Over the last years, cryptocurrencies gained attention from all over the world. However, one of the main reasons for their popularity, namely their independence from Central Banks and politics, might similarly impose severe threats to the financial system. The aim of this paper is to consider cryptocurrencies from a monetary economic standpoint by assessing what sets them apart from fiat money and why they might impose risks on existing financial systems and players. Based on that, we assess their current and potential application in practice by observing their traits as investment object, their ability to act as a safe haven and as a medium of exchange in cross-border trade from a traditional monetary economic point of view. Finally, this paper analyzes whether cryptocurrencies could serve as money in a traditional sense, hurdles they needed to take and potential implications of their implementation. Based on our assessment, their current functioning as currency in a traditional sense is still very limited so far, whereas regulatory forces will closely monitor and attempt to prevent unwanted developments. Consequently, their most promising field of application rather lies in other areas of application, especially in cross-border trade, as their unique characteristic bringing considerable potentials for saving intermediary and exchange costs. However, if States and Central Banks are capable of maintaining and improving all functionalities of fiat money, to keep it transparent, stable and technically up-to-date and to meet the demand of publicity, the desire to hold cryptocurrencies as alternative currencies might become obsolete.
List of Abbreviations

bn. billion(s)
c.a. circa
CB central bank
CC CC
ECB European Central Bank
ed. editor
e.g. exemplī grātiā (for example)
esp. especially
etc. et cetera (and so forth)
EU European Union
IMF International Monetary Fund
No. number
p. page
S&P Standard & Poor’s
USD United States dollar

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Introduction

Over the last two years, cryptocurrencies (CCs) gained attention from all around the world leading to absurdly high valuations that gave birth to a speculative bubble. The issue of decentralization and the self-defining safety connected to the distributed-ledger technology behind them put them under the lens of many economists wondering if we were dealing with the future of money. Similarly, their fast growth fueled the fear that they might impose severe risks on the financial economic system, which is further enhanced by the states’ and Central Banks’ (CBs) incapacity to control their development, hence to take supportive or corrective monetary measures.

Taking their general characteristics as a starting point, this paper describes the underlying concepts behind CCs, why they became that popular, what sets them apart from fiat money and why they might impose risks on existing financial systems and players. Based on that, we assess their current and potential application in practice by observing their traits as investment object, their ability to act as a safe haven and as a medium of exchange in cross-border trade from a traditional monetary economic point of view. Finally, this paper analyzes whether CCs could serve as money in a traditional sense, hurdles they needed to scale and potential implications of their implementation. Based on that, the paper provides some advice for monetary politics how to deal with upcoming issues on that topic.

General Information and Development of Cryptocurrencies

a) Definition and general characteristics

A CC is defined as “a digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank” (Oxford Dictionaries 2018).

Nowadays, there are more than 2,000 different CCs in the market, launched throughout the last nine years, compared to just 179 official currencies in the entire world. The best known CCs are certainly Bitcoin, Litecoin, Ripple and Ether.

Although they do not possess a mentionable intrinsic value, they gained huge popularity over the last years, which is predominantly because CCs are decentralized, do not require intermediaries and are designed to be scarce. Therefore, they were regarded as very innovative when they appeared on the market in January 2009.

b) Decentralization approach

In contrast to fiat money, CCs are sustained by mathematical equations, rather than the trustworthy word of a government or a CB (Starting Finance 2016). This makes them decentralized, meaning that there is no regulating authority behind them. Consequently, there is no possibility for official agencies to take corrective monetary measures when needed, as discussed later on.
c) Redundancy of intermediaries and the blockchain as underlying technology

The lack of a guaranteeing authority behind the CCs makes it possible to conduct transactions without the involvement of any intermediary. The users can directly exchange CCs on their devices. Thanks to a peer-to-peer system (in this context, a P2P network is an interconnected system, in which “the ‘peers’ are computer systems that are connected to one another via the Internet; files can be shared directly between systems on the network without the need of a central server” (TechTerms 2018)). And in order to ensure the legitimacy of transactions, complex mathematical equations are used to link each account. This system is called blockchain, which is essentially an accounting book of all transactions made in a CC from the very first one up to date (Starting Finance 2017). Supposedly, this should make it impossible to hack, even if we know that there were some hackings during the past years.

