European Union
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Future Ecom
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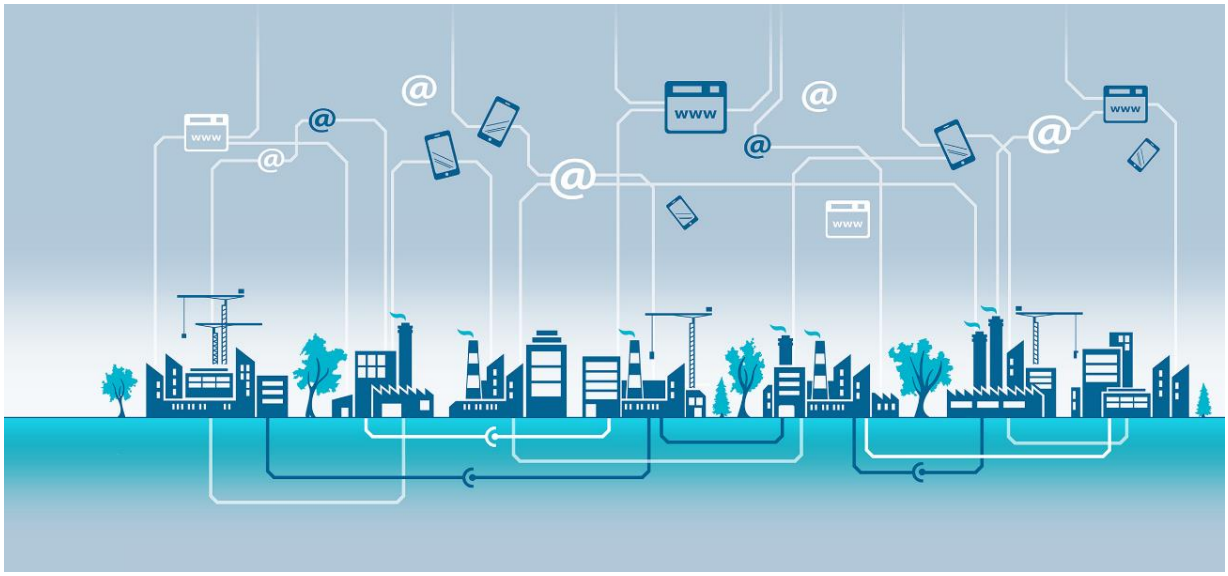
Project Future Ecom

Bitcoin, Blockchain and innovative means of Payment

State of the Art Report

22nd April 2020



It is estimated that in 2020 B2B e-commerce in EU will be twice as large as B2C in terms of sales which proves a huge unrealized potential for EU SMEs.

There is a risk of being surpassed by frontrunners as most SMEs have not even taken the first step in this direction. Succeeding with B2B e-commerce requires a huge turn-around within the company's internal processes as this may scale up the turnover dramatically.

Digitizing and automatizing the internal processes of the SME is the key to managing and keeping up with huge growth in global e-commerce while ensuring economic profit.

Executive summary

Instruments are given to understand the Bitcoin phenomenon: from monetary theory to practice examples, a crucial paper to better frame how crypto industry is a game changer in nowadays life and beyond. Readers will understand how money spontaneously emerges from human action and through which mechanism it coordinates human production. Bitcoin steps in as a major improvement of money developing history, allowing entrepreneurs to thrive thanks to it underlying technology and its nature as sound money.

Credits

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Contents

Additional information

1. Introduction

The best approach to understand money and why cryptocurrencies are money is an appreciation of some of the writings by members of the Austrian School of Economics on matters of monetary theory and policy. Carl Menger (1840-1921), the founder of the Austrian School in the 1870s, had explained in his Principles of Economics (1871) and his monograph on "Money" (1892), that money is not a creation of the State[1].

A **widely used and generally accepted medium of exchange emerged "spontaneously" – that is, without intentional government plan or design – out of the interactions of multitudes of people over a long period of time, as they attempted to successfully consummate potentially mutually advantageous exchanges**. For example, Sam has product "A" and Bob has product "B". Sam would be happy to trade some amount of his product "A" for some quantity of Bob's product "B". But Bob, on the other hand, does not want any of Sam's "A", due to either having no use for it or already having enough of "A" for his own purposes.

Rather than forego a desirable trading opportunity, we can easily imagine Sam believing that Bob might be willing to take some other commodity or product in trade for his product "B", if only Sam had some of whatever it is. So Sam might decide to first trade an amount of his product "A" for a quantity of Bill's product "C". Not because Sam has any need for it himself, but because he anticipates that if he were to have some amount of "C", Bob would gladly take it in trade for some his product "B", which is what Sam actually wants to acquire.

In this instance, product "C" has been used by Sam as a medium of exchange – something purchased by Sam not for any immediate and direct use himself, but as something to be traded away, again, in exchange for what Sam really wants to obtain: an amount of product "B", given that the owner of product "B" had no desire or use for Sam's original product "A".

Over time, individuals discovered that some goods possessed a variety of qualities, characteristics and attributes that made them more useful than others in this role of a medium of exchange – particular goods that were in wider and greater demand than others; goods that were more easily divisible into amounts reflecting agreed-upon terms of trade without losing their desired features as useful goods; more durable goods, so they may be stored for future exchange opportunities without a significant decrease in their marketable qualities; and goods that were more conveniently transported to where advantageous trades might be possible at some point in the future.

Individuals, in their own self-interest, would find it advantageous to first exchange their own, less marketable goods for such other more marketable ones before searching for trading opportunities to acquire the goods they actually wanted. Having possession of a relatively more marketable and salable good would increase the likelihood of being able to obtain from others those goods that were desired for various consumption or production purposes.

