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THESIS

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BUDAPEST BUSINESS SCHOOL FACULTY OF INTERNATIONAL MANAGEMENT AND BUSINESS

MA/MSc of International Relations

THE LEGAL FRAMEWORK OF THE CRYPTOCURRENCIES

AND

INITIAL COIN OFFERINGS (ICOs)

by Bedrettin Gürcan

Budapest, 2018

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1. Introduction

The technologic developments remain on the world agenda and this development happens without restraint. It brings fundamental changes in our daily life. Even as an individual, quite hard to follow all these developments and changes. In this respect, it is very understandable fact that governments and lawmakers cannot be able to catch all these things.

Since the internet has emerged, the world was transformed into more global and integrated for many services and activities. Social media was one of the first examples that how globalization could be happening extremely quick. This innovation brings richness by means of global market. Tech giants have replaced with old world companies as oil companies or real estate companies in the list of richness. However, these tech giants as Facebook, Microsoft, Oracle took the advantage of grey areas. Until they got their $ billion-dollar valuation, they have not faced with legal obstacles. In March 2018, Cambridge Analytics scandal broke out and the regulatory bodies first time realized that how these tech giants as Facebook operated without strict controls and regulations.

Blockchain technology also is one of the most exciting technologic developments in this decade beyond any doubt. Blockchain technology offers many features to solve plenty of daily issues with trustable infrastructure. To sustain this system, first decentralized digital currency, (also referred as a cryptocurrency) Bitcoin launched in 2009. It was not demanding in the beginnings. However, in today, there are many discussions about possibilities of replacing fiat currencies with cryptocurrencies.

Based on this knowledge, this paper studies legal framework of cryptocurrencies to understand better this cutting-edge technology and catch the technology for regulatory bodies. In this study, also we examine new funding model, Initial Coin Offering (ICO), which is for mostly early age blockchain start-ups. It is already reached to $ billion market cap in global. However, to understand technology as a whole, it is quite important to look ICOs and cryptocurrencies together in the legal aspect point of view. This study aims to

clarify both new terminologies first. Later on qualify them as a legal side to show a clear roadmap for investors, users, partners and observers of this technology.

In this research, the following questions are disposed of: What is the cryptocurrency exactly? What are their technologic differences and features? and how exactly can qualify cryptocurrencies as money, security or anything else and examines its legality for many aspects? However, this study also examines legal aspects of the initial coin offering fundraising method, which offers new cryptocurrencies with some rights or expectations.

It must be admitted; this field is pretty new to find many types of research about it. However, market cap and impacts on and also risks on the world financial system besides many issues as costumer rights, money laundering, terror financing by means of globalization and technologic infrastructure, it is quite urgent to understand this technology and takes true regulative steps without tie down of development. The objects of this study are cryptocurrencies and Initial Coin Offerings, the new fund-raising method via cryptocurrencies. The subject is the legal framework of cryptocurrencies and ICOs to qualify and control legality. The following hypothesis is tested: Can cryptocurrencies be qualified as currency, security or commodity? Can ICOs be qualified or regulated as Initial Public Offering or Crowdfunding?

The purpose of this research is to summarize how cryptocurrencies and ICOs work and discuss potential qualifications of these new terms to help regulatory bodies understand and take steps with enough knowledge.

To achieve the purpose, this research uses the following methods: analyses of most popular cryptocurrencies technical description reports, which called white paper (White papers of Bitcoin, Ether, Ripple, Bitcoin Cash, Litecoin, Eos, Tether, Tron, Vechain, Omisego), official public statements belongs to several countries' institutions, legal codes of these countries, evaluation of countries' aspects to cryptocurrencies and ICOs and future possible perspectives, media reports and critical articles about the similar topics.

The study researchers show the latest aspects to the legality of cryptocurrencies and ICOs from the view of more than twenty different countries, which are the most influential countries on the crypto market. In addition, this study does not just show the different

aspects, also it compares several countries' approach to these developments and creates a clear image to understand widely. This study is not just comparison, moreover, it offers the clear and comprehensive roadmap for lawmakers to how they can be regulated or take steps about these developments. It makes one of the unique studies to this research about this hot topic. This study aims to be the lighthouse for regulatory bodies.

Methodology and Its Crucial Questions

The research topic based on Blockchain technology, which has less than a decade history. Moreover, even technical part of this technology is still waiting to explored by experts. However, the legal side of this technology is not examined yet so detailed way in the literature. Some researchers focus on a narrow part of legality or qualification of the cryptocurrencies or ICOs. However, this study makes wider research about cryptocurrencies and ICOs and examine many regulative actions from the global aspect. This study offers quite a wide aspect of the legal framework of cryptocurrencies and ICOs.

We will face several problems in this study as the limitation of sources due to being very new development, countries' changeable approaches, lacking regulations, clear definitions and complexity of the technology. In this respect, the study makes deeper research one by one countries' regulations even sometimes translations of local languages to understand complex legal language. The methodology of this research is created to show comparable approaches worldwide about cryptocurrencies and ICOs and achieve to being the roadmap for regulatory bodies.

In this regard, qualitative and quantitative approaches will be used to investigate research problems and prove or disprove the hypothesis of research. For example, national regulations can be used to justify regulate to cryptocurrency and ICO market. However, some restrictive regulations can show that how it could make an obstacle for technologic development.

The qualitative method will be used to gain the understanding of opinions, underlying reasons, and motivations to regulate and qualify cryptocurrencies and ICOs. The scientific basis for this research will be the theory of international law, domestic law,

including international relations and finance knowledge as currency, commodity and security terms, cross-border business and regulations as Anti Money Laundering Act and Know Your Customer Act. Method of data collecting based on the country by country regulation overview, international institutions reports to give an objective overview. This research aims to give an objective overview to regulatory bodies besides some suggestions. Moreover, we will make critics also already existing regulations or official approaches to cryptocurrencies and ICOs.

The quantitative research will be used in this research to show cryptocurrency market size, investments, values and more. The objective data will be based on pioneer and well-known sources to reach figures about market cap, market value, investment number of cryptocurrencies and ICOs. To give an objective overview of legal aspects of countries on cryptocurrencies and ICOs, we will use systematic observations. In addition, to get certain assessments of legal trends, approaches, and possible contradictions in data, the principle of ‘’mediator’’ will be used by articles written by experts, specialized media and researchers. The appendix also will provide data on crypto and ICO markets.

1.1. Definition of Decentralized Digital Currencies

First, it must be admitted that the phrase "digital currency" is not clear enough, the question economists, regulators, and legislatures are facing whether a digital currency is truly a currency or something else. (Glass, 2017)The most common mistake is the confusion between digital currency and electronic money. Electronic money is nothing but an electronic representation of national currencies. In other words, electronic money is not currency itself as digital currency. (Schmalensee, 2005) However, digital currencies have no their own value in the international monetary system.

Digital currency is stored electronically, and also transferred via electronic gateways. First examples of digital currencies appeared in the 1990s. One of the first digital currencies was E-Gold, which was backed by gold in 1996. Another example of digital currencies was Liberty Reserve, enable to exchange dollars or euros to Liberty Reserve Dollars and Euros and exchange these centralized currencies with one another with transaction fee. The common feature of both systems was centralized. In addition, these systems were used for money laundering and other illegal actions. Finally, both

currencies were shut down by US Government. US Government was able to shut down these digital currencies, because of centralized systems.

In 2009, first decentralized digital currency Bitcoin was launched. Bitcoin was developed by an unidentified programmer, or group of programmers, under the name of Satoshi Nakamoto, who is indicated as an author of a white paper describing the basics of the functioning of Bitcoin. (Nakamoto) In their white paper, Bitcoin is described as a "peer-to-peer version of electronic cash" that used cryptography to secure transactions via this system. We can describe Bitcoin as open source, software-based, peer to peer, digital currency.

In principle, Bitcoin is pseudonymous because every user is represented by a random, cryptographically generated string of digits, called an address, which does not reveal the user's actual identity (Joshua Baron, 2015). However, the entire transaction history is completely public. The main reason is that Bitcoin Technology is based on the blockchain, which is the public ledger that includes records of every transaction that have occurred. The governments still can follow these transactions, but just figures and anonymous accounts.

The main difference between a traditional electronic payment system and Bitcoin is that traditional ones ensure integrity by relying on a trusted centralized party, such as banks. In contrast, Bitcoin avoids these centralized systems, instead, uses a distributed ledger, known as the blockchain, to store users' transactions. This chain is maintained and updated by consensus of participants of the system mutually. These participants use an Internet Protocol that is very hard to subvert. It provides certainty of transactions that have occurred ever.

The blockchain is the technology behind Bitcoin. But this technology includes more than 1.000 cryptocurrencies at present, and the total amount in the system increases remarkably day by day. Blockchain will store 10% of global gross domestic product (GDP) by 2027 according to World Economic Forum. (Impact, Deep Shift. Technology Tipping Points and Societal, 2015)

1.2. How it works

Individuals who want to own or transact in Bitcoin can either run a program on their own computer that implements the Bitcoin protocol (a Bitcoin client) or creates an account on a website that runs the Bitcoin client for its users. The Bitcoin client saves an individual's bitcoins in a file called the wallet, which the user must secure and backup. These programs connect to one another over the Internet forming peer-to-peer networks, making the system a distributed one resistant to central attack. (Grinberg, 2012)
Every individual has an opportunity to issue its own cryptocurrency as Bitcoin. In the Bitcoin example, the process of issuing Bitcoin is called mining. Miners use their operating system (computers) to generate solutions to problems of the system. Their operating power help ensure the integrity and security of the system.

Emerging 21st-century digital currencies have three characteristic components: the digital currency itself (for example, Bitcoin), the software that performs transactions and the underlying ledger on which all transactions are recorded. The "top level" of the digital currency stack the currency itself is a string of code. The code serves to identify the currency object and includes cryptographic features to secure the system as a whole and protect
individual users from hackers. (SWAN, 2015)

There are several websites, which provide transaction services to keep, send and receive cryptocurrencies without using their operating system. Some of the websites just provide exchange services to allow exchange from one cryptocurrency to others or into national currencies. Coinbase, Binance, Bittrex, Kraken, and Cex.io are some of the most popular exchange platforms, which allow exchanging cryptocurrencies either send, receive or keep.

According to Coinmarketcap, which is one of the biggest cryptocurrency platforms, there are 1564 currencies. Total market cap is $297,805,181,483 in April 2018. (https://coinmarketcap.com/, 2018)

Bitcoin is the first decentralized cryptocurrency and takes advantage of it. However, there are other 1563 cryptocurrencies in the market, which have many features and different from each other. The governments and lawmakers should be aware of these features before make regulation. To understand basic differences among most popular cryptocurrencies, we show differences.

First, there is a separation of cryptocurrencies: Token and Coin. Both are described as units of Blockchain value. Coin is used as a payment. As we mentioned above, Bitcoin is described as a "peer-to-peer version of electronic cash in its white paper. Coins act like a money. Main purposes of the coin are unit of account, store of value, the medium of transfer. Coins tend to enable businesses to account and pay for several services.

Tokens have wider functionality than coins. While coins offer money functionalities as a store, medium of transfer and unit of account as digital cash, Tokens represent some particular assets or utilities, which mostly hosted on another blockchain. For example, Ethereum allows its users to create a tradeable token that can be used as of an asset, a virtual share, a proof of membership or anything at all. (https://www.ethereum.org/, 2018)

On the one hand, creating tokens are easier than creating coins or another blockchain. Users are able to follow standard templates on the blockchain to offer features and creating tokens to create loyalty.

On the other hand, in computer terminology, the term "token" is used for two meanings. These are a gadget that can authorize a user (such as a dongle or a special thumb drive), or a fixed array of symbols that identify a user (such as an API key). In both situations, tokens can pass between different owners. (Dr Pavel Kravchenko, 2017)

The main difference of cryptocurrencies and tokens is their different structures. While cryptocurrencies use their own blockchain as a purpose of money, tokens operate on other blockchains to create facilities with their decentralized applications.

The most popular coins among 892 coins are Bitcoin, Ethereum, Ripple, Bitcoin Cash, Litecoin, Cardano, Stellar, Neo, Iota, and Monera. These all have different features from each other besides similarities.

1.2.1. The Most Popular Coins

Descriptions and features of most popular five coins are:

Bitcoin:

Bitcoin is the first original cryptocurrency, launched in 2009 as open source software. It uses a disturbed ledger, the name is Blockchain. Users can make transactions peer to peer with the digital currency. It has most liquidity and significant network effects. Its market cap is $ 130,226,456,119 and its value per BTC is
$7,672.43 (Coinmarketcap.com April 12). Value of Bitcoin peaked almost $18.000 in December 2017. The opposite of fiat currencies, there is no official Bitcoin price. Price of Bitcoin is calculated averagely based on price feeds by global exchange platforms. The system of Bitcoin is inspired by the rarity of gold. It was designed to have a fixed supply of maximum 21 Million Coins. By today, more than 16 million coins are already produced. (blockchain.info, April 12, 2018, 16.972.175)

Price of Bitcoin is determined by the market, which the BTC in a trade by means of supply and demand. Volatility is the biggest obstacle of Bitcoin to use in the daily trade as many coins.

The block time is an average time of coins. To hashing power of the network to find a solution to the block hash takes 10 minutes for Bitcoin, which is quite long compared with other coins.

Ethereum:

Ethereum has the second biggest market cap among 1564 coins. Its market cap is $ 45,876,361,724 and its value per ETH is $ 464.45 (Coinmarketcap.com April 12). Value

of Ethereum peaked 1.218 USD in January 2018 when after Bitcoin price was also peak point.

Ethereum has a decentralized platform that runs smart contracts. It was launched in 2014, 5 years later than Bitcoin, but it brings significant competition to Bitcoin.

The platform is developed by The Ethereum Foundation, a Swiss non-profit. Developers of Ethereum explain that the system enables developers to create markets, store registries of debts or promises, move funds in accordance with instructions given long in the past (like a will or a futures contract) and many other things that have not been invented yet, all without a middleman or counterparty risk. (https://www.ethereum.org/, 2018)

One of the biggest advantages of Ethereum is its block time; just 20 seconds. The main purpose of Ethereum is to function decentralized internet and app store to support a new type of applications.

In the opposite to Bitcoin, Ethereum has no limited number.

