ScMI
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Aktiengesellschaft für Zukunftsgestaltung
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The future of cryptocurrencies

Six scenarios for the integration and usage of cryptocurrencies in the financial system

Cryptocurrencies are fascinating – a lot of hype is directed towards underlying technologies. Still, the market for cryptocurrencies is growing. On the other hand, the high volatility and pricing issues as well as high uncertainty of the legal development of cryptocurrencies hinder general and meaningful exploration of substantial use cases.

We describe six potential futures of cryptocurrencies and their relationship to the traditional financial system. Offering a general framework for potential paths of development, this working paper aims at providing a simple but effective orientation guideline for the future of cryptocurrencies.

Working paper

1 Introduction

Only few people are aware that the word »salary« stems from the Latin word »salarium« and is linked to the myth of Roman soldiers being paid with salt. Besides being a »nice-to-know«-fact, there is more to learn from it than what meets the eye. Money is not what we think it is. It has been around before central banks could issue papers with a value printed on it. It could take different forms, such as shells, stones or even gold. And it was with gold that money used to be backed, guaranteeing value, up to the last century before this again changed, introducing nowaday's fiat currencies. And today, we oftentimes do not even hold our money in our hands, but rather see it as digits on screens. With informational technology disrupting the way we work, live and exchange values, there are new and exciting possibilities, challenging the need for intermediaries in the financial system.

With cryptocurrencies being all the hype in 2018, it is easily ignored that despite the following slump, markets for cryptocurrencies have been gaining in momentum ever since. As of today, cryptocurrencies are a vast market and are associatd with world-wide scalable business models. With the world of finance transforming in front of our eyes, the potential use cases for cryptocurrencies are immense.

Still, a lot of questions and puzzles around cryptocurrencies remain unsolved. We are unable to name a definite value which the token of one cryptocurrency should be assigned to. Cryptocurrency storage is more difficult than one might like to admit and entering the crypto market still lacks customer-friendliness, resulting in the necessity of at least some IT-knowledge in order to buy or sell cryptocurrencies. A high degree of country-specific regulation inhibits the creation of one-level-playing field. Much worse, there is to a large extent a high degree of uncertainty concerning the future regulation of cryptocurrencies by financial authorities. With regulatory concerns being one of the main obstacles, it needs to be noted that there might be good reasons for being cautious. As of today, cryptocurrencies are still being misused for illegitimate activities such as money laundering, terrorist financing and tax evasion. In addition, some even refer to cryptocurrencies as a new way of pyramid selling. But assuming that cryptocurrencies are just an elegant model of common fraud means nothing else than ignoring the fact that fiat money is already around since the 70ies. Furthermore, cryptocurrencies offer a wide range of advantages, such as transaction speed with minimal fees plus their high accessibility even for individuals without a registered bank account. This way, it is no surprise that diametrically to the named concerns, we can observe cryptocurrencies entering traditional financial markets i.e. in the form of specialized ETFs, or, as in the case of Facebook, being issued by social networks and thus being available to their up to 2bn customers. Given the advantages cryptocurrencies have as well as parties interested in accessing them, the question remains if cryptocurrencies move from partially accepted additions to full-range substitutes of money as we know it.

In this working paper, we present several core dimensions which have a direct influence on the development and usage of cryptocurrencies. On the basis of these dimensions and their future projections, we develop six highly consistent pictures of the future. They range from a regulatory ban of cryptocurrencies up to a complete replacement of traditional currencies. The possibilities are not only highly diverse, but also full of consequences for players in several key industries. Therefore, we understand these six scenarios as a starting point for further and more detailed analyses.

Are you ready to explore the future not only of cryptocurrencies, but of our financial system as a whole? As the future is beginning right now, we hope you will find relevant insights and maybe even new ways of thinking.

