BUCERIUS LAW SCHOOL
HOCHSCHULE FÜR RECHTSWISSENSCHAFT

Value Creation Through Tokenization of Private Equity and Venture Capital Funds – Making Funds a Tradable and Affordable Asset for Everyone

A thesis submitted to the Bucerius Master of Law and Business Program in partial fulfillment of the requirements for the award of the Master of Law and Business ("MLB") Degree

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July 24, 2020

13,270 words (excluding in text citations)
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1. Introduction

The purpose of this thesis is to analyze how Private Equity and Venture Capital companies can create value for their investors through the use of blockchain technology, specifically Security Token Offerings (STOs) which are basically similar to public offerings in which tokenized digital securities are sold in cryptocurrency exchanges. The value created through this technology is hardly measured and benchmarked. This thesis, is therefore, aimed at evaluating the potential value creation through reduction of holding time and increase of fungibility and, consequently, through risk reduction. Even though the blockchain technology was invented in 2008, most of the general public only associates it mostly with Bitcoin, the first publicly recognized cryptocurrency used on a global scale. However, to an average user the full potential of the technology whether through storing unlimited amounts of data or automating incredible amounts of processes, has remained hidden. STOs came into light a few months after the initial coin offering (ICO) bubble crash at the end of 2017 (BTC Echo, 2020). At this moment in time, experts in the field of security tokens and blockchain technology (a modern concept for data storage) became aware of the potential of STOs and more informed regarding the necessary technical background. Various entrepreneurs in Europe have started using STOs, in order to crowdfund (raising capital through asking a large group of individuals for a small amount of money each) real estate projects and thereby open the real estate market to small investors. Examples of such entrepreneur-backed companies are Invao from Lichtenstein or Brickblock based in Germany. These real estate projects may signal the start of the "Blockchain Revolution" and the beginning of the modernization of the financial industry. As STOs are an incredibly novel technology, research and application gaps are still dominant in this area. For that reason this thesis strives to contribute to the closure of these gaps by applying the concept of STOs to the day to day fund business. Lukas Hofer (a reporter for the newspaper ICO.lo has published many articles on blockchain technology and related and estimates that tokenizing real estate will become a trillion-dollar industry (Hofer, 2019). This gives an indication of the potential of tokenization in the real estate financing industry and allows a projection of the disruption potential of STOs on other industries in the financial sector such as the private equity and venture capital industry (Hofer, 2019).

Blockchain has shown to have the potential to play an important role across all industries especially the financial industry. This will be depicted further down in this thesis when showing the current existing uses of security tokens. As additional, new insights into the impact of blockchain technology are meant to be defined in this thesis, the research will be guided by the

question "*Can private equity and venture capital funds create an added value for investors through the use of tokenization as a funding channel?".* The underlying reasons for selecting this question will be discussed in the next chapter. To answer this research question systematically, the following methodology will be used:

- A literature review to summarize the existing theoretical knowledge.
- Expert interviews to reflect real life knowledge from different perspectives as well as opinions on the possible values that tokenization may bring.
- A practical case study showing how a private equity or venture capital firm could actually implemented tokenization and what implications this may have on the investors.

The hypothesis of this thesis is that "*Private Equity and venture capital funds would be able to attract more investors using tokenization, as they would not only open the market to small investors but would also reduce the required holding time and risk to realize gains for investors."* We shall not only review this topic at a theoretical level, but we shall also consider expert views and how this could be applied in the target industries.

1.1. Problem Definition

Although to those who are not specialized in blockchain applications, security tokens may seem similar to stocks/shares, which are traded on an everyday basis, their application can be much broader, as they can be applied to make any underlying asset fungible and hence tradable on open markets. A fungible asset as defined by the Cambridge English Dictionary is one, that can be easily traded for a different object, or asset of the same value. Thereby, a stock is fungible as it can be easily exchanged for fiat currency (Cambridge English Dictionary, n.d.). STOs are of disruptive character as they could be the first attempt at making those assets, that are unaffordable for many, small investors, tradable and affordable to everyone. Security tokens provide the necessary technological tools to crowdfund investments into assets of all kind. As stated above, all asset classes can be converted into fungible tokens by using security tokens, so investors can then own small fractions of a larger, otherwise unaffordable asset. This allows investors with substantially less funds to invest into large expensive assets which would otherwise never be affordable for them, such as private equity or venture capital funds. Using STOs in this context could not only make these assets tradable but also increase the market size

by including small investors. The problem, which the thesis aims to solve is, therefore, the following: Private equity and Venture capital funds are a long term investment strategy, which generally only institutional investors such as insurance companies or pension funds, family offices and in rare cases extremely wealthy individuals can benefit from. Never however do private equity and venture capital funds source their money from a person generating average income. This has to do with the way the fund's funding process works, the funds collect money from investors who then become limited partners. Funds need to collect large amounts of money in order to invest. Consequently, taking small amounts of money from low capital investors would not be efficient, as it would not be worth the cost of labor and time of negotiations for making them limited partners. This issue could potentially be solved through security token offerings, as the underlying technology allows small investments without increasing the workload and cost of acquiring the investor.

One could certainly argue, that a significant market potential, namely additional, possible investors, for both the funds is being lost and that smaller investors who are currently investing into stocks are not apprehending all investment opportunities, but they could become fund investors through the use of security token offerings. In short, the benefits are bilateral, on the one hand the funds would benefit from a larger investor pool and could use this to become less dependent on their current institutional investors. On the other hand, small investors would be able to benefit from investments into the asset class of funds which they would otherwise be unable to invest in. As stated before, this thesis will focus on the value creation for the investors, as they are the "customers" of the funds. Consequently, the problem to be solved is the evaluation of a market opportunity as well as the condition of its acessibility from the perspective of the customer (the investor).

The research question of the thesis will be accordingly: *"Can PE/VC funds create an added value for investors through the use of tokenization as a funding channel?"* In order to limit the scope of this thesis and investigate the application of STOs under specified regulation, the focus of this thesis will lay on German private equity and venture capital funds with a focus on German legislation and legislators. The results that will be drawn from this thesis can certainly be extended to other countries with some small limitations due to possible differences in legislation. German consumers are well known for being more conservative in the perspective of digitalization. The legislation related to digitalization is also reputed to be slower but stricter than in most countries. Nonetheless, the results regarding value creation for investors should be applicable to profit driven investors around the globe.

1.2. Hypothesis

The thesis relies on the hypothesis that "*Private equity and venture capital funds would be able to attract more investors use tokenization, as they would not only open the market for small investors but also reduce the required holding time and risk to realize gains for investors."* Indeed, from a perspective of risk of loss, investments in Private Equity can be compared to investments into bonds. Both investments have a comparably long duration and risk. The difference between venture capital and private equity would be, that private equity funds have a lower internal rate of return than venture capital funds as venture capital funds invest their capital in innovative businesses with a promising growth profile (will be defined in more detail in the following chapter). Private equity also have a lower risk profile than venture capital funds as they generally invest their capital in more mature companies with proven business models.

The hypothesis is supported by the financial theory, that the risk to create loss through an investment increases proportionally through the holding period as well as the ambiguity (the longer the holding period of an investment, the less clear it is what will happen to the assets environment, hence ambiguity) of the investment. Black Rock, a publicly well recognized financial services provider, defines time to be a crucial factor when evaluating investments. The price of an investment will change accordingly in relation to the time factor. This explains why a depreciation factor exists when calculating the net present value. In simple terms, duration increases ambiguity and uncertainty and it increases the risk for the investor to lose money. According to the Cebron Group, a private equity company based in the United States, the average holding period of private equity companies, the holding period being defined as the period between purchasing and selling a portfolio company is three to five years. Venture capital investments have longer average holding times reaching an average of 8.2 years (Bowden, 2017), as they generally invest in less mature companies whose success and business still has to be built before selling off the asset. Those companies are known for investing into new ventures and exiting again from the companies once they have developed into a mature company by selling their shares to a different investor such as a private equity fund.

During the course of this chapter, the hypothesis and the financial theory supporting it have been established. This is vital to the remainder of the thesis as it is designed to evaluate each aspect of the hypothesis in order to classify it as true or false. The next chapter will provide the necessary theoretical background to understand the evaluation presented of the thesis.

2. Theoretical Background

Blockchain and all affiliated topics are known to be highly technical and complex fields. The thesis, however, will not focus on technological issues behind tokenization but rather on the conceptual frameworks and how this technology is or can potentially be used in the field of private equity and venture capital funds. While the technological background of security tokens is complex and need to be taken into account when looking at the actual implementation of the concept, they are not explicitly relevant when evaluating the concept on the basis of value creation for fund investors. Further, the technical implementation can be outsourced to experts when giving them exact guidelines on the concept and how it is planned to be implemented.

2.1. Relevant Definitions

The definitions, that will be discussed in the current chapter, are terms, that will be used frequently throughout the thesis and their meaning should be readily available to the readers of the thesis that are not specialized in STOs.

Tokenization of an asset is the use of a blockchain based token, referred to as a security token, to represent this real world *fungible* (tradable) asset in a digital way. By definition (Cambridge Dictionary, n.d.), fungible goods are such: "that are easily exchanged for others of the same value." STOs work similar to securities, and are, therefore, tradable. But they can be applied to virtually existing asset. When then applying security tokens to PE/VC funds, the time to maturity of a PE/VC fund investment can be decreased dramatically. An investor would no longer have to wait until the private equity- or venture capital fund performs an exit but could sell the token (the asset) at any time. Furthermore, the STO would split an asset into smaller pieces (shares) and can hence be purchased at a much lower rate. Representing in this case means, that a security token of an asset could be the same as owning the rights of a share in a company or the participation in an investment fund (Laurent, Chollet, Burke and Seers, n.d.). Security tokens and stocks certainly have many similarities, however, they are not quite the same as will be discussed in more detail in **Chapter 3.2: Security tokens vs. equity (stocks and shares)**. Tokens are fungible and divisible. This means that they can represent small fractions of an asset, which makes them tailor fitted tools in the context of crowd investing in- and crowd ownership of assets. (Laurent, Chollet, Burke and Seers, n.d.). Tokenization of

assets poses some challenges including legal and compliance challenges, which will be covered in **Chapter 3. Literature Review.**

STO stands for security token offering. STOs make underlying assets, which are not tradable, fungible: As stated before, *fungible goods are such: "that are easily exchanged for others of the same value." STOs basically work like securities, and are hence tradable. But they can be applied to virtually existing asset. Hence, the time to maturity of a PE/VC fund investment decrease dramatically. Furthermore, the STO would split an asset into smaller pieces (shares) and can hence be purchased at a much lower rate"* (Cambridge Dictionary, n.d.).