d) Initial scarcity

Coming closely along with their decentralized sourcing, CCs are designed to be inherently rare, since the total amount of a particular CC existing in the network is set from the beginning by the programmers. In this context, their inflation grows at a controlled rate, which equals the amount of produced currency units per period (Starting Finance 2017). As only the miners can exert influence on the amount of tokens produced, it is almost impossible to pointedly stimulate the money supply of a CC making them hardly influenceable for monetary policies.

e) Market value

CCs do not have a mentionable intrinsic value since they are not linked to the availability of physical goods, such as gold, which might be the most striking feature in terms of their price development (depicted in the next paragraph). Without any official authorities behind them, very limited usefulness as mean of payment, no apparent usage or field of application yet and no connection to the mining company (as tokens do not represent a share in the mining entities), their value is only determined by the market participants’ believe in them and thus by laws of supply and demand. Apart from factors that influence the price development of almost all asset classes, the value of CCs is especially (esp.) driven by their inherent scarcity, market participants’ mistrust in the traditional financial system and their belief in the innovativeness of the individual blockchain technology underlying each CC (although that is technically not related to the tokens issued). The characteristics of CCs from an investment perspective will be outlined later on.

f) Development of their market capitalization

Thanks to their popularity, the value of most CCs has been skyrocketing over the last years, esp. in 2017 and early 2018. Whereas the accumulated market capitalization of all CCs equaled ca. USD 18 bn. in the beginning of 2017, it reached its peak in January 2018, when the total market capitalization of all CCs reached ca. USD 830 bn. (coinmarketcap.com), which equals 3% of the accumulated market capitalization of all S&P 500 companies.¹ But since the end of last January, the market value of most CCs decreased tremendously,

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¹ In this context, this tremendous increase is attributable to both the appreciation of existing CCs as well as the emergence of new ones.
flattening the crypto hype around the world, and now it lowered to around USD 140 bn. (as of 29/11/2018, compare figure 1).

This plunge was mostly due to geopolitical factors. In fact, some countries blocked the access to websites to trade CCs and announced their intention to regulate the market, due to the fear of the flight of capital. On top of this, major CBs in Europe, including the ECB, reduced the value of CCs to pure speculation and warned that the crypto bubble would burst soon (Forbes 2018). All these factors spread fear in the market and pushed investors to close their positions.

Application in Practice and its Implications

a) Cryptocurrencies as an asset class and investment object

Throughout the last years, CCs conveyed the impression to be rather another asset class than an actual currency, and since Bitcoin futures are finally tradable at major financial exchanges, at least Bitcoin (as most popular CC) can be considered as mainstream investment object. In this context, CCs reveal some very specific characteristics that set them apart from most other asset classes. So, the return of CCs is not (significantly) correlated to traditional asset classes such as currencies, commodities or stocks (Liu & Tsyvinsk 2018) and is hardly influenced by macroeconomic factors like inflation expectations or exchange rate developments (Bianchi 2018). Based on that, CCs should be of high interest for investors, esp. due to their diversification potentials.

In addition to that, in terms of their liquidity and tradability, the underlying blockchain networks guarantee a high degree of transparency and safety while trading. Nevertheless, for most CCs, this unavoidably comes along with relatively slow transaction speeds and relatively high costs compared to established payment systems (Wuermeling 2018). In addition to that, as characteristic for currencies or commodities, there is no interest paid on holding them – the yield is only generated through increasing courses, which turned out to be heavily fluctuating throughout the last years. Apart from the high volatility, CCs inherit the additional risk that they can only be held in hacking-prone digital wallets reveling severe security problems. Those serious risks represent the main reason why many official agencies, such as the EU financial regulatory authorities, warned against investing in CCs or even imposed constraints on the trade with them (Wuermeling 2018).

