



European Securities and  
Markets Authority

# Call for evidence

**Investment using virtual currency or distributed ledger technology**



## Responding to this paper

ESMA invites stakeholders to provide information on all matters in this paper and in particular on the specific questions summarised in Annex 1. Responses are most helpful if they:

- respond to the question stated;
- contain a clear rationale;
- give concrete examples

ESMA will consider all responses received by 21 July 2015.

All contributions should be submitted online at [www.esma.europa.eu](http://www.esma.europa.eu) under the heading 'Your input - Consultations'.

### Publication of responses

All contributions received will be published following the close of the call for evidence, unless you request otherwise. Please clearly and prominently indicate in your submission any part you do not wish to be publically disclosed. A standard confidentiality statement in an email message will not be treated as a request for non-disclosure. A confidential response may be requested from us in accordance with ESMA's rules on access to documents. We may consult you if we receive such a request. Any decision we make not to disclose the response is reviewable by ESMA's Board of Appeal and the European Ombudsman.

### Data protection

Information on data protection can be found at [www.esma.europa.eu](http://www.esma.europa.eu) under the heading [Legal Notice](#).

### Who should read this paper?

#### Investment products with virtual currency underlying

- anyone offering or investing in virtual currency investment products
- anyone providing advisory services to the above

#### Financial assets/securities issued in virtual currencies

- anyone issuing or investing in assets/securities denominated in virtual currencies
- anyone providing infrastructure related to the issuance, trading, custody or for the recording of transactions or ownership of such assets/securities

- anyone providing advisory services to the above

Distributed ledger technology

- anyone using or advising others on the use of distributed ledger technology ('blockchain') in relation to transactions in securities, whether or not those securities or transactions require the use of a virtual currency

## Acronyms used

AuM	Assets under management
CFD	Contract for difference
CIS	Collective Investment Scheme
ESMA	European Securities and Markets Authority
NCA	National Competent Authority
VC	Virtual Currency



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# 1 Executive Summary

## Reasons for publication

ESMA has been monitoring and analysing virtual currency investment over the last 6 months, to understand developments in the market, potential benefits or risks for investors, market integrity or financial stability, and to support the functioning of the EU single market.

ESMA's analysis is set out in this paper. ESMA is seeking to share its analysis in order to promote wider understanding of innovative market developments, and invites market participants and other stakeholders to submit feedback and any additional information on the following topics:

- a) Virtual currency investment products, i.e. collective investment schemes or derivatives such as options and CFDs that have virtual currencies (VCs) as an underlying or invest in VC related businesses and infrastructure
- b) Virtual currency based assets/securities and asset transfers, i.e. financial assets such as shares, funds, etc. that are exclusively traded using virtual currency distributed ledgers (also known as block chains)
- c) The application of the distributed ledger technology to securities/investments, whether inside or outside a virtual currency environment.

## Contents

Section I explains the background to this call for evidence. Sections II and III set out the topics on which ESMA is asking for feedback and the questions. Annex I summarises the questions. Annex II shows an overview of VC investment products identified by ESMA.

## Next Steps

ESMA will monitor the evolution of investments using virtual currencies or distributed ledger technology so as to ensure that regulators are aware of significant market developments. It has no pre-conceived view as to whether any other regulatory action is needed and, subject to assessing the information received in response to this call for evidence, has no immediate plans to take any.

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# 2 Purpose and background

1. ESMA has been monitoring and analysing virtual currency investment over the last 6 months to understand developments in the market, whether there are potential benefits

or risks for investors, market integrity or financial stability, and to support the functioning of the EU single market.