In coin case, Ethereum itself is not coin. Ether is the coin of Ethereum. To sustain its functionality, the system needs income. Ether is a unique piece of code that can be used to pay for the computational resources needed to run an application or program. Like bitcoin, ether is a digital bearer asset (Similar to security). However, it does not require a third party to process or approve a transaction. (What is Ether?, 2018)

Every Ethereum transaction fees are calculated based on how much 'unit' the action requires. Every Ether represents the unit. According to these unit needs for the action on the Ethereum Platform, total units are calculated, which is paid in Ether. We will explain more about Ethereum in the token side.

In addition, Ethereum platform is the biggest Dapp platform (Decentralized Applications) in the cryptocurrency market.

Ripple:

Ripple has been designed to be used by banks and financial companies for money transfers. It was released in 2012. Ripple is not designed to replace the banks. However, it enables them to continue with business as usual with less cost and time.

XRP has third biggest market cap among 1564 coins. Its market cap is $24,376,865,825 and its value per XRP is $ 0.623086 (Coinmarketcap.com April 14).

In their website, they describe the company frictionless experience to send money globally using the power of blockchain. Financial institutions can process their customers' payments anywhere in the world instantly, reliably and cost-effectively. Banks and payment providers can use the digital asset XRP to further reduce their costs and access new markets. (https://ripple.com, 2018)

The whitepaper of Ripple, terms of blockchain and block is not being used. Ledger is used instead. The Ripple system uses XRP coin, enabling real-time global payments anywhere in the world. Settling of payments takes just 4 seconds. It is also open source software as Ethereum and Bitcoin.

The network of Ripple can operate the company without the Ripple. In 2016, Ripple has granted a second company, issued for Bitlicence. (We mention more about Bitlicence in the section 3.1.)

The BitLicense allows the companies to sell and custody XRP, the native asset that powers its Ripple consensus ledger (RCL). (https://www.coindesk.com, 2018)

The price of ripple in the market is driven only by regular people and investors instead of just investors as Bitcoin.

The companies, accepted in the system being part of the gateway nodes, which is a form of trust chain. These companies are financial institutions, merchants, and exchanges. There is no consensus system for Bitcoin uses.

Another advantage of Ripple is fewer transaction fees when compare other coins. Ripple is decentralized when it comes to achieving consensus. However, it is trackable, which enable it to use by banks. At the beginning of 2018, Ripple announced that one of the largest money transfer company, Moneygram will use XRP (Coin of Ripple) in their payment flows to enable make payments without using of pre-funded accounts across the globe to source liquidity. (ttps://ripple.com, 2018)

One another partnership was between UAE Exchange, a leading global money transfer, foreign exchange and payment solutions brand. The company has partnered with San Francisco-based Ripple to enable instant, seamless and real-time cross-border payments. This makes UAE Exchange the largest payment solutions provider in the Middle East to use Ripple's blockchain technology to process payments globally in real time. (https://ripple.com/, 2018)

The Saudi Arabian Monetary Authority (SAMA), the central bank for the Kingdom of Saudi Arabia (KSA) has signed an agreement with Ripple to help banks in the KSA improve their payments infrastructure using xCurrent, which is Ripple's enterprise software solution that enables banks to instantly settle cross-border payments with end-to-end tracking. (http://www.businessinsider.com, 2018) However, there is a point to draw attention, these companies or institutions do not use XRP. They use technology and blockchain network of the Ripple Company.

Bitcoin Cash:

Every transaction, made in blockchain has recorded on the blocks that fit together cryptographically. Bitcoin's block size, which makes limit transactions in the blocks is 1 MB of data, meaning that the block size of bitcoin is just 1 megabyte, allowing for 250,000 transactions per day. It causes higher transactions fees and long transaction times.

On August 1st, some miners and developers initiated what is known as a hard fork, effectively creating a new currency: Bitcoin Cash. Bitcoin Cash has implemented an increased block size of 8mb, to accelerate the verification process, with an adjustable

level of difficulty to ensure the chain's survival and transaction verification speed, regardless of the number of miners supporting it. (https://www.investopedia.com, 2018)

Bitcoin Cash has fourth biggest market cap among 1564 coins. Its market cap is $ 12,440,013,786
and its value per BCH is $728.66 (Coinmarketcap.com April 14).

Litecoin:

Mining is the mechanism that allows the blockchain to be a decentralized security. It secures the bitcoin system and enables a system without a central authority. (https://dev.to, 2018) The miners use their digital power to solve extremely hard cryptographic algorithms. In Bitcoin, as we mentioned above, it takes 10 minutes for a block. Bitcoin uses the SHA-256 hashing algorithm, which requires a lot of energy for its mining. The biggest difference between Litecoin and Bitcoin is their mining algorithms. Litecoin uses the Scrypt algorithm, which requires less energy. By means of its mining algorithms, Litecoin has 2.5 minutes block mining speed. However, both Bitcoin and Litecoin use the same proof-of-work consensus mechanism.

Bitcoin Cash has the fifth biggest market cap among 1564 coins. Its market cap is $7,033,570,155 and its value per LTC is $125.42 (Coinmarketcap.com April 14).

As it is seen, among most popular coins have big differences besides common features. The most popular tokens among 674 tokens are EOS, TRON, Tether, Vechain, Binance Coin. These all have different features from each other besides similarities. Almost %95 of tokens operate on Ethereum blockchain. Omni, Neo, Stellar, Waves, Ardo are some other platforms, hosting tokens.

The total market cap of tokens is $ 39,384,831,239, which is almost eight times lower than coins' market cap, which is $ 275,923,747,541 (Coinmarketcap.com April 14).

1.2.2. The Most Popular Tokens

Descriptions and features of most popular five tokens are:

EOS:

The most popular token is EOS. EOS has the biggest market cap among 674 tokens. Its market cap is $6,489,872,559 and its value per EOS is $ 8.15 (Coinmarketcap.com April 16).

EOS use Ethereum platform. As we mentioned above, tokens operate on another blockchain. The company behind EOS is block.one, a Cayman Islands exempted company.

In the whitepaper of the EOS, it is explained as a software, which introduces a new blockchain architecture designed to enable vertical and horizontal scaling of decentralized applications. This is achieved by creating an operating system-like construct upon which applications can be built. Therefore, the resulting technology is a blockchain architecture that may ultimately scale to millions of transactions per second, eliminates user fees, and allows for quick and easy deployment and maintenance of decentralized applications, in the context of a governed blockchain. (https://github.com)

EOS uses Ethereum blockchain by allowing much faster transactions rather than Bitcoin blockchain.

Tron:

Tron is a project, building the infrastructure of the decentralized internet. The Tron Protocol, one of the largest blockchain based operating systems in the world, offers scalable, high-availability and high-throughput support that underlies all the decentralized applications in the TRON ecosystem. Its protocol allows anyone DAPPs (Decentralized Apps) with smart contracts making decentralized crowdfunding and token issuance.

Tron’s token is Trx, which has the second biggest market cap. Its market cap is $ 2,741,630,507 and its value per TRX is $ 0.041699 (Coinmarketcap.com April 16).

Justin Sun who is the CEO and the founder of Tron is the protegé of Jack Ma, the founder of the Alibaba group.

Tron's biggest advantage is the design of blockchain-based ecosystem for digital content. Tron's using digital media creators have total control and ownership over the data created by them.

Tether:

Tether has many differences from other tokens. Its aim is to ensure stability in exchange prices of cryptocurrencies.

Tether is described in its white paper as in order to maintain accountability and to ensure stability in exchange price, Tether proposes a method to maintain a one to one reserve ratio between a cryptocurrency token, called tethers (USDT), and its associated real-world asset, fiat currency. This method uses the Bitcoin blockchain, Proof of Reserves, and other audit methods to prove that issued tokens are fully backed and reserved at all times. (https://tether.to)

Tether operates on Bitcoin blockchain, which is a bit more developed and tested, instead of Ethereum. However, Ethereum has already proved its technical superiority versus Bitcoin blockchain.

Tether's token is USDT, which has the third biggest market cap among tokens. Its market cap is $2,284,899,416, which so close with Tron and its value per USDT is $ 0.999020 (Coinmarketcap.com April 16). Tether uses several techniques and financial methods to sustain its value at $ 1 against volatility.

Vechain:

VeChain provides governance structure, a robust economic model as well as advanced IoT integration, and make into a contribution to real-world applications.

In Vechain Development plan, the purpose of Vechain is building a trust-free and distributed business ecosystem to enable transparent information flow, efficient collaboration, and high-speed value transferring. (https://cdn.vechain.com)

Vechain was mandated to be the central blockchain partner for Gui'an (National Level Area of the People's Republic of China.) and have already taken initial steps to implement the E-Government System. (https://cdn.vechain.com, 2018)

Real life blockchain solutions of VeChain head start. For instance agriculture solutions on the blockchain.

Vechain's token is Ven, which has the fourth biggest market cap among tokens. Its market cap is $1,779,633,264 and its value per Ven is $3.38 (Coinmarketcap.com April 16).

Vechain also operates on Ethereum blockchain.

Omisego:

OmiseGO is a decentralized exchange besides liquidity provider mechanism, clearinghouse messaging network, and also asset-backed blockchain gateway.

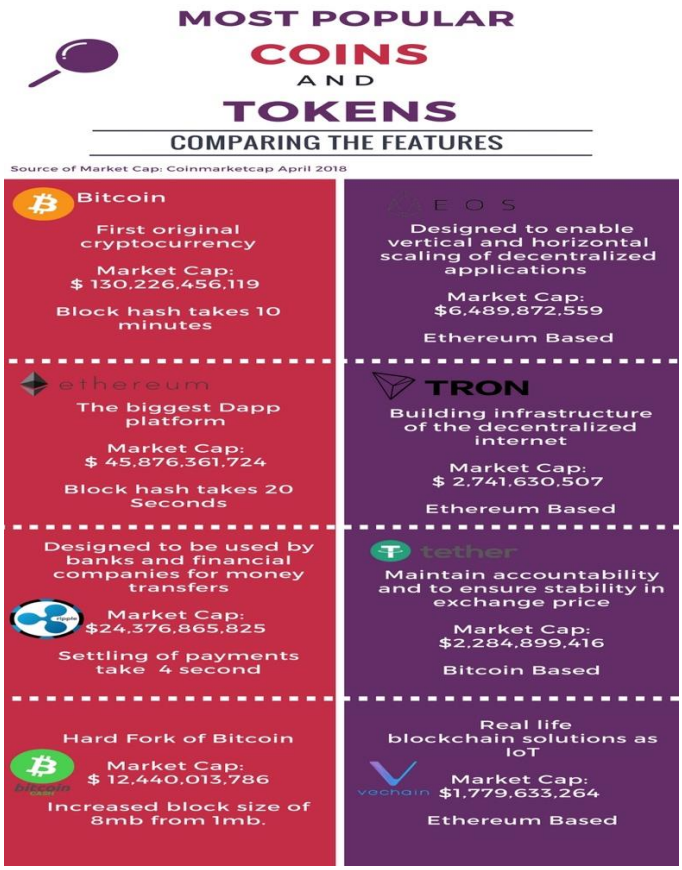
In the white paper of Omisego, technology is described as using the mechanism of a protocol token to create a proof-of-stake blockchain to enable enforcement of market activity amongst participants. (https://cdn.omise.co)

Omisego also operates on Ethereum blockchain. It is a public Ethereum-based fintech for use in mainstream digital wallets (Coinbase, Trezor, Ledger Wallet) that enables real-time, peer-to-peer value exchange and payment services.

In 25th September 2017, Omise, which the company behind Omisego token announced that Mc Donald's Thailand will use exclusive payments gateway for its website as an online payment technology service provider.

Omisego's token is OMG, which has the fifth biggest market cap among tokens. Its market cap is $ 1,436,361,163 and its value per OMG is 14.08 (Coinmarketcap.com April 16).

Figure 1 Most Popular Coins and Tokens



1.3. Concept of Money

Before regulating blockchain technology and its most important part, cryptocurrencies, the law should make recognize it as a money, commodity, security or anything else to apply rules on it. At this point, most possible description of cryptocurrencies is money. However, determining of cryptocurrencies as money causes many problems and interrogation points.

First, lawmakers should compare the concept of the f the money and features of cryptocurrencies. In this part, we will investigate the concept of the money and common points between cryptocurrencies besides negative aspects.

Money is an instrument of commerce and the measure of value. In the history, three different types of money were used. These are commodity money, representative commodity money, and credit money.

Commodity money was the first money. Items used as money has the same value in exchange were the first representative of money. The first commodity monies appear to have been grains. However, using grains was not easy as money because it could rot or so unwieldy. Eventually, metal coins have used. (Wray, 1990)

Representative money could be unvalued or little value but can be exchanged for silver, gold or its silver equal value. In the nineteenth century, American Banks issued some pieces of paper known as bank notes, which enable to exchange them for gold or silver coins.

Credit money is the third type of the money. By credit money or debt money, mean any money, except representative full-bodied (commodity) money, that circulates at a value greater than the commodity value of the material from which it is made. (Goldfeld, 1986)

Credit money is like a representative commodity money, which could be little or unvalued. But unlike it, credit money cannot be exchanged for gold or silver coin. All of the money currently used in the world is credit money. Even using of credit cards causes a change in the amount of credit money. Using credit cards means that there is no physical money transfer. We call electronic money to describe these nonphysical monies.

Electronic money is nothing but an electronic representation of national currencies. (David Evans and Richard Schmalensee, 2005) In the perspective of cryptocurrencies, all cryptocurrencies are digital money. The most common mistake is accepting the digital currency as electronic money. Electronic money is not currency itself as digital currency, because it represents national currencies. However, digital currencies have no their own value in the international monetary system.

Digital currency is stored electronically, and also transferred via electronic gateways. First examples of digital currencies appeared in the 1990s. One of the first digital currencies was E-Gold, which was backed by gold in 1996. Another one was Liberty Reserve, make possible to convert dollars or euros to Liberty Reserve Dollars and Euros and exchange these currencies freely with one another with some transaction fee. The common feature of both systems was centralized. In addition, these systems were used for money laundering and other illegal actions. Finally, both currencies were shut down by US Government. US Government was able to shut down these digital currencies, because of centralized systems.

In this respect, we should consider what is the possibilities of digital currencies as Bitcoin can eventually replace fiat currencies like US dollars or not. However, cryptocurrencies have limited number of units like Bitcoin (Max Issued 21.000.000). It causes value increasing in case of massive using of Bitcoin as fiat currencies.

