

SME Funding through Tokenization under the Liechtenstein Token and TT Service Provider Act: Legal Requirements, Market Sentiment and Business Concept*

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Abstract

The Principality of Liechtenstein aimed to provide legal certainty in the fields of tokenization and trusted technologies. This thesis gains its relevance from two perspectives; firstly, the restricted capital (market) access of SMEs which results from cost inefficiency of small volume emissions and other obstacles. Secondly, tokenization allows to split up any asset in any number of fractions and to make rights as well as intangible assets tradeable. This thesis, therefore, unites the potential of token economy with capital market access restrictions of SMEs by examining potential SME funding based on tokenization in Liechtenstein. The literature base in this field is still quite empty and no comprehensive legal analysis of the topic has yet been conducted. This legal analysis of the entire business model, including the tokenization process, asset and token transfer, and connected obligations of involved entities provides a handbook for practitioners and interested SME managers. The study also pays attention to business facets by a widespread survey among local SME owners as well as several expert interviews with potential investors. By the introduction of the TVTG the Liechtenstein government followed a law is law approach. It already leads to lots of legal certainty and promotes the Liechtenstein jurisdiction as potential hub for a tokenization funding industry. This thesis solves many legal questions that might occur during the tokenization process and regarding SME funding based on tokenization. However, it is of crucial importance that on European level legal certainty is created, too. Especially concerning the secondary market further steps are required to foster tokenization and to improve SME funding.

Keywords

TVTG; Blockchain; Token Economy; SME funding; TTT-Act

Regulations

Government of the Principality of Liechtenstein, Token and TT Service Provider Act (Token and TT Service Provider Act; TVTG)

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I. Introduction

A. Motivation

With effect from January 1, 2020 respective from the day subsequent to the announcement the Liechtenstein Blockchain Act (TVTG¹) came into force.² Hereby, the Principality of Liechtenstein as first jurisdictions aimed to provide legal certainty in the fields of tokens and trusted technologies providers.³ While, this might prove to be an event of historical significance, questions arise if and to what extent the newly passed law can be utilized by local businesses. Especially the SME (small and medium-sized enterprises) sector, which is also described as the backbone of the Liechtenstein economy⁴, eagerly aims at developing new business models and introducing improved means of finance by this legal basis.⁵

Therefore, the relevance for this thesis can be derived mainly from two perspectives. Firstly, external financing of small and medium-sized enterprises is difficult and systemically restricted to mainly bank lending.⁶ Although approximately 90 percent of all European companies are considered as SME, they usually have no access to the primary (capital) market. The main reason for this observation might result from the cost inefficiency of small volume bond and equity emissions. In consequence, also neither debt nor equity instruments related to those companies are traded on the secondary market. Shares of those enterprises as well as claims against them are very illiquid and basically cannot be traded. This situation translates to a funding disadvantage compared to market-listed companies and ultimately to a dependence on bank financing. As a result, since many years the European Commission attempts to alter and improve capital access for SMEs. However,

significant improvements have failed to materialize. To make the situation even worse, in consequence of the 2007 financial crisis in Southern European countries still a shortage of capital supply can be observed as financial institutions are hesitating to increase lending, despite historically low interest rates.⁷

Secondly, Blockchain innovations foster new concepts, such as tokenization. Tokenization is a very new and innovative tool. For example, it simplifies the transfer of property rights in material and immaterial goods. Furthermore, it is a vehicle for splitting up any asset in any number of fractions. Thus, it provides divisibility and liquidity even for illiquid, non-bankable or intangible assets such as real estate, classic cars, pieces of art or IP rights.⁸ With gaining popularity also regulators became aware of the increasing digitalization of goods and property rights as well as blockchain technologies in general. In consequence, the government of the Principality of Liechtenstein recognized early that the country and its financial hub should take a leadership role in this transition process towards the digitalized (token) economy. The settlement of modern fintech companies is welcomed in Liechtenstein. Hence, the government had applied to introduce the globally first blockchain law, which was then passed by the parliament. Thereby, not only legal certainty is provided, but also the evolution of a new business field is fostered that could become an additional pillar for the local financial industry.⁹ The introduction of this law might result in several new business models, which enlarge the scope of activities that can be exercised by local financial institutions and investors.