2. In seeking to understand investment using virtual currency and distributed ledger technology, ESMA is not expressing any view on the desirability or otherwise of virtual currencies as such or on their use as, for example, means of payment. EBA has already prepared an opinion discussing the use of virtual currencies as a means of payment and setting out the potential benefits and many risks arising from virtual currencies.<sup>1</sup>
3. Although ESMA is aware that many investors seem to consider VCs less as a payment instrument and more as a financial asset,<sup>2</sup> straightforward purchase and holding of a virtual currency is not the focus of this call for evidence.
4. ESMA is interested in three issues:
  - a. Investment products which have virtual currency as an underlying: these are 'traditional' investments which do not necessarily require the investor to use virtual currency to make the investment, but give the investor exposure to one or more virtual currencies. Examples would be financial instruments such as a collective investment scheme or potentially non-registered derivatives such as options and contracts for difference (CFDs) that use VCs as an underlying or reference to determine the amount payable under the financial instrument or invest in VC related businesses and infrastructure. ('VC investment products')
  - b. Investment in virtual currency based assets/securities, and the transfer of those assets/securities: this would encompass 'traditional' financial assets such as shares, funds, etc. that are, however, issued and traded using virtual currency distributed ledger technology. In this case the investor is likely to need to purchase one or more virtual currencies in order to make the investment, the asset/security invested in (which is constituted using the virtual currency and associated technology), and transactions made and recorded through the distributed ledger associated with the currency rather than through 'traditional' exchanges, custodians, CSDs or registrars. ('VC-based assets/securities')
  - c. Other uses of the distributed ledger in relation to investment: this would encompass any other use of the 'blockchain' technology, which might not be limited to VC investment products or VC-based assets/securities. For example, a distributed ledger technology could be used to record offers, transactions in or transfers of ownership or other rights in a 'traditional' security, whether by 'traditional' or new-entrant providers. In this context, the technology might not be dependent on the use of a virtual currency.

### 3 Virtual currency investment products

5. A number of VC<sup>3</sup> investment products have emerged recently. The investment vehicles range from collective investment schemes to CFDs and binary options.

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<sup>1</sup> EBA Opinion on Virtual Currencies, EBA/Op/2014/08, 4 July 2014.

<sup>2</sup> [Glaser et al \(2014\), Bitcoins – Asset or Currency? Revealing Users' hidden intentions, 15 April 2014.](#)

### 3.1 Examples of VC investment products

6. VC investment products currently exist in two different forms: collective investment schemes (CISs) and exchange platforms that offer different types of VC derivatives. ESMA identified twelve collective investment schemes. The largest collective investment scheme has approximate AuM of € 116 mn. Two regulated companies based in Europe currently offer CFDs in Bitcoins and litecoins. In total, 17 active platforms could be identified that offer CFDs or binary options for Bitcoins or litecoins.
7. In addition to CFDs and binary options, some exchange platforms offer futures and other derivatives on the BTC/USD, BTC/CNY, LTC/USD and LTC/CNY exchange rates. Two of the largest Chinese Bitcoin and Litecoin exchanges seem to be the main providers of these services. Smaller exchanges exist in other parts of the world. However, most of these exchanges are unregistered and their locations are unknown.
8. While some platforms and funds have sought regulatory approval, there are a number of cases where the location and other relevant information are not available. An overview of the examples identified is set out in Annex II of this call for evidence. Of the 12 CISs, 4 are located in the United States and the remainder are spread across a number of countries. Two funds are understood to have indicated they are domiciled in Europe, though it is unclear that this is in fact the case. Eleven of the 17 identified exchange platforms seem to be located in Europe.
9. Data concerning AuM and outstanding volume are not publicly available for most investment products. As most VC CISs are still in their nascent stages, only six out of thirteen funds have listed their current size. The total AuM of these six funds is approximately € 246 mn, with an average minimum investment of € 13,848.

**Q 1: Do you have any further information about any other VC investment product or platform distributing VC investment products, their location or size outstanding/volume?**

### 3.2 Who invests in VC investment products?

10. With the exception of certain smaller funds, the CISs explicitly state that only accredited investors are accepted. Platforms that offer CFDs and binary options have no such restrictions and seem to cater to retail investors. There is no aggregate data on which type of investor invests in VC investment products.

**Q 2: Do you have any information about the profile of investors investing in VC investment products?**

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<sup>3</sup> The EBA defined virtual currency as “a digital representation of value that is neither issued by a central bank or a public authority, nor necessarily attached to a fiat currency, but is accepted by natural or legal persons as a means of payment and can be transferred, stored or traded electronically”, see [EBA \(2014\) EBA Opinion on ‘virtual currencies’](#).