b) Current applicability and potentials

When it comes to practical usage in everyday life, the practicality of CCs as a mean of payment is very limited, as profoundly depicted in the following chapter. Nevertheless, it appears indeed that CCs might be functional when it comes to money transfer.

c) Safe haven

CCs are often perceived as a way to store money in countries with an unstable economy and uncertain political conditions. Mistrust in their government and high inflation rates, for instance, currently incentivizes many people in Turkey, Venezuela, but e.g. also in China, to search for alternatives to store their money’s value. Consequently, CCs, despite their high volatility, gained attractiveness in those countries, acting as a “safe haven”. In this context, it is the aspect of decentralization and independence from traditional financial or governmental
institutions that people value most, as they often lost their trust to those players. Similarly, the anonymous processing of data in the blockchains somewhat protects them from their states’ tax prosecution, which de facto makes CCs a mean of tax evasion, money laundering or terror financing, providing reason to governments impose restriction on them (Wuermeling 2018).

d) Medium of exchange in international trade

The most promising field of application, however, might be found in international trade. So, due to the exclusion of financial intermediaries, much time for transactions could be saved, transaction and intermediary costs lowered and the exchange of foreign currencies would become unnecessary. Similarly, the underlying blockchain technology provides a high degree of transparency as a track of records (coming along with the potential to reduce corruption) and provides numerous connecting points to the concept of smart contracts, which shows huge potential for automating administrative aspects of cross-border trade (Bambrough 2018). However, due to their volatility and very limited usefulness as mean of exchange (as depicted later on), this field of application still represents a future vision.

Cryptocurrencies and their Functionality as Money

The main question that comes along with the emergence of CCs is whether they will be capable of replacing fiat money as the major mean of payment. A very schematic way in order to approach this question is to check whether they fulfill the main functions of money. Firstly, money serves as a medium of exchange facilitating transactions so that market participants can agree on the value of products and services (Deutsche Bundesbank 2018). Considering that there are some (online) shops accepting CCs (especially, Bitcoin) and that there are about one million CC transactions conducted every day, this indicates that CCs de facto serve as a means of payment among some market participants. Nevertheless, as the purchasing power of CCs in everyday life is still very low and as there are no official authorities guaranteeing the acceptance of CCs, their usefulness as medium of exchange is limited.

Secondly, money serves as a store of value, which implies that money should be sufficiently stable in order to sustain value over time (Deutsche Bundesbank 2018). As the value of CCs, however, is predominantly based on the laws of supply and demand, they underlie heavy price fluctuations, which largely limit their usefulness to store money. Additionally, they are still virtually valueless if they cannot be converted into official currencies and cannot be stored in a bank or save environment but only in hacking-prone digital wallets, which further limits their ability to maintain value safely over time.

Thirdly, a currency is supposed to work as a unit of account so that the value of assets and goods can be expressed in a standardized unit of reference, which makes them comparable to each other (Deutsche Bundesbank 2018). Given that CCs show very unstable price developments, are traded at different price levels on different exchanges and do not get centrally aggregated (Jamali, Li & Pantoja 2016), their applicability as unit of account is still limited.

From those considerations, we can conclude that CCs do not meet the criteria to serve as “real” currencies, which is predominantly attributable to their presently high volatility as well as their missing official recognition.
Hurdles in the Implementation Process and Potential Implications

However, even if the value of CCs stabilizes, which would significantly increase their functioning as money, there are still numerous hurdles they need to take in order to become established means of payment.

Therefore, a transition to CCs would both require and cause tremendous changes in the financial system and infrastructure, which would redefine the role of traditional financial institutions. The importance of banks as intermediaries would probably decline and new players, especially miners and blockchain technology providers, could gain market power. In other words, there would be a shift from a highly regulated and supervised financial market to a rather free market environment, as players in an international CC market cannot be effectively controlled by national jurisprudence. Thus, in order to be effective, regulation needed to be agreed upon on an international level, which in turn might prove challenging due to different market characteristics and diverging country interests (Wuermeling 2018).

In addition to that, if CCs replaced traditional currencies, the latter would depreciate heavily leaving numerous, particularly less fast adapting market players, such as small enterprises or private savers, with a considerable loss of their assets and savings.