This thesis unites the potential of token economy with capital market access restrictions of SMEs. For this purpose, it aims to introduce a proof of concept for financing based on tokenization, which would widen and improve capital access for SMEs since the underlying technology allows cheaper, quicker and simpler emissions than conventional primary market emissions.¹⁰ Small and mid-sized companies have limited access to capital markets because the issuance of bonds or shares

1 [German: Token- und VT-Dienstleister-Gesetz] for [translated by the author] *Law on Tokens and TT Service Providers*.

2 *Regierung des Fürstentums Liechtenstein*, Regierung genehmigt Verordnungen im Zusammenhang mit dem TVTG (11.12.2019), available at <<https://www.regierung.li/de/mitteilungen/223135>> (retrieved 11/29/2020).

3 *Liechtensteiner Vaterland*, »Blockchain-Gesetz« soll Rechtssicherheit schaffen (2019), available at <<https://www.vaterland.li/liechtenstein/politik/blockchain-gesetz-soll-rechtssicherheit-schaffen;art169,384270>> (retrieved 12/16/2020).

4 *Liechtenstein Marketing*, Industrie und Gewerbe: KMU-Land Liechtenstein, available at <<https://www.liechtenstein.li/wirtschaft/wirtschaftszweige/industrie-und-gewerbe/>> (retrieved 11/16/2020).

5 NZZ, Liechtenstein setzt auf Token-Ökonomie (10/21/2019), available at <<https://www.nzz.ch/wirtschaft/blockchain-liechtenstein-setzt-auf-token-oekonomie-ld.1516762?reduced=true>> (retrieved 11/16/2020).

6 *Deutsche Bundesbank*, Stellungnahme der Deutschen Bundesbank zum Grünbuch »Kapitalmarktunion« der Europäischen Kommission [White paper] (2015) 7, available at <<https://www.bundesbank.de/resource/blob/664504/6a80059b7d5827a74d81e85b1e8659be/mL/2015-05-21-stellungnahme-kapitalmarktunion-hintergrund-download.pdf>> (retrieved 11/11/2020).

7 *European Commission*, Access to finance for SMEs (2019), available at <https://ec.europa.eu/growth/access-to-finance_en> (retrieved 11/11/2020).

8 *Regierung des Fürstentums Liechtenstein*, Bericht und Antrag der Regierung an den Landtag des Fürstentums Liechtenstein betreffend die Schaffung eines Gesetzes über Token und VT Dienstleister (Token- und VT-Dienstleister-Gesetz; TVTG) und die Abänderung weiterer Gesetze (BuA Nr 54/2019), 168; hereafter quoted as: Bericht und Antrag 54/2019.

9 *Wanger*, Braucht Liechtenstein ein Blockchain-Gesetz? Chance für neue Einnahmequelle, *Liechtensteiner Monat* 02/2019, 27.

10 *Wurzer*, Practical Applications According to the Law on Tokens and TT Service Providers (Token and TT Service Provider Act; TVTG) (2019) 75 and 79; hereafter quoted as: *Wurzer*, Practical Applications TVTG.

leads to high costs and requires minimum amounts that might exceed the funding needs. Therefore, a possible use case for tokenization would be the exchange of liquidity and longer-term capital for tokens; as collateral or representing property rights and other rights. A primary and secondary capital market for all kinds of SMEs' assets could evolve. Such a structure would probably be most applicable regarding assets that are not tradable yet or that currently require complicated and costly procedures. Involving professional investors or an investment fund could enable institutional and private investors to invest easily in the Liechtenstein SME sector. Previous research has proven that the implementation of a blockchain law in Liechtenstein is widely accepted and led to highly positive responses.¹¹

B. Research Gap and Research Objective

Concerning the legal perspective, the proposed business concept is an unexplored field, also because globally no comparable legal regime exists yet. As mentioned earlier, Liechtenstein took a leadership role in the field of Blockchain Law. For the legal part, at least two documents of outstanding importance were published to date. Firstly, the government report that introduced the legislative process by consultation published on August 28th, 2018.¹² Secondly, the government bill from May 7th, 2019 that was passed on to the Parliament which bore the final responsibility to vote in the proposed law or object the draft.¹³ Local researcher, such as *Nägele, Langer, Layr/Marxer* and others have published several research papers, monographies or journal articles.¹⁴ Also quite a few research papers dealing with token economy and blockchain had been published in Liechtenstein or concerned the legal treatment in Liechtenstein before the application of the Liechtenstein Blockchain Act and its

