

Discussion Paper: Virtual Currencies and Blockchain Technology

March 2018



SHAREHOLDER &
FINANCIAL
ADVISORY
(SFAD)



An Roinn Airgeadais
Department of Finance

*Department of Finance
Government Buildings, Upper Merrion Street,
Dublin 2, Ireland
Website: www.finance.gov.ie*



**An Roinn Airgeadais
Department of Finance**

Foreword

At the time of releasing this report, the combined market value of the more than 1,500 virtual currencies in issue was estimated to be worth circa €300 billion. The blockchain technology (also known as Distributed Ledger Technology or DLT) that underpins these virtual currencies continues to evolve, and there are examples of it being tested in specific business processes such as online payments and supply chain management. Furthermore, the ability to use virtual currencies for the purchases of goods and services is being trialled in several countries around the world, despite its price volatility. Even more recently, virtual currencies with pegged values have been created (e.g. Tether-USD; UK Royal Mint's RMG - representing 1 gram of fine gold.)

Virtual currencies and blockchain have a number of perceived benefits and inherent risks. As with the advent of any new technology, there are as many devotees as detractors. In order to protect consumers and alert investors to the pitfalls of investing in virtual currencies or new blockchain ventures, institutions such as central banks, consumer protection bodies and securities management agencies around the world have issued warnings and guidelines.

Ireland is home to a number of blockchain businesses, some of which have already attracted venture capital. Ireland has a track record in building globally recognised payment companies and innovative financial services businesses. Blockchain could deliver cost savings and efficiencies in these sectors. It presents an opportunity to assist in the delivery of the IFS2020 objectives by fostering growth in the technology sector, while supporting indigenous companies and continue to secure foreign investment.

Against this backdrop, this paper presents an introduction to key elements of the blockchain technology and the virtual currencies developed to access these DLT platforms. This

paper concludes with the recommendation to set up an intra departmental working group to monitor further developments.

Accordingly, the key objectives of this paper are:

- To provide an overview of what virtual currencies are and the blockchain technology that underpins them, providing use-cases as examples.
- To table considerations as to how virtual currencies impact consumers and companies on several fronts: consumer protection; EU FS regulations; data protection; taxation; contract law.
- To propose the creation of an intra-departmental **Working Group** to coordinate the approach to virtual currencies and monitor developments in blockchain technology, addressing considerations raised by consumers, industry, the EU, and governments worldwide.
- To instigate further research into the potential implications of virtual currencies and blockchain for the real economy, by engaging with industry, regulators and professional bodies if and as required.
- To further raise awareness of the possible risks to consumers and investors.

The purpose of this paper is not:

- To provide guidance or set forth policy in relation to virtual currencies trading, purchasing, selling, or raising funds via Initial Coin Offerings (ICO).
- To imply that virtual currencies are in any way a substitute for central bank issued currencies

Note: A blockchain is a type of distributed ledger. However, this paper does not differentiate between the terms 'distributed ledger technology (DLT)' and 'blockchain'. Refer to section 1.2 *Overview of virtual currencies* for further detail.

Table of Contents

| | |
|---|----|
| Foreword..... | 1 |
| 1. Introduction to Virtual currencies and Blockchain / DLT Technology | 2 |
| 1.1 Definition..... | 2 |
| 1.2 Overview of virtual currencies and blockchain..... | 2 |
| 1.3 Brief history of Virtual currencies | 3 |
| 1.4 How Virtual currencies Work..... | 3 |
| 2. Overview of the global virtual currencies market | 5 |
| 2.1 Market Overview | 5 |
| 2.2 Global Funding of Virtual Currency Businesses | 5 |
| 2.3 International Policy Responses to Virtual currencies | 6 |
| 2.4 Virtual currencies’ key stakeholders and considerations | 19 |
| 3. Overview of the Irish Virtual Currency Ecosystem..... | 20 |
| 4. Potential Benefits of Virtual Currencies..... | 22 |
| 4.1 Near instant settlements | 22 |
| 4.2 Traceability..... | 22 |
| 4.3 Lower fees..... | 22 |
| 4.4 Security | 22 |
| 4.5 Universal access | 23 |
| 5. Known Risks of Virtual Currencies | 24 |
| 5.1 Consumer Protection | 24 |
| 5.2 Criminality | 24 |
| 5.3 Money Laundering | 24 |
| 5.4 Initial Coin Offerings (ICOs)..... | 25 |
| 5.5 Taxation..... | 25 |
| 5.6 Price Volatility for Investors..... | 26 |
| 5.7 Data Protection | 26 |
| 5.8 Monetary Policy | 27 |
| 6. Conclusion and Next Steps..... | 28 |
| Appendix 1: Parliamentary Questions | 30 |
| Appendix 2: Overview of impacted stakeholders..... | 31 |

1. Introduction to Virtual currencies and Blockchain / DLT Technology

1.1 Definition

Virtual currencies can be defined as a **transactional system** in which encryption techniques are employed to verify transactions, facilitate the transfer of units from one party to another, and regulate the generation of new units of a 'virtual currency'. Like physical money, virtual currencies are designed to be used as a representation of value, medium of exchange or simply as tokens. However, unlike cash, they are not usually designed to be sovereign backed and do not have a physical form.¹

1.2 Overview of virtual currencies and blockchain

Conventional electronic payments systems that exist today rely on multiple parties to process transactions including: retail banks, merchant banks, payments software companies and card issuers. Each institution carries their own cost base, and thus charges fees to generate revenue and cover their overheads. This results in a system whereby users must rely on trusted institutions to complete their day-to-day electronic transactions. The processing costs incurred by the parties involved in payment transactions is one of the key components of payment transaction fees charged to consumers.

Virtual currencies, facilitated by the technology upon which they are created (DLT), possess their own 'in-built' payments system that can remove the need for third parties. It allows users to directly transact with each other on a 'peer-to-peer' basis. This creates what is known as a 'decentralised' system, and is achieved by spreading the computing power of processing the transaction to all parties on the network instead of relying on the IT systems of centralised institutions such as banks. In other words, this in-built payments technology acts as *"clearing system that runs independently of banks"* and other institutions.²

Separately, the algorithms that govern the behaviour of virtual currencies dictate the number of units that can be produced. For example, the bitcoin algorithm prevents

any more than 21 million units of bitcoin from being in circulation.³ While another popular virtual currency platform, Ethereum (on which ethers are traded), has no limit with regards to the total supply, but instead has an annual issuance limit of 18 million units.⁴ Ultimately, this introduces a scarcity principle similar to that of commodities such as gold.

New units of a virtual currency are issued as a reward for users on the network that assist with the matching and validation of transactions. This matching of transactions, and subsequent payment in virtual currencies, is known as **"mining"**. Although it is not a feature of every virtual currency, mining, or unit creation functionality, results in an additional layer of decentralisation by removing the need for a centralised party to govern the supply of new units. This functionality, in a number of ways, mimics the responsibilities of a central bank.

In addition to managing the generation of new units, virtual currencies possess the ability to record each transaction that takes place within their in-built payments system. This is achieved through the use of a ledger system known as **"blockchain"**. In the same manner in which banks keep track of customer balances on in-house (or centralised) ledgers, the blockchain ledger system employs cryptography to manage the record keeping process. However, unlike banks, this ledger is maintained collaboratively by a decentralised network of computers, instead of by any one single party. For this reason, the blockchain bookkeeping system is often referred to as **"distributed ledger technology" (DLT)**. Conceptually, this shared ledger takes on many of the same attributes as a shared database, where multiple users are responsible for updating and maintaining the transactional information stored within it. Unlike a shared database however, it is not possible to amend, or erase historical entries on the blockchain. This 'immutability' principle helps maintain a high level of integrity with regards to the accuracy of historical transactions on the shared ledger.

Ultimately, the process by which centralised parties are removed from the payments process results in **trust** being transferred from institutions to a distributed network of computers that employ complex encryption

¹ <http://www.fatf-gafi.org/media/fatf/documents/reports/Virtual-currency-key-definitions-and-potential-aml-cft-risks.pdf>

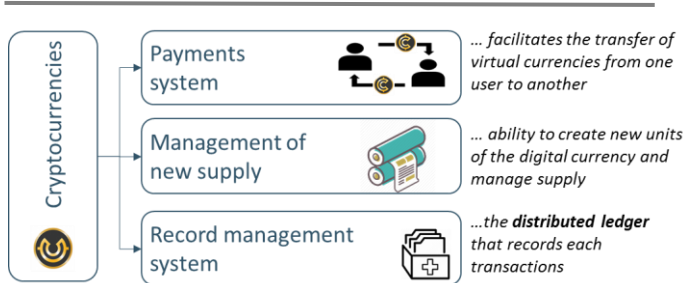
² Kaminska, Izabella. *Financial Times*, 3rd January 2017

³ www.economist.com/sites/default/files/carey_business_school_submission.pdf

⁴ <https://www.ethereum.org/ether>

techniques to facilitate transactions. If the need for institutions that exist to assist in the completion of payments (e.g. banks) becomes diminished, this new technology has the potential to be highly disruptive.

Figure 1.1: Virtual currency systems manage a number of processes



1.3 Brief history of Virtual currencies

The concept of a virtual currency is one that has existed since the late 1980s. However it was only in the early 1990's that elements of the modern virtual currencies began to be developed by software engineers. In 1998, computer engineer Wei Dai developed the idea of 'B-Money': the concept of a decentralised payments system.⁵ Later that year, a developer named Nick Szabo, further improved the concept by employing cryptographic techniques to facilitate the generation of new units of currency in a structured manner. This so called **"proof of work"** concept uses a participants' computer power to solve cryptographic equations assigned by the system. The solved equations would then be used to verify the transaction, and would reward the user that solved the problem with new units of virtual currency.

These developments ultimately formed part of the seminal paper entitled "Bitcoin: A peer to peer electronic cash system" by Satoshi Nakamoto (2008).⁶ Satoshi Nakamoto is a pseudonym for an individual, or group of individuals that still remains unknown to the public. This paper drew on previous research relating to proof of work and cryptography, and combined it with the concept of a virtual ledger (i.e. the distributed ledger technology) that records transactions and facilitates the transfer of virtual currencies from one user to another.

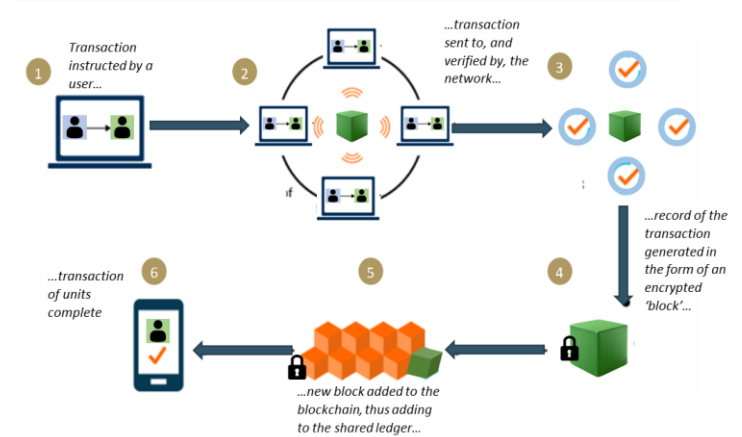
⁵ Department of Computer Science; University of North Carolina
<http://www.cs.unc.edu/~lin/COMP089H/LEC/bitcoins.pptx>
<https://en.bitcoin.it/wiki/B-money>

An open-source working example of this technology was then developed and released by Satoshi Nakamoto in 2009 and ultimately led to the creation of bitcoin.

1.4 How Virtual currencies Work

Virtual currencies were originally devised as a system for transferring electronic cash in a way that allows for person to person, or 'peer-to-peer', transactions to take place without the need for a central payments provider such as a bank or payments company (e.g. Western Union). As shown in figure 1.2, a virtual currency transaction can be broken into six stages:

Figure 1.2: Stages of a virtual currency transaction



1. Firstly, a user requests a transfer of virtual currency to be made to another user. All virtual currency transactions start from a user's *wallet*. A wallet is a software or web application that manages a user's virtual currency balance and allows them to send and receive virtual currencies to and from other users.
2. The requested transaction is then broadcast to a peer-to-peer network of computers.
3. The network of computers verifies the transaction by using algorithms to check the details of the transaction, and the validity of the sender and receiver.
4. Once the majority of users on the network agree the transaction is valid, it is then verified. This results in the creation of an encrypted 'block' that represents the transaction itself, and contains any relevant details of the transaction such as the payee, payer, amount and date.

⁶ Satoshi Nakamoto "Bitcoin: A Peer-to-Peer Electronic Cash System"
<https://bitcoin.org/bitcoin.pdf>

5. This block is then added to the shared ledger (i.e. the ‘blockchain’) meaning a permanent and traceable record is then linked to all previous transactions.
6. The end user receives their virtual currency and the transaction is considered complete.