[1] For more info see: Austrian monetary theory vs. federal inflation targeting, Richard Ebeling, Mises.org

Observing the successes of some in this endeavor, Carl Menger said, would reinforce others to also demand the same more marketable good to use as a medium of exchange. Or as Carl Menger explained in his, Investigations in the Methods of the Social Sciences (1883):

Each individual could easily observe that there was a greater demand in the market for certain wares, namely those which fitted a very general need, than there was for others […] Thus, every individual who brought to the market items of slight marketability […] had the obvious idea of exchanging them not only for goods he needed, but also for others […] which were more marketable than his […] The economic interest of the economic individuals, therefore, with increased knowledge of their individual interests, without any agreement, without legislative compulsion, even without any consideration of public interest, leads them to turn over their wares for more marketable ones […]The origin of money can only be truly understood […] as the unintended result, as the unplanned outcome of specifically individual efforts of members of society.

Menger's analysis of the market-generated origin of money became the starting point for later Austrians analyzing the nature, workings and problems of money in society. This was particularly true of **Ludwig von Mises** (1881-1973), in his, **The Theory of Money and Credit** (1912; 2nd revised ed., 1924). One of Mises' main concerns was to explain the determination of the value of money and how changes in money's general purchasing power were brought about.

For any good or commodity to emerge as the money-good in a society, it clearly first had to have a use and a value as an ordinary marketable good for either direct consumer uses or indirect production applications. Otherwise, in that historically distant past, no one would have seen an advantage to obtain it in exchange to, then, plan to trade it away for something else they actually wanted to buy, since there would be no one else who would want it and take it in trade.

But once this particular commodity was being used, also, as a medium of exchange, Mises argued, part of its market value was now based upon its demand for and use as a "money," besides its parallel and separate value and demand as an ordinary good having consumption and production uses. Indeed, Mises reasoned, over time the money demand and value for this commodity might come to overshadow and supersede its original non-monetary uses and demands. In the extreme, if this good through use, custom, habit and tradition had become the money-good in a society, it could even lose its original non-monetary uses and values and still have its demand and market-based value as the generally accepted and most widely used medium of exchange.

Of course, looking over the centuries, the most widely used and generally accepted commodities for such money purposes have been gold and silver. Not that other goods have not also served as moneys at different times and different places, but gold and silver often have been the predominant ones in many parts of the world, and especially in "the West" with the development of capitalist or market-based institutions of trade and finance.

But what is the “value” or purchasing power of money in the marketplace? Money, the Austrians argued, is an unusual good in the arena of exchange. As a particular good comes to be more widely and generally used, it becomes customary practice to first trade away ones own good or service in the division of labor in exchange for a sum of the money-good, with the plan and intention of then turning around and trading the money one has earned as a “supplier” of goods to now be a “demander” of other people’s goods. Goods are traded for money, and then money is traded for goods.

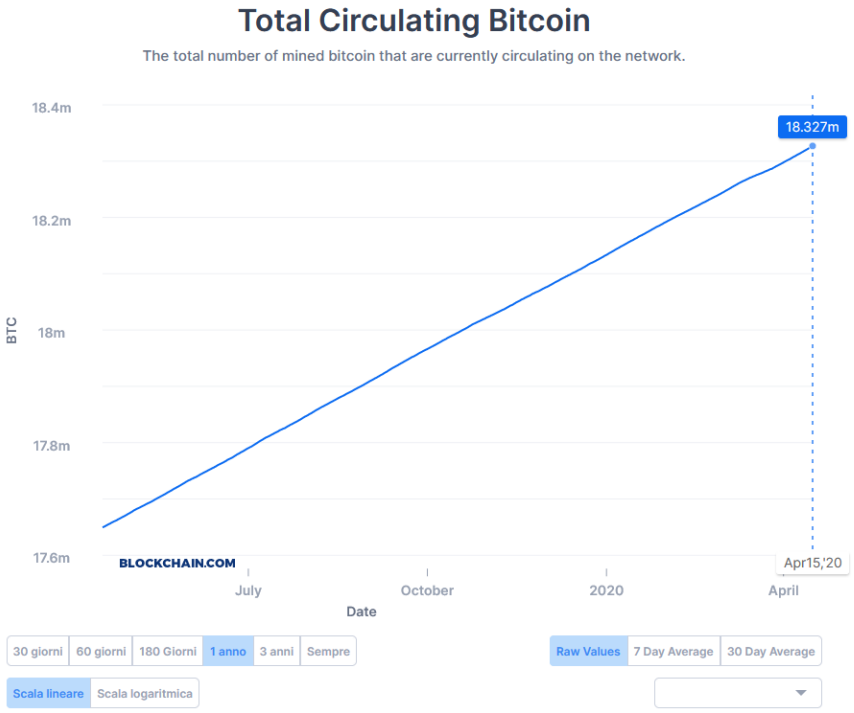
With, increasingly, money on one side of every exchange, every other good tends to now have one price, their individual money-price. For instance, the dollar price for a hat, the dollar price for a pair of shoes, the dollar price for a suit of clothes, the dollar price for a dozen eggs, the dollar price for a bushel of wheat, and so on. But money, on the other hand, continues to have no single price. Instead, it has as many prices as goods against which it trades. Money’s value is reflected in the array, or network, or set of all the individual exchange ratios between money and each of the large number of individual goods against which it trades in the market.

The value of money, as with all other market activities, is the outcome of the interaction of supply and demand. But the demand for money, unlike other goods and services bought and sold in the marketplace, is not to be used and consumed but to be held as a desired average cash balance over a period of time to facilitate future exchanges, whether those trades are only a few minutes away or a significant distance in the future. Each individual decides how much of his earned money income from selling goods or offering services should be held as an average cash balance over the income period to undertake future transactions until the next inflow of money income from the sale of one’s goods or labor services.

