

REGULATION OF CRYPTO INDUSTRY: CURRENT STATE, STRATEGIES & EFFECTS

**SKOLKOVO Financial Innovation
and Cashless Economy Centre**

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ABSTRACT

2018 may be marked as a year of crypto industry regulation. Most of the world's countries create work teams to develop laws and sometimes even pass legislations aimed at regulating actions of crypto industry participants. 35 out of 235 countries have already given an opinion on crypto industry regulation, but viewpoints of many regulators on this issue quite frequently change.

This report is the first in the series of reports, devoted to the crypto industry, by Financial Innovation & Cashless Economy (SFICE) Centre of The Moscow School of Management SKOLKOVO. It presents the analysis of global experience of crypto regulation and gives classification of possible regulators' strategies. The report will be useful not only for regulatory and government agents, but also for other participants in the crypto economy ecosystem: business representatives, regulatory initiatives lobbyists, companies that are active participants in crypto industry and engage in crypto activity, individuals who consider trading as a hobby or as a professional occupation, and everyone who is interested in crypto industry's global development. Regulation is one of the fundamental areas that should be taken into account when developing your own strategies of interaction with crypto industry, as well as determining direction of the current market state development.

Key findings:

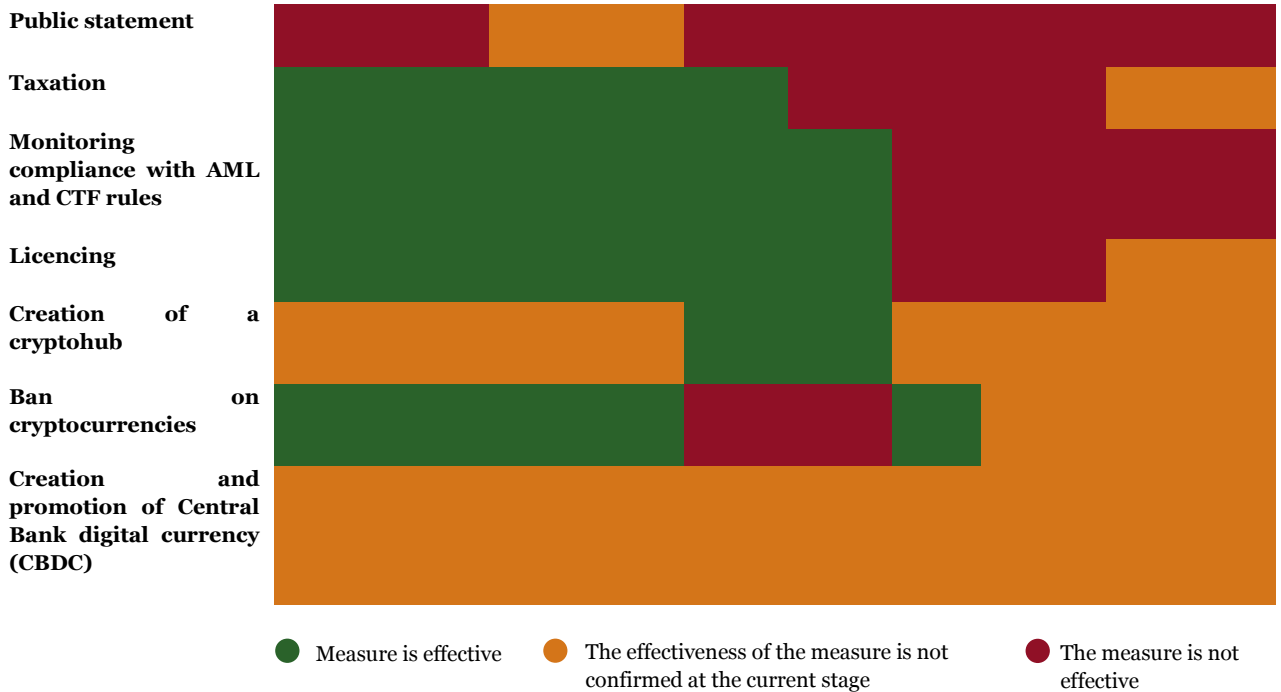
1. 5 key reasons that motivate crypto industry regulation include:
 - preservation of the financial and economic system stability;
 - protection of citizens from deception and loss of their investments;
 - desire to become a leader in the crypto industry and gain a new competitive advantage in the global market;
 - detaching from existing global monetary system or improving situation with your own weak local currency;
 - active contribution to economic and GDP growth.

2. 7 main regulator's actions aimed at the crypto industry:
 - public statement;
 - taxation;
 - licensing;
 - monitoring compliance with AML and CTF rules;
 - creation of a crypto hub;
 - ban on participation in the crypto industry;
 - creation and promotion of central bank digital currency (CBDC).

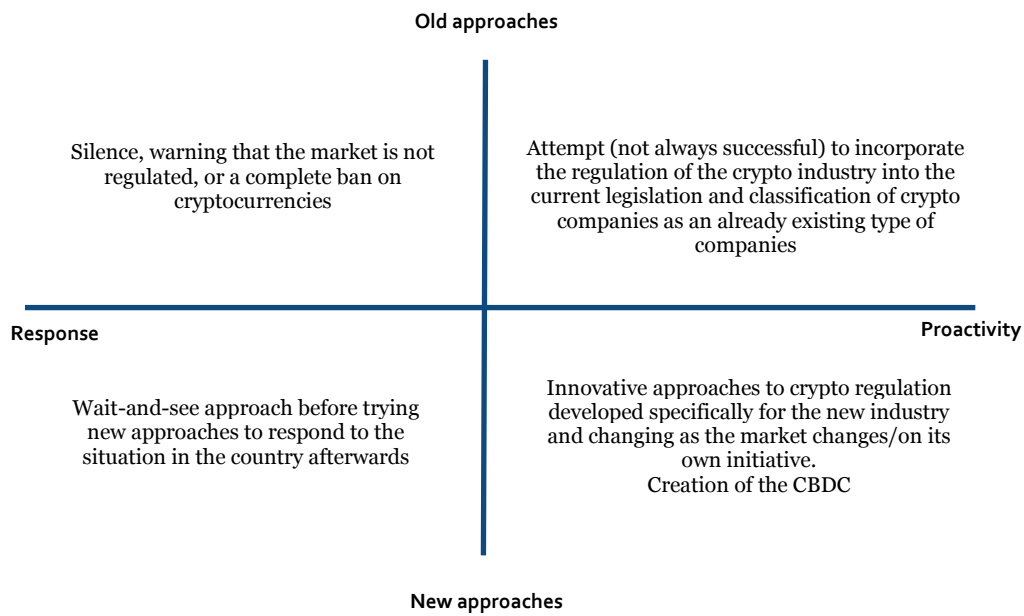
3. Effectiveness of these measures to achieve the above objectives:

Objectives

Preservation of the financial and economic system stability	Protection of citizens from deception and loss of their investments	Desire to become a leader in the crypto industry and gain a new competitive advantage in the global market	Detaching from existing global monetary system or improving situation with your own weak local currency	Active contribution to economic and GDP growth
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4. Crypto regulation strategies based on the current regulators' behavior are as follows:



INTRODUCTION

Over the past few years technological innovations, development of cryptography, as well as changes in perception of financial system by some communities have led to a breakthrough in yet another part of the financial industry – currencies. In 2008 someone under the pseudonym of Satoshi Nakamoto uploaded an article on Bitcoin to public access, which, according to many sources, is the beginning of discussion and development of cryptocurrencies.

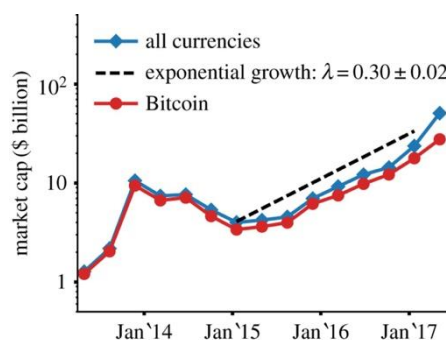
Cryptocurrency is a digital or virtual currency used as a means of exchange in the digital space (Internet), based on a distributed ledger technology (hereinafter – DLT). The “crypto” part means that this digital currency uses cryptography for the safety and verification of transactions, as well as for the control of the generation of new units of a particular currency. There is a special digital distributed ledger, in other words, a digital database that is either in open or limited access, and reflects all cryptocurrency transactions. These records cannot be changed without meeting the conditions specified by the technical protocol of the system.

It is worth emphasising that **cryptocurrencies are a subtype of tokens**. The difference between cryptocurrency and token is usually that cryptocurrency is a native/original token, which first appeared on the blockchain at launch and with which specific DLT is associated. Token, therefore, is an interchangeable (fungible) digital unit, which represents the value of the underlying asset in the digital space, allowing to transfer the right of control over the asset/entity to another party during transmission over the Internet (with the recording on the blockchain).

Cryptocurrency may have a limited supply (for example, according to some data, the number of Bitcoins is limited to 21 million) or may be unlimited depending on the original architecture of the currency.

ElBahrawy et al. (2017) studied **1469 currencies** and showed that capitalisation of all cryptocurrencies increased **exponentially** from January 2015 to May 2017, while the share of Bitcoin in the total capitalisation is gradually decreasing.

FIGURE 1. CHANGE OF CRYPTOCURRENCY MARKET CAPITALISATION IN USD BILLION

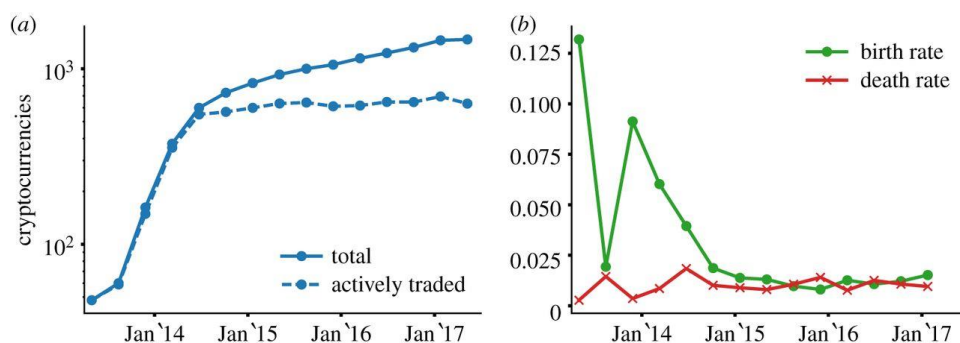


Adapted from ElBahrawy et al. (2017). Market capitalisation change, according to 15 week average data, from April 2013 to May 2017 for all cryptocurrencies (blue line) and for Bitcoin (red line). The dashed line is an exponential curve $f(t) \sim e^{\lambda t}$ with $\lambda = 0.3$



The authors also note that the largest increase in the number of cryptocurrencies was between mid 2013 and mid 2014. However, a few market indices have stabilised after mid 2014. These include the number of actively traded cryptocurrencies, distribution of market share and turnover of cryptocurrencies.

FIGURE 2-3. CHANGE IN THE NUMBER OF CRYPTOCURRENCIES AND THEIR BIRTH/DEATH RATE



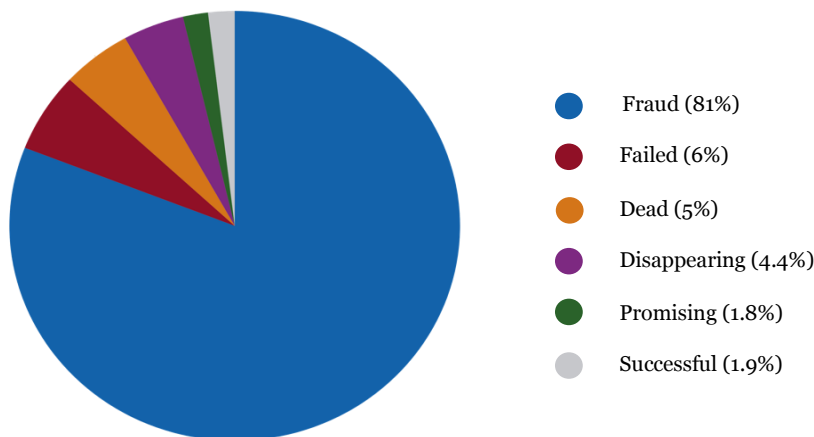
Adapted from ElBahrawy et al. (2017). The Chart (a) represents the number of cryptocurrencies that have ever entered the market (filled line) since April 2013 and the number of actively traded cryptocurrencies (dashed line). The Chart (b) represents the rate of birth and death of cryptocurrencies calculated over time. The birth rate (death respectively) is measured as the share of cryptocurrencies entering (leaving respectively) the market this week, compared to the amount of alive cryptocurrencies at the moment. The data over 15 weeks is averaged.

Many cryptocurrencies both quickly appear and die as well as other tokens. For this reason a lot of investors suffered from fraudulent organisations that collected money for ICO and then disappeared with all the funds raised.

Dowlat and Hodapp in their *ICO Quality: Development & Trading* divided all the projects on the issue of “coins” into 6 categories: **fraud (81%)**, failed (6%), dead (5%), disappearing (4.4%), promising (1.8%) and **successful (1.9%)¹** – **there were approximately 40 times more fraudulent ICOs than successful ones.**

¹ <https://news.bitcoin.com/80-of-icos-are-scams-only-8-reach-an-exchange/>

FIGURE 4. COINS/TOKENS WITH MARKET CAPITALISATION OF USD 50+ MILLION

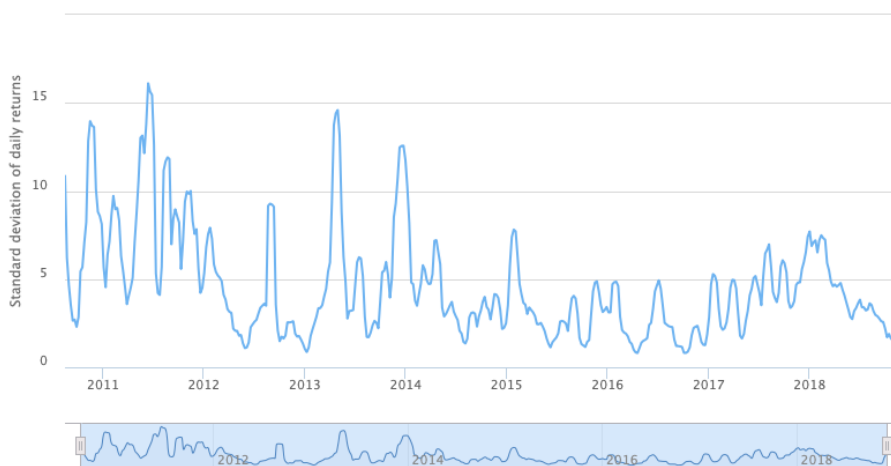


Source: Adapted from Dowlat and Hodapp (2018).

