Economic Nature and Classification of Stablecoins

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ABSTRACT

The article discusses the nature of stablecoins and their specifics in the financial market. **The aim** of the article is to reveal the economic nature and characteristics of various types of stablecoins. The author used system-functional and system-structural research **methods** as well as methods of statistical analysis and synthesis. The paper analyses different approaches to the interpretation of stablecoins and their regulation in developed countries, as well as provides the author's interpretation and classification of stablecoins. The article analyses the main indicators of stablecoins and identifies the potential benefits and risks associated with payment. The **conclusion** is that stablecoins are to be interpreted as a new hybrid type of digital financial assets. Stablecoins are not homogeneous and may have different economic and legal characteristics. Clearly identified blockchain-based issuers issue most stablecoins as tradable digital bonds or depository receipts that can be used as a means of exchange, savings, and payment. The major economic and functional criteria for the classification of stablecoins are: the form of collateral, the category of users, and the scale of circulation. The research has shown that currently the most widely used are centralized stablecoins, backed by fiat currencies and gold, used for exchange transactions and retail payments. Local stablecoins are primarily a store of value and a medium of exchange. Their widespread use can significantly affect the development of the crypto-asset market by increasing its liquidity and stimulating the development of more stable forms of digital financial assets. Global stablecoins may gain widespread use as a cross-border means of payment. They can increase the speed of cross-border settlements and reduce their costs, as well as provide wider financial inclusion for users without bank accounts. To realize the potential benefits of stablecoins, one should address the legal, regulatory and supervisory challenges associated with national and cross-border circulation of stablecoins.

Keywords: stablecoins; crypto-assets; digital financial assets; virtual currencies; cryptocurrencies; distributed ledger technology (DLT); blockchain; collateral stablecoins; algorithmic stablecoins; local stablecoins (LSC); global stablecoins (GSC)

INTRODUCTION

Over the past years, the introduction of digital information technology in the financial sector has led to the emergence of a new class of assets called "crypto-assets" or "virtual assets".[1] Crypto-assets are based on distributed ledger technology,[2] which allows for the decentralized storage of information related to the issue, trade and transfer of assets. Due to the technological possibilities of issuing crypto-assets, they may include instruments of various economic and legal nature: monetary, equity, debt, etc.

Under the crypto-assets classification adopted in a number of countries (UK,[3] Switzerland,[4] USA [1], etc.), digital tokens can be divided into three main types by their nature: payment tokens (exchange tokens); security tokens (tokens as digital analogues of securities); utility tokens.

In economic literature *payment tokens* are often synonymous with virtual currencies.[5] They are not issued or endorsed by any centralized authority or monetary regulator and are intended to be used as a means of exchange or means of payment. *Security tokens* are digital counterparts (in terms of rights and obligations) to traditional investment instruments such as stocks or bonds. *Utility tokens* provide holders with access to a current or promising product or service of the company-issuer, but do not give holders the rights to own shares in the company or to interest income from investments.

Today, virtual currencies are the most significant among crypto-assets.[6] To a certain extent, they act as a means of payment, a store of value and an object of investment. At the same time, virtual currencies, like crypto-assets, are not homogeneous. They can be issued by different issuers, for different purposes and within different blockchains,[7] due to which they can have excellent economic and legal characteristics.

At the beginning of November 2020, there were more than 7,600 crypto-assets in circulation with the capitalization of more than $435.7 billion. Leading virtual currency Bitcoin[8] accounted for more than 64.2% of the total crypto-asset capitalization.[9]

Cryptocurrencies are one of the most significant subtypes of virtual currencies. The key characteristics of cryptocurrencies are as follows: 1) a trust mechanism for creating their value due to the decentralized nature of the issue; 2) a built-in mechanism of direct value exchange as a result of the use of distributed ledger technology; 3) a unique institutional mechanism where information and financial transactions are managed with no intermediaries. Due to the absence of a clearly identifiable issuer, there is no way to influence the market supply value and the volume of cryptocurrency turnover, which largely determines the high volatility of their market rate. Therefore, cryptocurrencies do not sufficiently

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[1] In Russia, the term "digital financial assets" is used as a counterpart.

[2] The term "distributed ledgers" means a decentralized or distributed unified system for accounting data on financial transactions, consisting of chains built according to certain rules from formed blocks of transactions that are used in decentralized virtual currency schemes. Digital Currencies. Bank for International Settlements, The Committee on Payments and Market Infrastructures. 2015;(137). 24 p.

[3] Guidance on Cryptoassets. Financial *Conduct Authority. Policy Statement.* 2019;(22). 55 p.

[4] Guidance for Enquiries Regarding the Regulatory Framework for Initial Coin Offerings (ICOs). *Swiss Financial Market Supervisory Authority (FINMA).* 2018. 11 p.

[5] In fact, as will be shown further in the research, virtual currencies are inherently different from digital tokens.

[6] Virtual currency can be defined as a digital expression of value that can be bought and sold digitally and can function as: 1) a means of exchange; and/or 2) an account unit; and/or 3) store of value, but does not have legal status in any jurisdiction (i.e. is not a legal tender from a regulatory point of view in most developed and developing countries) [2].

[7] Blockchain is a subtype of distributed ledgers, a database consisting of a chain of blocks, each containing information about the previous ones. The database is stored decentralized simultaneously on all computers of the system participants.

[8] Bitcoin is the first decentralized virtual currency (cryptocurrency), created in 2008 by a programmer or a group of programmers known by nickname Satoshi Nakamoto. Due to the high capitalization in the crypto-asset market, it is a system-forming virtual currency (for more details see [3]).

[9] Calculated according to: Coinmarketcap.com. URL: http://www.coinmarketcap.com (accessed on 07.10.2020).

perform standard monetary functions both from the standpoint of monetary theory and their use in the financial market, since their exchange value demonstrates unpredictable fluctuations of large amplitude. Banking regulators, consider cryptocurrencies an insecure means of exchange.[10]

It raises the question of creating digital assets that could provide greater stability of the market rate. This would allow for wider use of the assets as means of payment and savings. The idea of linking cryptocurrencies to certain assets was substantiated in the Whitepaper of MasterCoin, written by J. R. Willett in January 2012 [4], but was never implemented at that time. Over time, many leading cryptocurrency exchanges, such as Coinbase, Binance, Bitfinex, and others, began to provide users with the opportunity to keep funds in electronic wallets on exchanges in both virtual currencies and fiat money. This partially reduces the risk of high volatility of cryptocurrency rates, since the latter can be sold at any time for fiat currencies, gold or other assets.

In recent years, cryptocurrency futures and options became the tools to mitigate currency risk when dealing with cryptocurrencies. In this case, it is only about mechanisms to minimize currency risk, but not to ensure the stability of the cryptocurrency rate comparing to fiat money. This is a prerequisite for the wide circulation of cryptocurrencies. Thus, the most important task for many users is to ensure the stability of the cryptocurrency rate both in the short term to stimulate their wider use in payments and transfers, and in the long-term, to increase their savings by economic agents [5].

All these methods for minimizing risks of price volatility of cryptocurrencies are traditional. However, one of the most innovative ways to reduce price volatility is to create a variety of digital assets that, by their very nature, could provide a more stable market rate. In 2015, the idea of issuing a digital asset, whose price would depend on the value of the underlying asset to which it is tied, was implemented on the basis of the blockchain by Tether Limited. New digital financial assets are called stablecoins,[11] or secured digital assets. They can maintain the stability of their market rate through either the underlying collateral or algorithmic technology that regulates their market supply.