While a number of monetary theorists have highlighted the “objective” institutional constraints that influence any person’s decision concerning how much of an average cash balance to hold over an income period – the timing of when bills come due during a month, the frequency with which individuals are paid by their employers, or the habits of how frequently people do their ordinary shopping – the fact is, Mises and other Austrians argued, **the decision and choice of holding cash balances of various amounts may have to take into consideration such institutional surroundings, but, ultimately, it is a matter of personal, or “subjective,” judgment and evaluation that cannot not be mechanistically determined or predicted.**

The interaction of suppliers of goods in exchange for money, and possessors of cash balances of money choosing to demand goods together determines the money prices for all the goods and services bought and sold, produced and consumed, in the marketplace. Out of these interactions emerges the formation of the structure of relative money prices for finished goods and the factors of production (land, labor, capital) out of which those finished goods are manufactured. And the height or “scale” of this general structure of relative money prices at the same time the represents the purchasing power or general value of money in the marketplace.

Thanks to Austrian monetary theory we understood how money emerges, from the spontaneous order of society, and how behaves when are laid down all the laws to which is tuned in. Of course, this is just a brief explanation of monetary theory, but you can figure now how price mechanism works, why money purchasing power is so important and, above all, why gold has been selected by people as the most traded commodity in exchanges. That's crucial. These are the basis from which has been designed Bitcoin.

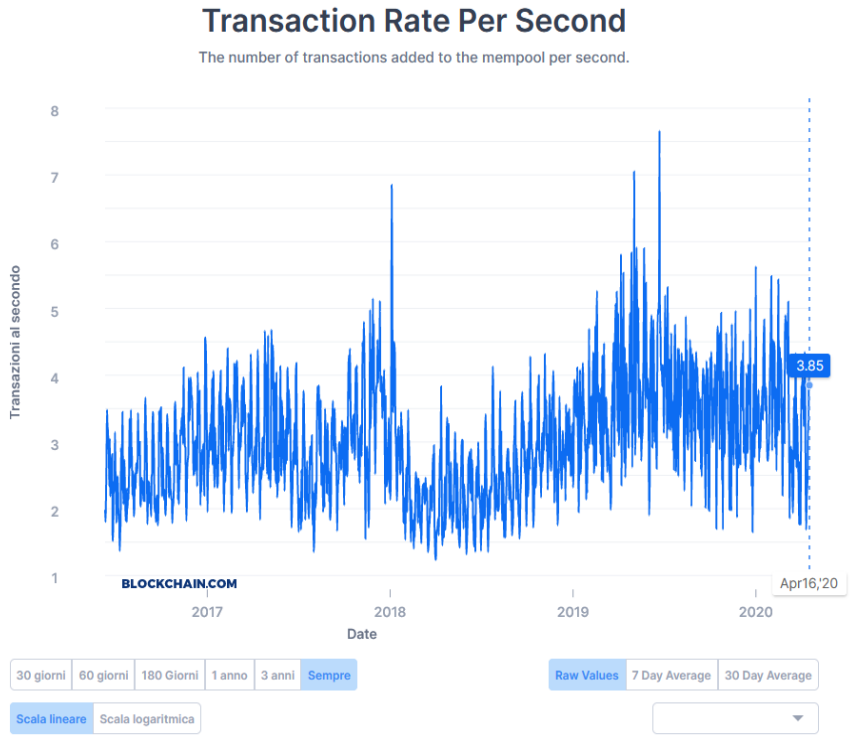


Source: *Total Circulating Bitcoin, Blockchain.com*

Source: *Bitcoin Market Capitalization (USD), Blockchain.com*

Source: *Bitcoin Exchange Trade Volume (USD), Blockchain.com*

Source: *Total number of transactions on the Bitcoin blockchain, Blockchain.com*



Source: *Number of Bitcoin transactions added per second, Blockchain.com*

2. Current Situation

Bitcoin and its underlying technology blockchain are game-changing technologies that are reshaping and revolutionizing the world economy. Often hidden behind the headlines of Bitcoin's meteoric rise in market value and blockchain's technological promise is a basic understanding of what these two technologies are and where they come from. **In 2008, a person or group of people acting under the pseudonym Satoshi Nakamoto published a white paper titled Bitcoin: A Peer-to-Peer Electronic Cash System. The paper introduced a solution to two puzzling issues[2].**

The first was our inability to transfer money digitally between willing participants without the need of a trusted third party. The second was that a function was needed to transfer money digitally with the ability to establish the order of transactions to avoid double spending.

Nakamoto proposed two solutions:

1. A **peer-to-peer currency** capable of maintaining its value without a central authority.
2. A **decentralized digital ledger** capable of establishing the order of transactions. The ledger would operate much the same as any other, except that the recorded transactions would be distributed to computers around the world. In 2009 the ability to transfer value digitally was born in what is widely known as Bitcoin. However, it is the second capacity, now known as blockchain that is proving to be of far greater significance. Although blockchain has scarcely found its way into mainstream thinking and discourse, it is, as mentioned, revolutionizing the world economy.

Since inception, Bitcoin has captured the attention of an ever-growing, and yet relatively small, number of investors, enthusiasts, companies, and others around the globe. As it has grown, it has served the dual function of acting as proof of concept for a "peer-to-peer version of electronic cash" and simultaneously giving rise to thousands of other digital currencies. The most well known of these currencies by market value are Bitcoin and Ethereum. Any attempt however to compare the two cannot be accurately described as an apples-to-apples comparison. More about this later. First, let's look at what Bitcoin actually is.

Bitcoin is a decentralized peer to peer electronic version of cash that maintains its value without backing or inherent value. It allows the transference of money digitally without going through a trusted third party such as a bank or credit card. The first standardized value of Bitcoin was set on October 5th, 2009 at $.0008, calculated using $1USD equals 1309.03 Bitcoin (BTC). It presently trades at more than $2300 USD. This represents 2.9 million x its initial value. According to the Washington Post, if you had purchased $100 in Bitcoin seven years ago, those coins would be worth more than $73 million USD today. To put this into perspective, if you had invested $100 into Amazon.com when it went public in 1997, your investment would be worth just under $64,000. It is worth noting, however, that digital currencies are significantly more speculative than stocks like Amazon.

