assets users to own, trade, and transfer the ownership of their assets with no need for an intermediary institution (PWC Luxembourg, 2021). Furthermore, the underlying technology referred to as Blockchain guarantees a secure transaction process and enhances the transparency of transactions. Each transaction is recorded on a decentralized database (Deloitte, 2021). Cryptographic assets underlying distributed ledger technology allow the creation of digital tokenized representations of assets such as stocks or bonds. By transforming ownerships and rights of traditional assets into a digital form, the friction and costs associated with the issuance and transfer of these assets are significantly reduced (KPMG, 2018).

2. ICO (Initial coin offerings):

An Initial Coin offering (ICO) is an alternative form of fundraising for an existing or upcoming cryptographic assets project. Unlike an Initial Public Offering (IPO), an ICO provides tokens to potential investors / Subscribers rather than shares (PWC, 2021).

When undertaking an ICO, the issuer, usually a company in the early stages of its development, allocates digital tokens or coins to the investors in exchange for the consideration received. The ICO tokens issued may constitute a share in a company, a voucher that allows access to a platform's project or products in the future, and can be traded on a cryptocurrency exchange platform. In return, the ICO developer receives a capital contribution in the form of cryptographic assets, usually a cryptocurrency, such as Bitcoin or Tether (Deloitte Belgium, 2018).

Despite being a new form of fundraising, ICOs have been incredibly successful, with developers raising over 11.4 billion dollars through ICOS in 2019. This can be explained by the speed of the capital raising process, for instance, the Swiss Bancor network raised around \$153 million in only three hours due to the absence of traditional financial intermediaries like central banks and stock exchanges. Furthermore, the blockchain technology used is considered simple and accessible (European Parliamentary Research Service, 2021).

However, the ESMA raised concerns that investors may not be aware of the significant risks they are taking by participating in ICOs after watching the surge in funds generated from investors through this new way of raising capital. At the same time, it highlighted that certain entities involved don't understand the terms and conditions mentioned in the whitepaper and other documents related to the ICO tokens issuance. Additionally, ESMA confirmed that investors risk losing their investments because most companies raising capital are early-stage ventures, not even operating companies, projects that light never reaches the implementation phase. Furthermore, ICO is associated with fraudulent activities, with approximately 80% of ICOs being issued for fraud and scam purposes. Finally, it stated that ICO may raise cyber security issues, as highlighted by EY, 10% of ICO revenues are lost due to attacks.

The tokens issued in an ICO can be security tokens, utility tokens, or payment tokens. Because of this variability, regulators have chosen to enforce regulatory laws on a case-by-case basis rather than trying to apply a single regulatory framework to all of the tokens (Deloitte, 2018). In the European Union, ICOs are required to adhere to the AML and KWC policies. While in the US, ICOs are considered securities and therefore fall under the scope of the SEC, all ICOs need to be registered with the SEC which applies securities law when the tokens issued are considered security.

3. Regulatory framework of cryptographic assets :

3.1 Existing fragmented regulations:

In the absence of a harmonized regulation or framework around cryptographic assets, national authorities such as Germany, Belgium, and Switzerland have implemented their own cryptographic asset regulations. This section will further discuss the different regulatory approaches adopted by some jurisdictions: Germany, Belgium, Switzerland, and the United States.

Germany:

In Germany, Cryptographic assets custodians, exchanges, and Bitcoin ATM (Automated Teller Machine) are considered to be financial services. Therefore, they are regulated by the Federal Financial Supervisory Authority (BaFin), Germany's financial regulator (Forbes, 2021).

In 2020, Germany has put in place a law called the 'Act on the Implementation of the Amendment Directive to the Fourth EU Money Laundering Directive' that defines a new category of financial instruments and introduces a custody license for cryptographic assets custodians. Under this regulation, a crypto custody business that performs the role of custody, administration, and safeguarding of cryptographic assets or private cryptographic keys will need to apply for authorization from BaFin. In the same way, Virtual assets service providers and Bitcoin ATMs must also be licensed by BaFin (Confirm, 2021).

Belgium:

On January 27, 2022, the Belgian Parliament adopted a law to amend the Belgian Anti-Money Laundering Act ("AML act") to regulate certain cryptographic asset service providers. Therefore, as of May 2022, entities that provide exchange services between cryptocurrencies and fiat currencies are required to register with the Belgian financial regulator, known as the Financial Services and Markets Authority (FSMA). The same applies to custodians and automated teller machines (ATMs). These cryptographic asset platforms should report to the FSMA their activities before July 1, 2022, and apply for registration before September 1 of the same year. Those who fail to respect the new

regulations risk being subject to fines or penalties that could result in the suspension of their business operations.

Exchange service providers are defined by FSMA as entities that use their own capital. Custodians, on the other hand, are defined as service providers for the custody of private cryptographic keys on behalf of the customers. From its side, the FSMA is required to hold a register of providers of exchanges between virtual currencies and legal currencies and of custodian wallet services, as in the case with other financial institutions.

Switzerland :

Due to the Swiss government's effort to create a favorable regulatory environment for cryptocurrencies, more than 900 cryptocurrency businesses have relocated to Switzerland. The regulation of blockchain business and cryptographic asset service providers is ensured by the country's financial regulator, the Swiss Financial Market Supervisory Authority (FINMA).

To carry on a business, cryptocurrency exchanges are required to obtain authorization from FINMA. Even more, they must be registered as a public limited company, referred to under Swiss law as Swiss AG, or a limited liability company, known as GMBH company. Moreover, Switzerland's crypto exchanges are subject to one of the strictest anti-money laundering (AML) and know-your-customer (KYC) policies in the world. The companies interested in obtaining authorization need to check the identity of their clients, verify the beneficial owner, monitor their business relationships based on a risk approach and communicate with the Money Laundering Reporting Office Switzerland (MROS)¹⁰ in the case of any money laundering suspicion (Confirm, 2022).

FINMA proposes two licenses to choose from: a banking license and a fintech license. The Banking License requires a minimum capital of 100 million CHF for cryptocurrency exchanges but enables an unlimited deposit. However, whilst a Fintech license requires a lower minimum capital, it also allows a maximum public deposit of 10 million CHF. Also, both license holders must maintain a minimum capital of 300,000 CHF to protect their clients. Cryptocurrency regulations in Switzerland also apply to Initial Coin Offerings (ICOs). FINMA believes that ICOs can be regulated as traditional financial securities. Hence, existing financial security rules apply (PoratGroup, 2022).

In 2021, Switzerland introduced the Distributed Ledger Technology (DLT) Act to adjust Swiss laws to take advantage of cryptocurrency innovation. The DLT Act included a new type of license category for cryptocurrency trading venues (FINTECHNEWS, 2021).

In spite of the Swiss government's effort to make the country "the crypto-nation", the regulations introduced are considered to negatively impact blockchain innovation and raise concerns about the privacy rights of cryptographic asset service providers. Therefore, Switzerland introduced the Distributed Ledger Technology Act (DLT act) to adapt Swiss laws to be more crypto-friendly (Confirm, 2022).

The United States of America (USA):

The United States of America is the global leader in the adoption of blockchain and cryptocurrency business models. The country is home to the biggest cryptographic asset service providers, including cryptocurrency exchanges like Coinbase, cryptocurrency security companies such as BitGo, and wallet providers such as Ledger Nano X. This led the regulatory agencies and federal states to develop laws and regulations to protect investors and prevent market abuse. The regulations in the

¹⁰ MROS is the equivalent of the CSSF in Luxembourg and the FSMA in Belgium.

USA vary by state; there is no unified legal framework governing cryptographic assets, and the laws depend on the regulatory regime adopted by the state (Confirm,2022).

The following section will discuss the most recent cryptographic asset regulation development in the United States:

✓ *The Bank Secrecy Act (BSA):*

Cryptocurrency exchanges in the United States fall within the regulatory framework of the Bank Secrecy Act (BSA). The BSA is an AML law and regulation that cryptocurrency businesses should comply with. In practice, this applies that United States-based cryptocurrency exchanges have to register with the Financial Crimes Enforcement Network (FinCEN), the body responsible for combating financial crimes, notably, local and international terrorism financing (FT) and money laundering. The Bank Secrecy Act imposes a compliance strategy for cryptocurrency exchanges. These entities are obliged to implement AML controls, ensure effective CFT (Combating of the Financing of Terrorism) measures and keep a record of suspicious financial transactions and those with a value above \$10,000 in a FinCEN electronic form. By Fall 2022, crypto exchanges would need to submit a suspicious activity report (SAR) for transactions above \$ 10,000, and proof of identity will be requested from wallet owners when sending more than \$3,000 in a single transaction (complyadvantage, 2022).

Furthermore, cryptocurrency exchanges are required to submit different types of reports to the relevant authorities, for example, suspicious activity reports, Foreign Bank Account Reports (FBAR), and Currency Transaction Reports. Exchanges that fail to report under the Bank Secrecy Act, also known as the Currency and Foreign Transactions Reporting Act, will be subject to fines and penalties (Confirm, 2022).

✓ *The US Securities and Exchange Commission:*

Cryptocurrency exchanges and platforms are registered as national security exchanges by the US Securities and Exchange Commission (SEC). The SEC treats cryptocurrencies as traditional Securities and applies the existing security laws to cryptocurrency wallets and exchanges. One reason for this approach is that due to uncertainty about the changing characteristics and use of cryptographic assets, highly prescriptive regulations could become obsolete and potentially ineffective. An important thing to highlight, the SEC only regulates cryptographic assets that fall under the security category, cryptographic assets qualified as commodities or securities are regulated by other competent authorities (ComplyAdvantage, 2022).

✓ *Cryptocurrency regulation by state:*

Other than the regulations by federal authorities like FinCEN and the SEC, cryptographic assets are also regulated at the state level. The legal and regulatory regimes vary from one state to another, some states regulate digital assets under existing money transmitter ¹¹state laws, whereas other states apply specific cryptocurrency regulations. The states have taken different approaches to regulate cryptographic assets, when some of the states have adopted friendly regulations, others introduced stricter rules.

▪ **Cryptocurrency regulation in New York:**

¹¹ Money transmitter: “The acceptance of currency, funds, or other value that substitutes for currency from one person and the transmission of currency, funds, or other value that substitutes for currency to another location or person by any means.” (FinCEN)

As the financial hub of the United States, New York has acknowledged the potential of cryptocurrencies and has developed the most comprehensive and detailed cryptocurrency regulations in the country. In 2015, the New York State Department of Financial Services (NYDFS), the body that supervises and controls the city's financial institutions, issued a cryptocurrency regulation named "BitLicense". This statutory standard targets entities that are involved in the cryptocurrency business, which often find the regulation difficult to obtain, violate users' privacy, and are very expensive to acquire (Bloomberg Law, 2022).

The list of requirements needed to procure a BitLicense is long. Cryptocurrency businesses, including exchange service providers and cryptocurrency management companies, must fulfill the following requirements (Coinspeaker, 2021) :

- 1) Put in place AML and cybersecurity programs, which implies implementing a KYC regulatory process and a qualified chief security officer. The licensee must report information on any suspected fraudulent transactions, hacker attacks, or privacy breaches to the NYDFS.
- 2) The regulation requires license holders to comply with all the existing laws on the federal and state levels. Additionally, it requires companies to have a written compliance policy.
- 3) BitLicense requires companies to maintain a minimum amount of assets to ensure their financial stability and ongoing activities. The NYDFS fixes the exact amount by taking into consideration factors such as the products or services offered, and the composition of assets and liabilities.
- 4) In order to protect customer assets, the licensee should retain a surety bond or trust account in United States dollars.
- 5) Material changes to business need to be approved by the NYDFS. Any change in services, activities, products, mergers, or control of a company cannot be introduced without a pre-approval from the NYDFS.
- 6) Maintain records and accounting books for a period of 7 years. The license holders must also submit periodic reporting and audited annual accounts to the NYDFS.
- 7) Ensure full transparency towards clients, by disclosing all the risks associated with cryptocurrency business products and services. They also need to display the phrase "Licensed to engage in Virtual Currency Business Activity by The New York State Department Of Financial Services."

▪ **Cryptographic assets regulation in Florida :**

On May 12 of this year, the Governor of Florida, Ron DeSantis, signed new cryptocurrency-related legislation. The new law establishes a new legal definition of cryptocurrency and modifies Florida's financial regulations targeting money service businesses (MSBs)¹² while eventually easing restrictions on Florida's cryptocurrency industry. The bill will enter into force on January 1, 2023 (Malscu Law, 2022).

The new cryptocurrency law signed by Florida's governor defines virtual currency as *"a medium of exchange in electronic or digital format that is not a currency."* Accordingly, cryptocurrencies such as Bitcoin, Ethereum, BNB, Cardano, and Dogecoin, and also stablecoins like Tether and DAI, will fall within the definition of virtual cryptocurrency, and consequently, businesses dealing in offering these

¹² Money Services Business: businesses that transmit or exchange money.

assets to the customer will be treated as Money Service Businesses (MSBs) for regulatory reasons. However, the definition excludes utility tokens from its scope (Winston & Strawn LLP, 2022).

The new legislation comes to ease the restrictions and license requirements for cryptocurrency businesses operating in Florida. To this end, cryptocurrency platforms and intermediaries wishing to be regulated are required to fulfil the following favorable requirements:

- 1) Cryptocurrency platforms, such as Binance and Coinbase must procure a Money Transmitter License in order to operate in the state of Florida. This new provision excludes individual cryptocurrency traders, they are not under the scope of this financial regulation.
- 2) Cryptocurrency exchanges are required to hold cryptocurrency of the same kind and value owed to the party receiving the transmission.
- 3) License holders must ensure that the cryptocurrency is available to the designated receiver within 10 working days after receiving and confirming payment.
- 4) Money transmitter license holders must maintain daily records of cryptocurrency transactions.

The new legislation reconfirms Florida's position as a crypto-friendly state and reinforces the cryptocurrency market in the state by attracting new blockchain businesses.

3.2 Markets in Financial Instruments Directive (MiFID II):

According to the ESMA, cryptographic assets trading platforms that are qualified as financial instruments should trade under MiFID II rules and obligations.

The Markets in Financial Instruments Directive framework (MiFID II) consists of a directive (MiFID II) and a regulation (MIFIR). MiFID II/MIFIR entered into effect on 3 January 2018 following adoption by the European Parliament and the Council of the European Union. The MiFID II framework sets out obligations for firms providing investment services or activities concerning financial instruments as defined by the Directive. Within this regulatory framework, businesses must be authorized as investment firms by the relevant National Competent Authorities (NCAs) and meet specific requirements such as investor protection, and reporting rules under the European Market Infrastructure Regulation (ELMIR), the conduct of business, and transparency. This regulatory framework enhances investor protection due to the number of reporting requirements and ensures the efficiency of the financial markets.

MiFID II applies differently to cryptographic assets business, the requirements vary depending on the services provided, the activity carried out and the type of financial instrument involved. Therefore, ESMA evaluates and decides on how MiFID II can be applied to cryptographic asset trading platforms based on a "substance-over-form" and "case-by-case" approach.

ESMA says that trading *"cryptographic assets platforms that have a central order book and/or match orders under other trading models"* are likely to be described as multilateral systems and consequently fall under the scope of MiFID II regulation. The same applies to cryptographic asset platforms qualified as broker-dealers.

However, the ESMA confirms that existing MIFID rules were not designed to cover cryptographic assets, and some requirements are not tailored to the digital characteristics of these assets. Therefore, the ESMA recognizes the difficulty of interpreting existing requirements and the barriers to determining the applicable rules.

3.3 European cryptographic-assets regulation (MICA):

In March 2020, the EU commission has proposed a regulation on crypto assets, and the markets in crypto-assets (MICA). MICA's objective is to harmonize the issuance and trading of cryptographic assets within the European Union (EU) as a part of the European Digital Finance Package. The proposed regulation will introduce for the first time a sound legal framework for cryptographic assets, cryptographic assets issuers, and cryptographic assets service providers. Once adopted, MICA would be directly applicable in the 27 member states after 18 months, replacing any national regimes for cryptographic assets.

After two years, on 30 June, the European legislators including, the Council presidency and the European Parliament reached a provisional political agreement on the draft proposal for a regulation on Markets in crypto-assets, also referred to as MICA. This regulation aims to protect Cryptographic assets investors and preserve financial stability while maintaining the attractiveness of the EU's cryptographic asset market.

MICA will protect customers against the risk associated with cryptographic assets by setting strict rules for cryptographic assets service providers, they will need to respect strong requirements to be able to protect investors' wallets against any market abuse, market manipulation, insider trading, and become liable if they lose investors cryptographic assets. Similarly, MICA will protect and guarantee rights for the cryptographic assets service providers. The regulation also addresses the environmental impact of cryptographic assets, under the supervision of the European Securities and Markets Authority (ESMA), the cryptographic assets market players will be required to report information on their environmental and climate impact.

Under the provisional agreement achieved today, cryptographic assets service providers, also known as CASPs must have authorization in order to operate within the European Union. To be licensed by local authorities, the service providers need to be located in the EU and have their headquarters within the European Union by a legal person, with specific capital requirements depending on the type of cryptographic assets provided, and be registered by the European Securities and Markets Authority. National authorities will therefore need to issue authorizations within a period of three months, this authorization will give services providers a passport to issue, safeguard and sell cryptographic assets across the European Union.