### 3.3 Benefits and risks of VC investment products

11. The main benefit of VC investment products seems to be that they enable investors to participate in the performance of a market without needing to hold VCs directly and with that, decreasing some of the risks associated with direct VC holding.
12. Risks of VC investment products differ depending on the wrapper and exact underlying of the investment. Risks generally cited in association with VCs are fraud risk, market risk, legal risk, operational risk, counterparty risk and liquidity risk.<sup>4</sup>

## 4 Virtual currency based financial assets/securities and their transfer

13. Another way of VC investing is by using the transaction technology to buy, sell, transfer and own financial assets/securities. This means essentially that no third party like a regulated exchange, broker, central securities depository, custodian, etc. intermediates between the shareholder and the issuer of the security. VC based financial assets/securities and transfers of them are distinct from VC investment products. While VC investment products are distributed like other financial instruments with a different underlying, VC based financial assets are distributed and traded using virtual currencies and the associated infrastructure. They cannot be bought from traditional brokers using fiat currency.
14. In order to understand how similar or different VC based financial assets/securities and transfers of them are from traditional regulated financial asset transfers, it is essential to understand the parties involved and their functions. This is necessary, because the process of buying, selling or transferring assets via the Bitcoin block chain or another block chain is not completely free of intermediaries either.

### 4.1 How do virtual currency ‘decentralised ledgers’ work?

15. Leaving aside centralised virtual currencies<sup>5</sup>, in which a central party is in charge of issuing units and/or administrating the transactions, the heart of a decentralised virtual currency is its block chain. A block chain is a public register or “distributed ledger” that contains all transactions in the respective virtual currency. At any moment in time the block chain keeps track of who owns how much of the VC. As the word says a block chain is a chain of blocks. The blocks consist of information about several transactions with the virtual currency. Whenever anyone completes a transaction involving a VC this transaction gets logged in a block. Each block contains an identifier of the previous block so that the blocks are linked in a chronological order. Every time a block gets completed a new block is automatically generated.<sup>6</sup> The information contained in a block differs from VC to VC but most seem to contain the following information items: a block number, a

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<sup>4</sup> For further detail please see [EBA Opinion on Virtual Currencies, 4 July 2014](#) and [ECB Report on virtual currency schemes, July 2012](#).

<sup>5</sup> For more details see [ECB Report on virtual currency schemes, October 2012](#).

<sup>6</sup> <http://www.investopedia.com/terms/b/blockchain.asp>

time stamp, an identifier of the previous block as a reference, the block's own identifier, at least one transaction, information about the fees/rewards contained in the block and in the case of bitcoins: the merkle root (a hash of all identifiers of the transactions in the block) and a difficulty statement.<sup>7</sup>

16. In terms of who maintains the block chain this is being done by different parties depending on the VC. With bitcoin it is the “miners”, i.e. individuals or groups of individuals that have installed the bitcoin software and mostly use specialized hardware. Miners essentially take part in a game that consists of solving mathematical problems. Someone wanting to buy, sell or transfer bitcoins automatically broadcasts the relevant information to the network. The system bundles those transactions into blocks and wraps them in a mathematical problem. The miner that solves the problem broadcasts the solution to the network and receives a set amount of bitcoins as a reward (for the current blocks, the reward is 25 bitcoins). This is the way new bitcoins are released.<sup>8</sup> Also, every transaction in bitcoin carries the possibility for a (small) transaction fee that is included in the blocks. When the solution gets broadcasted this validates the transactions contained in the respective block. This normally takes around 10 minutes. All other miners can check whether the solution is correct and confirm all the transactions in the block in that way. With bitcoin the recommended confirmation time is 6 blocks, i.e. around 1 hour.
17. With NXT, another VC, every user can be assigned the role to validate or “forge” NXT. One difference between bitcoin and NXT is that all NXTs exist already, as opposed to bitcoins of which around 2/3 of the final amount of bitcoin exists today. Users of NXT can earn NXT by forging. Forging fulfils essentially the same role for NXT as mining does for bitcoins, i.e. validating a set of transactions, only that rewards are not new NXT but the transaction fees contained in each block. Also, the process is different in the sense that the competitive set-up of validating bitcoin transactions requires a lot more computing power than the allocative set-up of validating NXT transactions. The processing of a block takes 1-1.5 minutes and the recommended confirmation time is 10 blocks, i.e. 10-15 minutes.
18. These are just two examples and other VCs may differ in this respect. The way in which transactions get processed and validated exactly and how the individuals processing transactions get rewarded is different for each VC.