passing in the parliament. Therefore, this research field can look back at a five- or ten-year history already although the literature base still is quite empty.¹⁵ However, some of the publications concerning the legal treatment became less important since the introduction of the TVTG in 2020 because they are referring to the legal treatment before its passing. In November 2019, though, *Wurzer* published a monography concerning »practical applications according to the law on tokens and TT service providers« that introduces an overview of the TVTG and of the legal research that was state of the art in the old legal regime. Since the law was passed by the parliament of the Principality of Liechtenstein shortly afterwards, *Wurzer* already considered and included the new regime to her work. It also provides an overview of pioneer blockchain law in other European jurisdictions. Based on literature research and expert interviews it suggests several use cases for the then proposed act.¹⁶ Although it covers fairly different topics than this study, her publication can be seen as a preceding work that provides a profound basis for any reader interested in the Liechtenstein Blockchain Act and tokenization as such.¹⁷ Since both publications revolve around tokenization and trusted technologies many definition chapters provided by *Wurzer* are also briefly covered by this thesis. Since, they build the common ground of both theses. The reader could adjudicate that this latest work starts where *Wurzer* ends. Closing the aforementioned research gap, it will go into more detail and engage with concrete use cases of the TVTG for SMEs and specific legal questions concerning the implementation of tokenization. The degree of legal analysis applied here might be concerned as the most obvious methodological difference. It may serve as a handbook for practitioners and interested SME managers.

A comprehensive analysis of the entire business model, including tokenization process, asset transfer and connected obligations of involved entities, has not been conducted yet. However, there is a recent publication by *Layr/Marxer* concerning the legal nature and transfer of tokens from a Liechtenstein legal perspective.¹⁸ So far, there is also no specific research on the attractiveness of the TVTG for the funding of (local) SMEs, yet. Although, tokenization might become a revolution as the introduction of the trust business in the 1920s. In

11 *Wurzer*, Practical Applications TVTG, 78.

12 *Ministerium für Präsidiales und Finanzen*, Vernehmlassungsbericht der Regierung betreffend die Schaffung eines Gesetzes über auf vertrauenswürdigen Technologien (VT) beruhende Transaktionssysteme (Blockchain-Gesetz; VT-Gesetz; VTG) und die Abänderung weiterer Gesetze (2018), available at <<https://www.llv.li/files/srk/vnb-blockchain-gesetz.pdf>> (retrieved 10/01/2020); hereafter quoted as: Vernehmlassungsbericht.

13 *Ministerium für Präsidiales und Finanzen*, Bericht und Antrag zum Token- und VT-Dienstleister-Gesetz (TVTG), vormaliges Gesetz über auf vertrauenswürdigen Technologien (VT) beruhende Transaktionssysteme (Blockchain-Gesetz; VT-Gesetz; VTG) (2019), available at <<https://bua.regierung.li/BuA/pdfshow.aspx?nr=54&year=2019>> (retrieved 10/01/2020).

14 For example, *Nägele*, Sekundärmarkt für Security Token (2020), hereafter quoted as: *Nägele*, Sekundärmarkt; *Layr/Marxer*, Rechtsnatur und Übertragung von »Token« aus liechtensteinerischer Perspektive, LJZ 40 (2019), hereafter quoted as: *Layr/Marxer*, Rechtsnatur und Übertragung; *Langer*, Das liechtensteinerische Steuerrecht: Grundlagen und Regelungen inklusive Besteuerung von Blockchain- und FinTech-Unternehmen (2019), hereafter quoted as: *Langer*, Das liechtensteinerische Steuerrecht.

15 *Wurzer*, Practical Applications TVTG, 77.

16 *Wurzer*, Practical Applications TVTG, 1.

17 It may also be noted that both master theses were supervised by Prof. Dr. Nicolas Raschauer, former Head of the Institute for Business Law and former Chairholder of the Propter Homines Chair of Banking and Financial Market Law at the University of Liechtenstein. Whose valuable feedback and extraordinarily helpful comments on draft versions built the base for the success of this publication.

18 *Layr/Marxer*, Rechtsnatur und Übertragung.

the absence of a proof of concept, it is difficult for market participants to evaluate the feasibility and potential of SME financing and investing based on tokenization. Therefore, it is worthwhile to conduct the proposed thesis and shed light on this innovation. At a first glance *Wurzer's* thesis reveals that at least literature concerning definitions of technical terms like *blockchain*, *tokens*, *distributed ledger technology* is abundant.