The applicability of MICA regulation covers cryptographic assets such as cryptocurrencies, stablecoins, utility tokens, and security tokens. It also excludes from its scope non-fungible tokens (NFT), except if they fall under one of the previous cryptographic assets categories, and cryptographic assets which qualify as financial instruments under MiFID II).

Under the provisional agreement MICA, regulators established stricter rules for the issuers and exchanges of stablecoins. Stablecoins that MICA regulation referred to as asset-referenced tokens (ARTs) and electronic money tokens are considered to negatively impact the financial system's stability and monetary sovereignty. Therefore, the stablecoins issuers need to secure liquid reserves and minimum liquidity with a 1:1 ratio. Moreover, stablecoins holders will have the right to claim at any time and no cost payment from the issuers. Stablecoins will be under strict supervision by the European banking authority (EBA).

The European Parliament and Council of the EU have to approve the provisional agreement before it can be formally adopted. The regulation is expected to come into force at the end of 2023 or the beginning of 2024 (European Council, 2022).

Chapter 2: Accounting and reporting standards applicable to cryptographic assets and related transactions

1. Belgian GAAP:

1.1 Introduction of the Belgian GAAP

Generally speaking, Belgian GAAP stands for the generally accepted accounting principles applied in Belgium. The Belgian accounting rules and standards were established by the Law of 17 July 1975 on companies accounting, Belgian royal decrees, and the recommendations of the Belgian Accounting Standard Board (BASB). According to the accounting act of 1975, the preparation of Belgian companies' financial statements, including Balance sheets, profit and loss, and the appendix of Small and Medium-sized Enterprises (SMEs) and Large businesses, must be under the Belgian Generally Accepted Accounting Principles.

1.2 Accounting for cryptographic assets under Belgian GAAP

On 6 December 2021, the Commission of the Countable Standards in Belgian, known as the CNC released the paper, *Valuation, and accounting of cryptocurrencies used as payment instruments*. The CNC examined the existing Belgian GAAP literature and evaluated whether cryptocurrencies should be accounted for as Cash and similar, short-term financial investments or Other receivables.

In this section, we will further discuss the temporary solution proposed by the CNC to address the accounting of cryptocurrency in the absence of an accounting framework for cryptographic assets.

Accounting for cryptocurrency as available values:

Belgian GAAP contains an explicit definition of cash and similar. According to Article 3:89, § 1, IX of the Royal Decree of 29 April 2019 implementing the Companies and Associations Code (AR CSA), cash and cash similar referred to as available values under BE GAAP consist of values that a company can use immediately to make payments. In other words, cash at hand and current assets with high liquidity can be convertible to a known amount of cash, including securities due for collection and sight deposit with credit institutions.

As a form of virtual cash, it might seem that the obvious option is to record cryptocurrencies as cash and similar. However, unlike cash, no credit institution is involved in the custody of cryptocurrencies. Therefore, it is not appropriate to account for cryptocurrencies used as a means of exchange as cash and similar under BE GAAP.

Furthermore, the commission noted the importance of not considering cryptocurrencies as cash and similar on the grounds that cryptocurrencies are not widely accepted as a medium of exchange. Presenting cryptocurrencies as cash and similar will lead the reader of the financial statements to assume that they can settle all types of transactions. However, it's not the case. Only a few creditors accept cryptocurrencies as a means of payment.

Compared to traditional currencies, cryptocurrencies lack certain common properties of cash. Cryptocurrencies are not backed by any intermediary or central authority; they operate according to a self-regulation system known as a peer-to-peer network. Accordingly, the CNC does not consider it appropriate to account for cryptocurrencies as available values.

Accounting of cryptocurrencies as cash investments:

The Commission considers that it is also inadequate to account for cryptocurrencies as short-term financial investments (Placements de trésorerie). According to Article 3:89, § 1, VIII.B of the AR CSA, short-term financial investments include receivables in short-term deposit accounts with credit institutions, convertible securities that do not have the characteristics of financial assets, and the holding of precious metals, to sell them in the short or medium term. By Looking at this definition, the CNC concluded that cryptocurrencies cannot be presented as a short-term financial investment. Cryptocurrencies are obviously not precious metals due to their digital native and are neither receivables on terms accounts nor securities because of their extreme volatility nature.

Accounting of cryptocurrencies as other receivables:

The CNC further found that cryptocurrencies meet the definition of Other Receivables on the asset side of the balance sheet.



Table 5 - Cryptocurrencies as a mean of exchange

Personal creation based on the CNC example

By taking the example of company B, which is willing to deliver goods in exchange for a certain amount of Bitcoin from Company A, the Commission concluded that cryptocurrencies in this case represent company B's claim on a future counterparty. Therefore, they should be accounted for as other receivables under the Belgian GAAP. Other receivables don't represent a claim on credit institutions as cash investments, but rather a claim on other counterparties. Furthermore, accounting of cryptocurrencies under other receivables has the advantage of indicating that an external party should accept settlement in cryptocurrencies.

The commission also noted that other cryptocurrencies received should be subject to impairment. According to the measurement, the rule stated in article 3:46 CSA: "Receivables due in more than one year and up to one year are written down if their repayment on maturity is wholly or partly uncertain or impaired". The CNC clarified that in the specific case of cryptocurrencies used as a means of payment, companies must report a loss when the realizable value of crypto-currencies becomes lower than their book value in order to comply with the principle of prudence in Belgian GAAP. On the other hand, their revaluation is prohibited if the prices recover.

Conclusion

	Belgian GAAP Definitions	Classification Conclusion
Available Values	Available values include cash and highly liquid assets that can be convertible to known amounts of cash.	<i>Not met:</i> Cryptocurrencies are not backed by any government, are not legal tender, and are not accepted as means of exchange.
Cash Investments	Cash investments consist of receivables on term accounts convertible securities, and precious metals.	<i>Not met:</i> cryptocurrencies are not low-risk investments because they are associated with price volatility.
Other Receivables	Debts owed to a company by its customers.	<i>Met:</i> Cryptocurrencies as means of payments represent a claim on a future counterparty.

Table 6 - An analysis of why cryptocurrencies meet the definition of other receivables

Source: Personal creation based on the CNC paper

2. IFRS:

2.1 Introduction of IFRS

International Financial Reporting Standards (IFRS) refers to the set of international accounting rules that a company must respect while preparing its financial statements. IFRS intends to create transparent, understandable, consistent, and highly comparable financial statements of companies regardless of their country of residence. IFRS standards are developed by two standard-setting boards, the International Accounting Standards Board (IASB) and the newly established International Sustainability Standards Board (ISSB) (*See Appendix 1*). The IASB is an independent and private sector organization responsible for the development and approval of IFRS Accounting Standards, while the ISSB issues IFRS Sustainability Disclosure Standards (IFRS,2022). According to the IFRS Foundation, IFRS Accounting Standards are the required accounting framework for public companies and financial institutions in more than 167 jurisdictions.

To date, the IASB has developed 17 IFRS standards and approved 23 IFRIC interpretations developed by the International Financial Reporting Interpretation Committee, known as IFRIC (IFRS,2021). IFRIC interpretations provide guidance on how IFRS should be applied or propose amendments to specific IFRS accounting standards. Furthermore, the IASB endorses and revises International Accounting Standards (IASs), the first international accounting standards issued between 1973 and 2001 by the IASB predecessor, the Board of the International Accounting Standards Committee (IASC) (Deloitte,2022). Although IFRS replaced IAS in 2001, some IAS standards are still applied, such as IAS 38 Intangible Assets which was amended in May 2014 by the IASB.

Since 2005, publicly traded European companies, including financial institutions, have been required to prepare their consolidated financial statements in accordance with IFRS. Belgium, for example, also requires unlisted banks and insurance companies to publish their consolidated financial statements according to IFRS as of 2006 and 2012, respectively (IFRS,2021). However, public companies in the United States are not required to report their financial statements under IFRS. US GAAP is the only mandatory applicable standard in the country. Nevertheless, 500 foreign SEC registrants use IFRS in their US financial statements.

2.2 Accounting of cryptographic assets under IFRS:

There is no specific IFRS standard that addresses the accounting of cryptographic assets. Of the 17 IFRS standards developed by the IASB, no standard provides guidance on the accounting of cryptographic assets and their related transactions. This is due to the diversity, innovation, and rapid growth associated with these assets. Furthermore, cryptographic assets are associated with different rights and conditions and can be held for various purposes. As a result, drawing a conclusion on single applicable accounting treatment for all cryptographic assets is difficult. In other words, the accounting for cryptographic assets by issuers and holders falls into a variety of existing IFRS standards.

In June 2019, the IFRS interpretation committee discussed the application of IFRS standards to cryptocurrency holders. It concluded that if a business holds cryptocurrencies for sale in the ordinary course of business, IAS 2- *Inventories* applies. However, if cryptocurrencies fall outside of IAS 2 scope, the holder should apply IAS 38 -*Intangible assets*.

In this section, we will look in detail at how a company can classify, measure, report, and disclose its cryptographic assets.

2.2.1 Accounting of cryptocurrencies held for own account under IFRS

Inventories

According to the IFRS interpretation committee (2019), cryptocurrencies held in the ordinary course of business meet the definition of an inventory under IFRS.

Inventory definition:

According to IAS 2, inventories should consist of assets held for sale in the ordinary course of business, assets in the process of production for sale in the ordinary course of business, and materials and supplies consumed in the production process (IAS 2.6). Unlike other financial reporting standards, intangible assets can fall under IAS 2 as it is not necessary for an inventory to be tangible under IFRS.

Accounting for cryptocurrencies as inventories might be appropriate if an entity holds these assets for sale in the ordinary course of business. In other words, an entity that trades cryptocurrencies and buys them in order to resell them in the future and generates profit from price volatility and market mispricing could consider cryptocurrencies as inventory and, therefore, apply IAS 2 to its holdings. Furthermore, some cryptocurrency service providers can act as broker-traders of cryptocurrencies. Broker traders are described as those who buy or sell commodities for others or on their account (IAS 2.5). Such entities can apply the commodity broker trader guidance under IAS 2 (IAS 2.3). Cryptocurrencies meet the first definition of an inventory under IAS 2 by falling under the category of

finished goods. However, cryptographic assets in general and cryptocurrencies are not used in the production process of the inventory and are not considered materials or supplies (EY,2021).

Inventory measurement:

IAS 2 requires measuring inventories at the lower of cost and net realizable value¹³. However, as stated in IAS 2 paragraph 3, the lower of cost and net realizable value is not the measurement approach to be applied by commodity broker-traders. Commodity broker-traders who acquire and resell cryptocurrencies to generate short-term profit are instead required to recognize their cryptocurrency inventories at fair value less costs to sell, with changes in fair value less costs to sell being recognized in profit or loss in the related period of change.

Holders of cryptocurrencies should apply paragraph 10 of IAS 2 standards while measuring their cryptocurrency inventories. Applying this paragraph, an entity includes in the cost of cryptocurrencies the purchase price, non-recoverable taxes, and any other costs associated with bringing the stock to its current location and condition. However, advance selling charges and, storage costs such as cryptocurrency wallet fees should be excluded from the inventory cost.

IAS 2 states that net realizable value (NRV) is estimated as the selling price in the ordinary course of business, less the estimated costs to make the sale. In other words, the NRV of cryptocurrencies refers to the net amount that an entity expects to realize from the sale of cryptocurrencies in the ordinary course of business (IAS 2.6). The cost of cryptographic assets recorded as inventory becomes unrecoverable if investors' interest declines or if their selling prices decline which is usually the case as cryptographic assets price is very volatile. Furthermore, if the estimated cost to sell the cryptographic assets increases, their cost can be totally or partially unrecoverable (EY, 2021).

Accordingly, cryptocurrency holders are required to estimate the net realizable value periodically. Where the NRV is less than the cost of completion and the estimated selling cost, the inventory should be subject to a write-down to its net realizable value, with the write-down being recognized as an expense in the period it occurs. When circumstances improve, the write-down of inventory can be reversed. However, the reversal amount should be equal to the amount previously written down such that the carrying amount never exceeds the original value of the cryptocurrencies (IAS 2.34).

As indicated above, commodity brokers-traders are, on the contrary, required to measure their commodity inventories at fair value less costs to sell, with changes in fair value less costs to sell being recognized in the income statement in the period of the change (IAS 2.3(b)). Under IFRS 13 - Fair value measurement, the fair value is defined as "the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date". Furthermore, commodity broker-traders are also required to estimate the cost of selling cryptocurrencies. The cost to sell includes the transaction fees on the blockchain and other fees charged to convert cryptocurrencies into fiat currencies. As with the cryptocurrency price, the associated fees are extremely volatile. The fees depend on the supply and demand for processing transactions on the relevant blockchain (EY, 2021).

According to PWC (2021), determining the fair value in the cryptographic asset case could be complicated (See section IFRS 13-Fair Value Measurement).

¹³ Net Realizable Value: the expected selling price of an inventory mindset the total selling costs.

Presentation and disclosure:

In terms of disclosures, entities holding cryptocurrencies qualified as inventory needs to disclose the following information:

- the carrying amount by cryptocurrency type.
- the entity's accounting policy for measuring inventory: the lower of cost and net realizable value or fair value less cost to sell.
- the amount of inventory recognized expensed in the period, any write-downs, and reversal of write-downs to net realizable value that were recognized in the income statements and the explication for the reversal.
- The disclosure requirements under IFRS 13.
- A specific requirement for broker traders holding cryptographic assets as inventory will be to disclose the carrying amount of those inventories measured at fair value less costs to sell.

Intangible assets

As stated in the IFRS interpretation committee paper issued in 2019, if an entity does not apply IA2 to cryptocurrencies held for sale in the ordinary course of business. The entity may apply IAS 38 to account for its holding of cryptocurrencies.

Intangible assets definition:

An asset is defined in IAS 38 as "*a resource controlled by an entity as a result of past events and from which future economic benefits are expected to flow to the entity.*" A subset of this category, intangible assets, are further described in paragraph 8 of IAS 38 as "an identifiable non-monetary asset without physical substance". This definition can be divided into three components. We will discuss below how each component meets or not the definition of intangible assets under IAS 38 :

- 1. Identifiable:** According to paragraph 12 of IAS 38, an identifiable asset is a separable asset or an asset that arises from contractual or other legal rights. An asset is considered separable if it "*is capable of being separated or divided from the entity and sold, transferred, licensed, rented, or exchanged, either individually or together with a related contract, identifiable asset, or liability*"(IAS 38.12). Cryptocurrencies can be traded on cryptocurrency exchange platforms or peer-to-peer transactions, and as result fulfil this part of the definition.
- 2. Non-monetary assets:** Monetary assets are money held and assets to be received in fixed or determinable amounts of money (IAS 38). The value of cryptocurrency is not defined or determined. On the contrary, its value is extremely volatile, influenced by changes in supply and demand, and cannot be predetermined (Grant Thornton,2018). Therefore, it meets the characteristics of a non-monetary item under IAS 21. IAS 21, " The Effects of Changes in Foreign Exchange Rates," another important element to note is that a non-monetary element is characterized by the absence of a right or an obligation to deliver a fixed or definable number of units of a specific currency. Accordingly, cryptocurrencies are not monetary assets but non-monetary assets.

- 3. Without physical substance:** Cryptocurrencies are a form of digital currency. Therefore, they lack physical substance by nature.

Intangible assets measurement:

Whether purchased or created by an entity, intangible assets shall be recognized only if it is likely that future economic benefits attributable to those assets will flow to the entity and if their cost can be measured reliably (IAS 38.21). Intangible assets acquired separately always meet the recognition criterion (IAS 38.33). The standard assumes that the purchase price reflects the future expectation of economic benefits. Consequently, an entity still expects future economic benefits from these intangible assets, even though the time or amount is unpredictable.

Under IAS 38, an entity shall initially measure intangible assets at cost (IAS 38.24). The cost of purchasing cryptographic assets consists of the acquisition price less any discount or rebates and the related cryptographic assets transactions cost, such as blockchain fees. Furthermore, it happens that an intangible asset is acquired in exchange for another non-monetary asset, the cost then should be measured at fair value, except if the transaction has no commercial substance or the fair value of the acquired and disposed asset cannot be reliably measured. In this case, the cost of the intangible asset is measured as the carrying amount of the disposed asset (EY, 2021).

IAS 38 contains two subsequent measurement approaches that can be applied as accounting policy choices: ***The cost model and the revaluation model.***

1) Cost model:

Under this method, intangible assets are initially measured at cost and are subsequently measured at cost less any accumulated amortization and impairment losses (IAS 38.74).

IAS 38 defines cost as "the amount of cash or cash equivalents paid or the fair value of other consideration given to acquire an asset at the time of its acquisition or construction, or, when applicable, the amount attributed to that asset when initially recognized in accordance with the specific requirements of other IFRSs".

Under paragraph 97 of IAS 38, if an intangible asset has a finite useful life, its cost less any residual value should be amortized. Under IAS 38, a finite life means a limited period over which the intangible asset is expected to generate benefit to the entity (IAS38.88). Intangible assets are generally not considered to have a residual value. Therefore, the cost of the asset over its useful life is not amortized.