On the one hand, to accept cryptocurrencies as a money, it could be as electronic money. To be accepted as electronic money, cryptocurrencies must have these conditions:

- Stored electronically,

- Using as payment by people and companies besides issuance companies,

- Issued in exchange of fund, which accepted by the law,

First, cryptocurrencies are stored electronically. It meets this expectation.

Second, cryptocurrencies, especially first one Bitcoin have been widely accepted in the world. The cryptocurrency countries let using cryptocurrencies for many services even for tax payments. This wide using of cryptocurrencies exactly meets the second expectation referred as electronic money.

The problem appears in the third condition of electronic money. To accept cryptocurrencies as an electronic payment, it must be funded behind by licensed fund institutions. However, cryptocurrencies have no any licensed funding behind them.

Ripple has deposited 60 % of the all XRPs to an escrow account to give the confidence to coin market. Moreover, with this step, investors take guarantee to avoid releasing a big amount of coins, which causes extreme value lose. Nevertheless, Ripple still has no licensed fund behind its coin value. In this respect, it looks hard to accept cryptocurrencies as electronic money.

On the other hand, in order for tender to be considered a currency, it must meet three criteria: first it must be able to be used for transactions, secondly, it must be able to be used as a unit of account, and the last condition is it must be able to store value. (Kiyotaki, 1989.)

The first requirement, it can be used for transactions easily is met expectation by cryptocurrencies including Bitcoin, Ether, Ripple, and others. There are thousands of websites and stores that accept Bitcoin or other cryptocurrencies. The graph below shows daily transactions of Bitcoin per day. In January 2018, the last number is 161.957 per day. However, it is just transaction on the Bitcoin blockchain. As we mentioned above, there are many blockchains, which open source to make transactions. After comparing with national currencies, this number could be quite low. However, there are some countries like Lao, Uganda has fewer transactions than Bitcoin.

To meet the second requirement, cryptocurrencies can be used as a unit of account. At this point, there are several debates on it. The first debate is related to cryptocurrencies' limited number. As we mention above, many cryptocurrencies have limited number of units as Bitcoin's 21-Million-unit limit.

Van Alstyne points out that fractional ownership of a Bitcoin is possible; therefore, the 21 million is not a limiting number. In addition, Bitcoin is fungible. All Bitcoins are created equally, and they can all be interchanged. Last, it is countable and subject to mathematical operations. (Van Alstyne, 2014)

The other debate on meeting unit of accounts is the volatility of coins and tokens. For my point of view, the biggest challenge of cryptocurrencies to be used as money in daily life is volatility. It creates problem in valuing goods and services. However, there are still some national currencies, which have high volatility. But, there is not any debate on

whether we should consider these national currencies as currency or not. As result, there is no reason to use as a unit of account for cryptocurrencies.

The third requirement is storage value of the account to be accepted as a currency.

Bitcoin suits as a unit of account, we focus on the storage of value and the means of trade purpose. In the case that a user wants to trade it Bitcoin against goods or services, both counterparties of the transaction must come up with a similar valuation of the currency at the same point in time. In order to use Bitcoin to store value over time, users need to quantify their expectations about the future value of the currency. (Glaser, 2014.)

The sharp increase in Bitcoin and mainstream cryptocurrencies at the end of 2017 and then falling down to more than %50 showed that time is still so early to store of value for cryptocurrencies. Because of lacking any inspection body against speculations in the crypto markets causes high volatility. Moreover, failures of dominant coin-token exchange platforms cause high volatility. In this respect, regulating these exchange platforms can be good step to avoid volatility. I will mention these exchange platform regulations in the following chapters in my thesis.

Many currencies have suffered from high levels of volatility, but the main difference between these currencies and Bitcoin is that Bitcoin is not backed by a government. It is clear that the legitimacy of Bitcoin as a currency will remain ambiguous for the foreseeable future. (Carrick, 2016)

In result, there are many debates on the form of cryptocurrencies as a money- currency and electronic money. However, the biggest obstacle of cryptocurrencies to use as money is volatility. In case of reaching a stable value of the crypto market, it proves storage of value and it can be good proof to lawmakers to regulate cryptocurrencies as money or electronic money. However, in the current situation, without any licensed government-backed fund and with high volatility, it is not possible to accept cryptocurrencies as money.

1.4. Concept of Commodity

The cryptocurrencies have different features than normal commodities and assets such as using as payment. However, when we examine legal background of money, it seems that accepting of cryptocurrencies as the commodity is the prevalent way by many institutions.

The high volatility of Bitcoin makes closer for commodity description. In 2010, One of the Bitcoin Forum, one user stated that he spent 10.000 BTC (Its value was $ 0.08 at that time) for two big size pizzas. (https://bitcointalk.org, 2018)Within eight years, the same value of two big size pizzas 'cost for this user in case of he paid 10.000 BTC is more than $ 81.000. Even this example draws all attention to the Bitcoin volatility.

In case of accepting cryptocurrencies as a commodity, it must be an intangible commodity.

What is the commodity exactly? Commodities are economic goods or services that have full or substantial fungible. Commodities of the same degree are considering fungible. Fungible is interchangeable with other commodities of the same degree regardless of produced or farmed by whom. Most used commodities are raw materials such as gold, uranium, copper, aluminum or basic resources, or agricultural products such as wheat, cattle, soybeans, corn, oranges, coal, cotton, and oil.

Commodities, which produced in large quantities by different producers, were considered equivalent. In today, these commodities can be exchanged in many exchange markets as the Winnipeg Commodities Exchange (WCE), Intercontinental Exchange (ICE), the Chicago Mercantile Exchange, London Metal Exchange (LME), and the New York Mercantile Exchange (NYMEX).

Prices of commodities on the trade are not determined by a single entity or individual. In the exchange platforms, commodities are traded with futures contracts, which obligate the holder to buy or also sell these commodities at a predetermined price on a delivery date in the future. A commodities futures price is determined by the supply and demand for the commodity market before. Sometimes, these sharp increase or decrease in demand

or supply can cause to the volatility of commodity prices as happened during the Gulf War.

As with other securities, traders can speculate on future prices of commodities. In this point, we can examine similarities between cryptocurrencies and commodities. First, all cryptocurrencies technically are produced by different miners. However, their prices are the same without considering different producer or the quality. The difference in here between them is that commodities can be a different quality. However, cryptocurrencies have the same features and qualities. But, commodities are exchanged in the market have the same value regardless of their quality and origin. In this point, either cryptocurrencies or commodities have the same style exchange mechanism.

Second, the value of cryptocurrencies mostly is determined by the market supply and demand. As Bitcoin, many cryptocurrencies have the limited number of suppliers, which enable certain supply conditions in contrast with commodities.

Third, cryptocurrencies can be exchanged in crypto exchange platforms as commodities. Most popular cryptocurrencies exchange platforms are Coinbase, Coinmama, Bitpanda, Kraken, Cex Io, Local Bitcoins, and Bitstamp.

The idea of cryptocurrencies users is that it is an alternative asset, lack a valid valuation method, and therefore they build their expectation their expectations about future prices of their coins-tokens based on any information they can acquire from any available source as social media, newspaper articles, friends and peers as well as internet communities. (Glaser, Bitcoin-asset or currency? Revealing users' hidden intentions., 2014)

Comparing of money and commodity description of cryptocurrencies shows that commodity has more common points than money-currency description. Many states consider that cryptocurrencies are the commodities.

In 2014, U.S. Commodity Futures Trading Commission declared that virtual currencies are "commodity" subject to oversight under The Commission's authority under the Commodity Exchange Act. (Testimony of CFTC Chairman Timothy Massad before the U.S. Senate Committee on Agriculture, Nutrition and Forestry, 2014)

In January 2018, Commodity Futures Trading Commission charged against the cryptocurrency platform Coin Drop Market with fraud and misappropriation in connection with purchases and trading of the virtual currencies Bitcoin and Litecoin in the U.S. District Court for the Eastern District of New York. In March 2018, a federal judge of Newyork Court upheld the notion that cryptocurrencies, such as Bitcoin and Litecoin, are commodities. Moreover, the court stated that these cryptocurrencies can be regulated by the U.S. Commodity Futures Trading Commission. It was the first confirmation of Commodity Futures Trading Commission's decision on cryptocurrencies as a commodity since 2014.

However, many countries still do not regulate or accept cryptocurrencies as neither commodity nor currency.

For example, the case against Mt. Gox, which was the biggest Bitcoin exchange in the world after its bankruptcy, have filed lawsuits seeking damages and refund of their bitcoins in holding in their accounts by clients. In 2015, The Tokyo District Court declared its decision on refund claim of ex-users of Mt Gox Co., and with the ruling saying the virtual currency is "not subject to ownership" claims. (Bitcoins Lost in Mt Gox Debacle "Not Subject to Ownership" Claims: Tokyo Court', 2015)

Presiding said that Japan Civil Code accepts proprietorship for tangible entities that occupy space and allow for exclusive control over these entities. However, the evidence of Bitcoin does not hold the properties of tangible entities and also it does not offer exclusive control over it because of structured parties system: Bitcoin seller-exchange and user. With this decision, Bitcoin itself does not prove its ownership. However, the court decision should be examined carefully. The issue in this decision is ownership of Bitcoins in the exchange platform. However, users can transfer their coins-tokens to their hardware wallet. But, it cryptocurrency itself does not show any ownership as money.
In my point, cryptocurrencies are not tangible property nor debts or obligations.

1.5. Concept of Security

Security is the written evidence of ownership, which provides rights of property without seeking for possession of the holder. Stocks and bonds are the most common types of security. Security and commodity have similarities. Investors of both of them seek profit with value rising. They both are traded in the market.

However, the both are regulated under the different regulations. For example, in the US, Securities and Exchange Commission regulates securities while Commodity Futures Trading Commission regulates commodities. They are also operated in different markets.

In 2014, The Internal Revenue Service (IRS) in the USA declared that cryptocurrencies do not have legal tender status in any jurisdiction. It accepts that capital gain or loss on the sale or exchange of virtual currency that is a capital asset in the hands of the taxpayer as bonds, stocks, and other investment opportunities. However, ordinary gain or loss on the sale or exchange of virtual currency that is not a capital asset in the hands of the taxpayer as inventory and other property held mainly for sale to customers in a trade. (IRS Notice Notice 2014-21, 2018)

In the USA, there is a conflict between IRS and Commodity Futures Trading Commission. The Internal Revenue Service (IRS) accepts cryptocurrencies as a property for taxation purposes. However, Commodity Futures Trading Commission declared that cryptocurrency is a commodity as we mentioned above. Every institution looks from their perspective and purposes to cryptocurrencies.

Meaning of having cryptocurrency is having a private cryptographic key, which allows you unlock specific address. The problem with this conceptualization of cryptocurrencies as the property is that the private cryptographic key is nothing more than confidential information and the regulations does not generally countenance the idea of property in confidential information. (Aplin, 2013)

Moreover, this private cryptographic key does not give all control. It enables owners just limited control on the cryptocurrencies. In this case, there is a debate about whether cryptocurrencies are property or not.

There is a clearance that cryptocurrencies cannot be at the same time as security, currency or commodity.

1.6. Other Possible Definitions

Nowadays, one of the hottest topics is regulating of cryptocurrencies. There is no any common declaration of states yet. Unusual scheme of cryptocurrencies makes regulations harder without harm to technologic developments.

If cryptocurrencies are not currency, neither commodity nor security, what can be other possibilities?

Cryptocurrencies or other description is virtual currencies can be considered to be a specific type of electronic money.
According to the Electronic Money Directive (2009/110/EC) of European Union, "electronic money" is described as monetary value as represented by a claim on the issuer which must be:

- Stored electronically
- Issued on receipt of funds of an amount not less in value than the monetary value issued;
- Accepted as a means of payment by undertakings other than the issuer (Electronic Money Directive (2009/110/EC),, 2018)

The differences between electronic money and cryptocurrencies is demonstrated appendix 2.

According to European Central Bank Report, published in 2012, some of these criteria are met by virtual currencies. However, in electronic money, funds are stored and expressed in the same unit of account with US dollar, Euro etc. However, in virtual currency, the unit of account is changed into a cryptocurrency as Bitcoin, Ether etc. Also, it might be a problem with exchanging these virtual currencies with fiat-currencies. Lastly, Virtual currencies are dominated differently and that the funds do not need to be redeemed at par value. It means that all control of the virtual currency is left to its issuer,

which is usually a non-financial company or institution. (Virtual Currency Schemes Report, 2012)

One another option might be accepted cryptocurrencies as an electronic payment system. Bitcoin was described as peer to peer electronic cash system by Satoshi Nakamoto.

Payment system the main difference between a traditional electronic payment system and Bitcoin is that traditional ones ensure integrity by relying on a trusted centralized party, such as banks. In contrast, Bitcoin avoids these centralized systems, instead, uses a distributed ledger, known as the blockchain, to store users' transactions. This chain is maintained and updated by consensus of participants of the system mutually. These participants use an Internet Protocol that is very hard to subvert. It provides certainty of transactions that have occurred ever.

For example, Directive 2015/2366/EU of the European Parliament regulates electronic payments systems. According to the directive, to consider blockchain technology as an electronic payment system, the system must be used for money or the same value as security transfer. However, there is no any regulation accepting cryptocurrencies as money or security in the EU. Because of this reason, accepting blockchain technology as the electronic payment system is not possible. Moreover, Blockchain technology itself also does not fit as electronic payment system description.

2. Initial Coin Offering (ICO)

2.1. Definition of ICOs

Initial coin offering is a fundraising style of blockchain project with offering tokens before the system started to work. Initial coin offering can be considered as seed investment of blockchain project. But the biggest difference between ICO and seed investment is sharing company. In seed investment, investors as venture capitals or angel investors invest capital in the company or just idea and incorporate a new company or take share from existing company. However, in initial coin offering, there is no share taken by investors. Investors of ICOs just take the private cryptographic key to access their tokens. Most of the ICOs do not enable to sell these tokens until the project completed and launched.

To start ICOs, founders mostly prepare an information paper, called white paper that describes to the technology behind the token they would like to sell with ICO. There are advantages of this tokens from the competitors besides the uniqueness of this idea.