[2] See for more info: From Bitcoin to Ether: Today's Blockchain Basics, Billy Silva, FEE, July 11, 2017

As the price of Bitcoin goes higher, one question that naturally comes to mind is, Where do Bitcoins come from? **Where do Bitcoins come from if by definition they are not backed by any central authority?** Bitcoins are actually “mined” into existence by Bitcoin miners. The easiest way to think about this is to consider gold miners. Gold miners work to mine gold from the earth. As it is mined, it then enters the economy.

Conceptually, Bitcoin is the same. New Bitcoins are generated through a competitive process called mining. Miners are given Bitcoins as rewards for their services processing transactions and securing the network using highly specialized hardware.

After Bitcoins are mined into existence, how are they used and what are they used for? Bitcoins are traded on exchanges like stocks, bonds, and currencies, and are also used as currency in the exchange of goods and services. The number of vendors and merchants accepting Bitcoins for the exchange of goods and services is expected to grow from the 1000’s to the 100,000's now that Japan is accepting Bitcoins as currency. Japan has been the first nation to officially accept Bitcoin for payments. More than 300,000 merchants begun accepting Bitcoin payments in that country alone.

While Bitcoin was first to market and has drawn most of the media attention, many believe that the Ethereum blockchain, and its currency Ether, is a much more powerful tool. Ethereum is an open source blockchain platform and its fundamental contention is this, that blockchains can be used for more than just the transfer of money. “Smart contracts” are one of Ethereum’s most important contributions to the rapidly expanding universe of digital currencies and blockchains. They can be thought of as a digital means of facilitating the exchange of anything of value in a way that is transparent and removes middlemen such as lawyers, notaries, and others. Smart contracts perform this function by carrying out the terms of the digital contract itself.

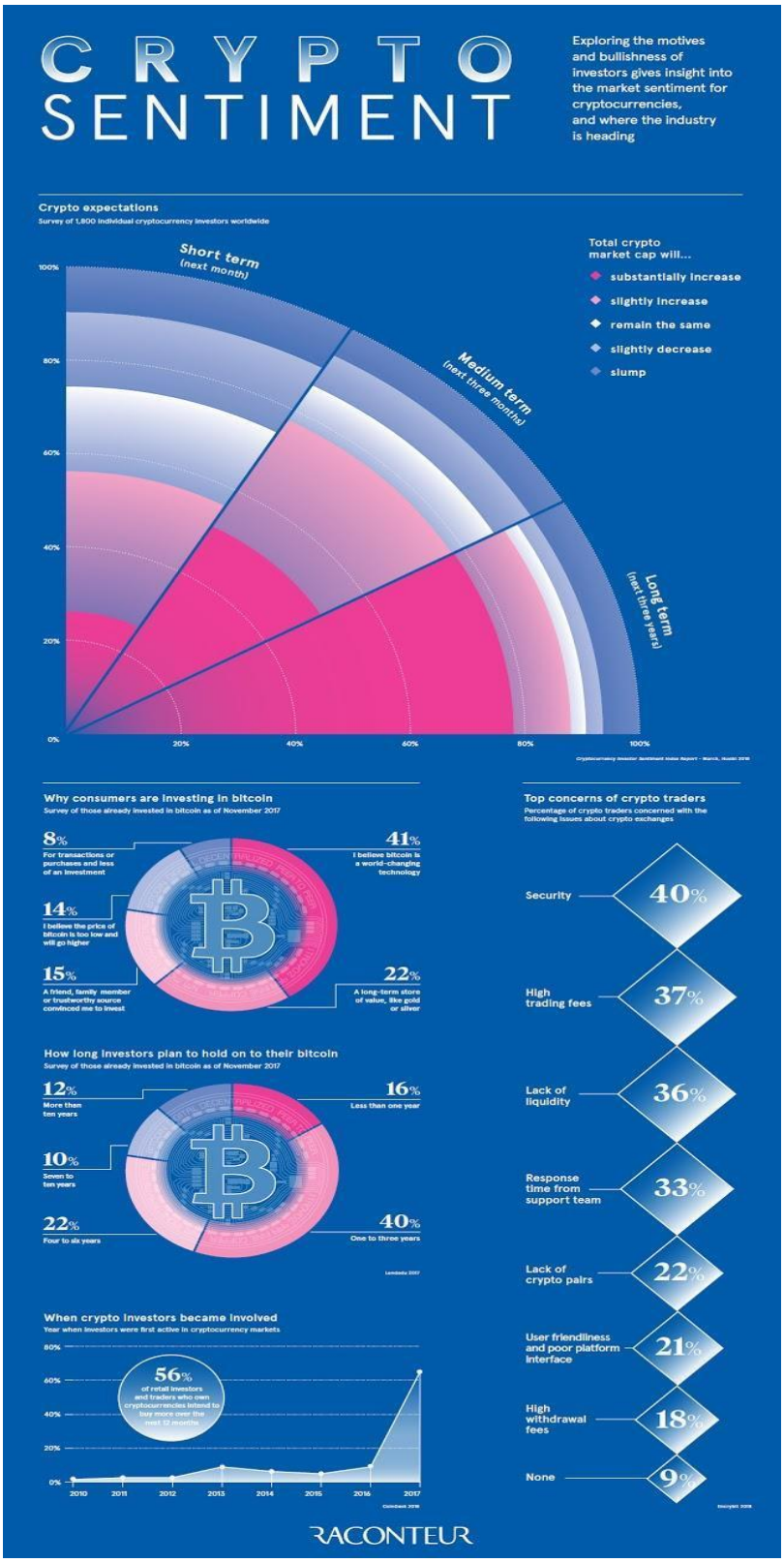
Nakamoto’s initial description of the framework needed to facilitate the movement of online payments between two willing participants without an intermediary has become known as blockchain. In its most simple form blockchain is a decentralized ledger. The implications of blockchain however, are far greater than the simplicity its name implies. **Blockchain facilitates the digital transference of value itself.** Sally Rivers, Financial Times technology writer describes the relationship between blockchain and digital currencies like Bitcoin: “[Blockchain] is to Bitcoin, what the internet is to email.” In the same way the internet facilitates the digital transfer of information, blockchain facilitates the digital transfer of value.