By drawing on the power of a peer-to-peer network, virtual currencies can achieve settlement times that are faster than traditional electronic cash transactions. For example, banks can take up to three days to settle an international money transfer using existing payments infrastructure (such a SWIFT). By contrast, some virtual currency platforms can process transactions in a matter of minutes, if not seconds. Kraken, a US based cryptowallet, claims that the estimated transaction time between users takes approximately six minutes when transacting in “ethers”, the world’s second largest virtual currency.⁷ Meanwhile, XRP, the world’s third largest virtual currency by value, can be settled in as little as four seconds.^{8,9}

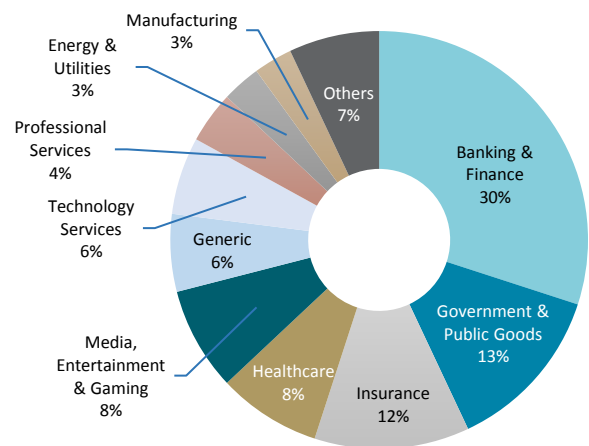
Furthermore, as there is no requirement for a centralised party, such as a retail bank or a central clearing party, blockchain technology can remove many of the costs associated with a transaction. Individuals transacting in XRP can expect transaction charges as low as USD\$0.05 per transaction (excluding any spreads or fees charged by cryptowallet and crypto exchange platforms).¹⁰ However older virtual currencies, such as bitcoin, may prove to be considerably more expensive, often costing in excess of USD\$20 per transaction when trading volumes are high.¹¹

Having realised the potential of these efficiency gains, financial institutions such as JP Morgan and Deutsche Bank are developing their own payments systems that draw on distributed ledger technology to increase the speed and efficiency of payments in state backed, fiat currencies.¹² However, not all payments providers are looking to blockchain technology as a means to drive faster payments. The existing payments infrastructure is

itself evolving with, for example, the introduction of the Single European Payments Area (SEPA) Instant Credit Transfer initiative. This initiative enables banks and payments providers to facilitate credit transfers of up to €15,000 in less than ten seconds across 12 European countries.¹³

Although the payments industry has been one of the first sectors to examine the possibilities of DLT, it is now being explored by a wider range of industries as a means to improve the efficiency and traceability of various business processes (see figure 1.3). For example, the settlement of equity trading often requires a large number of counterparties such as clearing houses and custodians to facilitate each trade. By employing blockchain technology, a shareholder could in theory sell directly to another party without the need for any of the intermediary institutions that are currently required to execute equity transactions. If such a system were to be implemented, this would vastly reduce the time and fees associated with trading equities that are listed on international stock exchanges.¹⁴

Figure 1.3: Sectors Currently Testing DLT¹⁵



⁷ <https://support.kraken.com/hc/en-us/articles/203325283-How-long-do-virtual-currency-deposits-take->

⁸ <https://xrphodor.wordpress.com/2017/09/27/how-xrp-is-faster-than-any-other-digital-asset-or-virtual-currency/>

⁹ www.ripple.com/insights/fundamentals-of-xrp/

¹⁰ <https://bitinfocharts.com/comparison/ripple-transactionfees.html#3m>

¹¹ <https://bitinfocharts.com/comparison/bitcoin-transactionfees.html#3m>

¹² Fiat money is currency that a government declares as legal tender.

¹³ However, it is not backed by a physical commodity like gold or silver. The value of fiat money is derived from the relationship between supply and

demand rather than the value of the material that the money is made of <https://www.reuters.com/article/us-jpmorgan-blockchain/jpmorgan-launches-payments-network-using-blockchain-technology-idUSKBN1CL1P6>

¹³ The number of participating countries is expected to increase in time. <https://www.europeanpaymentscouncil.eu/what-we-do/sepa-instant-credit-transfer>

¹⁴ <https://www.ft.com/content/8366b688-832d-3934-9e6e-c0f59e8d0f99>

¹⁵ www.jbs.cam.ac.uk/fileadmin/user_upload/research/centres/alternative-finance/downloads/2017-09-27-ccaf-globalbchain.pdf

2. Overview of the global virtual currencies market

2.1 Market Overview

As understanding of the technology grows, the market for virtual currencies has grown exponentially in recent years. The collective value of the global virtual currency market was roughly €320 billion at the beginning of February 2018.¹⁶ To put this in perspective, the virtual currency market is larger than Ireland’s 2016 gross domestic product (GDP), or nearly four times the combined market capitalisation of the Irish Stock Exchange’s 20 largest companies (ISEQ20 - see table 2.2). The market value of bitcoin alone is, at time of publishing this paper, comparable to the market capitalisation of General Electric or McDonalds Corporation.¹⁷

However, with the exception of the more popular virtual currencies (such as bitcoin, ether and XRP), the majority of virtual currencies in circulation have a relatively small market value. As of February 2018, the four largest virtual currencies accounted for roughly 70% of the combined market value of all 1,500 virtual currencies (see Table 2.1).

Table 2.1: Virtual Currency Market Value (€bn) February 2018

| Virtual currency | Market Value (Feb-18) | % Value of Total Market |
|------------------|-----------------------|-------------------------|
| Bitcoin | € 113 | 36% |
| Ether | € 66 | 21% |
| XRP | € 25 | 8% |
| Bitcoin Cash | € 14 | 4% |
| Other | € 99 | 31% |
| Total | € 316 | 100% |

Like in any market, prices of virtual currencies both rise and fall. The material price appreciation, and extreme price volatility of virtual currencies in recent months may be as a result of a number of factors, such as price speculation, or increasing proof-of-concept relating to

¹⁶ As of February 2018: Coinmarketcap.com

¹⁷ As of February 2018: Bloomberg.com

¹⁸ M2: CSO - Oct '17: The ECB defines M2 as the aggregation of currency in circulation, overnight deposits, deposits with maturities <2 years, and deposits redeemable with notice of up to three months.

the practical implications of the underpinning technologies. Whether the rise in prices in recent months is justified remains to be seen. However, the innovative potential of DLT is one that will continue to be investigated and developed.

Table 2.2 Market value of virtual currencies vs. selected benchmarks € billion^{18,19}

| | | |
|--|--------------------------------------|--------|
|  | Apple Market Cap | €674bn |
|  | JP Morgan | €317bn |
|  | All Cryptocurrencies | €315bn |
|  | Walmart | €244bn |
|  | Irish 2016 GDP | €276bn |
|  | Irish Money Supply October 2017 (M2) | €204bn |
|  | ISEQ20 Market Cap | €84bn |

2.2 Global Funding of Virtual Currency Businesses

Businesses that develop virtual currency platforms, and those that sell virtual currencies to investors, have experienced some of the largest increase in investment of any industry globally. The amount of investment going to such businesses in 2017 increased by 1,745% (albeit off a low base). This represents the third highest growth in investment in 2017 of any industry, behind investment in technologies focused on ‘People & Society’ and ‘Search Engine Optimisation’.²⁰

The increased rate of investment in virtual currency businesses is primarily driven by the high number of ‘initial coin offerings’ (ICOs) that took place in 2017. ICOs occur when individuals or entities develop and sell units of a new virtual currency to investors.²¹ This issuance

¹⁹ Irish Stock Exchange, Bloomberg.com, Central Statistics Office of Ireland (February 2018)

²⁰ <https://markets.funderbeam.com/reports>

²¹ ICO’s can vary in nature: tokens, means of settlement, smart contracts, conventional currencies, to name the most common.

allows them to in turn invest in their businesses, and develop the underlying platforms on which the virtual currencies exist.²²

2.3 International Policy Responses to Virtual currencies

As discussed in section 1, virtual currencies appear to function as an *electronic variety of money*, at first sight. On closer inspection, the underlying technology enabling payment with virtual currencies appears to act as a *means of payment* without the need to rely on a third party institution to verify the transaction. The very nature of this process is possible by the fact that the actual transaction acts as a *virtual contract*, concurrently. The recent price volatility experienced by virtual currencies may indicate that their nature is more akin to *commodities*, not money.

If virtual currencies are a digital variety of money, do they follow the traditional functions of money? They are currently being used as a medium of exchange, and as units of account in certain occasions. Can they act as a store of value? Can virtual currencies be a sort of intangible commodity? How should virtual currencies be treated? To date, countries are responding to these questions differently.

The international approach to virtual currencies by governments, tributary agencies and central banks reflect each country's review of their legislative and regulatory framework, and its own view on how virtual currencies behave. To date, there is no globally accepted standard as to the nature of virtual currencies (however, there is a 'Financial Action Task Force' (FATF) report from 2014 outlining a definition of virtual currencies and potential AML/CFT risks).²³

This section aims to set out global examples of countries that are either advocates, developing supporters/wait&see observers or opponents of the use of virtual currencies. Each country has been selected for its unique approach to virtual currencies, vis à vis the rest of the sample.

²² <https://markets.funderbeam.com/reports>

²³ <http://www.fatf-gafi.org/publications/methodsandtrends/documents/virtual-currency-definitions-aml-cft-risk.html>

²⁴ Sandboxes: reduced regulatory environment offered to specific companies by regulators for an agreed period of time

1. GLOBAL ADVOCATES

Pioneer nations whose governments have taken steps to support virtual currencies and drive parity with fiat currencies for virtual currencies.

They have established task forces to monitor the development of the technology and the use and impact of virtual currencies. Their central banks and tax/revenue authorities have issued clarity on their definition of virtual currencies and issued or amended legislation accordingly.

In some countries, support for the development of virtual currencies has extended to dedicated infrastructure and creation of regulatory sandboxes²⁴, to facilitate acceptance and usage of the virtual currencies.

AUSTRALIA

Australia has sought to find a beneficial balance with its embracing of blockchain technology and virtual currencies.

In 2013, the Australian Taxation Office (ATO) confirmed bitcoin transactions were to be considered as means of electronic payment, and therefore subject to goods and services tax (GST) and income tax.²⁵

In 2014, the governor of the Central Bank of Australia commented that while virtual currencies posed regulatory questions, he believed that investors who were prepared to accept the risk and speculate in virtual currencies should be allowed to do so.²⁶ The same year, the ATO issued guidance on the tax treatment for bitcoin. The ATO concluded that bitcoin is neither money nor a foreign currency, but an *asset* (virtual property) for capital gains tax purposes. Capital gain or loss from using bitcoin to purchase goods or services for personal use or

²⁵ <https://www.ato.gov.au/general/gen/tax-treatment-of-crypto-currencies-in-australia---specifically-bitcoin/>

²⁶ <https://www.perkinscoie.com/en/news-insights/virtual-currencies-international-actions-and-regulations.html#Australia>

consumption would be disregarded, provided that cost of the bitcoin was AUD\$10,000 or less.

In early 2015, The Australian Department of Treasury issued a white paper describing virtual currencies, such as bitcoin, as a challenge in determining how to appropriately tax companies. In particular, there were concerns that they could provide a company with the ability to relocate profits to minimize their taxes.²⁷

In January of 2016, The Australian Attorney-General's Department issued a Consultation Document in relation to the government's intention to begin drafting legislative proposals to regulate virtual currencies by the middle of 2017, with legislation approved and in place by 2018. To that end, the government solicited public comment on the proposal that looked to include virtual currencies in the laws against money laundering.²⁸

In early 2017, Australia's securities and investments regulator, ASIC, released guidance on the use of distributed ledger technology, including blockchain, in financial services and financial markets. The guidance included a framework to help the assessment of whether technology and risk management standards required by the regulator could be met.²⁹

In July of that year, senators from both major political parties announced that the Reserve Bank of Australia (RBA) should formally recognise bitcoin and other virtual currencies as official forms of currency. This pressure from parliament followed the ATO's decision to stop treating virtual currency as intangible property subject to goods and services tax, which effectively double taxed virtual currency transactions. The bill removing the double taxation on virtual currencies was unanimously approved. This effectively treated purchases of virtual currency in the same way as physical money.³⁰ Sales and purchases of virtual currency are not subject to GST from 1 July 2017. Income and capital gains taxes apply to companies and exchanges transacting with virtual currencies, as applicable.³¹

In December of 2017, the Australian Parliament passed amendments to the Anti-Money Laundering and Counter-Terrorism Financing Act of 2006. Among other rules, the law requires virtual currency exchanges to:

- Identify and verify their customers' identities;
- Monitor and report large or suspicious transactions to the Australian Transaction Reports and Analysis Centre (AUSTRAC);
- Register on the Virtual Currency Exchange Register maintained by AUSTRAC;
- Create a management protocol to identify, reduce, and manage money laundering and terrorism-financing risks; and
- Keep certain records and customer IDs for at least seven years.

Virtual currency exchanges will be subject to registration and regulation in mid-2018, once amendments to the Anti-Money Laundering and Counter-Terrorism Financing Act of 2006 take effect.³²

CANADA

Canadian lawmakers have taken a 'regulate-and-embrace' approach to virtual currency policy, focusing primarily on anti-money laundering concerns. Virtual currencies are not legal tender in Canada.

In early 2013, the Canada Revenue Agency said that barter transaction rules applied to the use of bitcoin for goods or services and tax regulations applied accordingly. Also, bitcoin bought or sold as a commodity was subject to capital gains taxes.³³

In 2014, the Canadian anti-money laundering legislation was amended to classify persons "dealing in virtual currencies" as "money services businesses" subjecting those businesses to Canada's anti-money laundering and counter-terrorist financing regimes. The act applies to persons in Canada engaged in the business of dealing in virtual currencies, as well as persons outside of Canada that provide such services to customers in Canada.

²⁷http://bettertax.gov.au/files/2015/03/01_Challenges-Australias-tax-system.pdf

²⁸<https://www.ag.gov.au/consultations/pages/StatReviewAntiMoneyLaunderingCounterTerrorismFinActCth2006.aspx>

²⁹<http://asic.gov.au/regulatory-resources/virtual-transformation/evaluating-distributed-ledger-technology/appendix-1-assessment-tool-for-evaluating-dlt-based-services/>

³⁰<http://sjm.ministers.treasury.gov.au/media-release/089-2017/>

³¹<https://www.ato.gov.au/business/gst/in-detail/your-industry/financial-services-and-insurance/gst-and-digital-currency/>

³²https://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/Bills_Search_Results/Result?bld=r5952

³³<http://www.cbc.ca/news/business/bitcoins-aren-t-tax-exempt-revenue-canada-says-1.1395075>

In early 2017, the Canadian Securities Administration (CSA) launched a regulatory sandbox for businesses to test out new financial products, services and applications. According to the CSA Chair, President and CEO of the Autorité des Marchés Financiers, the objective of this new initiative is to support and encourage innovation.³⁴

The CSA said the programme would consider business models including: online crowdfunding and lending portals, artificial intelligence for trades or recommendations, and virtual currency or distributed ledger technology-based ventures. It also signed an agreement with the UK's Financial Conduct Authority meant to help fintech firms expand in each other's markets.³⁵

In November of 2017, the Bank of Canada issued a discussion paper addressing whether a central bank should issue a central bank digital currency (CBDC)³⁶ that could be used by the general public.