Cryptocurrencies, including Bitcoin, do not have an expiry date, and they do not have a foreseeable limit to the period over which they could be exchanged or traded with a counterparty for an agreed sum of money or other goods or services (EY, 2021). If a cryptocurrency holder considers that there is no foreseeable limit over which such cryptocurrency is expected to generate profit for the entity. This cryptocurrency is considered to have an indefinite useful life and, therefore, no amortization is required. Nevertheless, indefinite useful life intangible assets need to be subject to impairment on an annual basis and whenever there is an indicator of depreciation (IAS 36).

As mentioned above, at the end of every reporting period, an entity must evaluate whether there is any indication that an asset is impaired. An asset is impaired if its carrying amount¹⁴ is higher than its recoverable amount¹⁵. A list of external and internal impairment indicators is listed in IAS 36. Once the impairment test determines that an intangible asset is impaired, the entity is expected to write down the original value of the asset less any depreciation to its recoverable amount with the write-down recorded in profit or loss for the period. If, in future periods, the impairment loss no longer exists, or the amount of the recognized loss has decreased. IAS 36 allows the holding entity to recognize a reversal of the impairment loss as long as the new carrying amount is not higher than the intangible asset's original price net of amortization.

Revaluation model:

It is possible for an entity to account for intangible assets at a revaluation model under IAS 38 if the fair value can be measured by reference to an active market. As mentioned before in this paper an active market is a market in which transactions for the asset or liability take place with a high frequency and volume (IFRS13). However, according to Grant Thornton (2018), not all cryptocurrencies have an active market in which they are traded. In other words, some of the trades on cryptocurrency exchange platforms could be non-cash transactions, where one cryptocurrency is exchanged for another. Therefore the holders might not be able to convert the cryptocurrency easily into cash (EY,2021).

Under the revaluation model, intangible assets are initially measured at cost and subsequently measured at fair value on the date of revaluation less accumulated amortization and impairment losses (IAS 38.75). IAS 38 requires an entity to recognize in other comprehensive income the net increase in fair value over the cost of the intangible asset. However, a net decrease in fair value below the cost of the intangible asset is recognized in profit or loss. The revaluation increase should be accumulated in equity under " revaluation surplus" unless they reverse a revaluation decrease previously recognized in the income statement.

In order to apply the revaluation model in IAS 38, the fair value of an intangible asset must be reliably measurable. Active markets are uncommon for intangible assets (IAS 38.78), intangible assets are generally measured using the cost model. However, for exchange-traded cryptocurrencies, the revaluation model of IAS 38 could be applicable (Grant Thornton, 2018).

Presentation and disclosure:

An entity holding a cryptocurrency classified as intangible assets under IAS 38 should disclose the following information:

- Reconciliation between the opening and closing carrying amounts.
- If the useful life of the cryptocurrency qualified as an intangible asset is assessed as indefinite or finite and any reasons supporting the assessment as indefinite life.
- A description of individually material holdings.
- Entities that measure cryptocurrency holdings under the revaluation model will need to disclose which exchange is used for measurement and the effective time of revaluation since that exchanges are open 24 hours a day and 7 days a week.

¹⁴ Carrying amount: the purchase price of the asset less accumulated depreciation and accumulated impairment.

¹⁵ Recoverable amount: the higher of Fair value less cost to sell and the value in use.

- Entities that measure intangibles under the revaluation model will also need to disclose : the effective date of the revaluation, a reconciliation of the opening and closing balance of the related revaluation surplus, and the carrying if the company had adopted the cost model.
- IFRS 13 requirements for entities holdings cryptocurrencies under the revaluation model.

Financial instruments

The IFRS Interpretations Committee has concluded that cryptocurrencies do not meet the definition of a financial asset under IAS 32. It is explained by the fact that cryptocurrencies are not cash. Nor an equity instrument of another entity. Furthermore, cryptocurrencies do not constitute a contractual right to receive cash or another financial asset from another entity and are not a contract that will or can be settled in the equity instruments of the entity (IAS 32, Paragraph 11).

Financial asset definition:

Another approach to accounting for cryptocurrencies would be to account for them as financial assets at Fair Value Through Profit or Loss. However, such an approach applies only if cryptocurrencies meet the definition of financial instruments as stated in IAS 32. Paragraph 11 of the standard defines an asset that is (1) *Cash* ; (2) *an equity instrument of another entity* ; (3) *a contractual right to exchange financial assets or financial liabilities with another entity* or (4) *a contract that will or may be settled in the entity's equity instruments* (IAS 32.11).

We will discuss below if cryptocurrencies can meet or not the definition of financial instruments under IAS 32:

1. Cash:

Paragraph AG3 of IAS 32 defines cash as financial assets because they are a medium of exchange and, therefore, the basis on which all transactions are valued and recorded in the financial statements.

The IFRS Interpretations Committee observed the definition of cash in IAS 32 and concluded that although some cryptocurrencies are used in exchange for limited goods and services, there is no cryptocurrency that is used as a medium of exchange and as the monetary value used in pricing most goods and services to the extent that it would serve as the foundation for measuring and accounting for all transactions. Therefore, the committee has reached the conclusion that cryptocurrencies cannot be considered cash as defined in IAS 32 since it lacks specific properties of cash.

2. Equity instruments:

IAS 32 defines an equity instrument as “ *Any contract that evidences a residual interest in the assets of an entity after deducting all of its liabilities*” (IAS 32.11). Therefore, a cryptocurrency that confers such contractual rights would be essentially an electronic share and thus a financial asset.

According to EY (2021), a cryptocurrency can result in variable cash flow to the holders, but this does not automatically mean that it meets the definition of an equity instrument under IFRS. For instance, a cryptocurrency that entitles the holder to a portion of the gross royalty stream on an intangible asset (such as an online game) would not be considered an equity instrument. Moreover, the issuer of cryptocurrency does not issue an obligation that rise a contractual right to a residual interest by the holder. The value of the cryptographic asset is linked to the population of a platform on which it operates, but there is no contractual right to a residual interest in the net assets of the underlying platform. In other words, cryptocurrencies available in the market so far don't represent an equity instrument.

3. Contractual right to cash or another financial asset

A cryptocurrency meets the definition of a financial asset if it is contractual and represents a right to receive cash or another financial asset. A cryptocurrency that gives the right to a cash payment or represents bonds or shares would meet the definition of a financial asset under IAS 32. In such cases, the cryptocurrency would, in substance, be equivalent to a digital payment slip, which would expose the holder to the economic risk of the underlying financial asset and also to default risk (EY, 2021).

However, this is not the case with cryptocurrencies. Cryptocurrencies are digital assets that use a sophisticated type of encryption to secure, verify transactions, and control the issuance of a new unit of cryptocurrency on the blockchain. It represents a decentralized medium of payments that works independently from any intermediary financial institution (BDO, 2019). They don't provide the holders with a right to cash or any other financial asset.

Nevertheless, Utility tokens and security tokens may be considered financial assets under IFRS as they represent cash or a contract. (See sections 2.1.1.3 and 2.1.1.4)

4. a contract that will or may be settled in the entity's equity instruments

As stated in Grant Thornton's (2018) paper, cryptocurrencies are not equity instruments or contracts to be settled in equity instruments.¹⁶

Conclusion:

- Cryptocurrencies do not meet the definition of financial assets.
- Cryptographic assets other than cryptocurrencies, including utility tokens and security tokens, can meet the definition of financial assets. Entities will be subject to IFRS 9-*Financial instruments* requirements.

2.2.2 Accounting of stablecoins held for own account under IFRS

According to EFRAG's April 2022 publication, cryptographic assets such as stablecoins could have contractual terms that would meet the definition of financial instruments and could thereby qualify for classification as financial assets.

Furthermore, the EFRAG highlights that the rights and obligations associated with the holding of stablecoins are different. Hence, the appropriate accounting for stablecoins varies accordingly. For instance, commodity-backed stablecoins can meet the definition of a financial asset under IAS 32 and are accounted for as a financial instrument under IFRS 9. However, fiat-backed tokens could be considered cash equivalents under IAS 7.

Financial assets :

Definition of financial assets :

As mentioned before in this paper, a financial instrument is, under IAS 32, "*a contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.*"

In the case of stablecoins, a contract exists between the holder of stablecoins and their issuing entity since they are required to have a binding agreement regarding the rights and obligations associated with the stablecoins. The holder of a specific stablecoin has the contractual right to receive cash at the current market price of the backed asset (such as gold) by using the redemption right. Hence, if

¹⁶ No further explication were provided in the publication.

there is a redemption right at the prevailing market price of the commodity backing the stablecoins, the definition of a financial asset under IAS 32 is met and the holder can account for the stablecoins as a financial instrument in accordance with IFRS 9.

However, the accounting for cryptocurrency-backed stablecoins would be different as there is no cash redemption or redemption option for the holder of such stablecoins. The terms and conditions associated with these stablecoins are different. Therefore, the holder needs to pay attention if the stablecoins represent a claim on the underlying asset itself or not, if all holders are illegible for redemption, or if it's limited to certain financial institutions and holders in certain jurisdictions. Furthermore, if the issuer has sole discretion over redemption, it means that the stablecoins do not embody a right to receive cash or another financial asset for the holder. Therefore, those stablecoins don't meet the definition of a financial asset under IAS32 (EY,2021).

Financial assets measurement :

According to IFRS 9 *"All financial instruments are initially measured at fair value plus or minus, in the case of a financial asset or financial liability not at fair value through profit or loss, transaction costs"* (IFRS 9. 5).

However, in the case of stablecoins or cryptographic assets in general, measurement of their fair value presents a challenge. Cryptographic assets, including stablecoins, are traded on more than one crypto-exchange platform, sometimes on non-regulated exchanges. The price and volume of these cryptographic assets differ significantly between markets. Even more, holders can trade stablecoins with one another rather than trading them for cash. Therefore, it is difficult for an entity to determine its principal or advantageous markets. If an entity fails to determine the price of its stablecoins based on an active market (Level 1 Fair Value), it cannot account for stablecoins under IFRS9.

IFRS 9 allows holders of financial assets under the scope of IAS 39 to measure their financial assets either at amortized cost or at fair value. However, the amortized cost measurement cannot be employed for stablecoins as they do not have a maturity date (David Procházka, 2018). Only fair value measurement can be applied. When financial assets are measured at fair value, gains and losses can be recognized in the income statement or other comprehensive income (IFRS 9).

Presentation and disclosure:

Holders of stablecoins that qualify as financial instruments will have to comply with the requirements of *IFRS 7 - Financial Instruments*, the standard includes two main categories of disclosure (IFRS 7.6):

- The significance of the financial instruments.
- Information about risks arising from financial instruments.

Moreover, the holders are also required to comply with the disclosures of *IFRS 13- Fair Value Measurement*.

Cash Equivalents :

Cash Equivalent definition:

Under IAS 7- *Statement of cash flows*, cash equivalent are “*short-term, highly liquid investments that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value*”. By looking at this definition, it seems that stablecoins can be classified as cash equivalents. Stablecoins are convertible to a known amount of cash and unlike cryptocurrencies, stablecoins are not subject to high price volatility.

Even if the EFRAG publication issued in 2022 didn't explain in detail how stablecoins could be classified as cash equivalents under IFRS. It has been stated that under specific circumstances, fiat-backed stablecoins could be qualified as cash or cash equivalents under IAS 7.

According to the Australian Accounting Review (AAR) published on behalf of CPA Australia, nine out of eleven stablecoins that represent 99.97% of the total market capitalization of the currency-backed stablecoins meet the requirements for the cash equivalent classification under IAS 7 (AAR paper, 2021). These requirements include that cash equivalents must be: highly liquid, convertible into a known amount of cash at the time of the initial investment, and subject to an insignificant risk of change in value (IAS7).

Cash equivalent measurement:

As a presentation category, cash equivalents do not require any specific recognition or measurement of the asset. To be considered as cash equivalents, stablecoins or cryptographic assets that meet the requirements of cash equivalents need to be first measured and classified in accordance with whatever applicable international accounting standards (IAS 7).

Presentation and disclosure:

Holders of stablecoins classified as cash equivalents under IAS 7 need to comply with the presentation and disclosure requirements of the standard. Under IAS 7, an entity is required to divide its cash flows into operating activities under the direct and indirect method, investing activities, and financing activities (IAS 7.10).

If a stablecoin is considered as a component of a cash equivalent, movements between other cash balances and the stablecoin will not be part of the cash flow activities. However, if a stablecoin is not considered a cash equivalent, any related cash transactions will be reported in the statement of cash flows as operating, investing, or financing activities (IAS 7.9).

Furthermore, a stablecoin holder is required to disclose material non-cash transactions where stablecoins are used as a medium of exchange for goods or services (IAS 7. 43).

2.2.3 Accounting of security tokens held for own account under IFRS

According to PWC (2019), security tokens could give the holder a right to cash or financial assets based on a platform's future performance or residual interest in the platform's net assets. These rights and obligations must be legally enforceable for security tokens in order to meet the definition of a financial asset under IFRS. Therefore, as long as there is a contractual right to cash or another financial asset, security tokens meet the criteria of financial assets under IFRS, and the holding entities should follow the requirements of IFRS 9 - Financial Instruments.

The measurement and the disclosure of IFRS 9 applied to security are the same as for stablecoins (Please refer to chapter 2.1.1.2 for more information).

2.2.4 Accounting of utility tokens held for own account under IFRS

The IFRS interpretation committee didn't propose any guidance on the accounting of utility tokens. In the June 2019 publication, the IFRS committee discussed only how existing IFRS standards could be applied to cryptocurrencies. And as utility tokens represent the right to receive goods and services in a specific ecosystem and not digital money, they fail to meet the definition of cryptocurrencies.

As suggested by PWC (2019), when utility tokens provide an entitlement to future goods or services, it might be considered a prepayment. If this prepayment for goods or services meets the definition of an intangible asset under IAS 38¹⁷, the utility token can be accounted for as an intangible asset under IFRS. The issuer of the utility token can view the prepayment as a contract liability and therefore apply IFRS 15 - *Revenue from Contracts with Customers* (KPMG, 2019).

Definition of prepayments :

A prepayment is *"an asset recorded where an entity has paid for goods or services before delivery of those goods or services"* (IAS 38.70). This definition leads to the conclusion that prepayments give an entity a right to future goods and services for which the entity has paid in advance.

Holders that intend to hold their utility tokens with the purpose of taking delivery of the underlying goods or services provided by the cryptocurrency platform could account for the utility tokens as prepayments under IAS 38 (EY, 2021).

Measurement of prepayments:

IFRS doesn't provide detailed guidance on the accounting of prepayments. IFRS notes that prepayments are recognized at cost and tested for impairment under IAS 36 Impairment of Assets.

Moreover, considering the limited guidance provided by IFRS regarding the accounting of prepayments by holders, prepayments holders need to establish their accounting policy and apply it consistently to similar items and throughout the reporting periods (See section 2.2.2.2.1 for more details).

Presentation and disclosure:

IFRS doesn't impose any disclosure requirements for prepayments. The holder of utility tokens classified as prepayments should refer to the guidance provided in IAS 1-*Presentation of financial statements* to determine the disclosures required in the given situation (See section 2.2.2.2.2 for more details).

2.2.5 Accounting of cryptocurrencies held on behalf of third parties

Crypto exchanges and other financial institutions might hold cryptographic assets, including cryptocurrencies, on behalf of their clients. For instance, a bank can provide custodial services for its client's cryptographic assets. Similarly, any entity that administers a trading platform is considered to be acting as a custodian. This brings up the accounting question of whether or not the holdings of cryptographic assets on behalf of customers should be recognized on the custodian financial statements under IFRS or off the balance sheet in the customer's financial statements.

¹⁷ See section 2.2.2.1 Intangible assets.

Determining whether the custodian can recognize cryptographic assets in its financial statements is very complex and will generally depend on the terms and conditions agreed with the client (EY, 2021).

In determining the accounting treatment, the custodian should carefully consider the following arrangements:

- The local laws and regulations governing cryptographic assets held on behalf of a third party.
- Analysis of the party that holds legal title to the cryptographic assets.
- The right of the custodian to 'borrow' explicitly or implicitly the cryptographic assets to use for its own needs.
- The degree of segregation of the cryptographic assets held for the custodian's own account from cryptographic assets held on behalf of clients.
- The security of customers' creditors in the event of liquidation of the entity holding the cryptographic assets on their behalf.
- Cryptographic assets held on behalf of clients are held in central wallets, cold wallets, hot wallets, or warm wallets. It's important to make the distinction since the terms and conditions vary for each arrangement. For example, with central wallets clients are only allowed to sell their cryptographic assets through trade in exchange for a fiat currency, trading a cryptographic asset for another is not allowed.
- If the cryptographic assets held on behalf of others are held in the account or wallet of the custodian itself or a third party account or wallet.

As suggested by PWC (2019), entities that held cryptographic assets on behalf of their customers should develop an accounting policy to account for such assets under IFRS. Since there is no IFRS that deals with cryptographic assets held on behalf of customers, custodians should consider the requirements of IAS 8 - Accounting Policies, Changes in Accounting Estimates, and Errors.

Conclusion:

Accounting of cryptographic assets held on behalf of clients represents a challenge for custodians and depositors given the different rights and obligations associated with such assets. There is no IFRS that discusses the issue of accounting for cryptographic assets held on behalf of the clients, so deciding on whether those cryptographic assets should be recognized on the custodians' financial statements or in the customers' is a matter of judgment.