ScMI AG is a public company founded in 1998 for future design and strategic corporate management. ScMI supports companies and organisations in the development of future scenarios and visionary strategies, as well as in the design and implementation of strategic planning, innovation and change processes.
Since its founding, ScMI has cooperated with most of the German DAX-companies, as well as with innovative market leaders and public facilities in and outside of the country in the area of Szenario-Management™ . Additionally, it has developed the scenario method further so that even small and medium-sized companies, business and functional areas, as well as regions and communities can use it in a beneficial manner. ***www.scmi.de/en***

2 Map of the future

The map of the future depicted in Figure 1 shows the six scenarios which have been developed. In order to gain a better understanding of these scenarios, the map of the future can be divided by several single key factor characteristics. At the same time, it can be just as interesting to consider which characteristics the scenarios might have in common. Getting to know the unique combination of key factors which make up each individual picture of the future then allows us to draw conclusions on causal relationships and potential drivers of change.

Issuers of cryptocurrencies: The characteristics of the issuers of cryptocurrencies allow for a number of following conclusions and is thus chosen as a main dimension for describing the scenarios. Issuers may be private or national. In the case of national issuance of currencies, it is most likely that only one currency is issued, changing characteristics of the current official one.

- Having **national issuers** of cryptocurrencies also allows for a number of corresponding observations. First, it can only take place if financial authorities as well as central banks do not only regulate cryptocurrencies, but actually engage actively. In doing so, the expert's view on cryptocurrencies should be rather positive. This speaks in favor of a high consmer-friendliness as well as actual currency characteristics allowing for it to be used for daily payments, i.e. low volatility and a high transaction efficacy. It follows that burdens for national cryptocurrencies are exceptionally high – which is why we observe this key factor element only in two out of six scenarios, i.e. scenarios 1 (»National currencies 2.0«) and 2 (»Unconsolidated growth«).
- In the case of **private issuers**, a variety of potential characteristics, functions and goals of cryptocurrencies can be described. It needs to be noted that for this

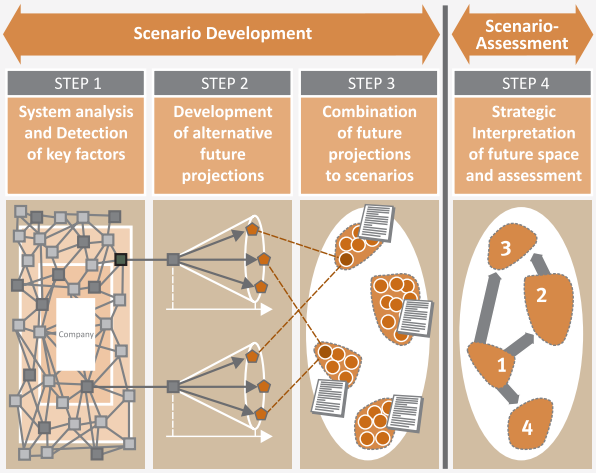
Methodology

System analysis and selection of key factors (step 1): *The starting point of scenario development is the system structure. The considered context is structured in areas of influence, for which different influence factors are collected and described. An interconnection analysis is performed to point out the interaction between the single factors.*

Development of future projections (step 2): *In the next step, possible future developments are created for each key factor. To prevent a one-dimensional approach, two uncertainties for each key factor are identified in order to set up a four-quadrant portfolio. The resulting future projections describe qualitative development alternatives of the individual key factors.*

Development and analysis of the scenarios (step 3): *Scenarios are illustrations of possible alternative futures. The scenario formation is based on an assessment of compatibility (consistency) of the single future projections. Using a cluster analysis,consistent futures are developed and originally condensed into six scenarios.*

In a later **step 4,** *the scenarios are assessed based on the scenarios' closeness to current and future development.*