Noting potential risks and benefits, the bank made several conclusions, including:

- Increasing contestability in retail payments is the most credible motivation to issue CBDC;
- Complete anonymity is undesirable because it could foster criminal activity;
- Banks considering issuance of a virtual currency should proceed cautiously and incrementally.³⁷

Regulations from the Department of Finance are currently being drafted, and are expected to further specify the types of businesses that are subject to the anti-money laundering laws.

FRANCE

In December of 2013, the Banque de France warned about the risks associated with virtual currencies: security risks, the absence of a central regulatory

authority, speculation and volatility, legal risks, and the use of currencies for illegal and illicit activities.³⁸

In early 2014, the French Ministry of Economy stated that revenue from sales of virtual currency is taxable income. The French Banking Federation indicated that wiring revenue from the sale of virtual currencies to a personal bank account would require the bank to file a declaration with the French anti-money-laundering agency.³⁹ That same year, a French Senate committee on finance heard testimony on the issues raised by the development of virtual currencies. The committee concluded that the rise of virtual currencies is a long-term trend that cannot be disregarded by public authorities. It further noted that despite its risks, blockchain and virtual currencies offer multiple opportunities for the future and that public authorities should work on a balanced regulatory framework.⁴⁰

In December of 2016, The Banque de France issued a press release indicating that it had tested, together with the start-up Labo Blockchain and the Caisse des Dépôts et Consignations, a blockchain prototype for hypothetical use in the management of SEPA Credit Identifiers, or identification markers used to establish the identity of creditors within the Single Euro payments area.⁴¹

In August of 2017, France passed new laws to allow banks and fintech companies to create platforms where unlisted securities can be traded instantly, cutting out intermediaries like brokers and custodian banks. France's Finance Minister released a statement saying that this would allow the development of new trading platforms and transactions for unlisted securities (mutual and hedge funds, negotiable debt securities, and unlisted stocks and bonds) that are faster, cheaper, more transparent, and safe. Meanwhile, securities listed on exchanges would continue to pass through custodians and clearing houses. Finance Minister Bruno Le Maire

³⁴<https://www.securities-administrators.ca/aboutcsa.aspx?id=1555>

³⁵<https://ca.reuters.com/article/businessNews/idCAKBN1622IO>

³⁶ The term "digital currency" is used in the context of "central bank digital currency", or CBDC.

<http://www.fatfgafi.org/media/fatf/documents/reports/Virtual-currency-key-definitions-and-potential-aml-cft-risks.pdf>

³⁷<https://www.bankofcanada.ca/wp-content/uploads/2017/11/sdp2017-16.pdf>

³⁸<https://www.reuters.com/article/us-france-bitcoin/french-central-bank-warns-over-bitcoin-risks-idUSBRE9B40IF20131205>

³⁹http://www.lemonde.fr/argent/article/2014/04/07/rapatrier-ses-bitcoins-et-les-declarer-ou-non_4396877_1657007.html?xtmc=bitcoin&xtcr=4

⁴⁰http://www.senat.fr/basile/visio.do?id=r879788_8&idtable=r879788_8|r883427_25|r884067_26|r879452_7|r879587_2|r885247_5|r884507|r885248_8&c=monnaie-virtuelle&rch=gs&de=20140111&au=20160111&dp=1+an&radio=deau&aff=sep&tri=p&off=0&afd=ppr&afd=ppl&afd=pjl&afd=cvn&isFist=true

⁴¹https://www.banque-france.fr/sites/default/files/medias/documents/communiqu-de-presse_2016-12-15_la-banque-de-france-mene-une-experimentation-de-blockchain-interbancaire.pdf

said in the statement that the new rules would be “another asset for Paris’ attractiveness as a financial center” as the sector seeks to put itself on the fintech map, eager to attract business from London post Brexit.⁴²

ESTONIA

In early 2014, the Head of the Estonian central bank payment and settlement system expressed concerns about the risks associated with bitcoin, including the nature of the decentralized system and the potential for a Ponzi scheme. That same year, the Estonian Tax Authority stated that income derived from bitcoin transactions constituted capital gains subject to taxation.⁴³

In November of 2015, the Estonian Supreme Court requested various government agencies and officials, including the Ministry of Finance, the Interior Ministry, the Estonian Central Bank and the Estonian Financial Supervision Authority, to answer questions regarding the government’s stance on the legality of bitcoin while it considered arguments in a 2014 case filed by the operator of a bitcoin trading company, BTC.ee.⁴⁴

In November of 2016, the Estonian Supreme Court ruled against the BTC.ee. As a result of the case, the Supreme Court decided to apply extra regulation to bitcoin trading; the requirement to meet customers in person as well as the requirement to keep copies of the identities of all customers, and to report those who traded more than €1,000 per month. This ruling applied to bitcoin and all other virtual currencies.⁴⁵

In August of 2017, Estonia proposed the launch of its own state-managed virtual currency, or estcoin, to be instigated as an Initial Coin Offering (ICO).⁴⁶ However, the European Central Bank (ECB) was critical of Estonia’s plan and indicated that it would not allow any member state to launch its own virtual currency.⁴⁷

JAPAN

Japan is arguably the strongest global advocate of virtual currencies.

In 2014, when other countries were banning bitcoin and generally taking a hostile or prudent stance towards virtual currencies, Japan announced its intention to continue to assess the possibility of regulation, even after the collapse of Tokyo based bitcoin exchange agent MtGox.⁴⁸

In early 2016, the Financial Services Agency (FSA) proposed legislation that would recognise virtual currencies as equal to conventional currencies. In March 2016, Japan’s first bill regarding virtual currencies was submitted to the Diet (the national parliament). The bill’s key points were:

- To provide definitions of virtual currency and virtual currency exchange services.
- To require registration of virtual currency exchange services.
- To establish regulations regarding the business of virtual currency exchange service providers.
- To impose certain obligations (including customer identification obligations) by designating virtual currency exchange service providers as “*specified business operators*” within the meaning of the Act on Prevention of Transfer of Criminal Proceeds.⁴⁹

The bill was ultimately approved in May of 2016.

In April 2017, Japan’s FSA enacted a new law authorising the use of virtual currency as a method of payment, essentially granting it the same legal status as any other currency. The law put in place capital requirements for exchanges as well as cybersecurity and operational regulations. In addition, those exchanges will be required to conduct employee training programmes and submit to annual audits.⁵⁰

In September of 2017, the FSA granted its first licenses for virtual currency exchanges to 11 companies. To

⁴² <https://phys.org/news/2017-12-france-blockchain.html>

⁴³ <https://www.bloomberg.com/news/articles/2014-01-30/bitcoin-ponzi-scheme-worry-sparks-estonia-central-bank-caution>

⁴⁴ <https://www.coindesk.com/estonia-supreme-court-government-bitcoin-stance/>

⁴⁵ <https://www.coindesk.com/estonia-supreme-court-after-restrictive-ruling/>

⁴⁶ A process by which funds are raised for a new virtual currency venture

⁴⁷ <https://www.cnn.com/2017/08/23/estonia-virtual-currency-called-estcoin.html>

⁴⁸ <https://www.reuters.com/article/japan-bitcoin/japans-ruling-party-says-wont-regulate-bitcoin-for-now-idUSL4N0P01LS20140619>

⁴⁹ http://www.amt-law.com/en/pdf/bulletins2_pdf/160425.pdf

⁵⁰ <http://www.fsa.go.jp/en/newsletter/weekly2017/239.html>

obtain a license, companies must meet several strict requirements, including segregating individual customer accounts and strengthening its computer systems.⁵¹

At the same time as these licenses were granted, a consortium of Japanese banks announced plans to introduce a virtual currency ahead of the 2020 Tokyo Olympics. The new project, led by Mizuho Financial Group and Japan Post, with the support of Japan's Central Bank and the FSA, aims to develop a virtual currency to allow Japanese people to pay for goods and services with their smartphone. The JCoin would be convertible into yen on a one-to-one basis, operating via a smartphone app and using QR codes to be scanned in stores. In return for providing the service for free, the banks would benefit by collecting more data on consumer spending patterns. The JCoin is designed to wean the Japanese off their heavy dependency on cash, which accounts for 70 per cent of all transactions by value. That is higher than any developed country, which have on average cash utilisation of 30 per cent. The consortium estimates that the use of Jcoin could add ¥10 billion (approx. €75 million) to Japan's economy by reducing the costs of handling cash and cutting settlement fees for retailers and consumers.⁵²

KAZAKHSTAN

In early 2014, Kazakhstan's financial institutions were banned from using bitcoin by the country's Central Bank. Transactions involving bitcoin were prohibited for financial institutions as the country had legislation to counteract money laundering; banks were not allowed to service transactions involving unidentified parties. The Central Bank Governor announced that the regulator would look into the developing technology of blockchain and the use of virtual currencies, with a view to issuing a statement by the end of that year.⁵³

In 2016, the new governor of the Central Bank announced that a task force would be set up to study the

feasibility of what he called “*surrogate currencies*”. The first bitcoin ATM was installed in Almaty.⁵⁴

Seeking to become the regional hub for virtual currencies, in June 2017, Kazakhstan announced plans to begin selling blockchain based bonds, and the country's President announced that “*It is high time to look into the possibility of launching the international payments unit. It will help the world get rid of monetary wars, black marketeering and decrease volatility at markets. The currency should have a simple transparent mechanism of emission, subject to its consumers. A payment unit of account can be created in the form of a virtual currency taking into account digitalisation and block-chain development*”.⁵⁵

In October of 2017, the Astana International Finance Center (AIFC) announced it had signed a deal of cooperation with Maltese firm Exante, to develop the ex-Soviet nation's untapped virtual currency market.

Kazakhstan's entry into the virtual currency ecosystem would be underpinned by Exante's new blockchain platform, 'Stasis'.⁵⁶

LUXEMBOURG

In April 2016, Luxembourg granted Bitstamp a license to be a fully regulated and licenced bitcoin exchange, making the company the first nationally licensed bitcoin exchange in the world.⁵⁷

SPAIN

Virtual currencies can be treated as an electronic payment system under gambling law and considered as trading income for tax purposes.⁵⁸

In May of 2014, the Agencia Estatal de Administración Tributaria (AEAT) indicated it was monitoring virtual currencies for illicit activity. In September of 2014, Spain's Department of Finance, the Ministerio de Hacienda y Función Públicas (MHAFFP) issued a ruling in response to questions from Coinffeine, a Spain-based, open-source bitcoin exchange platform, seeking clarity

⁵¹ <https://www.wsj.com/articles/bitcoin-exchange-giant-bitflyer-expected-to-get-key-license-in-japan-1506664801>

⁵² <https://www.ft.com/content/ca0b3892-a201-11e7-9e4f-7f5e6a7c98a2>

⁵³ <https://en.tengrinews.kz/finance/Kazakhstans-financial-institutions-banned-from-using-Bitcoin-256880/>

⁵⁴ <http://www.eurasianet.org/node/80266>

⁵⁵ <https://astanatimes.com/2017/06/kazakh-president-proposes-international-currency-climate-solutions-at-aef/>

⁵⁶ <https://www.cnn.com/2017/10/17/kazakhstan-plans-to-launch-its-own-virtual-currency.html>

⁵⁷ <https://www.bitstamp.net/article/bitstamp-first-nationally-licensed-btc-exchange/>

⁵⁸ <https://www.coindesk.com/spain-cracks-bitcoin-gambling-loopholes/>

on whether bitcoin-based online gambling companies in Spain should apply for licenses.

In April of 2015, the MHAFP confirmed that virtual currencies were exempt from Value Added Tax (VAT), based on the interpretation of section 135, paragraph 1, point e) of the VAT Directive 2006/112/CE. The MHAP's definition of bitcoin as a "financial service", linked to payment methods that enable the transfer of money and the assumption that bitcoin transfers are considered to be "special risk" activities, means that all Spanish companies operating with virtual currencies have to comply with anti-money laundering (AML) rules.

In 2016, the AEAT announced that mining was a taxable activity. The new directive required all virtual currency miners to register themselves with Spanish authorities before submitting taxes on mining-earned profits. Curbing money laundering, tax evasion and the potential link to cybercriminal activity and tools such as ransomware, were the main causes for the new legislation. The Spanish Ministry of Finance was to be responsible for implementing the new tax rules and would have the authority to hire virtual currency specialists, as well as train officials to identify mining activities.⁵⁹

While the Bank of Spain has publicly stated the importance of providing an appropriate legal framework for virtual currencies, no comprehensive rules or guidelines regarding ICOs have yet been published. Accordingly, any ICO related activity in Spain requires careful consideration of payment services and anti-money laundering regulations (within the context of the EU Directives).

SWITZERLAND

Switzerland has decided to embrace virtual currencies in the same non-regulatory manner as many other global advocates.

The Swiss Federal Council has stated that while there is no need to regulate virtual currency at the moment, laws

on how the financial sector will make use of them are being drafted to determine their status as securities and their corresponding taxability.

Accordingly, Switzerland hosts a rapidly booming blockchain start-up environment, governed by inclusive community entities like the Crypto Valley Association, a non-profit organisation designed to standardize the on-boarding of new blockchain technology into the Swiss ecosystem. Public infrastructure has started to incorporate virtual currencies, with passengers able to pay their transportation costs and other municipal fees with bitcoin.⁶⁰

In late 2017, Switzerland's Financial Market Supervisory Authority (FINMA) issued guidance on initial coin offerings (ICOs) within the country.⁶¹ Additionally, FINMA is investigating several ICOs to determine whether the issuers of those ICOs violated current regulations.

UK

The UK was one of the earlier advocates of virtual currencies.