2.2.6 Accounting of ICOs by the issuer

Cryptocurrency businesses can raise funds through ICO, to do so, the issuer entity issues tokens that grant access to their network's goods or services once established, and in exchange, they receive considerations from the holders of ICO tokens. The consideration takes on different forms; it can be cash or a type of cryptographic asset. Therefore, understanding the characteristics of each transaction is essential to determining the appropriate accounting by the ICO's issuers (PWC,2021).

1. *Consideration in the form of cryptographic assets:*

When the ICO issuer receives consideration in the form of another cryptographic asset, the transaction between the holder and the issuer of the ICO tokens qualifies as an exchange of similar goods and services under IFRS. Consequently, no accounting is needed by the issuer of the tokens. Nevertheless, cryptographic assets are associated with different rights and conditions, which means they are different. Therefore, accounting for tokens issued in an ICO as similar goods and services is inappropriate.

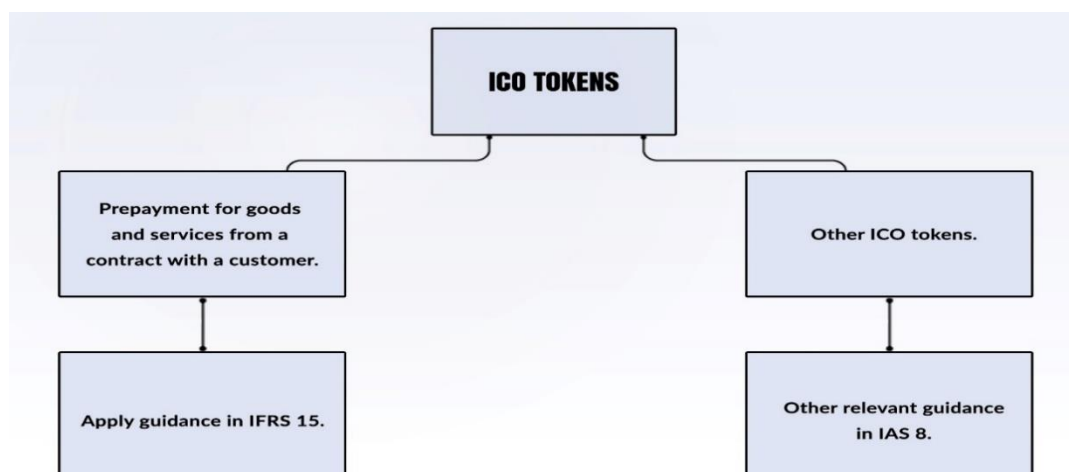


Table 7 - Accounting of ICOs under IFRS

Source: Personal creation based on PWC (2019)

2. *Consideration in the form of cash:*

When the ICO entity receives cash, it needs to record it on the asset side of the balance sheet. But deciding the appropriate corresponding liability might be complex because the ICO tokens issued vary, and their accounting treatments also vary accordingly.

In its 2019 publication, PWC suggested a possible accounting framework to be applied by ICO tokens issuers. We will discuss it below:

(a) Financial liability:

ICO tokens will not generally be classified as a financial liability under IFRS. The ICO tokens do not meet the definition of financial liability under IAS 32. However, under specific circumstances, the ICO tokens' terms and conditions allow the holders to get a refund reimbursement of products until they reach a certain stage. Only in this case, the issuer can recognize a financial liability and apply the guidance provided under IFRS 9.

(b) A contract with a customer:

ICO tokens issued can be accounted for as *a contract with a customer* under IFRS 15 – *Revenue from Contracts with Customers*. But this is subject to conditions. ICO Tokens are treated as a contract with a customer in accordance with IFRS 15 if the holder of the ICO token issued is a customer, a “contact” exists for accounting requirements, and the performance obligations attached to the ICO token do not fall into the scope of other standards such as IFRS 9 and IAS 9.

A customer is defined in IFRS 15 as “a party that has contracted with an entity to obtain goods or services that are an output of the entity’s ordinary activities in exchange for consideration”(IFRS 15. Appendix A). In addition, the ICO token issuer must determine whether a contract exists with a customer. To do so, the issuer must assess whether the whitepaper or purchase agreement creates enforceable rights or obligations between the holder and the issuer. Even more, the issuer should further consider all the criteria in paragraph 9 of IFRS 15 in determining whether a contract with a client exists.

(c) other relevant guidance:

If the ICO tokens do not meet the definition of a financial liability, equity instrument, or revenue transaction. IAS 8 can be applied to determine an appropriate accounting treatment.

2.2.7 Other relevant IFRS standards applied for cryptographic assets holders:

IAS 8 - Accounting Policies, Changes in Accounting Estimates and Errors

Under IFRS, when an entity chooses to account for an item under a specific standard, it must comply with the requirements of that standard. In other words, where an IFRS is specifically applicable to a transaction, event, or condition, the accounting applied to that item is to be determined by using the guidance associated with that IFRS (IAS 8.7). For instance, if a cryptographic asset has been classified as an inventory under IAS 2, the commodity-broker trader is required to apply IAS 2 in accounting for that cryptographic asset. It would not be appropriate to refer to another standard such as IAS 16 - *Property, Plant, and Equipment* or IFRS 9.

In the event that no IFRS standard or interpretation applies to a transaction, other events, or condition, the IAS 8 hierarchy enables an entity to use its judgment in establishing an appropriate accounting policy that produces relevant and reliable information (IAS 8.10). Relevant to users' economic decision-making needs and reliable in the sense that it provides a faithful image of the holders' financial performance (EY, 2021).

To make that judgment, the management of the entity should refer to the following sources, in descending order, and consider their applicability:

- the provisions and guidance in IASB standards and interpretations dealing with similar and related issues; *and*
- “the definitions, recognition criteria, and measurement concepts for assets, liabilities, income, and expenses in the Framework”. (IAS 8.11)

Management may also consider the most recent pronouncements of other standard-setting bodies that use a similar conceptual framework to develop accounting standards, other accounting literature, and accepted industry practices, to the extent that these do not conflict with the sources in paragraph 11 (IAS 8.12).

In conclusion, where no existing standard applies, holders of crypto assets should use a judgmental approach in developing their own accounting policy for recording cryptographic assets held in accordance with the IAS 8 hierarchy.

IAS 1 - Presentation of Financial Statements

In addition to the disclosures required by the IFRS standard applied by an entity for the classification and measurement of its cryptographic assets, it must also consider the general requirements of IAS 1. The holders of cryptographic assets shall disclose additional information if the requirements of the IFRS applied are not sufficient to help users to understand how the holding of cryptographic assets can impact the entity's financial position and performance.

The IFRS Interpretations Committee noted in its 2019 paper that holders of cryptocurrencies must disclose the following information:

- Under paragraph 122 of IAS1, an entity should disclose the judgment that its management has made to decide on the accounting policy for cryptocurrencies and whether these are among the judgments that had a material effect on the amounts reported in the financial statements.

From its side EY (2021) noted in its paper how IAS 1 disclosure requirements can be applied to cryptographic assets :

- Applying paragraph 29 of IAS 1, an entity presents material balances of cryptographic assets separately on the face of the balance sheet and material gains and losses from trading or revaluation in the statement of comprehensive income.
- Cryptographic asset holders will need to disclose the accounting policies used under IFRS and the judgment exercised in accounting for the various types of cryptographic assets (IAS 1.117-122).
- Any information relevant to the issuers of financial statements. For example, a description of the cryptographic assets, the split between the cryptographic assets held, an analysis of the price volatility, and the reason why the entity decided to hold these particular cryptographic assets and not others.
- Disclosures should be based on an appropriate accounting policy.

IFRS 13 - Fair value Measurement

As mentioned before in this paper, some cryptographic assets are measured at fair value or based on fair value less cost to sell. Fair value measurement is needed in the following situations:

- Cryptographic assets classified as inventories by broker traders under IAS 2. Those inventories are measured at fair value less costs to sell.
- Cryptographic assets defined as intangible assets under IAS 38 when the holder decides to apply the revaluation model.
- Fair value for cryptographic assets held on behalf of customers.

IFRS 13 defines fair value as *“the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date”*. Fair value is categorized into 3 different levels of the fair value hierarchy. The hierarchy gives the highest priority to (unadjusted) quoted prices in active markets for identical assets or liabilities and the lowest priority to unobservable inputs. (IFRS 13:73). Furthermore, fair value also implies that the asset sale or obligation transfer transaction will take place in the principal market for the asset or liability, or in the most advantageous market if there is no principal market (IFRS 13.15 /16).

The principal market refers to the market with the highest volume and level of activity for the cryptographic asset concerned that the holder can access. While the most advantageous market refers to the market that maximizes the profits from selling the asset or minimizes the costs associated with transferring the liability, after considering transaction and transport costs (IFRS 13. Appendix A). To determine if a principal market or an advantageous market exists for cryptographic assets, the management of the entity holding the cryptographic assets needs to use a reliable judgment as IFRS 13 doesn't set any specific requirements in terms of trading frequency or volume (IFRS 13.17). In other words, due to the specificity of cryptographic assets, determining the fair value of such assets can be very challenging.

Cryptographic assets trade on many regulated and non-regulated crypto exchanges, and the volume and price differ widely across these exchange platforms. Therefore, assessing the reliability of the trading data can be complex. According to a presentation from the SEC, cryptographic assets trading data reported by exchanges can be inflated. However, it was pointed out that the frequency and volumes reported by regulated exchanges are more reliable. For example, Coinmarket, the principal market for most cryptographic asset holders around the world.

Furthermore, cryptographic assets are usually exchanged for other cryptographic assets rather than being exchanged into a fiat currency. These exchanges may provide unreliable trading information, and therefore an entity cannot determine its principal or most advantageous market (PWC,2019). Moreover, under IFRS 13, a market where cryptographic assets are only exchanged for one another cannot be considered a principle market as it does not meet the definition of an active market under IFRS. An active market is defined 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”* (IFRS 13).

Another challenge for fair value measurement is the high price volatility of cryptographic assets. Cryptographic assets are traded on unregulated exchanges. The market for cryptocurrency and every other cryptographic asset is open 24 hours a day, 7 days a week. Therefore, the values of cryptographic assets are subject to high price fluctuations during the day. The timing of the reporting entity's valuation of the cryptographic asset in the market could be relevant as it can represent an accounting policy to be disclosed in the financial statements.

There is no additional guidance that further explains the fair value measurement of cryptographic assets. Therefore, holders need to understand the markets in which they trade their cryptographic assets in order to decide whether there is a market for the cryptographic assets that meet the requirements of fair value under IFRS 13 (See Appendix 2).

3. US GAAP :

1.1 Introduction of the US GAAP

Generally Accepted Accounting Principles (GAAP), also known as US GAAP, are a set of accounting rules and standards commonly followed for financial reporting in the United States. The US GAAP is the standard that U.S Securities and Exchange Commission has adopted. The standards contain conceptual definitions and accounting principles designed to ensure consistent and transparent corporate accounting and financial reporting between U.S based companies (CFA, 2022).

The Financial Accounting Standards Board (FASB) is responsible for the standards associated with GAAP. In other words, the FASB develops accounting and reporting standards and advises on any change that these financial accounting and reporting standards could be subject to. The FASB standards apply to publicly traded companies, private businesses, and non-profit organizations. However, financial reporting under US GAAP is only mandatory for public and regulated companies. On the other hand, the Government Accounting Standards Board (GASB) influences the financial accounting and reporting standards used at the state and local government levels. And from this, we can conclude that the FASB and the GASB standards are collectively known as US GAAP (AIEMD,2022).

Although US GAAP standards aim to deliver transparent and consistent financial statements, they do not guarantee that companies' financial statements are not misleading the investors by containing errors and omissions. Moreover, another weakness associated with the US GAAP is that the standards are not regulated by the government but instead are the result of government and companies' efforts. Therefore, the SEC considered abandoning US GAAP and switching to IFRS, the discussion started in 2008, but the adoption of IFRS as a reporting framework was very slow. Then, the SEC abandoned these changes so US GAAP and IFRS will continue to coexist (CFA, 2022).

The US GAAP is organized based on the FASB Accounting Standards Codification (The FASB ASC). On 1 July 2009, the FASB released the FASB ASC to serve as the authoritative source of non-governmental US GAAP. The FASB ASC is a financial accounting standard that restructures the US GAAP announcements into 90 topics. Therefore, interim financial statements and annual accounts are prepared under the FAB ASC for companies that report following US GAAP (FASB, 2022).

1.2 Accounting of cryptographic assets under US GAAP

Accounting for cryptographic assets is not currently covered by any U.S. GAAP accounting standard. However, it does not mean that cryptographic asset holders or issuers cant report their holding of such assets. In the absence of explicit accounting standards under US GAAP, most cryptographic assets held by entities that report in accordance with US GAAP, are classified as indefinite-lived intangible assets under ASC 350 *Intangibles — Goodwill and Other*.

In 2021, the American Institute of Certified Public Accountants (AICPA) and the Chartered Institute of Management Accountants (CIMA) published a paper entitled " *Accounting for and Auditing of Digital Assets*", in which they provide unauthorized guidance on the accounting and auditing of cryptographic assets under US GAAP.

This section will provide an overview of cryptographic assets accounting. The IACPA Practice Aid published in 2021 and other BIG 4 publications will be the primary source of information.

1.2.1 Accounting of cryptocurrencies held for own account under US GAAP

Intangible assets

According to the AICPA, cryptocurrencies meet the definition of intangible assets as defined in the FASB ASC Master Glossary. Therefore, they are subject to the same accounting and reporting requirements as traditional intangible assets under ASC 350, Intangibles — Goodwill and Other (KPMG U.S, 2022), even though cryptocurrencies have characteristics that are not typically intangible assets (EY U.S, 2018).

Definition of intangible assets

Intangible assets are defined by the FASB ASC Master Glossary as “*assets (not including financial assets) that lack physical substance.*” Cryptocurrencies don’t meet the definition of financial assets under US GAAP. Because, in order to be considered as financial assets under US GAAP, cryptocurrencies need to be qualified as cash, and they should give their holders an interest in another entity, or contractual right to receive money or another financial asset or financial instrument (ASC 860). However, cryptocurrencies are not cash because they are not issued by any sovereign government or accepted as legal tender. On the other hand, cryptocurrencies lack physical substance. Accordingly, they are considered intangible assets and should be accounted for under the requirements of FASB ASC 350.

Once an entity has classified its cryptocurrencies as intangible assets, the next step is to assess whether the cryptocurrencies should be considered finite or indefinite-lived intangible assets (ASC 350). According to FASB ASC 350-30-35-4, intangible assets that have no legal, regulatory, contractual, competitive, economic, or other factors that limit their useful life to the reporting entity, their useful life should be considered indefinite. Cryptocurrencies are determined to have no foreseeable limit to the period over which they are expected to contribute to the reporting entity's cash flow (KPMG, 2022). Therefore, cryptocurrencies meet the definition of indefinite-lived intangible assets.

Measurement of intangible assets :

Since cryptocurrencies are classified as indefinite-lived intangible assets under ASC 350, they are initially measured at cost. The cost of cryptocurrencies includes the original price and all related transaction costs. Cryptocurrencies should be assessed for impairment rather than amortized because it has been determined that they have an indefinite useful life.

Cryptocurrencies are tested for impairment by comparing the assets’ carrying amount to their fair value, measured in accordance with ASC 820-*Fair value measurement*. Whenever the carrying amount exceeds the fair value, an impairment loss is recognized (350-30-35-19). However, determining the fair value of cryptocurrencies requires judgment. The management of the entity holding the cryptocurrencies needs to determine the principal market or most advantageous market that the entity can access, and assess the reliability of the information provided in the markets (KPMG, 2022).

Cryptocurrencies intangibles assets with an indefinite life are tested for impairment annually or if impairment indicators are identified prior to the annual testing date. In practice, it means that cryptocurrency holders need to keep track of when cryptocurrencies similar to those they hold are brought or traded in their principal market or advantageous market for a price less than their book value (AICPA,2022).

Furthermore, in accordance with ASC 350-30-20, the reversal of an impairment loss is prohibited, even if the fair value of the cryptocurrency intangible asset recovers at the end of the reporting period in which the impairment loss was recognized. Impairment losses on indefinite-lived intangible assets are generally recognized in operating income (loss). Impairment losses on cryptocurrencies are presented as operating income (loss) to the extent that the gain on the cryptocurrency transaction is a component of operating income (loss) following ASC 606.

Indefinite-lived intangible assets need to be aggregated into a single unit of accounting for impairment test purposes if these intangible assets function as a single asset and are thus basically inseparable (ASC 350). For example, each unit of Bitcoin held by an entity is its unit of account. Bitcoin is a unit of account since an entity is able to sell each unit independently (EY U.S, 2018). Consequently, it is inappropriate to assess different types of cryptocurrencies such as Bitcoin and Ether, or multiple units of one cryptocurrency that have different carrying amounts recorded as a group (KPMG,2022).

Presentation and disclosures:

ASC 350 doesn't address disclosures for cryptocurrencies. Therefore, the disclosures of cryptocurrencies and related transactions are the same as for traditional intangible assets under the guidance of ASC 350.

Inventories

There is much debate as to whether cryptocurrencies meet the definition of inventory under US GAAP. Cryptocurrencies lack physical substance, one of the requirements of inventories under US GAAP, so they don't meet the definition of inventories. However, under certain circumstances, they can be accounted for as inventories even if they lack physical substance. The AICPA paper discussed how and when cryptocurrencies are inventories as defined in the FASB ASC Master Glossary.