According to Freshfields Bruckhaus Deringer, a multinational legal advisory company, a Smart Contract is a "computer code that can automatically monitor, execute and enforce a legal agreement." Further Freshfields states, that: "An important feature of smart contracts is that blockchain technology impedes retroactive alteration: Smart contracts are unmodifiable and final. This also entails that an automated transaction cannot be reversed or rolled back." Smart contracts being a rather new topic, they still create some legal challenges in the real world, which will be covered in **Chapter 3. Literature Review** (Freshfields, n.d.).

The *Howey Test*, stems from a former Supreme Court case, known as Howey. Said case provides the framework to determine whether or not a specific asset is classified as a security under the law. In simple terms, a security exists: *"If the asset represents an investment in a common enterprise solely through the efforts of others"*(Peirce, 2019). Even though, the Howley Test originated from US regulation, it is a helpful tool in distinguishing between security and utility tokens, as will be done in the following chapter.

Blockchain technology could easily take up a whole thesis itself. This thesis however, will only outline the necessary conceptual and theoretical background, as it is not necessary to go in depth technicalities to understand STOs in the framework of this thesis. Nathaniel Popper, a journalist for the New York Times found a rather simple explanation for what the Blockchain actually is. The Blockchain can be described as a highly technical new kind of database that has become the go to solution for storing digital information bundles in a safer way. The name Blockchain means literally that all information coming into the database is grouped into separate blocks and then chained together into one long ledger. The Blockchain is different from all other databases as it is completely public and transparent. Everyone using the Blockchain gets notified when a new transaction stored on the Blockchain occurs. The

transactions are saved for eternity, they can no longer be modified or deleted and can be reviewed at any time from any user in the world. This is the main difference between the Blockchain and all other databases. The blockchain, is commonly referred to as the public ledger, a series of blocks on which transaction details are stored after verification by the chosen network participants. To summarize, the blockchain is a database, which is constituted by the public ledger. All transactions are irrevocably saved on the public ledger once it has been verified by the designated network participants (Popper, 2018)

To put it in very simple words as coin telegraph, a well-recognized blockchain technology newspaper, does in their guide for beginners, *Smart Contracts* are essentially a fully automated contract. The contract between party A and party B is carried out without any notaries having to interfere. It is carried out digitally and payment from one party to the other is also being carried out digitally. Basically, it is a fully automated business contract between two parties (coin telegraph, n.d.).

In order to understand, how STOs work, one must understand how and where the security tokens can be traded. All digital tokens are traded on designated secondary markets similar to other securities. A secondary market is a market where investors can buy and sell securities from and to other investors without involving the principal agency offering in the first place. Once the company has carried out their initial token offering, the coins will be traded on the secondary market (CFI, n.d).

IRR is short for internal rate of return, it is a financial measure of performance used by investment companies including private equity and venture capital fund to measure the performance of their investments in assets. The Corporate Finance Institute defines it as the "expected compound annual rate of return that will be earned on a project or investment" (CFI, n.d).

A *fiat currency* or *fiat money* is any kind of monetary currency made legal by their issuing government, examples would be the USD or the Euro (Michael Ray, n.d.).

As stated at the beginning of the chapter, the previously mentioned definitions are part of the basic technical toolkit of the. These definitions are all interrelated as they are part of the different conceptual and financial frameworks used throughout the thesis.

2.2. What kind of tokens exist and how they differentiate

In order to get a sound understanding of how security token offerings work and how they can bring advantages to investors, one must understand that three different kinds of blockchain based tokens exist, with different uses, concepts and backgrounds.

The first token to be discussed within this section is the so called *payment token.* A payment token is relatively self-explanatory as it has the purpose to be used as a payment mechanism and to become interchangeable with common fiat currency such as the USD or the Euro.

The second token to be discussed under this section is the so called *utility token.* If a token does not qualify as a security according to the Howey Test, defined in **Chapter 2.1 Relevant Definitions**, the token classifies as a utility token. Basically, a utility token provides the owner with the right to receive a product or a service, it provides the owner with a specific use case. There is a maximum amount of utility tokens to be issued by a company and hence the price of the tokens is regulated by the supply demand curve (Mitra, 2019).

Most importantly, the core token of this thesis, the *security token* shall be discussed in this third and final step of the chapter. To be regarded a security token, the crypto token has to pass the Howey Test as stated above in **Chapter 2.1 Relevant Definitions.** It is important to notice at this point, that a token that is deemed a security token will also be treated as a security and is subject to the relevant regulations. Security tokens have the aim to achieve profits from the work of others (Mitra, 2019).

The three above-mentioned tokens are characterized by their intended use. Payment tokens have the intended use to replace fiat currency for payment, utility tokens can be viewed as a voucher for a good or a service and security tokens have the intention to become a new potential investment class, a new security. The following chapter will review the available literature to shed light on the environment of security token offerings from various angles.

3. Literature Review

3.1. STO environment

In the context of an STO, there are various angles that the offering party or company has to account for, before kicking off its offering. These three angles will be discussed in the light

of the relevance of this thesis: the regulatory environment, the technological infrastructure, and finally the secondary markets, which the tokens can be traded on (Chester, 2019)

Angle 1: Regulatory environment for STOs

When discussing the regulatory environment surrounding STOs, there is a variety of different regulatory viewpoints that that have to be taken into consideration. Financial institutions, especially multinational players, which play a big role in respect to the global financial markets, have important responsibility in preventing money laundering. Financial institutions have been hesitant to invest or partake in the crypto currency market as they have concerns about potential money laundering that can take place in relation to crypto currencies (Sprenger and Balsiger, 2018).

The main issue, that financial institutions are facing with any crypto currency or similar product (security tokens) is, that it is difficult to identify the holder of the account investing. Even though, the blockchain has the potential to store all relevant information (IP data etc.), which is relevant to identify investors, criminal subjects could still use VPNs or conceal their IP addresses (Sprenger and Balsiger, 2018).

Nonetheless, some counter actions against money laundering do exist and shall be listed and discussed within this paragraph. Financial institutions can and should implement additional procedures in order to prevent money laundering. In essence, the financial institutions are the intermediary between the offering company and their clients. They should be the party monitoring who invests into financial products and flagging such individuals who raise questions (customers whose funds predominantly come from cash or cash equivalents, excessive in. or outflows of capital exceeding the source of funds the customer seems to have, etc.). This is increasingly difficult in the crypto environment, where the beneficiary of a transaction may be anonymous to the financial institution. Transactions can nevertheless be monitored through algorithms that have been developed for fiat currency, which work just as well on digitalized assets. These algorithms detect patterns and behavior which may indicate laundering strategies. With these algorithms combined with the public ledger, IT experts can forge a powerful instrument for legal prosecution as transactions are transparent and irreversible on the ledger (Sprenger and Balsiger, 2018). Identifying the party behind the transaction may be more complicated. However, covering up the transactions has become impossible. Such a technology exists already; ERC-1404 for example, which helps companies

to know who their investors are at all times, managing compliance requirements and basically keeping a white list of investors who have not shown any sign of criminal behavior and circle out the "black sheep".

STOs and crypto currencies are a rather new topic with the blockchain being invented less than 20 years ago. It is, therefore, certainly understandable that legislators yet have to properly adapt. Different legislative bodies in different countries are at various stages in their legislative efforts to adapt. Whenever securities are involved in Germany, the "Federal Financial Supervisory Authority" (BaFin) is involved. The BaFin has provided all potential companies considering to launch an ICO or an STO with a rather comprehensive summary sheet. This summary sheet provides an assortment of relevant information especially for start-up companies. The BaFin states, that a security token or equity token will legally be treated the same way as a stock or equity in a company. Now the question to the differences between a security token and a stock arises. The differences will be covered further down in **Chapter 3.2 STO vs IPO** (BaFin GZ: WA 51-Wp 7100-2019/0011, 2019).

Any person who carries out a stock trade online, must first verify/identify themselves more specifically their identity. A verification process will likely also become crucial when carrying out a security token transaction. In order to preserve privacy and increase efficiency, Sprenger and Balsiger argue, that third-party ID providers should be put under state supervision. They argue that due to the fact that all data is stored on the public ledger, any blockchain related concept such as a security token, becomes a vulnerable target to identity and data theft. Placing those third party ID providers under state supervision, which take over the storage of data for crypto companies enhances their accountability and increases the security of investor related data (Sprenger and Balsiger, 2018).

It will be absolutely crucial regulating the secondary markets on which crypto products are and will be traded in the future. At this moment in time, crypto currencies are traded on secondary markets which have been specifically designed by private companies in order to ensure decentralization. As of today, security tokens cannot be traded on the same exchanges as stocks and there is no indication for this to happening soon. Sprenger and Balsiger argue that investor protection and anti-money laundering would be helped through the state regulating crypto exchanges directly with direct laws instead of treating them the same as stocks. It seems as though this legislative approach still has a long way to go. Today, the BaFin is already regulating the secondary exchanges on which crypto products such as crypto

currencies or security tokens, by placing the "burden" of the anti-money laundering directive is placed on all of these "wallet providers" (wallet provider is basically a synonym for crypto exchanges, as they provide their customers with a digital wallet to store coins and tokens in) (Kirschbaum, 2019).

In summary, Blockchain is a step forward in preventing money laundering as it provides the legal enforcement with a better trail to follow than exists today with fiat currency. Nonetheless, blockchain technology is yet to be involved fully into the daily life of businesses and the legislators are yet to fully adapt and provide a fitting legal framework. Anti-money laundering issues have been discussed in a comparably extensive manner compared to other issues discussed up to this point in the thesis. The reasons are, that the BaFin pays very close attention to money laundering issues, and that financial institutions have to be very careful when dealing with potential money laundering as it can cost them their good reputation as well as their license and consequentially their business.

