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Stablecoins and Perspectives of their Use in the Financial System

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Abstract

The article is devoted to stablecoin issues and their functioning features in the financial system. The nature of stablecoins and major ways of their use are revealed. Also impact of the global economic crisis on stablecoins is analysed. It was observed that at a time of decreased volatility stablecoins are primarily used as a safe haven for traders in the crypto-asset market. The study about the local stablecoins development in the global economic crisis in 2020 showed the constant market prices of assets-backed stablecoins against the high volatility of other crypto-assets. In contrast, the growing interest in applying global stablecoins under the new reduction volatility mechanisms may encourage extensive use of stablecoins in both retail and wholesale payments at the international level.

Keywords: Stablecoins, Crypto-Assets, Digital Financial Assets, Virtual Currencies.

Introduction

In recent years, the introduction of digital information technologies in the financial sector has led to the emergence of a new class of assets called crypto-assets, virtual assets or digital financial assets. Crypto-assets are based on distributed ledger technology[1] or blockchain, which allows decentralised storage of information related to issuance, trading and transfer of assets. However, virtual currencies do not adequately perform standard monetary functions due to high volatility of their market exchange rates. In this regard, a critical challenge for a wide range of users is to ensure stability of virtual currencies, both in the short term, to encourage their wider use in payments and transfers, and in the longer term, to increase their savings by economic agents.

In recent years, cryptocurrency futures and options, as well as so-called "price freeze" services (Locks ™), have emerged as instruments to mitigate currency risk in cryptocurrency transactions. However, these are only mechanisms to minimize currency risk, and not to ensure exchange rate stability of virtual currencies compared to fiat money, which is one of the prerequisites for widespread circulation of virtual currencies.

The idea of linking cryptocurrencies to specific assets was justified in Mastercoin's White Paper (J.R. Willett, January 2012)[2]. But it was never put into practice for a long time. In 2015, the idea was implemented based on blockchain by Tether Limited. The new assets were called stablecoins. They can maintain stability of their market rate by either having an underlying backing or algorithmic technology that regulates the volume of their market offer.

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Interpretation of stablecoins and their Functional Features

The mechanism for securing the purchasing power of a derivative asset by storing an equivalent amount of the underlying asset is not new. Such a mechanism was used repeatedly during the evolution of monetary forms, when it became necessary to tie a new form of money that had no intrinsic value to a monetary form that had intrinsic value.

The application of the stablecoin market rate stabilisation mechanism, similar to the mechanism for ensuring the purchasing power of undervalued money, is innovative. This mechanism is based on new information technologies that provide control over the circulation of digital coins. Because of the technological features of issuance and use of different blockchains, and ways and mechanisms to support exchange rate stability, stablecoins can differ significantly from one another. In most developed countries, regulators can currently interpret stablecoins as deposits (Switzerland)[3], securities (US)[4], e-money (EU countries, Singapore, etc.)[5], or a type of crypto-asset (Malta, Bank for International Settlements, etc.)[6]. The latter two interpretations are most common due to having most similar functional characteristics of these financial instruments to those of a stablecoin.

A modern feature of stablecoins is the possibility for issuers to change their guarantee obligations (if any), as well as the absence of special regulatory requirements with respect to issuers of stablecoins, except for certain regulatory norms, such as mandatory identification of customers. Besides, stablecoins, unlike fiat money, are not a universally accepted means of payment, they can be issued by non-credit institutions and they may not be subject to regulation by monetary authorities.

In our view, in general terms, stablecoins can be defined as digital assets that: 1) are issued based on blockchain[7], in the form of negotiable digital obligations of the issuer or certificates of deposit; 2) maintain exchange rate stability by linking to underlying low-volatility assets or through the use of algorithmic technologies; 3) can be used as a store of value as well as a means of exchange and/or means of payment by a wide range of individuals.

Classification of stablecoins according to rate stabilisation mechanism

One of the main criteria for classifying backed digital assets is the mechanism for ensuring stability of their exchange rate, according to which stablecoins can be divided into collateral (backed) and algorithmic (unbacked), the author's classification of which we will discuss in more detail.