ICOs mostly accepts other cryptocurrencies as Bitcoin, Ether etc. and some of them also accept fiat currencies as US Dollar. There are several sectors ICOs are so popular as trading-investing, finance, payments, infrastructure, social network. But the biggest three sectors were funded by ICO are finance, retail/commerce, and payments/wallets. (The source: ICO Statistics - By Industry)

In 2017, over 500 initial coin offering projects raised $6.5 billion during a time when overall crypto markets grew in size, awareness, and depth. (Token Sales in Review: Part I-, 2018)

Some of the most successful two ICOs I 2017 targeted at next-generation blockchain infrastructure, like Filecoin (Raised $ 217.000,000 in 2017), Tezos (Raised $232,000,000 in 2017). Most successful ICO of 2018 by now is Telegram, which is a messaging app. (Raised $850.000.000)

Creating ICO is not so hard by means of abstract of ERC20 Token Standart, which is a technology of Ethereum. Some ICOs showed extraordinary performance about time and amount of money. For example, Aragon ICO raised around $25 million in just 15 minutes, media-digital advertising project Basic Attention Token's ICO raised $35 million in only 30 seconds, and message and payment app, Status.im raised $270 million in a few hours.

Year by year, these illustrate shows some of the most successful ICOs.

Figure 2 Some of the Most Successful ICOs BETWEEN 2014-17

The amount of money, collected by ICOs already reached more than $5 Billion, which is quite a high amount for one of the financial instrument before regulated. The closest instrument from the ICO is crowdfunding.

The basic idea of crowdfunding is to raise money through relatively small contributions from a large number of people via the internet. (Paul Belleflamme, 2011)As ICOs, crowdfunding includes high risk. Investing in early-stage projects always includes high risk. Another point is also the responsibility of project owners. Mostly, users set a limit and reward, promising to contributors in case of complete their limit. In the USA, US Securities and Exchange Commission (SEC) set a limit for the public to invest these project in the base of their income to avoid big financial risks of these investors. People can invest in crowdfunding projects at the rate of their income.

The most popular crowdfunding platforms are Kickstarter, Indiegogo, and Circle Up. Just in Kickstarter, 142,270 projects are funded and from 2009, over $2.000.000.000 raised over. (Source: Kickstarter)

There are several crowdfunding models. These are the donation model (Without reward expectation), the reward model (Reward and pre-purchase model are so similar. Reward model offers a small reward, while pre-purchase model offers items produced by the project. Both of them do not offer financial returns as interest, dividends etc.); the pre-purchase model, the lending model, (investors seek to repay from the project as loan. Sometimes the project can offer interest to contributors) and the last one the equity model (Equity crowdfunding offers investors a share of the profits or return of the project and it is the model most involve the sale of security. It is a reason why it is not common in the USA because of regulatory reasons. (Bradford, 2012))

For example, US Securities and Exchange Commission regulate crowdfunding and enables eligible companies to offer and sell securities through crowdfunding. To do crowdfunding:

- The platforms either broker deal or funding portal must be registered to SEC
- The 12 months period, the maximum $1,070,000 through crowdfunding can be funded
- Limit of individual investors must be applying during 12 months
- Require disclosure of information to the commission, investors

The biggest difference with crowdfunding and ICOs can be a top limit of amount, is collected by crowdfunding. However, there is no limit for ICOs yet in many countries.

Another difference between ICOs and crowdfunding is accessibility. Crowdfunding projects are not global mostly because of regulatory reasons. However, ICOs are mostly global. But, last ICOs exclude US citizens because of logistical challenges associated with differing regulations in the many states of the USA. However, investors can easily find a way to join ICOs by means of global blockchain network.

Both instruments can be used for different projects. Crowdfunding project may be used for technology, textile even food products. ICOs tent to find solutions around blockchain technology.

Investors of crowdfunding projects seek for the pre-sale product, discount or even non-profit reasons. However, ICO investors just look for high profit. In crowdfunding,

products or prototype takes attraction. But, in ICOs dreams sell with white paper, which describes the concept and technology of the project and marketing nothing more many times.

Figure 3 Differences between ICO and crowdfunding

One another funding method similar to initial coin offering is initial public offering (IPO). Both methods aim to collect capital from public and investors to extend their operations or sustain their already ongoing operations. However, an IPO, most companies, which have already proved business model and good income flow with good financial structure.

To understand differences between two, we need to know what the initial public is offering exactly.

An initial public offering is basically going to public and selling of company shares. The initial public offering is the issuing firm's first offer to sell stock to the public. (Jenkinson, 2001) The main reason of IPOs is raising liquidity of the company. By means of IPOs, companies can raise more equity capital. Increasing of capital can make benefit to stakeholders or founders as profit or return on the stock. One another reason is tied to the

secondary market, which is referred to the ability of further stock trading (Jenkinson and Ljungqvist, 2001).

According to Ellingsen and Rydqvist (1997), four most common reasons to apply IPOs are raised capital, boost the company image, increase publicity, and also use it to motivate the employees. (Ellingsen, 1997)

Initial public offering offers that companies can sell securities to the public for the first time. However, IPOs is not just an option to raise capital. The other securities such as bonds, warrants, and capital notes can be sold by the companies as well.

The process of IPO includes three parties: the issuing firm (Company), the underwriter(s), and the investors, who buy the stocks. To start an IPO, the issuing firm needs to choose one of the investment banks to use as the lead underwriter. Frequently, two arrangements are used by the underwriters and the company. First is a firm commitment, which allows for the bank buys all the new issued stocks of the company and sell to the public. The bank makes a profit from the difference between buying and selling price. In this arrangement, banks take all the risk. The second one is best efforts arrangements, which the bank just help the process of the public offering to the company. In this method, the bank acts as an intermediary between the parties of the public offering: issuing company and potential investors.

The next phase is to make a prospectus whose detailed content is created in order to satisfy the regulatory authorities. For example, the prospectus includes:

- Term and conditions, (Description of the offer, for example, price)
- Presentation of the company,
- Financial development,
- Financial targets,
- Ownership structure
- and previous annual reports.

The initial public offering is mostly well and strictly regulated fund-raising method. Every country can claim many different requirements and proofs for IPO.

After preparing this descriptive prospectus, next phrase is to set the offer price and determine the allocation of the issued shares. (Falk, 2009) There are mostly three popular ways, which are used by IPOs. The first is fixed price method, which offers price, was set before the requests of shares have been submitted. In case of excess demand for the issue, the price of issued shares will be rationed on lottery basis or pro rata.

The second method is book-building, which underwriters, especially investment banks, seek to find potential investors for coming initial public offering. These investment banks look for big investors to measure how many shares can be bought by these investors. By means of this pre-marketing, the price of issued shares can be more fair and useful to meet expectations of the market. But the final allocation will be determined according to the preference of the initial pre-issuing shareholders.

The third method is auctions. This method is a tendency that the price will be set slightly below the market clearing price after all the bids are submitted (Jenkinson and Ljungqvist, 2001).

As it is clear, ICOs and IPOs have many common points. To draw attention these common points, almost every ICOs have a white paper, which is the descriptive text of the project. IPOs also have prospectus as we mentioned above. However, prospectus of IPOs is prepared for authorities to get acceptance for public selling. Moreover, it mentions the ownership and allocation of the issued shares of the companies. But, during the ICO, there is not any share offer an IPO. The biggest difference between to funding method is to share allocation. IPO's investors will be offered with shares in return for their investments. ICO's investors just seek money spinner. Therefore, both investors of ICOs and IPOs seek for profit. But, one of them will be a shareholder of the company and make profit besides vested benefits, ICO's investors just take coins or tokens to use with advantage into the system, which ICO offer or exchange in case of completing the project.

The setting model of ICOs and IPOs can be similar. The book-building method can be used for ICOs too. However, most common pricing method of ICOs is auction model. Mostly, ICO team offer a cheap price per unit of coin-token, and then market itself determines the price of coin-token.

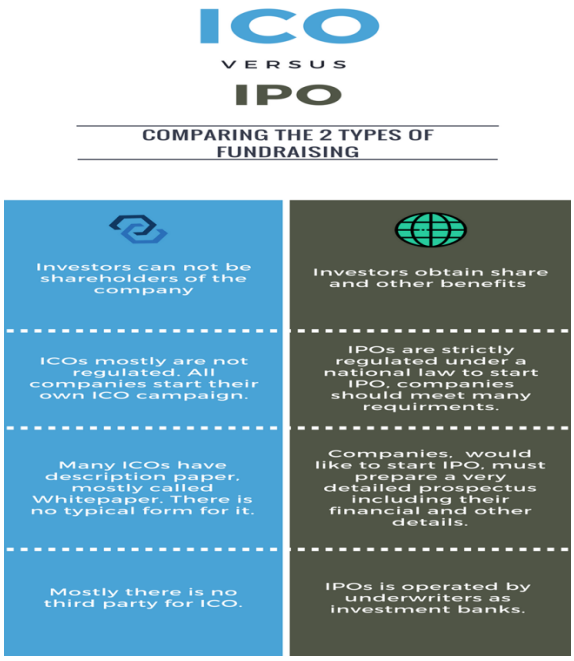
One another difference between both methods, there is no third party as underwriters (Investment banks) in IPO. Token-Coin issuers can directly offer their cryptocurrencies to the public without underwriters. Some of the ICOs also offer their cryptocurrencies via some exchange platforms. However, it does not mean that we can call these exchanges as an underwriter.

In the regulatory aspect of view, IPOs are regulated strictly under the institutions as The Securities and Exchange in the USA. (SEC) However, ICOs are not regulated yet directly as IPOs. In the following sections, we will discuss ICO regulations with the examples from the world.

And lastly, to start IPO, there must be a registered company, has transparent financial records and well-prepared application and later on application to relevant authorities and get authorization for IPO. However, ICOs even do not incorporate sometimes when they start to collect investment.

To sum up, ICOs have more common points with crowdfunding than an initial public offering. In the legal side of ICOs, regulating ICOs as crowdfunding can be a better option rather than determine ICO as IPO and regulate under the strict rules.

Figure 4 Comparing of ICO and IPO



2.2. Risks of the ICOs

As we discussed above, ICOs have several risks because of its nature and unregulated legal gap. However, Initial public offerings (IPOs) which is strictly regulated and looks secure investment has even risks. Crowdfunding is also another risky investment, which majority of the crowdfunding investors cannot get what they expect. (Product or other returns). In this respect, every investment itself includes some risks. Comparing the risks of these three similar funding methods, we can range them from less risky than highest risky: Initial coin offering (IPO), crowdfunding and lastly too risky Initial coin offerings (ICOs).

ICOs are a very risky investment. In the following parts, we will share with government's aspects to ICOs. The first risk in ICOs is the unregulated wild global advantage of the ICOs. When total ICOs investments raise up to $6,048,441,132 (https://www.coinschedule.com) and many scam ICOs disappeared recently, many institutions decide to take measures against ICOs. Lacking regulations, and by means of collecting money from the globe, ICOs can easily raise up million dollars. However, an example of crowdfunding, regulators set a top level, which is the maximum amount of money collected by crowdfunding. In IPO example, it is also very possible to increase the capital of the company raise up multi-million dollars. However, until IPO point, these companies must obey many obligations. In contrast, ICOs still have no top limit in many countries.

The second risk is at the end of ICOs, the project team of ICO promises very high investment return. However, even they do not control pricing of their cryptocurrencies. The market demand determines future pricing. Sometimes even project gets a success, market demand may be low and promises given by project team cannot be kept.

One another risk of ICOs is the criminal attractions to ICOs. ICOs collect money mostly anonymously, and it attracts criminal organizations or criminals with several purposes. Money laundering is the prevalent crime activity, going on ICOs. Moreover, some countries engage ICOs with criminal activity, and when individuals or companies involve, these investors are under suspect with several criminal activities as money

laundering of funding or terrorist organizations, which have long years custody or serious investigations.

Lastly, in case of scam ICOs, there is not much research exactly how many percent of the ICOs were a scam. 902 ICOs took place in 2017 in the Token data, which is the compressive ICO track platform. 142 of them failed at the funding stage and a further 276 have since failed, either due to taking the money and running or slowly fading into obscurity. This means that 46% of 2017's ICOs have already failed. (https://news.bitcoin.com, 2018)

When we consider that ICO projects are mostly very early stage projects, this failure rate can be normal. According to Forbes report, 8 out of 10 entrepreneurs who start businesses fail within the first 18 months. (https://www.forbes.com/, 2018)ICOs mostly focus on very new and early age technology, blockchain. And it is a normal result of ICO's failures. However, lacking regulations make ICOs are very advantaged methods for fraud.

The last example of ICO fraud was Savedroid. On April 2018, founder of Savadroid shared a picture from his Twitter account in long beach and wrote: '' Thanks, guys. Over and out''. And Savedroid's website replaced with a meme picture, writing "Aannnd it's gone.". However, later on, the website turned normal and it was just understood that they pretend it was exit scamming after collect $50 Million from its ICO. It was a PR stunt, to take an attention how it is easy to collect money via ICO and run away. They just added that it could be very easy to run away even for highly regulated German corporation.

High price volatility, market manipulations and lacking conscious investors are also other risks of ICOs.

The European Securities and Markets Authority (ESMA) also published a statement to draw attention to high risks of ICOs for investors on 13 November 2017. (ESMA: "ESMA alerts investors to the high risks of Initial Coin Offerings (ICOs)", 2017)

2.3. Benefits of the ICOs

There are several benefits of initial coin offering fundraising method.

The first, it is a new and easy model of financing for blockchain projects. Blockchain technology is a quite new (Since 2009) and comprehensive technology. Many blockchain start-ups are struggling to make money from their products at this early stage of the technology. Moreover, the market is not getting used to using this technology and not understood by the market what the blockchain is offering. Because of this reason, finding investment for the research and development of the blockchain technology is not easy for either angel investors or venture capitals. However, ICO funding offers easy and low-cost funding for blockchain projects. The amount can be collected by ICOs sometimes are much more than even the project needs. ICOs encourage the development of the blockchain technology.

Also, non-profit foundations finance open-source projects via token sales. It can make into the contribution of the growth in open-source innovation and development.

Furthermore, by means of global blockchain infrastructure, regardless of country, religion, income level every individual can join token sales through ICOs. It brings several advantages. The first is the amount of money collected by ICOs can be funded from all over the worlds and accumulate huge numbers. The other advantage is people who are living in the other countries cannot easily invest to another country Initial public offerings, even for crowdfunding or buying shares from the international companies. It is not easy to find alternative investments in many countries. However, ICO offers token sale of project, which can be incorporate in the USA or Malta or Japan. For instance, the, making an international investment with ICO is much easier than buying stock from the New York Stock exchange for one of the individuals in the other continent.

Every investment of the ICO settles to the blockchain. It enables to individual or companies can easily track their assets and it requires lower resources than a wire transfer. Blockchain technology also brings transparency for all transactions.