Definition of inventories

ASC master glossary defines an inventory as “ *tangible personal property that is held for sale in the ordinary course of business.*” In other words, in order to be accounted for as inventories under US GAAP cryptocurrencies need to be (1) tangible and (2) held in the ordinary course of business.

Let's discuss if cryptocurrencies meet the definition of inventory under US GAAP:

- 1. *Tangible assets:*** Cryptocurrencies lack physical substance and are generally used as means of exchange or for trading purposes. Therefore, they do not meet the definition of inventory under ASC 330.
- 2. *Held in the ordinary course of business:*** Cryptocurrencies may be held for sale in the ordinary course of business in the same way that commodity inventories are held by brokers. Accordingly, holders can account for cryptocurrencies as inventory under specific facts and circumstances (AICPA, 2022).

According to Deloitte (2018), in the absence of clear guidance from the FASB regarding the accounting of cryptocurrencies by broker traders, it may be appropriate to account for these assets as inventory. However, before reaching such a conclusion, cryptocurrency holders need to evaluate their circumstances.

Similarly, the AICPA suggests including cryptocurrencies that are held for trading in the ordinary course of business in the inventory category under US GAAP. Its suggestion is based on the FASB ASC 940, which allows the interpretation of inventory's definition by broker-dealers rather than fixing specific requirements. Since the definition of inventory held by a broker-dealer includes not only tangible assets but financial instruments and physical commodities, it might be suitable to consider including intangible assets such as cryptocurrencies.

Measurement of inventories:

As inventories, cryptocurrencies are measured at fair value, with changes in fair value recorded in the income statement (ASC.940.320.35).

Presentation and disclosure:

Under US GAAP, the financial statement disclosures related to traditional inventories are the same as the ones applied to cryptocurrency inventories (KPMG, 2022).

- the accounting policies that have been adopted to value inventories.
- the total carrying amount of inventories.
- the carrying amount of inventories measured at fair value less cost to sell.
- the amount of any write-down of inventories that is recognized as an expense during the reporting period.
- The carrying value of inventories that are used as a guarantee against liabilities.
- Significant estimates were applied to inventories.

Other investments

Under US GAAP, companies that meet the definition of an investment company must account for cryptocurrencies held for capital appreciation purposes as other investments under ASC 946-*Financial Services—Investment Companies*.

According to the FASB ASC 946-10-15-5, an investment company is a company unregulated by the investment company act of 1940 that has the basic requirements of ASB ASC 946-10-15-6. The fundamental requirements include: (1) Provides investment management services after raising funds from investors, its business mission is to achieve capital appreciation and investment income. (2) An investee or its affiliates are not expected to provide returns or benefits to the entity or its affiliates that are not typically associated with ownership interests or that are not capital gains or investment income. Furthermore, an investment company should have some of the different characteristics indicated in FASB ASC 946-10-15-7. Those characteristics include having several investments, more than just one investor, the investors should be unrelated parties to the parent company (if it exists) or the investment manager, holdings in the form of shares or partnership shares, and all its investments are managed based on fair value.

An entity that holds cryptocurrencies as an investment class needs to consider all investment companies' characteristics mentioned above to decide if its activities are in line with those of an investment company under FASB ASC 946. For instance, purchasing cryptocurrencies with the intention of selling them for capital appreciation would be regarded as investing activities similar to those of an investment company under US GAAP.

If an entity holding cryptocurrencies determines that its activities are consistent with those of investment companies under FASB ASC 946. The next step would be to assess if its cryptocurrencies are debt security, equity security, or other investment (AICPA, 2021). Since they are not securities and they meet the definition of intangible assets under US GAAP, cryptocurrencies should be classified as other investments in accordance with ASC 946-325.

Measurement of “Other Investments”

Investment companies measure cryptocurrencies classified as another investment initially and subsequently at fair value. Therefore, both the increase and decrease in the fair value of the cryptocurrency are recognized (KPMG U.S, 2022).

Presentation and disclosure:

An investment company’s cryptocurrency investments are subject to the presentation and disclosure requirements that may apply to other categories of other investments. However, there are some specific presentation and disclosure requirements related to cryptocurrencies. Which are the following:

- Investment companies are required to present separately a “*schedule of investments*” to disclose detailed information about their investments. The “*schedule of investments*” should be a separate financial statement (ASC 946-210).
- If the investment company purchased cryptocurrency and other digital assets as part of a capital appreciation strategy, they should be listed on the schedule of investments (AICPA, 2021).
- Investments in the “*Schedule of Investments*” must be categorized by type of investment. Therefore cryptocurrencies held by an investment company need to be presented separately from cryptocurrency receivables (KPMG U.S, 2022).

1.2.2 Accounting of Stablecoins held for own account under US GAAP

As mentioned earlier in this paper, there are different types of stablecoins in the market. Each type of stablecoin is associated with various underlying rights and obligations. Therefore, the accounting rules will vary depending on the material facts and circumstances of the stablecoin. According to the AICPA, stablecoins can meet the requirements of financial instruments or assets under US GAAP.

A stablecoin that gives the holder an ownership interest in another company meets the definition of financial assets or financial instruments under US GAAP. As a result, it can be accounted for under FASB ASC 321, *Investments — Equity Securities*, FASB ASC 323, *Investments—Equity Method and Joint Ventures*, or FASB ASC 810, *Consolidation*.

On the other hand, a stablecoin that qualifies as an asset or financial instrument may contain an embedded derivative. In this case, FASB ASC 815, *Derivatives and Hedging*, applies.

In addition, some stablecoins can be redeemed for a known amount of money, which means that they meet the definition of financial assets under US GAAP. If these stablecoins also meet the definition of a security, the holding company can account for the stablecoins under FASB ASC 320, *Investments - Debt Securities*.

In brief, because of the differences among stablecoins available in the market, there is no unified accounting rule that holders of these crypto assets can apply. The Recognition, measurement, and disclosure of these assets depend on different facts and circumstances. Moreover, there is currently no specific guidance or paper that addresses in detail the accounting for stablecoins under US GAAP and how existing standards can apply, so concluding the accounting for these assets can be very complex.

1.2.3 Accounting of intangible assets cryptocurrencies received

Although cryptocurrencies do not meet the definition of cash under US GAAP and therefore cannot be considered an official medium of exchange. Many companies accept cryptocurrencies such as bitcoin as a medium of exchange.

When a company receives cryptocurrencies that are qualified as intangible assets under FASB ASC 350 as payment for goods and services delivered under a contract, the company should account for the cryptocurrencies received as indefinite-lived intangible assets in accordance with FASB ASC 350 and the related contract under FASB ASC 606, Revenue from Contract with Customers.

More specifically, if the goods and services are being provided to a customer under a contract, the company should apply Topic 606; if the goods and services are sold to a party that is not considered a customer, the company should follow the guidance provided in Subtopic 610-20. In both scenarios, the cryptocurrencies obtained in exchange for the product or service are initially valued at their fair market value on the date the contract was first signed. The amount of revenue (Topic 606) or gain (Subtopic 610-20) realized for the sale of the good or service is unaffected by changes in the fair value of a cryptocurrencies intangible assets that occurs after the contract is established (AICPA,2021).

1.2.4 Accounting of cryptocurrencies on behalf of a third party US GAAP

Companies do not always hold their own cryptocurrencies; they usually hire a third party to host their cryptocurrencies. This third party could be a crypto exchange, a retail broker, or a bank that provides cryptocurrency services. In this case, the question of which entity can recognize the cryptocurrencies on its financial statements arises. The answer is that the entity that controls cryptocurrencies can recognize these assets on its financial statements. The custodian and the depositor can refer to the agreement between them to determine who has control over the cryptocurrencies and also to the definition of an asset under FASB Concepts Statement No.6, *Elements of the financial statements*.

If the custodian has control over the cryptocurrency, then the custodian can recognize the cryptocurrency held on behalf of its customer as its assets and book a corresponding liability to return the cryptocurrency to the customer on its balance sheet. From its side, The depositor is required to recognize the right to receive the cryptocurrency in the future as an asset on its financial statements under Topic 815 (AICPA,2021).

According to the U.S SEC (2022), custodians should disclose information about the type and amount of cryptographic assets they hold, while each significant cryptographic asset should be disclosed separately. Custodians must also disclose any potential risks associated with their involvement in cryptocurrency businesses.

1.2.5 Other relevant US GAAP standards applied for cryptographic assets holders:

FASB ASC 820 - Fair value Measurement

The Fair value measurement is required under US GAAP to measure a cryptocurrency classified as :

- An “other investment” by an investment company under ASC 946.
- An indefinite-lived intangible asset within the scope of ASC 350 for impairment testing purposes.
- Revenue from Contract with Customers under FASB ASC 606.
- An inventory by a commodity broker trader under FASB ASC 940.

As under IFRS, the measurement of fair value under US GAAP depends on whether the entity holding the cryptocurrency operates in an active principal market. According to the FASB ASC 820-10-35-5, a fair value measurement supposes that the sale of the asset or transfer of the liability occurs in the principal market or the most advantageous market (if the asset or liability has no principal market).

A principal market is a market with the highest volume and level of activity that the holding entity can access. So, to determine the principal market, the entity needs to perform an assessment to identify if any regulatory restrictions can block its access to a specific market (FASB ASC 820). Furthermore, the entity needs to consider the reliability and sufficiency of the information regarding the volume and level of activity provided in the market. Cryptocurrencies with the highest market capitalization, such as Bitcoin and Ether, are actively traded on cryptocurrency exchanges. Therefore, they are considered to be operating in an active market, and determination of their fair value is possible. However, other cryptocurrencies may not be able to measure their value (EY U.S, 2018).

If an entity holding cryptocurrency determines that a principal market exists for its cryptocurrencies, the quoted price¹⁸ in the market is used to measure the fair value, even if prices in other markets can be considered more advantageous for the cryptocurrencies' measurement. The market that maximizes the price that would be obtained when selling the cryptocurrency after accounting for transaction costs is the most advantageous market for the entity (FASB ASC 820-10-35-9B).

If the cryptocurrency is traded in an active market, the fair value of the cryptocurrency should be measured within level 1 fair value, it implies that the valuation of an asset or liability is based on the *"quoted prices for similar assets or liabilities in active markets that an entity can access at the measurement date."* The Fair value according to the level 1 hierarchy is equal to the price in the active markets multiplied by the quantity of the cryptocurrency, the adjusting fair value is not allowed (AICPA, 2021).

However, determining the fair value at the measurement date is not easy since the cryptocurrency market, unlike traditional markets, doesn't close, they operate 24/7. In such a case, the cryptocurrency holding entity might consider setting an accounting convention to specify a cut-off time for determining the cryptocurrency's fair value. The cut-off time can be determined based on the closing time of the entity, fixed Coordinated Universal Time (UTC), or the closing time of a traditional market (AICPA, 2021).

The fair value measurement of the cryptocurrency should be categorized as level 1 or level 2 of the fair value hierarchy if there is no principal market for it (EY U.S, 2018).

4. Belgian GAAP, IFRS, and US GAAP similarities and differences

¹⁸ Quoted Price: the last price at which a trade took place.

In this section, we will try to see if there are similarities or differences in the accounting treatment of cryptographic assets under three major accounting standards: IFRS, US GAAP, and Belgian GAAP (See Appendix 3).

4.1 Cryptocurrencies held for own account

Classification	Acceptable under IFRS	Acceptable under US GAAP
Cash and cash equivalents	No	No
Intangible assets	Yes	Yes
Inventories	Yes	No
Financial instrument or financial asset	No	No

Table 8 - The table provides a summary of the accounting treatment of cryptocurrencies by holders

Source: Personal Creation

In order to be considered cash under IFRS or US GAAP, cryptocurrencies need to be backed by a central bank or a government. And to meet the definition of cash equivalents under IFRS or US GAAP, cryptocurrencies need to have a maturity date on which they can be convertible into a known amount of cash. However, as mentioned before in this paper, cryptocurrencies don't meet the above requirements, and accordingly, they can't be classified as cash or cash equivalents under IFRS and US GAAP.

Cryptocurrencies are usually held with the intention of selling them in the future for capital appreciation, so it can be thought that cryptocurrencies will automatically meet the definition of inventories under IFRS or US GAAP. However, US GAAP does not include intangible assets in inventories, so a company reporting under US GAAP can not recognize its cryptocurrencies as inventories except in the case where the stock is recorded by a commodity broker-trader. On the other hand, IFRS does not require inventories to be tangible assets, so cryptocurrencies held in the ordinary course of business would meet the definition of an inventory under IAS2.

Cryptocurrencies have no physical substance and therefore meet the criteria for recognition of an intangible asset under both IFRS and US GAAP. An entity holding cryptocurrencies may account for its cryptocurrencies as intangible assets with an indefinite useful life in accordance with FASB ASC 350 if it prepares its financial statements under US GAAP, or following the guidance in IAS 38 if its financial assets are prepared under IFRS.

An entity holding cryptocurrencies for its own account can't recognize its cryptocurrencies as financial assets or instruments under IFRS or US GAAP. Financial assets are defined as (1) assets other than cash and (2) assets that give the holder the right to receive money or the right to receive a financial

asset or a financial instrument. And as explained before, cryptocurrencies are not cash but they don't fulfill the second requirements and therefore they don't meet the accounting classification for a financial asset or instrument under both IFRS and US GAAP.

Moreover, US GAAP includes an industry-specific standard for investment companies which is not the case with IFRS. Under US GAAP investment companies that hold cryptocurrencies for investment purposes should apply the accounting framework under "another investment".

4.2 Stablecoins held for own account

Classification	Applicable under IFRS	Applicable under US GAAP
Financial assets or financial assets	Yes	Yes
Cash equivalents	Yes	No

Table 9 - The table provides a summary of the accounting treatment of stablecoins by holders

Source: Personal Creation

Stablecoins are financial instruments or financial assets under both IFRS and US GAAP because they can be redeemed for a known amount of cash. Moreover, stablecoins and, under specific circumstances, can meet the definition of cash equivalents under IFRS, so companies can account for them in accordance with IAS 7. However, stablecoins are not cash equivalents under US GAAP because they don't have a maturity date.

4.3 Cryptocurrencies held on behalf of customers

In the event that an entity holds its cryptocurrencies in a third-party wallet, determining which entity can recognize the cryptocurrencies on its financial statements can be complex. The custodian and the depositor need to refer to the contractual agreement to see which part has control over the cryptocurrencies. Under both IFRS and US GAAP, the entity that has control over the cryptocurrencies recognizes them as assets on their balance sheet, and the depositor records a right to receive the cryptocurrencies. The definition of "control" is the same under IFRS and US GAAP.

4.4 Cryptocurrencies received as payment

The accounting treatment of cryptocurrencies received as a means of payment is different under US GAAP and BE GAAP. Companies that report under US GAAP can account for the cryptocurrencies

received under certain conditions as intangible assets under ASC 350 and their associated contracts as revenue from a contract with customers under FASB ASC 606. The CNC instead treated the accounting of cryptocurrencies from the payer perspective. If an entity intends to pay for the goods and services received in cryptocurrencies such as Bitcoin, such cryptocurrencies meet the definition of other receivables under BE GAAP. By accounting for cryptocurrencies used as other receivables, an entity can book a claim on another party.

This chapter gathers the relevant data collected from thirty-eight financial statements and periodic reports published by public companies reporting under IFRS, US GAAP, and other local GAAPs such as Australian Accounting Standards (AASB standards), and Thai Accounting Standards (TAS). Those companies are located in different geographical areas, including the United States, Canada, Germany, and the United Kingdom. The objective of this chapter is to see the different accounting approaches adopted by companies to report for their cryptographic assets held for different purposes in the absence of clear guidance or accounting standards that cover this emerging asset class (Appendix 4).

Do companies record cryptographic assets as financial instruments, Inventories, or Intangible assets under the different accounting standards? How can companies record gains and losses on cryptographic assets? These are questions that we will try to answer in this chapter.

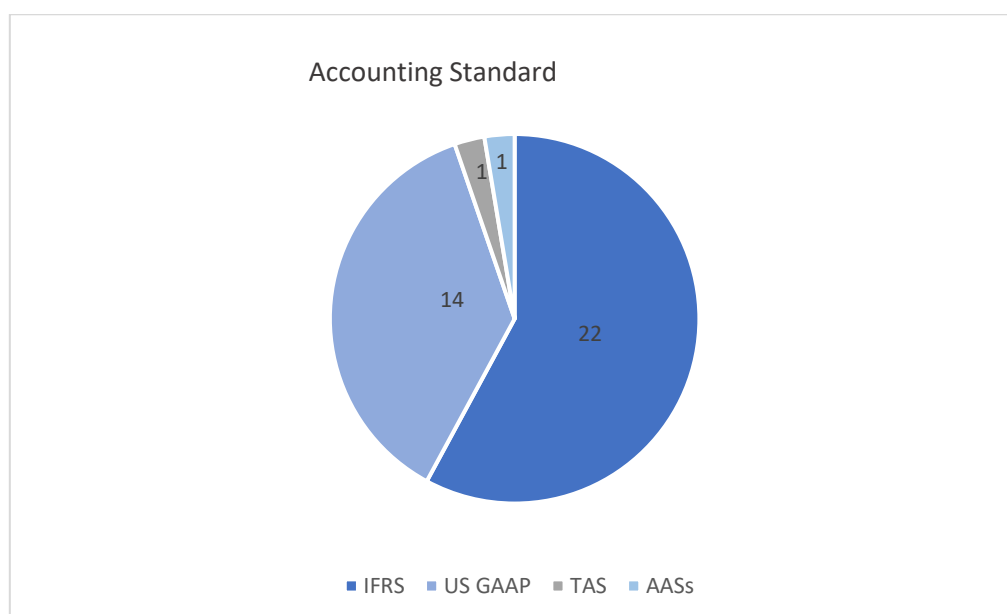


Table 10 - Accounting standard used in the accounting for cryptographic assets

The database shows that 22 out of 38 public companies involved in cryptographic assets activities have chosen or are required to prepare their financial statements under IFRS and must therefore account for their cryptographic assets following IFRS guidelines.