Collateral Stablecoins

Collateral stablecoins is the most common type. They can be divided into two large groups: 1) backed with collateralised traditional assets; 2) backed with collateralised crypto-assets. Backing for collateral stablecoins with collateralised traditional assets can be provided by: fiat currencies (as a rule, freely used currencies – US dollars, euros, etc. or a basket of such currencies); commodities (as a rule, gold and other precious metals); commodity-cash backing (equity backing with fiat money and precious metals); other assets (securities, real estate, etc.). Backing for collateral stablecoins with collateralised crypto-assets may include: cryptocurrencies (Ethereum, Wave and other native tokens, as well as baskets of cryptocurrencies or stablecoins); fiat-cryptocurrency backing (equity backing in fiat money and cryptocurrencies).

Collateral stablecoins pegged to fiat currencies can be exchanged at any time for a fixed amount of local currency (usually 1:1). For this purpose, the issuer provides 100% of the issuance of stablecoins with a reserve in freely usable currency held in his bank account. The main advantages of stablecoins pegged to fiat currencies are: high market exchange rate stability, easy issuance and functioning of the stabilisation mechanism, and low cyber-risk. The latter advantage stems from the fact that the collateral for backing a stablecoin is not stored in a blockchain.

Collateralised commodity-backed stablecoins certify the stablecoin holder's ownership of one ounce of a precious metal (gold is used in most cases). Though gold price as an underlying asset is more volatile than rates of freely used fiat currencies, gold is a commodity and not a debt instrument, and has a value which does not depend on the actions of monetary authorities. Similar to the interpretation of classic banknotes as warehouse receipts or special certificates of deposit, which represented a property, rather than as a debt obligation of the issuer, gold-backed stablecoins can be regarded as a digital analogue of such certificates of deposit.

Stablecoins backed by cryptocurrencies (native tokens) are designed to solve the main problems of centralised stablecoins – credit risks, risks of holding backed assets, failure of the issuer to repay its debt obligations in case of unfavorable circumstances.

The main advantages of stable cryptocurrency-backed coins are: they are more decentralised; they can be exchanged quickly and inexpensively for the underlying cryptocurrency because stablecoins and their backing are on the same blockchain; and

they are highly transparent, allowing for easy verification of the degree of security of a stablecoin. However, the disadvantages of cryptocurrency-backed stablecoins are the less stable price of a backed digital asset than in the case of fiat backing and greater complexity in the mechanism for maintaining a stable digital coin rate than in the case of fiat money or gold backing.

To diversify the risks associated with fluctuations in the market rate of fiat currency or the market price of a commodity, a stablecoin can be fully backed not by a single currency (fiat or crypto) or 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 operating history.

Algorithmic stablecoins

Unlike backed stablecoins, the market rate of algorithmic stablecoins is not directly supported by fiat currencies, commodities, cryptocurrencies or other assets. This case assumes the use of a fiduciary model for backing the value of stablecoins, similar to that used in the issuance of modern fiduciary money, but with certain features of using algorithmic technologies to regulate the volume of their offer. However, currently unbacked stablecoins are less well known and less widely used compared to backed stablecoins due to the complexity of the stabilisation mechanism implementation and safe use. Their functionality does not lend itself to precise analysis, which can provoke significant fluctuations in the market rates of unbacked stablecoins. In addition, one of the reasons for the slow development of unbacked stablecoins was the closure of a number of promising projects, such as Basecoin (Basis) and Havven.

In general, depending on the stabilisation mechanism used, stablecoins can combine separate elements of commodity, credit and fiat money. Collateral stablecoins linked to other traditional assets, such as precious metals or crypto-assets, have similar characteristics to commodity money, being their representatives in the payment cycle. With the credibility of new money issuers not being established yet, providing real assets to stablecoins could be an important contributor to their market success. Algorithmic stablecoins are to a greater extent representatives of purely fiat or, more precisely, fiduciary money.

Current development of stablecoin market

Two main stages can be distinguished in the development of backed digital assets. The first stage of development (2015 – present) is the issuance of stablecoins by financial and fintech companies directly or indirectly associated with large cryptocurrency exchanges, such as Bitfinex, Binpace, Gemini, etc., involved in crypto-assets trading. Generally, stablecoins that emerged in the first phase are limited in their intended use by the digital asset market and are predominantly an exchange-traded product. Such stablecoins can be called local stablecoins.