**Q 3: Do you have anything to add or suggest a change to the description (paragraphs 15-18) of how virtual currency distributed ledgers work? Please clearly state to which virtual currency you are referring in your answer or whether your answer refers to virtual currencies in general.**

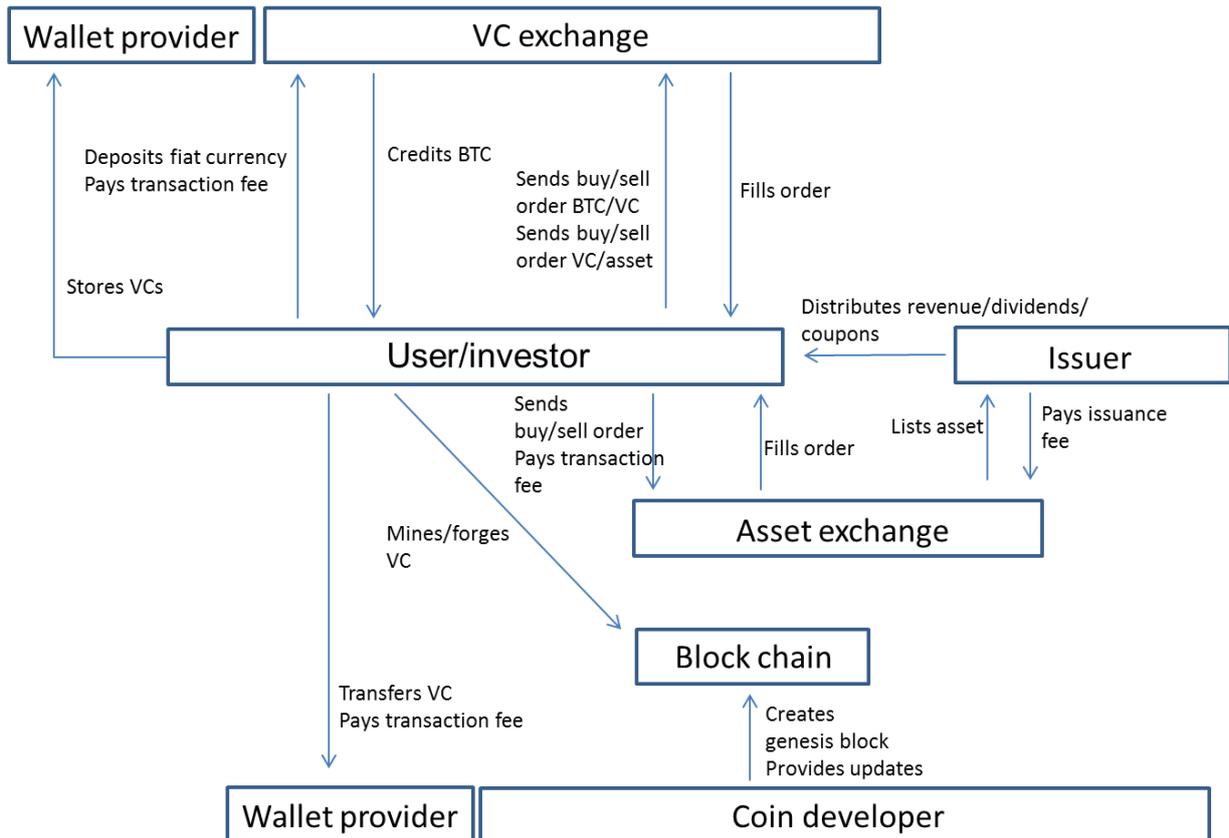
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<sup>7</sup> <http://bitcoin.stackexchange.com/questions/12427/can-someone-explain-how-the-bitcoin-blockchain-works>

<sup>8</sup> <https://bitcoin.org/en/how-it-works>

## 4.2 How do transfers of VC-based assets/securities work in practice?<sup>9</sup>

19. VC based assets/securities are created and transferred via a software protocol that operates either independently or on top of the Bitcoin block chain. The following process description is based on the example of a VC that operates independent from the Bitcoin block chain.



20. The process of buying financial assets via a virtual currency block chain starts with the user/investor opening an account with a VC exchange and selling fiat currency in exchange for virtual currency units. This can happen in two ways: either online or using a VC ATM. In the case of an online platform there seem to be two different types: one where the platform holds the users/investors' money at least for a short period of time ('exchange') and one where the platform only intermediates between buyers and sellers of VCs ('trading platform'). This is the start of the users/investors "address" or account in this VC. The transaction is registered in the block chain of that VC as "this address has the right to dispose of this amount of VC now". Or as two journalists recently described: "Owning bitcoin doesn't mean having a digital banknote in a digital pocket; it means having a claim to a bitcoin address, with a secret password, and the right to transfer its balances to someone else."<sup>10</sup> Whenever any transaction is made from now on using the

<sup>9</sup> The description of the process is based on the case of the virtual currency "NXT". Other VCs may have slightly different procedures in order to buy/sell/transfer financial assets/securities via their block chain.