Making transfer of the tokens is very easy from one cryptographic private key to another. Token or coin is bought from the ICO can easily transfer to any other account regardless of borders, regulations even tracking of the governments sometimes. Comparing with the international money transfer, coin or token transfer across borders are much easier.

Moreover, ICOs bring liquidity to the market. Popular ICOs collect multi-million dollars from 100 to a million investors and these ICOs have liquidity market on cryptocurrency exchanges. In addition, ICOs promise enormous profit rates as 300-500 times more than investment.

2.4. Government Approaches to ICOs

In this study, we examine separately to the government, regulatory approaches to Initial Coin Offerings (ICOs) and cryptocurrencies. ICOs looks a part of cryptocurrencies but there are some different aspects of the regulations for both.

In this part, we will examine some countries approaches to ICOs. Many countries still wait to see where the technology goes and later on they will take the example of well-developed countries' regulations probably.

As it is seen from the graph in appendix 3, Singapore, Switzerland and Cayman Islands hosted more ICOs by means of their regulative framework of ICO. We will show ICO regulations country by country. The first one is the United States of America. Because The USA leads to world financial system and has a power on the banking system by means of the power of US Dollar.

2.4.1. United States of America

In the USA, there are three regulative bodies, relevant with Initial Coin Offering (ICOs). These are The Securities and Exchange Commission (SEC), The U.S. Financial Crimes Enforcement Network (FinCEN) and Commodity Futures Trading Commission (CFTC). SEC is the most concerned one among them because of its position.

Companies settled in the United States choosing to exchange in crypto-currency must adhere to strict 'Know Your Customer' ('KYC') and 'Anti Money Laundering' ('AML') rules, the same rules that apply to banks and other financial institutions. (Danova, 2014) For example, one of the well-known digital currency platforms, Kraken requires social security number in case of US Transactions.

Each of states in the USA may have different regulations about ICOs. SEC takes strong actions against ICOs. On December 2017, SEC made a statement about Initial Coin Offerings. In this statement, what drew attention waspaid less investor protection than traditional security markets. In case of token or coins do not offer increasing value or profit from the tokens based on the efforts of others, they cannot be accepted security as representative coin for a participation interest in a book-of-the-month club. However, many ICOs offer and sale of securities and because of this, it involves securities registration requirements besides other investors protection provisions of US federal securities laws. (https://www.sec.gov/)

In the example of DAO token, the commission made a decision that DAO ICO should obey with US Security Law because prices of tokens could rise according to demand and also exchanged in the secondary market. (https://www.sec.gov) In another example, Munchee Inc., which is California based company willing to start ICO for their blockchain based food review project. After SEC investigation started, they stopped their ICO and immediately returned the proceeds before issuing tokens and by means of this step, SEC did not impose a penalty for the ICO.

Furthermore, ICO project makes massive marketing to offer their tokens or coins. Some ICOs made promotion deal with some celebrities and used their reputation to market their project. Some of the scam ICOs used also these techniques. After this news, SEC shared its public statement about celebrities backed ICOs. In this statement, any celebrity or another individual who promotes a cryptocurrency that is a security must disclose the nature, scope, and amount of compensation received in exchange for the promotion. A failure to disclose this information is a violation of the anti-touting provisions of the federal securities laws. (https://www.sec.gov)

In January 2018, SEC has shut down of Arisecoin ICO. SEC stated that the ICO, which is organized by the Arise Bank and so-called first its kind decentralized bank use celebrity endorsers as boxer Evander Holyfield to raise billion dollars by mispresenting the company. SEC also froze Arisecoin's assets. The commission said that it was a fraud. (https://www.sec.gov)

According to US Law, all securities offered in the U.S. must be registered with the Securities and Exchange Commission (SEC). After DAO token was hacked, many investors objected to SEC, and then as we mentioned above, SEC declared that DAO coin as a security. To understand which cryptocurrency is a security or currency, the court used a test, the name is Howdy test, which used for to determine whether an instrument qualifies as a security/investment contract for the purposes of the Securities Act of the USA.

In case of following requirements are met by the ICO Project, this ICO can be considered as security and has to register to SEC and obey all security laws:

a. There is an investment of money (It can be debatable investments via other cryptocurrencies can be considered as money or commodity-Many ICOs also accept fiat currency)

b. There is an expectation of profits (Many ICOs offer high profit)

c. The investment of money is in a common enterprise (There is no ownership in ICOs. However, sharing profit and losses debateable)

d. Any profit comes from the efforts of a promoter or third party

For example, we can say that Ether, Bitcoin, Litecoin are used as a currency rather than security, and there is no obligation on their part.

To sum up, to do ICO in the USA is not easy as before in today. Because of SEC regulations, many ICOs have to obey with heavy regulations. However, there is no official statement on whether ICO tokens qualify as security or not.

After SEC steps against ICOs, new ICOs stop accepting investors from the US. New ICOs do not want to take a risk of violating US securities laws. If one ICO token cannot pass the Howdy Test, it will be accepted as security and has to obey security law.

According to American Security Law, only accredited investors can be part of private placements of securities (private placements meaning is to offer and sale of any security *token in this case* by a brokerage firm not involving a public offering).

The SEC rules also expect from security seller to check all purchasers whether they are accredited investors or not. Because of ICO's team cannot check all US purchasers are accredited investor or not, they just ban US citizens to join their token sell. ICO owners have to take all measurements to check investors they are accredited or not. Mostly they prevent with different techniques, but still, many US investors without accreditation may be part of ICO.

2.4.2. China

In September 2017, China officially banned ICOs to protect the stability of the financial market. (China's ICO Ban: A Full Translation of Regulator Remarks., 2017)

Before the ban, Beijing Internet Finance Association anticipated that in the first seven months of this 2017, approximately 65 ICOs raised almost $400 million in China. As compared to overall economies, it is relatively small, but it had a big potential to grow quickly.

In the statement made by China, it draws attention that ICOs can be used easily for pyramid schemes, illegal issuance of securities illegal fundraising and fraud. In the following of the statement, financial institutions and non-bank payment institutions are prohibited to deal with ICOs from their operating business.

Moreover, exchanging of the cryptocurrencies from the fiat currency is also prohibited besides trading tokens. Lastly, completed ICOs previously shall make arrangements such as refunding cryptocurrencies to their investors.

2.4.3. Russia

Russia is the second largest country on ICO deal volume according to Ernst and Young. (research-initial-coin-offering)However, by today, Russia monitoring cryptocurrency transactions and charge capital gain tax related to ICOs.

On 25th January 2018, Russian Finance Ministry proposed a new draft law to regulate ICOs. According to draft, there would be no limit for licensed investors in accordance with Russia's securities law. (http://regulation.gov.ru)

Investors who have no license would invest a fifty thousand rubble (around $900) for each ICO. It could be a clever solution for Russian investors in the customer law aspect of view.

According to draft, all ICO events must be registered in Russia Federation. In addition, ICO initiators need to get valid accreditations, which would be issued and regulated by the ministry.

Crypto venture would get a license. Lastly, transactions must be executed via national currency, rubble in the registered bank account associated with all money transfers.

2.4.4. Switzerland

Switzerland is one of the pioneer countries to regulate ICOs and determine the legal frame of cryptocurrencies. The city, Zug or called ‘’Crypto Valley’’ is the center of blockchain technology in the country.

Zug is one of the cantons of Switzerland, has the lowest tax rates in Switzerland (Corporate tax rate is %14.16), therefore it attracts ICOs from a taxation point of view. Switzerland keeps laissez-faire philosophy, which is left to do philosophy. By the end of 2017, 40 successful ICOs were completed in Zug. (ICO Alert Website)

Tezos, Bancor, Status, and the DAO, which are the four largest ICOs of 2017 were hosted in Switzerland. In addition, the biggest decentralized app platform Ethereum is registered in Zug and completed its ICO in there. It is also another advantage of Ethereum based ICOs choosing to Switzerland.

In Switzerland, ICOs are termed as Token Sale or Token Generating Events (TGEs). If the token is not directly linked to a debt or share, it is not classified as a security and is a reason to not subject to Swiss securities laws. (Lyons, 2017)

Swiss The Financial Market Supervisory Authority FINMA investigates ICOs according to how these ICOs are structured. According to Swiss Law, ICO issuers even do not have to incorporate any specific form of the company. However, they have to follow existing regulations, which fits according to their ICO structure.

There is no specific regulation about ICO as many countries in Switzerland. However, Swiss Authorities draw attention that technology is neutral and they support technologic development.

On 29th September 2017, FINMA shared a guidance for regulatory treatment of initial coin offerings. In this guide, it stated that FINMA cannot rule out that ICO activities may be fraudulent. The just general warning was issued about increased fraudulent activities by providers of fake cryptocurrencies. (FINMA Guidance Regulatory treatment of initial coin offering, 2017)

On 19TH September 2017, The Financial Market Supervisory Authority FINMA, in Switzerland announced that one ICO, E-Coin was unauthorized providers of the fake cryptocurrency, and closed down by FINMA. In the statement, it said that this firm had accepted some million Swiss Franc without holding a required banking license. (FINMA closes down coin providers and issues warning about fake cryptocurrencies) It showed that FINMA (As SEC in the USA) looks closer to ICOs.

In the beginning of this year (16.02.2018), FİNMA published another ICO Guidelines. According to this guideline, all ICOs cannot be categorized the same. It divides three categories to ICOs. These are payment, utility, and asset coins, and all have to obey

different legal implementations. The guideline draws attention that financial market law and regulation are not applicable to all ICOs. (Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs) , 2018)

First type token is the payment tokens. This token also refers to cryptocurrency, is token, which are intended to be used for the purpose of payment for acquiring services or goods or the same purpose with money or value transfer. FINMA will not deal with payment tokens as securities for example in Bitcoin and Ether case.

Second type token is the utility tokens. Utility tokens are designed to provide access digitally to a blockchain-based infrastructure application or service. If utility tokens are:

- The only purpose to confer digital access rights to an application or service
- Actually, be used in this way at the point of issue

FINMA will not be treated as securities. However, if utility tokens also have investment purpose, FINMA will treat to utility tokens as security. In this case, these token ICOs will be regulated under Swiss Security Law and other required regulations.

The third one is the asset tokens.: These tokens represent assets such as an equity or debt claim on the token issuer. These tokens promise can promise a share in future company earnings or future capital flows, which are analogous to equities, bonds or derivatives.

FINMA accepts asset tokens as a security as a derivative. Asset tokens are suitable for mass standardized trading. The guideline makes division between existence (in the circulation) tokens and pre-sale/financing tokens, which promises to investors for given tokens at some point in the future and token or underlying blockchain structure remain to be developed. This pre-sale or pre-financing tokens are also treated as security by FINMA.

Unless the fund raised by ICO is not treated as a deposit, ICOs will not be associated with Banking Act. It means that there is no requirement to obtain a banking license for these ICOs.

One another point that payment tokens should obey with Anti-Money Laundering Act (AMLA) because these tokens provide payment services a means of payment as long as the payment tokens can be transferred technically on a blockchain system. As long as the utility tokens provide access rights to a non-financial application of blockchain technology, the Anti Money Laundering Law is not applicable for utility tokens.

One token can be treated both as security and means of payment. In this case, ICO must be obeyed also Swiss Security Law as asset tokens.

Independent and government-supported association Crypto Valley Association also published Code of Conduct for ICOs to encourage blockchain technology developers and to protect the reputation of the Switzerland ICO market. (Https://cryptovalley.swiss, 2018)

2.4.5. Singapore

Singapore plays a significant role last years in the technologic developments. The country hosts many high-technology firms and lastly many successful ICOs by means of their clear convenient taxation rules, open friendly government attitude to Cryptocurrencies besides government funds to help the development of blockchain technology.

In November 2017, Singapore de facto central bank, Monetary Authority of Singapore (MAS) published a guide about initial coin offerings (ICO). (Monetary Authority of Singapore a Guide To Digital Token Offerings,, 2017) In the report, in which conditions tokens can be treated as security are explained briefly and in case of accepted as security, which rules would be implemented to ICOs.

MAS examines ICOs (in the report referred as a digital token) with their structure to determine whether these digital tokens are a type of capital markets products under the Securities and Futures Act of Singapore (SAF). In the case of situations below, digital tokens constitute securities under the SAF:

- If the digital token represents an ownership interest in the blockchain based project or the corporation

- If the digital token represents a liability of the token holder (ICO investor) in the corporation-project
- If the digital token represents mutual covenants with other token holders (Investors or issuers may be) in the corporation inter se
- If the digital token constitutes or evidences the indebtedness as debenture or may be lent to the issuer by a token holder
- In a collective investment scheme, If the digital token represents right or interest or an option to acquire a right or interest

Unless digital token has none of there characteristics in one of the situations above, ICO is not regulated under a security law and not be treated as a security. In contrast situations, ICOs must be made in accompanied by a prospectus, which is prepared in accordance with the Securities and Futures Act of Singapore (SFA) and is registered with MAS (Monetary Authority of Singapore).

In addition, MAS observes primary platform owners, the person who provides financial advice about any digital tokens and lastly trading platforms, which enable to trade cryptocurrencies. The guidelines also draw attention that the requirements of the SFA may apply extra-territorially to the activities and person who operates primary platforms or trading platforms. It means that in case of security offer with incorporated ICOs in other countries, nevertheless can be investigated by MAS.

Moreover, the relevant Mas Notices on prevention of money laundering and countering the financing of terrorism may be applied to ICOs. (“AML/CFT Requirements”)

EY’s research shows that Singapore is the third country with regard to the total amount of money collected by ICOs ($260 Million, EY research: initial coin offerings). As the USA and Switzerland, there is no any specific law, regulates ICOs in Singapore.

2.4.6. Hong Kong

Hong Kong is one of the hubs for ICOs by means of its liberal structure and location, next to China Mainland. After Chinese ban to ICOs, Hong Kong get more attractions especially ICOs, which would like to look for Asia Market.

As many countries, business activities based on blockchain technology has not been regulated officially yet. However, Hong Kong Securities and Futures Commission (SFC) took several steps to protect consumer rights and clarify responsibilities.

On September 5, 2017, Hong Kong Securities and Futures Commission published a statement and stated that digital tokens that are offered or sold with Initial Coin Offering (ICOs), maybe "securities" as defined in the Securities and Futures Ordinance (SFO), therefore subject to the securities laws of Hong Kong. (Statement on initial coin offerings,, 2017)

In Hong Kong, if one of token offered by ICO meets one of the features, it qualifies as security according to Hong Kong Law:

- If digital tokens offered in an ICO represent ownership interests in a corporation or equity, these tokens may be accepted for "shares"

- If digital tokens offered by ICO are used to acknowledge or to create a liability or debt owed by the token issuer, they may be regarded as a "debenture".