The second stage of development (2019 – present) is characterised by the development and launch of stablecoin within large ecosystems, both nationally and internationally, spanning multiple jurisdictions. In this regard, the stablecoins that emerged during the second stage of market development can be referred to as global stablecoins.

Local stablecoins have limited intended use, while global stablecoins are potentially targeted at a larger number of users and could theoretically become a universally used means of payment. Due to the network effect conditioned by the multimillion users, global stablecoin, primarily of multinational technology companies such as Facebook, could find widespread use globally, provided the problems with national regulators are resolved [Cœuré B., 2019, P. 1]. Investment banks and other financial sector organisations such as JPMorgan Bank, Signature Bank, UBS, Deutsche Bank, Santander, etc. are also interested in issuing global stablecoins and are trying to incorporate new payment instruments into their ecosystems. As far as the domestic market is concerned, the Bank of Russia [Ecosystems..., 2021] has taken up the issue of developing cross-national digital platforms, and a number of Russian leading companies in the financial sector are already building platform and ecosystem business models with digital currency development in mind.

Nevertheless, now local stablecoins are of the greatest research interest, because the market of these financial instruments, unlike that of global stablecoins, is already at the stage of formation, and it can serve as an indicator of development of the whole digital financial assets market.

One of the first and most famous stablecoins is Tether USD, released in 2015 by Tether Limited. It was the first to integrate Tether stablecoin into its exchange service. Even despite the emergence of a number of stablecoins backed by fiat currencies (TrueUSD, USD Coin, etc.) in 2018-2019 and their listing on major cryptocurrency exchanges, Tether USD continues to dominate, holding over 80% market share of all traded backed digital assets by capitalisation in March 2021 and 5th place among all crypto-assets[8].

Stablecoins in the Global Economic Crisis of 2020

The economic crisis of 2020, exacerbated by the COVID-19 pandemic that led to a widespread decline in business activity, has negatively impacted global financial systems and, above all, the crypto-asset market. Since late February and throughout March 2020, leading cryptocurrencies such as Bitcoin, Ethereum, and Ripple experienced a real price storm amid the collapse in traditional stock markets in the US and other developed countries. During this period, the average daily price volatility of these assets exceeded 20%. For example, Bitcoin, the most capitalised cryptocurrency, lost more than 60% in price from mid-February to mid-March 2020. The total market capitalisation of crypto-assets (excluding Bitcoin) fell from USD 120.15 billion (February 15, 2020) to USD 45.64 billion (March 13, 2020). However, on April 2, 2020, Bitcoin was already trading at above USD 7088[9], which represented a price increase of more than 72% from its March 2020 lows.

Against the backdrop of falling stock market indices, as well as high volatility in cryptocurrencies in February-March 2020, most leading stablecoins showed only minor fluctuations in their market rates. Figure 1 shows comparative changes in the price of Bitcoin and typical stablecoins during March 2020.