Industries in which blockchain technology is being rapidly explored and deployed include the capital markets, financial services, payments and remittances, derivatives, identity and reputation management, governance, sharing economy, supply chain, auditing, stock trading, internet of things, insurance, healthcare, and others. Digital currencies and Blockchain technology are truly reshaping the world economy.

We may, however, be too close to their inception to accurately assess their importance or ultimate impact.

A few key thoughts:

- Bitcoin was founded in 2008 and launched in 2009. Bringing with it digital currencies and the underlying technology, blockchain.
- There are thousands of new digital currencies of which Bitcoin ($30bil) and Ethereum ($16bil) are the largest in terms of market value.
- These currencies are created through a process of digital mining akin to mining for gold.
- Many of these currencies are traded on exchanges like stocks, and used for the purchase of good and services.
- Blockchain is to Bitcoin, as the internet is to email.



Source: *Crypto sentiment, Raconteur.net*

3. Current Approach

It is true that much of the 2018 price-driven euphoria has vanished, but interest in the underlying technology hasn't. **Good products and services are offered on the market, The phases of recession does this: clears the market from all the bad projects and allow entrepreneurs to distinguish which of the remainings are good enough to be prosecuted. Even if they are ambitious projects.**

Thus, business investments in blockchain technologies continued to develop and mature. Not all projects have seen the light and some of these examples have been overshadowed by other initiatives, but you must focus on the main point here: **blockchain technologies are already offering cost savings, efficiency gains and market advantages.** But wait, there's more: **companies are pushing to reconsider paradigms that, until recently, there was no reason to reconsider.**

There are many examples of this and the following described are among those who achieved a good scale of success:
B-Notary: a notarization service that allows you to obtain proof of the existence of a digital document on a certain date, guaranteeing that it cannot be modified later.
Tokens and Blockchains: as part of innovative business projects, we design and program Blockchains and related Tokens, with the specific function decided at the start of the project. We can analyze and manage the progress of the project as a general contractor, evaluating and coordinating the different aspects that must dialogue closely: technical part, fiscal and administrative part, and marketing part.
Cybersecurity: we initiate audit procedures that allow us to consider and bring to light, through various security tests, all the potential weaknesses and threats, both physical and digital, that penalize a company's business, promoting its resolution.
Documents: Proof of Concept, White Paper, tax analysis and all the technical documents necessary to start and develop a blockchain based project.

Let's take a close look to some of these projects. Bnotary is a notarization software that allows the insertion of a unique and deterministic code (hash generated by processing a document) in a transaction on the Bitcoin blockchain. In this way it is possible to prove the date insertion (timestamp) and the correspondence of a document with the filed version (in case of modification, the generated code would be different from the one filed). With the advent of systems like Bitcoin, evidence of a particular document can be created and verified (timestamp or timestamp, which we could translate with the periphrasis "stamping with date and time") without relying on a trusted third party. From a legal point of view, the value of blockchain registrations is governed by art. 8-ter of Legislative Decree 135/2018, converted with Law 12/2019, which refers in general to all technologies based on distributed ledgers. In this regard,

B-Notary[3] allows multiple business model spin offs, newborn enterprises and many other applications. Remember we are talking about notarization here and this means a basis for a wide range of projects, most of of all the supply chain tracking.

The advantages of using B-Notary compared to other forms of traditional notarization, as well as compared to the same implementation of other forms of Proof-of-Existence, are evident both in terms of time and costs.
● trust - B-Notary uses the decentralized Bitcoin blockchain, eliminating the need for trusted third parties;
● costs - B-Notary is indefinitely scalable, allowing the creation of timestamps by combining an unlimited number of timestamps within a Bitcoin transaction;
● convenience - B-Notary can create a timestamp as a third party trustee party in less than a second, there is no need to wait for confirmation on the Bitcoin network.

A good example of supply chain tracking is Chain Beauty. **ChainBeauty.it** is the reference portal for the cosmetics sector (raw materials and production) that allows you to notarize and share regulatory documents, technical data sheets, safety data sheets, efficacy tests, compatibility tests and many other documents relating to intrinsic characteristics of active ingredients, product efficacy and tolerance. ChainBeauty is a notarization system built on blockchain technology, applicable to the business to business (private labeling, third party productions), the business to consumer (own brand productions for direct retail) and the sector of raw material suppliers. B2B cosmetic productions for third parties requires a high index of guarantee and protection information. The business customer appreciates the immediate availability and truthfulness of the documentation accompanying the product.

For manufacturers of proprietary brand cosmetics in retail distribution, ChainBeauty B2C is the notarization solution that provides all final information for the customer.

By framing the QR-Code on the product label with a smartphone, the consumer can immediately consult the list of raw materials used, view the origin of the ingredients, identify the authenticity of the certified organic cosmetic, have certainty about the vegan product, check the cruel free guarantee and finally, obtain confirmation that it is a product allowed to the consumer of Islamic religion. In addition, the buyer can check the results of the product efficacy tests by reading the final evaluations of the reports issued directly by the appointed analysis laboratories or university research institutes. To complete the information on the cosmetic, you can finally insert the essential elements on the composition of the packaging with the related indications of stability, environmental impact and disposal methods.
Remember a key factor here: the thing that led to the transition from a movement to an industrial sector is the greater efficiency posed to the business modelling of the blockchain technologies. That's an entrepreneurs' task. Through their alertness they can diminish the energy intensive costs required by a new technology and in turn maximize the efficiency within. That is to say, when you look to a business model in the blockchain environment or you want

[3]Bnotary website: *http://b-notary.com/*

to develop one, there are two aspects which require careful attention and details: **value proposition** and **revenue stream**. The first is intended to explain what kind of usefulness is expected to give a particular project: why people should invest in it, believe in it, or use it. The second is aimed to explain how deep is the gain that a project can reach. Of course, the more the value proposition is high, the more the revenue stream will be high. Everything begins with the value proposition and everything ends with the revenue stream, a confirmation of the good alertness of the entrepreneur. In the end, that's the role of entrepreneurs: to anticipate consumers' demand as precise as possible.