The aim of the article is to reveal the economic nature and characteristics of various types of stablecoins. To achieve this, we solve the following tasks: analyze various approaches to the interpretation of stablecoins and their regulation in developed countries; offer own interpretation and classification of stablecoins, considering their economic characteristics; analyze the main indicators of using stablecoins and identify the potential benefits and risks of their use for payment purposes.

Today, there is no unified interpretation and classification of stablecoins, which vary significantly both between countries and between international financial institutions. Being a variety of crypto-assets, stablecoins require a reasonable classification and economic interpretation of the various monetary and/or financial instruments included in stablecoins. The economic interpretation, in our opinion, should contribute to the development of unified mechanisms for monetary, investment and tax regulation of stablecoin turnover both at the national and international levels.

RESEARCH METHODS

Currently, most of the scientific research on stablecoins follow their empirical use. The

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[10] Statement on Crypto-Assets. *Bank for International Settlements, Basel Committee on Banking Supervision.* 2019. URL: https://www.bis.org/publ/bcbs_nl21.htm (accessed on 06.08.2020).

[11] We will also widely use synonyms of the term "stablecoins", such as: "stablecoins", "digital coins with a stable rate", "backed digital assets".

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main publications are presented in the studies by foreign authors and international financial organizations. The issues of the feasibility of issuing stable coins, their key characteristics, the tasks they are designed to solve, are considered in the works by economists of the Bank for International Settlements,[12] the European Central Bank [6]; International Monetary Fund [7] and others.

The largest audit, fintech companies and cryptocurrency exchanges also study this issue. For example, in January 2019, Price Water Cooper House released a report describing the emergence and evolution of stable value digital coins [8]. The development of the stablecoin market and the analysis of individual secured digital assets are devoted to studies of Binance cryptocurrency exchange,[13] fintech company Blockchain. org,[14] as well as experts from specialized Internet sources such as ForkLog [9] and others.

The order of functioning of secured stablecoins has been well-studied. However, the mechanisms for stabilizing the rate of unsecured stablecoins are mentioned by few scientific publications, for example [10, 11], etc. Works analyzing the fundamental and methodological problems of stablecoins, in fact, have been isolated and are currently aimed mainly at the Libra project developed by social network Facebook [12].

This study established the methods for interpreting the nature of stablecoins and identifying their characteristics on the method of rising from the abstract to the concrete, from the abstract provisions of monetary theory to the practical use of stablecoins as a digital financial asset in the modern payment system and in the financial market. We used the system-functional and system-structural methods, which made it possible to propose our own classification of stablecoins and identify the existing relationships between traditional money and assets and crypto-assets, as well as methods of statistical analysis and synthesis to assess the level of modern development of the stablecoin market.

ECONOMIC INTERPRETATION OF STABLOCOINS

The mechanism for ensuring the purchasing power of a derivative by holding an equivalent amount of the underlying asset is not new. A similar mechanism for ensuring the purchasing power of money was used repeatedly in the process of evolution of monetary forms, when it became necessary to link a new form of money that had no intrinsic value to a monetary form that had intrinsic value. As the latter, precious metals such as gold were most often used. An example of such purchasing power assurance is the classic full-cover banknotes[15] that appeared in the 18th — 19th centuries in most European countries. Such banknotes were representatives of high-grade money (gold and silver coins) in the vaults of the issuer. The issue of secured banknotes into circulation marked the beginning of a long transition from secured high-grade money to representatives of high-grade money and further — unsecured money.[16]

When issuing any new form of defective money, issuers always had to look for a reliable value anchor that would ensure the

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[12] Investigating the Impact of Global Stablecoins. *Bank for International Settlements. G7 Working Group on Stablecoins Research.* 2019;(187). 37 p.

[13] For more details, see: The Evolution of Stablecoins. *Binance Research.* 2019. URL: https://research.binance.com/ analysis/ stablecoins-evolution (accessed on 16.08.2020).

[14] The State of Stablecoins. *Blockchain Luxembourg S.A.* 2019. 140 p.

[15] Initially, the volume of banknotes in circulation was tied to a fixed amount of precious metal held in the issuing bank. This, on the one hand, would limit the volume of banknotes in circulation, on the other hand, it would stimulate economic agents to use a new monetary form.

[16] The process was caused both by the growing demand for means of circulation and means of payment to service an increasing number of transactions in the national and international commodity and financial markets, and by the technical capabilities to create new types and forms of money characterized by the lowest transaction costs.

purchasing power of the new monetary form in the absence of initial trust either in the issuer or in new forms of money. The last statement cannot be directly applied to modern fiat or fiduciary money, whose mandatory and permitted forms of use are established by law. Even in the case of fiduciary money, their purchasing power is based primarily on the confidence of users in the economic and financial policies of the monetary authorities or the activities of private issuers.[17]

The use of the mechanism for stabilizing the market rate of stablecoins, similar to the mechanism for ensuring the purchasing power of inferior money, is innovative. This mechanism is based on new information technologies that provide control over the circulation of digital coins. Unlike fiat money, stablecoins are not a generally recognized means of payment, they may not be issued by credit institutions, and they may not be subject to regulation by the monetary authorities. Therefore, the availability of adequate collateral for stablecoins is an important factor in market success in the context of the lack of confidence in their issuers.

Stablecoins can be viewed as a type of virtual currency backed or pegged to the price of a cryptocurrency, another asset, or a pool of assets to maintain a stable value.[18] Unlike traditional "unsecured" cryptocurrencies, which are generally decentralized [13] and do not have an identifiable issuer, or at least an institution that is financially liable to users, stablecoins represent a "demand" for a specific issuer (on its underlying assets,

funds or other rights) (Investigating the Impact of Global Stablecoins, 2019).

Due to the technological specifics of issue and use of various blockchains, as well as due to various methods and mechanisms to maintain the stability of the exchange rate, which causes the emergence of various property rights, stablecoins can differ significantly from each other [14]. In most of developed countries, regulators can now interpret stablecoins as deposits,[19] securities or derivatives,[20] electronic money,[21] and also as a kind of crypto-asset.[22]

The last two interpretations are most common due to the most similar functional characteristics of these financial instruments with stablecoins.

A unified approach to the interpretation of stablecoins may be absent not only at the international level, but also at the level of individual countries. For example, in the United States, there are several approaches to the interpretation of stablecoins, proposed by various regulatory bodies at both the federal and state levels. A possible interpretation of stablecoins in the United States is as a security. Thus, according to representatives of the US Securities and Exchange Commission (SEC), labeling stablecoins as "digital asset" does not affect their regulatory status, which depends on the circumstances of their use.[23] In particular, to stablecoins, like to other digital assets, the Howey test[24] can be used in the United States to de-

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[17] A similar analogy can be used in relation to electronic money as a new monetary form that appeared at the beginning of the 21st century. The use of this form is provided for by legislation, which requires the issuer of the electronic value to obligatory reimburse it at the request of the holder in cash or deposit money. This provides a guarantee for the holder of electronic funds to fulfill monetary obligations on the part of the issuer.

[18] Retail CBDCs: The Next Payments Frontier. *Official Monetary and Financial Institutions Forum (OMFIF),* IBM. URL: https://www.omfif.org/wpcontent/uploads/2019/11/Retail-CBDCs-The-next-payments-frontier.pdf (accessed on 07.08.2020).

[19] For more details, see: "Stable Coin" Guidelines. *Financial Market Supervisory Authority (FINMA).* 2019. 3 p.

[20] For more details, see: "Stable Coin" Guidelines. *Financial Market Supervisory Authority (FINMA).* 2019. 3 p.