This can be explained by the fact that reporting under IFRS is adopted in more than 167 jurisdictions. Therefore, using IFRS in the preparation of financial statements or interim reports for cryptographic asset holders or service providers is highly probable. In our database, 68,18%¹⁹ of the 22 companies using IFRS in the preparation of financial statements are located in Canada, where the Canadian Standards Board (AcSB) requires public companies to prepare financial statements and interim reports under IFRS. Additionally, three other companies are situated in the European Union, where listed companies are required to prepare their consolidated financial statements under IFRS. Furthermore, even if the use of IFRS as an accounting standard by US public companies is not mandatory, one crypto company judged that it is relevant to account for their cryptographic assets under IFRS.

¹⁹ $15/22 * 100 = 68,18\%$

In sum, 57,89% of public companies that have published their financial statements use IFRS as an accounting standard. Therefore, these companies must refer to the IFRS interpretation committee paper, which advice on the accounting of cryptocurrencies.

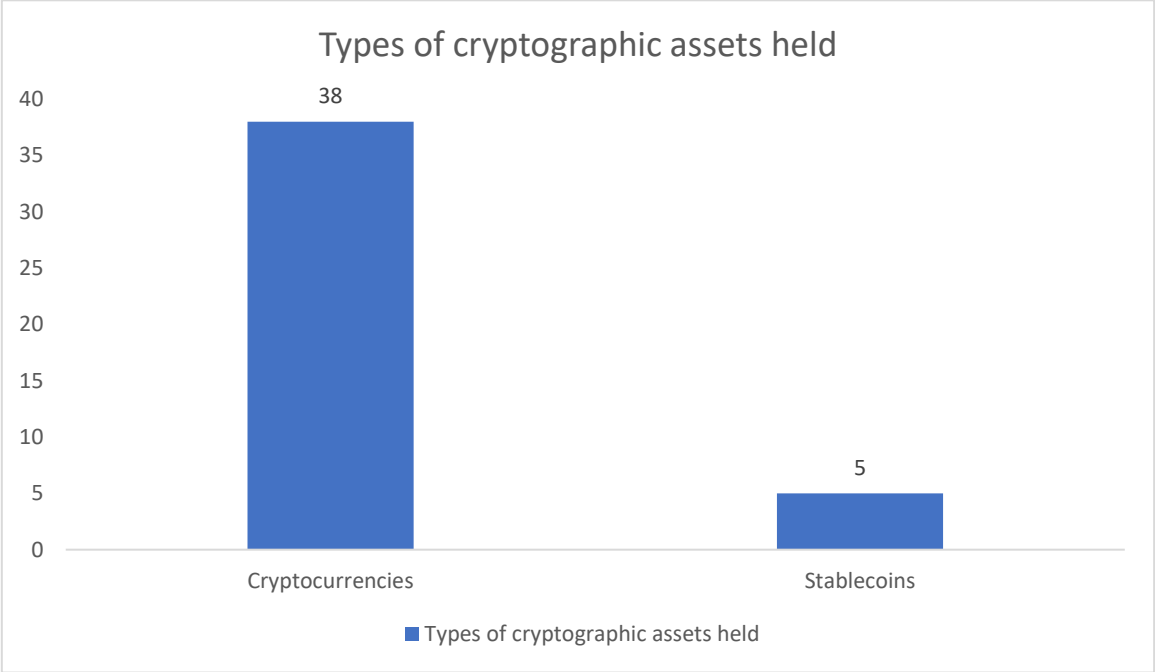


Table 11 - Types of cryptographic assets held by companies

This study showed that all 38 selected companies hold cryptocurrencies such as Bitcoin, Ethereum, Litecoin, and Dash. While only 5 out of 38 companies purchase and hold stablecoins like USDC coin and Tether alongside cryptocurrencies. Stablecoins, in other words, are never owned alone; they are always held alongside cryptocurrencies. However, the finding is not surprising. Cryptocurrencies are the most-known type of cryptographic asset because they were the first type of cryptographic asset to be issued in the market and have the highest market capitalization among other cryptographic assets. The high volatility of the cryptocurrencies didn't impact the holding of these assets by the 38 companies. Most of these companies believe that cryptocurrencies can recover their price losses in the long term.

Moreover, the 5 companies recognizing stablecoins on their balance sheet hold mostly Tether and USDC coins, which are stablecoins backed by the U.S dollar that have the highest market capitalization among other stablecoins (Coinmarketcap,2022). None of the companies hold commodity-backed stablecoins such as Tether Gold (XAUT) and Paxos Gold (PAXG). Mainly because fiat-backed tokens have a high trading volume and can consequently serve as a liquid medium of exchange, and by being backed by a strong fiat currency like the U.S dollar, fiat-backed tokens can be very credible and reliable to exchange. However, it doesn't mean that holding commodity-backed stablecoins is not a wise decision. It's just that this type of stablecoins is not easily exchanged; instead, they can serve as more investment instruments.

Furthermore, none of the companies has disclosed if they hold utility tokens or security tokens.

1. IFRS

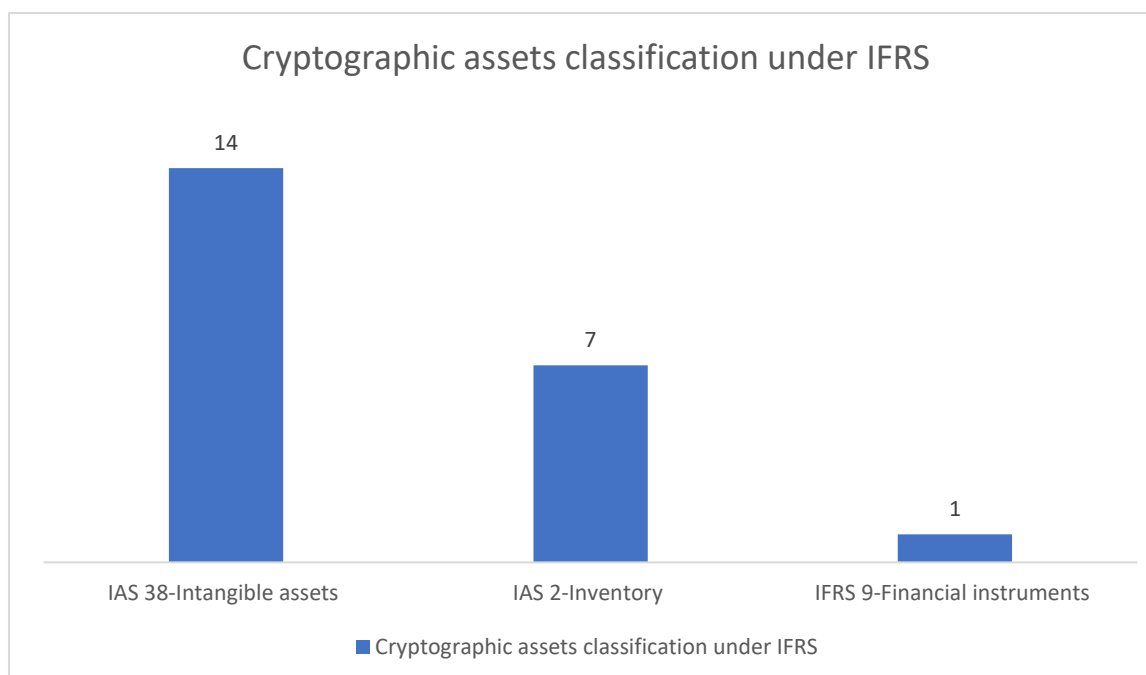


Table 12 - Classification of cryptographic assets under IFRS

Companies that report under IFRS classify their cryptographic asset holdings into three categories: intangible assets under IAS 38, inventories according to IAS 2, and financial instruments according to IFRS 9. In numbers, 14 companies decided to account for their cryptographic assets under IAS 38, 7 companies under IAS 2, whereas only one company decided to record their cryptographic assets under IFRS 9. Therefore, a question arises why there is a divergence in the accounting of cryptographic assets even if they are subject to the same accounting rules.

The answer has already been mentioned in Chapters 1 and 2 of this document. Cryptographic assets are associated with different rights and conditions; they represent different claims and derive their value from various sources. Accordingly, accounting for cryptographic assets under the same accounting standards is not appropriate and won't result in providing transparent and consistent financial statements, which is the purpose of IFRS standards. Furthermore, from the results, we can conclude that holder of cryptographic assets and in the absence of an IFRS that specifically deals with cryptographic assets are using existing IFRS as advised by the IFRS Interpretations Committee. The IFRS interpretation committee issued a paper in 2019 where it suggested accounting for cryptocurrencies as inventories if they are held in the ordinary course of business or as intangible assets if they don't meet the definition of intangible assets under IAS 38. However, the IFRS interpretation committee considered that cryptographic assets don't fall under the scope of IFRS9.

The data collected shows that the 8 companies reporting cryptographic assets as inventories under IAS 2 are companies that hold cryptographic assets as part of their operational activities. In other words, the 8 companies reporting under IAS 2 are either bitcoin mining companies or blockchain technology companies that hold crypto assets for short-term trading to generate profits based on the price fluctuation of cryptographic assets. Furthermore, this classification was based on the judgment of the companies' management in the absence of clear guidance on the recognition, measurement, and presentation of crypto assets. Based on the financial statements of these companies, these companies' business model meets the definition of a commodity broker-dealer under IAS 2, and they should therefore apply the accounting requirements of a traditional commodity broker-dealer under

IFRS. Moreover, all of the companies hold cryptocurrencies and not other cryptographic assets such as utility tokens or security tokens.

Entity	Country	Entity's type	Type of Crypto holded	Accounting	Accounting	Measures	Purpose of holding
Galaxy Digital	United States	Technology-driven financial	Bitcoin	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
Voyager Digital LTD	Canada	Cryptocurrency platform	Bitcoin,Voyager Token,USD Coin,StormX and Avalanche	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
Hive Blockchain	Canada	Bitcoin mining company	Bitcoin, Ethereum	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
Argo Blockchain PLC	United	Cryptocurrency miner	Bitcoin, Ethereum and other cryptocurrencies	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
DMG Blockchain	Canada	Blockchain and	Bitcoin,ethereum	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
Cypherpunk Holdings	Canada	Blockchain technologies	Bitcoin,ethereum	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
Cathedral Bitcoin Inc	Canada	Bitcoin mining company	Bitcoin	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
Banxa Holdings Inc	Canada	Payments Services	Bitcoin, Litecoin,Ethereum	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities

Table 13 - Accounting of cryptographic assets as Inventories under IAS 2

Source: Personal Creation

Furthermore, 14 of the 22 companies reporting under IFRS consider that cryptographic assets fall under the definition of intangible assets in accordance with IAS 38. Those companies have used judgment in reaching such a classification of cryptographic assets. According to their financial statements, the accounting of cryptographic assets as intangible assets is justified by their digital nature. Since cryptographic assets are non-monetary assets that lack physical substance (see chapter 2), these companies decided to treat their cryptographic assets as intangible assets under IAS 38. Moreover, it was also noted in these companies' financial statements that they tend to hold their cryptographic assets as long-term investments and not as short-term trading instruments. Therefore, the commodity broker-trader classification under IAS 2 is not appropriate. However, we can note that 2 out of the 14 companies accounting for cryptographic assets under IAS 38 are bitcoin-related businesses that hold cryptographic assets in the ordinary course of business, whereas according to the IFRS interpretation committee, such companies should account for cryptographic assets as inventories and not as intangible assets. No further classification of why these companies decided to record their cryptographic assets as intangible assets. Nevertheless, we can assume that the companies 'management exercised judgment in determining this accounting treatment as allowed under IFRS.

Entity	Country	Entity's type	Type of Crypto holded	Accounting	Accounting	Measures	Purpose of holding
Hut 8 Mining Group	Canada	Digital asset miner	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
Bitfarms Limited	Canada	Bitcoin mining company	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Operating activities
Bitcoin Group SE	Germany	Investment company	Bitcoin,Litecoin,ripple,dogecoin, Ethereum,Bitcoin gold	IFRS	IAS 38, Intangible assets	Revaluation model	Operating activities
NEXON Co.Ltd	Japan	Video game publisher	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
Meitu	Hong Kong	Technology company	Bitcoin	IFRS	IAS 38, Intangible assets	Cost model	Investment activities
Digihost Technology	Canada	Blockchain Technology	Bitcoin,ethereum	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
BIGG Digital Assets Inc.	Canada	A cryptocurrency exchange	Bitcoin,ethereum, algorand, theter,XRP, bitcoin cash and	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
Neptune Digital Assets	Canada	Bitcoin mining company	Bitcoin, ATOM,Fantom,Dash,Tether,Litecoin,Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investing activities
LQwD FinTech Corp	Canada	Lightning Network company	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
Sato technologies	Canada	Bitcoin mining company	Bitcoin, ethereum	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
MOGO	Canada	Non-bank car financing	Bitcoin, ethereum	IFRS	IAS 38, Intangible assets	Cost model	Investment activities
Net Holding Anonim	Turkey	management and auditing of	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
Mode Global Holdings	United	Fintech Group	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
NEPTUNE DIGITAL	Canada	Cryptocurrency company	Bitcoin, Fantom, Cosmos ,ATOM, Ethereum and Dash	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities

Table 14 - Accounting of cryptographic assets as Intangible Assets under IAS 38

Source: Personal Creation

Among the 14 financial statements prepared under IFRS examined in this study, 13 companies chose the revaluation model to subsequently measure their cryptocurrencies classified as intangible assets, while only one company chose the cost model. Which is quite a surprising result because, according

to paragraph 76 of IAS 38, the revaluation model is uncommon for intangible assets since they don't usually have an active market on which companies can measure the intangible assets' fair value (IAS 38.78). Moreover, we concluded through the literature of this paper that defining an active market for cryptocurrencies is complex for various reasons.

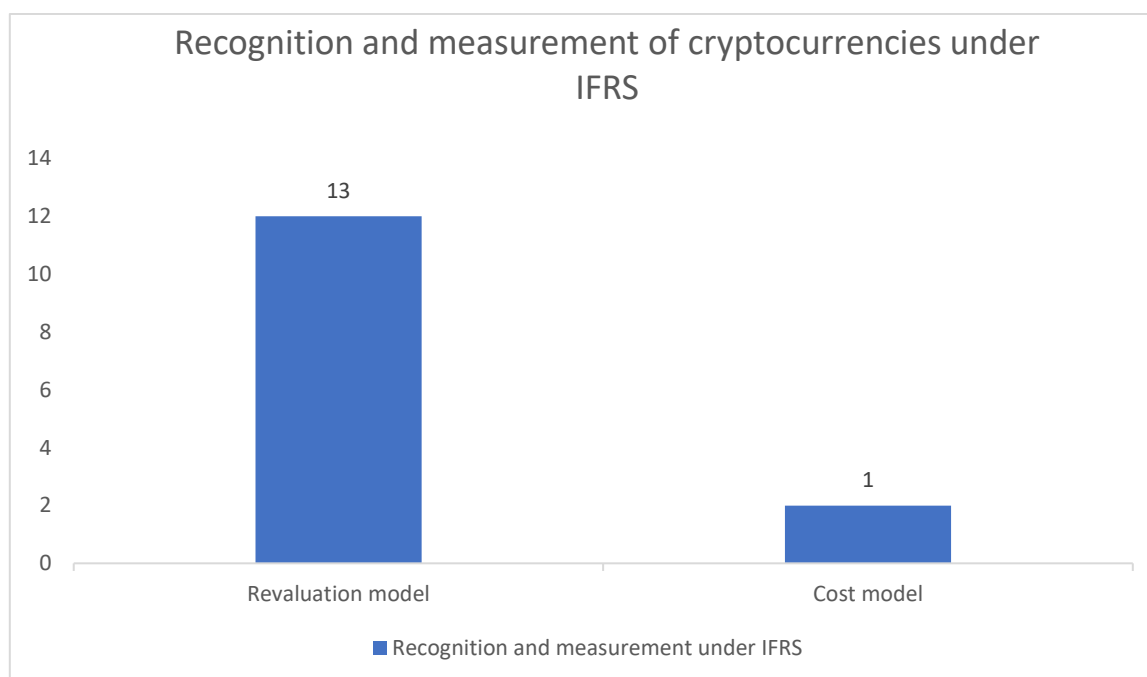


Table 15 - Measurement model under IAS 38

Moreover, NEPTUNE DIGITAL ASSETS CORP, a Bitcoin mining company located in Canada, exercised significant accounting judgment and decided to account for USD Coin as a financial asset under IFRS 9. According to the company, USD Coin, the second highest stablecoin by market capitalization²⁰, meets the definition of financial assets in accordance with IFRS 9 because the contractual terms of the USD Coin give the right to cash flow.