- If ICO scheme operators use offered token by the to invest in projects with an aim to enable token holders to participate in a share of the project returns, these digital tokens may be accepted for an interest in a "collective investment scheme (CIS)"

Interests in a collective investment scheme (CIS), debentures and shares are all regarded as "securities" in Hong Kong. Furthermore, dealing, advising, managing or marketing of these digital tokens, regarded as security may constitute a regulated activity, which requires licence or registration under the Securities and Futures Ordinance (SFO) irrespective of whether the parties of these activities involved are located in Hong Kong as long as these activities target the Hong Kong public. In this respect, SFC warns ICOs as the same with US SEC, whether the companies incorporated in other countries or not. On February 2018, SFC has sent letters to seven cryptocurrency exchanges in Hong Kong or with connections to Hong Kong to warn these exchanges that they should not trade

cryptocurrencies which are "securities" as defined in the Securities and Futures Ordinance (SFO) without a license. (SFC warns of cryptocurrency risks, , 2018)

SFC took this step after some complaints come from the investors about being unable to withdraw fiat currencies or cryptocurrencies from their accounts opened with cryptocurrency exchanges. In this statement, SFC one more time repeated that ICOs have a risk of extreme price volatility, hacking, and fraud when investors using services of cryptocurrency exchanges.

On March 19, 2018, SFC shot down one of the ICO issuers Black Cell Technology Limited's ICOs to the Hong Kong public and agreed to unwind ICO transactions for Hong Kong investors by returning them the relevant tokens following regulatory action by the Securities and Futures Commission over concerns that Black Cell had engaged in potential unauthorized promotional activities and unlicensed regulated activities. (SFC's regulatory action halts ICO to Hong Kong public, 2018)SFC added that Black Cell offered to holders of the tokens would be eligible to redeem equity shares of Black Cell, therefore this token qualify as security and it has to comply with the security regulations under SFC Regulations.

As it is clear, Hong Kong Securities and Futures Commission (SFC) has similar concerns with American Security and Exchange Commission (SEC) and closely follow the ICOs.

2.4.7. European Union

Each member of the European Union may have a different approach to cryptocurrencies to regulate.

On 13 November 2017, European Securities and Market Authority (ESMA) publish a statement about initial coin offerings. (ICOs). (ESMA: "ESMA alerts firms involved in Initial Coin Offerings (ICOs) to the need to meet relevant regulatory requirements", 2017) In this statement, according to the structure of ICOs, several regulations are likely applied to these ICOs besides national laws. There is four European Union Directive may be used for initial coin offerings. These are Prospectus Directive, The Markets in Financial

Instruments Directive, Alternative Investment Fund Managers Directive and Fourth Anti-Money Laundering Directive.

If the token offered by the ICO is treated as security because of its features, initial coin offering process will be as offering transferable securities to the public. In this case, ICO owners should obey with Prospectus Directive of EU, which regulates raising capitals in EU. This directive requires publication of a prospectus, which contains the necessary information to understood by the investors about the facts of the project. In case of offering transferable securities by ICOs, publication of this prospectus will be obligatory and it shall be subject to approval by a Competent Authority. If ICOs offer just:

- to qualified investors and/or,
- to less than 150 natural or legal persons and/or,
- Of at least EUR 100,000 per investor and/or,
- with a minimum denomination of EUR 100,000 and/or,
- an offer of securities in the EU less than EUR 100.000, within 12 months

They could be exempted from publishing prospectus.
In case of the coin or token offered by the ICO qualifies as a financial instrument such as dealing in financial instruments, placing or advising on a financial instrument, the ICO involves The Markets in Financial Instruments Directive (MiFID) services /activities. Purpose of the MiFID is creating a single market for investment services/activities and to make certain a high degree of harmonized protection for investors in financial instruments. Depending on services offered by the ICO project, the conduct of business rules and the transparency requirements of the MiFID may be applied.

If ICO scheme is designed to raise capital from a number of investors with a view to investing it in accordance with a defined investment policy of The Alternative Investment Fund Managers Directive (AIFMD), ICO could qualify as an alternative investment fund. In this case, ICO project should comply with AIFMD obligations, which are about capital, operational and organizational rules and transparency requirements of the project.

Lastly, the statement of ESMA mentions Fourth Anti-Money Laundering Directive, which prohibits money laundering and terrorist financing and aims to track illegal and

suspicious transactions. MiFID investment firms, financial institutions, collective investment undertakings marketing their shares or units must be obeyed with Fourth Anti-Money Laundering Directive rules. In summary, the Directive requires that these firms should carry out due diligence on customers/investors and record-keeping these records. Any suspicious activity must be reported to relevant public authorities. ICOs may obey with Fourth Anti-Money Laundering Directive according to their structure. For my point of view, ICOs must comply with this directive.

In France, currently, legal definitions of tokens are determined according to their qualification under national legislation. On 22 February 2018, The French Financial Market Authority (AMF) recently issued a public consultation paper about ICO regulations and definitions will be drafted later, and still in progress. (The AMF publishes the summary of responses to the public consultation on initial coin offerings (ICO), 2018)

2.4.8. Germany

In Germany, German Stock Corporation Law does not apply to initial token offerings because the tokens are not required to carry any membership rights, information rights, control rights or voting right. (BaFin: "Initial Coin Offerings: High Risks for Consumers, 2017)

On March 29, 2018, BAFIN published an advisory letter on the classification of the tokens as a financial instrument. (Supervisory classification of tokens or cryptocurrencies underlying "initial coin offerings" (ICOs) as financial instruments in the field of securities supervision,) This paper is so similar to the FINMA ICO Guideline in Switzerland. According to this letter, to accept tokens as a security, tokens have to meet these criteria in particular:

- Transferability,
- Negotiability on the financial market or capital market (Cryptocurrency exchange trading platforms can be deemed financial or capital markets),
- The embodiment of rights in the token, (For example shareholders rights embodied in token)

• The token must not meet the criteria for an instrument of payment (For example payment coins meet),

Every token will be investigated as case-by-case assessment based on the circumstances.

Furthermore, if a token, offered by ICO meets these criteria, these domestic laws may be applied:

- the German Securities Trading Act (Wertpapierhandelsgesetz),
- the German Insurance Supervision Act (Versicherungsaufsichtsgesetz),
- the German Banking Act (Kreditwesengesetz),
- the German Securities Prospectus Act (Wertpapierprospektgesetz),
- the German Capital Investment Code (Kapitalanlagegesetzbuch),
- the German Payment Services Supervision Act (Zahlungsdiensteaufsichtsgesetz),
- the German Capital Investment Act (Vermögensanlagengesetz),

2.4.9. United Kingdom

The graph in Appendix 5 shows the countries have the largest numbers of ICOs. As it is clear, United Kingdom is the third country, hosts 230 ICOs by today.

In the UK, there is no regulation yet about initial coin offerings. On 12 September 2017, FCA (Financial Conduct Authority) published consumer warning about the risks of ICOs. (Consumer warning about the risks of Initial Coin Offerings ('ICOs'), 2017) In this statement, ICOs were described as a very high-risk speculative investment.

Many ICOs still are out of FCA scope. However, some ICOs feature parallels with these fundraising methods:

- Initial Public Offerings (IPOs),
- Private placement of securities,
- Crowdfunding or collective investment schemes,
- Transferable securities (It must obey with prospectus regime),

On November 14, 2017, FCA published one another consumer warning about the risks of investing in cryptocurrency contracts for differences (CFDs). It describes that cryptocurrency CFDs as allowing to investors to speculate on a change in the price of cryptocurrencies. And warning to consumers about cryptocurrency CFDs because of its high-risk, speculative investment. (Consumer warning about the risks of investing in cryptocurrency CFDs, 2017)

2.4.10. Belarus

Belarus announced new law, referred as Digital Revolution to encourage blockchain and other technologic developers. Just specific places will be covered by this law. Hi-Tech Park 2.0 (Belarusian Silicon Valley) will enjoy the benefits of this law for taxation and legal regime. (Belarus ICO Regulation I First Country To Legalize ICO,)

There is an under-construction law, Decree of the President (dd. 22.12.2018. No.: 8.). This law offers many tax advantages as:

Exemption from:

- corporate profits tax (18%), VAT (20%) and the offshore duty (15%)
- income tax for individuals in relation to a sale of shares and securities in the Hi-Tech Park resident companies provided they owned the interest for at least 365 days prior to the sale
- a real estate tax, and a land tax for the period of construction (but not more than for 3 years)
- the VAT for sale of IP rights, advertising, web hosting and other services to the Hi-Tech Park resident companies
- customs fees in case of import of technological equipment necessary for the implementation of an investment project in IT sphere

And reduced:

- income tax rate (9%) for sale of shares
- personal income tax (9% instead of standard 13%) for the employees of the Hi-Tech Park resident companies

• zero withholding tax for foreign companies when they provide advertising, data processing or web hosting services, or when they sell shares in a Hi-Tech Park resident company.[1]

Countries, which are like Belarus trying to get some attractions for foreign investment. In the draft law, to enjoy these exemptions, companies have to deposit high amount of capital in the beginning and must work with local banks.

2.4.11. Gibraltar

The country of Gibraltar is a British Overseas Territory, which has less than 50.000 inhabitants. However, Gibraltar would like to be an alternative place for United Kingdom ICOs besides for ICOs from all over the world.

In 2017 August, SX Group Limited, which operates the Gibraltar Stock Exchange announced that

The strategic partnership between Cyber Hub Fintech Holdings Limited, which is fintech group in Asia to become one of the world's first regulated exchanges to fully integrate the use of blockchain into its operational processes from Initial Coin Offering (ICO) to Initial Public Offering (IPO). (Gibraltar Stock Exchange announces Cyberhub Fintech as a new strategic partner,) Moreover, Gibraltar Stock Exchange (GSX)'s parent company, The Gibraltar Blockchain Exchange (GBX) did its own ICO on February 2018 and raised to $27 Million with their Rock Token, which structured as an ERC-20, Ethereum Based blockchain.

On September 22, 2017, The Gibraltar Financial Services Commission (GFSC) published a statement about Distributed Ledger Technology (DLT), called commonly Blockchain. (Statement on Initial Coin Offerings) The statement was the signal of Blockchain regulation including Initial Coin Offering after The Government consultation document about DLT regulation in May 2017.

[1] Ibid.

In October 2017, Financial Services (Distributed Ledger Technology Providers) Regulations was published on the Gibraltar Official Gazette. (18ht) According to this regulation, since 1st January 2018, Firms carrying out business with the use of distributed ledger technology (DLT-Blockchain) for storing or transmitting value belonging to other firms or individuals (DLT activities), in or from Gibraltar, must be authorised by the Gibraltar Financial Services Commission (GFSC) as a DLT Provider.

HM Government of Gibraltar announced a new proposal for token sales, investment services relating to tokens and secondary token market platforms in February 2018. In the proposal, it was stated that Draft Regulations for the promotion, sale, and distribution of tokens should be ready in May 2018. (Token Regulation Proposals for the regulation of token sales, secondary token market platforms, and investment services relating to tokens,)

With this proposal, The Government of Gibraltar stated that tokens-coins cannot be qualified as security under Gibraltar or EU Legislation. In the statement, ICOs defined as the advance sale of products that enable investors-buyers to access future networks or consume future services of ICO projects. These tokens represent commercial products according to report. The foreseen law aims to protect consumers rights and Gibraltar's reputation.

The foreseen law will not regulate according to the proposal:

- Technology (For example Blockchain or platform)
- Tokens, smart contracts or their functioning; (For example Functions of tokens)
- Individual public token offerings; or
- Persons involved in the promotion, sale, and distribution of tokens (For example SEC already publish a statement about responsibilities of promoters especially for celebrities.)

The companies carrying out business activity based on Blockchain must be obeyed with DLT Regulations. However, operating a secondary market platform for trading coins or tokens is not currently regulated in Gibraltar. This proposal also covers token secondary market platforms. The same scope is relevant for token investment service providers too.

Currently, it is not regulated but the new law shall cover investment service providers who carry out business related to tokens-coins.

3. Government Approaches to Decentralized Digital Currencies

ICOs are a fundraising model of mostly blockchain based projects. There is an important point that regulations about Initial Coin Offerings and cryptocurrencies itself should not be mixed. In this part, we would like to draw attention these difference between ICO and cryptocurrencies. ICOs can be used for fraud, money laundering or just raising fund. However, cryptocurrencies may replace with fiat currencies in the following years. Cryptocurrencies make payment and money flow very easy and affordable for everybody regardless of citizenship, religion, income level. However, it brings several risks for current world financial system. Central Banks concerns are important at this point. Because cryptocurrencies operating on blockchain technology eliminate to central banks besides banks and other money transfer companies.

It is sure that blockchain technology is a cutting-edge technology and some countries would like to be a pioneer in what the USA did for the internet technology years ago. Unregulated nature of cryptocurrencies makes several problems to legalize this tokens-coins because the world financial system is very integrated each other. For example, managing director of Estonia E-residency stated that the Republic of Estonia can be the first country with an Initial Coin Offering (ICO) after launch government support token, Estcoins. (Kaspar Korjus, 2017)

Countries can offer their tokens as Bitcoin or Ether. However, how is it possible to accept these digital currencies as the fiat currency of these countries?

One another example is Singapore's central bank and its partners have successfully digitized the Singapore dollar (SGD) onto an Ethereum-based private blockchain and published a report about that name is "Project Ubin: SGD on Distributed Ledger". (The future is here Project Ubin: SGD on Distributed Ledger)

3.1. Cryptocurrency Friendly Countries

3.1.1. United States of America

Fast growing of crypto market pushed the US to be the leader in crypto-currency regulation. Legitimate companies choosing to exchange in crypto-currency must adhere to strict 'Know Your Customer' ('KYC') and 'Anti Money Laundering' ('AML') rules, the same rules that apply to banks and other financial institutions in the US. (Danova, CEX.IO Official Blog KYC, AAL and Bitcoin -)
USA has largest Bitcoin ATM network in all across the country. In April 2018, a number of Bitcoin ATMs is 2662 and 76 percent of global Bitcoin ATMs were concentrated in North America. (Number of Bitcoin ATMs worldwide from 2016 to 2018)

On the one hand, USA has 50 states and it brings many different approaches to cryptocurrencies. For instance, New York State Department of Financial Services created a special license which is limited to activities involving New York or residents of New York. This license is a business license of virtual currency activities and called Bitlicence.