[21] For example: Strategic Hub for Innovation and Financial Technology. Framework for "Investment Contract" Analysis of Digital Assets. *U. S. Securities and Exchange Commission.* 2019. 8 p.

[22] For more details, see: Guidance on Cryptoassets. *Financial Conduct Authority. Policy Statement.* 2019;(22). 55 p. ("Payment Services Act", 2019).

[23] Strategic Hub for Innovation and Financial Technology. Framework for "Investment Contract" Analysis of Digital Assets. *U. S. Securities and Exchange Commission.* 2019. 8 p.

[24] In 1946, in the case of the SEC against W. J. Howey Co, The US Supreme Court has defined an "investment contract" as

termine whether certain transactions qualify as an "investment contract". As a result, the SEC can consider the nature and functionality of each stablecoin separately.

In theory, when the value of stablecoins is backed by fiat currencies, the lack of price fluctuation should result in the impossibility of making a profit from owning stablecoins, making any expectation of profit for the holder unfounded. Regarding stablecoins backed by fiat currencies with a fixed redemption price, the SEC now maintains that, similar to traveler's checks, they function as a tradable means of exchange and payment that can be exchanged for a fixed amount of fiat money. At the same time, stablecoins backed by crypto-assets or unsecured stablecoins can be regarded by the SEC as securities.[25]

From the standpoint of the US banking regulation, stablecoins with fiat collateral and a fixed redemption price can be considered in a number of states, in particular, in the state of New York, as a certificate of debt that is in circulation like money and, accordingly, the issuer of stablecoins must obtain a banking license or a trust company license.[26] At the same time, the Financial Crimes Enforcement Network (FinCEN) of the US Treasury treats stablecoins as convertible virtual currencies, and considers their issuers as money transmitters (money transfer intermediaries). The appropriate regulatory regime should apply in their respect.[27] While most US states do not distinguish between stablecoins with different types of collateral, some states, such as Texas, distinguish between stablecoins that are backed by fiat currencies and those backed in a different way. Under the Texas Money Services Act, stablecoins backed by fiat currencies represent "money" or "monetary value" and, accordingly, these stablecoins are regulated by the state law on money transmitters.[28]

The interpretation of stablecoins as deposits or securities, depending on their functions, is used by the Financial Market Supervisory Authority (FINMA) of Switzerland. If stablecoins are backed by fiat currencies with a fixed rate of return, they are classified as deposits under banking law. If stablecoins are pegged to a basket of currencies, and the reimbursement rate depends on the price of the basket at the time of reimbursement, such stablecoins should be interpreted depending on who manages the underlying assets and risks. If stablecoin holders do this, then stablecoins equate to a collective investment scheme. If the issuer does so, stablecoins are treated as a bank deposit. When stablecoins are pegged to commodities, the interpretation of stablecoins by the Swiss Financial Markets Authority will depend on the nature of the asset claim and the type of commodity. If there is only a contractual requirement to the issuer for a precious metal stored in a bank or depository, then stablecoin is considered a deposit due to its similarity to funds stored in bank metal accounts. In contrast, if there is a contractual requirement for other commodities, stablecoin is generally treated as a security or derivative.[29]

In Japan, regulation of all types of crypto-assets is carried out under the new edi-

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an investment of money in a joint venture that is expected to generate profits through management and business efforts. URL: https://supreme.justia.com/cases/federal/us/328/293/(accessed on 10.11.2020).

[25] See: Strategic Hub for Innovation and Financial Technology. Framework for "Investment Contract" Analysis of Digital Assets. U.S. *Securities and Exchange Commission*. 2019. 8 p.

[26] Stablecoins: A Global Overview of Regulatory Requirements in Asia Pacific, Europe, the UAE and the US. *Clifford Chance*. 2019. September. 20 p.

[27] For more details, see: Application of FinCEN's Regulations to Certain Business Models Involving Convertible Virtual Currencies. *FinCEN*. URL: https://www.fincen.gov/sites/default/files/2019–05/FinCEN%20Guidance%20CVC%20FINAL%20508.pdf (accessed on 16.08.2020).

[28] Texas Department of Banking, Supervisory Memorandum 1037: Regulatory Treatment of Virtual Currencies Under the Texas Money Services Act. 2019, April 1. URL: http://www.dob.texas.gov/public/uploads/files/consumer-information/sm1037.pdf (accessed on 16.08.2020).

[29] "Stable Coin" Guidelines. *Financial Market Supervisory Authority (FINMA)*. 2019. 3 p.

tions of the Payment Services Act and the Financial Instruments and Exchange Act, which entered into force in 2020. However, this legislation cannot always be applied to all stablecoins. From the standpoint of the Financial Services Agency (FSA), depending on their legal status, stablecoins may differ from typical forms of crypto-assets. For example, stablecoins backed by fiat money cannot be interpreted as traditional crypto-assets. They can potentially be viewed as prepaid payment instruments or payment functions. The latter, initiated by such stablecoins, can be considered as remittances.[30]

The Monetary Authority of Singapore have similar views. In Singapore, under the new version of the Payment Services Act (PSA), which came into force in 2020, stablecoins backed by fiat money can be considered as electronic money. Their issuers may be subject to regulation as payment service providers that issue electronic money. At the same time, unsecured stablecoins (for example, algorithmically controlled stablecoins) can be considered digital payment tokens, and their issuers can therefore be regulated as payment service providers for transactions using digital payment tokens.[31]

The Monetary Authority of Singapore also admits that the issue and circulation of certain types of stablecoins, such as basket-backed assets, may be securities or derivatives and be regulated under the Securities and Futures Act (SFA).[32]

There is no harmonized approach to the regulation of crypto-assets in general and stablecoins in particular in the European Union. A number of researchers believe that the legal basis that can be applied to a certain type of stablecoins, namely, stablecoins backed by fiat currencies, is the electronic money regulation regime [6].

The legal regime for electronic money was established by the European Parliament and the Council in the second Electronic Money Directive (EMD2). The Directive defines electronic money as "electronic (including magnetically) as represented by a claim on the issuer which is issued on receipt of funds for the purpose of making payment transactions and which is accepted by a natural or legal person other than the electronic money issuer".[33]

Thus, if a stablecoin is issued formally in accordance with all the requirements of the Electronic Money Directive, it can be considered as electronic money in the EU countries, and the activities of its issuer should be regulated by the relevant regulatory requirements. It is likely that any stablecoin can formally embody monetary value in electronic form, be used to make payments and be accepted as a means of payment by individuals or legal entities other than the issuer. However, stablecoins do not necessarily represent a claim on the issuer and/or may not be issued based on the receipt of an equivalent amount of funds by the issuer.

In the UK, similarly to European Union countries, fiat-backed stablecoins can be considered e-money tokens,[34] if they meet the definition of e-money under the UK regulation, which still coincides with e-money regulation in the EU countries. Stablecoins backed by commodities or other assets, as well as unsecured stablecoins in the UK, can be interpreted functionally as debt securi-

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[30] Revisions to Payment Services Act & Financial Instruments and Exchange Act on Crypto Assets. *Anderson Mori & Tomotsune, Financial Services & Transactions Group.* 2019. May. 26 p.

[31] Payment Services Act (Revision). *Singapore Statutes Online Plus.* 2019. 191 p.

[32] Stablecoins: A Global Overview of Regulatory Requirements in Asia Pacific, Europe, the UAE and the US. *Clifford Chance.* 2019; Sept. 20 p.