ElBahrawy et al. (2017) noted there were 1469 currencies from April 2013 to May 2017. According to Coinmarketcap, there are already a total of 1737 cryptocurrencies as of August 2018.²

Rapid changes in the market and a large amount of deceived investors have led to such a risky and very volatile market (see Bitcoin Volatility Index in Fig. 5), which became popular among ordinary people due to its openness and accessibility, being in need of regulation, in the opinion of state bodies responsible for the stability of the market, as well as of the immediate market players.

FIGURE 5. BITCOIN VOLATILITY INDEX FROM 08.2010 TO 00.2018



Source: Adapted from www.buybitcoinworldwide.com/volatility-index/

This report is dedicated to an overview of the global regulation of the crypto industry. Section 1 is devoted to the analysis of the behaviour of regulators in different countries in relation to the

² Analysis of the site's authors <https://coinmarketcap.com/all/views/all/>

regulation of the crypto industry and the main reason for its application. Section 2 consists of five parts, each describing the type of regulation currently existing in the crypto industry, the main motivation for its use and cases that reflect its use in the best way. Section 3 is devoted to the analysis of the central bank's digital currencies, which are one of the possible responses of the state to the cryptocurrency boom along with regulation.

SECTION 1. REASONS FOR CRYPTO REGULATION

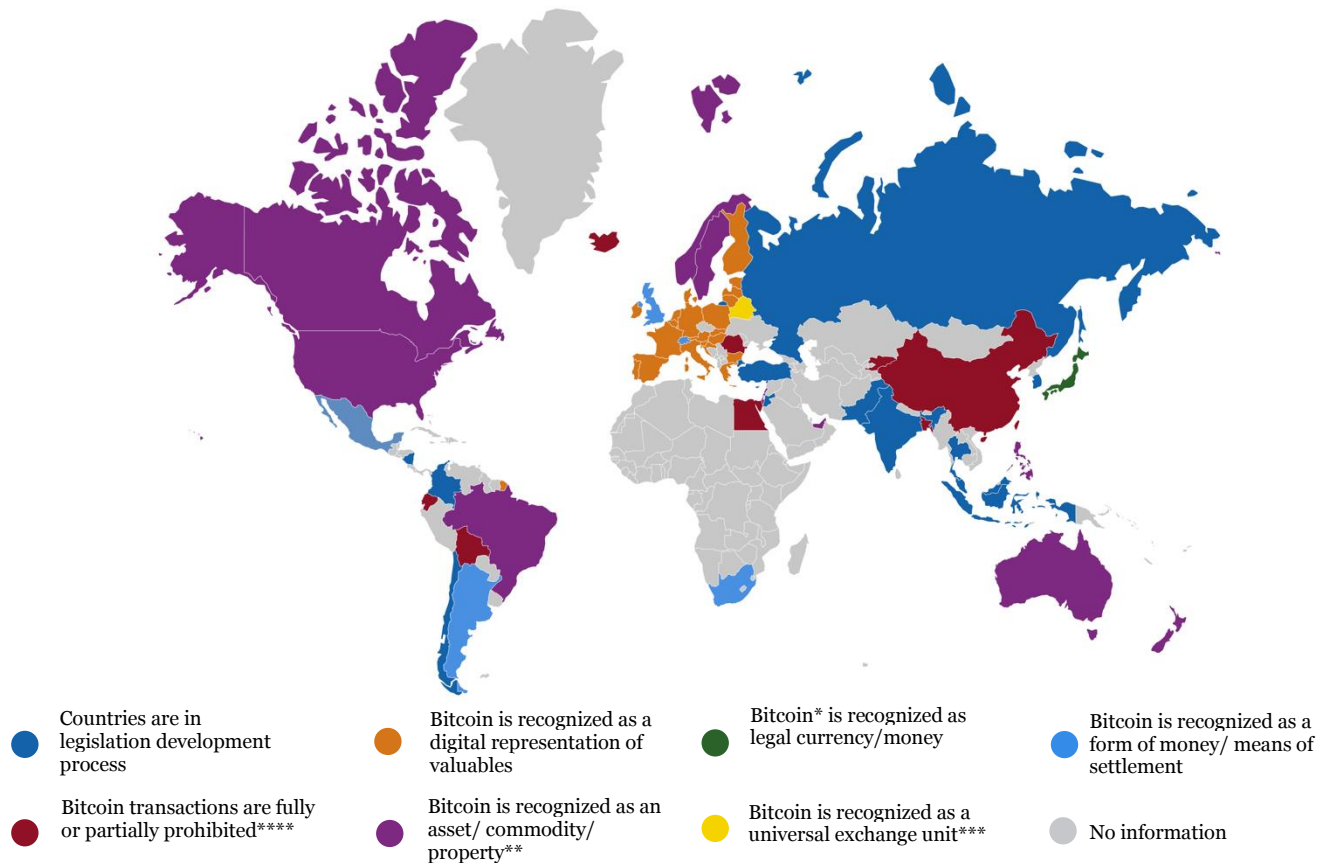
Although cryptocurrencies have begun to attract public audience in the last few years, talks on cryptocurrency regulation among different countries' regulators started in 2013, when cryptocurrency mania was just at its infancy and only enthusiasts who were interested in such a project owned and traded Bitcoins. For example, even before appearance of Ethereum – the second most widespread cryptocurrency and the first altcoin³ – Australia announced in 2013 that Bitcoin is an intangible property, which is used as an e-payment means and is subject to goods and service taxation. However, in 2014 ATO (Australian Tax Organization) concluded that Bitcoin is an asset, and continued to change legal regulations related to the crypto industry until 2018. Australia is just an example, and not the only country that is interested in regulating Bitcoin and other cryptocurrencies.

As you can see from **Map 1**, almost every country somehow expressed their opinion on and perception of Bitcoin as the main representative of virtual currencies. Most countries are in the process of developing legislation. However, there are also pioneering countries, such as Japan, where Bitcoin is recognized as a legal means of settlement; Republic of Belarus, where tokens (cryptocurrency, among other things) are considered to be a universal exchange unit, and the EU, where the tokens have been defined as a digital representation of valuables.

³ Altcoins are cryptocurrencies, alternative to Bitcoin.



Map 1. Definition of Bitcoin in different countries



* Bitcoin in most cases displays the attitude to all cryptocurrencies and is selected for simplification
 ** In this context, the position of Dubai on this issue is considered as the position of the UAE
 *** Belarus is the only country where this definition is officially adopted
 **** Bitcoin transactions are partially prohibited in Iceland only, and fully in other countries

According to the results of the analysis of open sources, the regulation of the crypto industry may stem from several key reasons. Firstly, it is the desire to preserve the stability of the financial and economic system. In some countries, the crypto industry has begun to play such a significant role that it would be too risky to ignore it. For example, Colombia became the third country in the world, after China and Nigeria (and number 1 in Latin America) in the rate of Bitcoin transaction growth, which grew by 1200% in 2017. At the same time, the cryptocurrency sector began to bring the Colombian economy almost as much as tourism, which accounts for just over 2% of GDP. This development of the industry makes regulators think about how to maintain stability and not lose control of a country that is beginning to depend on something that is only indirectly controlled because of its decentralised and global nature in use and distribution.

Secondly, some states want to protect their people from frauds and loss of their investment. There are leading countries in crypto regulation, the most striking example of which is Japan, where there are already quite comprehensive laws regarding work of the crypto industry, including approaches to licensing companies and the taxation of all participants. The creation of such laws was caused by the fact that a significant share of Japanese citizens suffered from hacked crypto

exchanges and out of business one-day companies who raised money for ICO and then disappeared forever. Unlike Japan, which has taken the path of careful regulation to prevent possible negative consequences of the rapidly developing crypto industry, some countries have decided to outlaw them (for example, China) after experiencing a number of issues resulting from the development and active use of cryptocurrencies, due to allowing them initially. However, some countries did not allow them, even initially, to avoid unpredictable consequences. Egypt is an example of such country – ban on Bitcoin exchange was connected there with religious postulates.

Some of the countries that initially banned everything connected to crypto industry, on the contrary, are now working on the legislation (Russia and Vietnam), realising, that the ban is a too radical measure, and trying to develop the industry in a direction which is the best for the country. Therefore the third reason for regulatory development, highlighted in this report, is the desire to become a leader in the industry and gain a new competitive advantage in the global market. Switzerland, Luxembourg, Hong Kong, Belarus, Armenia and other countries supporting the development of innovations, wishing to become the first crypto hub in the world, have created a detailed regulations, in addition to providing tax remissions for innovative crypto business attraction, for which it is easier to work in places where their activity is well defined and tax-exempt.

The fourth significant reason for some countries is to detach from existing global monetary system or to improve the situation with a weak national currency. Key examples are Ecuador and Venezuela, who have already released and tested the use of state digital currencies. The failed Ecuador case is described in more detail in the section on the central bank's digital currencies of this report.

The last reason that can provoke regulation of the crypto industry is active contribution to economic growth and increase in GDP. For many island states, which are famous for their offshore reputation, the crypto industry has become a new source of revenue, as many cryptocurrency businesses have begun to register and perform their operations in these countries. For a number of such countries, the introduction of their own cryptocurrency is a measure of stimulating their economy (see Section 3 for examples).

These five reasons are key motivators for introducing regulation in the crypto industry, but in addition to the reasons it is necessary to highlight 7 main actions on the part of the regulator aimed at the crypto industry:

- public statement;
- taxation;
- licensing;
- monitoring compliance with AML and CTF rules;
- creation of a crypto hub;
- ban on participation in the crypto industry;
- creation and promotion of state cryptocurrency.

Many states have either chosen or are in the process of selecting a set of these instruments. Each of these measures has been analysed in more detail in the subsequent sections of the report.

SECTION 2. OVERVIEW OF THE REGULATOR'S ACTIONS⁴

Public statement




Motivation to use and expected effects

The public statement of the Central Bank on the crypto industry was the first reaction to its active development and was made by almost all countries. For the record, the statements were negative (the Central Bank does not support anything related to crypto currencies), positive (crypto economy may become a priority for the country) and neutral (all members of the crypto industry carry their risks on their own as this field is not regulated yet).

However it is possible to identify two types of countries: ones that made a statement and continued working on the legislation and ones that have thus shed responsibility for any current or future incidents related to the crypto industry.

Such public statement is not a measure as it is, but may serve as a warning or, conversely, an incentive for some market participants. In the first case, there is a possibility that CB's statement will partially protect some groups of citizens who would have made a mistake from misunderstanding that their investments and action are legally protected from fraud. This measure restrains reacting (usually untrained) market participants from reckless actions in the crypto industry. In the second case, this may serve as a signal for investors, businessmen and traders that the country is open for crypto economy development.

TABLE 1. EFFECTIVENESS OF THE PUBLIC STATEMENT MEASURE

	Objectives					
	Preservation of the financial and economic system stability	Protection of citizens from deception and loss of their investments	Desire to become a leader in the crypto industry and gain a new competitive advantage in the global market	Detaching from existing global monetary system or improving situation with your own weak local currency	Active contribution to economic and GDP growth	
Public statement						
	 Measure is effective	 The effectiveness of the measure is not confirmed at the current stage	 The measure is not			

⁴ All data is specified as of September 2018



Taxation

Motivation to use and expected effects

Taxation is the most common method of regulation. A state starts to realise that the majority of crypto market participants join it to obtain sufficient income/profit from participation in trade/exchange of cryptocurrencies or tokens due to the high volatility of the latter. In its turn, the state can not only get additional income to the state's funds through taxation, but also (as a part of actions to minimise fraudulent activity in the market) reduce the number of untrained and suspicious participants who want to take part in such a risky initiative.

Channels

Tax rates vary from country to country, as do the objects of taxation. Basically, the main reason for applying different tax rates is differences in determining what cryptocurrency is at the state level and, accordingly, already existing tax rates. Currently most countries (about 18, according to open sources) consider cryptocurrencies as an asset (e.g. Brazil, Bulgaria, Australia), gold or other exchange commodity (e.g. Austria, Canada). However, some states define them as property (Israel), private money (Great Britain, Germany) or legal means of settlement (Japan) (see Map 1). The definition of Bitcoin and other virtual currencies has evolved in many countries. For example, as it was noted earlier, in Australia cryptocurrencies moved from intangible property to the category of financial assets, which immediately affected what taxes should be paid by residents involved in the trading of the virtual currency (see Case 1). Moreover, taxation also depends on current legislation, as not all countries have developed special laws aimed at regulating cryptocurrencies, but rather used current legislation to justify way of cryptocurrencies taxation, assigning to it the status of a financial asset or a commodity/property.

In general, the following events are taxed, and they will be discussed specifically in this report:

- exchange of cryptocurrency for fiat currency (for example, USD, EUR, etc.);
- exchange of cryptocurrencies for other cryptocurrencies;
- use of cryptocurrency for the purchase of goods or services;
- obtaining cryptocurrency as a result of fork or mining.

However, there are events that are not usually taxed:

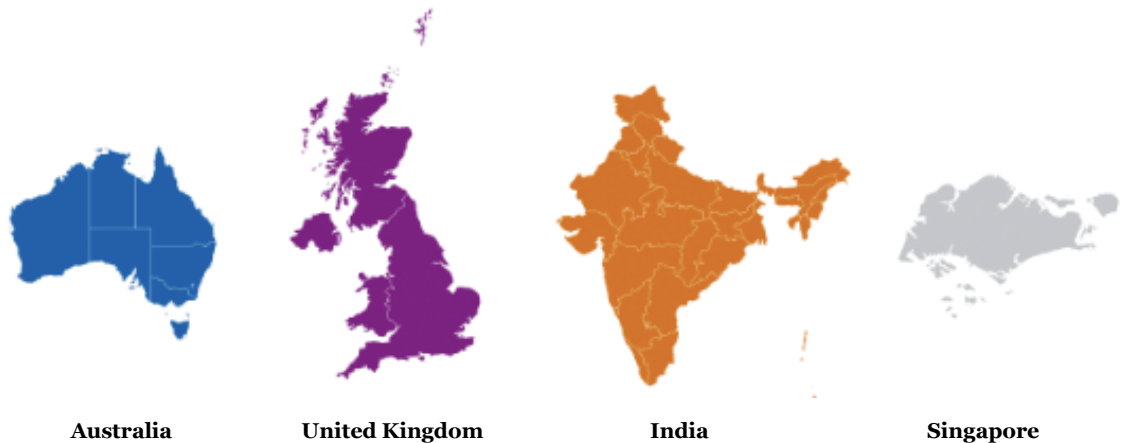
- purchase of cryptocurrency using fiat currencies;
- transfer of cryptocurrency to a tax-exempt organisation;
- donation of cryptocurrency (however, if the amount of donation is large enough, donation tax payment may be required);
- transfer of cryptocurrency between client's wallets.