<sup>10</sup> Casey, Michael and Paul Vigna, Bitcoin and the digital-currency revolution, Wall Street Journal, 23 January 2015.

respective account/address this is registered in the same block chain to keep up to date who owns what.

21. Depending on which financial asset/security the user/investor wants to buy she may need to exchange her virtual currency units for another virtual currency. This is currently necessary because not all virtual currencies can be bought using fiat currency. Some can essentially only be bought using another virtual currency (most commonly bitcoin) or if they can be bought directly with fiat currency, fees tend to be higher than when buying bitcoins and then exchanging bitcoins against the other VC. In order to exchange bitcoins for another virtual currency the user/investor may need to use another VC exchange than the one where she exchanged fiat currency into bitcoins. This may be necessary because not all VC exchanges offer all VCs.
22. In order to buy a financial asset/security the user/investor needs to create an account with the asset/VC exchange that offer the kind of financial asset she wants to buy. Not all VC/asset exchanges offer all VCs/assets. In order to buy a financial asset the user/investor puts a buy order in the order mask and confirms. The asset/VC exchange<sup>11</sup> normally matches buy and sell orders using a simple priority system: Orders are prioritized first by price (higher/lower bids have greater priority for buy/sell orders), followed by the block height when they're added (bids in earlier blocks have greater priority), followed by the transaction ID (bids with lower transaction IDs have greater priority). Higher priority orders are filled first.<sup>12</sup>
23. Once the order is filled the financial asset units are credited directly in the users/investors' account. Depending on the nature of the financial asset/security, the issuer will distribute revenue/dividends/coupons/interest to every account that holds financial asset units.
24. At the moment, essentially three different kinds of assets exist: a revenue sharing agreement, a fund and an instrument resembling a common share that grants voting rights, etc.<sup>13</sup>

**Q 4: Do you agree with the general investment process in VC based financial assets as described above (paragraphs 19-24)? Please explain where this process could differ for different virtual currencies.**

**Q 5: Which VC based financial assets exist other than the broad categories mentioned (paragraph 24)?**

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<sup>11</sup> This is based on the example of NXT.