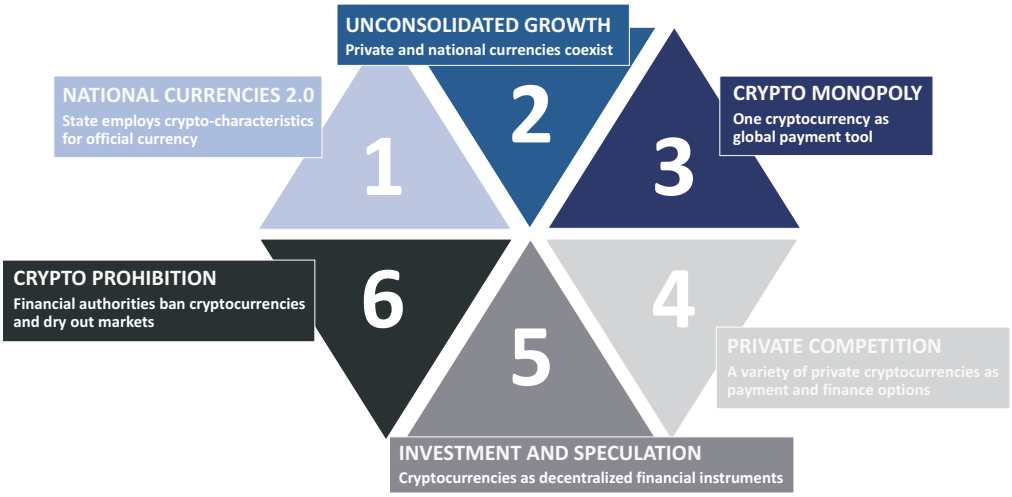


Figure 1: ***Map of the future***

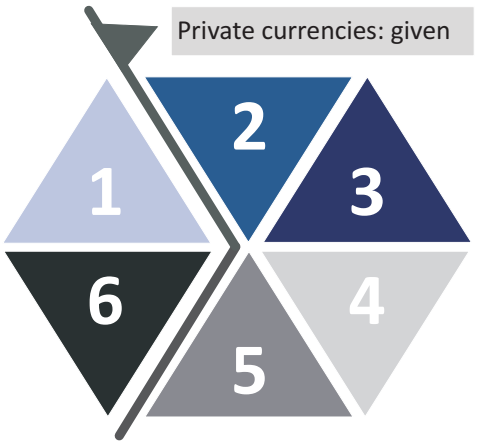


Figure 2: ***Scenarios by private cryptocurrencies***

Figure 3: ***Scenarios by national cryptocurrencies***

working paper, a clear focus is laid on cryptocurrencies and their usage as alternative monetary tools instead of the underlying technology. Technology is only viewed regarding the aspect of innovation and transaction efficacy. Contrary to the case of national issuers, it is possible that there is a high number of differing cryptocurrencies issued by private parties. This way, there can be competition between currencies as well as different use cases. It also needs to be noted that even with a small number of currencies being issued, this has no implications concerning the actual market volume, hence the possibility of a monopoly. Given the fact that the private issuance of cryptocurrencies can highlight most different futures, we see this characteristic in four of the six scenarios, i.e. scenario 2 (»Unconsolidated growth«), 3 (»Crypto monopoly«), 4 (»Private competition«) and 5 (»Investment and speculation«).

Cryptocurrency function: The six scenarios show different use cases of cryptocurrencies with respect to their actual function. They are specified as payment and finance function. Taking into account the possibility of multiple cryptocurrencies existing, the two functions can be included in one and the same scenario.

- Cryptocurrencies which are designed to be used as an alternative **payment tool** should in general have a low volatility. We define payments in this context as a traditional financial exchange with external parties, not as a payment within a token system. Their underlying characteristics should enable a sufficient transaction speed. Payment functions are described