According to regulation, anyone who engaged in the following activities must obtain Bitlicence:

- Digital currency transmission
- If anybody maintaining custody, holding, storing, or control of digital currency on behalf of others
- Buying and selling digital currency as a customer business
- Performing exchange services as a customer business
- Administering, controlling or issuing, a digital currency. (BitLicense Frequently Asked Questions)

In the aspect of this licensing procedure, Newyork State is not as easy to start cryptocurrency business as other states.

In Arizona State, at the beginning of 2018, two bills were prepared to enable taxpayers to pay their income tax using a payment gateway, such as bitcoin, litecoin or any other recognized cryptocurrency, using electronic peer-to-peer systems. (18ht1) One another bill which aims to regulate crowdfunding through initial coin offerings (ICO) in Arizona will be read on June 2, 2018. (18ht2)

One another cryptocurrency friendly state is the US is Wyoming. One of the bills, introduced in Wyoming states that if the token can be exchanged for services and goods, specified securities law is not subjected to an individual who, facilitates, sells or develops the exchange of an open blockchain token. (18ht3)

New Hampshire, Kansas, and the Montana States also have passed several legislations about digital currency exemptions in their domestic money transmitter regulations.

The Internal Revenue Service (IRS) does not qualify digital currencies as legal tender. For Federal Tax Purposes, it is treated as property by IRS. (18ht4)

The Financial Crimes Enforcement Network ("FinCEN") also does not accept cryptocurrencies as legal tender and users of virtual currency are not an MSB (money services business) under FinCEN's regulations and therefore is not subject to MSB registration. In case of using of convertible digital currencies for the purpose of to purchase real or virtual goods and services, the user of this digital currencies is not subject to regulation as a money transmitter. However, in case of creating units of convertible digital currency in the purpose of selling those units to another person for fiat currency or its equivalent, this transaction is engaged in transmission to another location and is a money transmitter. (Application of FinCEN's Regulations to Persons Administering, Exchanging, or Using Virtual Currencies, 2013)

3.1.2. Japan

Japan Yen is the most traded fiat currency in the cryptocurrency market. After several restrictions and bans in another Asian country, Japan takes important steps to being a major global cryptocurrency market hub. In April 2017, cryptocurrencies are recognized

legal tender, as means of payment in Japan rather than legal currency and required cryptocurrency exchange platforms to make registration with the government. (18ht5)

On September 29, 2017, 11 cryptocurrency exchange companies were approved by Japan's Financial Services Agency (FSA) as operators of cryptocurrency exchanges. (18ht6)Among approved cryptocurrencies and companies issued digital currencies are able to trade Bitcoin, Ripple, Litecoin, Bitcoin Cash and Ether and some other coins.

3.1.3. United Kingdom

The United Kingdom is one of the global finance hubs in many years. However, after Brexit impact on the economy, probably the UK did not make any restrictive steps for cryptocurrencies. AML (Anti Money Laundering) and KYC (Know Your Customer) regulations are still important in the UK, and mandatory to obtain for cryptocurrency exchange companies.

The Financial Conduct Authority (FCA) treats cryptocurrencies to be private currencies. It also warns to citizens about the high risk and volatility of cryptocurrencies. However, there is no other step to regulate the crypto market to restrict or getting harder to doing business related with cryptocurrencies.

In April 2016, Home Office Treasury published an action plan for anti-money laundering and counter-terrorist finance and in this report digital currencies are mentioned. Digital currency exchange firms as wallet providers were warned not to deliver any benefits in terms of mitigating money laundering and terrorist finance risk under anti-money laundering regulations beyond. (Action Plan for anti-money laundering and counter-terrorist finance , 2016)

3.1.4. Estonia

Estonia is a small Baltic country but one of the technology-driven countries in the world. Estonia aims to adopt its own e-currency, the name is Estcoin. However, European Central Bank draws attention that in the Euro Zone, any member state can not introduce

its own currency. Estonia is the part of Euro Zone since 2011, and it does not look it will be easy for Estonia to launch its own ICO and currency.

On 27th November 2017, Anti-Money Laundering Act and Terrorism Finance Act was changed and new version makes a clear definition of digital currencies, regulating cryptocurrency wallets and identification of the users of cryptocurrency exchanges. In this law, cryptocurrencies may be accepted as payment instrument but no legal tender. Exchange of the ICO tokens or other digital tokens can be partially covered by the Anti-Money Laundering Act and Terrorism Finance Act. (18ht7)

3.1.5. Denmark

Denmark is one of the wealthiest Scandinavian Countries and has very good technology infrastructure. By means of its already well-developed technology ecosystem, Denmark attracts many blockchain projects. As many EU Country, Denmark also has no any specific regulation about digital currencies.

In 2013, Financial Supervisory Authority (FSA) of Denmark published a statement, repeated warnings of the European Banking Authority (EBA) and draw attention that how risky to invest cryptocurrencies.

To run digital currency exchange even with fiat currency is not required to obtain any permission from the government in Denmark. Also, there is no obstacle to using digital currencies to make a payment.

In 2014, The National Bank of Denmark released a statement about the legal frame of cryptocurrencies. In the report stated that digital currency transactions are not covered by other consumer protection provisions under the Payment Services. (Statement: IC, 2017)

In November 2017, Financial Supervisory Authority (FSA) published a statement about Initial Coin Offering and its risks. (Statement: IC, 2017)

On February 19, 2018, FSA published another statement very similar with 2013 one, encored statement of European Union's three financial supervisory authorities EBA

(European Banking Authority), EIOPA (European Insurance and Occupational Pensions Authority) and ESMA (The European Securities and Markets Authority). (EU authorities warn consumers about cryptocurrency, 2018)

3.1.6. Netherland

Netherland is one of the most popular countries among cryptocurrency supporters. The city, Arnhem embraced community to use cryptocurrencies, especially Bitcoin in daily life. There are many shops accepting cryptocurrency payment. There are widespread Bitcoin ATMs as well.

At the government level, cryptocurrency is not regulated as others. Government approach is to regulate cryptocurrencies to protect customer rights, KYC and AML measure and support blockchain start-ups.

Dutch government would like to regulate exchange platforms, ICOs, and providers of cryptocurrency storage vouchers by 2019.

In November 2017, The Netherlands Authority for Financial Markets (AFM) published a statement about how ICOs are risky and includes many vulnerable to misleading information, fraud, and manipulation. (AFM warns of serious risks associated with Initial Coin Offerings,)

According to Dutch Law, digital cryptocurrencies are not accepted as digital money.

In 2015, The court of Overijssel stated that Bitcoin (one of the digital currencies) cannot be qualified as money within the meaning of the Civil Code but should be regarded as a means of exchange. (https://uitspraken.rechtspraak.nl)

Moreover, Netherland Central Bank, (De Nederlandsche Bank) simulated Bitcoin since its early days to expected mining over date, 2140, it is tested with its own digital currency DNBcoin that how Bitcoin-based blockchain might be adopted by national banking institutions. (De Nederlandsche Bank N.V. 2015 Annual Report, , 2016)

3.1.7. Switzerland

Switzerland hosts many blockchain based companies. Most popular decentralized app platform, Ethereum incorporated in the city Zug, which is the small city in Switzerland and referred as Crypto Valley.

A liberal aspect of Switzerland makes the country always popular for business transactions and incorporation. The government approach to cryptocurrencies is quite supportive. However, the lawmakers would like to keep good reputation of Switzerland and therefore Swiss The Financial Market Supervisory Authority (FINMA) prepared a very detailed guide for ICOs to show them a clear regulative roadmap.

Commercial operators of cryptocurrencies digital currency trading and exchange platforms must still obey with AML (Anti Money Laundering) /KYC (Know Your Customer) requirements. These companies also should be become a member of a self-regulatory organization or obtain a license for a supervised financial intermediary, which issued by FINMA.

FINMA qualifies cryptocurrencies according to their features and promises. Digital currencies may be qualified as security according to their promises and features.

3.1.8. Germany

In the European Union, Germany leads regulations either domestic or for the union. Germany, known for its dominance in European fiscal policy decisions, has quickly started to regulate Bitcoin. (Stacke, 2013) In the second quarter of 2013, Germany ranked fourth in the world in Bitcoin software downloads. (Gray, 2013) Additionally, the euro has the second highest trading volume, trailing only the United States dollar. (Gray)

On August 19, 2013, the German Federal Ministry of Finance recognized Bitcoin as "units of account" when it formally issued regulations regarding the cryptocurrency. (Essers) This means that Bitcoin is legal for use in private transactions, but companies

that desire to engage in commercial transactions must receive permission from the Federal Financial Supervisory Authority (BaFin) (Essers).
Additionally, German lawmakers issued directives regarding the tax obligations of Bitcoin use and creation. (Rizzo, 2013) The German government stated that no exemptions will be granted for commercial activities using Bitcoin. (Dillet, 2013)

3.2. Cryptocurrency Restrictive Countries

3.2.1. China

China was one of the biggest cryptocurrency markets since September 2017. In September 2017, China banned to Initial Coin Offerings.

China hosts the biggest cryptocurrency mining operations. By means of low electric prices, China cryptocurrency mining sector took many steps. More than %50 of all Bitcoin mining is done in China. At the beginning of 2018, some documents were leaked online, which shows that The Leading Group of Internet Financial Risks Remediation in China has requested from the local governments make an orderly exit, which means prohibitions of the cryptocurrency mining activities because of high energy consumption. (China wants an “orderly exit” from bitcoin mining)
Moreover, China’s Central Bank is planning to make a further step to protect national currency Yuan against digital currencies and they put their outlined their agenda for the coming year. (18ht8)

In 2013, People's Bank of China (PBOC) made a statement about prohibiting financial institutions from handling bitcoin transactions as giving a price, buy or sell or insure cryptocurrency linked services or products. However, there is no restriction yet for individual cryptocurrency transactions.

3.2.2. Macedonia

Macedonia is a small Balkan country. National Bank of Republic Macedonia warns its citizens about the risk of cryptocurrencies.

Using of virtual currencies in the retail sector for payment is illegal in Macedonia and also National Bank discouraged to use virtual currencies. Using of virtual currencies as payment may be punished with a fine or even imprisonment because of breaking rule. (http://www.nbrm.mk)

3.2.3. Vietnam

Vietnam does not accept cryptocurrencies as a legal payment method. On October 2017, State Bank of Vietnam (SBV) also confirmed that digital currencies are not legal means of payment. In case of using digital currencies as a payment method, it may be fined up to 200 Million Vietnamese Dong because of violating acts of supplying, issuing, and using illegal means of payment. (https://www.sbv.gov.vn)

However, trading cryptocurrencies via exchange platforms still are not regulated or prohibited. Individual trading and holding are not prohibited.

3.2.4. Iceland

Iceland is a small country, which has one of the biggest cryptocurrency mining industry by means of cold climate, which is very good for mining machines, cheap energy, and super-fast network.

There is no restriction in Iceland for mining or holding cryptocurrencies. Buying and selling products with virtual currencies are legal in Iceland.

However, in 2013, Central Bank of Iceland stated that trading virtual currencies with the foreign exchange are prohibited under Icelandic Foreign Exchange Act. It means that buying or selling cryptocurrency with fiat foreign currency is prohibited in Iceland. The main reason for this prohibition is to prevent capital movements between countries, especially from Iceland to other countries. (Significant risk attached to use of virtual currency, 2014)

On October 25, 2017, Central Bank of Iceland amended its Foreign Exchange Act, and this capital movement restrictions mostly removed. (https://www.government.is)

3.2.5. Bolivia

Bolivia is a small country located in South America.

In 2014, according to the official statement of The Central Bank of Bolivia, using or issuing cryptocurrencies is not legal because these digital currencies are not controlled by a government or an authorized entity.

3.2.6. Iran

In April 2018, The Central Bank of Iran (CBI) has published a statement about cryptocurrencies. According to this statement, it draws attention that using of virtual currencies for money laundering and financing terrorism is so possible and banks and financial institutions are banned to make a transaction with all cryptocurrencies.

Nigeria, Ecuador, and Cambodia also banned to cryptocurrency transactions for banks and financial institutions to prevent money laundering under their money laundering law.

Algeria amended its law and they are planning to ban cryptocurrencies for all transactions as using, buying, selling by financial institutions besides individuals.

In 2017, The Central Bank of Nepal also declared that cryptocurrencies are illegal. There is no exact law, whic cryptocurrencies are banned. However, any cryptocurrency transactions engaged with money laundering and prohibited under money laundering law. (https://nrb.org.np/)

4. Suggestions

Governments have three possible regulatory options for cryptocurrencies and ICOs:

- Preparing for a guide according to current legislation and any change in existing legislation
- Extension of scope of existing regulations
- Propose new regulations adapted to cryptocurrencies and its fundraising method, ICOs

Many countries make the first choice rather than extend or regulate to cryptocurrencies. It is an observation period for cryptocurrencies and ICOs and just make steps in case of serious issues. First priorities were anti-money laundering (AML) acts and taxation measures. Know your costumer was the part of AML. Later, security or financial institutions of countries have started to make qualifications for tokens offered by ICOs as security or not for instance SEC in the USA, FINMA in Switzerland, AMF in France.

On our side, we have following suggestions to governments to make legislation for cryptocurrencies and ICOs.

First, supervisors as government authorities, regulatory agencies or policymakers may not understand the technology and cases. In this respect, authorities can seek for public consultation for industry stakeholders to gather information's and shape its policies and regulations about cryptocurrencies and ICOs. For example, The French Financial Market Authority (AMF) published public consultation about ICOs. One another side, monitoring of ICO organizations and practices by authorities can be beneficial to make legislation.

Second, clarity of authority approach to cryptocurrencies and ICOs help business development in the industry and attract capital from the globe. The first expression can be the legality of ICOs and use cryptocurrencies for several purposes as payment, holding etc. Second can be clarifying taxation of ICOs and cryptocurrencies. Because of nature of cryptocurrencies, vat exclusion for cryptocurrency transactions as fiat currency payments is reasonable.