In June of 2013, Her Majesty's Revenue & Customs (HMRC) confirmed that the UK tax legislation applied to virtual currencies and that, when virtual currencies were used to pay someone for goods and services, that person was considered a trader and consideration received in virtual currencies was thus taxable.⁶²

In January of 2014, HRMC considered classifying bitcoin as private money, and thus not liable to capital gains tax. In October of the same year, the Financial Conduct Authority (FCA) created **FCA Innovate**, a team dedicated to support Fintech and RegTech initiatives in the UK. Since creation, FCA Innovate has launched a Regulatory Sandbox⁶³, now in its 4th cohort and an Advice Unit. It also produces research papers on specific topics like blockchain.⁶⁴

In March of 2015, the UK Treasury announced plans to regulate bitcoin exchanges with anti-money laundering

⁵⁹<https://www.criptonoticias.com/regulacion/mineros-bitcoins-criptomonedas-impuestos-espana/#axzz4LRnv47Yt>

⁶⁰<https://www.sbb.ch/en/station-services/services/further-services/bitcoin.html>

⁶¹ <https://www.finma.ch/en/news/2018/02/20180216-mm-ico-wegleitung/>

⁶² <https://www.coindesk.com/irs-targets-bitcoin/>

⁶³A sandbox is a closed testing environment designed for experimenting safely with web or software projects. Also refers to regulatory sandboxes: testing

grounds for new business models that are not protected by current regulation, or supervised by regulatory institutions

⁶⁴ <https://www.fca.org.uk/firms/fca-innovate>

regulations, while at the same time committing significant funds to the research and study of DLT.⁶⁵

Later that year, the UK Treasury published a risk assessment of money laundering and terrorist financing. According to the report, the majority of the illicit transactions involving virtual currencies related to online markets and the sale and purchase of controlled substances and firearms, rather than money-laundering.⁶⁶

In April of 2016, the HRMC published further clarification as to the applicability of VAT to transactions in bitcoin and other virtual currencies:

- Bitcoin received by miners for their bitcoin mining activities would generally be outside the scope of VAT on the basis that the activity did not constitute an economic activity for VAT.
- Charges made by miners and others for performing specific bitcoin transactions would be exempt from VAT under Item 1, Sch 9, Gp 5 VATA.
- When bitcoin was exchanged for goods and services no VAT would be due on the value of the bitcoin itself.
- Charges (in whatever form) made over and above the value of the bitcoin for arranging any transactions in bitcoin that met the conditions outlined in VATFIN7200, would be exempt from VAT under Item 5 Sch 9, Gp 5 VATA. However, in all instances, VAT would be due in the normal way on any goods or services sold in exchange for bitcoin or other similar virtual currency.⁶⁷

In December of that year, The UK's government-owned Royal Mint announced plans to use blockchain technology to operate a new gold-trading system. The project will provide investors with access to \$1 billion worth of gold on a blockchain and allow customers to own and trade fractions of gold, stored in the Royal Mint's vaults, using a virtual token called Royal Mint Gold

(RMG). Each RMG will be equivalent to one gram of gold. RMG's are expected to be launched in 2018.⁶⁸

In early 2017, the Governor of the Bank of England stated that the fintech sector did not need the same level of regulations as financial services institutions. Also in 2017, the London Stock Exchange announced its partnership with IBM to adopt a blockchain model to digitize securities certificates data. Small private European companies will be able to interact with shareholders and vice versa; and will simplify the tracking and the management of information by recording all shareholder transactions.⁶⁹

Later the same year, the FCA published a warning to consumers about the risks of investing in virtual currency contracts-for-differences (CFD's). The risks include:

- price volatility
- potential multiplying of losses incurred by the investor
- fees
- lack of price transparency.

Investors are protected by FCA regulation, which requires that firms offering CFDs be authorised and supervised by the FCA. Eligible consumers may even have access to the Financial Services Compensation Scheme.⁷⁰

The FCA also published a warning on Initial Coin Offerings (ICO), stating that ICOs are very high-risk, speculative investments, and that investors should be conscious of the risks involved, and fully research the specific project. It recommends to only invest in an ICO project if the investor is experienced and confident in the quality of the ICO project itself (e.g. business plan, technology, people involved). Furthermore, the investor must be prepared to lose their entire investment.⁷¹

In December 2017, it was reported that a research unit created two years earlier by the Bank of England could green light its own virtual currency by the end of 2018. A

⁶⁵https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/414040/virtual_currencies_response_to_call_for_information_final_changes.pdf

⁶⁶https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/468210/UK_NRA_October_2015_final_web.pdf

⁶⁷<https://www.gov.uk/hmrc-internal-manuals/vat-finance-manual/vatfin2330>

⁶⁸<https://www.royalmint.com/aboutus/press-centre/the-royal-mint-and-cme-group-to-launch-royal-mint-gold/>

⁶⁹<https://bitcoinmagazine.com/articles/london-stock-exchange-partners-ibm-develop-securities-data-blockchain/>

⁷⁰<https://www.fca.org.uk/news/news-stories/consumer-warning-about-risks-investing-virtual-currency-cfds>

⁷¹<https://www.fca.org.uk/news/statements/initial-coin-offerings>

central bank-issued virtual currency could allow citizens to keep their money in virtual form with the central bank itself. This could ultimately reduce the need for retail banks, and allow for big-ticket transactions, such as buying a house, to happen in nanoseconds.⁷²

In January 2018, the Bank of England announced that it did not plan to issue a central bank-issued digital currency.⁷³

USA

The United States Federal Government has not yet claimed the right to regulate virtual currencies exclusively, leaving individual states to determine how their citizens can participate. New York, Arizona, Maine, Nevada and Vermont have introduced bills to their state senates, mostly dealing with the acceptable use of blockchain ledgers and smart contracts for record keeping and other tasks. Other states like New Hampshire, Connecticut, Hawaii, Georgia, North Carolina and Washington have regulations that are less favourable to virtual currencies.

The Internal Revenue Service (IRS) published “Notice 2014/21” in 2014 explaining that profits made from virtual currencies trading, acquiring or selling are to be considered property for capital gains purposes to the IRS.⁷⁴

On March 13th 2018, the 2018 US Congress Joint Economic Report contained analysis and recommendations for the coming year, dedicating an entire chapter to providing insight into the impact of virtual currencies and blockchain on the US economy.⁷⁵

2. DEVELOPING SUPPORTERS / WAIT & SEE OBSERVERS

Some countries are progressing toward equal status for virtual currencies, with barriers still remaining. Other countries have not banned the use, trading or exchange of virtual currency – yet have not provided any legal or regulatory protection to users of virtual currencies.

⁷²<https://www.telegraph.co.uk/news/2017/12/30/bank-england-plots-bitcoin-style-digital-currency/>

⁷³ <https://www.bankofengland.co.uk/research/digital-currencies>

⁷⁴ <https://www.irs.gov/pub/irs-drop/n-14-21.pdf>

⁷⁵ <https://www.congress.gov/115/crpt/hrpt596/CRPT-115hrpt596.pdf>

⁷⁶<https://www.coindesk.com/belgian-regulators-issue-joint-bitcoin-warning/>

BELGIUM

In 2013, the then Belgian Finance Minister Koen Geens, claimed that the National Bank of Belgium (NBB) had no intention to ban bitcoin, and that the bank had no evidence of the virtual currencies being used in money laundering.

In early 2014, the NBB and the Belgian Financial Services and Markets Authority (FSMA) jointly issued a warning to investors in virtual currencies. The warning made reference to the fact that virtual currencies: are not issued by a central bank; are not regulated; that they carried risks associated with security, hacking, and fraud; that the values fluctuated; and that they were not legal tender.⁷⁶

In May of 2017, the now minister for Justice Koen Geens, announced his intention to subject virtual currencies to the same strict regulation as to those applied to the financial services sector. This marked the first such statement by the Belgium government.⁷⁷

In June of the same year, the NBB issued a report on the threat of virtual currencies to monetary policy—concluding that “*any threats to monetary stability caused by virtual currencies issued by private players are rather limited at this point*”.⁷⁸

DENMARK

In 2013, the Danish Financial Supervisory Authority (FSA) released a warning on the risks of investing in virtual currencies:

- Losing money to exchanges
- Theft from virtual wallets
- Unable to convert to fiat
- Rapid price fluctuations
- Potential links to criminal activity

The FSA reiterated that virtual currencies were not covered by the existing regulatory framework for

⁷⁷<https://www.koengeens.be/news/2017/04/18/niet-langer-vrij-spel-met-virtueel-geld>

⁷⁸<https://www.nbb.be/en/articles/press-release-virtual-currencies-threats-and-opportunities-monetary-policy>

electronic money, currency exchanges, brokerages, or deposit services.⁷⁹

In March of 2014, the Danish Central Bank issued a statement declaring that bitcoin was not a currency. The Bank went on to explain, “*bitcoin does not have any real trading value compared to gold and silver, and thus is more similar to glass beads*”. The Danish Central Bank explicitly highlighted that bitcoins were not protected by any national laws or guarantees, such as a deposit guarantee.

That same month, The Danish Assessment Board (Skatterådet) gave its ruling in the case of SKM2014.226.SR (published on 1 April 2014). The board ruled that bitcoins were not considered an official currency for tax and VAT purposes. Furthermore, fluctuation in the value of bitcoins was not taxable as gains or losses on currency, as covered by the Tax Act on Capital Gains and Losses on Debt and Claims. This conclusion was based on the description of the bitcoin system according to which purchase and ownership of bitcoins *does not involve a debtor or creditor* and, thus, neither a claim nor debt exists for tax purposes.⁸⁰

In December of 2017, Danmarks Nationalbank published a study on the benefits and feasibility of the central bank issuing a virtual krone (ekrone). The analysis concluded that a central bank digital currency (CBDC) would not be an improvement of the existing payment solutions in Denmark. A CBDC would fundamentally change the Danmarks Nationalbank’s role in the financial system and make it a direct competitor to the commercial banks. The introduction would also lead to risks of financial instability. The potential benefits of introducing CBDC for households and businesses in Denmark would not match the considerable challenges that this introduction would present. Danmarks Nationalbank thus confirmed that it had no plans to issue a CBDC.⁸¹

Profits earned on bitcoin trading by individuals are tax free, since the ruling in 2014 by the Skatterådet. The

Financial Services Authority and the Government of Denmark however have announced that all businesses dealing with bitcoins will have to pay taxes and that amendments to existing legislation will be required to regulate all virtual currencies, including bitcoins⁸².

FINLAND

In early 2012, during a television interview, the Governor of the Finnish Central Bank said that bitcoins were legal and could be invested in and used as people liked. There were no guarantees however, that unregulated virtual currencies could be exchanged back into fiat.⁸³

In 2013, the Finnish Tax Authority (Vero Skatt) released tax interpretations regarding bitcoin, indicating that capital gains treatment would be given to an exchange of bitcoin for another currency, but that losses would not be deductible.⁸⁴

In November of 2014, The Finnish Central Board of Taxes judged bitcoin to be a financial service, akin to banking services, in ruling 034/2014, making bitcoin exempt under the EU VAT directive.⁸⁵

In November of 2017, Finland’s Financial Supervisory Authority (FSA) issued a warning that initial coin/token offerings (ICOs/ITOs) and virtual currencies are risky and highly speculative investments. The FSA warned consumers of the volatile price of bitcoin and other virtual currencies citing the European Banking Authority (EBA) 2013 publication on the risks of virtual currencies.

The FSA listed several risks associated with token sales, including fraud, loss of capital, price volatility, inadequate information, and technology risks. The FSA also cautioned potential ICO/ITO issuers to be aware of existing regulatory requirements applicable, determined according to how the ICO is structured. The ICO may, for example, be subject to crowdfunding regulations, securities legislation, regulations on alternative investment fund managers or it may also be structured such that it falls outside the regulated space.⁸⁶

⁷⁹<https://www.finanstilsynet.dk/da/Nyheder-og-Presser/Pressemeddelelser/Arkiv/Presse-2013/Advarsel-mod-virtuelle-valutaer-bitcom-mfl-2013>

⁸⁰ <http://www.skat.dk/skat.aspx?old=2156173&vld=0>

⁸¹ <http://www.nationalbanken.dk/en/publications/Pages/2017/12/Central-bank-virtual-currency-in-Denmark.aspx>

⁸² <https://news.bitcoin.com/bitcoin-denmark-facts-figures-2017/>

⁸³ <https://www.youtube.com/watch?v=7vYH1JH73pw>

⁸⁴ https://www.vero.fi/sv/Detaljerade_skatteanvisningar/anvisningar/48411/inkomstbeskattning_av_virtuella_valuto/

⁸⁵ <https://www.coindesk.com/finland-classifies-bitcoin-vat-exempt-financial-service/>

⁸⁶ http://www.fin-fsa.fi/en/Publications/Press_releases/Pages/17_2017.aspx

GERMANY

Virtual currencies are financial instruments under German law and, more specifically, are a form of “*private money*” that can be taxed as capital. Certain uses may also require a license or permit. Earlier guidance from the German financial supervisory authority suggested virtual currencies were commodities, and subject to taxation both upon sale of bitcoin and sale of goods in exchange for bitcoin.

As early as 2011, BaFin (German financial supervisory authority) declared that bitcoin was exempt from the definition of “e-money” because they were not tied to legal tender currency. Instead, it was to be treated as a commodity subject to taxation.⁸⁷

In the summer of 2013, the German Finance Ministry declared that virtual currency are not e-money or foreign currency but a financial instrument under German banking rules. Virtual currency was therefore akin to “private money” that can be used in “multilateral clearing circles” (suggesting that virtual currency would be taxed as capital).⁸⁸

In 2017, The Austrian and German governments decided to fund a research effort focused on the use of virtual currencies in organised crime. The initiative was split into two sub-projects: (1) the German sub-project, primarily supported by the German Federal Ministry of Education and Research, and (2) the Austrian sub-project, backed primarily by the Austrian Federal Ministry for Transport, Innovation and Technology, the Austrian Institute of Technology, and the Federal Ministries of Finance and the Interior.⁸⁹

In late 2017, BaFin released a statement warning consumers of the risks of initial coin offerings, referring to ICOs’ as “*a highly speculative form of investment that is often not subject to existing capital market regulations*”.⁹⁰

INDIA

The Indian government does not yet regulate virtual currency exchanges. The Reserve Bank of India has issued warnings to the public about the risks associated with virtual currencies and that it is examining virtual currencies under India’s existing legal framework.