Moreover, the **Nasdaq**, together with other stock exchanges such as the NYSE and the LSE, has continued to invest financial and human capital in blockchain technologies. Although too early to predict how these experiments will end, the benefits and investments are real.

The prospects for using blockchain technology in the **securities markets** are promising. And while the prospects of **tokenizing physical assets** are clear, reducing or eliminating the cost of back-office processes with blockchain technologies adds a boost to productivity and profitability: confirmation, processing and management of post-trade functions, reconciliation (confirmation of the correct movement of securities and cash), purchase/sale (the details of the exchanges: price, selling times, etc.), settlement/register performed in a fully automated way with blockchain technology. **Rather than keeping one's register centralized with tons of people working feverishly to keep everything in order, a consensus-based process can quickly reconcile positions and movements.**

A further advantage deriving from the shift of these functions in a peer-to-peer framework will be a slow but constant reduction of the operational risk since the risks can be learned over time and taken into consideration in the decision-making process.

For example, a product like B-Notary can facilitate strict transparency requirements for asset managers. For share brokerage relationships, the proxies can be controlled and applied almost in real time. With higher levels of trust imposed by programmable and executable contracts, investors can focus more on performance and costs than administrative distractions.

The first wave (2017-2018) of inefficient blockchain and cryptocurrency applications has been swept away, letting "survivors" create new businesses that offer real savings and value; and this is more than evident in the Fintech field. This development and the competition that accompanies it are positive both for the blockchain market and for future users of these products and services.

4. Best Practices

Before parting away, we want to shed light on a couple of example in which is best seen how blockchain technologies are helping firms to thrive and create value. Again, we can't but underline how Bcademy has a leading role on this transition thanks to its team and therefore

their skills. **Tokenomic** is a highly innovative project, centered on the virtualization of credit rights through the generation and distribution of tokens. A token is a digital representation of value, ergo represents in a virtual format a real asset. In this case, unlike a utility token, which usually represents a medium of exchange for an asset or service of the issuer, a security token represents a right, a legally protected claim towards the issuer, incorporated in its digital representation. This type of token is the subject of particular attention by financial authorities, which tend to assimilate it (case by case) to financial instruments or, more generally, to financial products. This classification is in principle the one proposed by FINMA and generally adopted in the absence of a standard, since the token classifications made by the financial authorities are manifold and none of them are universally recognized.

More generally, the Tokenomic project becomes particularly disruptive in a post COVID-19 historical moment where SMEs will be on the hunt for funding to survive. Many companies, especially in Italy, will find themselves facing an economic crisis probably worse than the previous one, and organically the unemployment rate will be destined to rise. It is estimated that start-ups (and more generally new-co) have been one of the main drivers of post-2008 recovery, and will probably be called even more to be in 2021, on the wave of new generations needing to create their own occupation. In this respect, the idea of investing in a start-up could weaken, while the idea of supporting a new-co to keep the production sector of its territory alive could survive. According to this dynamic it will therefore become fundamental that the new solutions for the purchase and transaction of quotas are easy to use and negligible cost, to break down any friction that can keep the ordinary person away from the investment in SMEs.

It becomes clear that in such a scenario the Tokenomic project represent an easy and viable way to gather funds, while remaining in compliance with the regulator. Through a simple online procedure it will be possible to comply with all the KYC and AML regulations directly from your smartphone, to then proceed directly to the purchase of shares with the guarantee of a transfer immediately notified and notarized on blockchain.

Tokenomic is an ecosystem based on the BTOKEN platform, which allows you to virtualize (tokenize), real assets as a service, in a simple and intuitive way. The perspectives are literally boundless: the tokenization can extend to any asset since the virtualization of real rights and credit, ergo the virtual representation of a real asset, made possible by the tokenization (and incorporation) operation, is almost unlimited: real estate or property income, percentages of business turnover or spin-offs, revenues from works of art or social media. The value offered is out of scale here: with a simple wallet via smartphone it is possible to exchange a multiplicity of assets in real time, without geographical borders, without commissions.

Side note: We have already sent a letter to Consob, asking for confirmation to issue tokens for that type of startup that have successfully passed a funding phase on the crowdfunding portal.

Alongside tokenization there's the financing needs of enterprises. And Bcademy recently has been the advisor of an Italian non-profit foundation that wants to raise funds in order to finance its project in the social media world. Let's start by saying that nowadays it is possible to make

a token sale with a level of 100% legality. Obviously this has greatly reduced the offer of new tokens on the market, but at the same time those who present themselves in this landscape have much more market. Precisely because they don't have to worry about any legal flaws. So despite the fact that costs have increased, and therefore barriers to entry, companies that now present themselves with a token sale are "forced" to be much more serious. As a rule, therefore, these token rooms are organized to raise funds that are at least around the million, if not more.

It brings utility to the market and consequently this new utility pushes users to consider it more valuable. Unlike IPOs or bond issues, tokenization opens up a new way of understanding investments. We are no longer passive spectators of a world that goes on with its own facts and looks only at the gain of the title. In this case the investor becomes an active part of the project, because he participates in the token community, actively uses it and therefore encourages its value thanks to the usefulness he finds in it.