In an attempt of meeting the research needs and closing the research gap the research objectives listed below will be addressed:

- ▶ To introduce a proof of concept for financing based on tokenization by an extensive evaluation of the legal framework contained in the TVTG and auxiliary legislative texts;
- ▶ to evaluate the legal feasibility of SME financing based on tokenization in Liechtenstein;
- ▶ to determine legal requirements or obstacles, involved entities, duties, relevant legal norms and important regulation;
- ▶ to provide SMEs and law practitioners with a structured overview of the legal situation (handbook of potential frequently asked questions);
- ▶ to increase awareness for the opportunities resulting from the TVTG and tokenization itself;
- ▶ to investigate the relevance, suitability or attractiveness of such a funding alternative, for small and medium-sized enterprises in Liechtenstein as well as potential investors;
- ▶ to collect remarks by experts, desirable characteristics, and aspects worth paying attention to that are related to this financing model.

With this overview, the audience is provided with the first comprehensive business and legal analysis concerning SME funding based on tokenization in Liechtenstein. First and foremost, this study concerns legal aspects, but also pays attention to business or economical facets. This also aims to analyze market acceptance on both ends. Financial institutions, entrepreneurs or legal practitioners will be able to utilize this thesis when assessing market entry and determining the suitability of the Liechtenstein jurisdiction for this business.

C. Structure of the Thesis

As previously mentioned, this interdisciplinary research links the fields of business studies or financial innovations with law. Therefore, a methodology consisting of a multitude of research methods will be applied. In consequence of the expected shortage in research specifically addressing this topic or those congeneric fields, this

thesis encompasses a mixed approach based on published information, self-provided data, and legal interpretation. Therefore, in addition to the legal analysis, a survey among managers, shareholders, or owners of small and medium-sized enterprises as well as several expert interviews contribute to the business study. This business analysis does not only pave ways for the legal analysis but primarily investigates the feasibility, interest in and attractiveness of suggested financing alternatives based on tokenization, both from a perspective of capital funds supply as well as capital demand.

In a first step chapter II will briefly introduce several definitions and provide a historical review of the emergence of blockchain legislation in Liechtenstein and the concept that is underlying the TVTG. This is followed by a methodology chapter explaining the applied techniques and methods. Chapter IV.A provides an overview about a potential SME financing procedure based on tokenization. This business concept serves as starting point for a survey among local businesses respective the sector presidents of the Liechtenstein Economic Chamber¹⁹ in chapter IV.B. The economic perspective will then be completed by expert interviews with potential investors like asset managers, client advisors and providers of seed capital. Both are intended to provide valuable insights about requirements, challenges and other aspects concerning SME financing through tokenization. Expected characteristics of the funding procedure and the involved token issuers as well as investors will be determined. The survey and the interviews, thereby, lay the foundation for the legal analysis conducted in chapter V which will set the main contribution of this thesis. Legal provisions, the lawmaker's intentions and involved laws for Liechtenstein SME funding based on tokenization will be evaluated. The focus is set on the tokenization process, token transfer, connected obligations of involved entities, and miscellaneous other topics. Also, a subchapter will be dedicated to an analysis of the secondary market for tokens and token investment funds.

Citation in this thesis does follow the rules of the Austrian Legal Citation Style (AZR).²⁰

¹⁹ [German: Wirtschaftskammer].

²⁰ This applies to the list of references, too. *Dax/Hopf* (publ.), *Abkürzungs- und Zitierregeln der österreichischen Rechtssprache und europarechtlicher Rechtsquellen (AZR) samt Abkürzungsverzeichnis* (2012); *Kerschner*, *Wissenschaftliche Arbeitstechnik und Methodenlehre für Juristen* (2014) will serve as the primary reference guide; hereafter quoted as: *Kerschner*, *Methodenlehre*. Please also note that dates in the footer are given in the standard English (US) format MM/DD/YYYY.