In July of 2017, the Securities and Exchange Board of India (SEBI) established a 10-member advisory panel to examine recent global fintech developments and report on opportunities for the Indian securities market. The goal of the new Committee on Financial and Regulatory Technologies is to prepare India to adopt fintech solutions and foster innovations within the country.⁹¹

Later that year, the Indian Supreme Court issued a notice to the central bank and several other agencies asking to respond to a petition made to the court to regulate bitcoin. The petition called to make virtual currencies accountable to the exchequer, expressing concerns about the anonymity of virtual currency transactions.⁹²

ISRAEL

In 2014, the Central Bank and Finance Ministry issued a warning against the use of virtual currencies, similar to those of the European Banking Authority. It warned that virtual currencies were not legal tender, may be subject to volatility, could be used for money laundering or terrorist financing, and were subject to loss by hacking.

In December of 2017, the Israel's government announced that it would apply capital gains tax to bitcoin sales, categorizing virtual currencies as a type of asset, like tangible or intangible property. The Israel Tax Authority (ITA) published a draft circular regulating taxation of income received in connection with activities involving virtual currencies such as bitcoin and litecoin.⁹³

Individuals involved in the sale or mining of virtual currencies would be subject to business tax rates. Further, any commercial sales of bitcoin or transactions

⁸⁷https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Merkblatt/mb_111222_zag.html

⁸⁸ <https://www.cnn.com/id/100971898>

⁸⁹https://www.bitcrime.de/en/Flyer_BITCRIME_EN.pdf

⁹⁰https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Fachartikel/2017/fa_bj_1711_ICO_en.html

⁹¹ https://www.sebi.gov.in/media/press-releases/aug-2017/sebi-constitutes-committee-on-financial-and-regulatory-technologies-cfrt-_35526.html

⁹²https://barandbench.com/wp-content/uploads/2017/11/PIL_bitcoin-watermark.pdf

⁹³https://taxes.gov.il/incometax/documents/hozrim/hoz_x_2017_tyota.pdf

involved with trading are subject to value-added tax (VAT).⁹⁴

POLAND

In 2014, the Lodz provincial office of the Polish Tax Administration issued an opinion stating that the sale of mined bitcoins was subject to Polish value-added tax of 23%, based on the rationale that bitcoin mining is a service with a set service fee, and mined bitcoins will be subject to VAT as a result.⁹⁵

In June of 2016, Poland's Ministry of Virtual Affairs announced an expansive digitization plan to promote virtual public services, the development of cashless solutions and the implementation of electronic identification (eID)⁹⁶. That same year, the Ministry of Finance concluded in a published report that while virtual currencies are not subject to any separate regulation under Polish legislation, their use in Poland is fully legal and subject to income tax.⁹⁷

In early 2017, Poland's Central Statistical Office (GUS) recognised the trading and mining of virtual currencies as an official *economic activity*. As a result, companies active in the industry were able to register with the agency.⁹⁸ This marked the first regulation of virtual currencies in the country.

SWEDEN

In 2014, Swedish Tax Agency (Skatteverket) officially stated virtual currencies were an asset, like art or antiques, and not a currency. Later that year, the Swedish Central Bank issued a report analysing whether virtual currencies had affected the retail payments market, and the risk associated with same considering the lack of regulation⁹⁹.

In 2015, the Skatteverket announced that it would treat income generated from certain bitcoin mining activity as income from employment. It stated that *"income from mining of bitcoin and other virtual currencies is normally taxed as income of service (hobby) for a natural person,*

*but may exceptionally be taxed as income from business activities. Even if bitcoin is earned in a business activity, subsequent value adjustments will normally be taxed as income from capital. Mining of bitcoin and other virtual currencies is not an activity that imposes a tax liability on value added tax".*¹⁰⁰

In late 2016, Sweden's Central Bank (Riksbank), faced with a significant decrease in use of cash by its society, announced that it was launching a project to examine what a central bank backed digital currency would look like and what challenges it would pose. It hoped to take a decision on whether to start issuing what it called an ekrone by the end of 2018.¹⁰¹

3. GLOBAL OPONENTS

Nations that have outlawed virtual currencies within their borders; some countries even threatening punitive actions of varying severity, to those individuals buying, using or trading them.

Other countries have a *hostile* stance towards virtual currencies, taking steps to curtail virtual currencies but not banning their use, exchange or trading: this is the case of countries like Turkey, Brazil, Thailand and Czech Republic.

A Bloomberg article in December 2017, stated that bitcoin expanded faster in the year in emerging markets than developed ones - and quickest of all in places where authorities tried to crack down this particular virtual currency. Peer-to-peer bitcoin trading in major developing nations outpaced the U.S., the world's biggest market, according to data from LocalBitcoins.¹⁰²

⁹⁴https://taxes.gov.il/About/SpokesmanAnnouncements/Pages/Ann_120117_2.aspx

⁹⁵<https://www.coindesk.com/polish-tax-authority-bitcoin-mining-profits-subject-22-vat/>

⁹⁶<https://www.gov.pl/cyfrizacja/porozumienie-o-wspolpracy-miedzy-ministerstwem-cyfrizacji-a-icm-uw>

⁹⁷ <http://orka2.sejm.gov.pl/INT8.nsf/klucz/658C47ED/%24FILE/i06655-o1.pdf>

⁹⁸<https://www.coindesk.com/polish-regulator-recognizes-bitcoin-businesses/>

⁹⁹http://www.riksbank.se/Documents/Rapporter/Ekonomiska_kommentarer/2014/rap_ek_kom_nr02_140617_eng.pdf

¹⁰⁰<https://www4.skatteverket.se/rattsligvagledning/338713.html?q=131+191846-15%2F111>

¹⁰¹<https://www.ft.com/content/0e37795c-ab33-11e6-9cb3-bb8207902122>

¹⁰²<https://www.bloomberg.com/news/articles/2017-12-14/bitcoin-trading-thrives-wherever-regulators-crack-down-most>

BOLIVIA

In 2014, the Central Bank of Bolivia banned any currency or coins not issued or regulated by the government, or not being the peso. The Bank's resolution states that citizens are prohibited from denominating prices in any currency that is not previously approved by its national institutions. It also states that bitcoin is not an asset, as it is not backed by other central banks.¹⁰³

Included on the central bank's list of banned currencies are feathercoin, namecoin, peercoin, quark and primecoin.

CHINA

China currently views virtual currencies as “virtual commodities.”

Initially, the lack of regulation helped China become an early adopter in the blockchain space, especially in bitcoin trading and mining, but it went through a drastic reversal earlier in 2017. Scared by how much capital was fleeing the country via bitcoin, China imposed sudden strict regulations on bitcoin trading.¹⁰⁴

Financial institutions and third-party payment providers are banned from accepting, using, or selling virtual currencies. Although its use remains legal, the People's Bank of China has required exchanges to register with the appropriate regulatory authorities and has suggested it will closely watch the markets. The People's Bank of China has allegedly warned banks from working with virtual currency-related businesses.

China has banned all companies and individuals from raising funds through ICO activities, reiterating that ICOs are considered illegal activity in the country. Several entities including the People's Bank of China (PBC), the China Securities Regulatory Commission, and the China Insurance Regulatory Commission, issued a joint statement announcing the ban.¹⁰⁵

ECUADOR

In 2014, the government of Ecuador banned bitcoin, and all decentralized virtual currencies, as part of a reform to

the country's monetary and financial laws. At the same time, the reform allowed the government to make payments in virtual currency. It also proposed the creation of an Ecuadorian state virtual currency, to be backed up by the assets of the central bank.¹⁰⁶ The government rolled out Dinero Electrónico, pegged one-to-one to the US dollar, which is the country's official currency.

Despite the government making bitcoin illegal, its use has not halted in Ecuador. There are buyers and sellers in the country who list themselves on Localbitcoins.com. Bitcoin can be purchased via Paypal like other online purchases. There is a thriving bitcoin community in Ecuador. Private banks and local businesses have not backed the use of Dinero Electrónico, despite it being the Central Bank's own virtual currency.¹⁰⁷

ICELAND

The government, worried about the flight of capital out of the country, banned bitcoin in early 2013 under its Foreign Exchange Act, effectively treating bitcoin as another type of foreign currency transaction.

In 2014, auroracoin was launched within Iceland as an alternative to bitcoin and the Icelandic krona. Like bitcoin, auroracoin was created by an anonymous person or group of person, and issued to all the circa 335,000 inhabitants of Iceland. The coin followed the bitcoin creation methodology and employed a proof-of-work algorithm based on litecoin. Despite public air-drops, the auroracoin had little take up, mostly due to the lack of clear legal status.¹⁰⁸

In March of 2017, Iceland lifted the capital restrictions introduced in 2008 following the financial crisis. Lifting controls allow domestic Icelandic pension funds to invest abroad, potentially weakening the upward forces on the krona and allowing the investors to diversify their assets, which may involve dealing with virtual currencies¹⁰⁹.

¹⁰³<http://www.banrep.gov.co/es/comunicado-01-04-2014>

¹⁰⁴<http://www.scmp.com/news/china/economy/article/2132119/beijing-bans-bitcoin-when-did-it-all-go-wrong-cryptocurrencies>

¹⁰⁵ <http://www.scmp.com/news/china/economy/article/2132119/beijing-bans-bitcoin-when-did-it-all-go-wrong-cryptocurrencies>

¹⁰⁶<http://www.asambleanacional.gob.ec/es/noticia/29856-con-91-votos-la-asamblea-aprobo-codigo-monetario-y>

¹⁰⁷ <https://news.bitcoin.com/use-bitcoin-ecuador-grow-government-ban/>

¹⁰⁸<https://www.unlimited.world/motherboard/new-currency-at-the-end-of-the-world>

¹⁰⁹<https://www.ft.com/content/81bc3a88-0737-11e7-97d1-5e720a267>

NIGERIA

The Central Bank of Nigeria is still studying bitcoin and the use of virtual currencies.

It held a ‘Virtual Currencies as an Emerging Medium of Exchange’ conference earlier in 2017, with various stakeholders in attendance. Nigeria is already the second largest volume of peer-to-peer bitcoin exchange in the world (after China), and that’s despite the Central Bank of Nigeria issuing the following warning in January of 2017:

All banks and financial institutions are required to take the following actions, pending substantive regulation or decision by the CBN:

- Not use, hold, trade and/or transact in anyway virtual currencies.
- Ensure that existing customers, that are existing virtual currency exchangers, have effective AML/CFT controls, enabling them to comply with customer identification, verification and transaction monitoring.
- Discontinue relationship with virtual currency exchangers if they do not satisfy fully all AML/CFT controls.
- Report any suspicious transactions by these costumers immediately to the Nigerian Financial Intelligence UNIT (NFIU).¹¹⁰

SOUTH KOREA

In 2013, the Ministry of Strategy and Finance, the Bank of Korea, the Financial Services Commission, and the Financial Supervisory Service said that “cyber currency” was not a “real legal currency” and did not meet the standard regulations governing currency transactions, either via the Internet or commercial institutions. Also warned about the high volatility in the value of bitcoin, and about its lack of intrinsic value.

In early 2016 however, the Financial Services Commission launched a new virtual currency task force,

with the goal to introduce new regulations for exchange.¹¹¹

In 2017, South Korea’s Financial Services Commission issued a ban on the trading of bitcoin futures, prompting several securities firms to cancel seminars scheduled in December for bitcoin futures investors. The Korean government indicated it would not ban bitcoin exchanges outright, but that ICOs and futures trading would remain subject to the ban.¹¹²

¹¹⁰<https://www.cbn.gov.ng/out/2017/fprd/aml%20january%202017%20circu%20lar%20to%20fis%20on%20virtual%20currency.pdf>

¹¹¹<https://www.coindesk.com/south-korea-debating-new-bitcoin-exchange-rules/>

¹¹²<http://www.businesskorea.co.kr/english/news/money/20022-trade-bitcoin-futures-s-korean-financial-authorities-ban-bitcoin-futures-trading>

2.4 Virtual currencies' key stakeholders and considerations

As evidenced by the precedent section, the adoption of virtual currencies is embedding into society, and the underlying technology and its uses are evolving both globally and locally. The industry is becoming fluid and changing at a rapid pace, with lines between exchanges, wallets and traditional payments processes being re-invented. Against this backdrop, consumer protection, issues of security and regulatory compliance are likely to remain prevalent for years to come.

The global advocate countries have not followed the same pattern of approval for virtual currencies, nor have the same bodies been involved in delivering such policies. One country may have chosen the central bank to spear research into the technology and use of virtual currencies; another may have chosen to regulate its taxable status first, and allow the private sector to develop the technology further. Global opponents of virtual currencies have banned the use of bitcoin, or mining, and penalties and arrests have taken place.

In 2014, the Financial Action Task Force (FATF) issued a report titled "*Virtual Currencies - Key Definitions and Potential AML/CFT risks*". This was the first attempt at defining a common set of terms reflecting how virtual currencies operate. It was a crucial first step to enable government officials, law enforcement, and private sector entities to analyse the potential AML/CFT risks of virtual currency as a new payment method. As regulators and law enforcement officials around the world begin to grapple with the challenges presented by virtual currencies, more research and increased dialogue will be needed. Similarly, as the technology evolves, and new risks emerge, governments and regulators must consider not only the AML/CFT risks, but also risks relating to consumer protection, exchange regulation, data protection and taxation.¹¹³

Table 2.3 provides a brief summary of the key stakeholders that are relevant to Ireland's virtual currencies ecosystem. *[Refer to Appendix 2 for an overview of stakeholders in Ireland]*

Table 2.3: Key stakeholders - Virtual currencies

| Stakeholder | Key Considerations |
|--|---|
| Consumers | <ul style="list-style-type: none"> • VAT on purchases with virtual currencies • Refund policies • Data protection laws • Deposit guarantee schemes • Access to redress • Reliable / accurate pricing information on virtual currency platforms • Vulnerability to cybercrime • Complaints processes • Illiquidity & insolvency issues that lead to the failure of cryptowallet providers and loss to consumers |
| Virtual currency investors | <ul style="list-style-type: none"> • Capital gains tax on profits • Income tax on mining profits • Tax write-offs against losses • AML compliance when registering with cryptowallet providers • Inheritance tax |
| State Bodies (e.g. Enterprise Ireland / ISIF / IDA) | <ul style="list-style-type: none"> • Clear legal & regulatory environment to ensure compliance when investing in blockchain linked businesses • Guidance in relation to tax and consumer protection matters |
| Entrepreneurs & businesses | <ul style="list-style-type: none"> • Know Your Customer (KYC) compliance • Anti-Money Laundering (AML) compliance • Corporation tax implications relating to the issuance of virtual currencies to investors |
| Foreign investment in virtual currency businesses | <ul style="list-style-type: none"> • Clear legal & regulatory environment • Clarity with regards to legality of virtual currencies |
| Accounting bodies | <ul style="list-style-type: none"> • Clear definitions of virtual currencies and tax implications • Accounting standards applicable • Experience in the technology • Auditing of potential fraudulent transactions; access to cryptowallets vs bank accounts |
| Legal bodies | <ul style="list-style-type: none"> • Clear legislative environment • Availability of legal expertise relating to blockchain technology • Clarity in relation to data protection |

¹¹³<http://www.fatf-gafi.org/media/fatf/documents/reports/Virtual-currency-key-definitions-and-potential-aml-cft-risks.pdf>

3. Overview of the Irish Virtual Currency Ecosystem

Due to the largely unregulated nature of the virtual currency market, it remains highly challenging to compile detailed information on the levels of virtual currency ownership in any particular country.