Entity	Country	Entity's type	Type of Crypto held	Accounting standard	Accounting	Measure	Purpose of holding
Neptune Digital Assets	Canada	Bitcoin mining company	Bitcoin, ATOM, Fantom, Dash, Tether, Litecoin, Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investing activities
			cash, stellar				
			USD coin		Financial Instruments ("IFRS 9").	Amortised cost	

Table16 - Accounting of Stablecoins as Financial instruments under IFRS 9

Source: Personal Creation

²⁰ According to CoinmarketCap.

Conclusion:

In the absence of clear IASB guidance on accounting for cryptographic assets, companies holding cryptographic assets such as cryptocurrencies and stablecoins need to refer to existing IFRS and make significant accounting judgments about whether existing IFRS definitions can be applied to cryptographic assets. We can conclude from the analysis of the financial assets of 22 companies that prepare reports under IFRS that cryptocurrencies can be classified as either intangible assets under IAS 38 or as inventories under IAS 2. The classification depends primarily on the purpose for which companies hold cryptographic assets. Companies that hold cryptographic assets as part of a long-term investment strategy recognize cryptocurrencies as intangible assets, while companies that hold cryptocurrencies for short-term capital appreciation purposes recognize cryptocurrencies as inventories. However, a public company holding stablecoins accounts for its holding as financial instruments under IFRS 9.

Furthermore, companies that hold cryptocurrencies justify their accounting policy by referring to the IFRS interpretation committee publication “*Holdings of Cryptocurrencies*”. They usually use it as a starting point to decide on cryptocurrency accounting. However, the accounting of stablecoins or other types of cryptographic assets such as utility tokens wasn’t discussed by the IASB, so the management of companies’ holding these types of assets should use judgment in determining the appropriate accounting classification.

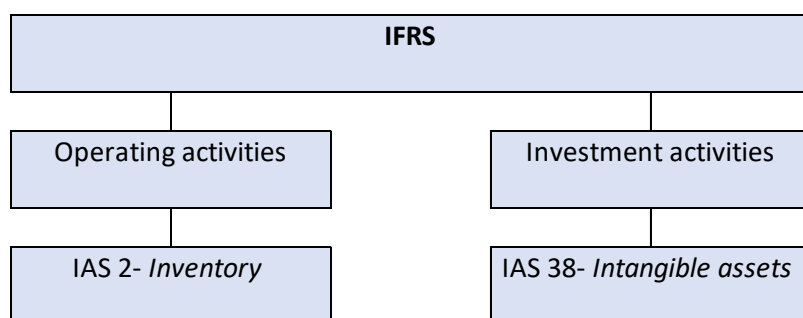


Tableau 17 -- Summary of accounting for cryptographic assets under IFRS

Source: Personal Creation based on the information collected

2. US GAAP

As shown in Table 14 of this chapter, of the 38 companies analyzed, 14 companies prepare their financial statements under US GAAP. US GAAP reporting is mandatory for all public and regulated companies in the United States. Therefore, 13 of the 14 companies that are US-based companies use the US GAAP accounting model. In addition, Mercado Libre, the largest e-commerce and payments ecosystem in Latin America, has been preparing its consolidated financial statements under US GAAP since the company was incorporated in Delaware. Even though it does not operate or generate profits from US operations, simply by being a Delaware company, the company is required by the SEC to prepare its financial statements under US GAAP.

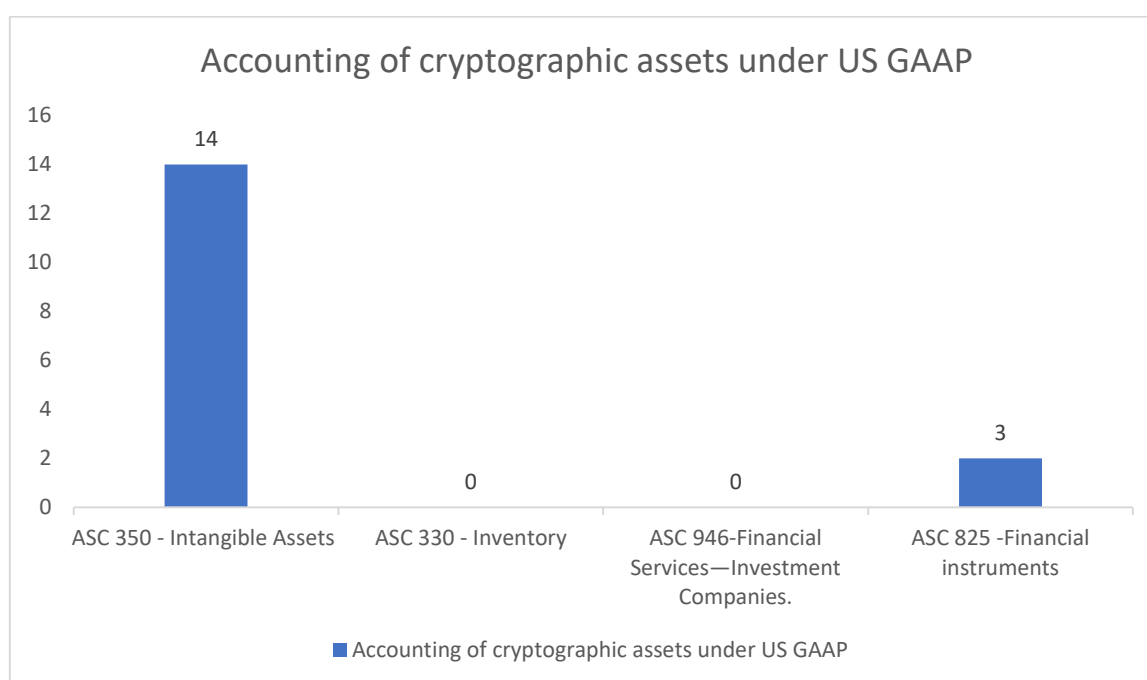


Table 18 - Cryptographic assets classification Under US GAAP

According to the financial statements of 14 public companies reporting under US GAAP, such as MicroStrategy, a business intelligence (BI) and analytics industry service provider, and Square, a financial services and digital payments company, cryptocurrencies are considered intangible assets under ASC 350 – Intangible-goodwill and other. This accounting classification under US GAAP is explained by the lack of a physical substance form of cryptocurrencies. As stated in the 14 companies' financial statements and supported by the AICPA publication published in 2019, cryptocurrencies meet the definition of intangible assets because they are not financial assets and lack physical substance. Furthermore, it was also noted in these financial statements that there is no limit on which cryptocurrencies can trade. There is no time limit on which cryptocurrencies can generate cash flow for their holders. Therefore, cryptocurrencies meet the definition of an indefinite live intangible asset under US GAAP and are accounted for accordingly.

Moreover, we can note that no company has accounted for its cryptocurrencies as inventory under ASC 330. This is explained by the fact that US GAAP requires inventories to be tangible. However, this is not the case for cryptocurrencies or cryptographic assets in general.

Since cryptographic assets are digital representations that lack physical substance, they will never meet the recognition criteria of inventories under FASB ASC 330, even if they are held in the ordinary course of business.

Therefore, cryptographic asset mining companies like Marathon Digital and Core Scientific that hold cryptocurrencies as part of their operating activities as they expect to sell these intangible assets shortly after the acquisition are also required to account for their cryptocurrencies as intangible assets.

Furthermore, this study showed that even if the AICPA proposed accounting for cryptocurrencies held for investment purposes as “other investment” under ASC 946 when the holders meet the definition of an investment company under US GAAP. However, None of the companies selected in this study accounted for cryptocurrencies as “other investments.” This accounting choice results from these companies’ judgment that their cryptocurrency activities are not consistent with the activities of an investment company in accordance with FASB ASC 946. Nevertheless, as noted in the AICPA & CIMA practice aid issued in 2021, an entity that acquires cryptographic assets intending to realize capital appreciation is considered to have investing activities similar to investment companies. But for instance, a company like Marathon Digital that holds cryptocurrencies for the same purposes considers that their crypto activities are operating activities and not investing activities under FASB ASC 946. Consequently, we can conclude that in the absence of strict accounting rules under US GAAP, companies can use judgment that might result in different accounting models for cryptographic assets.

In addition, it was shown in this study that the three companies that hold US dollar-backed stablecoins, namely USDC, DAI, and Tether, have decided to account for their holdings as financial instruments under ASC 825. Besides, it resulted from this study that not only stablecoins can be accounted for as financial instruments under the US GAAP, as mentioned earlier in this paper. However, cryptographic asset borrowings might fall under the scoop of financial instruments under US GAAP. First, cryptographic assets borrowing means that a company or an individual borrows cryptocurrencies from lenders qualified as investors in exchange for interest payments entitled in the case of cryptographic assets lending, " Crypto dividends" (STILT,2022). These borrowings are made possible through cryptographic asset lending platforms including Binance, CoinLoan, and Celsius (Danielle Greving, 2021). According to Coinbase Global (2020), crypto-currency borrowings are accounted for as hybrid instruments. The liability host agreement and its embedded derivatives of borrowed crypto assets can be accounted for as financial instruments or financial assets under US GAAP. In addition, it was also noted that Coinbase Global has entered into a mandate to purchase crypto assets from an issuer. The company accounts for the contract with the issuer as a derivative and the warrant as a prepaid expense. This classification is consistent with the AICPA document issued in 2019 and revised in 2021.

Conclusion:

According to our study, holders of crypto-currencies reporting under US GAAP treat them as indefinite-lived intangible assets under ASC 350 for accounting purposes. This classification is justified by the intangible nature of cryptocurrencies and is not a result of the purposes for which the cryptocurrencies are held, as is the case under other accounting standards. In other words, holding cryptocurrency as an operating or an investment activity results in the same accounting framework.

In addition, accounting for crypto-currencies as "other investments" under ASC 946 has been suggested by the AICPA for investment companies, such as Bitcoin mining companies. However, in analyzing the financial statements of 22 companies that maintain their accounting under US GAAP,

we found that public crypto-currency mining companies such as Marathon Digital and Core Scientific account for their crypto-currency holdings as intangible assets under ASC 350. even though they engage in activities consistent with investment company activities as defined by the AICPA. Nevertheless, this does not mean that their accounting is not correct. On the contrary, it demonstrates the importance of accounting judgments and estimates in US GAAP accounting in the absence of clear FASB guidance.

Moreover, companies holding stablecoins backed by the US dollar consider that stablecoins meet the definition of financial instruments or financial assets under US GAAP. Accordingly, they are accounted for as financial instruments under ASC 825.

3. Local GAAPs

DigitalX:

It might be interesting to discuss how the first publicly listed blockchain technology company, DigitalX, accounts for cryptographic assets. DigitalX is an Australian company that operates as a bitcoin mining company, a developer of blockchain technology applications²¹, and is the first Australian digital assets fund. The company prepares its financial reports under Australian Accounting Standards (AASBs) and interpretations, while it prepares its consolidated financial statements in accordance with IFRS.

To decide on the accounting framework for cryptographic assets, the management of DigitalX refers to the guidance released by the IASB and other standards bodies around the world, such as the FASB in the United States. Unlike other companies' accounting policies reviewed in this study, DigitalX classified its cryptographic assets into three categories: Inventory, intangible assets, and financial assets (DigitalX,2021).

1. Inventories under AASB 102- *Inventory*

Cryptocurrencies held by the company for trading activities are classified as inventory under AASB 102. DigitalX uses a historical method to measure inventory at fair value less costs to sell, with changes in fair value less costs to sell recognized in the income statement of the period of change. In addition, the company must derecognize cryptocurrencies from its financial statements when all risks and rewards associated with the cryptocurrencies have been transferred to another party and when the company loses control of the cryptocurrencies, which means that it cannot access any economic benefit from owning cryptocurrencies classified as inventory.

2. Financial assets under AASB 139- *Financial Instruments: Recognition and Measurement*

Cryptographic assets that meet the definition of a financial asset under the Australian GAAP are initially measured at fair value adjusted for existing transaction costs. After initial recognition, the company subsequently measures cryptographic assets at fair value through profit or loss (FVTPL) under AASB 13²². If the company asses that the cryptographic assets are traded on an active market, the fair value of the cryptographic asset is measured within level 1 as the quantity held by the company multiplied by the quoted price in United States dollars on Coinmarketcap.

3. Intangible assets under AASB 138-*Intangible Assets*

²² AASB 13 Fair Value Measurement fair value hierarchy

If the cryptographic assets held by the company don't fall under the scope of inventory or financial assets, the company accounts for these assets as intangible assets under AASB 138.

DigitalX measure initially the intangible assets at cost and subsequently uses the revaluation model. The management of DigitalX based its judgment on referring to the IASB publication of 2019.

We can conclude that the accounting framework under the Australian GAAP is very similar to the accounting of cryptographic assets under IFRS.

The Brooker Group:

The Brooker Group is a public financial advisory and capital management firm based in Thailand. Its mission is to provide its services to traditional and digital asset holders (The Brooker Group,2021). The company prepares its separate financial statements and consolidated financial statements under the Thai Financial Reporting Standards ²³(TFRS).

The company classifies its investment in Bitcoin, Ethereum, and other Digital Tokens as Digital Asset Inventory. By classifying its cryptographic assets as Digital Asset Inventory, the company followed the in a way the guidance proposed by the IASB in the absence of an IFRS in connection with cryptographic assets. In accordance with the TRFS rules, the company initially recognizes cost and measures the cryptographic assets acquired at the of lower cost or the net realizable.

The accounting framework for cryptographic assets adopted by The Brooker Group under TFRS is similar to the accounting of cryptographic assets under IFRS because TFRS standards are translated from IFRS. Thailand has adopted all IFRS standards starting from 1 January 2021 (IFRS,2021).

²³ TRFS: Thai Financial Reporting Standards.

Chapter 4: Cryptographic assets' accounting limits

The absence of an accounting standard for cryptographic assets is the first obstacle to accounting for them under the different Generally Accepted Accounting Principles. Currently, standard setters such as the IASB or the FASB haven't issued any accounting standards or interpretations that deal specifically with cryptographic assets. Instead, they advised applying existing accounting standards to cryptographic assets. For instance, a company that prepares its financial statements under IFRS should apply existing IFRS accounting standards to its held cryptographic assets. In other words, this emergent asset class should be subject to the same recognition, measurement, and disclosure criteria as traditional assets. However, financial statement preparers have questioned the relevance of applying IFRS, US GAAP, or other existing local GAAP accounting rules to cryptographic assets.

This question arises because the existing accounting standards were not drafted considering cryptographic assets. As it happens, cryptographic assets can meet the definitions and characteristics of traditional assets covered by the different accounting standards. However, Cryptographic assets have an evolving nature, are very diverse, and are associated with various rights and individual circumstances, making it inappropriate to apply existing guidance. According to Grant Thornton (2018), accounting for cryptocurrencies as intangible assets under IAS 38 is not satisfying, as the measurement of cryptocurrencies at a cost by IAS 38 may not reflect their true value, and also, the intangible asset revaluation model is very complicated to apply to cryptographic assets as gains and losses are either recognized in the income statement or other comprehensive income depending on specific circumstances. Similarly, KPMG (2020) recommended that cryptocurrencies be measured at fair value because this shows their actual value in a given period. Nevertheless, this is not the case under US GAAP. Under US GAAP, it is only possible to measure cryptocurrencies at their fair value if they are held for investment purposes by a company that exercises activities consistent with investment companies' activities under FASB ASC 946 (AICPA, 2021). In addition, companies like MicroStrategy are not satisfied with the accounting treatment of cryptocurrencies under US GAAP. Because under US GAAP, cryptocurrencies are accounted for as indefinite-lived intangible assets under FASB ASC 350, which means that companies must report losses when the fair value of cryptocurrencies is less than the cost. However, reversal of impairment is prohibited under US GAAP if cryptocurrency prices recover later. For example, as noted in MicroStrategy's financial statements (2022), the company reported a net loss of approximately \$131 million in Q1 2022 because of the \$170 million impairment losses that the company booked during the same period as a result of the Bitcoin price's depreciation. The company added that if it weren't for the impairment loss booked, they would have reported a net profit of \$39 million. MicroStrategy judged the relevance of applying existing US GAAP standards to cryptocurrencies because the company finds itself reporting significant losses even if its core business is very strong. Therefore, it presented in its Q1 2022 financial statements a section entitled "Non-GAAP Measures" in which it shows the net profit without retaining the impairment loss related to Bitcoin to present a reliable image of its financial position to investors. However, the SEC asked the company to remove this section from the SEC filings. Furthermore, this issue raised by US-listed companies does not affect companies reporting under IFRS, as it allows the reversal of impairment losses for intangible assets (IAS 36).

Moreover, cryptographic asset holders, issuers, or custodians are required to disclose more information than traditional businesses (CPA, 2021). These entities need to respect the disclosure

requirements of the adopted accounting standard used to account for the cryptographic assets in addition to other disclosures to provide relevant information about the financial situation to the readers of the financial statement because of the complex nature of the cryptographic assets and their variety (Granth Thornton, 2018). In addition, accounting for crypto assets is complex as it requires an understanding of accounting standards and also of blockchain technologies (EY,2021).