The next step in analyzing regulatory environment regarding STOs within the framework of the thesis, hence from the point of view of the investors' value creation, means looking at the tax burden that every investor would have to bear with. According to the rules of the Federal Ministry of Finance, the income tax manual, security tokens are to be treated the same ways as other securities with regards to taxes. It comes down to the legal misconception, that security tokens are also known as equity tokens and they are, therefore, treated the same way as shares or stocks. The difference between equity (shares and stock) will be discussed in **Chapter 3.2: Security tokens vs. equity (stocks and shares).** From a company perspective this means, that security token investments represent aa share of a company, hence equity capital or debt capital and are hence tax exempt for them. From an investor point of view, security tokens are subject to income tax from capital assets, like investments in stocks, and they are generally subject to withholding tax (Dzionsko, Kirschbaum and Wagemann, n.d.). From the perspective of the investor, no taxation disadvantage exists compared to investing their money into a classic stock.

To sum-up this first angle, the thesis will focus on a country, (Lichtenstein), that has already established a first steps to legislation. For this, the thesis will especially look at the Lichtenstein Blockchain Act. Indeed Lichtenstein tried to demonstrate its openness to financial innovation as a working group was founded to pass the Act in 2016. The law was then passed in 2019. The regulation aims at providing a rule set not only for cryptocurrencies but also for tokens of all kinds. It provides fertile ground for the tokenization of any asset. Furthermore it

is drafted in a way to be open for any future digital innovation in the financial sector that may yet be to come. Prior to the Lichtenstein Blockchain Act, the law did not define tokens as a monetary asset. Tokens, were accepted afterwards as monetary assets as they could be exchanged for fiat currency. This excludes utility tokens however, which can only be exchanged for goods and services within their designated ecosystem (Wanger, 2020). Such a tailor-made regulation does not yet exist in Germany. Going over all the provisions the Blockchain Act has brough forward, would certainly exceed the scope of this thesis. Nonetheless, this short excursus shows, that other countries have already started developing a suitable regulation for the "Blockchain Revolution". Germany is reportedly already working on a suitable tailor-made regulation as well. It would be only reasonable for the German authorities to consider the Lichtenstein Blockchain Act as a role model.

Angle 2: Requirement technological environment

The first concept to be discussed within the second angle is, that the basic technological line of a security token offering will be the distributed ledger technology. A company considering a STO has to be aware of what it is and what it means for the data of the investors and the tokens in consequence. The distributed ledger should be broken down into two separate fields. First, distributed refers quite literally to the distribution of information and explicitly refers to the fact that the data is distributed across multiple network users and that it is publicly accessible to virtually anyone who wants to access it. Second, as previously described, the ledger can be seen as a more technologically advanced data base, with the potential to store seemingly unlimited amounts of data. So basically as previously mentioned, the distributed ledger is a publicly available open database to store data (Collet, Laurent, Homsy, Ramos, Martino et. al., 2019).

The second concept to be discussed is the concept of decentralized decisions or control. What this concept adds to the environment of security tokens, is the fact, that, based on standardized and agreed upon processes (these processes have to be agreed on to become part of the network), each and any single member of the network can process updates in the network. Further, updates which have been carried out by other participants of the same network can be accepted by any member of the network (Collet, Laurent, Homsy, Ramos, Martino et. al., 2019).

A further point to be discussed is the term and concept of cryptography. It can be defined as the scientific process of transforming data pieces into a form, which is impossible or infeasible to forge, duplicate delete or alter without a secret random key. The distributed ledger network can safely know all participants in the network at all times, confirm all their data and cross check the logic connections behind transactions and flagging them where necessary (Collet, Laurent, Homsy, Ramos, Martino et. al., 2019).

As defined under **Chapter 2.1: Relevant Definitions** previously, smart contracts are basically, a fully automated business contract between two parties. So essentially, what any company or investor considering a STO or ICO has to be aware of is, that automation is a crucial part of tokenization. Virtually all processes in tokenization are automated (Collet, Laurent, Homsy, Ramos, Martino et. al., 2019).

Even though, a company planning an STO has to be aware of the technological ground, the technological base already exists and can be purchased form third party experts, which will help plan and execute the emission of the tokens. One can therefore conclude that technology does not seem to be a stepping stone in launching a successful STO, as it can easily be outsourced.

Angle 3: Secondary Markets

As mentioned before under **Angle 1: Regulatory environment for STOs in Europe,** security tokens are traded similar to crypto currencies. They are traded via privately owned cryptocurrency exchanges as the principal idea of blockchain technology and cryptocurrencies especially is the decentralization of currencies and developing one shared global currency. Security tokens are naturally different in their conceptual nature but they are nonetheless traded via crypto exchanges. Some examples of already existing crypto exchanges would be the following: Coinmama, eToro, Kriptomat, Kraken etc. Hence, a crypto exchange on which the security tokens could be traded in case of a new emission by a company is not a bottleneck. The only challenge would be to get BaFin approval to emit tokens or coins in general.

After having considered all three angles, the regulatory, the technological, and the secondary market angle, it becomes apparent, that the dominant bottle neck when considering the introduction of a private equity or venture capital fund based token is the regulatory environment surrounding tokens. Indeed, even though, the BaFin is trying to give a rather

comprehensive idea of how tokens and other crypto products will be treated (treated as a security in the case of security tokens), the topic is still very new and legislation is still under development. Consequently, the future of the legislation is still ambiguous. Due to the ambiguity (ambiguous, as no expert in the field knows how the legislation will develop in Germany) and undefined legal situation, the BaFin decides on a case by case basis and encourages firms planning to carry out an STO to submit a so called no action letter, a letter requesting the relevant regulation within the firms case (BaFin GZ: WA 11-QB 4100-2017/0010, 2017 and BaFin GZ: WA 51-Wp 7100-2019/0011, 2019). The information analyzed within the past chapter directly relates to the hypothesis, as it shows that emitting security tokens to investors is not problematic from a technical point of view for the company and the necessary infrastructure for investors trading them is already in place and easily accessible. The challenge for a company will be to take an experienced legal counsels' advice, who has already worked on other tokenization projects in a similar industry. This chapter hence brings the evidence, that it is possible for the private equity or the venture capital fund to emit tokens to their investors rather easily without having to boycott their existing business. Next the thesis will take steps to understand the difference between tokens and equity as in shares or stocks to find out what the value creation for the investors would be without affecting the business model of the funds.

3.2. STO vs. Equity

This chapter is meant to distinguish the crucial characteristics of an STO and an IPO. When participating in an IPO, an investor acquires equity, which corresponds to ownership right. In contrast, investing in an STO refers to the purchase of a digital token representing a company's assets. Although it entitles the holder to dividends, it does not constitute equity (BTC Echo, n.a.).

Moreover, STOs eliminate intermediaries required for traditional stock exchange investments and, therefore, allow drastic cost reductions and fast, efficient trading that are not subject to a stock exchange's business hours as they are traded on tailor made secondary exchanges for crypto products. For that reason, more trading efficiency is created for investors as they are able to invest and react to new market information in real time. Such real-time actions following information changes can also lead to increased market efficiency (investors can react to market changes and news 24 hours a day without having to wait for the exchange

opening hours). In addition, the opportunity to trade frequently improves the liquidity of a token when compared to stocks (BTC Echo, n.a.).

However, not only investors experience a cost decrease in STOs, but also the emitting institution. The issuer is not formally required to be a limited company ("Aktiengesellschaft") and the elimination of intermediaries also leads to a cost reduction in the issuing process. A limited liability company can issue tokens to raise capital with an STO avoiding the structural costs of an IPO. In conclusion, these cost-saving elements, therefore, lower barriers to participate for investors and to emit for issuing companies (BTC Echo, n.a.)

Another key difference to IPOs when considering STOs is the opportunity to crowdfund investments, for instance, into an expensive stock via fractional ownership. In other terms, a security token can represent a claim on partial dividends and the value of the token can be set at even small percentages of cents as it does not constitute equity. This enables small investors to capture and speculate on the upside development possibilities of assets that would otherwise be unaffordable for them (BTC Echo, n.a.).

Future opportunities arising from the underlying technology of security tokens are smart, self-enforcing contracts, that will further simplify the payment of dividends and trading of tokens, for instance, mobile trading of various security tokens is already possible (BTC Echo, n.a.).

Overall, this chapter proves the superiority of security tokens compared to stocks following the hypothesis of the thesis. The investors would receive profit participation rights and benefit from the upside potential of the fund business without having to wait the entire holding period as they can trade their tokens due to their fungibility. Furthermore, the investors reduce their risk, as the fungible tokens allow investors to sell their tokens according to developments in the funds' portfolio companies. Investors are able to react immediately to developments regardless of the time of day. Finally, this sums up the value that can be created for the fund investors with lower spendings and regulations compared to an IPO. The following chapter has the purpose of depicting the current industry specific private equity and venture capital environment.

3.3. Current situation in the PE/VC environment

This chapter has the purpose to evaluate the size of the existing market, in which the investors can invest in as well as the possible IRR they can expect with both private equity and venture capital funds. Finally, this market overview will be used to compare the existing market with the potential market that could exist under the circumstance that private equity and venture capital funds emit security tokens.

3.3.1. Market analysis PE

3.3.1.1. General market overview

According to the PWC "Private Equity Trend Report 2020 – Bull or bear", the private equity industry has had a rather successful FY19 with over 2,500 deals in Europe and more than € 260 bn invested. In Germany a total of € 14.3 bn have been invested in over 900 different companies across different industries (Roberts, 2020). More than half of these investments were also invested in by venture capital companies (Dutschmann, 2020) which gives a clear indication, of the different point in time on the investment horizon of private equity and venture capital funds but their congruence in interests across industries nowadays. An ongoing trend within the industry stays the buyout. It also appeared, that the funds have been setting their eyes on listed companies more than private ones throughout the year. Germany has a steady 13% share of all buyout private equity deals that have been made since 2014, this is a total of 1,109 buyout deals that have been made in Germany. The German market holds the fourth place in terms of market share with only the Nordics, UK and Ireland (pre Brexit) and France having higher market shares. This could however develop in favor of Germany in the coming years due to the Brexit effects. In terms of deal value these 13% market share of the German market make up € 48.84 bn between 2018 and 2019 which indicates the sheer size of the German Private Equity industry. Further, 99% of all interviewed PE funds have stated that they will continue doing business in Germany as they believe it to be an interesting and strong market, in fact 46% of all respondents believe that Germany is the single top choice for making buyouts (Roberts, 2020).