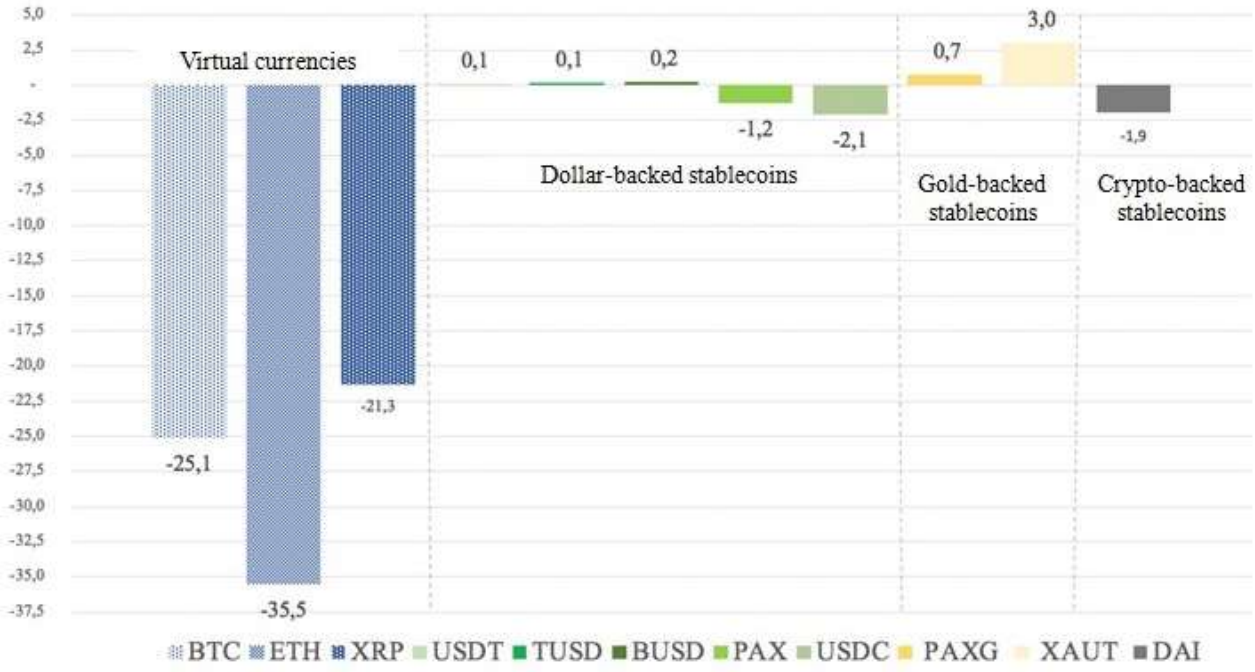

Fig. 1. Comparative change in the market rates of the leading stablecoins and virtual currencies compared with 12.03.20 and 30.03.20, %

Source: compiled by the authors using the data: www.bitaps.com/ (accessed on 20.04.20); www.coindesk.com/price/ethereum (accessed on 20.04.20); www.coinmarketcap.com/currencies/ (accessed on 20.04.20)

As seen in Figure 1, the exchange rates of leading cryptocurrencies Bitcoin (BTC), Ethereum (ETH) and Ripple (XRP) showed some of the worst monthly performance in the history of crypto-assets from March 12 to 30, 2020 (columns 1-3, Figure 1). Thus, since March 12, the price of BTC fell by 25.1%, ETH by 35.5%, and XRP by 21.3%. Against this background, the rates of USDT, TUSD, BUSD, USDP, USDC (columns 4-8, Figure 1) practically did not change during the three-week period, varying from +0.2 to -2.1%. We see a similar pattern with gold-backed stablecoins, PAXG and XAUT (columns 9-10, Figure 1). The rates of these stablecoins even grew by 0.7% and 3% respectively, directly correlating with the price of gold. Since the third decade of March 2020, gold-backed stablecoins rose in value as traditional gold suppliers faced shortages and difficulties in bringing physical bullion to market during the COVID-19 pandemic[10]. These changes in the crypto-asset market reflected an increased demand for backed digital assets from investors, driven by the need to preserve cash in more stable assets during the global economic crisis without withdrawing funds from cryptocurrency exchanges.