Third, cryptocurrency exchange platforms can be regulated first. This legislative step can increase public trust to cryptocurrencies and make a positive contribution to cropmark growing. This legislation imposed exchange platforms can cover anti-money laundering act and know your consumer requirement. In the past, because of big exchange platforms

fails or frauds made big damages to crypto market and caused high volatility. This regulation can be a help to price stabilization of cryptocurrencies as well. One another fields should be covered by exchange regulation is consumer protection. Disclosure of exchanges can be clear and warns to consumers about the high risks of cryptocurrencies and tax liabilities of users. With this regulation, authorities can monitor money laundering activities- crime funding, achieve consumer protection and do not lose its tax income. It brings more investment for this exchange platforms as well by means of their clear legal status besides banking support rather than restrictions.

One of the most important topics is the regulation of initial coin offering fundraising method. Our suggestion is to enable making ICOs keep domestic capital in the country and attract foreign capital by means of inner ICOs. It also makes into positive contribution development of technology.

As we discussed before, ICOs have several advantages besides high risks. To eliminate scam ICOs and enable new companies to reach funding, legislation must be made balanced. Switzerland (FINMA) guide and diversion of tokens according to their features is a good example. Authorities can take this example and have to examine these ICOs case by case. To attract more investment to these projects, legal clarity is quite important. Our roadmap for ICO regulation:

- **Categorizations of tokens offered by ICOs**

As FINMA guide, qualify tokens according to their types and ICO structure as a security or commodity or payment method.

- **Proposing Detailed White Paper Format**

Almost all ICOs have a document, which explains the project, technologic background, and roadmap. However, there is no any format yet. The regulation can be designed to propose a white paper structure, includes detailed company details (to understand it is a legal company or not), team members profile (To determine who are they, real person or fake), how the project obeys with AML/KYC requirements. This format can be as IPO

prospectus) To sustain the project, regular pro-ICO reports can be imposed on ICO organizations to inform investors about the process of the project.

- **Top Limit**

As some crowdfunding regulations (For exm. US and UK), there can be a maximum limit to ICO investments. One of the biggest advantages of ICOs is collecting money from the very wide network. Many times, these investors just seek high profit and even do not have enough knowledge about technology and project. For regulative aspect, one of the priorities should be consumer protection. Unexperienced investors can easily lose their lifelong savings with the scam ICOs or because of high-risk nature of ICOs. To educate these investors, there are two options which can be regulated: First, Liability of clear definition of duties and obligations should be imposed on ICO organizations. Second can be delamination of the amount of investment unexperienced investors. With this maximum contribution limit, at least inexperienced investors can be protected. However, it should not be limit for professional licensed investors to enable ICOs to achieve capital. Up to a top limit, just licensed investors can invest. This limit can be imposed either payment tokens or asset tokens to protect investors. This limit can be imposed for certain period and per ICO. Therefore, investors can divide their risks and more project can be funded.

- **Authorization of Auditors or Self-Regulatory Organizations**

Auditing of ICOs and determining their qualifications can be operated by government authorized auditors or self-regulatory organizations or independent industry watchdogs. It can be more productive instead of given by the government agency itself.

On another possibility, ICOs can be operated just under licensed exchange platforms as crowdfunding. By means of this, ICO organizations do not have to think about KYC/AML requirements.

Moreover, governments can make agreements to adapt their legislation for technology cooperation. For instance, Switzerland and Singapore signed a cooperation agreement in 2016 for cooperation on Fintech. (Singapore and Switzerland to Expand Cooperation on FinTech., 2016)

5. Conclusion

Blockchain-based technologies and their tokens or coins are the complementary factors each other. Blockchain will store 10% of global gross domestic product (GDP) by 2027 according to World Economic Forum. (Deep Shift. Technology Tipping Points and Societal Impact, Survey Report 2015) In this respect, governments cannot be ignoring this technology anymore. However, there are many issues waiting for solutions. For a regulative side, it brings many risks to miss the benefits of this technology. Lawmakers are still very far from the understand this technology. Therefore, possible early regulations made by non-expert law-makers about this tech can harm the development of this cutting-edge technology.

In this study, we show the basic background of technology to give an overview to lawmakers about cryptocurrencies and comparing current regulative steps taken by pioneer countries besides restrictive countries. We have compared most popular countries in blockchain technology and their regulative steps.

The regulative trend in the world goes to understand better technology and categorized features of tokens-coins to determine their legal obligations. For taxation purpose, the trend is accepting cryptocurrencies as money- payment methods and exclude from value-added taxes. For example, Court of Justice of the European Union qualified that Bitcoin as a digital currency is a currency, not a good in 2015 and transactions relating to ‘bank notes, currency, and coins used as legal tender, and exempt from the VAT. (Judgment in Case C-264/14 Skatteverket v David Hedqvist, 2015)

However, accepting cryptocurrencies as legal tender is not so common by countries. (Japan accepts as legal tender for example). As we discussed above, some cryptocurrency friendly states aim to increase using of cryptocurrencies as tax payment etc. There are three main options to qualify cryptocurrencies: currency, commodity, and security.

Restrictive countries mostly qualify as security and regulated under a strict security law, which does comport with the nature of cryptocurrencies. Accepting cryptocurrencies as commodity causes some taxation problem as value added taxation. Because of high volatility and uncontrolled nature of cryptocurrencies, it is not logical to accept as currency in today. It is still so early to make exact legal definitions for cryptocurrencies. However, accepting as money is not looking option yet except taxation purposes. According to features of coins, it could be accepted as security, which will bring many paper works for coin issuers, or commodity. As we discussed in our research, there are other possible definitions too as payment method. With this research, we successfully summarized world approach to cryptocurrencies objectively. Every country should be examined itself results of the regulate cryptocurrencies. Our solution is giving approach them and then they can be harmonized with their domestic law and world trends without make obstacles for technologic development.

In this research, we give answer how ICOs also can be regulated besides cryptocurrencies. Accepting ICOs as crowdfunding or Initial Public Offering does not look as a correct definition of ICOs. World regulative trend on the ICOs is partly restrictive and tend to categorize according to features of the tokens offered via ICOs. In this case, definition of the cryptocurrencies also plays significant role. Accepting cryptocurrencies as security will cause strict legal conditions for ICOs and treat ICOs as IPOs. As Switzerland did (FINMA Guide), categorizing features of tokens and investigate them case by case looks better solution rather than make regulations in general after our comparison of the countries' regulative actions.

To sum up, we hear the name of blockchain technology and cryptocurrencies in the following years more. The countries, which can regulate this technology with supportive approach, can enjoy the benefits and development of this cutting-edge technology. Adoption of cryptocurrencies to existing global banking and the monetary system will not be easy. However, in the end, the law has to catch technology at some point. We are hoping that countries can make legislation without slowing down to technology. Since 2009 to today, we are talking about couple billion-dollar market. But after this stage, every development will be much faster than before. The question is who will be ready when the technology will be developed.

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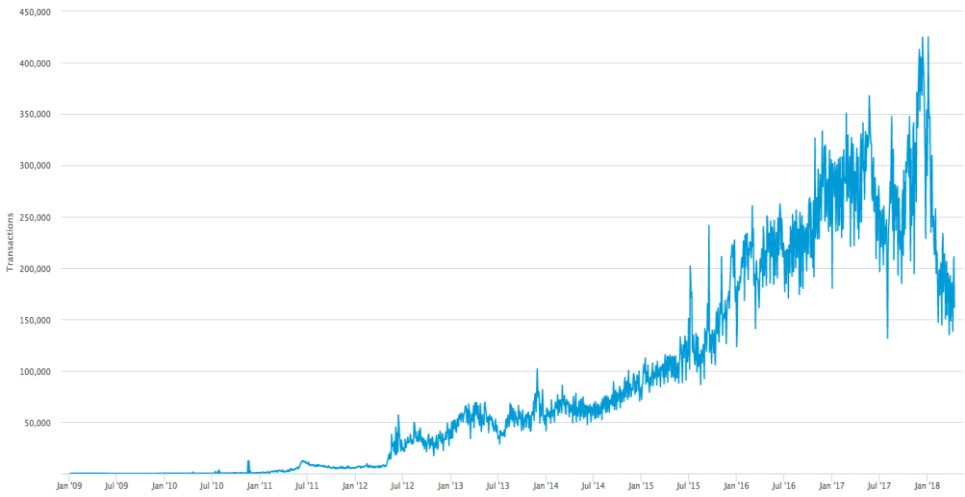
Appendix-1 The number of daily confirmed Bitcoin transactions



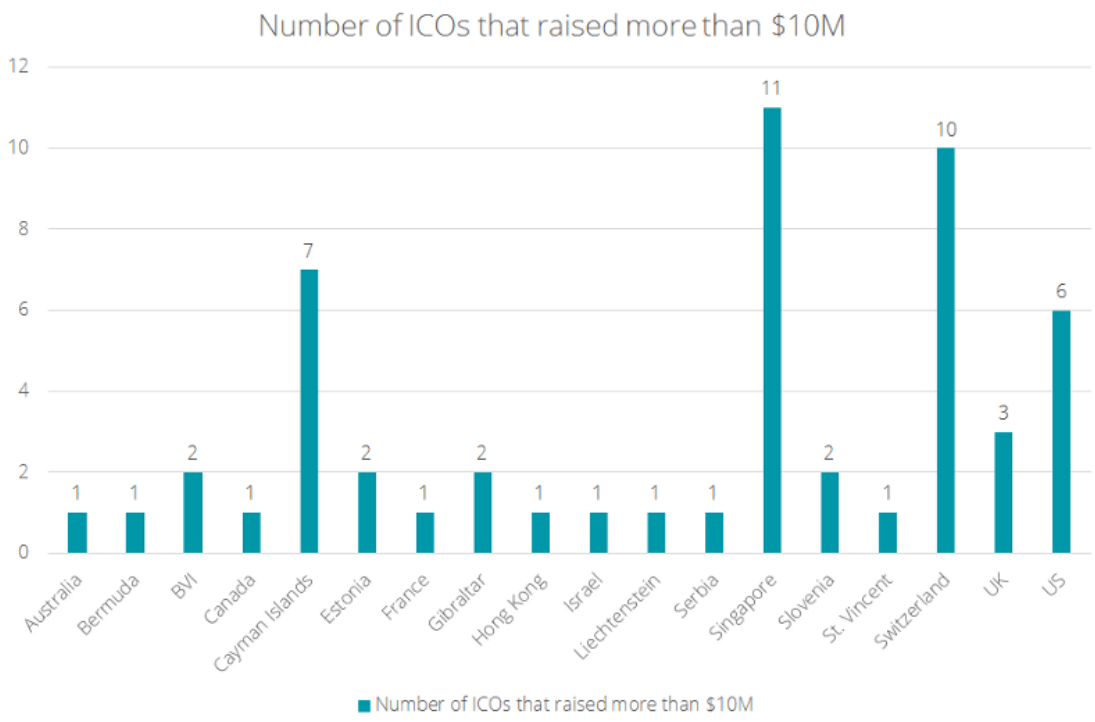
Source: www.blockchain.info

Appendix-2 The differences between electronic money and cryptocurrencies schemes

	Electronic money schemes	Virtual currency schemes
Money format	Digital	Digital
Unit of account	Traditional currency (euro, US dollars, pounds, etc.) with legal tender status	Invented currency (Linden Dollars, Bitcoins, etc.) without legal tender status
Acceptance	By undertakings other than the issuer	Usually within a specific virtual community
Legal status	Regulated	Unregulated
Issuer	Legally established electronic money institution	Non-financial private company
Supply of money	Fixed	Not fixed (depends on issuer's decisions)
Possibility of redeeming funds	Guaranteed (and at par value)	Not guaranteed
Supervision	Yes	No
Type(s) of risk	Mainly operational	Legal, credit, liquidity and operational

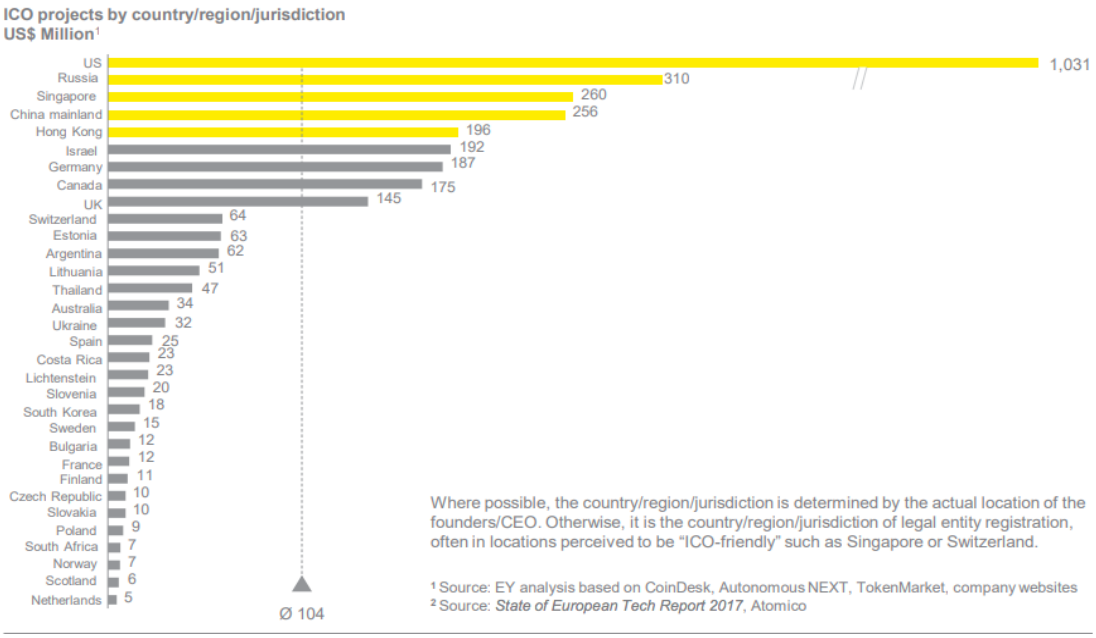
Source: European Central Bank

Appendix-3 Number of ICOs that raised more than $10 Million



Source: www.ablicature.com

Appendix 4 ICO Projects by country by country



Source: EY Research

Appendix 5 Top ICO Countries by the number of ICOs and per million people

Top countries by the number of ICOs		Top countries by the number of ICOs per million people	
#1 USA	428	#1 Estonia	94.7
#2 Russia	242	#2 Singapore	36.1
#3 UK	230	#3 Cyprus	24.6
#4 Singapore	211	#4 Slovenia	16.8
#5 Switzerland	134	#5 Switzerland	15.6

Source: Icobench.com

Appendix 6 Legal Status of Cryptocurrencies in G20 Participant Countries

Source: G20

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