These operations may also begin to fall under taxation in the future, but at the moment, no such cases have been seen in the world.

In total, there are currently several taxation strategies of individuals and legal entities related to the crypto industry — this is the introduction of the:

- goods and services tax;
- capital yield tax (as part of personal income tax or corporate tax);
- value added tax;
- or tax exemption.

Goods and Services Tax



Some countries, such as Australia, the United Kingdom or Singapore, have begun to tax cryptocurrencies on goods and services (Goods and Services Tax or GST), considering cryptocurrency as a service, private money or intangible property. However, Australia has taken a step forward and removed GST for cryptocurrencies (GST still applies to other non-payment tokens granting the right to a product or a service).

Case 1. Australia and GST

Situation and motivation: One domain that has been the focus of the last few years in Australia is double taxation of digital currencies under the Act on Goods the Services Tax of 1999 (GST). In December 2014, in response to the development and growth of use of digital currencies, and in search of certainty in this field, the Australian Taxation Office (ATO) issued a series of tax regulations for Bitcoin, namely GST and income tax. In this statement, ATO reported that Bitcoin is considered a form of intangible property, and as a result, any of its internal offers in exchange for fiat currencies will be subject to GST. In addition, internal transactions in which Bitcoin was exchanged for other taxable goods and services were considered a barter transaction and were also subject to GST. This approach has led to the situation where consumers using bitcoin as payment for other goods and services were subject to GST twice – firstly when buying bitcoin and then secondly when exchanging it for other goods and services. This has led to a decrease in use and development of digital currencies.

Solution: In March 2016, the Australian government announced its support for the development of financial technology in the country, and in the summer of 2017 announced that, as for the 2017–18 budget, double taxation of digital currency will be cancelled. Since 1 July 2017, digital currency under GST is considered to be money.

Conclusion: The Australian economy is going through a major transformation, moving from growth driven by investment in resource projects to larger growth drivers in other parts of the economy. The Australian government is actively promoting this transition by encouraging new ideas and stimulating innovation, including those in the area of financial technology. The fact that the government has reconsidered its attitude towards virtual currencies proves that the Australian government is open to the domestic development of crypto economics.

Income taxes from capitalisation and selling of financial assets, personal income tax and corporate tax

Capital yield tax on cryptocurrencies, including tax on profits from the sale of cryptocurrencies, is the most common in the world (Table 1), as it affects cryptocurrencies when they are determined as a financial asset or property traded on exchanges. Such a definition of cryptocurrencies has been adopted by many countries, especially in the west, where stock markets are at a higher level of development compared to other countries.

Capital yield tax is an income tax that occurs when a transaction is taking place involving asset transfer (in this case, cryptocurrency), which increases in price. These operations include:

- sale of cryptocurrency;
- transfer of cryptocurrency as a gift;
- exchange of cryptocurrency for something else;
- receiving compensation for cryptocurrency — as an insurance payment for loss or destruction.

Most often, capital yield tax means either a corporate tax or a personal income tax, depending on who is engaged in crypto activity — legal entity or an individual. Moreover, corporate taxes may vary for individual traders and companies engaged in economic activities (business) and for traders engaged in speculative activities, as well as for companies engaged in mining.

The wording of the principles for taxation of virtual currencies including speculative activity (in other words, speculation on cryptocurrency volatility), is found in the official statements of only two countries (Italy and Belgium) and may change in the future as both countries are members of the EU. The European Union is in the process of developing pan-European legislation, which can potentially change the current status of cryptocurrencies and define other concepts related to the crypto industry (e.g. The 5-th Directive, as defined in Case 4).

Most often, this method of taxation is chosen by countries with developed capital markets and detailed regulation of financial transactions.

There are several types of issues associated with this type of taxation. Firstly, it is often impossible to track the moment when a simple hobby of an individual becomes the main source of income, so in many cases vague wording leads to the appearance of grey areas of regulation and tax-dodging. Secondly, such taxes (usually high, especially in European countries) often reduce the interest of innovative firms to enter markets where these taxes are applied. On the other hand, the regulator ensures that illegal and non-transparent activities leave their country, and increases revenues to the state budget. This is expected, as there are a significant number of cases of fraud of ordinary investors who have lost large sums of money. The best example of this outcome is Japan, where the biggest hack in the history of the crypto industry was registered. The case of the crypto exchange **Mt Gox**, where **850,000** Bitcoins **were lost**, provoked the most thorough regulation of the crypto industry in the world at the moment, including trading taxation and licensing of crypto companies. By the way, Japan also has the highest progressive tax on personal income, which can amount up to 55%.

Despite the advantages of regulation and high taxation in terms of protecting markets from illegal activities, excessively strict regulation and high taxes may harm the development of the innovative environment in the country. Therefore, some countries choose tax remissions and create tax holidays for companies involved in cryptocurrency trading or mining.

TABLE 2. RATES OF TAXATION OF INCOME FROM THE SALE OF CRYPTOCURRENCIES

Country	Rate for individuals	Rate for legal entities
Australia	Progressive tax is from 8% to 34% [only 1/2 of capital income is taxed]	30% 15% [if SMSF ⁵]
Belgium	Depending on the level of actions “speculativity”: <ul style="list-style-type: none"> • high-risk income – 33% • in other cases – progressive tax is from 30 to 50% [personal income tax] 	33,99% [Corporate tax]
Bulgaria	10% [personal income tax]	- ⁶
Brazil	15% [if the amount is > 35,000 reals, ~ \$11,000]	-
United Kingdom	Progressive tax is from 0% to 45%	20% [for miners] 10% [for all others]
Germany	26.375% [if the amount is > 600 euros] 0% [if time of holding is > one year]	30%
Denmark	-	22%
Israel	25%	46%
Canada	50% [investment, only 1/2 of the amount of capital income is taxed; the rate depends on the province]	25% [self-employment]
Latvia	20%	-
Malaysia	Progressive tax is from 1% to 28% [personal income tax]	-
Norway	25% [if the holding time is < one year]	-
Poland	Progressive tax is from 18% to 32%	-
Portugal	28%	Progressive tax is up to 48%

⁵ SMSF – Self-managed Super Funds – is a private fund (*superannuation fund*) regulated by the Australian Taxation Office (ATO). This fund is managed by a person/group of people independently. There are up to four members in SMSFs. All members must be trustees (or directors, if there is a trustee) and be responsible for decisions made concerning the fund and for compliance with relevant laws.

⁶ In this table, “-” denotes the lack of reliable information in public sources.

Slovenia	Progressive tax is from 16% to 50%	19%
UNITED STATES	Progressive tax is from 10% to 39,6% [depending on income and the state]	-
Thailand	15%	-
Finland	30% if the amount is < 30,000 euros 30% if the amount is > 30,000 euros	20%
France	19%	45% [Business income tax]
Sweden	30%	-
Switzerland	The rate is determined at the end of fiscal year depending on income	11.5%–24.2% [corporate tax depends on location in the country]
Estonia	21%	-
The Republic of South Africa (RSA)	Progressive tax is from 18% to 45% [personal income tax] 18% [for long-term investment]	28% [Corporate tax]
Japan	Progressive tax is from 15% to 55% [Income tax on cryptocurrency]	-

Value added tax

The sale of cryptocurrencies can be subject to VAT if they are treated as goods, and cryptocurrency payment transactions are treated as a barter deal. Some countries retain the old laws on VAT payment, that is, the value of the goods payed with bitcoins includes VAT on release of product. This is where taxation ends.

Many countries and regions have abolished VAT for their residents (more details in the section “Tax Holidays”), for example, the European Union, but only in case of cryptocurrency exchange for fiat currency. If goods or services are payed with cryptocurrencies, VAT remains untouchable and is paid according to all the rules and regulations prescribed, as, for example, in Estonia, Germany and Ireland. The only countries in the EU that have thought about introducing VAT to cryptocurrency exchange for fiat currency are the Czech Republic and Sweden. In the Czech Republic, a special VAT rate is still being set, and in Sweden it is 25%. Outside the European Union, only Israel imposed 17% VAT.



Israel
(17%)



The Czech Republic
(in the process of setting)



Sweden
(25%)

Case 2. VAT in Sweden

Situation and motivation: Sweden decided to introduce VAT on bitcoin transactions. Bitcoin is considered in this country not a currency, but an asset (as a work of art or jewelry). At the same time bitcoin transactions are considered to be a barter deal.

Solution: In such a barter transaction each transaction and side should be considered separately. If bitcoins are received from an individual, but not from a legal entity, VAT is not paid. If a client (an individual) purchases goods from the company and pays in bitcoins, the transaction should be considered as two transactions:

- A client purchased goods from a company.
- A company bought several bitcoins from a client.

In the first transaction VAT is added by the company and is recognised as VAT on output (25% according to Swedish legislation). There is no VAT in the second transaction because the company purchases bitcoins from an individual. Later, if the company wants to exchange bitcoins, the transaction will be recognised as a bitcoin sale (regardless of whether bitcoins are exchanged for a currency or for a product/service) and will be subject to VAT (same 25%).

Conclusion: Despite the fact that Sweden is one of the few countries that introduced VAT on bitcoin transactions, the system of tax calculation is described with examples and details in official sources. It makes the process much easier for companies and individuals.

Tax exemption

Non-taxation is not the most common practice. However, there are countries which follow that route, for example, the Republic of Belarus. These countries want to attract investments, they look for new competitive advantages developing the crypto industry. There are countries which apply these measures only partially. In this case there are two options:

1. **Full tax exemption** for people with **certain investments** or for certain crypto businesses:
 - Armenia case, where all mining companies will not be subject to taxation until 2023.

- Germany case, where the tax on long-term investment income for individuals (> 1 year) is reduced to zero.
2. **Exemption** of all people/businesses from **certain taxes**:
- Thailand case, where at the beginning the VAT was set at 7% for individuals, but in 2018 it was abolished.
 - The Republic of Belarus exempted from taxes all people and businesses connected with crypto industry (more detailed description of this case is in the section about licensing).
 - There are no taxes on currency trading losses in all countries.

TABLE 3. COUNTRIES WITH FULL OR PARTIAL NON-TAXATION ON CRYPTOCURRENCY TRANSACTIONS

Country	Zero taxes
Armenia	Taxes for mining businesses
The Republic of Belarus	All taxes for crypto-businesses Capital gains tax
Germany	Taxes for mining businesses Long-term investment income tax (> 1 year)
The EU	VAT
Cyprus	Capital gains tax
Costa Rica	Capital gains tax if trading is not a core activity.
The Netherlands	There is no capital gains tax for companies or individuals if trading/mining is not the main source of income/business operations.
Isle of Man	Capital gains tax
Dubai	Personal income tax Corporate tax
Puerto Rico	Federal personal income tax Capital gains tax
Singapore	Capital gains tax
Switzerland	Capital gains tax
Thailand	VAT

There is no "best" approach to taxation

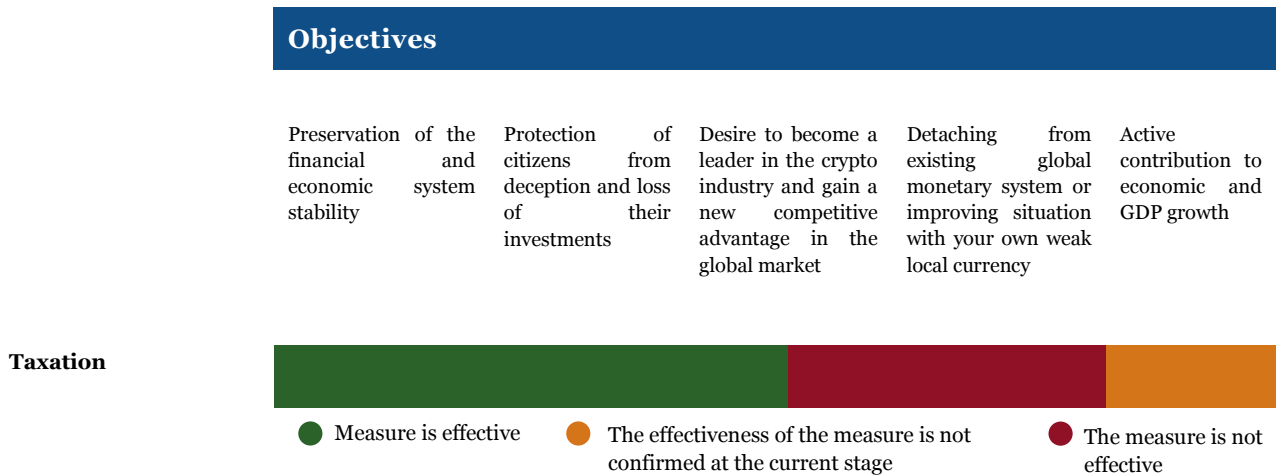
There is still a number of open issues concerning a better approach to cryptocurrency taxation. The Australian case shows that the selection of favorable taxation is an iterative process of changing taxes for obtaining the desired result.

In general, current taxation differs in many countries. The countries try to adjust the new industry to the current financial legislation misguiding users and investors. It is hard for them to understand how they should report their cryptocurrency activities profits and whether they should report their profits at all. There are countries that treat crypto business as a usual business applying the same tax rates. There are countries that apply new special rates on crypto business to either get rid of fraudsters and minimise risks imposing barriers on the entry into the industry or, vice versa, to provide a basis for crypto business development on its territory through tax exemption of companies and individuals.

On the part of individuals, taxation looks a little bit easier, because in most cases it implies independent income reporting in the tax return. However, there is another issue. Many cryptocurrencies were created to ensure that all cryptocurrency transactions are anonymous. How to track who should pay taxes and who should not?