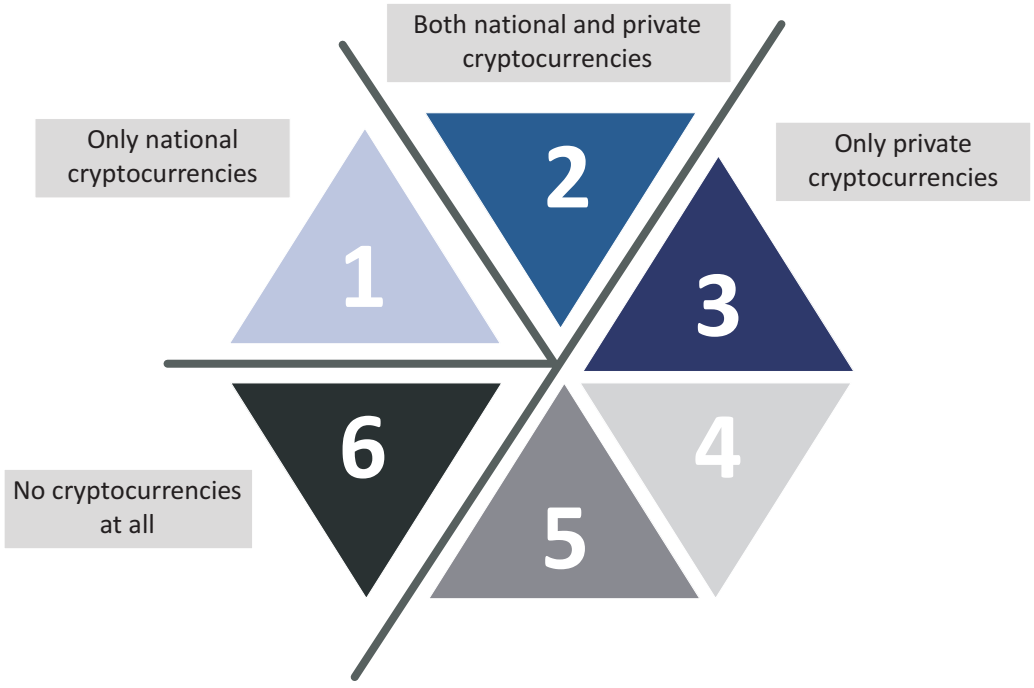


Figure 4: ***Scenarios by private and national issuers***

in the scenarios 1 (»National currencies 2.0«), 2 (»Unconsolidated growth«), 3 (»Crypto monopoly«) and 4 (»Private competition«).

- Giving the current price development of cryptocurrencies, it is clear that there is the possibility of them being rather used as an **investment tool**. Investments can be driven by the generation of financial value, but also by its need to set up a token system for data, as seen in smart contracts and utility tokens. Raising the question of intrinsic value, degrees for uncertainty are high. This can also be interpreted as a leeway for innovation and new currencies entering the market. Scenarios including investment functions of cryptocurrencies are scenarios 4 (»Private competition«) and 5 (»Investment and speculation«).

Regulation by financial authorities: It has often been noted that the regulation of cryptocurrencies might be the main driver when it comes to forecasting future developments. Especially considering today's diverse frameworks from a global perspective, a high degree of uncertainty is induced. This is another reason for the usage of scenarios, since they allow for a clear and specific depiction of different developments.

- Overall, regulation is assumed to differ from a rather baseline acknowledgement of cryptocurrencies up to a complete ban. The latter is the case for scenario 6 (»Crypto prohibition«), explaining also why we do not see neither a private nor a national issuance of cryptocurrencies.
- Concerning **transparency** requirements, it is a common misconception that today's cryptocurrencies allow for completely anonymous transactions. While some currencies such as Monero might make tracing transactions much harder, there are already businesses existing which focus on uncovering account ownerships. Therefore, the scenarios can be divided into transparent and pseudonymous systems. Scenarios showing a high transparency are scenarios 1 (»National currencies 2.0«), 2 (»Unconsolidated growth«) and 3 (»Crypto monopoly«).

As shown in Figure 5, the combination of key factor dimensions allows an integrated analysis of the relationship between cryptocurrencies and the traditional financial system. While all three scenarios on the upper side of the map of the future are described by a high transparency, a general acceptance and cryptocurrencies being used as pure payment devices, scenarios 1 (»National currencies 2.0«) and 2 (»Unconsolidated growth«) show them being integrated in the financial system, while in scenario 3 (»Crypto monopoly«), one cryptocurrency replaces traditional financial system functions. It follows that even with some shared characteristics, consequences can be quite diverse. On the lower part of the map of the future, scenario 6 (»Crypto prohibition«) diametrically shows a