Private equity funds are generally perceived as more safe than a classical venture capital fund. This has various reasons, the most important ones being, that venture capital funds invest into younger companies without a proven business concept, whilst private equity funds usually

invest into mature companies in markets with proven concepts. Furthermore, especially in the case of buyout funds, which make up the majority of the market according to Roberts, private equity funds purchase majority shareholdings of companies and obtain operative control to be carried out through a team if their choice, whilst venture capital funds invest into business concepts developed by the founders, who remain in the company and usually try to stay in control of their company. The IRR in the buyout private equity sector amount to an average of 13.8%, where every fund was only allowed once in the calculation of the overall average by taking their company specific average as a measure (Roberts, 2020).

3.3.1.2. What are the biggest investment sectors of PE firms

On average there is 300 associate investment companies buying shares in over 1,000 firms in Germany every year. Overall, these 300 associate investment companies have over 5,000 companies under management. The biggest investment sector in the German private equity sector has been the ICT sector accounting for 34 percent of all private equity investments in the country. The industry sectors following right behind are the enterprise products and services sector as well as the energy and environment sector making up 18 percent respectively of the total private equity investments in Germany (BVK, 2020). Overall it is evident, that the IT sector is the most important one in the current days and there is no indication that this segment is going to stop growing in the foreseeable future. Furthermore, the preferred exit channels have also changed throughout the past year, as the amounts of divestments have decreased by over € 2bn or 45 percent compared to the prior year. In 2018, private equity companies preferred to sell their assets under management to other private equity fund for a premium (31 percent of the total exit volume in Germany), this past year, it seemed as though they preferred to carry out trade sales (45 percent of the total exit volume in Germany) (BVK, 2020).

3.3.2. Market analysis VC

3.3.2.1. General market overview

According to the KPMG “Venture Pulse Q4 2019 - venture funding industry report” published at the beginning of 2020, the venture capital industry has had a record-breaking year of VC investments in 2019. This being said, the market has shown to be highly resilient especially due the strong growth even through the ongoing national elections and the ambiguity

surrounding further Brexit proceedings. First-time VC investments have been on the decline in the past year, they have been at USD 3.3 bn in 2018 and have shrunken by USD 0.4 bn over the following 12 months. This paired with the total amount of funding rising overall gives a clear indication, that VC funds may not invest in as many companies as before, however they are more committed when they find a company they believe in (Kay, 2020). Over the course of the financial year 2019 (FY19), VC-backed companies were able to raise a total of USD 7.9 bn through 804 funding deals. This does however not include other follow up investments. In total terms, VC companies have invested close to USD 39 bn throughout FY19 compared to far less than USD 20 bn in 2012. The European VC industry has been on the rise for the past 7 years and there is no indication for this growth to slow down (Kay, 2020).

The VC fund business may be rather dangerous for investors. All analysis of business models, financial modelling and discussions cannot guarantee that a start-up will actually have success. There are of course VC funds who invest in later stages of the business, nonetheless VC funds commonly invest into high growth and innovative, sometimes disruptive, business models whose future is not easily foreseen. Nonetheless, the capital of an investor would be better invested in a competent VC fund than in the S&P 500. The totality of the venture capital companies in the US have achieved an IRR of 27% whilst the S&P 500 has only achieved an average IRR of 12% for the same time period (Janeway, 2010).

3.3.2.2. What are the biggest investment sectors of VC firms

Venture capital companies are naturally focused on business models developing a new, innovative in the best case even disruptive business model to invest their capital in. It shouldn't take the attentive reader too long, to make the connection to what has been said in Chapter 3.3.1.2 What are the biggest investment sectors of PE firms, the IT sector is the fastest growing and most interesting sector for venture capital funds and consequentially also private equity funds at a later stage. Nonetheless, venture companies are focusing on certain specific areas within the IT sector. The most important sub-sector is the artificial intelligence sector, secondly venture capitalists are also focusing on any other tech company with a purpose driven value proposition such as B2B tech (e.g. Amazon, Google, Microsoft) mobility, PropTech operating in the industry of prospering properties as well as flexible work and living places (Prüver, Turner, Baldicheva, Berens, Ernst et. al. 2020).

3.4. STOs as a way to open a new market and benefit investors

The following chapter is designed to establish the theoretical advantages of STOs by showing the industries in which they are currently used and comparing them to the private equity and venture capital environment. In a second step, the advantages of STOs will be discussed and put into context with the industries this thesis is focused on.

3.4.1. Current uses of STOs

Security tokens are utilized for various investment opportunities. In Germany security tokens currently function as digital representations of assets and claims on specified profit streams and cannot represent fractional ownership rights. This can vary in other countries according to the country specific legislation, but will not be discussed as part of this thesis. In an international study in 2019, BlockState, a Swiss security token trading platform (secondary market), has established thirteen sectors that STOs had been conducted in from 2018-2019. More than half of all STOs focused on the finance and banking or blockchain industry (BlockState, 2019) showcasing the significance of the technology for this sector. An example of this use case would be Germany's first STO Bitbond in which the capital raised is invested in financial products such as loans and junior debt (Thick, 2019). A rising industry applying STOs, ranked third in the study is real estate. Construction development projects and real estate investments are crowdfunded by issuing security tokens and granting token holders a share of rental income and other profits, for instance, in the case of a future sale. Another possible application gaining momentum is an investment into artworks. What unites all these industries is, however, that it lowers the barriers to invest so significantly that even low-budget investors can suddenly profit from the return of extensive investments while their underlying risk is diversified among more parties (BlockState, 2019).

As stated above, all these uses of STOs had one similarity they made assets, which were otherwise unaffordable and fungible, affordable and tradable for small investors. This is the reason why those industries have been chosen to be presented within this chapter, as they have a lot of similarities with the venture capital and private equity industries' advantages of STOs, which are being assessed within this thesis. The advantages of STOs in the private equity and venture capital context will discussed in the following chapter.

3.4.2. Value creation through STOs in general and for private equity and venture capital funds

As previously introduced, security token offerings have various advantages for the emitting party. Said advantages will be discussed in more detail within this chapter and will in a next step be contextualized with venture capital and private equity funds. Firstly, costly intermediaries can be eliminated by applying this blockchain technology (STOs). Not only various banks, trading platforms, and advisors can be eliminated but processes such as the automatic verification of the investors funds for a transaction can also be implemented into the blockchain (Dijkstra, 2017). This presents the advantage that liquidity of investments can be improved by offering readily-available, around the clock, international trading opportunities and real-time market reactions. This means, that the assets not only become fungible, but also that investors have the opportunity to react to new market reporting and developments permanently. This would not be possible when investing into common stocks on stock exchanges such as the NASDAQ in the United States or the Börse Stuttgart in Germany (Dijkstra, 2017). Moreover, crowdfunding uses can be explored and brought to sectors otherwise inaccessible to non-institutional investors or high net-worth individuals. Finally, the utilization of security tokens also enhances transparency and data security. A blockchain creates a distributed ledger that is almost impossible to change after a transaction (Dijkstra, 2017). This point has already been mentioned previously when discussing the KPMG report regarding anti money-laundering measurers in the times of cryptocurrencies in **Chapter 3.1: STO environment**. The consensus among Sprenger and Balsinger as well As Dijkstra shows unity in regard to possible advantages of blockchain technology and data security when used in the context blockchain concepts such as STOs.

When discussing advantages of Blockchain technology it is important to also mention the possible use of smart contracts. Although not mandatory in order to perform STOs, smart contracts are crucial to maximize the benefit of an STO for the emitting entity as well as the investor. The integration of self-executing smart contracts is possible.

After the introduction of the mechanisms behind and the potential of STOs, there are several challenges when utilizing security tokens that should be evaluated. What remains to be considered as well is, that the conflicts surrounding STOs do not only arise for the emitting company, but also for possible investors. Firstly, significant disadvantages when conducting an STO can be trust and image issues. The possible, negative impression of tokens can be traced

back to the initial boom of offerings of utility tokens, referred to as Initial Coin Offerings (ICOs), in 2017. Utility tokens differ from security tokens from a legal point of view. Utility tokens are not classified as securities. When investors first purchase a utility token, they receive a digital voucher for a product that is still to be developed. As stated before, this voucher is only usable in this ecosystem and, consequently, if a product is not successfully developed, the investors lose their capital. Moreover, as utility tokens are not considered securities, firms emitting utility tokens are not required to submit prospectuses and white papers. Their concepts are, therefore, not examined by authorities. As a result, many of the initially conducted ICOs were of fraudulent nature. Tokens were sold to investors with the aim of selling online vouchers to crowdfund the development of any product, which was never launched. Investors lost their capital since they do not hold any legal claims with the utility tokens, and the product, their digital vouchers could have been used for, had never been developed. As the frequent cases of fraud received great media attention and even lead to China forbidding ICOs, STOs might have significantly suffered from the schemes surrounding utility tokens, especially such a novel method of raising capital (Bain, 2017).

Beyond this challenging situation, the benefits of STOs are meant to include improved tradability and liquidity of the represented assets. However, this has yet to be proven in reality, as the increased trading can only occur with enough actors and movements in the market. In addition, the secondary market of tokens is limited at the moment, as the tokens can only be traded at certain permitted exchanges and at some even exclusively with accredited investors (Hamilton, 2018).

Overall, the disadvantages identified throughout this thesis are mainly related to the public perception.The disadvantages listed above could be eliminated by educating the investors, presenting their benefits and educating the investor on the difference between an ICO and a STO. It can also be said that regulations and compliance still need to be developed. Potentially, however, the advantages outweigh the disadvantages for the investors.

4. Empirical evidence

This chapter aims at gathering empirical evidence to determine whether the findings of the thesis are to be supported or not. The chapter also aims at getting new insights especially in regard to the market dynamics. For this purpose the opinion from experts working in the field shall be consulted. The chapter gathers expert information from three different angles: private

equity professionals, venture capital professionals and finally legal professionals working in the field of private equity transactions. The questions asked to those experts are in Appendix 1. The answers will be discussed in the dedicated subchapters each dealing with a different expert angle (PE, VC, legal). This guarantees, that the sections remain comparable to each other as well as within itself for sections with more than one respondent. The responses to the questions have been recorded in the Appendices 2 to 7. Due to the different experience levels of the respondents in regard to tokenization, all of the respondents have been given reading material giving them a short overview of the most important terminology and concepts.