When assessing whether CCs could finally replace fiat currencies, it needs to be taken into account that national governments are still vital for setting the legal framework for CCs. In this context, there are multiple reasons why it seems improbable that local governments will give up their control over domestic currencies. Therefore, the decentralized and anonymous data processing in most blockchains provide the foundation for tax evasion, which is certainly not in favor of the government as tax sovereign. Apart from that, succinctly put, CBs would lose their power to intervene with monetary measures to undesirable developments. For instance, accommodative monetary policies in order to support the economy, or affecting the exchange rates of their domestic currencies would not be possible. Furthermore, CBs could not correct inflationary or deflationary tendencies any more, hence price stability in a traditional sense would not lie in their field of responsibility any longer and the mode of action how CBs work would change considerably.

Advice from a Monetary Policy Point of View

Right now, the economic footprints is relatively small and their interconnectedness to the remaining financial system, their influence on price formation processes and their usage for transaction purposes is very limited (Wuermeling 2018). Nevertheless, if their importance increases, regulators should be attentive, as CCs impose the threat to amplify the risk of leverage trading and to intensify the transmission of economic shocks (Lagarde 2018).

In this context, it is especially the blockchain technology that provides huge application potentials, particularly in order to guarantee efficient, transparent, safe and liquid market infrastructures. Similarly, some CBs even consider to launch own digital currencies, primarily in countries where cash loses importance. The launch of digital CB money, however, might impose severe interferences in the banking sector as starting point for monetary policies and challenge traditional concepts of monetary measures (Wuermeling 2018).

Due to the thematic overlap with other seminar works presented in the course of Monetary Economics, we refrain from further elaborations on the issuance of central banks’ digital money or CCs.
In the end, it is the question to which extant governments should intervene in the market and in the free banking system, CCs operate in order to keep their monopoly on money and their CBs’ power to take monetary measures. If states and CBs are capable to maintain and improve all functionalities of fiat money, to keep it transparent, stable, technically up-to-date and to meet the demand of publicity, e.g. to enable real-time transactions, the desire to hold CCs as a real alternative currency might become obsolete (Wuermeling 2018).

Conclusion

In conclusion, we can state that the number of CCs and their value have been skyrocketing over the last years. It is especially their decentralized sourcing, independence from intermediaries, CBs and politics as well as their inherent scarcity that explain their popularity – even though they do not possess a mentionable intrinsic value and show heavily fluctuating prices. At this moment, their high volatility and their missing recognition as mean of payment limit their functioning as currency. Additionally, national governments will most probably refrain from giving up their control over domestic currencies – especially for tax reasons and their CBs’ sovereignty to take supportive and corrective monetary measures. For those reasons, it currently seems relatively improbable that CCs will replace fiat money in the short- and midterm.

Coming along with that, the most promising fields of application for CCs are not related to their usage as real currency but rather as safe haven for investors and savers from unstable countries as well as medium of exchange in cross-border trade, as their unique characteristics bring considerable potentials for saving intermediary and exchange costs.

Although their interconnectedness to the financial system and their economic footprint is still relatively small, they impose huge challenges for traditional players to adapt their business models in order to keep up with technical developments. Similarly, if CCs become more integrated in the financial landscape, they might amplify the transmission of shocks, wherefore regulators should carefully monitor their development.

In the end, there are certainly only a few CCs, probably the most stable ones that will succeed to become a mean of universal use – the vast majority of the 2,000 CCs will most probably vanish. From a current point of view, however, fiat money is obviously superior over CCs in most areas of application. And if states and CBs are capable to maintain all functionalities of fiat money, to keep it transparent, stable, technically up-to-date and to meet the demand of publicity, the desire to hold CCs as an alternative currency (in other areas than cross-border trade) might become obsolete.
Appendix

Figure 1: Accumulated market capitalization and 24 hours volatility of all CCs between 01/2017 and 11/2018

Source: https://coinmarketcap.com/charts/.

Figure 2: Percentage of total market capitalization (dominance) of selected CCs

Source: https://coinmarketcap.com/charts/.
References