[33] Directive 2009/110/EC "On the Taking up, Pursuit and Prudential Supervision of the Business of Electronic Money Institutions". *Official Journal of the European Union,* 2009;16Sept. (267):7–17.

[34] Electronic Money Regulation 2011. Statutory Instruments 2011. No. 99. Financial Services and Markets. URL: http://www.legislation.gov.uk/uksi/2011/99/contents/made (accessed on 16.04.2020).

ties, derivatives or shares in a collective investment scheme.[35]

However, not in all countries, fiat-backed stablecoins can be interpreted as electronic money and subject to relevant regulations. For example, the Malta Financial Service Authority in the Virtual Financial Assets Act provides for individual regulatory regimes for different types of assets based on distributed ledger technology (DLT assets). Under this regulation, DLT assets may include: virtual tokens, virtual financial assets, electronic money, and financial instruments. In Malta, stablecoins are considered as a type of virtual financial assets (digital assets pegged to the fiat currency of the euro[36]), and their issuers are subject to the regulatory requirements of the Law on Virtual Financial Assets.[37]

The Bank International for Settlements (BIS) has similar views and believes that stablecoins should be considered as a variety of crypto-assets that use various stabilization mechanisms through the provision of benchmark assets in order to minimize fluctuations in their market value.[38] In this case, the prudential regulation of stablecoin issuers should not fundamentally differ from the regulation of other types of crypto-assets that can be used as a means of exchange or payment. The Financial Stability Board G20 (FSB) shares similar views and indicates that stablecoins are a type of crypto-asset (in a broader sense, a type of digital asset) that maintain a stable value relative to a specific asset, pool or basket of assets. The Financial Security Council emphasizes that digital assets do not include digital forms of fiat currencies.[39]

In our opinion, the direct application of the interpretive construction of electronic money in relation to stablecoins (even those backed by fiat currencies) does not seem to be sufficiently justified. The definition of electronic money, in the second EU Directive on electronic money, does not consider the functional and technological features that characterize the release of modern stablecoins as a new type of digital assets based on distributed ledger technology.

In particular, electronic money is widely regarded as a digital alternative to cash, whereby the key purpose of issuing and using it is to make ongoing payments. On this very purpose they are issued as non-interest bearing obligations of the issuer. Electronic money does not represent any tangible asset, but is the electronic equivalent of fiat currency of the corresponding value. On the contrary, most stablecoins are backed by underlying assets, therefore their primary function is to store value, while the functions of a means of exchange and/or payment are derived functions.

A typical feature of electronic money is their circulation failure, since now they are issued in closed circulating systems.[40] Each transaction using electronic money requires mandatory monetary intermediation, since after each payment, electronic money must be returned to the issuer for the verification and destruction, leading to the final settlement [15]. Issuing electronic money in openly circulating systems that provide for their circulation is only possible if the issuer is the central bank or another monetary regulator, but in this case, it is about central bank digital currencies (Central Bank Digital Currencies — CBDC).[41] Unlike electronic money, stablecoins are issued

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[35] Guidance on Cryptoassets. Financial Conduct Authority. Policy Statement. 2019;(22). 55 p.

[36] EURS: Euro-backed stablecoin. STATIS. URL: https://eurs.stasis.net/ (accessed on 16.08.2020).

[37] Virtual Financial Assets Act. *Malta Financial Services Authority (MFSA)*. 2018. 59 p.

[38] Designing a Prudential Treatment for Cryptoassets. Bank for International Settlements, Basel Committee on Banking Supervision. Discussion Paper. 2019. 18 p.

[39] Addressing the Regulatory, Supervisory and Oversight Challenges Raised by "Global Stablecoin" Arrangements. *Financial Stability Board (FSB)*. 2020. 62 p.

[40] The electronic money issuer is not required to keep the full amount of funds raised during the issue as collateral (partial reservation is applied). In the case of fiat-backed stablecoins, the collateral is voluntary, but generally complete.

[41] For more details, see: [16].

as tradable financial instruments that can change hands, since using blockchain technology eliminates the need for monetary intermediation in exchange and payment transactions.[42] This allows stablecoins to trade on the exchange market and generate income for their owners.

Table 1 presents major characteristics of stablecoins backed by fiat currencies, compared to electronic money and cryptocurrencies.

Table 1 demonstrates that, on the one hand, stablecoins can have a number of characteristics of cryptocurrencies, on the other hand, some stablecoins have characteristics of electronic money. In most cases, stablecoins use the same distributed ledger issuing technology as cryptocurrencies. As in the case of cryptocurrencies, stablecoins are denominated in new units of account (albeit tied to underlying assets), which, by analogy with traditional cryptocurrencies, implies the need to establish the market rate during exchange trading. Unlike cryptocurrencies, they represent a requirement for a clearly identified issuer or for the underlying assets that underlie the issue of stablecoins. Thus, most stablecoins differ from traditional cryptocurrencies, but at the same time, they are not a complete counterpart of electronic money on the blockchain platform.

In our opinion, stablecoins represent a new, hybrid type of digital assets, which combines innovative mechanisms for direct value exchange and management of financial transactions without intermediaries with centralized issue mechanisms and the use of various methods to ensure the price stability of financial assets. In general, *stablecoins are crypto-assets that: 1) are issued by an identified issuer on the blockchain in the form of tradable digital obligations or depositary receipts; 2) maintain the stability of the exchange rate by linking to the base low-volatility cash or commodity security or by using algorithmic technologies; 3) can be used as a store of value, as well as a means of exchange and/or a means of payment for persons other than the issuer.*

CLASSIFICATION OF STABLCOINS AND THEIR FUNCTIONAL FEATURES

Stablecoins are not homogeneous. They differ in various ways, according to which they can be classified. One of the main criteria for classifying stablecoins is the mechanism to ensure the stability of their exchange rate. The stability of the stablecoin market rate can be achieved in various ways (*Fig.*).

Fig. demonstrates that according to the exchange rate stabilization mechanism, stablecoins can be subdivided into collateral (secured) and algorithmic (unsecured).

Collateral stablecoins

Collateral (secured) stablecoins are the most popular. They can be divided into two types: 1) backed by traditional assets (pegged to fiat currencies or backed by goods and other assets); 2) backed by crypto-assets. To provide the first type of collateral stablecoins, the following are used: fiat currencies (as a rule, freely usable currencies — US dollars, euros, etc., or a basket of such currencies); goods (usually gold and other precious metals); commodity-money security (equity security with fiat money and precious metals); other assets (securities, real estate, etc.). As collateral for the second type of collateral stablecoins, the following are used: cryptocurrencies (Ethereum, Wave, etc., as well as baskets of cryptocurrencies or stablecoins); fiat-cryptocurrency collateral (equity collateral with fiat money and cryptocurrencies).

In general, collateralized digital assets use the most traditional way to achieve exchange rate stability, which is that the stablecoin issuer undertakes to exchange it for

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[42] It is currently possible for stablecoin issuers to change their guarantee obligations (if any) to back up stablecoins. In addition, there are no regulatory requirements for stablecoin issuers, with the exception of specific regulations such as mandatory customer identification and anti-money laundering requirements.