For this reason both global and local regulators started thinking about introducing other types of regulation which will both help to manage collection of taxes and combat the financing of terrorism (CFT) and money laundering (AML). These methods include compliance with AML and CFT regulations which are the subject of the next section of this report.

TABLE 4. EFFICIENCY OF THE MEASURE "TAXATION"



AML and CFT Regulations

Motivation to use and expected effects

This type of regulation is used primarily to prevent illegal activities of companies related to money laundering and terrorist financing. They are becoming widespread due to the cryptocurrency anonymity and the possibility of cryptocurrency exchange for fiat currency on the cryptocurrency exchanges. This area of regulation has become particularly relevant after several major events connected with the financing of known terrorist groups⁷ using bitcoins and using anonymous currencies (for instance, Monero and Zcash) for “dark web” payments.

Channels

Compliance with anti-money laundering rules can be: 1) part of the new law developed specifically for cryptocurrency companies; 2) part of the licence to be obtained by a legal entity connected with cryptocurrencies; 3) a separate measure aimed at the regulation of the crypto industry. The AML/CFT regulations are almost always applied to the two types of crypto business: cryptocurrency exchanges and wallet operators, because these organizations are directly involved in the cryptocurrency transactions between persons. In most cases the lists of regulations are similar to each other in different countries:

- 1) compliance with KYC procedures (identification and verification of users);
- 2) tracking large and suspicious transactions, as well as reporting about it to the appropriate public authorities;
- 3) Application of corresponding penalties for non-compliance.

However, each country can also include additional regulations and decide what is considered a big and suspicious transaction. In Austria transactions and participants are displayed at levels greater than €10,000 or \$12,000, and in the Isle of Man anyone who buys bitcoin must disclose information about a transaction if it exceeds €1,000 (about \$1,036).

There are countries which deliberately classify companies connected with cryptocurrencies under existing types so that they fall under existing AML requirements. Thus, since 2014 the amendments have been made to Canadian legislation against money laundering to classify persons “dealing with virtual currencies” as “money service businesses” which fall within Canadian regime against money laundering and financing of terrorism.

There are countries which follow an entirely new path of defining cryptocurrency operations. Mexico case is a good example of the country where crypto companies have gained their own status – financial technological institutions. Now they have to comply with AML/CFT regulations in accordance with the new legislation aimed at regulating these institutions.

Case 3. Australia and AML & CFT

Situation and motivation: In Australia, despite the early attempts to control bitcoin, there were no amendments to AML and CFT regulations for crypto companies till 2017. Because of anonymity issue there are cases of illegal transactions using cryptocurrency all over the world. It made a regulator start thinking over the necessity to make cryptocurrency exchanges comply with a number of rules.

⁷ <https://www.cfr.org/blog/bitcoin-bombs>



Solution: In 2017 amendments have been made to the legislation. They have been made specially for cryptocurrency exchanges. Now the exchanges have to comply with the following rules:

- KYC procedures (identification and verification of users);
- Tracking large (more than \$ 10,000) and suspicious transactions, transfer of this information to AUSTRAC;
- registration in the national register of cryptocurrency exchanges;
- establishment of a control protocol to identify, reduce and manage the risks of money laundering and financing of terrorism;
- storage of certain data on transactions and clients' ID for seven years;
- Penalties for non-compliance: up to two years imprisonment and/or a fine of 150,000 AUD.

Case 4. The European Union and the 5th AML Directive

Situation and motivation: The European Union has remained silent for a long time concerning regulating crypto industry in general, and AML/CFT regulations in particular. However, development of crypto industry in the USA has led to emergence of a significant number of companies and exchanges where active and uncontrolled trade for unknown purposes took place. New rules and standards were created, first of all, to counteract real risks connected with misuse of a technology and financing of terrorism due to anonymity of cryptocurrency transactions. It was discovered that the significant part of illegal income in bitcoins is cashed via services based in Europe⁸.

Solution: The legislation known as the 5th Anti-Money Laundering Directive was adopted in the EU in spring 2018 to make AML and CFT regulations clear for businesses. They have to comply with these regulations if they conduct their transactions in the European Union.

The new legislation covers two types of cryptocurrency business:

- 1) cryptocurrency exchanges;
- 2) services of cryptocurrency wallets (services that store the keys of their users).

These business categories will become “mandatory entities” under the new legislation, similar to such traditional financial institutions as banks. They will be required to implement measures to counter money laundering and financing of terrorism, such as customer due diligence (including KYC) and transaction monitoring. They will also be obliged to keep a comprehensive record of transactions and report suspicious transactions. The implementation of the regulations across the EU should be made by the end of 2019.

Conclusion: Compared to other countries, for example, Japan or the USA, the European Union introduced its directive relatively late. However, the fact that the EU did not classify crypto businesses within existing types of companies to solve the problem, but, on the contrary, singled them out as separate mandatory entities, demonstrates that the EU, in contrast with many countries, does not avoid the question, and is engaged in resolving issues of crypto regulation.




In addition to the fact that AML and CFT regulations are aimed to protect the state and its citizens, they are also initiated by the global regulation. FATF (Financial Action Task Force) develops recommendations that help countries establish their own regulatory system to combat money laundering and financing of terrorism. At the time of writing this report (September 2018) FATF has just planned several initiatives. First, it is development of recommendations to investigate criminal activity where digital currencies have been used to launder money or to finance terrorism. Second, determining whether there is a need to modify existing FATF recommendations so that they can be applied to cryptocurrencies and other cryptoassets. That is why FATF recommendations are likely to become national regulations soon, and user

⁸ <https://www.elliptic.co/our-thinking/5th-aml-directive-eu-regulation-cryptocurrency>

identification rules for AML and CFT regulations will be a mandatory condition for cryptocurrency exchanges, cryptocurrency wallets and, probably, for other new players in crypto industries in most countries.

It should also be noted that yet today there are states with developed AML and CFT regulations, which are part of the obtained license for cryptocurrency exchanges and wallet operators for functioning inside the country. In the following section of this report there is a more detailed description of that.

TABLE 5. EFFECTIVENESS OF THE MEASURE “CONTROL OF COMPLIANCE WITH AML AND CFT REGULATIONS”

	Objectives					
	Preservation of the financial and economic system stability	Protection of citizens from deception and loss of their investments	Desire to become a leader in the crypto industry and gain a new competitive advantage in the global market	Detaching from existing global monetary system or improving situation with your own weak local currency	Active contribution to economic and GDP growth	
Monitoring compliance with AML and CTF rules						
	 Measure is effective	 The effectiveness of the measure is not confirmed at the current stage	 The measure is not			

Licencing

Motivation to use and expected effects

Licencing is one of the most common approaches to regulating organisations connected with the financial industry. Therefore, regulators begin to develop special rules for licencing cryptocurrency companies. First, it is the natural selection of companies participating in the cryptocurrency market in order to reduce risks and increase security. If a business initially does not meet certain criteria for obtaining a licence, it cannot operate in a particular market, and therefore carry out fraudulent operations. For example, most often, the licence is issued to companies that have a clearly defined business plan, a strong team, initial capital, reports on activity and non-involvement of management in criminal activity, as well as all the required documents proving the existence of the systems that can help to monitor money laundering, financing of terrorism, including the “KYC” (know your customer) and the identification of large transactions. Second, licences help to follow up on the organisation and its activities as the licence is often issued for a limited period of time and it must be renewed for each period. Therefore, companies should report on compliance with the regulations. In case of non-compliance with the rules, the owners of the company can pay a fine or lose their licence and, as a result, their business. Finally, license fees are additional revenue for the state.

Channels

Licences have different content, but the following requirements can be distinguished from all existing licenses for crypto business, particularly for cryptocurrency exchanges.

- 1) Applicants must have:

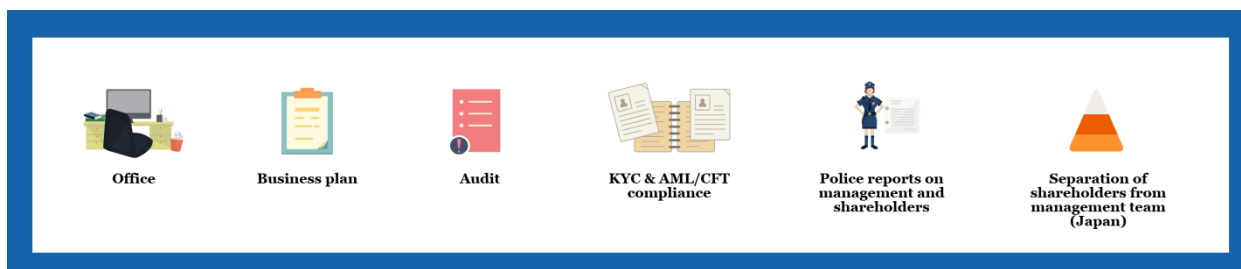


TABLE 6. CAPITAL REQUIREMENTS FOR CRYPTOCURRENCY EXCHANGES IN DIFFERENT COUNTRIES

Country	Current capital requirements
Australia	\$ 50,000 + 5% capital reserve (different coefficients are applied after \$100 million in assets and reserves)
Belize	\$50,000 min.
The Republic of Belarus	capital from \$100,000 to \$500,000 in a local bank
Luxembourg	€350,000 min.
Japan	¥10 million min. (\$93,500), but it is recommended to have more than ¥50 million (~ \$ 500,000)

2) Registration fee and/or annual fees.

In Belize, fees range from \$18,000 to \$25,000 including registration fees, in the Philippines they range from €10,000 to €20,000. Moreover, in the Philippines, CEZA (local regulator) also requires companies to have an equity capital of at least \$1 million within two years and to pay up to \$100,000 royalties.

3) Requirements for transactions (if they exceed a certain amount).

In the Philippines, for example, payments over 500,000 pesos or this equivalent amount in foreign currency per transaction must be made either by cheque or by direct deposit into the account.

4) Use of best practices in asset management.

In order to issue a license the state and the regulator, first of all, must acknowledge crypto industry companies as legitimate. As mentioned earlier, many countries are moving towards integrating crypto businesses into one of the existing classifications of company activities (Table 4).

TABLE 7. LICENCE TYPE FOR CRYPTOCURRENCY EXCHANGES/WALLET OPERATORS IN DIFFERENT COUNTRIES

Country	Licence type
Australia	Licence for financial services
Belize	Licence for capital management
Quebec	Licences in accordance with the local Money-Services Businesses Act
Luxembourg	Licence for payment institutions (e-money)
Philippines	Licence for cryptocurrency exchanges
Estonia	Licence for companies engaged in investment services
Estonia	Licence for loan institutions
Estonia	License for business activities to provide services of alternative means of payment
Mexico	Central Bank licence for the financial technological institute

There are also less standard cases, for example, Mexico, where the legislation defining cryptocurrency operators as previously non-existent financial technological institutions (FTI) was adopted. According to the new Regulation of Cryptocurrency Exchanges Act all financial institutions will be permitted to work with FTI, and FTI will be considered as important to the financial system as banks, and, therefore, will obtain a licence for functioning.

It is worth noting that some countries do not pay attention only to crypto companies licencing. Some countries give preference to crypto industry and creation of crypto hub becomes one of the national tasks. It will be discussed in the next section.

TABLE 8. EFFECTIVENESS OF LICENCING

Objectives	
Preservation of the financial and economic system stability	Protection of citizens from deception and loss of their investments
	Desire to become a leader in the crypto industry and gain a new competitive advantage in the global market
	Detaching from existing global monetary system or improving situation with your own weak local currency
	Active contribution to economic and GDP growth
Licensing	

● Measure is effective
 ● The effectiveness of the measure is not confirmed at the current stage
 ● The measure is not confirmed at the current stage

Case 5. Switzerland and token regulation

Situation and motivation: In Switzerland, as in other countries, due to the sharp increase in the number of ICO projects, market participants put questions to the local FINMA regulatory body about the licencing of businesses connected with crypto industry and applying financial market regulation to ICO.

Solution: FINMA outlined their approach to regulation in the official document

First, ICO raises a number of legal issues on which there are no relevant precedents or any legal doctrine at all. Second, they noted that they can't be generalised given the variety of token types and ICO. Therefore, each case must be treated separately and comprehensively. Companies are required to provide the minimum required amount of information in order to make a final decision. FINMA is going to evaluate ICO projects based on the economic objective of the project, and its classification of tokens is based on the basic economic function of the token:

1. Payment tokens (cryptocurrencies) are intended to be used now or in the future as a means of payment for the purchase of goods or services or as a means of transferring money/value. FINMA notes that there are different legal opinions as to whether such tokens are security papers. However, given that payment tokens are intended for use as a means of payment and their functions are not similar to traditional security papers, **FINMA will not consider them as valuable.**

2. Service tokens are meant to provide access to an application or service in digitalised form via blockchain-based infrastructure. These tokens will not be treated as security papers if their only purpose is to grant digital access rights to the application or service and if the token can actually be used this way at the time of issue. In these cases, its primary function is to grant access rights, and there is no connection with financial markets. This connection is a characteristic feature of security papers. **If a service token has an additional or exclusively investment purpose at the time of issue, FINMA treats such tokens as security papers** (i.e., as well as asset tokens).

3. Asset tokens represent assets or security papers such as bonds and shares or derivatives. This category also includes tokens that allow to trade physical assets using blockchain. In regulatory terms, FINMA considers asset tokens as security papers. Underwriting and offering of tokens constituting security papers of third parties being on the primary market is a licenced activity, if it is carried out professionally.

4. Hybrid tokens, which can be any combination of the three types mentioned above, should be evaluated on a case-by-case basis. Requirements for similar types of tokens will be cumulative. That is, if the token is both a payment token and a service token, then both token regulations must be observed simultaneously.

Pre-financing takes place when ICO investors are promised that they will receive tokens at some point in the future, and tokens or basic blockchain will be developed. **Pre-sale** is another option — in this case investors receive tokens that give them the right to purchase other tokens later. The

issue of tokens, as a rule, is not connected with the requirements for the return of funds to the ICO organiser, so that these tokens do not fall within the definition of the deposit. In view of this, the ICO project does not need to obtain a banking licence. If, however, there are liabilities with debt capital (for example, promises of guaranteed return of capital), the collected funds are considered as deposits, and, in accordance with the Banking Act, the project needs to obtain a licence unless there are any exceptions. The provisions of the Collective Investment Schemes Act are relevant only if the funds accepted under ICO are managed by third parties.