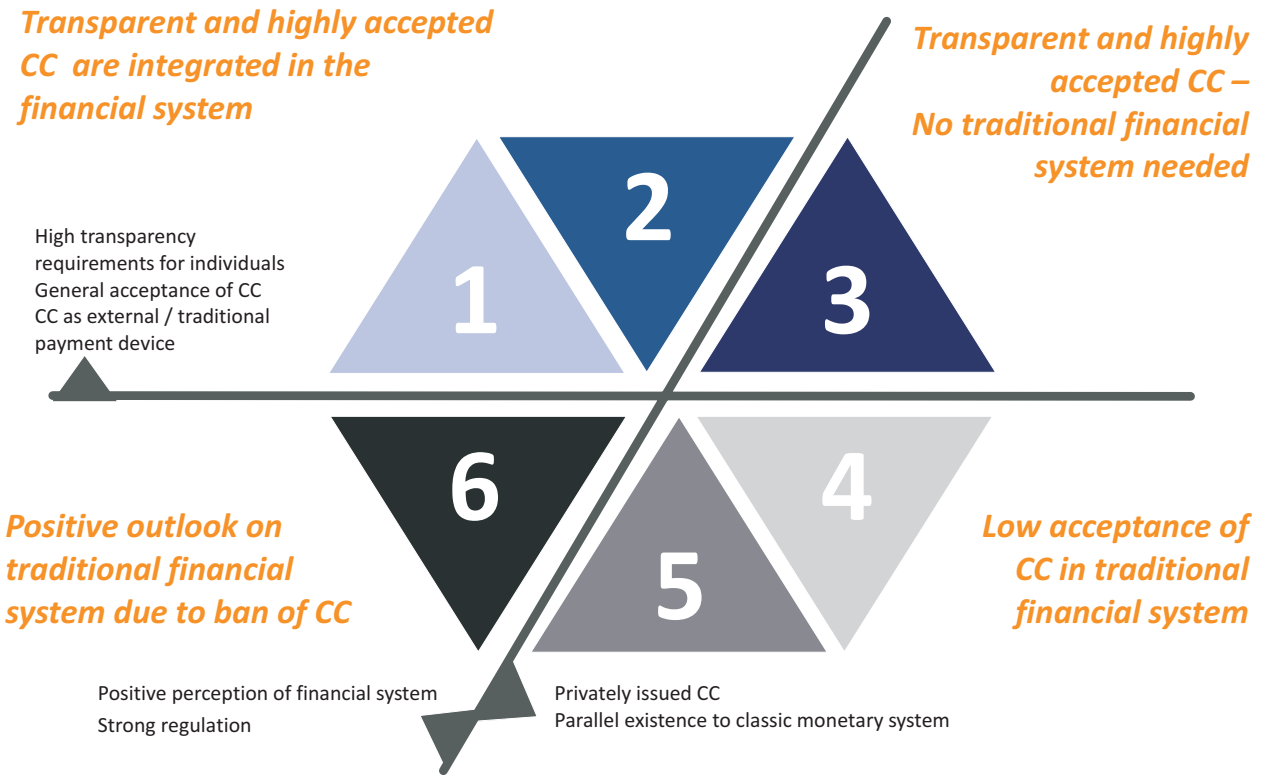


Figure 5: ***Scenarios by acceptance and integration in traditional financial system***

linear and incremental development of traditional financial systems without cryptocurrencies. As for scenarios 4 (»Private competition«) and 5 (»Investment and speculation«), traditional structures remain as they are, but are accompanied by cryptocurrencies as additional tools. Potential reasons, mechanisms and linkages which may result in one future are now examined by describing the individual scenarios.

3 Scenarios

The six scenarios depicted in the map of the future can be presented in short as follows.

Scenario 1:
NATIONAL CURRENCIES 2.0
State employs crypto-characteristics for official currency

The advantages of technologies such as blockchain have become so apparent, that policy makers decide to employ them for official currencies. With cryptocurrencies being viewed overall positively, a general acceptance is given. Central banks are highly involved in procedures of adoption, offering both a legal framework as well as technological guidance for the execution of change. Therefore, the banking industry is obliged to adjust their systems, as well.