Conclusion:

From the literature review, it is clear that the nature of cryptographic assets is not easy to understand. Cryptographic assets are based on relatively new technologies such as blockchain, which means that they are evolving rapidly. In addition, there are different types of cryptographic assets in the market, including cryptocurrencies which can sometimes be confused with the umbrella of cryptographic assets that contain other types of cryptographic assets, such as stablecoins, utility tokens, and security tokens. While these different cryptographic assets have various characteristics, no two cryptographic assets are similar. On the contrary, they have distinct characteristics, are held for various reasons, and are even more created based on different technologies and blockchains. Therefore, understanding cryptographic assets are complex and require advanced knowledge of distributed ledger technology.

This diversity of cryptographic assets makes it impossible to have a legal or generally accepted definition of this emerging asset class. In the view of this paper, there is no unique definition of cryptographic assets. Nevertheless, companies, standards bodies, regulators, and government institutions define cryptographic assets in different ways, depending on the purpose of the discussion on these assets. Furthermore, the debate surrounding cryptographic assets also covers the classification of cryptographic assets into different categories. According to Chapter 1 of this paper, the classification of cryptographic assets by different stakeholders can range from very broad to very detailed.

However, despite the nuanced nature of cryptographic assets, the number of individuals and institutions interested in cryptographic assets continued to increase, forcing government authorities around the world to develop new regulations to protect investors' interests and maintain financial stability. This research also concluded that the regulations governing cryptographic assets are very fragmented. Some countries apply existing financial regulations to cryptographic assets despite their digital nature. For instance, MiFID II is applied by the EU-based cryptographic asset trading platforms qualified as financial instruments. Other countries have developed specific crypto regulations by creating license requirements. For example, the EU MICA regulation agreed upon this year or the executive order signed by the US president that directs the country's federal government to create a regulation plan for cryptocurrencies.

Another challenge was highlighted by the increase in the number of companies involved in holding and issuing cryptographic assets. The challenge was related to the accounting for cryptographic assets and related transactions under generally accepted accounting rules. The financial statement preparers are incapable of achieving an appropriate accounting treatment that could result in reliable financial information for the readers of the financial statements. And this is due to the lack of accounting rules dealing specifically with cryptographic assets. Standards setters such as the IASB and the FASB didn't update the existing accounting standards to cover cryptographic assets' nature. On the contrary, they have advised applying the same accounting guidance provided for traditional businesses under IFRS and US GAAP. The IFRS IC noted that among the multiple existing IFRSs, IAS 2 and IAS 38 are the only relevant accounting standards that apply to the holdings of cryptographic assets. The IFRS IC explained that IAS 2 applies to cryptocurrencies when they are considered part of the holder's operating activities. While IAS 38 applies to holdings of cryptocurrencies if they are not held for sale in the ordinary course of business. In addition, under US GAAP, the AICPA issued a practice aid in 2019 stating that companies reporting under US GAAP may account for their cryptocurrency holdings as intangible assets under ASC 350 or as "other investments" under ASC 946 if held by an investment company with no modifications to the standards.

Further, this paper noted that if there is little guidance on cryptocurrency accounting by holders, financial reporting standards developers ignored, for now, the accounting of other types of cryptographic assets, including stablecoins, utility tokens, security tokens, and hybrid tokens. Therefore, the management of such asset holders needs usually exercises accounting judgment to determine the appropriate accounting treatment of their cryptographic assets among the existing accounting standards. Furthermore, it resulted from this paper that cryptographic assets don't need only to be accounted for by holders. But also by issuers, custodians, lenders, and borrowers in the absence of any accounting guidance.

The objective of this paper was to analyze the accounting treatment of cryptographic assets and related transactions that companies adopt under IFRS, US GAAP, and Belgian GAAP in the absence of accounting standards for these assets. To this end, 38 financial statements of companies reporting under IFRS, US GAAP, and other local GAAP were analyzed to identify how companies decide to account for cryptographic assets and whether they can reflect their true value while reporting under accounting standards that have not been drafted to cover assets of digital nature. It was demonstrated through the literature review that the accounting rules between IFRS and US GAAP are different. Therefore, the results of this study are presented first by accounting standards and then analyzed within the same accounting standard.

It resulted from this study that companies holding cryptocurrencies for their own account under IFRS follow the guidance of the IFRS interpretation committee by accounting for cryptocurrencies held in the ordinary course of business as inventory under IAS 2 or as intangible assets under IAS 38 if the companies cryptocurrencies for long-term investment purposes. While companies preparing financial statements under US GAAP, account for cryptocurrencies as intangible assets under FASB ASC 350 regardless of the purpose for which the company holds the assets since inventories need to have a physical substance under US GAAP. Moreover, stablecoins are accounted for as financial as financial instruments under IFRS 9 and ASC 825 following IFRS and US GAAP respectively. Among the sample of public companies holding cryptographic assets studied in this paper, one company prepare its financial statement under TAS and the other under AASB. They both accounted for cryptographic assets as inventories, intangible assets, or financial assets under their local generally accepted accounting rules, translating the guidance issued by the IASB into their local laws.

By applying existing accounting standards to account for these emerging digital assets, companies expressed their concerns about the relevance of existing accounting standards, that weren't revised to take into consideration the digital nature, the price volatility, or even the diversity of these assets. According to this paper applying existing accounting rules doesn't reflect the true value of these assets or even provide a clear view of the financial position of these companies. Therefore, companies interested in cryptographic assets business are asking accounting standards setters to develop a cryptographic assets accounting framework or at least revise existing accounting rules to include features of cryptographic assets.

The lack of an internationally accepted definition of cryptographic assets, some feature of these assets that can be considered as an advantage by a part is viewed as a risk by another, associated with the fragmented regulation surrounding cryptographic assets, and the lack of a clear accounting framework makes cryptographic assets a nuanced and debated topic involving a lot of individual interpretations and significant accounting judgments.

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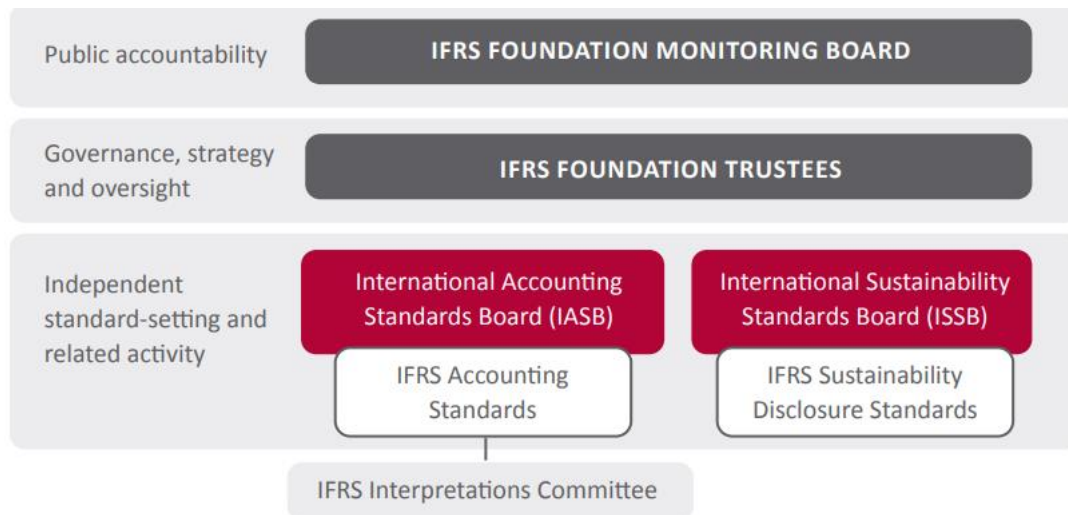
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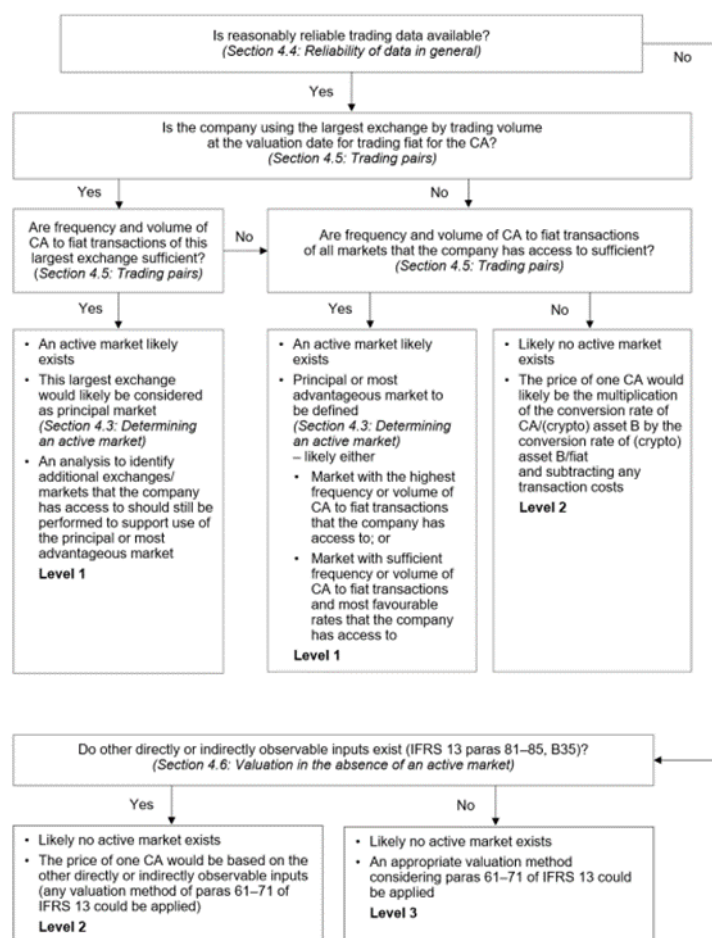
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List of appendices

Appendix 1: IFRS structure



Appendix 2: determine the valuation of a cryptographic asset under IFRS 13



Appendix 3: IFRS & US GAAP Comparison Chart

	IFRS	US GAAP
Cash and cash equivalents	IAS 7 — Statement of Cash Flows	ASC 305 Cash and Cash Equivalents
Intangible assets	IAS 38 — Intangible Assets	ASC 350 Intangibles—Goodwill and
Inventories	IAS 2 — Inventories	ASC 330 Inventory
Financial instrument or financial asset	IFRS 9 — Financial Instruments	ASC 825 Financial Instruments
Fair value	IFRS 13 — Fair Value Measurement	ASC 820 Fair value Measurement

Appendix 4: Companies reporting of cryptographic assets

Entity	Country	Entity's type	Type of Crypto held	Accounting standard	Accounting	Measure	Purpose of holding
MicroStrategy	United States	Business intelligence, mobile software and cloud-based services	Bitcoin	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Long term investment
Tesla	United States	Automotive and clean energy company	Bitcoin	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Long term investment
Galaxy Digital Holdings	United States	Technology-driven financial services and investment	Bitcoin	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
Square	United States	Financial services and digital payments	Bitcoin	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Long term investment
Voyager Digital LTD	Canada	Cryptocurrency platform	Bitcoin, Voyager Token, USD Coin, StormX and Avalanche	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
Marathon Digital Holdings	United States	Bitcoin Miner	Bitcoin and Ethos	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Operating activities
Hut 8 Mining Group	Canada	Digital asset miner	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
Riot Blockchain	United States	Bitcoin mining company	Bitcoin	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Investment activities
Bitfarms Limited	Canada	Bitcoin mining company	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Operating activities
Core Scientific	United States	Digital asset mining and a premier provider of blockchain infrastructure, software solutions, and	Bitcoin, Ethereum	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Operating investment
Coinbase Global	United States	A cryptocurrency exchange platform	Bitcoin, Ethereum	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Investment activities
Bitcoin Group SE	Germany	Investment company	Bitcoin, Litecoin, Ripple, Dogecoin, Ethereum, Bitcoin gold and other cryptocurrencies	IFRS	IAS 38, Intangible assets	Revaluation model	Operating activities
Hive Blockchain	Canada	Bitcoin mining company	Bitcoin, Ethereum	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
Argo Blockchain PLC	United Kingdom	Cryptocurrency miner	Bitcoin, Ethereum and other cryptocurrencies	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
NEXON Co. Ltd	Japan	Video game publisher	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
Exodus Movement Inc.	United States	Asset investors platform	Bitcoin, Ethereum, Algorand, Thether	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Investing activities
			Stable coins		Financial Instruments-ASC 825: Financial Instruments	Fair value	
Meitu	Hong Kong	Technology company	Bitcoin	IFRS	IAS 38, Intangible assets	Cost model	Investment activities
Bit Digital	United States	Bitcoin mining company	Bitcoin USDC USDT	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Investing Activities and operating activities
Digihost Technology Inc.	Canada	Blockchain Technology	Bitcoin, Ethereum	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
BIGG Digital Assets Inc.	Canada	A cryptocurrency exchange platform	Bitcoin, Ethereum, Algorand, Thether, XRP, Bitcoin cash and other cryptocurrencies	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
					IAS 2, Inventories	Fair value - cost to sell	Operating activities
DMG Blockchain Solutions Inc.	Canada	Blockchain and cryptocurrency company	Bitcoin, Ethereum	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
CleanSpark Inc.	United States	Bitcoin mining and energy technology	Bitcoin	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Investing activities
Cyberpunk Holdings Inc.	Canada	Blockchain technologies	Bitcoin, Ethereum	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
DigitalX	Australia	Blockchain technology company/ Digital asset fund	Bitcoin	Australian Accounting Standard	AASB138: Intangible Assets	Revaluation model: fair value - costs to sell	Operating activities
					Financial assets	AASB 13: Fair value measurement	
Neptune Digital Assets	Canada	Bitcoin mining company	Bitcoin, ATOM, Fantom, Dash, Tether, Litecoin, Bitcoin cash, Stellar USD coin	IFRS	IAS 38, Intangible assets	Revaluation model	Investing activities
					Financial Instruments ("IFRS 9")	Amortised cost	
Cathedral Bitcoin Inc (Fortress Blockchain)	Canada	Bitcoin mining company	Bitcoin	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
MercadoLibre, Inc.	Argentina	Online commerce and payments ecosystem	Bitcoin, Ethereum	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Investing activities
IQWiD FinTech Corp	Canada	Lightning Network company	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
Banxa Holdings Inc	Canada	Payments Services	Bitcoin, Litecoin, Ethereum	IFRS	IAS 2, Inventories	Fair value - cost to sell	Operating activities
Phunware, Inc.	United States	Software platform	Bitcoin	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Investing Activities
BTCS Inc.	United States	Blockchain infrastructure and technology	Bitcoin, Litecoin, Ethereum, Tezos, Terra, Solana, Polygon, Cosmos, Polkadot, Dogecoin	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Investing Activities
Sato technologies corp	Canada	Bitcoin mining company	Bitcoin, Ethereum	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
Metromile	United States	Technology Start up	Bitcoin	US GAAP	Indefinite-Lived intangible assets - accounting standard 350 "Intangibles-goodwill and other".	Cost - Impairment ASC 820 fair value measurement	Long term investment
MOGO	Canada	Non-bank car financing	Bitcoin, Ethereum	IFRS	IAS 38, Intangible assets	Cost model	Investment activities
Net Holding Anonim Sirketi	Turkey	management and auditing of the companies operating	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
The Broker Group Public Co Ltd	Thailand	Professional advisors	Bitcoin, Ethereum, Digital Tokens	TAS	Digital asset inventory	Cost or net realizable	Investment activities
Mode Global Holdings	United Kingdom	Fintech Group	Bitcoin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
NEPTUNE	Canada	Cryptocurrency company	Bitcoin, Fantom, Cosmos, ATOM, Ethereum and Dash blockchains USD Coin	IFRS	IAS 38, Intangible assets	Revaluation model	Investment activities
					Financial Instruments ("IFRS 9")	Amortised cost	

Executive summary

This paper analyzed the adequacy of existing accounting standards for the recognition, measurement, and disclosure of cryptographic assets and their implications for financial reporting. As a conceptual paper, it uses the accounting policy and procedures prescribed in current IFRS, IAS, and ACS standards to derive a logical conclusion.

The paper concludes that the appropriate accounting treatment for cryptographic assets is IAS 2 on accounting for inventories, taking into account the findings and interpretation of the IFRS interpretation committee that if the sale of a cryptocurrency is the principal activity of the company, it is appropriate to account for it under IAS 2 and under IAS 38 if cryptographic assets don't meet the definition of inventories. Under IAS 38, it is possible to measure cryptocurrencies under the cost model or the revaluation model, which confirms the existence of an active market for cryptographic assets with sufficient information and frequency of transactions to provide a pricing policy continuously by IFRS 13. Moreover, it was concluded that under US GAAP it is appropriate to account for these assets as intangible assets under ASC 350, whether held as a principal activity or investment. However, since the Belgian GAAP doesn't cover the accounting of cryptographic assets by holders, the CNC only discussed cryptocurrencies used as a means of exchange and suggested accounting for them as other receivables. Furthermore, through the analysis of companies' reporting of cryptographic assets, it was concluded that stablecoins can be considered financial instruments under IFRS and US GAAP.

This study confirmed the complexity of accounting for cryptographic assets by companies and highlighted the need for specific accounting standards that deals with these digital assets.

Key words: Cryptographic assets, cryptocurrencies, digital assets