The Anti-Money Laundering Act (AMLA) protects the financial system against money laundering and the financing of terrorism. All the companies that provide payment services or manage funds are financial intermediaries (AMLA). Payment tokens fall under this legislation. These tokens are issued as a method of payment if they are then transferred to blockchain technology (during or after the ICO). It is worth to note that other regulation of such tokens is unlikely because virtual currency in Switzerland is deemed marginal. In case of service tokens regulation, related to anti-money laundering, is not applied as long as the main purpose of issuing tokens is to give a right of non-financial access to blockchain technology.

Conclusion: At this moment, Switzerland is trying to actively develop crypto industry in a country and such regulations are a part of an initiative to build a crypto hub called Crypto Valley in Zug. As for September 2018 Switzerland is one of the best countries for crypto business development.

Case 6. SEC (USA) and Howey Test

Situation and motivation: In the USA, as in many other countries, interest in ICO among individuals increased significantly. DAO raised more than \$ 150 million for ICO as the first company to position itself as working on automatised smart contracts. However, then there was a hack and stealing of \$ 50 million, that collapsed Ethereum prices by 50% and many investors lost significant investments. This situation attracted attention of SEC (Security and Exchange commission) – US stock market regulator.

Solution: SEC became actively involved in the regulation of the crypto industry in 2017, when it began to investigate DAO's⁹ tokens and use of distributed ledger technology to sell them to attract capital. As a result, SEC decided that DAO tokens were securities and applied to them existing US securities laws. The Commission stressed that those who offer and sell securities in the United States are required to comply with federal securities laws, whether or not they are purchased through virtual currency or are distributed by the blockchain technology¹⁰.

To determine whether a token is a security or not, the Commission began to apply the Howey test, according to which the token is a security if all of the following conditions are met:

- there is an investment of money;
- there is an expectation of profit;
- investment takes place in a joint venture;
- any profit comes from the efforts of a promoter or a third party.

Conclusions: Many crypto industry participants received this regulation negatively. Moreover, this approach to ICO has eliminated the possibility of participation in token investment that meet Howey test criteria for non-professional investors in the USA. As a result, many ICO projects, firstly, were forced to change their legal residence, and secondly, specifically emphasized that the sale of tokens to citizens in the United States is prohibited to avoid problems with the SEC. This is especially critical for many crypto companies, as the US is a favourable country for the development of the crypto industry, thanks to the high development of infrastructure, innovations and talented human resources capital, as well as positive externalities and external economy due to scale of, for example, the silicon valley.

⁹ DAO – Distributed Autonomous Organization

¹⁰ https://www.sec.gov/oiea/investor-alerts-and-bulletins/ib_coinofferings

Creation of crypto hubs

Motivation to use and expected effects

Countries that create special economic zones and crypto hubs do this, first of all, to attract investments and find a competitive advantage.

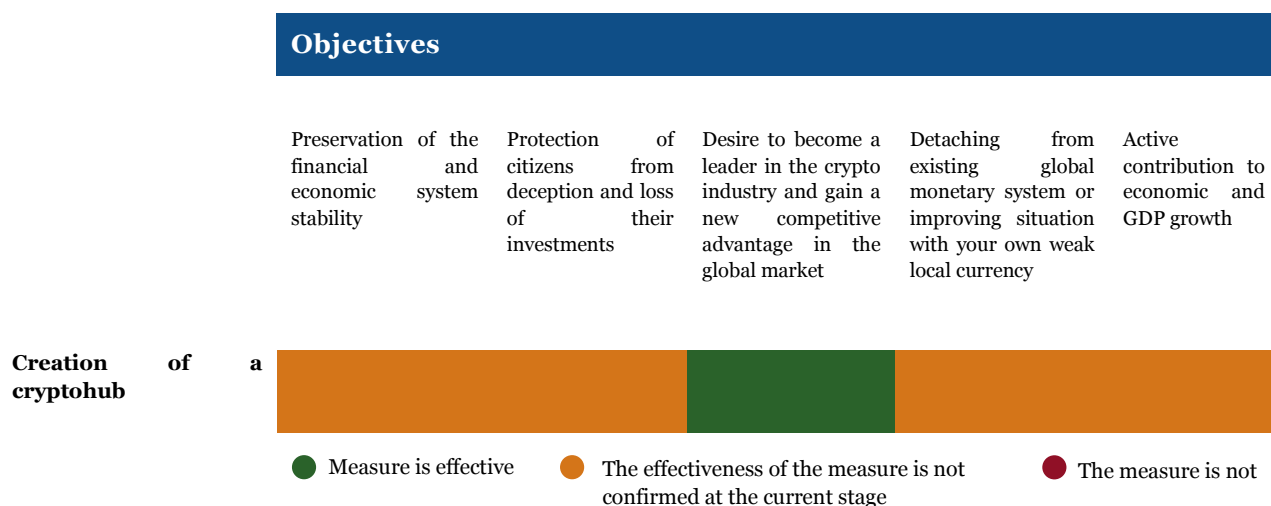
Main Channels

This solution is comprehensive and includes all of the measures described above. The only thing worth noting is that all measures should be favourable for crypto business to attract it to the country. Crypto hubs in and of themselves include:

- allocation of physical space within the country for registration of crypto businesses;
- Specific conditions for licenses (including a certain level of investment in the country and keeping accounts in local banks);
- Setting taxes to zero for a certain period or reduction of tax rates;
- definition of crypto industry concepts at the legislative level (for example, token, ICO, cryptocurrency, etc.).

This approach is relatively innovative. Instead of being afraid of the crypto industry, countries try to develop it because they see a potential in it. The most shining cases are HTP in the Republic of Belarus (Case 7) and Crypto Valley Zug in Switzerland (Case 8).

TABLE 9. EFFECTIVENESS OF THE “CREATION OF A CRYPTOHUB” MEASURE



Case 7. HTP in the Republic of Belarus

Situation and motivation: The presidential decree “On the development of the digital economy” came into force in the Republic of Belarus in the spring of 2018, which is aimed at the development of the digital economy in the country. In the context of this report, it is interesting that this initiative is aimed at legalizing and active stimulating the development of the crypto industry and attracting crypto businesses from all over the world thanks to enabling environment for their development. Moreover, the government of the country points out the need for a new round of development of the information technology industry in the country, as well as “attracting gifted people and successful companies”.

Solution: This decree makes all cryptocurrency activity on the territory of the Republic of Belarus legal, including exchange services and cryptocurrency exchanges, ICO, mining, smart contracts. Moreover, there are no restrictions on the issuing, storage and trading of digital tokens. Individual entrepreneurs and legal entities working in the crypto industry are free to conduct business anywhere, provided that they register as residents of the Belarus High Technologies Park (HTP). HTP residents are now operating in 67 markets around the world. The new regulations include measures to simplify procedures relating to foreign trade and employment of foreign citizens by HTP resident companies. HTP employees and investors will not be required to apply for a work permit. They will also be granted a special visa-free regime and the temporary accommodation status in the Republic of Belarus.

“On the development of the digital economy” decree also accompanies a number of legal changes. First, a new standard was created, aimed at correcting accounting practices in relation to cryptocurrencies. It classifies digital tokens as cryptocurrencies, according to their acquisition and intended use. Authorities have specified information that crypto companies and entrepreneurs are obliged to share with the state.

The changes also affected the Central Bank of Belarus, in particular, new requirements for internal control procedures were introduced, which are part of the supervision of commercial banks and other financial institutions. The new regulations are aimed at preventing the legalisation of illegal proceeds, financing of terrorism and the proliferation of weapons of mass destruction. In general, they are designed to improve measures against money-laundering and to improve cybersecurity. Now operators of any crypto platform are obliged to:

- ensure the availability of funds in the bank of the Republic of Belarus in the amount of at least 1 million BYR. (~ \$ 500.000);
- provide identification and verification of clients engaged in financial transactions (KYC) for AML/CFT purposes (in accordance with FATF requirements);
- provide separate accounting of money, electronic money, crypto platform operator tokens and money, electronic money, client tokens held by the crypto platform operator;
- protect information, the spread and/or provision of which is limited, related to customers (including in accordance with GDPR requirements);
- ensure control over token transactions in order to detect violations of legislation and Rules approved by the HTP Supervisory board (manipulation of token prices, misuse of insider information, etc.), and their termination and prevention in the years to come.

Moreover, the decree also introduces tax exemptions and other incentives for the crypto business development until 1 January 2023. The profit of companies from mining, production and placement of digital coins is not taxed, as well as the crypto income of individuals from mining and trading of cryptocurrencies. In the next five years, even foreign crypto companies will not be taxed. However, 1% of all proceeds of cryptocurrency exchanges, cryptocurrency exchange operators, ICO platforms and other activities related to cryptocurrencies and tokens will be allocated to the HTP Administration .

In addition to all of the above, a Council for Digital Economy Development in the country was established, whose activities are aimed at coordinating the process of digitization and development of information and communication sectors.

Conclusion: The Republic of Belarus became one of the first countries to create tax holidays for crypto business within the framework of the HTP. This innovative approach can help Belarus to find its competitive advantage in the crypto economy through active technological development and increased flow of foreign investments as well as the well-developed and highly-professional human capital.

Case 8. Zug Crypto Valley in Switzerland

Situation and motivation: Switzerland has always been an attractive country for business development, especially in the financial sector. Joan Grevers, founder of Monetas startup in Zug, brought the idea of creating a crypto valley that attracted a significant number of followers, including corporations, service providers, industrial associations, institutions, state, regulators and other stakeholders. Main reason for the creation of such an initiative is getting leadership in the actively developing crypto industry. Moreover, according to the founders of Crypto Valley, Switzerland is the ideal place for it, thanks to the decentralisation and neutrality of the political system, the culture of confidentiality and the strict Act on personal data protection, the framework and the enabling environment for business development, including transparent and amicable regulation, a low corruption level, and low tax rates for both legal entities and individuals.

Solution: Zug was chosen as a location for Crypto Valley, perhaps because this district (canton) of Switzerland has the lowest taxes (corporate tax - 14%, personal income tax – from 3% to 20%). The main stages in establishing Zug as Crypto Valley were:

- 2013 – appearance of such businesses as Monetas, Shapeshift;
- 2014 – registration of Ethereum Foundation and first installation of Bitcoin ATM;
- 2016 – official admission of tax payments in bitcoins;
- 2017 – the creation of the official organisation Crypto Valley, which continues to actively develop the environment for businesses from the crypto industry by creating all necessary infrastructure and flexible regulations (e.g. creation of a digital identification system based on Ethereum);
- 2018 – the first successful test of the blockchain voting system.

Conclusions: Crypto Valley in Zug has already become one of the most popular places for registration of crypto business, making Switzerland a leader among all cryptohubs in the world. Moreover, such positioning makes the once unknown Swiss region Zug one of the most popular destinations for tourism in the country, which favourably affects both the economic and image development of the Swiss region.

Ban on cryptocurrencies

Motivation to use and expected effects

At the time of writing this report, about 16 countries have certain interdictions related to cryptocurrencies. Motivation for such a decision varies from country to country, but, in general, is associated with increased riskiness of virtual currencies. Bolivia, for example, stated that virtual currencies contributed to tax evasion and instability of the monetary/financial system. Egypt issued a special religious edict that prohibits trading of bitcoins, citing that this cryptocurrency condones money laundering, fraud and piracy. Some countries prohibit transactions with existing virtual currencies in order to develop their state cryptocurrency (for example, Ecuador). Countries like China make virtual currencies and ICOs illegal because of a large number of fraudulent projects that have caused a large proportion of the population to lose their investments (see Case 9). Many countries point out that digital currencies contradict existing regulations, which is why transactions with them are prohibited in the territory of the state. For example, in Iceland, since virtual currencies are not compatible with the Icelandic Foreign Exchange Act, bitcoin trading is prohibited.

It is also worth noting that there are countries whose initial negative stance on cryptocurrencies has changed, and now they are looking for methods of legalisation of crypto business. Among this group of countries one can distinguish Russia and Vietnam, whose positions until recently have been associated with a complete ban on all operations with cryptocurrencies, however, to date, both countries have decided that this is a wrong approach and are in the process of creating laws regulating the crypto industry.

Ban on transactions with digital currencies in any form



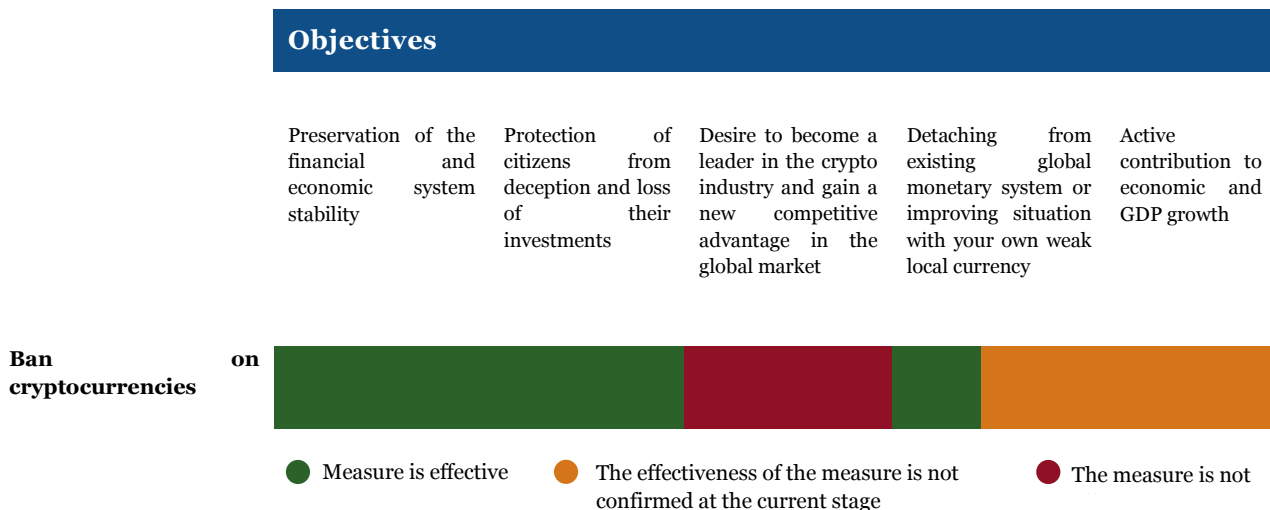
Ban on digital currency transactions for financial institutions



Prohibition of ICO



TABLE 10. EFFECTIVENESS OF THE “DIGITAL CURRENCY BAN” MEASURE



Case 9. China and the ban on crypto industry

Situation and motivation: In China, in September 2017, transactions on the exchange of yuan (renminbi) for bitcoin accounted for 90% of global trading activity in bitcoins. Despite the fact that some analysts claim¹¹ that this indicator is overstated, in reality crypto-currencies have begun to play a significant role in the economy of the country and, potentially, could significantly improve its economic stability. Moreover, a significant proportion of Chinese investors suffered from fraudulent ICOs and lost a large amount of initial investments.