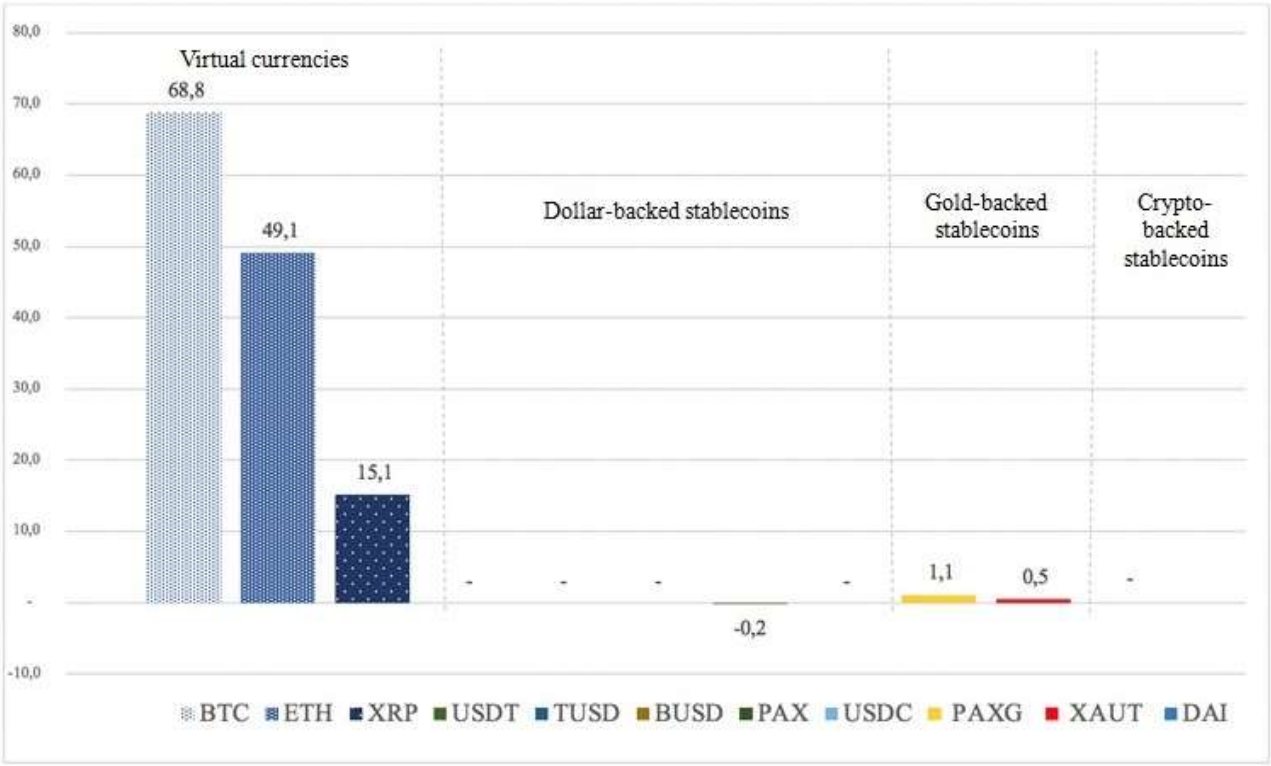

Fig. 2: Comparative change in market rates of leading stablecoins and virtual currencies compared to 01.02.21 and 22.02.21, %

Source: compiled by the authors using data from: www.coinmarketcap.com/currencies/ (accessed on 20.03.21)

Figure 2 shows how the market rates of the leading stablecoins are changing one year later, in response to strong growth of key virtual currencies. Between February 1 and February 20, 2021, BTC gained 68.8%, rising above the USD 55,000 mark. It was followed by ETH and XRP cryptocurrencies rising by 49.1% and 15.1% respectively. The market rate of BTC and other significant cryptocurrencies began to rise sharply since the second half of December 2020, amid the news about investments in Bitcoin made by major investment funds and global companies, as well as banks, payment systems and services providing access to cryptocurrencies. Despite these changes, there was no reaction from stablecoin, its value remained unchanged, except for minimal fluctuations of 1.1 and 0.5% of gold-backed stablecoins PAXG and XAUT.

Promising uses of stablecoins

Three main directions for the use of stablecoin in the financial system can be distinguished: 1) a safe haven for traders in the crypto-asset market; 2) offering stable digital assets for countries with crisis economies; and 3) use in P2P and P2B payments [Lin, Conrad, 2019, P. 17-30]. Let us consider these directions in more detail.

A safe haven for crypto-asset traders

A characteristic feature of the crypto-asset market is high volatility of market prices of the assets that prevail in this market. In order to avoid downward volatility in the cryptocurrency market and protect their cryptocurrency funds, traders often choose to use stablecoins as a safe haven. Stablecoin exchange rates fluctuate within narrow ranges, even when there are significant fluctuations in the market prices of cryptocurrencies. Therefore, during periods of high downward volatility, stablecoin trading volumes increase significantly until price stability returns to the market.

Companies issuing backed digital assets listed on many exchanges (especially large exchanges) have a higher chance of success. This is because such stablecoins become available to more traders, thereby taking a larger market share and creating a better network effect for their development. In addition, having a listing on many exchanges increases the likelihood of being included in a stablecoin package (e.g., Binance exchange package). By being included, a token is guaranteed to have greater trading volume (the number of trades that occur over a period of time), which maintains its liquidity.