LKSCOIN[4] is an intriguing project regarding the world of copyright. There is little to add about how confusing this sector is today and how many violations occur every day. LKSCOIN goes to solve long-standing problems regarding the rights of a work and its remuneration. For example, you will no longer have to pass the scrutiny of "experts" who make the crest on the original works of the authors. Your work is presented directly on the market and financed by those who intend to subsidize it through "likes". The most disparate social platforms can integrate LKS into their system and allow/encourage individuals to issue micro-payments with very low commissions. Needless to say, social networks are now a staple in the costume of individuals and something like LKS could even overcome LIbra by Facebook.

Then we have a project born from a public tender: **ChainLeather**. It concerns tanneries, which have a series of needs: to trace leathers from the raw material until they leave their warehouses and end up in stores. Supply chain tracking is done for a whole series of reasons, not least that they give leathers to external companies and often some of them go lost. In addition to the fact that tranneries want to innovate and trace the supply chain to understand how to optimize the processes within the company, to ensure that their product comes effectively from their wharehouses and to have a guarantee of quality.

And let us not forget that there are also project aimed to allow people to have full control of their coins thanks to a software called "wallet". These are the most common form of custodial service that, as far as for now, the cryptocurrency environment can offer. No intermediaries. And also here Italy has its own excellence, in fact an italian firm called Melis developed the definitive wallet for Bitcoin, Bitcoin Cash, Litecoin and Groestlcoin. The concept of national currencies, centrally controlled and manipulated by states is antithetical to the Internet. Furthermore, fiat money is not at all functional in online transactions. So the rise of the so-called "money of the Internet", with Bitcoin and a handful of other cryptocurrencies, will be consolidated by an offer of stability, usability, security and convenience, providing better and more efficient solutions.

[4] LKS Foundation website: https://www.lksfoundation.org/

With Melis users can get convenience, security and privacy all in one app. Melis team daily work is focused on maintaining this perspective: be the best with the least costs. This in turn helps them developing a better infrastructure and helps the users by having a service full of options and minimum expenses. Melis team goal now is to reach a wider pool of users. For more details check Melis website (melis.io). But Melis team is not only involved in this kind of developing, linked especially on cryptocurrency environment. In fact they are also a consulting firm. So, as readers have seen in this essay, Italy is a great forge of ideas and projects when it comes to blockchain technologies, each of them with huge perspective of growing in a world destined to be digitalized in the near future.

5. References

- *Bitcoin White Paper*, Satoshi Nakamoto
- *The Bitcoin Standard*, Saifdean Ammous, Wiley, 2016
- *L'economia è un gioco da ragazzi*, Francesco Simoncelli, Lulu.com, 2015
- *Economics in one lesson*, Henry Hazlitt, Harper & Brothers, 1946
- *The Austrian School: Market Order and Entrepreneurial Creativity*, Huerta De Soto, Edward Elgar Pub, 2008
- *Blockchain Revolution*, Don Tapscott, Portfolio, 2016
- *The Business Blockchain*, William Mougayar, Wiley, 2016

Additional information[5]

EU initiatives supporting the application of cryptocurrencies

The following pages show the main projects carried out in Europe on the topic of cryptocurrencies. After briefly describing the current European legislation, the scenario of programs financed by the European Union and any initiatives related to the European context will be analyzed. Specifically, we have focused on the Horizon 2020 program in which around 20 projects were developed directly or indirectly connected with the field of cryptocurrency research. Furthermore, a mapping of the main blockchain projects implemented by the European Union Blockchain Observatory has been detected and some data on the territorial distribution of the projects and the promoters have been observed. Research has been also carried out in the calls on trade innovation published on the POR-FESR portals of the Italian regions. This research have not produced any results regarding the financing initiatives for cryptocurrency-based payment systems.

1. UE regulation and policies

The legislative instrument on virtual currencies provided by the European Union Parliament is the anti-money laundering directive 843/2018 (ADML5). The goal of ADML5 is to prevent money laundering and terrorist financing that occurs through the financial system. This directive is the first that deals with the issue of cryptocurrencies and provides a definition of virtual currency:

"A digital representation of value that is not issued or guaranteed by a central bank or a public authority, is not necessarily attached to a legally established currency and does not possess a legal status of currency or money, but is accepted by natural or legal persons as a means of exchange and which can be transferred, stored and traded electronically ".

In terms of virtual currencies, the directive recognizes anonymity, through which users of the cryptocurrency market operate, as a constraint for the transparency of transactions, in fact through this mechanism some operators can make an improper use of virtual financial instruments for criminal purposes. In order to combat illegal transactions, the directive recognizes the figures of the provider engaged in exchange services and the custodian wallet provider and places them among the recipients of the directive. Furthermore, these subjects are obliged to register in specific national registers in order to allow a minimum level of

[5] This addendum to the report “state of the art – WP6/Currency of the future” has been prepared by Maria Cristina D’Aguanno, ART-ER.

monitoring of the operators and to reconcile the risk of anonymity of the transactions carried out through them.

However, according to a document of the Policy Department for Economic, Scientific and Quality of Life Policies, many players in the virtual currency market are not covered by ADML5, it follows that there are gray areas in which illegal actions can be carried out, such as money laundering, in complete anonymity and without any type of tracking. The elaborated document analyzes the state of the art regarding legislation and tries to evaluate its adequacy by detecting the critical issues.

2. UE funded or co-funded projects

Cryptocurrencies applications and use are considered today innovative topics of work, included within the general field of blockchain applications. According to information collected through EU programmes web platforms a few EU funded or co-funded projects have been financed and developed about cryptocurrencies and related digital platforms as specifics topics of work. Here are results of the survey developed, updated May 2020 about Horizon 2020 overall programme and about main territorial and interregional cooperation programmes.

2.1. Horizon 2020 projects

Research and collection about projects financed by Horizon 2020 programme concerning the topic can provide information about the state of the art on the use of cryptocurrencies in Europe.
The research has been carried out through the Cordis portal of the European Commission[6], the Community information service for research and development. Starting from the keyword "cryptocurrency", the site's search engine returned 20 results relating to projects carried out within the Horizon 2020 program and 3 projects funded by the European Research Council. Most of the countries involved are part of the European Union, being United Kingdom, Switzerland and Israel are also involved. Table 1 shows the number of Cordis projects per country and the related funds allocated.