However, by a number of measures, there does appear to be a growing virtual currency ecosystem in Ireland:

3.1 Formation of virtual currency & blockchain focused interest groups

In recent years, a number of active interest groups have emerged in Ireland including like the Irish Bitcoin Association and the Blockchain Association of Ireland. These organisations help to build understanding of the technology and aim to liaise with Irish businesses, Government and regulators to promote the industry.^{114,115}

3.2 At least four virtual currencies issued by Irish based organisations

In October 2017, an Irish business known as Mingo issued a virtual currency called 'MingoCoin'. The business, which aggregates multiple social media accounts and offers users a platform for exchanging virtual currencies, raised over €650,000 in the first hour of trading.¹¹⁶ A Mingo smartphone application already exists and has been downloaded more than 50,000 times in 93 countries.¹¹⁷

Similarly, in November 2017, a Cork based company known as 'Confideal' raised investment following the issuance of its virtual currency. This issuance to investors was designed to fund the future development of their business.¹¹⁸ Confideal aims to offer fast and safe deals through a user-friendly interface for creating complex smart contracts, using Ethereum. Other virtual currencies issued in Ireland were 'IrishCoin' and 'GaelCoin', both of which were released in 2014.¹¹⁹

3.3 Growing number of Irish businesses that employ virtual currencies & DLT

A growing number of other Irish businesses are harnessing the power of virtual currencies to drive efficiency and transparency. Case studies for two Irish businesses are outlined below. By way of example, the first business employs virtual currencies as a means to improve transparency, while the second draws on blockchain technology to enhance efficiency.

CASE STUDY 1: MOYEE COFFEE¹²⁰

Amsterdam and Dublin based 'Moyee Coffee' offer a useful example of how DLT can be employed to add transparency and traceability to consumer goods. Moyee recently partnered with a US blockchain platform that will provide its customers with access to a shared ledger that tracks each stage of the production process and supply chain. At the point of collection, Moyee's platform issues a number of tokens to the coffee farmer that represents the value of the purchased commodity. As the commodity flows through the supply chain, from the washers, to roasters and onto the retailer, new tokens are created to represent the commodity as its value increases. Throughout the process, all parties involved, including the consumer, are provided with access to the ledger, and in so doing, receive full visibility of the supply chain from crop to cup.¹²¹

Similar to the Fairtrade movement, this provides consumers with insight into what the farmers are being paid, while also providing information on exactly when the coffee is harvested and roasted. This provides an unprecedented level of transparency around origin and quality.

By adding increased levels of traceability to agricultural produce, innovative virtual currencies solutions such as those used by Moyee coffee, and others, could prove valuable to the Irish agricultural industry.

¹¹⁴ allcom.ie/websites/BitcoinIRL/about.htm

¹¹⁵ <https://www.blockchainireland.org/>

¹¹⁶ <https://btcmanager.com/irelands-first-ico-mingo-raises-e650000-in-pre-sale/>

¹¹⁷ <https://mingocoin.com/>

¹¹⁸ <https://www.coindesk.com/wall-street-bids-bitcoin-tactics-change-icos>

¹¹⁹ <https://coinmarketcap.com/all/views/all/>

¹²⁰ <https://medium.com/@MoyeeCoffeeIRL/worlds-first-blockchain-coffee-project-cd04fff9e510>

¹²¹ [MoyeeCoffee.com & irishtechnews.ie/using-the-blockchain-to-bring-transparency-to-coffee-industry-moyee-coffee/](https://moyeecoffee.com & irishtechnews.ie/using-the-blockchain-to-bring-transparency-to-coffee-industry-moyee-coffee/)

CASE STUDY 2: ORNUA

In September 2016, Ornuia, formerly known as the Irish Dairy Board, was involved in the first ever blockchain based trade finance transaction in the world. Trade finance, which facilitates the short term financing of loans for businesses to acquire goods from suppliers, often involves a number of banks and law firms across different jurisdictions to facilitate the transaction. This can result in substantial paperwork, data entry and duplication of workload across all parties. By instead drawing on DLT, all parties involved in a transaction have a single source in which to input, process and share relevant information.¹²²

Ornuia, Bank of Ireland, Barclays and Seychelles Trading Company engaged in a collaborative effort to complete the transaction using a blockchain platform that allowed all relevant parties to review transfer titles and transmit shipping documents through a secure decentralised network, eliminating many of the inefficiencies that existed before. Despite not explicitly using virtual currencies in the process, it does demonstrate how the technology has multiple applications.

Other forms of lending, such as aircraft leasing and syndicated lending, could also benefit from the types of efficiency gains achieved by Ornuia. Credit Suisse for example, are expected to roll out a syndicated lending platform based on blockchain technology sometime in 2018.¹²³

3.4 Ireland's first bitcoin ATM installed

In 2014, a Dublin based retail IT company installed Ireland's first ever bitcoin ATM. Based on Abbey Street in Dublin, this machine allows user to deposit physical cash into the ATM and then credit their cryptowallet with the corresponding amount of bitcoins.¹²⁴

3.5 Levels of investment in blockchain businesses

It is estimated that between 2012 and 2016, 6.3% of the total venture capital (VC) invested in Ireland, was channelled to Irish based blockchain businesses. This represents the highest percentage of any Northern European country.¹²⁵ On an absolute basis, Irish based blockchain businesses received approximately

USD\$150m in venture capital, second to only the UK which received roughly USD\$500m in funding over the four years measured. Although many of these blockchain businesses may not specialise in virtual currencies as such, this is evidence that Ireland has the potential to benefit from the technology and process innovation underpinning virtual currencies, while fostering economic development and growth.

Figure 3.1: Investment in blockchain businesses as a % of total venture capital 2012 - 2016¹²⁶

| Blockchain share of venture capital funding by country | 2012 - 2016 % |
|--|---------------|
| Ireland | 6.3% |
| Netherlands | 5.4% |
| Switzerland | 2.1% |
| Slovenia | 2.1% |
| Sweden | 2.1% |
| UK | 2.0% |
| Denmark | 0.4% |
| Germany | 0.4% |
| Poland | 0.3% |
| France | 0.2% |
| Estonia | 0.1% |

¹²² <https://www.irishtimes.com/business/technology/ornua-involved-in-groundbreaking-blockchain-transaction-1.2782748>

¹²³ <http://uk.businessinsider.com/credit-suisse-led-blockchain-solution-makes-progress-2017-8?r=US&IR=T>

¹²⁴ <https://www.gsmsolutions.ie/bitcoin/>

¹²⁵ <http://irishtechnews.ie/ireland-may-become-the-hot-spot-for-blockchain-disruption/>

¹²⁶ funderbe.am/blockchainreport2017

4. Potential Benefits of Virtual Currencies

One of the primary benefits of virtual currencies is their ability to transform the way payments and transactions take place. Companies across multiple sectors are now looking to harness the distributed ledger technology that underpins virtual currencies to improve the speed, efficiency and transparency of their services.

4.1 Near instant settlements

Virtual currencies allow for transactions to be matched in a highly efficient manner, often allowing for users' cryptowallets to be updated within minutes.¹²⁷ Having realised the potential this technology offers, a number of large financial institutions such as JP Morgan and Royal Bank of Canada (RBC) are collaborating on a transactions processing network that draws on blockchain technology to complete international payments.¹²⁸ Faster settlement of payments would prove particularly beneficial to business customers (such as SMEs), with timelier cash-flows allowing for working capital to be managed more efficiently.¹²⁹

Moreover, the functionality of matching repeatable and repetitive transactions has drawn the attention of other industries that could benefit from the efficiency gains this technology offers. For example, the Australian Securities Exchange announced plans to manage the clearing and settlement of equity transactions using blockchain technology.¹³⁰ Traditionally, equity trade settlements take three days (T+3); however, this timeline could be considerably reduced by utilising smart contracts through distributed ledger technology.

Globally, post-trade securities settlement (including equities, bonds and other financial instruments), are estimated to cost the financial services industry in excess of €50 billion per annum.¹³¹ Adopting distributed ledger technology to streamline these processes could help to increase efficiency and reduce costs. Ultimately,

consumers could benefit from these cost savings in the form of reduced fees and transaction charges.

4.2 Traceability

Although it is possible to transact pseudonymously (i.e. under a false name) using virtual currencies, there is the potential for virtual currencies to actually record much greater levels of information than traditional payments systems. Blockchain technology has the ability to record not only the time and value of a transaction, but also to store other information such as contracts¹³², pictures and records relating to the product or service being bought or sold. Similarly, it can record information on the customer and any emails or other communications associated with the transaction. As information recorded on the blockchain is immutable, the information maintains a level of integrity that will prove useful when reviewing the transaction at a later date. This would be particularly beneficial when dealing with issues such as conflict resolution or property rights disputes.¹³³

4.3 Lower fees

By removing the need for costly centralised parties, DLT could allow businesses to facilitate transactions at a lower cost than before. The costs associated with clearing houses, credit and debit card providers and retail banks, all contribute to transaction fees incurred by consumers. By removing some of these institutions from the process, there is the potential to pass on savings to the consumer.

4.4 Security

Blockchain technology draws on advanced encryption techniques to cryptographically secure details of any transaction recorded on a shared ledger. This increases the difficulty a cybercriminal faces when attempting to hack, and change, the details of a given transaction. Furthermore, as each user with permission to access a

¹²⁷<https://xrphodor.wordpress.com/2017/09/27/how-xrp-is-faster-than-any-other-digital-asset-or-virtual-currency/>

¹²⁸<https://www.reuters.com/article/us-jpmorgan-blockchain/jpmorgan-launches-payments-network-using-blockchain-technology-idUSKBN1CL1P6>

¹²⁹ HM Treasury: *Virtual Currencies: response to call for information*. March 2015

¹³⁰ <https://www.ft.com/content/8366b688-832d-3934-9e6e-c0f59e8d0f99>

¹³¹ UK Government Office for Science: *"Distributed Ledger Technology: beyond block chain"*

¹³² ftalphaville.ft.com/2017/07/11/2191240/guest-post-smart-contracts-will-need-human-juries/

¹³³ HM Treasury: *Virtual Currencies: response to call for information*. March 2015

distributed network has a copy of the ledger, other users are able to observe instances where details of a transaction have been illegitimately altered. Many distributed ledgers possess a ‘consensus mechanism’ meaning that in order for a cyber-criminal to be successful in a cyber- attack, they would require to decrypt and change at least 51% of users’ ledgers simultaneously, making it extremely difficult to disrupt the integrity of the information stored on the ledger. Ultimately, with copies of the data in all users’ hands, the overall database remains safe even if some users’ accounts are compromised.¹³⁴

This contrasts with the security structure of many existing financial institutions that host their ledgers on a centralised, in-house, platform. Such a structure, provides a single point of attack for cyber criminals. One recent example of a security breach involved the website of a major Brazilian bank that was subject to a cyber-attack in early 2017. This resulted in the internet banking details of customers being illegally obtained by cyber criminals, thereby providing them with access to customers’ bank accounts.¹³⁵ Cyberattacks continue to occur both in Ireland and abroad, often compromising users account information and private data.¹³⁶ In October 2017, a large Irish wholesaler had to request that customers review their bank statements following a cyber-attack on its systems.¹³⁷

4.5 Universal access

Virtual currencies allow for individuals to transact with each other all over the world at high speed, and usually at a low cost. As virtual currencies can act as a universal means of exchange, individuals are not required to pay additional fees to transfer units to users in different countries. Equally, foreign exchange spreads are not incurred as both the payer and payee can agree to transact in the same virtual currency. This may have the potential to be disruptive to the global remittances market currently managed by banks and global money transfer agents.¹³⁸ For this reason, virtual currencies are proving particularly popular in sub-Saharan African

nations where cross border payments are common, and where a relatively large percentage of the population remains unbanked. Many citizens still face issues when trying to access banking services due to their lack of a verifiable physical address, their lack of state backed identification documentation, or their lack of proximity to a bank branch. This makes virtual currencies an ideal medium for storing and transferring value between one another. In Kenya, the mobile-money platform, M-Pesa has a virtual currency wallet function that accompanies their more conventional banking services. This capability now provides roughly one third of all Kenyans with ability to transact via virtual currencies if they so wish.¹³⁹

¹³⁴ uk.businessinsider.com/secure-virtual-currency-blockchain-technology-2017-10?r=US&IR=T

¹³⁵ <https://www.wired.com/2017/04/hackers-hijacked-banks-entire-online-operation/>

¹³⁶ <https://www.independent.ie/datasec/data-including-pps-numbers-hacked-from-irish-primary-school-and-held-for-ransom-35612786.html>

¹³⁷ <https://www.theregister.co.uk/>

¹³⁸ <https://www.globalradar.com/the-potential-impact-of-virtual-currency-on-the-remittance-industry/> & <https://transferwise.com/gb/blog/overview-of-world-remittance-industry>

¹³⁹ https://motherboard.vice.com/en_us/article/788gpq/one-third-of-kenyans-now-have-a-bitcoin-wallet

5. Known Risks of Virtual Currencies

Both the European Banking Authority and the Central Bank of Ireland have issued warnings in relation to the known risks associated with transacting and investing in virtual currencies.¹⁴⁰ Despite these risks, many governments have recognised the wider potential the technology offers for process improvements and innovation. Some countries are considering, or have begun to amend, legislation to facilitate the use of DLT and virtual currencies. Evidence from around the world suggests that legislators and regulators must consider several areas impacted by the use of virtual currencies. Some of these are set out below:

5.1 Consumer Protection

Consumers face a variety of risks, both in relation to ownership of virtual currencies and when using them as a means to purchase goods or services. According to the European Banking Authority's 2013 guidance on virtual currencies, consumers rarely receive any protection when their virtual currencies are lost or stolen. Unlike deposits with a traditional bank, consumers that hold virtual currencies using a 'crypto-wallet', are not covered by deposit guarantee schemes, meaning that they are unlikely to be refunded if their account is hacked, and their virtual currencies stolen. To date, a number of cryptowallet providers have been the victims of cyber-crime. Table 5.1 details some of these cyber-attacks, and the amounts of virtual currencies that were stolen. As can be seen, as recently as December 2017, an established crypto-wallet provider had the equivalent of USD\$62 million worth of bitcoins stolen by cyber-criminals.¹⁴¹ It is not clear if the underlying owners of the virtual currencies recovered their holdings, or whether they were compensated.