Major economic and functional characteristics of stablecoins backed by fiat currencies

Characteristics	Electronic money*	Stablecoins**	Cryptocurrencies***
Demand			
Intrinsic value	No	No	No
Issuer requirement	Yes	Yes	No
Means of exchange	Yes	Yes (limited)	Limited
Means of payment	Yes	Limited	Limited
Unit of account (at the state level)	Yes	No	No
Store of value	Yes, but with inflationary and liquidity risk	Yes, but with the credit risk of the issuer and the inflationary risk of the underlying asset	Yes, but with great volatility
Accrual of interest income	No	No, but there is a possibility of getting insignificant speculative income	No, but there is an opportunity to receive significant speculative income
Supply			
Issue procedure	Centralized	Centralized	Decentralized
Issue source	Private	Private	Private
Issue volume	Flexible	Relatively flexible	Non-flexible
Issue rules	Issue based on equivalent exchange for other forms of money	Issue based on the collateral of the underlying fiat asset	Issue is determined by a computer protocol with established limits
Change in terms of issue	Yes, subject to regulatory changes	Yes, subject to change in issuer's policy	Possible, subject to reaching a consensus with major miners
Issue cost	Low	Relatively low	High (driven by electricity costs for computing)
Possibility of circulation	No	Yes	Yes
Availability of monetary intermediation	Yes, both at the is sue and payment levels	No, at the payment level. Yes, at the issue level	No, both at the issue level and at the payment level

Note: * — electronic money as defined in EMD2; ** — the example of stablecoin backed by the fiat currency Tether; *** — the example of Bitcoin

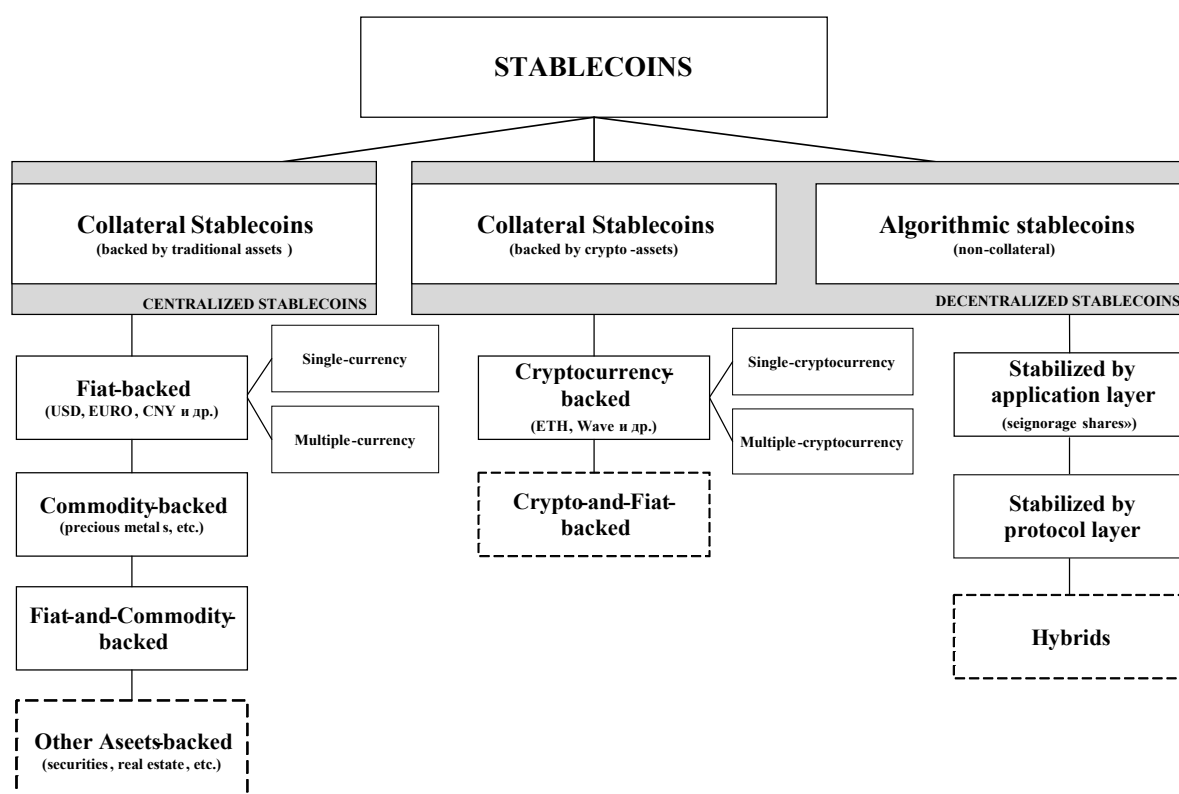*Source:* compiled by the author.

Fig. **Modern classification of stablecoins by the exchange rate stabilization mechanism**

Note: the dotted line marks the varieties of stablecoins, whose issue is possiblein theory, but currently is not widespread.

Source: compiled by the author based on [17]; Guidance for Enquiries Regarding the Regulatory Framework for Initial Coin Offerings (ICOs). Swiss Financial Market Supervisory Authority (FINMA). 2018. 11 p.; The State of Stablecoins. Blockchain Luxembourg S.A. 2019. 140 p.

the underlying asset at a fixed rate. Therefore, debt obligations are not only issued centrally, but also centrally repaid, which implies trust in the issuer who controls the issue of stablecoins and their collateral. To build user confidence, the issuers of such stablecoins develop various schemes to confirm that their debt obligations are fully backed by appropriate reserves. However, the strongest evidence of collateral is regular audits of reserves, which should be performed by independent, reputable audit firms.

Collateral stablecoins backed by fiat currencies can be exchanged for a fixed amount of local currency at any time, because their issuer undertakes to redeem them in freely tradable currency at a fixed rate (usually 1:1). For this, the issuer provides 100% issue

of stablecoins with a reserve in freely usable currency, which is stored in its bank account. The main advantages of stablecoins backed by fiat currencies are: high stability of the market rate; easy issue and operation of the stabilization mechanism, as well as low cyber risks. The latter advantage is due to the fact that the collateral for securing the stablecoin is not stored on the blockchain.

One of the main disadvantages of fiat-backed stablecoins is their centralized issue. Ensuring a stable exchange rate for digital coins requires a financial institution for reliable storage and competent management of reserve funds. The idea of centralized issue goes against the classical concept of crypto-assets, based on the fact that the use of distributed ledger technology allows

for the decentralized storage of all financial information related to assets without intermediaries.[43] In theory, centralized storage cannot guarantee digital coin holders against managerial errors and abuses by the issuer. Moreover, the process of destroying stablecoins when exchanging them for fiat money is rather expensive and slow. It is also necessary to carry out regular independent audits of the issuer's activities to ensure the financial transparency of the issuer for market participants. The most famous examples of fiat-backed stablecoins are: Tether USD (USDT), TrueUSD (TUSD), USD Coin (USDC), etc.

Collateral stablecoins backed by commodities (precious metals) certify the ownership of the holder of the stablecoin to one ounce of gold held in the bank's depositories of the issuing company. They do not represent a debt obligation of the issuer to provide a fixed amount of precious metal to the holder of the secured digital asset.

Currently, among the precious metals, gold is used in most cases to provide stablecoins. Although the price of gold as an underlying asset is more volatile than the exchange rates of freely usable fiat currencies, gold is a commodity, not a debt instrument, and has a value that does not depend on the actions of monetary authorities. Similar to the interpretation of classical banknotes as warehouse receipts[44] or special certificates of deposit [19], which represent a property right rather than a promissory note of the issuer, gold-backed stablecoins can be viewed as a digital counterpart of such certificates of deposit. The most prominent examples of such stablecoins are PAXOS Gold (PAXG), Tether Gold (XAUT), Digix Gold Token (DGX), etc.