4.1. Expert interviews

4.1.1. PE expert interview

Equistone Partners, a private equity fund headquartered in London but also operating Germany has agreed to have two of their employees interviewed, namely Philipp Gauß (Investment Professional) and Maximilian Goeppert (Investment Director and Partner).

All private equity experts have a similar level of experience, as they have barely had any contact with blockchain technology and no experience with STOs. It does not play a role in their current working environment. This however is not surprising, as the concept of tokenization has not yet been used within the private equity industry. However, their experience as private equity professionals makes them well suited respondents as they can report from the perspective of a first user how they would like to use tokenization and what disadvantages they see. They are unbiased as they have no relationship to the concept neither positive nor negative.

Next, the experts have agreed upon the fact, that the introduction of STOs within their industry has a variety of potential advantages if the legislation would allow. They believe in reduced financing costs, co-investment opportunities, advantages of blended interest rates, as well as easier financing from foreign investors and the generation of a new exit channel for their own shares in the companies. The experts see the advantages of the technology even though they have not been in touch with it yet. They do however also see disadvantages with the use of STOs. They are uncertain how they would regulate these small investors, what rights they would have and how they would be able to control the shareholder structure and most importantly to them, how to treat them compared to normal equity and avoiding unknown investors.

The uncertainties the experts have in using STOs can be traced back to the fact that they have not yet worked with the tokens in their working environment. As stated above however, they are experts in the industry and can through their personal experience with blockchain technology and the reading material they have received certainly give an insights into the advantages and disadvantages of the concept in their industry. While the issues of regulating the smaller investors compared to their bigger counterparts may require the fund to set up rules for small investors. Their enforcement could be carried out through the use of smart contracts. However, the main issue for the experts was in the sense, that the small investors should not have calling rights, which they would not have in any case. The security token does not represent equity but rather a digital right to benefit on the upside if the investment realized profits and a duty to potential losses in the sum of the investments if the investments realizes losses. Controlling the shareholder structure as well as avoiding unknown investors was also voiced as a problem by the investors. As described previously, the blockchain saves all previous transactions and hence unknown investors become more familiar. Furthermore, as described previously when discussing the KPMG study carried out by Sprenger and Balsiger, secondary markets are and will even more in the future take the necessary precautions to ensure personal identification of investors. Controlling the shareholder structure would not change compared to today, as the STO investors would only share profits and not be a shareholder. The investors and their rights could be stored on the public ledger on a transaction basis as described before.

The experts are aware, that legislation is ambiguous and may create compliance issues for them and would hence not want to be a first mover. They would prefer for other companies to explore the opportunities and learn from them. The majority of the experts believes STOs to become part of their industry within the next five years while one believes venture capital funds will move quicker and they will only come into contact with the technology in ten years. The experts see the value creation for their customers as it would make it easier for investors to participate in the gains of the private equity funds. However, they don't believe that the fund is in need of additional funding opportunities as funding is not currently an issue. For the sake of this thesis, the investors value certainly exists in the eyes of the private equity experts. The experts believe that bigger institutional investors would not see an issue in coinvesting with smaller investors so long these small investors have no decision rights. This could easily be carried out through smart contracts and does hence not pose an issues. One of the experts however, raised the point, that more individuals would get insights into the private equity funds

and their earnings which was believed problematic for public perception. The experts don't see the risk portfolio of their investments changing but believe that investors would benefit from cost savings for legal and administration expenses as well as faster information flow.

Summarizing, the experts believe, that STOs will become part of their daily working environment in the mid to long term and that they certainly see the advantages that have been identified throughout the literature review as well. As this topic is very new, they are hesitant to the potential disadvantages of the technology even though their issues seem to be solved fairly easy. Finally, one respondent has mentioned that Moonfare already allows small investors to participate in private equity funds. This will be further evaluated in **Chapter 5: Results**.

4.1.2. VC expert interview

Max Schneider an Investment analyst from the early stage blockchain venture capital company Blockwall Capital has agreed to also answer the same questions asked to the private equity experts of Equistone. Considering the investment focus of Blockwall, Max Schneider is certainly more experienced than the previous interviewees and his opinion will be weighted according to his experience when combining the analysis to reach the result.

On top of his work experience with blockchain and related technologies, Max Schneider has also made personal investments as well as academic work in the field which qualifies him as a well suited respondent for the questions this thesis poses. Even though blockchain plays a central role in his work environment, the experts' company does not use the blockchain themselves but invest in companies using it. Consequentially, Max Schneider has a very objective view of blockchain related concepts such as tokenization and is not subject to negative or positive bias.

The expert certainly sees a variety of advantages of the use of STOs including such that have been mentioned in the literary review as well as in the first set of interviews with Equistone. He sees the potential of co-investments and of fungibility, but does not see the technology becoming part of the daily life of funds earlier than the next ten years as the environment/infrastructure for tokenization is not yet developed well enough. He believes that the benefits of tokenization becomes obsolete in the light of the immense legal fees necessary to carry out a STO. Further he believes that this will of course change over time when legal

frameworks are developed, but that the technology is yet too new and the legal situation yet too ambiguous. The same has been noted by the Equistone respondents as well as various sources consulted for the literature review.

Max Schneider sees potential to open the market for smaller investors but also mentions that the possibility already exists through Moonfare (a platform where small cap investors can invest into private equity and venture capital funds). However, he believes Moonfare will integrate blockchain and new players will join the market using STOs. Max Schneider does not believe from his experience that institutional investors would be burdened by coexisting with small investors but thinks the large number of investors would increase bureaucracy for funds and create an unbearable workload. He believes that the risk profile would not change due to the joining of small new investors, the same has been mentioned by the previous respondents. He sees the investors gaining easier access to the asset class of funds, having an increased level of transparency due to the recording on the blockchain as well as fungibility around the clock for investors to react. All these points confirmed previous learnings out of the literature review.

Overall, in the perspective of the present thesis, Max Schneider could identify competition as well as project a strong future for tokenization of the fund business. He however noted that the legal environment surrounding tokens and blockchain in Germany have not yet been developed to implement it in the market on a big scale. He believes that this will change over the next ten years and that tokenization will then become more common and open the markets for small size investors at large.

4.1.3. Legal expert interview

Both legal experts that have been consulted are working in a well renowned law firm in Germany. The law firm has a focus on M&A and private equity, venture capital, financing, corporate law- and capital markets law as well as private funds and tax law. The experts have specifically asked to not be named and for their company to not be made public, hence the transcripts of their answers have been redacted according to their wishes before including them into the Appendix 6 and 7 of this thesis.

Both experts consulted have made personal experience with blockchain technology such as cryptocurrencies either through investments or through academic research for their PhD thesis.

Furthermore, they lecture about these topics and have made work related encounters (legal consulting) with blockchain technology.

Both experts have congruent opinions as to the fact, that the topic of blockchain will become important in the legal field to digitalize consulting processes in the future. Furthermore, one of the experts has stated that some of his clients already advise the expert in the field of tokens as a new investment asset as well as tokenization of assets as an emitting party. For the time being this is specially to observe in the field of reals estate tokens. This strongly confirms the initial thought on which the thesis relies, that the investment industry is already tokenized, and that private equity could follow. The expert confirms this possible development since clients are already considering these investments.

Both experts agree that tokens do not play a major role in the current private equity and venture capital environment as the current institutional investors are happy investing through a limited partnership (LP) in a fund. Nonetheless they also agree that tokens could be a way of increasing funding for portfolio companies quickly and that smaller investors could then benefit from the investment as well.

The experts have both raised concerns towards the use of security tokens for private equity and venture capital companies. They believe that the structuring of a compliant security token is a costly process which is highly time consuming due to the ongoing communication with the relevant authorities (BaFin and the German tax authority). Further, the experts stress out that private equity and venture capital companies make individual agreements with their investors and that these shareholder agreements would no longer function having STO investors. When a larger number of shareholders would be integrated it would no longer be feasible to have individual agreements with each shareholder. However, as stated in the previous chapter related to the Equistone experts, the STO investors are not shareholders and merely purchase the right to benefit from profits and not equity. Hence, they would not be shareholders which would render the previous point obsolete. The experts disagree that tokenization will become part of the daily fund business within the next two to ten years. One states to be certain it will happen within the coming five to ten years, while the other is uncertain it will ever happen unless the legislator removes ambiguity and therefore opens the markets.

Finally both experts agree that there is a general benefit of opening the market to small investors with some limitations that will be discussed in the following paragraph. One states that the rules of the current private equity and venture capital markets would change and the funds would need to adapt while the other states what has also been stated by Equistone experts: At this point in time, funding is not an issue as it is easy to obtain for venture capital and private equity firms. Hence security tokens are not a topic the firms focus on at this moment in time. For them tokens would only mean additional funding which they do not need currently. Once funding is less easy to obtain, the emission of tokens may become more interesting as it may generate additional funding from new investors. Both experts further agree that conventional investors in private equity and venture capital funds can certainly coexist if the communication is open and the offering is structured in a compliant manner. Hence, there are only two barriers which prevent private equity and venture capital companies from emitting tokens at this point in time, the lack of proper legislation, and the ease of obtaining funding. They further raised the point, that the large investors may even attract greater masses of small investors through their good reputation. They may give them a sense of safety as they have certainly carried out a thorough due diligence.

None of the experts had an opinion on the risk distribution. This can be related to the fact that they are not financial but legal experts. Finally, the experts have different views on the advantages for investors when participating in security tokens. On one hand, one of them, states that they are easily available also to investors from developing countries who would otherwise not have the ability to invest into a private equity fund in Germany. On the other hand, they also have the ability to easily sell their tokens to realize gains or limit losses, which is certainly important for individuals or companies with fewer funds. These advantages have also previously been mentioned by other respondents and confirm therefore the literature review.

5. Learnings

This results chapter has the purpose of combining the findings that have been made throughout the literature review as well as the seven conducted interviews. Additionally, this chapter will look at the Moonfare concept which has been stated by the respondents of the interviews as an already existing alternative to the concept the thesis is bringing forwards.