Solution: In 2017, the Chinese government banned the use of fiat currencies for purchasing cryptocurrency. 88 crypto exchanges and 85 ICO projects ceased to operate on the territory of China and moved to countries with more enabling setting for business development (i.e., Malta and other European countries, Singapore). Some investors continued to trade on offshore crypto exchanges, but in February 2018 the government banned all activity related to cryptocurrency trading and blacklisted a number of exchanges and crypto-related sites (about 110 sites¹²), in an effort to restrict access to them. In the summer of 2018, China banned in certain regions of the country any information events promoting the crypto industry, including conferences and forums. The regulation also affected the largest Chinese companies. Thus, Baidu, the operator of the country's leading online search engine, recently closed some of its popular cryptocurrency-related forums, while Tencent and Alibaba Group stated that they are forbidding virtual currency transactions made using their mobile payment services.

Conclusions: The result of such a policy for China, according to the latest data, was successful - at the moment yuan (renminbi) is used less than 1% of all transactions related to bitcoin exchange. Moreover, in the short term, China is not going to lift the ban, citing major financial risks for Chinese investors. However, despite this attitude towards cryptocurrencies, the Chinese government is interested in distributed ledger technology, actively studying and implementing it at the state level (for example, within the in partnership with the cryptocurrency exchange Huobi, the participants of which said that this initiative is part of the Chinese national policy¹³).

¹¹ <https://www.ccn.com/experts-fear-china-losing-90-control-over-bitcoin-market-forgetting-govt-ban/>

¹² <https://ethereumworldnews.com/china-crypto-ban-successful/>

¹³ <https://blog.huobi.pro/hc/en-us/articles/36000052661-Huobi-Labs-Initiate-US-1-Billion-Global-Blockchain-Industry-Fund->

SECTION 3. CENTRAL BANK'S DIGITAL CURRENCIES: MYTH OR REALITY?

Cryptocurrencies have come to a level when their effect and the scale of their development is hard not to see even for a regular person. Thanks to new developments in cryptography and computing technology, it is possible to develop digital alternative currencies, just as P2P as cash, as convenient as debit cards, and in the potential are more affordable to use and more secure than deposits (Camera, 2017).

As a result, large global organizations and local central banks, as well as private companies, are beginning to approach the topic at a deeper level and ask the question of the possible establishment and introduction of a state-owned digital currency. This section is a continuation of the regulatory review and is devoted to a peculiar and not yet widespread measure of regulation – creation of state digital currency or **central bank digital currency** as well as a primary analysis of the potential benefits and risks of such initiatives.

The central bank's digital currency (CBDC) in this context can be a tool of detachment of the monetary system of a country from the current global monetary system. Some countries, especially those under sanctions, have chosen this goal as a key target for the implementation of the CBDC (e.g. Venezuela). However, it is worth noting that there is another approach to the creation of the CBDC (e.g., adopted in Sweden), where the CBDC is only a modernisation and technological improvement of the current monetary system. The potential effects of the implementation of the CBDC and the approaches of different regulators and states require more detailed study. A full analysis of the effects of the implementation of the CBDC requires a separate study. However, at the current stage there are several key differences in different approaches, as noted in this report.

What is the Central Bank's Digital Currency (CBDC)?

The Bank of England defined the Central Bank's Digital Currency as a universal electronic 24/7 access to interest and redenominated currency balance sheet at the Central Bank (Barrdear & Kumhof 2016). In his work, Bjerg clarifies this definition as deposit obligations registered electronically on the balance sheet of the Central Bank. The author further emphasizes that access to these deposits is universal, in other words, they can be owned and used by all holders of money in the economy, and the Central Bank issues these obligations by crediting the accounts of money users (Bjerg, 2017).

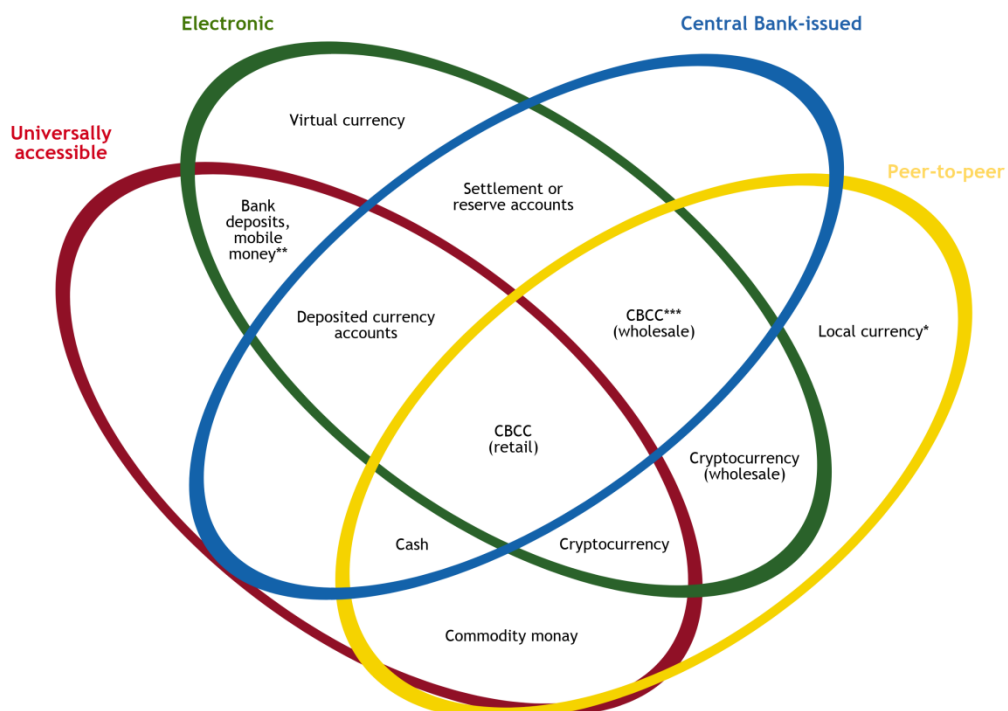
The work of Bech & Garrat (2017) from the Bank for International Settlements (BIS) presented a classification of currencies, where 4 criteria are identified:

- 1) the issuer of the currency (the Central Bank of the country or other persons);
- 2) form of issued currency (physical or electronic);
- 3) access to the use of currency (universal or restricted);
- 4) currency distribution/transfer mechanism (centralised or decentralised).

Intersections between the main classifiers give the types of current or existed currencies throughout the history of mankind (Fig. 6).



Figure 6. Currency classification – “Money Flower”



Source: Adapted from Bech & Garrat (2017);
Currency classification – “Money Flower”

CBDC (wholesale): CADcoin is a wholesale cryptocurrency of the Central Bank or digital assets representing money of the Central Bank used for an interbank payment system built on a distributed ledger. The project is being carried out by Bank of Canada in cooperation with Payments Canada, R3 and a number of Canadian banks, but has not yet been tested in practical terms.

CBDC (retail): FedCoin is a retail cryptocurrency of the Central Bank, which was offered in the work of Koning (2016), but which has not yet been adopted by the Federal Reserve System. The essence of the concept is the creation of the US own state cryptocurrency, an alternative US dollar with 1:1 conversion to fiat US dollar. The exchange will be managed by the Federal Reserve Banks of different states.

Source: Bech & Garrat, 2017

Motivation to use and expected effects

The Bank of England in 2017 stated in one of its documents that if the Central Bank issues digital currency, all individuals and legal entities (except banks) will be able to store their money and make payments in the CBDC **in addition to the ability to pay in cash**. Moreover, they also note that this can have significant implications for the monetary policy and financial capacity of the country, as it opens up new monetary policy measures. Therefore, **the first reason** for adopting a digital currency is the **expansion of monetary policy options** within the country. **The second possible driver** for some states is **the unpegging from the dollar and de-dollarisation within the country**. This is achieved by conducting all calculations in the country in its own digital currency, and change to dollars is possible only through the cryptocurrency exchange at a certain rate. The benefit of this measure lies in the fact that the country is much less dependent on US dollar shocks and the USA policies, and can bypass sanctions by the USA as was the case, for example, with Venezuela.

The third reason is **GDP growth**, which can occur due to the simplification of trade relations within the customs union if they adopt a single digital currency. For example, Barbados, Aruba and the Bahamas have begun to consider the option of creating three state cryptocurrencies on one platform: digital equivalents of Barbados dollar, Aruban florin and Bahamian dollars. According to experts, the smooth interchangeability of these currencies could reduce friction and stimulate trade between the islands. Aruba economists estimate that this could lead to 4-5% GDP growth (by comparison, the region's largest growth in the last 20 years was about 0.5%).

The fourth and important reason is to **increase financial inclusiveness** and **stimulate cashless economy** within the country. Thanks to the active introduction of digital money, even people who use cash can switch completely to cashless payment methods, thus helping to make transactions more transparent.

Many other countries (Map 2) also spoke about the possibility of launching their own state digital currencies, such as the Bank of England or the Bank of China, and some of them have already introduced digital currency (Venezuela, Case 13) or even had time to give up on it (Ecuador, Case 11).

Map 2. Distribution of the CBDC in the world

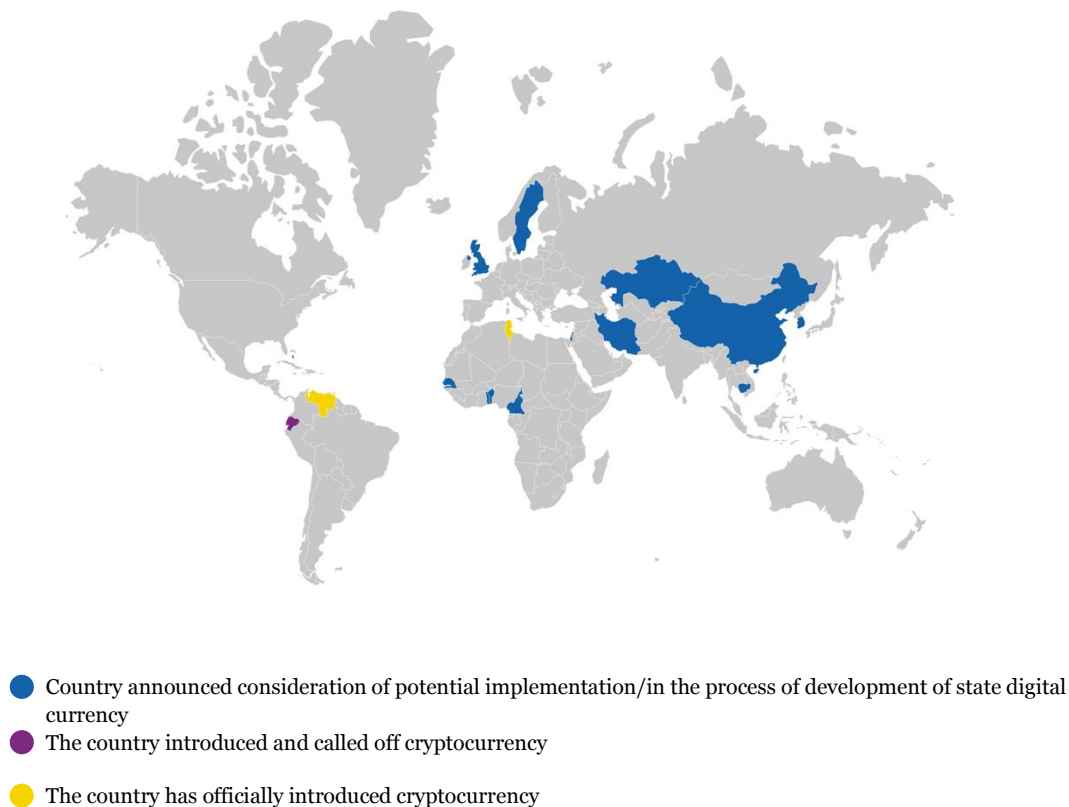


TABLE 11. DISTRIBUTION OF THE CBDC IN THE WORLD

Countries	
Have the state digital currency issued by the Central Bank	Venezuela, The Marshall Islands, Tunisia
The country is in the stage of development of the state digital currency	Kyrgyzstan, Sweden, Japan
Consideration of the potential of its own state digital currency ¹⁴	Aruba, Bahamas, Barbados, Benin, Vatican, ECCU (Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines), Denmark, Dubai, Iran, Israel, Kazakhstan, Cambodia, Cameroon, China, Palestine, South Korea, Senegal, Togo, Switzerland, Estonia
Consideration of the potential of its own state digital currency	Burkina Faso
The state digital currency was adopted but then called off	Ecuador

¹⁴ According to open sources, Russia is presumably one of the countries that considers the potential of creating a state digital currency. However, due to the absence of direct public statements from State representatives, the authors of this report do not place the country in the classification presented.

Case 10. Organisation of Eastern Caribbean States

Situation and motivation: Eight island countries: Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines formed the Eastern Caribbean Currency Union (ECCU) and issued a Memorandum on Mutual Understanding, which is a sign of the party's will to create an “e-money” system.

Solution: The agreement provides for a study on the viability and functionality of the Digital Eastern Caribbean Dollar (DXCD). DXCD will be the equivalent of the Eastern Caribbean dollar based on blockchain. It is expected that the currency will be issued by the Eastern Caribbean Central Bank (ECCB) in partnership with the Barbados FinTech. Bitt Inc startup on behalf of the eight countries. The fiat East Caribbean dollar is pegged to the United States dollar and is backed by foreign exchange reserves.

Conclusion: Small states see cryptocurrencies as a new potential for domestic economic growth by increasing trade and simplifying payments with nearby countries.