Stablecoins backed by cryptocurrencies are designed to solve the main problem of centralized stablecoins. The use of fiat-backed stablecoins carries credit risk. Backing of such stablecoins is outside the blockchain where they circulate. It is controlled by the issuer, which, in case of unfavorable circumstances, may be unable to repay its debt obligations. Stablecoins backed by gold or other commodities are not associated with credit risk. However, even in this case, it is necessary to trust the company that provides storage services for the underlying asset, as well as its delivery to the owner. To mitigate credit risk as well as the risk of holding backing assets, stablecoins can be backed by cryptocurrencies. Unlike the stablecoins discussed earlier, here the collateral is on the same blockchain as the stablecoins. Due to this, stablecoins backed by cryptocurrencies are controlled by a code and obligations are canceled automatically.

The main advantages of stablecoins backed by cryptocurrency are as follows: they are more decentralized; there is a possibility of a quick and inexpensive exchange for the basic cryptocurrency in the blockchain; high transparency makes it easy to check the security of the stablecoin. The disadvantages of crypto-backed stablecoins are: less stable price of the secured digital asset than in the case of fiat collateral; the possibility of automatic liquidation of stablecoins during the depreciation of the base cryptocurrency and technological failures[45]; inefficient use of capital to support the stablecoin; it is more complicated to maintain a stable exchange rate for digital coins than

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[43] The study by Coin Metrics revealed that in September 2019, 80% of the Tether USD stablecoin issue was stored in 318 wallets. Each of these addresses had more than $1 million. For comparison, there are more than 20,000 wallets with such balances in the network of virtual currency Bitcoin (see: [18]). According to the analytical company Intotheblock, in November 2019, 2.8 billion USDT were concentrated on 104 e-wallets, which was 70% of the stablecoin turnover. See: Intotheblock news. URL: https://twitter.com/intotheblock/status/1184044492107714560 (accessed on 16.08.2020).

[44] See: [20, 21].

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[45] A similar case occurred to holders of DAI stablecoins during the financial crisis on March 12, 2020. Back then, due to the sharp drop in the price of Ethereum, used as the underlying digital asset for collateral for dollar-pegged DAI stablecoins (MakerDAO), thousands of collateralized debt positions by stablecoins held by investors were liquidated.

collateral with fiat money or gold. Representatives of such stablecoins are Single-collateral DAI (MakerDAO), bitUSD (BITUSD), Neutrino Dollar (USDN), etc.

To diversify the risks associated with fluctuations in the market rate of a fiat currency or the market price of a commodity, the stablecoin can be fully backed not by one currency (fiat or crypto) or one commodity (precious metal), but by a basket of these assets. Stablecoins of this type are at various stages of development and do not yet have a long history. For example, Multi-collateral DAI (MakerDAO), USDx stablecoin, etc.

Algorithmic stablecoins

Unlike secured stablecoins, the market rate of algorithmic (unsecured) stablecoins is not directly supported by fiat currencies, commodities, cryptocurrencies, or other assets. In this case, it is assumed to use a trust model for ensuring the value of stablecoins, similar to that used to issue modern fiduciary money, but with specific using algorithmic technologies to regulate the volume of their supply. Currently, there are three main mechanisms for stabilizing unsecured stablecoins: 1) at the application level; 2) at the level of protocols; 3) hybrid (combining elements of the first two mechanisms).

In general, almost every crypto-asset operates at the protocol and application levels [17]. A protocol is a set of rules for the entire cryptocurrency system. For example, one of the rules of the Bitcoin protocol is that the maximum block size must be 1 MB. Changing the Bitcoin protocol level requires the consent of the majority of users, which is rather complicated. Therefore, making changes at the application level seems to be easier.

Stablecoins regulated at the application level. Today, the concept of so-called "seignorage shares", proposed by Robert Sams in 2014 [22], has become popular among proponents of unsecured stablecoins regulated at the application level. It is based on the idea that a smart contract can be created on behalf of the issuer (the prototype of the central bank in this system), and the monetary policy of this smart contract will be to perform only one authority, i.e. to issue a currency that will be traded at a price of $1. To control the rate of this currency, it is necessary to control its issue volume. Let us assume that the stablecoin is trading at $2. It means that the price is too high due to very low supply. To compensate for the insufficient supply of stablecoins, a smart contract could initiate the issue of new digital coins and then sell them in the market, increasing the supply until the stablecoin price returns to $1.

Due to using smart contracts in the stabilization mechanism, the issuer would receive some additional profit, the seignorage income. If digital coins would be trading at a very low rate, for example, 0.5 USD, the smart contract should initiate the purchase of coins on the market to reduce the volume of coins in circulation. Since the accumulated seignorage might not be enough to buy digital coins with a stable exchange rate, the seignorage shares concept suggests that instead of distributing seignorage income, the issuer may issue certificates of entitlement to receive a share of future seignorage income. Thus, equity holders will expect an increase in the price and demand in stablecoins. This will ultimately help them receive a larger seignorage income that will be paid to the share owners. This will reduce the supply of stablecoins, and the digital coin can stabilize again at the level of $1.

One of the main disadvantages of the seignorage shares concept is that we cannot accurately analyze the functionality of such systems. This can provoke significant fluctuations in the market rates of unsecured stablecoins. Moreover, a reason for the slow development of unsecured stablecoins regu-

Classification of stablecoins

Classification feature	Type	Examples of stablecoins
Exchange rate stabilization mechanism (collateral form)	Backed by fiat currency	TrueUSD (TrustToken), USD Coin (CENTRE), Binance USD (Paxos Trust Company, Binance), STASIS EURO (STASIS), Steem Dollars (Steemit project), StableUSD (Stably), *Swiss franc — DCHF (Sygnym)* etc.
	Backed by goods (precious metals, etc.)	Digix Gold Token (DigixDAO), PAX Gold (Paxos Trust Company), DigixDAO (DigixDAO), Tether Gold (Tether Limited) etc.
	Backed by a basket of fiat currencies	*Libra (Facebook & Libra Association)* etc.
	Mixed collateral (fiat currency, commodities, securities, etc.)	Tether USD (Tether Limited), STASIS EURO etc.
	Cryptocurrencies	Neutrino Dollar (USDN); bitUSD (BITUSD); Single-collateral DAI (MakerDAO) etc.
	Backed by a basket of cryptocurrencies	USDx stablecoin (dForce Network), Multi-collateral DAI (MakerDAO), Saga (SGA) etc.
	Unsecured (regulated at the protocol level)	BitBay (BAY) etc.
	Unsecured (regulated at the application level)	There are currently no well-known examples
Direction of use (category of users)	For retail payments	Tether USD, TrueUSD, Paxos Standard (Paxos Trust Company), *Libra*
	For wholesale payments	Signet (Signature Bank); JPM Coin (JPMorgan Bank); USC — *Utility Settlement Coin (UBS, Deutsche Bank, Santander, BNY Mellon, ICAP and the other 11 banks), Swiss franc — DCHF* etc.
Exchange rate	Fixed	Signet, JPM Coin, *USC* etc.
	Floating	Tether USD, TrustUSD, Paxos Standart, BitBay, *Libra* etc.
Scale of circulation	Local	Tether USD, TrueUSD, Paxos Standard, USD Coin, Binance USD, Gemini Dollar (Gemini Trust Company LLC) etc.
	Global	JPM Coin, *Wells Fargo Digital Cash (Wells Fargo Bank), USC — Utility Settlement Coin, Libra* etc.

Note: Stablecoins that are currently in design or development are marked in italics.