As a result of the previously gathered theoretical and practical insights, the main results of this thesis will be presented within this chapter. Introducing security tokens to private equity and venture capital funds can feature significant advantages for the investors into those tokens.

The most important learning is that tokenization enables small investors to participate in PE and VC funds, as tokenization eliminates the otherwise high capital barriers. These funds are an investment opportunity that was previously inaccessible to low budget investors. By applying tokens, investors can profit from the experienced and thought-through investment strategies that previously only high net worth individuals and institutional investors could afford. Moreover, private equity and venture capital investments are easy to implement using security tokens, as they only require the purchase of a token to participate in the funds developments. This is especially enabling for unexperienced investors, who would otherwise not consider private equity or venture capital investments because they assume them to be very complex and challenging to invest in

Furthermore, investors gain transparency in the otherwise ambiguous private equity and venture capital funds industry. Tokenization allows the investor to overview the transaction history of the tokens. This also creates the possibility to analyze previous value developments and how frequently the tokens have been sold. This would allow the investor to track record the token development and hence the fund which would allow them to increase investment efficiency. As the blockchain is almost) impossible to manipulate and logs all transactions, this grants the investors more data they would not be able to access without the tokens and improves data security by making changes virtually inexecutable. In addition, by also storing data on the past performance of the tokens, investors might find it easier to establish patterns within value developments and might find it easier to derive investment strategies.

Nevertheless, the fund becoming more transparent to small investors who do not have expertise or experience with funds, also bears a significant risk regarding the public image of the emitting fund. Inexperienced investors can suddenly retrieve performance data and data on the size of the fund. As private equity funds are already perceived as “grasshoppers” in the public eye, the publication of this data may create more reputation damage. They may foster this “grasshopper” reputation and harm themselves instead of creating value for small investors. In addition, the inexperienced investors might connect the previous fraud cases concerning ICOs to the tokens in STOs, which could also negatively influence the whole private equity or venture capital firm

Another benefit for investors is the improvement of the secondary market. The secondary market for tokens, taking place on dedicated exchanges, is flexible and enable real-time reactions to change of developments of the PE fund. This is due to the fact that these exchanges are open 24 hours per day for seven days a week and that tokens can even be traded via smartphones. However, it should be considered that the small investors might be uneducated in the field of private equity and venture capital investments. Especially as these new investors have not had any previous experience in such investments because this investment class has not been accessible to them before. Such uneducated investors might perceive the performance of the fund to be unfavorable and might exit their investment pre-maturely as they lack the ability to correctly classify the value developments. Especially at the beginning of the funds, this can lead to higher volatility in token prices. Furthermore, these secondary markets only exits from private companies and are hence perceived to be not as safe as the official exchanges. Even though the Börse Stuttgart is reportedly working on a secondary token exchange themselves, it does not seem that they have made too much progress and it will likely still take a fairly long time until it is launched.

What should furthermore be assessed is that this opportunity to exit the investment earlier than the date specified by the private equity and venture capital fund can, nonetheless, reduce the investors risk. If an investor decides, that the investment strategy of the fund is not in their favor, investors can limit their losses and exit.

Lastly, the bottleneck factor raised in theoretical and practical research is the ambiguity in regulation. No international, universally applicable laws on security tokens exist and only a handful of STOs have been conducted, therefore granting solely a few precedents. Even German authorities have not released definite regulation on STOs and, as previously introduced, has stated that new regulation should be expected in the next years. For that reason, investors into the tokens might fear drastic changes in the structure of their investment and new developments in the taxation of their profits or losses. It might be a decisive factor for investors considering whether to invest into a private equity and venture capital via security tokens, that there is the great possibility of changes in regulation.

Finally, two of the respondents have mentioned the already existing Moonfare concept as an existing alternative to tokens. Moonfare is a platform allowing small non institutional investors as well as small cap institutional investors to invest into private equity funds. According to the Moonfare website, the minimum investment per investor is € 100,000, which

according to the understanding of this thesis does not classify as a small investor and is not comparable to the potential of STOs. An STO would allow investors to invest even only one euro and receive profit sharing rights according to the size of their investment. This being said, Moonfare may become more interesting for small investors if they would introduce a security token into their offering. At this point in time, this thesis will not treat them as an alternative to a STO as it does not allow small investors to invest and hence does not create the same value for investors as security tokens would.

After having weighted all different positive and negative aspects against each other the positive side clearly overweighs when looking at it from the perspective of the investor. While it is certainly true on one hand, that the legislation is not yet ready for a roll out of STOs on a big scale, investors would nonetheless benefit. What stands in the way of STOs becoming a new normal are hurdles such as legislation and infrastructure that can and will be (according to experts) removed over time. The positive aspects hence overweigh as no other concept exists, which would allow small investors to invest their capital into funds and react 24 hours a day to market changes. The next chapter will depict two potential ways of practically implementing STOs before the thesis moves on to its concluding statement.

6. Case study: How can tokenization be implemented in order to realize its value?

This chapter aims at showing two practical cases of how a security token offering could be carried out in the real world environment of private equity and venture capital funds.

Figure 1: STO investments into the investment vehicle

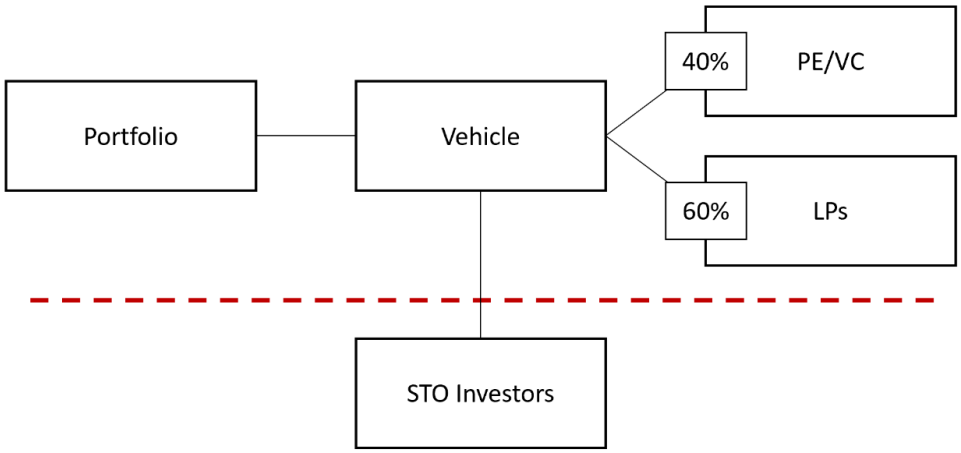

Figure shows one of the possible ways of integrating the STO concept into the practice of private equity and venture capital fund raising. Through this set up, the private equity or venture capital company would still raise funds through their current method with their current partners who would participate in the investments through LPs. However, the Vehicle would then also emit security tokens, for small investors to invest in and participate in the profits from the investment. Through this, the investors would invest into the whole diversified portfolio and the private equity or venture capital fund would gather more funds without having to give away equity. The investor would then benefit from all advantages that have previously been stated throughout the thesis and summarized in the past results chapter.

Figure 2: STO investments into the portfolio company

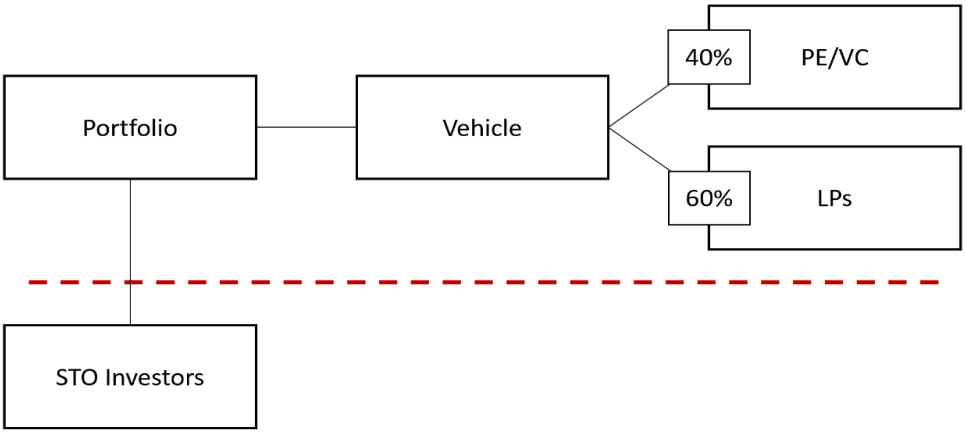

Figure two depicts the second possible way of integrating the STO concept into the practice of private equity and venture capital fund raising. Through this second set up, the private equity or venture capital company would not change their current fund raising mechanisms on the fund basis and would not emit security tokens through their investment vehicles but rather tokenize the single portfolio companies in order to generate additional fund raising in those companies - when needed. The investors would benefit from all but one advantage stated throughout the thesis; They would invest into single portfolio companies and not into the diversified portfolio of the fund. This would require more work on the side of the investor as they would have to select multiple portfolio company tokens in order to generate a well-diversified portfolio. Whereas the well-diversified portfolio would already be generated by the private equity or venture capital company.

It seems likely, that the private equity fund would opt for the first setup as the second would require a higher amount of legal and administrative expense both capital and time whise. Setup one would also be more favourable to investors as badly performing portfolio companies would then automatically be diversified with better performing ones and the investor would only need to monitor the performance of the whole fund rather than monitoring single portfolio firms. The next chapter of the thesis will depict the limitations and uncertainties the thesis has faced throughout and will comment the research question and hypothesis.

7. Conclusion

7.1. Limitations and uncertainties

Having evaluated a relatively new topic, this thesis has certainly faced some limitations and uncertainties. One of the most important limitations was that no quantitative data exists in and that it could not be derived as the impact of carrying out a STO in a private equity or a venture capital fund would involve subjective opinion. Even though the experts were deemed to be strong in their fields, the amount of expert per field was unbalanced and hence the findings may be bias. Furthermore, this thesis was able to only question a total amount of seven experts which may not be representative to the whole market. Further studies should aim at carrying out a greater number of interviews to work upon the learnings of the thesis

As the topic is new, there is a lack of academic depth and this made the literature review challenging. With time, more academic research will evaluate the topic and verify the findings of this thesis as well as creating new findings. Finally, the uncertainty prevails that no tailor-made legal regulation has been established in the target country of the thesis, Germany. Hence, the results of this thesis may change once the authorities draft a clearer regulatory framework.