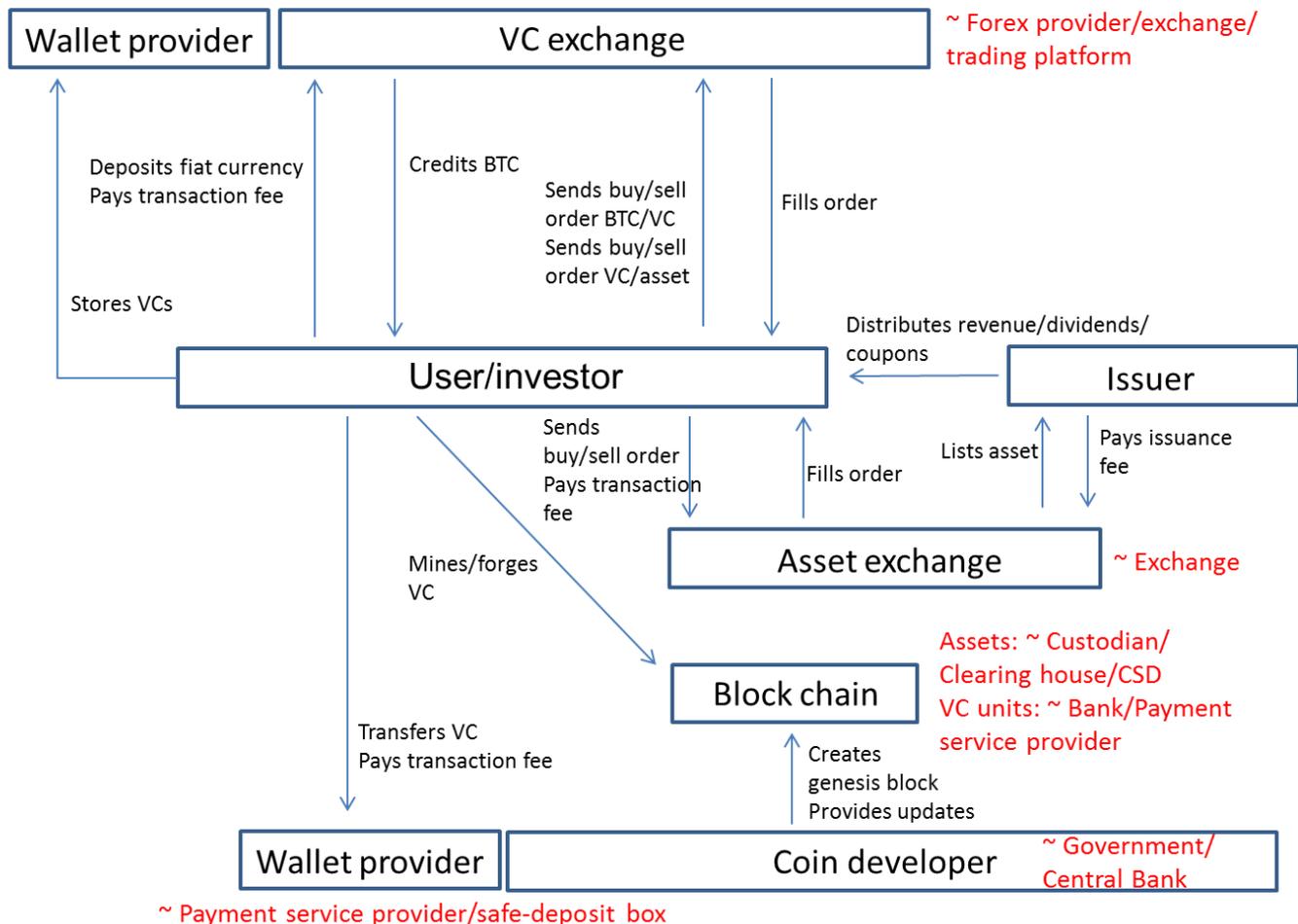
<sup>12</sup> <http://nxtor.org/how-to-use-nxt-asset-exchange-tutorial/>

<sup>13</sup> <http://nxtor.org/nxt-core-asset-exchange/>

### **4.3 Differences and commonalities with the traditional process of investing in financial assets/securities**

25. The process described above results for example in an individual holding shares in company XYZ in the same way as if an individual buys shares of a company in the traditional way, e.g. via a broker, regulated exchange, clearing house, central securities depository and custodian. Only the intermediaries are different and mostly unregulated. The question is: who plays whose role in the VC world?
26. The VC exchanges have a similar function as a bank and/or broker: they intermediate in the exchange of different currencies and/or currency units against assets. Some of them even seem to hold client's money for a short time, acting essentially like a currency exchange.
27. Wallet providers can be another service of a VC exchange, a coin developer, or be completely separate of the two. Their function is to store VC units and they offer different degrees of safety and mobility of VC units. Compared to traditional regulated institutions their function is either comparable to safe-deposit box provider or resembles parts of the functions of a payment service provider, i.e. offering a payment or savings account.
28. The asset exchange provides the same function as a traditional regulated exchange: it matches buyers and sellers of assets. The only difference may lie in the order matching where traditional regulated exchanges offer a variety of order types and VC asset exchanges do not seem to at the moment.
29. The coin developer is essentially the equivalent of government in creating a new fiat currency and that of a central bank in the sense that some coin developers control the supply of the VC units.
30. The block chain unites the functions of several traditional regulated entities: it is the register of all transactions and hence all balances in the VC, a function that is normally provided by the central bank and banks more in general as well as central securities depositories (CSDs). Furthermore, the block chain clears and settles transactions by enabling confirmation of transactions. For most virtual currencies, transaction as well as clearing and settlement times seem to be much quicker than in the traditional regulated system. Confirmation of a transaction and settlement takes at most a couple of hours and not days. Apart from that, transaction costs can be much lower than the fees charged via traditional payment processing or securities brokerage and settlement. For example, the transaction fee for an NXT transaction is currently a flat fee of 1 NXT, which is currently the equivalent of a bit over 1 cent (USD).

~ Payment service provider/safe-deposit box



31. It is unclear whether and how ownership rights created via a block chain would be enforceable. Essentially, all the block chain records is one address sending a certain amount of VC units to another address.