Case 11. The failure of Ecuador's CBDC

Situation and motivation: In 1999, Ecuador experienced a hyperinflation of the national currency of the Sucre, which resulted in the official dollarisation of the economy: The State has set the Sucre parity with the United States dollar and removed all Sucre from circulation by September of the same year. In 2014, the Government of Ecuador announced that the Central Bank of Ecuador (CBE) will start the development of e-money (dinero electrónico).

Since state representatives have repeatedly mentioned that dollarisation imposes restrictions on the policies and behaviour of the country, the society questions about intent of the e-money system: the way for the government to make a profit or the first step towards de-dollarisation?

The stated reason and motivation was to increase the level of financial inclusion in financial services for consumers outside the banking system. Moreover, in order to calm public unrest that electronic money will become a forced currency, followed by de-dollarisation, the government has legislated that the use of e-money will be free and even public servants and government contractors, whatever their position is, will not be obliged to accept it as payments.

Solution: Users were expected to store the balance surplus in the accounts of the Central Bank and transfer them using the mobile application. The necessary legislation was passed in September 2014, and the first users were able to open accounts in December. The new laws provided the state with a monopoly on electronic money. Only the Central Bank could issue electronic dollars and only the state-owned mobile company CNT could provide mobile payments services. The law prohibited private mobile companies and private financial institutions from providing competing systems. Moreover, use of other cryptocurrency, including bitcoin, has been banned. Despite this, the government was optimistic and expected to increase the popularity of the system.

Results and conclusions: Authorities expected that about 500,000 people would start using e-money in 2015 but the actual number of accounts opened in 2015 was less than 5,000. At the beginning of 2016, local economists, with reference to the Central Bank of Ecuador, noted that the circulation within the system was less than 0.003% of the monetary obligations

of the financial system of the country.

The main reason why the Central Bank failed to attract a sufficient number of clients to its platform is the lack of confidence in the state and its bodies. Since the Central Bank of Ecuador defaulted on government bonds in dollars in 2008, people did not trust the new initiative doubting whether the new e-money is actually backed by dollars which Ecuador has. Moreover, the population trusted commercial banks too much. Therefore, in 2014-2017 the citizen familiar with the matter was likely to perceive dollar deposits in a private commercial bank in Ecuador as less risky than dollar deposits in the Central Bank.

One of the economic commentators from El Comercio noted that “unlike private bankers with their own funds on the line, the Central Bank of Ecuador may behave irresponsibly. In addition, it may be under pressure from the treasury, with its chronic financial problems. The only case when the system would be accepted by people is legal coercion to use the system, but they realize that such a step would «lead to chaos»”.

Less than three years after getting started in December 2017, the National Assembly of Ecuador, at the insistence of the new president, passed an act on the termination of electronic money system of the Central Bank. The new legislation opened the market both for mobile payment alternatives from private commercial banks and savings institutions of the country. Account holders had to withdraw their funds from the Central Bank accounts by the end of March 2018. Full deactivation was scheduled for mid-April 2018.

The main reason for this decision is that the state system has not been able to attract a significant number of users and ensure sufficient payments. Some experts suggest that the Central Bank has not been able to make sufficient profits from the initiative, so the new government did not see the point of working on it further.

In late 2017 – early 2018 the substitution of open competition for state monopoly in mobile money took place in Ecuador. This case shows that the Central Bank has a limited ability to successfully launch a new form of money when consumers do not trust the state at a sufficient level and, at the same time, are not ready for transition, while the use of this system is not necessary. Although the institutional specificity of Ecuador's economy may differ from other countries, this experience needs to be taken into account in the development of its own CBDC projects and in other areas in order to avoid any problems at the start-up and development stage of the system.

Case 12. Sweden is on the way to the CBDC?¹⁵

Situation and motivation: Sweden is one of the first countries which switched to cashless payment almost completely. Therefore, the fact that it is one of the first countries to develop a project on the introduction of digital currency is expected. The Riksbank in Sweden claims that e-krona is an access to digital cash guaranteed by the state. According to Riksbank representatives, the main advantage is independence from the infrastructure of commercial banks. It makes e-krona system more stable and reliable in case of failures, for example, in the card payment system. Moreover, Sweden considers this process to be a natural step in the digitalisation of the country.

One of the drivers of such a decision is the active transition to a small number of private payment providers (e.g. Swish), which made the Central Bank of Sweden think about possible

¹⁵ Source: <https://www.riksbank.se/en-gb/financial-stability/payments/e-krona/>

consolidation among commercial participants, payment services, infrastructures and less competitive market and think over the risk of making the society more fragile. The second important motivator is the people in society who prefer cash, for whom electronic cash can become a viable alternative to traditional non-cash retail payment services. The third driver mentioned is aimed to prevent the inability to get cash in times of crisis when demand for them grows. The Riksbank claims that even if it were prepared for the dire need to provide the entire population with cash, in times of systemic shock it would not be possible to meet the surge in cash demand.

Solution: At the time of writing this report, Sweden was considering two models for e-krona. The first model is based on the register, the second one is based on value/cost. In the register model, balances will be stored in accounts in the central database, and in the cost-based model the situation will be more similar to the current one, as the value will be stored locally, for example, in the application or on the map. The second model can be implemented faster, but it is limited in its possibilities for further development. Register-based model, on the contrary, has greater potential, but is difficult to create and run.

The final decision of the Riksbank is to combine both models. A simplified cost-based model of e-krona will focus on small payments that are made offline. This will make digital cash more available to people who do not want to have special e-krona accounts. The technology for the development of the Swedish CBDC has not yet been solved and is being discussed.

The effects that limit or harm monetary policy, payment market or financial stability of the country have not been identified. According to the preliminary assumptions of the Riksbank, the process of determining the demand and supply of e-krona will not differ from current banknotes and coins.

The Riksbank is also going to make appropriate amendments to the current legislation if the Riksbank issues a new means of payment.

The project offers the following design for the digital crown in case of a positive decision to enter digital money from the Central Bank:

- 1) e-krona is primarily intended for smaller payments and transfers between consumers, companies and government establishments;
- 2) e-krona is a direct claim on the Riksbank. It is in Swedish krona and may belong to the people, financial institutions and companies. It is available in real time, 24 hours a day, seven days a week, 365 days a year;
- 3) e-krona does not charge any interest, but the internal technological composition of the currency should have a built-in function to allow interest accrual in the future;
- 4) Register-based e-krona is combined with a cost-based solution that allows to make offline payments with small amounts and increases their availability for groups that do not want or can't have an e-krona account;
- 5) the Bank provides the key features for e-krona, but is exploring the possibility of using existing data-based facilities and engaging external stakeholders to offer decisions to end users;
- 6) this concept is the result of the initial findings of the project and is subject to change within research and analysis, as well as after the dialogue with stakeholders.

Conclusions: Unlike such countries as Ecuador and Venezuela, Sweden has approached the issue of developing its own digital currency carefully, consciously and comprehensively, so perhaps e-krona will soon appear in of the circulation. It is also interesting to note the regulator's attempt to involve all stakeholders in the ecosystem, which can improve the new system if it is developed in partnership between government, business and society.

Case 13. El Petro – “crypto oil” of Venezuela

Situation and motivation: At the beginning of 2018, Venezuela became the first country in the world to declare the crypto currency called El Petro its main currency. The primary Venezuelan currency, the Bolivar currency, is in a state of hyperinflation, which has achieved record levels. The national currency has lost more than 99% of its value. The population of the country feeling hopeless began to actively participate in the trade and mining of cryptocurrencies. Sanctions imposed by the US and other countries, as well as lack of investment in the country, make the economic situation of the country even worse.

Solution: Initially, the Venezuelan government banned mining and trading activities and outlawed them, but this did not help, and people continued to participate in the crypto industry despite the prohibitions. The situation with bolívar continued to deteriorate, so that Venezuela decided to find another way and take risks by creating its own cryptocurrency based on the distributed Ethereum register. The government decided to make initial coin offering (ICO), preliminary mining of which amounted to 2.7 billion coins. Then, at the initiative of the Venezuelan government, most of the coins were sold to private investors, including some countries. It is worth noting that the restrictions were imposed on the sale of coins on the basis of Venezuelan policy. For example, sales to American investors were prohibited.

The name of El Petro was assigned to the cryptocurrency for a reason – each coin, according to the idea of the creators, is supported by the oil reserves of Venezuela, which, according to experts, amount to about 5 billion barrels. According to the official document for ICO (white paper) cryptocurrency is an ERC-20 token based on Ethereum, but other reports note that it works on NEM blockchain.

Conclusions: It is still necessary to find out which consequences Venezuela will experience from the introduction of its national currency but it should take at least a couple of years after the introduction. In August 2018 El Petro officially started to be used in the country and it depreciated bolivar even more.

TABLE 12. EFFECTIVENESS OF THE MEASURE “CREATION AND PROMOTION OF CBDC”

Creation and promotion of digital currency	Objectives					
		Preservation of the financial and economic system stability	Protection of citizens from deception and loss of their investments	Desire to become a leader in the crypto industry and gain a new competitive advantage in the global market	Detaching from existing global monetary system or improving situation with your own weak local currency	Active contribution to economic and GDP growth
	<div style="display: flex; justify-content: space-around; align-items: center;"> ● Measure is effective ● The effectiveness of the measure is not confirmed at the current stage ● The measure is not effective </div>					

MANAGEMENT STRATEGIES: HOW DOES THE REGULATOR APPROACH THE PROCESS?

Having analysed the reaction of the regulators to the crypto world situation in all the countries, as well as the use of various measures, it is possible to distinguish two axes that characterise the behaviour of regulators in the cryptosphere.

How does the regulator approach the regulatory process?

Response vs Proactivity

This axis is typical for behaviour of players in the cashless economy, which is inseparably connected with the crypto world (digital currencies are a subtype of cashless payments), in particular for the regulator. (Krivosheya, Semerikova, Korolev, Tarusova, 2016)

Reaction in the matter is the response of the regulator to everything related to cryptocurrencies and the crypto industry in general by means of any act/regulation/public statement. Responsive behaviour of the regulator is a common phenomenon, as it often adapts to what has already happened in various areas of functioning of the country (Krivosheya, Semerikova, Korolev, Tarusova, 2016). Crypto industry is not an exception – basically the regulator began to think about everything related to it when it grew to such a scale that it was able to influence economic stability of certain countries (see [Fun fact №4](#)). However, there were countries that noted the activity in the crypto industry and started to regulate it proactively from the very beginning (for example, Australia). Therefore, the regulator is able to be proactive, particularly with sufficient volumes of open data. In the case of the crypto industry, it is easier to do that, as all the data is in the public domain because of the high level of openness and decentralisation of many offers and initiatives. Moreover, even relying on the current regulation of financial markets, there is an opportunity to develop a proactive strategy to regulate the crypto industry. However, it is worth noting that excessive proactivity can be unreasonably risky, which can lead to failed initiatives and failed experiments due to the fact that decisions were made too quickly and recklessly. This is especially relevant in the case of the adoption of state cryptocurrencies, where such policies proved unsuccessful (for example, in Ecuador, see Case 9).

What approaches should be employed to regulate the crypto industry?

New approaches vs old approaches

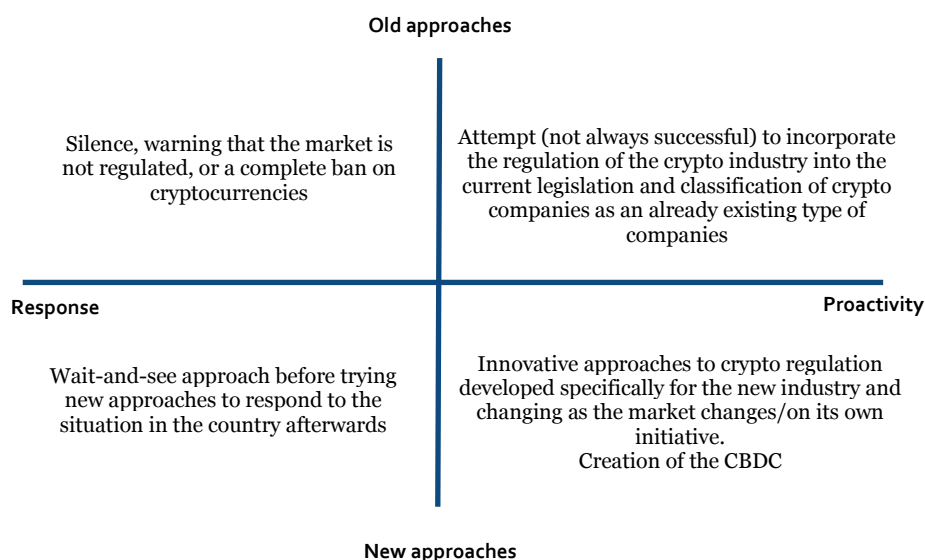
New approaches mean consideration of the crypto industry as a new phenomenon and, accordingly, a radically new approach to regulation of this industry using all available information and defining such completely new concepts as digital asset, a token, and a

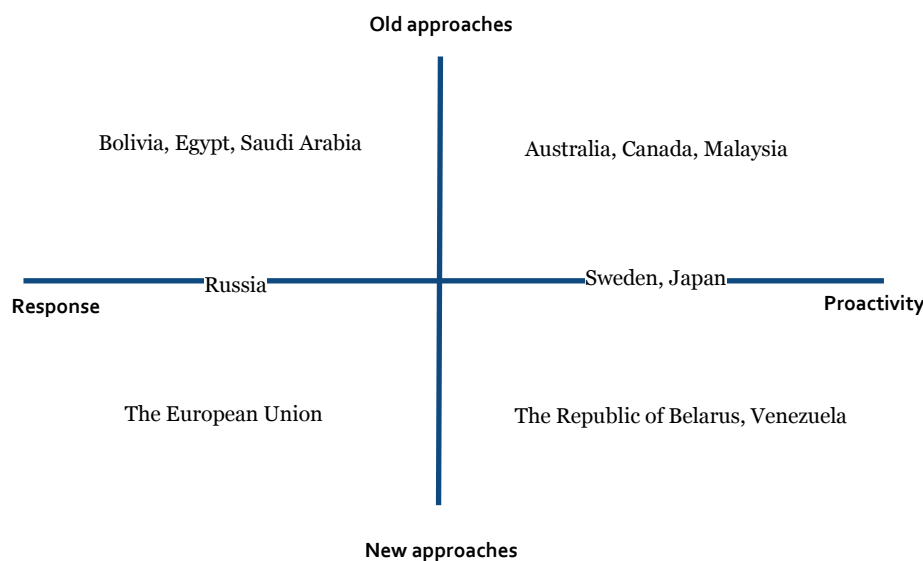
digital currency. Prior to the appearance of bitcoin, the concept of cryptocurrency did not exist, so that new approaches are meant to indicate at the legislative level that it is an innovation that needs its own approach. One more new solution in this area is the creation of one's own cryptocurrency (for example, Ecuador, Venezuela, Sweden). New approaches, however, are not equivalent to reasonable solutions, because even among innovative approaches there are thoughtful and conscious actions on the part of the regulator (Swiss e-krona, see Case 11) and rather harsh and non-transparent solutions (El Petro Venezuela, see Case 12).