Offering stable digital assets for crisis economies

Economic agents around the world, when their currencies are depreciated due to hyperinflation, tend to switch to more stable assets to protect their savings and commercial activities. The process of mass use of the U.S. dollar by emerging market countries as a reliable instrument to compensate for high inflation and national currency instability is widely known as the process of dollarisation. Dollarisation helps the population of such countries to cope with hyperinflation and protect against rapid depreciation of the purchasing power of money. Stablecoins backed by fiat currencies, including the U.S. dollar, increase opportunities for people in emerging markets to gain access to backed digital assets that can serve as safe havens for their money during economic and financial crises. Use of stablecoins can be made easily available to populations of such countries for the following reasons.

First, existing financial infrastructure can be used to apply stablecoins. While traditional finances require an advanced banking infrastructure to access them, stablecoins on an infrastructure level can only require the availability of e-wallets. Such wallets can be placed on users' mobile phones and provide them with remote access to exchanges where digital assets are traded. In Africa, for example, the number of mobile phone users could reach 634 million[11] by 2025. This creates one of the necessary conditions for the widespread use of stablecoins.

Second, stablecoins can be used like other traditional inflation hedging instruments. Many countries face hyperinflation every year. For example, in March 2020, Venezuela's inflation rate was 2431%. Many African countries such as Zimbabwe, Sudan and South Sudan also experienced hyperinflation in March 2020 at 676%, 81.6% and 36.4% respectively[12]. If stablecoins are able to maintain a stable market rate and become easily available for purchase, they can become an attractive means of hedging against volatility in national currencies.

Third, stablecoins have the necessary ecosystems to offer convenient and simple user interfaces for entrepreneurs to use stablecoins as the primary form of value exchange. Emerging markets offer great opportunities for the use of stablecoin, provided there is widespread access and low transaction costs. Also, the use of backed digital assets fits well with the UNO and World Bank's paradigm of equal access to financial services and consumer benefits around the world[13].

A number of countries in a difficult economic and financial situation, such as Venezuela and Iran, now issue so-called "state cryptocurrencies". These assets have much in common with stablecoins, as their issuance is declared to be backed by real assets (oil, gold, etc.). Such a stabilization mechanism is not used when issuing cryptocurrencies or digital currencies of central banks[14]. The main purpose of their creation was to ensure the continuity of payments and attract external investment in the context of sanctions restrictions [Kochergin D.A., Yangirova A.I., 2019].

Important factors for the success of stablecoin in developing countries are: interface integration, adoption by merchants and service providers, and compliance with national regulatory requirements. Integration with existing infrastructure is critical for the mass adoption of backed digital assets. Stablecoin issuers need to partner with local e-wallet providers or offer their own regionally tailored mobile applications to be successful. Companies' use of stablecoins can reduce their need for financial intermediation. For example, if companies begin to accept stablecoin as a means of payment, it can lead to a significant increase in the use of such an asset as a store of value and vice versa.

Unfavorable regulatory environment is one of the most important limiting factors for the adaptation of stablecoins at the national level. Many governments oppose dollarisation for three main reasons: loss of seigniorage revenues, decrease of monetary policy efficiency and loss of financial autonomy [Lönnberg, Jácome, 2010, P. 4]. Therefore, by choosing regions with favorable regulatory environment, companies issuing backed digital assets can reduce such regulatory risks. At the same time, cooperating with national governments to compensate for revenue losses or rebranding stablecoin as a national payment token may contribute to a more favorable regulatory environment[15].

Stablecoin use in P2P and P2B payments

In recent years, payments made using mobile devices showed significant growth rates. According to eMarketer, in 2019, on average about 36% of consumers worldwide used mobile payments as their primary payment tool. In most countries, mobile payments were only behind debit card payments and cash payments. However, it is projected that mobile payments could account for over 42% of total global retail payments by 2023[16]. Stablecoins have the potential to take a significant share of mobile payments. Companies that process electronic payments generate revenue by charging fees (acquiring fees) to merchants of goods and services. For example, PayPal charges a fee of 2.9% of a payment amount plus USD 0.3 per transaction for credit card payments, while Apple Pay charges a fee of 3% of a payment amount. At the same time, companies issuing backed digital assets could potentially reduce this fee by reducing their own transaction processing costs through the use of blockchain. Thus, merchants and service providers may be interested in using stablecoins to increase their profits.