In the light of national currencies taking over crypto-characteristics, the amount of currencies of this kind is linked to the general existence of currencies and thus not externally given. An important basis of this development are highly efficient transaction characteristics: in spite of large transaction volumes, a sufficient speed is reached. In order to guarantee a usage without inferences, the degree of innovation is rather low. Updates and improvements are carefully tested before being implemented. Payments are booked in standardized accounts which are provided by the banking industry. This way, national authorites can positively influence the ongoing importance of the banking industry. Privately issued cryptocurrencies do not play an important role since the trust in traditional financial markets and institutions is quite high. With national currencies being state-of-the-art, there is no necessity seen by society for private alternatives. With crypto characteristics being implemented into national currencies, there is not much change to be expected for additional players in the financial system. This is also illustrated by this scenario‘s closeness to scenario 6 (»Crypto prohibition«).

Scenario 2:
UNCONSOLIDATED GROWTH
Private and national cryptocurrencies coexist

While traditional financial systems start to lose trust, privately issued cryptocurrencies are viewed as rather positive and become more attractive as a payment and value storage alternative. This way, more and more people are willing to engage in the crypto business which leads to currencies being actively used on a day-to-day basis. Governments are not prohibiting these developments, but require a high transaction transparency. In order to regain control over financial systems, monetary authorities test potential developments of own currencies as well as an engagement in private currencies. The banking industry adapts and supports the usage of cryptocurrencies by cooperation with currency providers. A transformation of individual business strategies follows consequently.

Currencies exist in different shapes and sizes since the market has not been consolidating – both private but also state-owned currencies coexist. In general, the currencies are used for payments so that their values fluctuate only slightly: a stable value is of great importance when it comes to preferred payment devices. In line with the high degree of diversity between currencies, storage systems are highly diverse with compatibility being an advantage. In the race to establish the main used currency, many providers push forward innovation in order to establish safe und fast transactions.

Scenario 3:
CRYPTO MONOPOLY
One cryptocurrency as global payment tool

Misleading monetary policies have driven the traditional financial system to the edge of collapse. In the meantime, one privately issued cryptocurrency is able to gain a monopolistic market power since it is employed by more and more private users. Together with a high adoption concerning payment providers, this cryptocurrency becomes the go-to payment and value storage device. Central banks start to realize advantages of this system and try to regain control by regulation. With consumers simply shifting to other private currencies, monetary policy makers have become much more sensitive to consumer demands and regulate with high sensibility. Banks are not able to transform their generically grown business models and thus become obsolete. Remaining important financial tasks are rather executed by newly found and highly specialized FinTechs.

The cryptocurrency market is dominated by one privately issued currency. Due to its clear advantages in comparison to other currencies, users have a strong preference for this currency. Payments and value storage are thus easily executed. On the other hand, since other private currencies still exist and might be able to regain in importance, innovation is still employed in order to guarantee safe and fast transactions.

Scenario 4:
PRIVATE COMPETITION
A variety of private cryptocurrencies as payment and investment options

After years of low interest rates and several banking crises, society starts to lose trust in traditional financial systems and actively searches for potential alternatives. Privately issued cryptocurrencies gain therefore in popularity, leading to the majority of businesses accepting it in everyday payments. Overall, the general public is curious to try out the potential use cases of private currencies. Central banks try to intervene by regulation, but giving the global business models and the variety of currencies, fail to establish completely transparent systems. Banks readjust their business focus and offer more crypto-related services and products.

The cryptocurrency market is in the hands of private issuers, offering a variety of different currencies with their own advantages and disadvantages. In addition, currencies might serve different goals: while a lot of currencies are designed in order to serve as a payment device and stable value storage, others aim at financing business models and are thus rather volatile.Concerning currencies focusing on payment functions, intermediaries aim at enabling payments being compatible to a large number of currencies. Overall, no currency is able to reach a monopolistic position within the system. Due to a high competition between the individual currencies, innovation is employed in order to guarantee safe, stable and fast transactions even on a large scale of payments.