In addition to the risk of individuals' virtual currencies being stolen, consumers that choose to purchase goods or services using virtual currencies are unlikely to be covered by existing consumer protection laws. The European Banking Authority included in their statement

that "when using virtual currencies as a means to pay for goods and services, you are not protected by any refund rights under EU law offered".¹⁴²

Table 5.1: List of recent virtual currency wallet cyber-attacks (>USD\$1 million at the time of the attack)¹⁴³:

| Date | Approx. Amount Stolen | Virtual currency Stolen |
|------------------------------|-----------------------|-------------------------|
| February 2014 | c.\$473m | Bitcoin |
| January 2015 | c.\$5.1m | Bitcoin |
| June 2016 | c.\$50m | Ether |
| August 2016 | c.\$72m | Bitcoin |
| July 2017 | c.\$7m | Ether |
| July 2017 | c.\$32m | Ether |
| July 2017 | c.\$8m | Veri tokens |
| December 2017 ¹⁴⁴ | c.\$62m | Bitcoin |

5.2 Criminality

Since virtual currencies rose to prominence in the late 2000's, the most well documented concern relates to the use of virtual currencies to acquire contraband. Like cash, bitcoin and numerous other virtual currencies have the ability to be used as a pseudonymous medium of exchange. This allows for criminals to transact online, using platforms like the now defunct Silk Road, without leaving any virtual footprint of the user's real identity. Proof that such activities are becoming more widespread is demonstrated by the recent seizure of devices used for storing virtual currencies during raids on criminal networks in Europe.¹⁴⁵

5.3 Money Laundering

Currently, many virtual currency platforms enable users to transfer their holdings around the globe while avoiding the anti-money laundering protocols required by traditional financial institutions. Due to the ability for individuals to disguise their identity by using pseudonyms, it remains difficult for regulators to measure to what extent virtual currencies are being used for money laundering. In 2016, the IMF declared that "[virtual currencies] pose considerable risks as potential

¹⁴⁰ <https://www.centralbank.ie/consumer-hub/consumer-notice/alert-on-initial-coin-offerings>

¹⁴¹ <https://www.coindesk.com/62-million-gone-virtual-currency-mining-market-nicehash-hacked/>

¹⁴² eba.europa.eu/documents/10180/598344/EBA+Warning+on+Virtual+Curr encies.pdf

¹⁴³ <http://storeofvalueblog.com/posts/virtual-currency-hacks-so-far-august-24th/>

¹⁴⁴ <https://www.coindesk.com/62-million-gone-virtual-currency-mining-market-nicehash-hacked/>

¹⁴⁵ <http://www.thejournal.ie/bitcoin-mine-cash-kinahan-3597575-Dec2017/>

vehicles for money laundering, terrorist financing, tax evasion and fraud".¹⁴⁶

Some regulators are now beginning to close in on such activities. In late 2017, the UK Treasury announced plans to regulate cryptowallets and virtual currency exchanges by incorporating them under existing anti-money laundering directives.¹⁴⁷ This follows an agreement between the European Parliament and European Council on new proposals to further strengthen anti-money laundering rules. Under the forthcoming fifth anti-money laundering directive (5AMLD), the European Commission is expected to bring virtual currency platforms under existing anti-money laundering legislation. This will require companies that are in "charge of holding, storing and transferring virtual currencies" to identify their customers and report any suspicious activity to the relevant authorities.¹⁴⁸ Once this directive has been finalised at a European level, the revised regulatory and oversight measures will be transposed into Irish law.

5.4 Initial Coin Offerings (ICOs)

In December 2017, the Central Bank of Ireland issued a warning to consumers and investors in relation to investing in newly issued virtual currencies via Initial Coin Offerings.¹⁴⁹ This announcement reflected an earlier warning that was released by the European Banking Authority in 2013.

ICOs remain unregulated and therefore carry risks not normally associated with the issuance of financial instruments such as equities and bonds. In particular, investors in virtual currency businesses are rarely provided with the same levels of disclosure (such as financial information) that are expected of traditional securities. Without adequate information, investors and consumers are exposed to making ill-informed investment decisions. The European Securities and Markets Authority (ESMA) referred to this, and a number

of other risks relating to ICOs in their November 2017 circulation, stating that:¹⁵⁰

- ICOs are an unregulated space, vulnerable to fraud or illicit activities.
- Investors face the risk of losing all their invested capital.
- ICOs often present a lack of exit options and extreme price volatility.
- Inadequate information often exists in relation to the viability of the virtual currency.
- Flaws in the technology may lead to investors falling victim to cyber-attacks.

5.5 Taxation

Although criminality associated with virtual currencies represents a risk to governments, there is evidence to suggest that the majority of virtual currencies are purchased by investors and legitimate owners, with some researchers suggesting that as little as 1% of transactions are used for laundering activities or tax evasion.¹⁵¹ As such, legitimate stakeholders that own, transact or facilitate virtual currency transactions need to be aware of their tax obligations. For example, **investors** in, and **miners** of virtual currencies may need to assess their capital gains tax liabilities. This is particularly relevant given the appreciation in virtual currency prices over the last 12 months.¹⁵² Similarly, **businesses** that accept virtual currencies as payment may also need to consider corporation tax implications (and the legal framework supporting their claim as trusts, sole traders etc.). Meanwhile, **individuals** that own virtual currencies for use as a medium of exchange may be subject to VAT on any purchases they undertake.¹⁵³ For example, in 2015, the Spanish government provided clarity in relation to VAT by stating that purchases of virtual currencies would be exempt from VAT. This decision was based on an earlier announcement by the European Court of Justice in relation to VAT Directive 2006/112/CE. Similarly, in 2014, Belgium's Federal Public Service Finance (FPS) released a statement noting that

¹⁴⁶ <https://www.imf.org/external/pubs/ft/sdn/2016/sdn1603.pdf>

¹⁴⁷ <https://www.theguardian.com/technology/2017/dec/04/bitcoin-uk-eu-plan-virtual-currency-price-traders-anonymity>

¹⁴⁸ http://ec.europa.eu/newsroom/just/item-detail.cfm?item_id=610991

¹⁴⁹ To forewarn virtual currency investors of the risk associated with potentially dubious investments, the Central Bank of Ireland issued a warning in December 2017 highlighting some areas of concern in relation to ICOs, including: risks relating to the unregulated nature of ICOs, their vulnerability to fraud and illicit activities and a lack of exit options for investors.

¹⁵⁰ https://www.esma.europa.eu/sites/default/files/library/esma50-157-829_ico_statement_investors.pdf

¹⁵¹ <https://info.elliptic.co/whitepaper-fdd-bitcoin-laundering>

¹⁵² Coinbase.com

¹⁵³ Arthur Cox Group Briefing June 2014: Cryptocurrencies and the Law - The Irish Position

certain domestic virtual currency transactions were exempt from VAT.¹⁵⁴

As already outlined in Section 2, countries are addressing the tax implications of virtual currencies according to local legislation.

5.6 Price Volatility for Investors

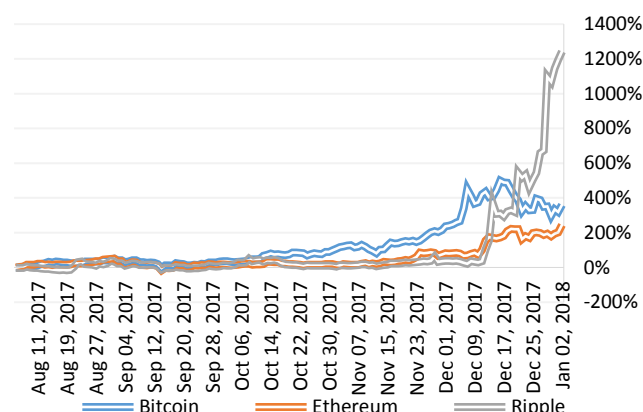
Recent price volatility associated with virtual currencies has been well documented. Investors in bitcoin for example can expect average daily price movements against the US Dollar of more than 7%. By comparison, the price of gold against the US dollar fluctuates on average about 0.6% per day.¹⁵⁵

High price volatility can result in substantial gains or losses to consumers and investors. The virtual currency platform Ethereum saw its virtual currency (ether) price rise from c.USD\$230 a unit in August 2017 to c.USD\$770 in January 2018 – a 240% increase.¹⁵⁶ Meanwhile, bitcoin prices fell by 30% in less than three months between their peak in December 2017 and January 1st 2018 (see figure 5.1).

Some of the rapid price appreciation associated with virtual currency prices in 2017 can be attributed to the increase in the number of virtual currency investors. Binance, the world’s largest virtual currency exchange, revealed that it had been adding more than 250,000 international users a day, and had been forced to stop adding new users temporarily as a result. Other exchanges, Coinbase and Bitstamp also were adding more than 100,000 users per day.¹⁵⁷

High levels of price volatility pose a significant risk to consumers and investors, and may result in Irish investors incurring capital losses. Similarly, some virtual currencies remain highly illiquid, limiting investors’ ability to exit their positions if required.¹⁵⁸

Figure 5.1: World’s 3 largest virtual currencies by market value: % Price Change of Bitcoin, Ether and XRP:



5.7 Data Protection

Distributed ledger technology is designed so that information that is recorded on a ledger during the course of a transaction is both permanent and immutable (i.e. not editable). This raises a number of potential inconsistencies with existing Irish and European data protection laws. For example, if an individual chooses to make a purchase that is later recorded on a distributed ledger, as can now be done with many retailers¹⁵⁹, a permanent record of that transaction will be added to a blockchain. By the very nature of the technology, this transaction is then disclosed to all parties on the network, thereby limiting the data controller’s (i.e. the retailer) ability to adequately manage information it has obtained from the customer. If any personal information can ultimately be traced back to the purchaser then it raises questions around General Data Protection Rules (GDPR) and Right To Be Forgotten rules that exist under EU law.¹⁶⁰

Similarly, due to the immutability of blockchain technology, businesses may be unable to edit or destroy personal information added to a given block. Under the current data protection laws in Ireland, “*data shall not be kept for longer than is necessary for that purpose or those purposes*” meaning that indelible records

¹⁵⁴ <https://www.coindesk.com/european-court-of-justice-official-proposes-bitcoin-vat-exemption/>

¹⁵⁵ 30 day price volatility indices January 2018:

<https://www.buybitcoinworldwide.com/volatility-index/>

¹⁵⁶ August 1st 2017 – January 1st 2018 (Coinmarketcap.com)

¹⁵⁷ <https://cointelegraph.com/news/study-22-of-bitcoin-investors-used-borrowed-money-for-trading-not-recommended>

¹⁵⁸ HM Treasury: Virtual Currencies: response to call for information. March 2015

¹⁵⁹ <https://99bitcoins.com/who-accepts-bitcoins-payment-companies-stores-take-bitcoins/>

¹⁶⁰ https://ec.europa.eu/info/law/law-topic/data-protection_en

containing personal information may cause data protection challenges for businesses.¹⁶¹

Finally, any businesses that currently record information on DLT may need to assess the implications of the forthcoming General Data Protection Rules (GDPR) that are expected to come into effect in 2018.¹⁶²

5.8 Monetary Policy¹⁶³

With only a few exceptions¹⁶⁴, nearly all of the world's virtual currencies currently in use are not sovereign backed, or controlled by central banks. As virtual currencies allow for a medium of exchange to take place outside of the traditional banking systems, this creates a number of potential challenges for central banks and governments.

Firstly, in an environment where widespread use of virtual currencies exists, central banks would have no means by which to control the unit supply linked to a given virtual currency. In the event of an economic downturn, a central bank's ability to stimulate the economy by availing of quantitative easing measures could therefore be diminished. Secondly, a central bank's ability to manage inflation by adjusting the money supply would also be impeded if there were to be extensive use of virtual currencies instead of fiat currencies.

One idea considered in several countries is for central banks to issue their own virtual currency, pegged to the value of the existing money supply (i.e. physical and electronic cash balances). Such an idea is not without precedent. As discussed in section 2, a consortium of Japanese banks announced that they are collaborating on the creation of a virtual currency, known as 'JCoin', to be pegged to the Japanese Yen.¹⁶⁵ This will allow individuals and businesses to transact electronically almost instantly, while removing many of the risks associated with those virtual currencies not linked to Japan's central bank. This would in-turn reduce the levels

of cash transactions that take place (which are traditionally very high in Japan relative to international norms¹⁶⁶), therefore greatly reducing the costs associated administering physical cash transactions at the participating banks.