32. The above depicted analogies with traditional regulated entities may differ from VC to VC and also depending on the exact service provided.

**Q 6: Do you agree with the analogies to traditional regulated entities as outlined (paragraph 25-32)? Please explain where you have a different opinion, including where the analogies are different for different VCs.**

#### 4.4 Who invests in VC based financial assets/securities?

33. There is no reliable information on who owns VC based financial assets. Given that they are transacted online there is reason to believe that in all EU countries some individuals are holding VC based financial assets. At least judging by how widespread Bitcoin ATMs have become this seems to be a fair conclusion, although the obtained units of VC may

also be held for payment transaction purposes or for direct investment.<sup>14</sup> 975 shares and other assets have been created and transacted so far via Colored Coin and NXT.<sup>15</sup> Since the start of NXT's asset exchange in May 2014 around 50 new assets have been created each month. The internet site [www.coinmarketcap.com](http://www.coinmarketcap.com) currently lists 51 assets with a total value of € 24.4 mn.<sup>16</sup>

**Q 7: Do you have more evidence on how widespread ownership of VC based financial assets/securities is? Please mention your sources.**

#### **4.5 Benefits and risks of VC-based financial assets/securities and their transfers**

34. The main benefits of VC based financial assets and asset transfers seem to be speed and cost. From the perspective of the user/investor, the speed of VC based financial asset transactions is higher than traditional financial asset transfers and takes place within a couple of hours at most. The cost of transactions seems to be currently somewhere around a couple of Euro cents. Both speed and cost of transactions vary between different VCs.
35. The benefit of cost and speed equally holds for issuers in terms of listing an asset on an asset exchange. In the case of the NXT asset exchange, a listing currently costs 1000 NXT (currently around 10 Euro) one-off plus transaction costs when sending rewards to investors. Especially for small and medium sized companies this could become an attractive source of funding.
36. A reduction in costs and an increase in transaction speed should in theory be beneficial for the financial system as whole. Speedier transactions should, all else being equal, decrease counterparty risks. A reduction in costs could attract additional market participants, thus reducing entry barriers and contributing to a more complete financial market.
37. The risks of VC based financial assets/securities for investors consist mainly of the risks associated with virtual currencies in general.<sup>17</sup> Apart from that, investors are subject to exchange rate risk when investing in VC based financial assets/securities. Furthermore, it is unclear how enforceable claims based on VC based financial assets/securities would be in practice for investors. Another risk could be the irreversibility of transactions which is a feature of most VCs. If investors put in a wrong address when sending buy orders they may not be able to get the VC units back.
38. Risks to the financial system could result from risks to price stability, financial stability and payment system stability.<sup>18</sup> However, they would only materialise if transactions and holdings in VCs and VC based financial assets became significantly more widespread and start substituting fiat currency. In that scenario, traditional regulated entities such as

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<sup>14</sup> <http://www.coindesk.com/bitcoin-atm-map/>, status as downloaded on 29 January 2015.

<sup>15</sup> <https://www.coinprism.info/assets> and <http://nxtreporting.com/stats.php> on 4 February 2015.

<sup>16</sup> <http://coinmarketcap.com/assets/views/all/> on 10 February 2015.

<sup>17</sup> See [EBA Opinion on Virtual Currencies, 4 July 2014](#).

<sup>18</sup> [ECB Report on virtual currency schemes, October 2012](#).



clearing houses, central securities depositories and others would face significant risks to their existing business models.

**Q 8: Do you agree with the assessment of benefits and risks of VC based financial assets/securities or are there other benefits/risks for investors, for other market participants, and for the financial system as a whole?**

## 5 Other use of the distributed ledger

39. It is clear that in other sectors, firms are looking at ways of using the distributed ledger technology for purposes other than recording ownership of VCs or VC based assets. For example, Edgelogic is looking at using blockchain technology to provide a record of the history of assets so as to reduce fraudulent claims in the insurance sector.<sup>19</sup> Anecdotal evidence suggests that some firms are looking at ways of using the distributed technology into their existing business models to increase efficiency. It is also possible that firms could look for ways of using the technology to provide alternative trading and post-trading services in relation to 'traditional' securities, and not just VC-based securities.