7.2. Final statement regarding hypothesis and research questions

The research question that this thesis has put forward was the following: *"Can private equity and venture capital funds create an added value for investors through the use of tokenization as a funding channel?".* The final answer to the research question would be as follows: *Private equity and venture capital fimrs can create added value fort investors through the use of*

tokenization as a funding channel. However, the legislation and infrastructure are not yet ready for private equity and venture capital firms carrying out tokenization.

The value created for investors is not easy obvious to the investor target group and they will certainly have to be educated in order to understand this new asset class and its advantages. Furthermore, the regulatory environment is still uncertain. This means that the tokenization of private equity and venture capital companies is still years from being realized. The Equistone experts emphasized they would not be a first mover as they would want to see how the regulatory framework develops. This suggests that regulation development must come first. The Lichtenstein Blockchain Act seems to be the first step to clarify the regulatory environment. A further study in this field may want to analyze this Act to see if it is applicable in Germany and could become a guideline for German legislators. Further the expert suggested, that the funds are likely to invest into companies carrying out STOs to gain experience before carrying out one themselves. After having conducted the relevant research this thesis can confirm the hypothesis that *"Private Equity and venture capital funds would be able to attract more investors using tokenization, as they would not only open the market to small investors but would also reduce the required holding time and risk to realize gains for investors."* Concluding it is important to mention that STOs, while being interesting for funds are not their top priority. All experts have said that fundraising is not the issue currently. This has also been clearly shown in the market which depicting the growth in investments. Once the investment volumes into funds declines, STOs may become more of a priority but at this point in time they are unlikely to be carried out.

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9. Appendix

Appendix 1: Interview Questions

1) ***Please state your name.***
2) ***What industry and company do you currently work in?***
3) ***What is your role within your company?***
4) ***Have you made previous experiences with blockchain technology such as cryptocurrencies or other tokens (please specify)?***
5) ***What role does Blockchain currently play in your work environment?***
6) ***What opportunities do you see in the application of security tokens for VC/PE ?***
   a) ***Are there any current challenges you would be able to solve with security tokens?***
7) ***Do you see any disadvantages in the utilization of security tokens for your industry?***
   a) ***Do you see any legal hurdles within your industry that would prevent you from introducing a security token?***
8) ***When do you think will blockchain technology be established in the VC/PE industry? (e.g. within the next 2 years, 5 years, 10 years)***
9) ***Do you see potential in giving an increased number of investors with smaller capital the opportunity to invest into a PE/VC fund?***
10) ***Do you see problems arising from including small investors?***
    a) ***Do you believe that institutional investors would be disturbed by the fact that private investors would also be able to invest into the same fund as them?***
11) ***How do you think the risk distribution and profile would be influenced by opening PE/VC funds to private investors?***
12) ***What benefits if any would you expect investors to experience when investing via an STO?***

Appendix 2: Private Equity Expert 1 Answers

1) Please state your name

Julia Brunswicker

2) What industry and company do you currently work in?

Private Equity Equistone Partners

3) What is your role within your company?

Investment Director

4) Have you made previous experiences with blockchain technology such as cryptocurrencies or other tokens (please specify)?

No

5) What role does Blockchain currently play in your work environment?

Currently no role

6) What opportunities do you see in the application of security tokens for VC/PE ?

n/a

a) Are there any current challenges you would be able to solve with security tokens?

n/a

7) Do you see any disadvantages in the utilization of security tokens for your industry?

n/a

a) Do you see any legal hurdles within your industry that would prevent you from introducing a security token?

n/a

8) When do you think will blockchain technology be established in the VC/PE industry? (e.g. within the next 2 years, 5 years, 10 years)

5 years

9) Do you see potential in giving an increased number of investors with smaller capital the opportunity to invest into a PE/VC fund?

yes

10) Do you see problems arising from including small investors?

the number of investors will increase and as a result more people / investors will receive confidential information

a) Do you believe that institutional investors would be disturbed by the fact that private investors would also be able to invest into the same fund as them?

No

11) How do you think the risk distribution and profile would be influenced by opening PE/VC funds to private investors?

I do not see a big impact on risk profile as investments will remain the same and the risk profile will be the same for small and large investors

12) What benefits if any would you expect investors to experience when investing via an STO?

n/a

Appendix 3: Private Equity Expert 2 Answers

1) Please state your name.

Philipp Gauß

2) What industry and company do you currently work in?

Private Equity, Equistone (German office)

3) What is your role within your company?

Investment Professional

4) Have you made previous experiences with blockchain technology such as cryptocurrencies or other tokens (please specify)?

On a private level by investing into cryptos

On a business level: Competitors of a potential M&A target used a blockchain technology to track ownership of euro pallets in a pallet pooling system

5) What role does Blockchain currently play in your work environment?

The only (known) touch point was the one mentioned in the point above

6) What opportunities do you see in the application of security tokens for VC/PE ?

Co-investment opportunities by a larger group due to the lack of a minimum investment value (if desired by the majority investor)

Reduced financing costs

Easy Marketability of own shares

a) Are there any current challenges you would be able to solve with security tokens?

Financing of assets which are hard to finance with existing debt assets

Improved blended interest rate

Easier financing by international investors

7) Do you see any disadvantages in the utilization of security tokens for your industry?

We avoid a large base of unknown investors

Which rights do small investors have?

a) Do you see any legal hurdles within your industry that would prevent you from introducing a security token?

Technology is very young with a low track record (technical issues, compliance, small eco-system…); thus, we would not be a first mover

Legal jurisdiction – which country?

8) When do you think will blockchain technology be established in the VC/PE industry? (e.g. within the next 2 years, 5 years, 10 years)

I think VC would be faster than PE; PE 10y earliest

9) Do you see potential in giving an increased number of investors with smaller capital the opportunity to invest into a PE/VC fund?

I see a potential for a.) these people to participate in PE/VC returns for b.) assets which are hard to finance to get access to cash

I do see less a value for us as a PE as fundraising is in current times not the issue

10) Do you see problems arising from including small investors?

a) Do you believe that institutional investors would be disturbed by the fact that private investors would also be able to invest into the same fund as them?

Structure clearly needs to be in a way that small investors do not have any call rights; if this is the case, the structure should not be a big issue for a PE

11) How do you think the risk distribution and profile would be influenced by opening PE/VC funds to private investors?

n/a

12) What benefits if any would you expect investors to experience when investing via an STO?

n/a

Appendix 4: Private Equity Expert 3 Answers

1) Please state your name.

Maximilian Goeppert

2) What industry and company do you currently work in?

Private Equity Equistone Partner

3) What is your role within your company?

Investment Director & Partner

4) Have you made previous experiences with blockchain technology such as cryptocurrencies or other tokens (please specify)?

Only privately not in a work-related context

5) ***What role does Blockchain currently play in your work environment?***

None

6) What opportunities do you see in the application of security tokens for VC/PE ?

Given the current regulatory environment, we, as a private equity fund operate in, it might be quite difficult to combine "normal equity" with STOs i.e.

a) Are there any current challenges you would be able to solve with security tokens?

It might be an option to consider an ICO of STOs instead of an IPO – however there would be enough liquidity required for the STOs

7) Do you see any disadvantages in the utilization of security tokens for your industry?

Complex to monitor shareholder structure? How to finance capital increases? How to treat shareholder rights? How to treat compared to normal equity?

a) Do you see any legal hurdles within your industry that would prevent you from introducing a security token?

Regulatory and Compliance might be a problem i.e. how to protect small investors (Kleineranlegerschutzgesetz) ? How would you ensure that all investors have the same information? Which investors are allowed to take action within the invested Company? Are there any "rights" attached to the STOs? How would the STOs be treated in case of an insolvency?

8) ***When do you think will blockchain technology be established in the VC/PE industry? (e.g. within the next 2 years, 5 years, 10 years)***

probably within the next 5 years

9) ***Do you see potential in giving an increased number of investors with smaller capital the opportunity to invest into a PE/VC fund?***

There are already existing opportunities e.g. moonfare; I guess the highly regulated environment will make it quite difficult. STOs will more allow to invest in Companies rather in funds.

10) Do you see problems arising from including small investors?

Might be difficult to "handle" a highly fragmented investor base including shareholder rights?

a) ***Do you believe that institutional investors would be disturbed by the fact that private investors would also be able to invest into the same fund as them***?

That will be indeed difficult

11) ***How do you think the risk distribution and profile would be influenced by opening PE/VC funds to private investors?***

I guess things are mixed up here – are we talking about STOs in funds or in portfolio Companies? There are funds for private investors but mostly private investors. Moreover, usually it is not attractive to have private investors because the admin and legal cost are too high for small amounts

12) What benefits if any would you expect investors to experience when investing via an STO?

Less legal and admin cost – more speed in information etc.

Appendix 5: Venture Capital Expert Answers

1) Please state your name.

Max Schneider

2) What industry and company do you currently work in?

Early stage blockchain venture capital at Blockwall capital

Investing into both equity and tokens

3) What is your role within your company?

Investment Analyst

4) Have you made previous experiences with blockchain technology such as cryptocurrencies or other tokens (please specify)?

Wrote my bachelor thesis on Bitcoin vs. Gold

Self-study of cryptocurrencies via online research, project whitepapers, books

Small investments in numerous tokens

5) What role does Blockchain currently play in your work environment?

A very central role as my job includes judging blockchain based business models on a daily basis. As an investment firm we do however not use blockchain itself in any of our activities.

6) What opportunities do you see in the application of security tokens for VC/PE ?

a) Are there any current challenges you would be able to solve with security tokens?

more efficient and cap table creation and management which could cut out the need for notaries for cap table changes. This however requires law changes to become feasible.

Tokenization of specific cash flows without equity rights i.e. a fix percentage of a business or even a part of the business revenue paid to the token holder

Fractional ownership, which would enable broader access to VC/PE, which is usually only open to high net worth individuals or professional investors

more liquid secondary markets for PE/VC investments via tradable token

However, I don't see those use cases becoming reality in the short term, rather in something like 10 years. This is due to the fact that those use cases are already possible or theoretically possible with traditional securitization. Blockchain would just make them more efficient, and easier to create. Due to current scalability issues of all major blockchain networks, the infrastructure is not yet well developed enough in order to facilitate these use cases efficient enough, thus security tokens are unlikely to compete against traditional securitization methods in the short term.