Scenario 5:
INVESTMENT AND SPECULATION
Cryptocurrencies as decentralized financial instruments

Low interest rates and a difficult, highly regulated investment environment drive the disappointment of society in the traditional financial system. Therefore, alternative investment opportunities are being explored – cryptocurrencies seem to be an attractive alternative for an enthusiastic society. Central banks in general view the usage of cryptocurrencies rather critical and try to intervene by regulation. These efforts are complicated by the global nature of business models and the failure to establish general, transnational rules. Banks try to profit from the trend and extent their existing products and include additional services focusing on cryptocurrencies as investment products.

The cryptocurrency market is highly diverse and driven by innovation. While currencies have been shown to be too volatile in order to be used as reliable payment systems, the focus shifts to their usage as a form of direct financing and investments. For example, individuals are able to participate in business models without facing intermediaries. With regulation being relatively low, investments are made anonymously and liberally. At the same time, potential disadvantages and the volatile nature of investments is not visible to everyone. The storage of crypto coins takes place in individual wallets, compatibility remaining an issue to be solved. This also leads to a low accessibility for large parts of society, since some IT literacy is needed. Innovation is a driver of coin prices but also involves potential inefficiencies which are then closely linked to value losses.

Scenario 6:
CRYPTO PROHIBITION
Financial authorities ban cryptocurrencies and dry out markets

Monetary policy makers have come to the conclusion that cryptocurrencies endanger traditional systems as well as indivdual users: hard-to-trace payments linked to crime, business scams and overly volatile currencies have lead to an overall negative view on cryptocurrencies. High losses associated to individual currencies have robbed individuals of their savings. It follows a strict intervention and the overall ban on the usage of cryptocurrencies. While this does not include underlying technologies like blockchain, actual cryptocurrencies serving payments or financing functions are no longer allowed. Coin market places are closed and further exchange is sanctioned.

With the official ban on cryptocurrencies, the market collapses. Regardless of the individual characteristics, cryptocurrencies lose their purpose and remain an interesting chapter in economic history.

5 Outlook

As noted before, the described six scenarios are viewed as a starting point for a more in-depth analysis of the future of cryptocurrencies. Ongoing discussions about the future of cryptocurrencies might involve topics one could miss in the scenarios. Issues such as the personal goals of issuers or environmental concerns are shaping the usage of cryptocurrencies, as well. A further analysis of these factors might be interesting, but has been deliberately left out since the specific characteristics have shown a significantly lower degree of interaction with other system factors and can also be additionally integrated to the individual scenarios at later points in time. For example, ecological concerns can be modeled by an adjustment of proof of work, without changing the actual usage of the cryptocurrency.

Developing potential use cases and environments which may or may not allow cryptocurrencies to thrive, we see a great advantage in the high number of potential applications of these six scenarios. Working with scenarios offers a number of potential analytical tools in order establish strategic foresight. With the scenarios helping us to gain a deeper understanding of potential development paths as well as their drivers, it is up to actual industry players to shape their future. It is important to know the alternatives and to set the course early on since it is certain that decisions made today (and this includes not deciding or doing nothing) will have a decisive impact on success and the scope for action in the future.

The available results can be used by any company or organization, for example to check their own strategy for one's own future robustness. As your partner for strategic foresight, we are at your disposal for advice on such applications and would also like to present our offers in this regard. We are happy to get in touch with you.

Next steps

Which scenario is the most likely to become reality?

We are highly interested in your opinion concerning the presented scenarios. Therefore, we would like to give you the opportunity to participate in our survey concerning the expected and desired future developments in the cryptocurrency market. Clicking on the link, you will be forwarded to the questionnaire on QuestionPro. You will get the chance to be updated concerning the results and further activities:

Link to our questionnaire

Here at ScMI, we take your privacy seriously. Therefore, you data is evaluated anonymously and for the sole purpose to generate information concerning the scenarios described. Your data will be stored for up to two years. We will only contact you in case of you indicating your E-Mail address and thus giving consent for contact. Your personal data will not be shared with third parties. We will publish the results of our survey without indicating individual answers. We will only contact you in order to keep you updated concerning our cryptocurrency project as well as comparable projects. At all time, you can decline us getting in touch and we will delete your personal information immediately. In case of any questions, you can contact us at info@scmi.de.

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