**Q 9: How is distributed ledger technology being used or likely to be used in relation to the issuance, distribution, trading, recording of transactions and ownership of 'traditional' securities or investment products and why?**

**Q 10: To what extent is the use of distributed ledger technology in relation to 'traditional' securities or investment products being separated from an associated virtual currency and, if so, how and why?**

## 6 Annex I: Questions

### Questions

Q 1: Do you have any further information about any other VC investment product or platform distributing VC investment products, their location or size outstanding/volume?

Q 2: Do you have any information about the profile of investors investing in VC investment products?

Q 3: Do you have anything to add or suggest a change to the description (paragraphs 15-18) of how virtual currency distributed ledgers work? Please clearly state to which virtual currency you are referring in your answer or whether your answer refers to virtual currencies in general.

Q 4: Do you agree with the general investment process in VC based financial assets as described above (paragraphs 19-24)? Please explain where this process could differ for different virtual currencies.

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<sup>19</sup> <http://www.edgelogic.net/blocktrace>, discussed in *Bitcoin: possible bain of the diamond thief*, Financial Times, 3 February 2015, <http://www.ft.com/intl/cms/s/0/f2b0b2ee-9012-11e4-a0e5-00144feabdc0.html#axzz3TW9FqVG>



Q 5: Which VC based financial assets exist other than the broad categories mentioned (paragraph 24)?

Q 6: Do you agree with the analogies to traditional regulated entities as outlined (paragraph 25-32)? Please explain where you have a different opinion, including where the analogies are different for different VCs.

Q 7: Do you have more evidence on how widespread ownership of VC based financial assets/securities is? Please mention your sources.

Q 8: Do you agree with the assessment of benefits and risks of VC based financial assets/securities or are there other benefits/risks for investors, for other market participants, and for the financial system as a whole?

Q 9: How is distributed ledger technology being used or likely to be used in relation to the issuance, distribution, trading, recording of transactions and ownership of 'traditional' securities or investment products and why?

Q 10: To what extent is the use of distributed ledger technology in relation to 'traditional' securities or investment products being separated from an associated virtual currency and, if so, how and why?



## 7 Annex II: Overview of VC investment products

**Table 1: Examples of VC investment products: CFDs and binary options**

Platform Name	Registered	VC Services offered
AVA Trade	Ireland	Contract For Difference
Plus 500	United Kingdom	Contract For Difference
IG	United Kingdom	CFD/Binary Options/Spread betting
TopOption	Cyprus	Binary options
24 Option	Cyprus	Binary options
OptionTime	Cyprus	Binary options
Cedar Finance	Cyprus	Binary options
TradeRush	Gibraltar	Binary options
Beast Options	Gibraltar	Binary options
xCFD	New Zealand	Binary options
traderXP	Romania	Binary options
BTClevels	Seychelles	Binary options
WinOptions	United Kingdom	Binary options
Cointures	United States	Binary options
BTCOracle		Binary options
Satoshi Option		Binary options
UpDown		Binary options

Source: Company websites.



**Table 2: Examples of VC Collective Investment Schemes**

Collective Investment Scheme	Registered	Investment Strategy	AUM (MM EUR)	Min. investment (EUR)	Annual fee	Since
Future Capital Bitcoin Fund	Australia	VC service providers	23.18	N/A	N/A	N/A
Bitcoin fund	Bermuda/Malta	Buy and hold bitcoins	32.60	10,000.00	1.75%	2012
Bitcoins Reserve (Chesham Group)	British Virgin Islands	Arbitrage and buy and hold	N/A	6,750.97	NA	2013
Global Advisors Bitcoin Investment Fund	Jersey	N/A	N/A	N/A	2.00%	2014
The Panama Fund	Panama	VC service providers	13.45	N/A	N/A	N/A
Bitcoin Superfund	N/A	Active investment strategy	N/A	N/A	N/A	N/A
Coin Capital Partners	United States	Buy and hold	N/A	N/A	N/A	2014
Falcon Global Capital*	United States	Buy and hold	N/A	19,319.75	N/A	2014
Winklevoss Bitcoin Trust	United States	N/A	N/A	N/A	N/A	N/A
Bitcoin Investment Trust	N/A	Buy and hold	54.10	19,319.75	2.00%	2013
Pantera Capital	United States	VCs and VC service providers	115.92	N/A	N/A	2013
Binary Financial	N/A	Arbitrage and others	N/A	N/A	30% of profits	N/A
			239.25	13,847.62		
			TOTAL	AVERAGE		

Sources: [www.coindesk.com](http://www.coindesk.com), company websites.