As we noted earlier, for the mass application of stablecoins for payment purposes, the issuing company must either offer its own e-wallet or develop partnerships with existing payment service providers. The market of payments with the use of e-wallets is very competitive. Thus, in the US, Venmo (PayPal) (more than 52 million users)[17] as well as Cash app and Zelle

play a significant role in the e-wallet market. In China, e-wallets AliPay (more than 900 million users)[18] and WeChat Pay (more than 800 million users)[19] have the biggest number of users in the world. In EU countries, major technological companies such as Apple, Google and Facebook offer their e-wallets Apple Pay, Google Pay and Facebook Messenger Payments respectively. Given the high competition among e-wallets, including those storing monetary value, stablecoins need to realise network effects and exploit competitive advantages for widespread adoption.

Network effects are an important factor for stablecoin issuers because the number of users determines how useful an asset is as a means of payment. In P2P payments, the utility of stablecoins is a function of the number of economic agents that use stablecoins to exchange value. As a result, companies issuing backed digital assets must find a way to encourage participation of new economic agents.

In general, it should be noted that the investigated scenarios of the use of stablecoins seem to be the most reasonable ones from the economic point of view at the moment. Nevertheless, there are also more ambitious, promising options for the use of stablecoins, in particular, as an analogue of a "synthetic" central bank digital currency or as a new form of money offered by fintech and bigtech companies. The latter options of using stablecoins should be a subject of a separate research study.

Conclusions

At present, there is no unified interpretation of stablecoins due to their great diversity associated with the use of different stabilisation mechanisms and forms of price stability. According to the author's interpretation, stablecoins should be regarded as a hybrid form of digital assets, which can combine elements of commodity, credit and fiat money with new issuing and accounting technologies.

Stablecoins are issued on the basis of blockchain in the form of tradable digital obligations or certificates of deposit; maintain exchange rate stability by linking to underlying low-volatility assets or through the use of algorithmic technologies and can be used as a store of value as well as a means of exchange and/or means of payment by a wide range of individuals.

The most widespread stablecoins are local stablecoins backed by fiat currencies. This is due to the higher liquidity of the backing of such stablecoins, as well as the greater potential for the increase of the underlying asset in case when there is need for increasing the volume of digital coin issuance during the transition.

Analysis of leading cryptocurrencies and stablecoins showed that the current global economic crisis, exacerbated by the COVID-19 pandemic, had a negative impact on the crypto-asset market, which has seen a significant depreciation of most traditional cryptocurrencies since March 2020. At the same time, stablecoins, irrespective of their backing, have remained fairly stable in the face of severe fluctuations in cryptocurrency market rates. The active use of stablecoins in cryptocurrency trading underscores the fact that today, local stablecoins are predominantly used by exchange traders to address high volatility in the crypto-asset market. In contrast, for exchange traders seeking to capitalise on exchange rate differences during the rise of cryptocurrencies, stablecoins will be of no interest.

Prospective lines for application of local stablecoins are their use as a reliable financial asset to offset the effects of high inflation and national currency volatility in emerging markets and crisis economies, and to improve cross-border payments and transfer of funds in terms of increasing transaction speed and increasing access to the provision of digital financial services around the world. Because the payment market is highly competitive, stablecoin issuers should primarily target niche market segments where digital assets and blockchain technology offer technological advantages over traditional payment instruments.

The use of stablecoins as a universal payment instrument with a low level of volatility, may be most in demand at the global level. Using stablecoins at the global level will inevitably increase competition in the payment services market and the number of multinational companies and investment banks issuing their own stablecoins. It will also stimulate central banks to issue their own digital currencies.

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[1] The term "distributed ledgers" refers to technologies that enable nodes in a network (or arrangement) to securely propose, validate and record state changes to a synchronised ledger that is distributed across the network's nodes [Digital Currencies, 2015, P. 5], [Distributed Ledger..., 2017, P. 2]. In domestic economic science, this term has been interpreted by the author in the works of Kochergin D.A.

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