Country	Number of projects	Financial resources
Italy	4	15.849.350,00
Austria	2	6.873.844,00
Belgium	3	4.893.713,31
Estonia	1	4.527.917,50

[6] https://cordis.europa.eu

United Kingdom	2	4.121.621,86
Germany	2	3.977.599,95
Israel	1	2.059.375,00
Greece	1	2.023.800,00
Poland	1	1.960.000,00
Netherlands	1	1.499.631,00
Switzerland	4	200.000,00
Spain	1	50.000,00

Italy and Switzerland have more projects than other countries and, moreover, Italy has been the country that has received the most economic resources. The projects conducted in Italy have as their object of analysis the risk assessment and cybersecurity within FinTech, like most of the projects funded. The blockchain systems in these projects are also declined for the innovation of the economic infrastructure, for example the creation of low-cost bank accounts compatible with the new digital financial instruments. Some projects concern the frontier of research in different sectors ranging from computer science to the management of European institutions. Finally, other projects analyzed consist of blockchain applications in areas other than commercial and economic, for example in the field of privacy or strictly technological.

2.2. Projects of the European Territorial Cooperation

Through a search on the main websites of the territorial cooperation programs, no projects has been found on the topic of cryptocurrencies.

As for the initiatives, Green Mind at Trasfiere was held in February 2019, an information event within the InterregMed framework. During the initiative, the Spanish R&D sector met the European Forum for Science, Technology and Innovation. More than 200 experts took part in the event and the topics covered were related to industry 4.0, innovative technology and systems including blockchains and cryptocurrencies.

3. Specific UE or UE-connected initiatives

3.1. The European Union Blockchain Observatory

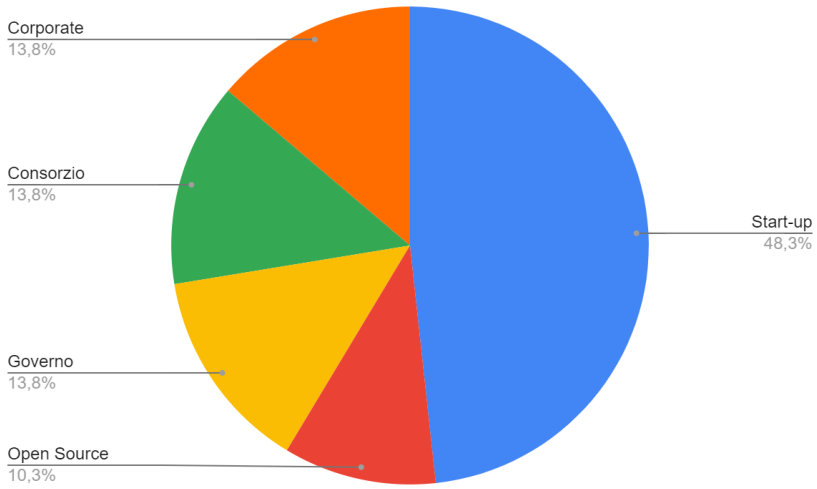
Another source used to understand the European cryptocurrency scenario is the European Union Blockchain Observatory website (https://www.eublockchainforum.eu/). The European Union Blockchain Observatory is a pilot project of the European Parliament and managed with the eagis of the Directorate General for Communications Networks, Content and Technology of the European Commission. The observatory has the task of accelerating blockchain

innovation and ecosystem development in the European Union. Among the missions of the observatory there is the monitoring of blockchain initiatives in Europe, through the map on the site it is possible to observe where these initiatives are located and from which reality they are carried out.

By selecting the initiatives relating to the "transactions and payments" application, 29 initiatives are detected within the European Union. Table 2 shows the initiatives distributed in the individual countries.

Country	Number of initiatives
France	5
Portugal	3
Spain	3
Belgium	2
Netherlands	2
Germany	2
Swedwn	2
Estonia	2
Luxembourg	1
Italy	1
Slovenia	1
Croazia	1
Denmark	1
Finland	1
Latvia	1
Romania	1

The country where the most initiatives has been found is France, followed by Portugal, Spain and Belgium. In many countries, including Italy, a single initiative has been taken over. Figure 1 shows the realities that implement blockchain-related initiatives in the area of payments and transactions.



In most cases, Start-ups contribute to the diffusion of a new product, the other realities involved are the companies, consortia, governments and collaborations that give life to open source projects.

At a national level, on the other hand, the initiatives implemented for the diffusion and development of cryptocurrencies are mainly of a formative and popular nature. The promoters of these events are the Chambers of Commerce of different regions that organize training events for businesses, traders and subjects interested in digital finance.

4. References

- https://cordis.europa.eu/it
- https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018L0843
- https://www.eublockchainforum.eu/
- https://ec.europa.eu/newsroom/fisma/item-detail.cfm?item_id=624021&utm_source=fisma_newsroom&utm_medium=Website&utm_campaign=fisma&utm_content=Cryptocurrencies&lang=en
- https://www.europarl.europa.eu/cmsdata/150761/TAX3%20Study%20on%20cryptocurrencies%20and%20blockchain.pdf
- https://ec.europa.eu/regional_policy/en/projects
- https://ec.europa.eu/info/departments/communications-networks-content-and-technology_it
- https://ec.europa.eu/info/departments/regional-and-urban-policy_it
- https://www.interreg-central.eu/Content.Node/home.html
- https://interreg-med.eu/
- https://greenmind.interreg-med.eu/news-events/news/detail/actualites/green-mind-at-transfiere/
- https://www.adrioninterreg.eu/
- http://www.sportelloeuropacomunevittoria.eu/programmi-di-interreg-che-coinvolgono-litalia/