Source: compiled by the author based on Coinmarketcap.com. URL: https://coinmarketcap.com/currencies/ (accessed on 16.08.2020); official websites of stablecoin issuing companies.

lated at the application level is the inability to realize the main benefits of unsecured stablecoins under existing regulations. As a result, a number of promising projects such as Basecoin (Basis) and Havven have been closed.

Stablecoins regulated at the protocol level. An important direction in the development of unsecured stablecoins is using various stabilization methods at the protocol level. Japanese researchers Kenji Saito and Mitsuru Iwamura [10] proposed a stabilization mechanism that includes three instruments to regulate the market price of stablecoins. The first tool involves an algorithm for the issuer to timely automatically response to the changed level of demand for stablecoins by an equivalent increase in the supply of digital coins in the market. The second tool for regulating the market price of stablecoins provides for the variability of the reward for mining or forging, depending on the volume of supply of digital coins in the system. The third tool is to charge negative interest on digital coin storage in e-wallets to prevent the accumulation of stablecoins and to encourage consumers to pay by stablecoins.

The main advantages of unsecured stablecoins are the following: no collateral; complete decentralization of the issue of coins; independence from exchange rate fluctuations of cryptocurrencies or fiat currencies. The disadvantages of unsecured stablecoins include: the need for permanent growth of the system and exposure to a decrease in demand for digital coins; the difficulty of analyzing their security and stability; the complicated implementation of the stabilization mechanism. Currently, unsecured stablecoins are less well known and less widespread than secured stablecoins due to the lack of transparency in the mechanism for maintaining their value and trust from a wide range of users.

Stablecoins can share some characteristics with digital tokens, and sometimes even

be identified as tokens.[46] Like tokens, stablecoins are usually issued not on the original, but on the pre-existing blockchain, and represent a requirement for an identifiable issuer or collateral assets.[47] This approach does not seem entirely justified. While digital tokens are issued with very specific functions or for specific purposes (for example, to provide their owners with ownership and/or the right to receive dividends, or to grant the right to access a certain product or service), stablecoins are typically do not provide these functions. Stablecoins are to be used as a universal means of exchange in the purchase and sale of goods or services provided by any organization or individual other than the issuer. Therefore, stablecoins must be distinguished from digital tokens according to their economic nature.

Table 2 presents the main examples of modern stablecoins, classified by various classification criteria.

Table 2 indicates that besides the classification by the rate stabilization mechanism, we can distinguish two more key features of stablecoin differentiation: by the direction of use (the level of users who can hold and make transactions with stablecoins) and by the exchange rate regime.

In terms of use, secured digital assets can be retail or wholesale. The term "retail stablecoins" refers to stablecoins that can be used universally by any user (both individuals and legal entities). The term "wholesale stablecoins" [23], on the contrary, denotes stablecoins with limited access and use. As a rule, only specialized financial institutions or individual clients of such institutions are entitled to access them. For example, Facebook and the Libra Association have pro-

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[46] For example, the largest information Internet portal Coinmarketcap.com identifies Tether and DAI stablecoins as tokens.

[47] Usually, such tokens are issued as a result of the Initial Coin/Token Offering (ICO/ITO) mechanism. Currently, the term ICO/ITO is widely used by economists to refer to the processes where companies issue tokens to a wide range of people to raise funds for their innovative projects.

posed making their Libra stablecoin available to all users, so it can be considered a retail stablecoin. At the same time, the Utility Settlement Coin (USC) stablecoin, developed by a group of banks — UBS, Deutsche Bank, Santander, BNY Mellon, etc. — is intended for use only by financial institutions that are part of the USC consortium. Therefore it can be considered as a wholesale stablecoin (*Table 2*).

Exchange rate for stablecoins can be either fixed or floating. Wholesale stablecoins, which fall under the depositary receipt model, are the tokenized asset underlying the issuer's obligations (typically a bank deposit). Consequently, such stablecoins have fixed exchange rates and are not listed on exchanges. This means that such stablecoins are purchased and redeemed at their par value. The price of other stablecoins, even 100% fiat-backed coins, can fluctuate relative to the base currency. Stablecoins Tether, TrueUSD, Paxos, etc. are quoted on cryptocurrency exchanges and have exchange rates that fluctuate against the US dollar or other collateral fiat currency (*Table 2*). Today, we can only think of wholesale stablecoins with a fixed exchange rate and retail stablecoins with a floating exchange rate. Since wholesale stablecoins are created primarily to replace or supplement existing settlements using bank or central bank money, wholesale floating exchange rate stablecoins cannot be serve this purpose. Retail stablecoins with a fixed exchange rate seem only a matter of time, but at the moment there are no such examples.

By the scale of their use, stablecoins can be divided into local and global. Local stablecoins (LSC) are usually issued by financial or fintech companies directly or indirectly associated with large cryptocurrency exchanges such as Bitfinex, Binance, Gemini, and others that trade crypto-assets. The use of local stablecoins is currently limited to the digital asset market, so they are predominantly an exchange-traded product.

Global stablecoins (GSC) are stablecoins issued by large investment banks and banking consortia, for example: JPM Coin (JPMorgan Bank), Signet (Signature Bank), USC — Utility Settlement Coin (UBS, Deutsche Bank, Santander, BNY Mellon, ICAP and others). Moreover, global stablecoins are now developed by multinational technology companies and associations such as Libra (Facebook and Libra Association), etc.

Currently, local stablecoins are listed on more than 120 cryptocurrency exchanges, with the Tether stablecoin having the largest number of common individual exchange listings, namely: Tether USDT — 149; USD Coin — 92; DAI — 67, TrueUSD — 60; Paxos Standard — 60, Gemini Dollar — 19, etc.[48] The same was with currency pairs for stablecoins. At the beginning of 2020, Tether USDT was trading against over 400 different cryptocurrencies, while stablecoins USD Coin and TrueUSD had 149 and 119 currency pairs, respectively.[49] *Table 3* presents the comparative data of the most famous retail local stablecoins, which are quoted on cryptocurrency exchanges.

Table 3 shows that in October 2020, secured stablecoins are the leaders among retail stablecoins in terms of capitalization. The overwhelming share of the market (about 95%) was occupied by stablecoins backed by fiat currencies, such as Tether USD (USDT), USD Coin (USDC), Paxos Standard (PAX), Binance (USD), TrueUSD (TUSD), etc. Stable coins backed by gold and crypto-assets played a significantly smaller role (about 5%).

The capitalization of most local stablecoins has increased significantly against the backdrop of the economic crisis that began in 2020, exacerbated by the COVID-19

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[48] Data of Crypto Exchanges. *CoinCodex*. URL: https://coincodex.com/crypto/tether/exchanges/ (accessed on 25.10.2020).
[49] Data of Crypto Exchanges. CoinCodex. URL: https://coincodex.com/crypto/true-usd/exchanges/ (accessed on 18.04.2020); The State of Stablecoins. *Blockchain Luxembourg S.A.* 2019. 140 p.