Closer to Ireland, the European Central Bank has remained cautious on the evolution of virtual currencies. In September 2017, Mario Draghi, President of the ECB publically stated that the Eurozone does not see virtual currencies coexisting with the Euro: *"No member state can introduce its own currency; the currency of the euro zone is the euro"*.¹⁶⁷ On February 8th 2018, Yves Mersch, Member of the Executive Board of the ECB, during a lecture at the Official Monetary and Financial Institutions Forum, London, concluded that *"Virtual currencies are not money, nor will they be for the foreseeable future. Their market share is still small and their ties to the real economy are still limited. But this can be subject to change. Regulators and legislators on all levels should therefore urgently pay close attention to mitigating the potential risks that could stem from growing VC business"*.¹⁶⁸

¹⁶¹ <https://www.dataprotection.ie/docs/Data-Protection-Rule-7/31.htm>

¹⁶² Further discussion in relation to the threats and opportunities of cryptocurrencies and monetary policy can be found in the June 2017 report issued by the National Bank of Belgium. https://static1.squarespace.com/static/59cb821618b27d9277121e21/t/59d37c7a51a584ef26bab480/1507032187643/BAI_DOC.pdf

¹⁶³ <https://www.nbb.be/en/articles/press-release-digital-currencies-threats-and-opportunities-monetary-policy>

¹⁶⁴ <https://www.bloomberg.com/news/articles/2018-02-20/venezuela-is-jumping-into-the-crypto-craze> <http://time.com/money/5186316/this-is-the-first-country-to-adopt-a-cryptocurrency-as-its-official-currency/>

¹⁶⁵ <https://www.cnn.com/2017/09/27/japanese-banks-virtual-currency-j-coin.html>

¹⁶⁶ <https://asia.nikkei.com/Business/Trends/Cash-loving-Japanese-going-virtual-even-at-the-shrine>

¹⁶⁷ <https://www.reuters.com/article/us-ecb-bitcoin-estonia/ecbs-draghi-rejects-estonia-virtual-currency-idea-idUSKCN1B12BI>

¹⁶⁸ <http://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp180208.en.html>

6. Conclusion and Next Steps

Since the launch of bitcoin in 2009, over 1,500 virtual currencies have been created. Innovation by blockchain platforms such as Ethereum (the platform on which ether is traded) and Ripple (the platform on which XRP is traded) have helped evolve the technology to improve transaction times and scalability. Blockchain technology is making its way into the mainstream payments industry, with start-ups offering instant low cost global payments that draw on distributed ledger technology to transfer real world, fiat currencies between individuals.¹⁶⁹

Similarly, firms involved in equity settlements, loan underwriting, and supply chain management are exploring ways in which blockchain can streamline practices and reduce processing times. Consequentially, blockchain has the power to transform industries by enhancing the speed, accuracy and reliability of information processing and proliferation. This may prove to be disruptive to the status quo across the financial services sector, healthcare, government services, both globally, and in Ireland. DLT has the potential to be as transformative as the arrival of e-mail or the internet. The impact of those technologies, and their universal effect, radically changed the nature of our personal and professional lives.

As with any new technology, risks that impact on consumers, businesses and the economy cannot be ignored, particularly when the technology is evolving rapidly and is little understood. In particular, consumers may find themselves falling victim to cybercrime due to inadequate IT security on the part of cryptowallet providers, or be exposed to losses when refund policies, deposit guarantee schemes, or access to redress, do not apply. Similarly, consumers that hold virtual currencies may suffer financial loss from extreme price volatility, or find themselves facing difficulties when converting virtual currencies back to fiat currencies due to illiquidity.

In addition to consumer protection, governments are exploring issues such as taxation, anti-money laundering and cybercrime. In Ireland, the first parliamentary questions (PQs) in relation to virtual currencies were raised in 2013 by members of Dáil Éireann, requesting

clarity as to the legality of virtual currencies and the potential loss to the Exchequer by individuals circumventing tax. In December 2017 and January 2018, three further PQ's were raised concerning the safeguards in place for Irish investors. These raised questions about how virtual currencies are being monitored, how they affect the financial services industry in Ireland, and what regulatory framework may exist. Concerns such as these are evidence that the use, trade and exchange of virtual currencies in Ireland is real.¹⁷⁰

Some countries have emerged as advocates of virtual currencies (e.g. Australia); while others have created tailor-made solutions to suit their own circumstances (e.g. Sweden's vision to become cashless society, or France's suite of innovation tax incentives). At an EU level, the European Court of Justice (ECJ) has clarified the VAT status for virtual currency transactions, while the European Council reached agreement on new proposals to further strengthen anti-money laundering rules.

From an Irish perspective, there are several reasons why an articulated position from the Department of Finance on virtual currencies may be constructive:

1. To provide clarity to consumers with regards to the levels of protection available to them when transacting with virtual currencies.
2. To present transparency to consumers, investors and businesses as to their tax obligations.
3. To deliver to entrepreneurs and start-ups an unambiguous regulatory framework, and thus promote innovation and growth.
4. To align with developing international policies.
5. To reduce illicit activities such as terrorist financing.
6. To align with Ireland's IFS2020 Strategy to foster opportunities in international financial services by building on the country's strengths in technology, research and financial services.
7. To equip Ireland with a differentiating competitive advantage in securing foreign direct investment in DLT companies and ventures.

Ultimately, no one policy measure or State agency has the ability to address all the risks and opportunities that virtual currencies and DLT now present to Ireland. For each of these issues to be comprehensively evaluated,

¹⁶⁹ Circle.com

¹⁷⁰ Refer to Appendix 1 for all PQ's raised in relation to cryptocurrencies

the Irish Government will be required to draw on the expertise of multiple State agencies including (amongst others): the Department of Finance, the Revenue Commissioner, the Data Protection Commission and the Department of Business, Enterprise and Innovation. A coordinated exploration into the implications of virtual currencies may allow for the development of holistic policy measures that will encourage innovation in the sector, while addressing risks to consumers, investors and businesses.

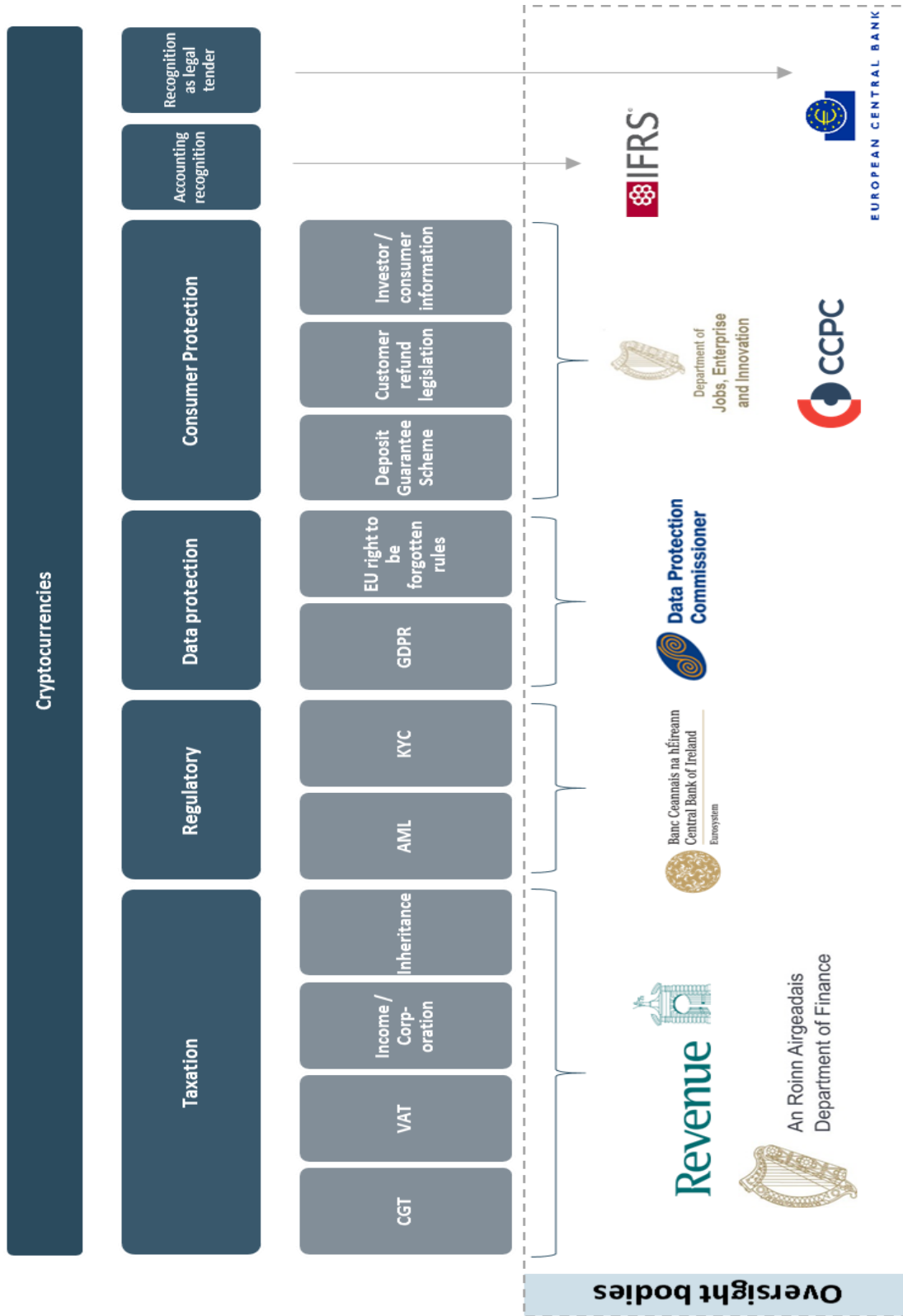
As a first step towards this goal, the Department of Finance is establishing an **intra-departmental working group** to draw on expertise from across the Department in order to oversee developments in virtual currencies and blockchain technology, with a view to:

1. Monitor developments at European (i.e. ECB, EBA, ESMA, EC, EIOPA) and global level (i.e. OECD, IMF) in relation to virtual currencies and blockchain, and to provide input into the discussions as and when required.
2. Keep up to date knowledge of developments in the technology to identify risks and assess potential economic opportunities for Ireland.
3. Engage with industry and subject matter experts in the private and professional sectors to build a dynamic communication flow.
4. Liaise with other areas of Government to assess where involvement might be required.
5. Consider whether suitable policy recommendations are required.
6. Assist in promoting a better understanding of the technology across Government.

Appendix 1: Parliamentary Questions

| Date | Raised By | Question |
|---|-----------------------------------|--|
| Written PQ6661/18 January 2018 | Michael McGrath (Fianna Fáil) | “To ask the Minister for Finance if his department or the Central Bank gather data on trading in crypto currencies; if his department or the Central Bank have undertaken an in-depth analysis on the technology behind crypto currencies; if crypto currencies are traded on platforms here; the number of trades in crypto currencies made here in each of the years 2013 to 2017; the value of those trades; the number of trades in a crypto currency (details supplied) made here in each of the years 2013 to 2017; the value of those trades; the value and quantity of the currency circulating here; the consumer and financial regulation that exists here in relation to crypto currencies; and if he will make a statement on the matter.” |
| Written PQ55026: December 2017 | James Lawless (Fianna Fáil) | “To ask the Minister for Finance the safeguards in place to protect Irish investors that invest in crypto currency; and if he will make a statement on the matter.” |
| Written PQ55025: December 2017 | James Lawless (Fianna Fáil) | “To ask the Minister for Finance the actions his department is taking to monitor the use and investment of crypto currencies such as bitcoin here; the way in which these currencies affect the financial industry; the studies his department is conducting to analyse the potential problems and risks involved in using and investing in these currencies; the regulatory frameworks required in the near future or that are currently in place in relation to crypto currency; if he is liaising with the Central Bank in relation to these matters; and if he will make a statement on the matter.” |
| Seanad debates: November 2017 | Aidan Davitt (Fianna Fáil) | “As bitcoin pushes beyond the €8,000 mark this week I call on the Leader to liaise with the Department and Minister for Finance regarding their policy on bitcoin, of which I understand we currently have none. Today, bitcoin was the cause of two large American technology companies biting the dust. According to the Korean police, a bitcoin ponzi-type scheme recently in operation in Korea involved an estimated fraud of \$38 million. This is only one of a few such schemes. There are possibly 100 similar schemes in operation. Ireland is at the cutting edge of technology, social media and finance. It has all of the ingredients to become a hot bed of bitcoin farming and, unfortunately, fraud. We need to play our part and immediately introduce a policy on bitcoin and its use in Ireland by the technology companies and as a method of payment throughout the country.” |
| Written PQ45769/14: December 2014 | Timmy Dooley (Fianna Fáil) | “To ask the Minister for Finance further to Parliamentary Question No. 137 of 15 January 2014, if he will provide an update on the Revenue Commissioners' current view regarding the taxation status of crypto-currencies, including Bitcoin; and if he will make a statement on the matter.” |
| Written PQ: 1228/14 January 2014 | Terence Flanagan (Independent) | “To ask the Minister for Finance Ireland and the Central Bank of Ireland's current position on Bitcoin; and if he will make a statement on the matter.” |
| Written PQ: 52492/13 December 2013 | Stephen Donnelly (Independent) | “To ask the Minister for Finance if his attention has been drawn to the growing use of crypto-currencies such as Bitcoin; if he has concerns regarding the legality of using such currencies as de facto legal tender in any transactions in this jurisdiction; if he has any concerns regarding the use of such currencies to circumvent taxes and any potential loss to the Exchequer as a result; and if he will make a statement on the matter.” |

Appendix 2: Overview of impacted stakeholders



Government Buildings, T: 353 1 604 5626
Upper Merrion Street, F: 353 1 676 1951
Dublin 2, www.finance.gov.ie
D02 R583
Ireland.

Disclaimer:

This paper is for informational purposes only. No person should place reliance on the accuracy of the data and should not act solely on the basis of the document itself. The Department of Finance does not guarantee the accuracy or completeness of the information which is contained in this document and which is stated to have been obtained from or is based upon trade and statistical services or other third party sources. Any data on past performance contained herein is no indication as to future performance.

No representation is made as to the reasonableness of the assumptions made within or the accuracy or completeness of any modelling, data tables or statements. All opinions and estimates are given as of the date hereof and are subject to change. The information in this document is not intended to predict actual results and no assurances are given with respect thereto. The Department of Finance complies with the [Regulations on the Re-use of Public Sector Information](#) and encourages the re-use of the information that we produce subject to the latest PSI licence available at www.psi.gov.ie.

© Department of Finance, 2017