7) Do you see any disadvantages in the utilization of security tokens for your industry?

a) Do you see any legal hurdles within your industry that would prevent you from introducing a security token?

Absolutely, at current situation the process of creating security tokens requires such immense legal fees, which in the end outweighs all benefits of using security tokens. This will of course change over time, once legal frameworks for security tokens have been created.

There are specific security token laws in existence yet, which makes it unclear which laws apply when using the traditional security laws. This leads unclarity and leaves much room for argumentation, which is the reason for current high legal costs of security token activities.

8) When do you think will blockchain technology be established in the VC/PE industry? (e.g. within the next 2 years, 5 years, 10 years)

10 years due to need for clear laws and further improvement's on the infrastructure side of blockchains.

9) Do you see potential in giving an increased number of investors with smaller capital the opportunity to invest into a PE/VC fund?

Yes, this is one of the key arguments pro using security tokens for PE/VC. However, there are services available doing this without blockchain already, i.e. Moonfare.

Even though it is already possible without blockchain, I expect blockchain will be integrated by existing platforms like Moonfare at some point, or a fully blockchain based platform will be created from scratch in the future.

10) Do you see problems arising from including small investors?

a) Do you believe that institutional investors would be disturbed by the fact that private investors would also be able to invest into the same fund as them?

this could certainly be an issue, but I don't think a big one as professional investors tend to be rational and would evaluate an investment opportunity rather based on potential returns than who are other investors.. But I would see the issue more with the funds themselves instead of their investors. Having many small investors increases the customer service burden, and amount of bureaucratic activities of the funds, which would increase their costs. Thus, I would expect funds to prefer having fewer but bigger investors. This would in turn lead to small investors being only able to access the VC/PE funds, in which the bigger and professional investors have no interest themselves.

11) How do you think the risk distribution and profile would be influenced by opening PE/VC funds to private investors?

I think regulators would probably demand better information provision and explanation of risks towards individuals investors to help them learn about the risks, which would make it more expensive for the funds to sell towards smaller investors. This would probably lead to different fee schedules for retail investors due to the increased burden of explaining the product, risks etc. The risk distribution and profile should however remain the same.

12) What benefits if any would you expect investors to experience when investing via an STO?

Increased and easier access to investments

Increased transparency due to captable being tracked on a blockchain, observable by all investors in real time.

Increased liquidity via security tokens being freely tradable

Appendix 6 : Legal Expert 1 Answers

1) Please state your name.

[redacted] (Please note that my answers are only for anonymous evaluation and shall not be published.)

2) What industry and company do you currently work in?

[redacted]

3) What is your role within your company?

Attorney-at-law

4) Have you made previous experiences with blockchain technology such as cryptocurrencies or other tokens (please specify)?

Yes, I have bought tokens, give lectures, write about it and write my PhD thesis in this field.

5) What role does Blockchain currently play in your work environment?

In the future, the topic could be relevant for mandates. My employer therefore allows me to give lectures on this occasionally.

6) What opportunities do you see in the application of security tokens for VC/PE ?

a) Are there any current challenges you would be able to solve with security tokens*?*

Currently it does not play a major role. In principle, however, tokens enable the denomination of an investment and its easy sale/transfer.

7) Do you see any disadvantages in the utilization of security tokens for your industry?

a) Do you see any legal hurdles within your industry that would prevent you from introducing a security token?

Securities have so far not been interesting for the VC/PE industry, which focuses more on equity. For larger investments, it is also important for VC/PE investors to negotiate the shareholder agreement individually and to be able to exercise a certain influence on the target company.

8) When do you think will blockchain technology be established in the VC/PE industry? (e.g. within the next 2 years, 5 years, 10 years)

Tokenization could receive a significant boost if corporate shares could be tokenized. For this, the legislator must first pave the way. Whether and when this will happen is still unclear.

9) Do you see potential in giving an increased number of investors with smaller capital the opportunity to invest into a PE/VC fund?

On the one hand, it opens up new opportunities to attract investors, while on the other hand, investing with small investors is subject to different rules than those currently prevailing in the VC/PE industry.

10) Do you see problems arising from including small investors?

a) Do you believe that institutional investors would be disturbed by the fact that private investors would also be able to invest into the same fund as them?

Large investors will probably be offered different, better conditions than small investors. The reason for this could be that a large investor is a good advertisement, because everybody knows he conducted a due diligence and has apparently come to a positive result. This attracts

further (small) investors.

11) How do you think the risk distribution and profile would be influenced by opening PE/VC funds to private investors?

I have no opinion on that.

12) What benefits if any would you expect investors to experience when investing via an STO?

Investors strive for profit, and this must be the main benefit of an STO, otherwise it is not interesting for investors. However, other positive side effects are desirable, such as the denomination of the investment and its easy sale/transfer.

Appendix 7 : Legal Expert 2 Answers

Dear Antonio,

I congratulate you on the fascinating topic of your master thesis and the noteworthy issues that you have highlighted in your abstract.

Although not stated in your email, I assume that it is our mutual understanding that participating in your questionnaire is a confidential endeavor and that the answers will be used for your master thesis only, however, they will not be published in any way. If you intend to publish any of your work, I trust that you will do so strictly anonymously with regard to the participants in this questionnaire.

Best,

[redacted]

1) Please state your name.

[redacted]

2) What industry and company do you currently work in?

[redacted]

3) What is your role within your company?

Attorney (Tax)

4) Have you made previous experiences with blockchain technology such as cryptocurrencies or other tokens (please specify)?

I wrote my PhD thesis on the taxation of cryptocurrencies (Link) and publish regularly in this field (Link). As an attorney, I advise clients on tax issues with regard to cryptotoken / token-offerings etc.

What role does Blockchain currently play in your work environment?

Blockchain technology does not (yet) play any significant role in the legal field in the sense that it is utilized to digitize legal advice itself. However, blockchain technology is a (slowly) growing field in which to render advice. Two relevant categories seem to be distinguishable:
(i) Clients seek advice with regard to tokens as a new investment asset (e.g.: are tokens a suitable asset under regulatory law to invest in for a PE fund? What are the tax consequences for such investments?)
(ii) Clients seek advice with regard to tokenization of equity/finance instruments/assets (such as real estate)

6) What opportunities do you see in the application of security tokens for VC/PE ?

a) Are there any current challenges you would be able to solve with security tokens?

I believe currently, the opportunities depend on the level of review:
(i) On the level of portfolio companies, which are held by a VC/PE, the offering of security tokens can be a viable option to source (additional) funds via modern financing instruments (combined with a fair PR opportunity). Thus, the offering of security tokens can contribute to develop portfolio companies in addition to the traditional funding and guidance by VCs/PEs. Details depend on various factors such as the industry of the portfolio company.
(ii) On the level of PEs/VCs itself ("tokenization of funds"), the offering of security tokens does not yet seem to show any significant advantage over financing methods that are currently used. In particular professional investors seem to prefer their investment via traditional vehicles (e.g. as an LP in a fund) rather than in token.

7) Do you see any disadvantages in the utilization of security tokens for your industry?

a) Do you see any legal hurdles within your industry that would prevent you from introducing a security token?

In general, the structuring of a compliant security token offering is still a fairly costly endeavor in the current regulatory environment. Depending on the existing knowledge in a company, it requires technical-, market-, legal- (regulatory) and tax- advice. Moreover, communications with the authorities (BaFin, tax office) are often time consuming.

In particular with regard to a law firm, the utilization of security tokens would be subject to professional law and regulations for lawyer (i.e. investments in law firms are generally highly restricted).

8) When do you think will blockchain technology be established in the VC/PE industry? (e.g. within the next 2 years, 5 years, 10 years)

On portfolio-company level: within the next 5 years blockchain technology will be

established for a notable percentage of portfolio companies

On PE/VC level: 5-10 years

9) Do you see potential in giving an increased number of investors with smaller capital the opportunity to invest into a PE/VC fund?

In the current economy (low interest rates and rich capital markets on the one hand but a dawning recession on the other), it seems that sourcing funds is not the relevant issue for PEs/VCs, but rather sourcing assets/targets to invest in. Thus, the incentive to establish token-based funding methods seems restricted.

In general, yes, there is high potential to source funds from investors with smaller capital (in particular from investors worldwide without sufficient current access to the capital market)

10) Do you see problems arising from including small investors?

a) Do you believe that institutional investors would be disturbed by the fact that private investors would also be able to invest into the same fund as them?

The offering of additional finance instruments such as security tokens will require professional investors to conduct a due diligence also in this regard before investing in a fund. For example, assuming that a VC/PE has offered security tokens to small cap investors worldwide, a professional investor will only invest in this VC/PE, if the STO is compliant with regulatory requirements. Thus VC/PE risk to potentially loose funding opportunities if they decide to offer security tokens. If, however, the token offering is structured well and/or the professional investor is on board with an STO to begin with, then I believe that token offerings and traditional professional investments can coexist in a VC/PE.

11) How do you think the risk distribution and profile would be influenced by opening PE/VC funds to private investors?

No thoughtful opinion on that; details seem to depend on future (BaFin) regulations

12) What benefits if any would you expect investors to experience when investing via an STO?

Investments via an STO seem to be most beneficial for investors without sufficient access to a primary and / or secondary capital market. This will generally apply to residents in developing countries as well as small cap investors, as it increases their opportunities to invest in assets, which they normally could not (easily) target (e.g. European or US real estate; European or US mid cap companies).

10. Glossary

B2B	–	Business-To-Business
BaFin	–	Bundesanstalt für Finanzdienstleistungsaufsicht (German Federal Financial Supervisory Authority)
EU	–	European Union
EUR	–	Euro
FY	–	Financial Year
ICO	–	Initial Coin Offering
IPO	–	Initial Public Offering
IRR	–	Internal Rate of Return
LP	–	Limited Partnership
PE	–	Private Equity
PWC	–	PricewaterhouseCoopers
SEC	–	U.S. Securities and Exchange Commission
STO	–	Security Token Offering
US	–	United States
USD	–	United States Dollars
IT	–	Information Technology
VC	–	Venture Capital