In this case under the old approaches several types of the regulator's behaviour are also considered. First, legislative and regulatory authorities may conclude that the crypto industry is not new, and to use old approaches to regulation, which means to try to include crypto activity (for example, business activity or exchange trading) in already existing regulatory areas, so that they fall under the existing legislation. Sometimes it is done consciously after analysis of the information available on the market as in the case of the new approaches. However, in most cases, old approaches are used when the regulator responds sharply to a new phenomenon, which he does not understand, and he is not willing to consider possible advantages. They can react in a different way: someone just warns the Central Bank that participation in the crypto industry is not regulated, and all the participants do so at their own risk, and someone prohibits participation in the crypto world completely or partially.

To sum up, new and old approaches are not black and white view on crypto regulation. This axis rather allows to see how conservative a country is or, vice versa, whether a country is ready to use innovative approaches and share risks in order to gain potential benefits from crypto industry.

Summing up the axes described above, you can get the following classification of behaviour of regulators in the cryptosphere and indicate the current positions of regulators in different countries.





Response and old approaches

This type includes those regulators who treated the crypto industry phenomenon conservatively and limited themselves to one or more actions, including:

- 1) ignoring the existence of a new market;
- 2) warning citizens that the market is not regulated;
- 3) full or partial prohibition of actions on the crypto market;
- 4) high or irrational taxation (for example, taxation of losses in cryptocurrency trading - as it was established in Poland in 2017).

Proactivity and old approaches

This behaviour is characterised by a proactive use of traditional regulatory methods, for example:

- 1) Taxation according to existing laws;
- 2) defining cryptocurrency as something already existing (for example, an asset, a commodity);
- 3) issuance of licences according to the current rules, classification of crypto companies into the category of companies offering financial services;
- 4) AML and CFT requirements, including KYC.

Response and new approaches

This category includes countries that have chosen a wait-and-see policy and are waiting to respond with new and proven approaches. For example, if CBDC proves its value as a good policy in other countries, these countries will be the first to create their own internal cryptocurrency.

Proactivity and new approaches

In this category there are the countries that were not afraid of using new unconventional methods to regulate the crypto industry. Namely, they created cryptohubs and national cryptocurrencies in order to use crypto world for its own purpose, and not to annihilate it without understanding all the advantages and the risks it bears. These countries are trying to find a competitive advantage in the new crypto economy and create a basis for its construction and development.

However, the description of these four options is a static picture, while the crypto industry is a dynamic sphere, and that is why, with few exceptions, countries are never in the same option. Often they can be at an intersection or move from one quadrant to another. Russia case is a bright example. At the very beginning, the regulator responded with the traditional approach and banned any transactions with cryptocurrencies. But in the course of time the regulator realised that the crypto industry has potential and it can be ineffective to ban it totally, because even if there is a ban, people continue to actively take part in it. Russia has chosen the way of developing legislation in the crypto industry... Thus, Russia has reached the lower left quadrant and is somewhere in the middle, as the Russian regulation is likely to bring together traditional and new approaches.

Switzerland and Japan are also at the intersection of old and new approaches, but in a proactive part, because their policies are a mixture of traditional and new solutions. They were among the first countries to talk about bitcoin regulation, and Japan is the only country to accept bitcoin as a new payment method.

Market dynamics forces regulators from different countries to re-evaluate their strategy and position on a regular basis to support the development of the crypto market (or any other means, depending on the objectives to be achieved). Therefore, the position of countries in the matter is dynamic and can change from time to time, and the strategy of individual countries, companies and other market participants requires taking into account the goals, the current state and the desired results. That is why it should be developed individually, taking into account the analysis of existing initiatives.

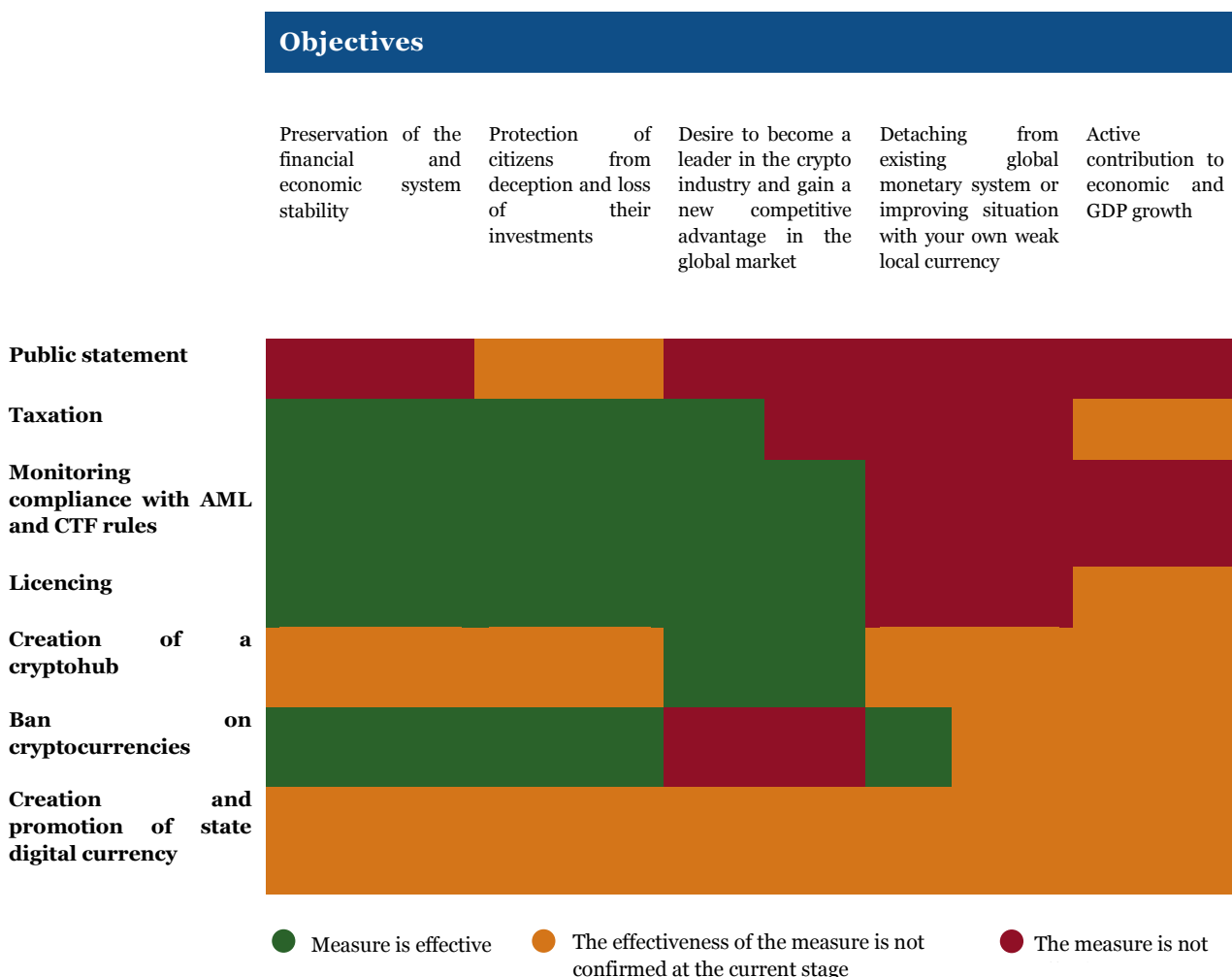
CONCLUSION

Having analysed the global crypto regulation initiatives, the following conclusions can be made:

1. Crypto regulation is a dynamic area in regulatory practice, so that many regulators should react quickly to all changes that take place, and, best of all, they should act proactively and develop the crypto market with the help of correct regulation. At the moment, some countries are doing well, others are waiting, and still others are experimenting with innovative approaches. Regulators are in an unusual situation, because there aren't enough finest practices to use. At the same time the most successful approaches to regulation are developed in a specific institutional environment which can interfere to adapt the approaches on other markets.
2. There are five key goals regulators want to achieve by regulating the crypto industry, and there are seven basic ways to achieve these goals. Different methods are used to achieve the corresponding objectives in combination or separately. Preliminary results of the analysis of the effectiveness of these measures based on existing approaches and regulatory cases are presented in the table below¹⁶.

¹⁶ It is worth noting that the effectiveness of particular measures may change over time. The choice of the color reflecting effectiveness is based on regulatory objectives in statements of regulators and market experts. This analysis is not a direct recommendation for an action and is presented for research purposes.

TABLE 13. EFFECTIVENESS OF THE MEASURES CONSIDERED



3. Crypto regulation strategies in different countries can be placed in one of the following four groups in terms of novelty of approaches (new or old ones) and attitude to the crypto industry (response or proactivity). However, market dynamics forces some regulators to change their strategy all the time: from old approaches to new ones, from the usual responding to proactive actions to support the development of the crypto market (or any other methods, depending on the objectives to be achieved). Therefore, the position of countries in the matter is dynamic and may change from time to time.

Despite the fact that the crypto industry has appeared relatively recently and has not yet become widespread for a wider audience, regulators from various countries have already managed to create the first approaches to development and minimisation of risks in the industry. Not all of them have been successful and some countries have changed their regulatory approaches. At the moment, there is an opinion that cryptocurrencies are an international phenomenon that

necessarily exists outside the state, and therefore regulation should be offered by some inter-country organisation (for instance, the UN, FATF, BIS, IMF, the World Bank etc.). However, as the above analysis shows, a comprehensive and proactive approach to regulation of the industry and ensuring the soft involvement of the state in the crypto economy allowed certain countries to find new areas of comparative advantage, without exposing the population and, particularly, vulnerable groups, to further risks. Regulatory effects presented in this report are only preliminary and require taking into account the institutional, regulatory and strategic specifics of the country where particular measures/laws are being developed. However, it can be noted now that the development of crypto industries affects not only inter-country issues, but also internal areas of functioning of financial and economic systems. That is why it is up not only to international organisations to regulate. Each country needs to develop an integrated approach to regulation, taking into consideration existing global experience.

This report is a part of the initiative of Financial Innovation & Cashless Economy (SFICE) Centre of The Moscow School of Management SKOLKOVO in the field of financial innovations and in particular the crypto industry. The second report of 2018 is devoted to the classification of distributed ledger technologies and

the potential of introducing these technologies in various areas of operation of companies and the state. At this stage it is necessary to understand that despite the fact that the crypto industry is in its early stages of development and is accompanied by a large number of fraudulent and controversial projects and operations, it is possible to identify potential of crypto economy in case if it is applied properly. This potential can be identified both at the level of companies and at the country level.

FUN FACTS

1. Bitcoins were tried to be sold massively in news-stalls in Australia and in Korea it can be bought in 7-Eleven stores.
2. There is often a disclaimer in announcements about ICO and token sales that residents from the US can't buy tokens. Currently, the U.S. citizens can't buy tokens, although this country is considered to be one of the most favourable for ICO and cryptocurrency business development. The main reason is the restriction on participation in the purchase of tokens that can be considered by SEC (Securities and Exchange Commission) as security papers when passing the Howey test, see Case 6). Projects from the United States are forced to choose other jurisdictions to sell tokens in order not to make life more difficult both for themselves and for American investors. Despite this fact, US residents find ways to invest and still participate in the ICO market, for example, using VPN, thereby changing their "e-residence".
3. Creation of three state cryptocurrencies on one platform: the digital Barbadian dollar, Aruban florin and Bahamian dollars can increase Aruba's GDP by 4-5%, according to domestic estimates. By comparison, over two decades, the growth was about 0.5%.
4. The first bitcoin mining farm in Transcaucasia was established in Georgia, and since 2016 the country's land register has been maintained on the blockchain.
5. Colombia is the third country in the world, after China and Nigeria (and number one in Latin America), in terms of growth of bitcoin transactions. They increased by 1200% in 2017. At the same time, the cryptocurrency sector began to benefit the Colombian economy almost as much as tourism, which accounts for just over 2% of GDP.
6. The first eco-friendly plantation in Laos has issued a token based on Ethereum, called Bananacoin, tied to the export price of 1 kg of bananas.
7. The Lithuanian Central Bank has announced that it will issue cryptocurrency aimed at enthusiasts at the end of this year. Digital coins intended only for collecting will not be released into circulation and can't be used as a legal means of payment. This step will show the world that Lithuania is "a progressive and innovative country which is always opened to new ideas". "Presenting a digital collector coin, Lithuania is the first to open new horizons in numismatics."
8. Family-run Bank in Liechtenstein has become one of the first banks in the world that allows customers to invest directly in cryptocurrencies. Representatives of the Bank Frick said that the first batch of cryptocurrencies available for trading would include Bitcoin, Bitcoin Cash, Litecoin, Ripple and Ether.
9. Many people call the Isle of Man "Bitcoin Island". Back in 2015, businesses on the island accepted bitcoins for payment. Moreover, according to open sources, about 25 blockchain startups were registered on the island at that time, and the Isle of Man was planning to become a crypto hub since then.
10. The Australian Government has already invested \$200,000 AUD to assist the Central Bank of Papua New Guinea in using distributed ledger technology in local financial and economical systems and to increase the level of financial integration.
11. The Vatican considered the possibility of creating a bitcoin-like currency with automatic deduction of part of the amount from the recipient of the currency in any transaction. This deduction will be marked as "belonging to the Vatican" and will be converted at its current rate into any fiat currency that will then be managed by the Pope's government to help the poorest people in the world. In the crypto community this currency is called "the Catholic Bitcoin".
12. Cryptocurrency traders in Poland have created a petition to protest against the Government's decision to tax all cryptocurrency transactions, even those that are not profitable. As a result, they made the government abolish such a tax policy.

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