Table 3

Comparative data of leading local stablecoins

No.	Stablecoin name (sign)	Issuer (launch year)	Issue model (blockchain)	Provision method (unit)	Circulation volume, mln	Capitalization, USD mln
1	Tether USD (USDT)	Tether Limited (2015)	Centralized (Bitcoin, Ethereum, EOS, TRON, Algorand)	Fiat (USD)	15 721.47	15 738.39
2	USD Coin (USDC)	CENTRE (2018)	Centralized (Ethereum)	Fiat (USD)	2855.23	2857.03
3	Multi-Collateral DAI (DAI)	MakerDAO (2019)	Centralized (Ethereum)	Ethereum-based crypto assets approved by Maker token holders	869.32	877.65
4	Binance USD (BUSD)	Paxos Trust Company, Binance (2019)	Centralized (Ethereum ERC-20)	Fiat (USD)	672.74	672.74
5	TrueUSD (TUSD)	TrustToken (2018)	Centralized (Ethereum)	Fiat (USD)	365.71	367.37
6	Paxos Standard (PAX)	Paxos Trust Company (2018)	Centralized (Ethereum)	Fiat (USD)	244.95	245.11
7	HUSD (HUSD)	Stable Universal (2019)	Centralized (Ethereum)	Fiat (USD)	139.14	139.21
8	STASIS EURO (EURS)	STASIS (2018)	Centralized (Ethereum)	Fiat (Euro)	31.98	38.80
9	USDK (USDK)	OKLink, OKEx (2019)	Centralized (Ethereum ERC-20)	Fiat (USD)	28.60	28.66
10	Neutrino USD	Neutrino Protocol Volunteers (2019)	Centralized (Waves)	Waves cryptocurrency based on a smart contract	26.41	26.28

Source: official websites of stablecoin issuing companies. URL: https://coinmarketcap.com/currencies/bitcoin/ (accessed on 10.10.2020).

coronavirus pandemic. In March 2020, the trading volume of Bitcoin/Tether USDT (BTC / USDT) reached 21.6 million Bitcoin, which is over 280% more than the trading volume in this pair in February 2020. The total volume of stablecoins in circulation in early April 2020 exceeded $7.5 billion and amounted to more than 3.7% of the total market value of all crypto-assets. As a result, the total volume of transfers of funds from cryptocurrencies to stablecoins reached a historic record of $444.2 million,[50] and the total volume of transactions with stablecoins exceeded $90 billion.[51] In the context of the global COVID-19 coronavirus pandemic and the significantly increased volatility of cryptocurrency rates in 2020, the market capitalization of major stablecoins increased more than twice, amounting to 6.5% of the Bitcoin capitalization.

While local stablecoins have a limited target audience and are not currently used as a universally accepted means of payment, global stablecoins could, in theory, be issued both nationally and internationally. Also, they could potentially be a universally available means of payment or a specialized settlement tool for clients of financial institutions around the world. Switching from a financial instrument as a store of value and exchange, as well as a tool to increase dollar liquidity in the crypto-asset market to a widely used means of payment at the international level, represents a paradigm shift in the development of stablecoins. Due to the network effect among millions of users, global stablecoins, primarily from transactional technology companies such as Facebook,[52] are able to stimulate com-

petition in international payment services, increasing the speed of cross-border payments and reducing their cost. Also, global stablecoins can provide a wider level of financial accessibility to numerous users without bank accounts in different countries of the world [24].

The potential benefits of stablecoins can only be realized if to eliminate the main legal, regulatory and supervisory issues and risks associated with their wide circulation. The main problems and risks of using stablecoins include: the need for legal certainty of their turnover; rational management of the ecosystem of stablecoins and investment rules underlying the stabilization of their value; combating money laundering, terrorist financing and other forms of illegal financing[53]; control over the efficiency and integrity of the functioning of payment systems; ensuring cybersecurity, confidentiality and protection of personal data; protection of consumer and investor rights; issues of tax discipline, etc. Global stablecoins can create risks for the conduct of monetary policy, ensuring financial stability and the stability of the international monetary system.[54] All these issues are subject to close supervision by organizations such as the FATF, BIS, etc., and can be the subject of another scientific study.

Most modern stablecoin systems are characterized by a high level of centralization. Therefore, such systems are easier to regulate as opposed to decentralized cryptocurrency systems. This opens up the op-

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[50] State of the Network Report. Coin Metrics. URL: https://coin-metrics.io/coin-metrics-state-of-the-network-issue-42-data-shows-cryptoasset-sell-off-was-driven-by-short-term-holders/ (accessed on 18.04.2020).

[51] The Block Research Report March 2020. The Block. URL: https://www.theblockcrypto.com/genesis/61451/the-block-research-report-march-2020 (accessed on 18.04.2020).

[52] The infrastructure of social network Facebook is more than 2.5 billion people. Also, the company owns a number of other

social applications and instant messengers (Instagram, WhatsApp, etc.).

[53] For more details, see: Virtual Assets and Virtual Asset Service Providers. Guidance for a Risk-based Approach. *The Financial Action Task Force (FATF)*. 2019. URL: https://www.fatf-gafi.org/media/fatf/documents/recommendations/RBA-VA-VASPs.pdf (accessed on 20.10.2020); Report to the G20 Finance Ministers and Central Bank Governors on So-called Stablecoins. *The Financial Action Task Force (FATF)* 2020. URL: https://www.fatf-gafi.org/publications/fatfgeneral/documents/report-g20-so-called-stablecoins-june-2020.html (accessed on 20.10.2020).

[54] For more details, see: Investigating the Impact of Global Stablecoins. *Bank for International Settlements. G7 Working Group on Stablecoins Research*. 2019;(187). 37 p.

portunity for financial regulators to exert legal and administrative influence on stablecoin issuers and to minimize financial risks both in national jurisdictions and on the international level.

CONCLUSIONS

The research results lead to the following conclusions. Currently, there is no unified interpretation of stablecoins due to the great variety of their forms and methods to ensure the stability of their market value, as well as due to their specific issue. Therefore, stablecoins have multiple interpretations in developed countries: electronic money, deposits, securities and derivatives, secured crypto-assets, etc. When interpreting stablecoins, the main attention should be paid to identifying the economic purpose of such stablecoins, as well as the functional and technological features of their issue and circulation.

In general, stablecoins should be viewed as a new hybrid type of crypto-assets that combines innovative mechanisms for direct value exchange and management of financial transactions without intermediaries with centralized issuing mechanisms and the use of various methods to ensure price stability. In practice, stablecoins can be interpreted as a subtype of virtual currencies, whose main purpose is to perform the functions of a store of value and payment in the financial market. For the circulation of stablecoins it is advisable to be regulated within the framework of unified regulatory and legal norms that ensure their coordinated monetary, investment and tax regulation at the international level.

The suggested classification of stablecoins made it possible to draw more clear distinctions between economic differences in the mechanisms of issue and collateral, as well as the scale of circulation of collat-

eral and algorithmic stablecoins. Today, local stablecoins are the most common, with the largest share belonging to centralized secured digital assets. Stablecoins backed by fiat currencies remain dominant both in terms of capitalization and the number of transactions. Secured cryptocurrencies dominate among decentralized stablecoins. Unsecured stablecoins have not gained widespread acceptance due to a lack of massive user confidence and regulatory concerns, despite a number of technological innovations that underlie their stabilization mechanism.

The ability of stablecoins to maintain their market value almost unchanged determines the widespread use of local stablecoins as a safe place in the crypto-asset market during periods of downward volatility in cryptocurrencies, caused by both temporary market fluctuations and large-scale economic crises. Wider use of local stablecoins can positively influence the development of the crypto-asset market by increasing its liquidity and stimulating the use of more stable forms of digital financial assets.

Stablecoins as a universal means of payment may be most popular at the global level. Global stablecoins can increase the speed of cross-border payments and reduce their cost, as well as provide a wider level of financial inclusion for a large number of users without bank accounts. Using stablecoins at the global level may lead to increased competition in the payment services market by increasing the number of multinational companies and investment banks issuing their own stablecoins. The realization of potential benefits of stablecoins requires addressing the underlying legal, regulatory and supervisory challenges posed by the ability of stablecoins to be used anonymously in both domestic and cross-border transactions.

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