II. Definitions and Theoretical Foundation

A. Distributed Ledger Technology

Distributed ledger technology (DLT) is a generalized term for the cryptographic technology cryptocurrencies and blockchain networks are based on.²¹ Distributed ledgers are described as decentralized database systems spread over a network of a multitude of network participants. Information stored and spread within the network can only be altered and added by a democratic consensus mechanism.²² This forms a more secure, reliable and trustworthy system compared to centralized, server-based data storage.²³ It consists of the data base, a registration and participation rulebook and the register protocol itself which stipulates the processes used for information transfer and recording.²⁴ The mechanisms used to reach consensus result from the protocol the respective DLT network is based on. As blockchain and DLT pioneer, *Nakamoto* introduced *proof of work* as the mechanism underlying Bitcoin in the year 2008.²⁵ Since then, alternative consensus mechanisms have been developed.²⁶ Each protocol balances security, scalability, efficiency, and performance to meet the needs of its application purpose.²⁷ They strive for two goals: ensuring the integrity of the next block and protecting the network from manipulative attacks. The first aims at guaranteeing that only one valid version of each block circulates through the network. While the latter protects nodes²⁸ and network participants from the actual

act of data manipulation.²⁹ With this, the primary purpose of DLT is confirming information independently of intermediaries or central counterparties. Therefore, it is incredibly important that the protocol is programmed flawless.

Protocols many times are primarily distinguished in permissioned and permission-free protocols. Anyone can contribute data to permission-free ledgers and everyone is in possession of the ledger; therefore, there is no actual owner of the ledger in this case. No actor can prevent any data stream from taking place and the integrity of the ledger is reached by consensus.³⁰ Instead, for permissioned ledgers the integrity is confirmed through a limited consensus process performed by a preselected group of trusted actors. Those might be government departments or banks. Hereby, maintenance of such ledgers is simpler and the verification process might be quicker. However, the trustworthiness is not created from the process but rather from the validating participants. The digital signatures are recorded and provide long-term verification and tracing.³¹ Also, there is a differentiation between public and private networks. The first-mentioned is accessible by everyone, while in the second case the group of those who can access and thereby read the ledger is restricted. Any combinations between public, private, permissioned, and permission-free networks are conceivable.³² The participants in the network who are validating transactions are called *miners*. This terminology spread with the popularity of Bitcoin. For their computing resources they are remunerated through fees collected from network users. Furthermore, they might receive coins originated on the respective blockchain.³³ For example, Bitcoins when validating transactions on the blockchain used by the Bitcoin network.³⁴

Digital ledger technology allows for real-time handling of information or data streams while it is almost

21 *Balzli*, Blockchain und Kryptowährungen, in *Klebeck/Dobrauz* (publ.), *Rechtshandbuch Digitale Finanzdienstleistungen* (2018) 418 mn 12; hereafter quoted as: *Balzli*, Blockchain und Kryptowährungen.

22 *Langer*, Das liechtensteinische Steuerrecht, 243.

23 *Cachin/Vukolic*, Blockchain Consensus Protocols in the Wild (2017) 1–2, available at <<https://arxiv.org/pdf/1707.01873.pdf>> (retrieved 10/10/2020), doi: 10.4230/LIPIcs.DISC.2017.1; hereafter quoted as: *Cachin/Vukolic*, Blockchain Consensus.

24 *Meisser*, Kryptowährungen: Geschichte, Funktionsweise, Potential (2015) 10, available at <https://www.mme.ch/fileadmin/files/documents/160520_luzius_meissner_-_bitcoin__crypto_currency_funktionsweise__entstehung_.pdf> (retrieved 10/10/2020); hereafter quoted as: *Meisser*, Kryptowährungen.

25 *Nakamoto*, Bitcoin: A Peer-to-Peer Electronic Cash System (White Paper) (2008), available at <<https://bitcoin.org/bitcoin.pdf>> (retrieved 10/12/2020); hereafter quoted as: *Nakamoto*, Bitcoin.

26 For an overview about the consensus mechanisms *proof of work*, *proof of state* etc please refer to: *Balzli*, Blockchain und Kryptowährungen, 421 and *Castor*, A (Short) Guide to Blockchain Consensus Protocols (2017), available at <<https://www.coindesk.com/short-guide-blockchain-consensus-protocols>> (retrieved 10/30/2020); hereafter quoted as: *Castor*, Guide Consensus Protocols.

27 *Wahab/Memood*, Survey of Consensus Protocols (2018) 9, available at <<https://arxiv.org/ftp/arxiv/papers/1810/1810.03357.pdf>> (retrieved 10/18/2020); hereafter quoted as: *Wahab/Memood*, Survey of Consensus Protocols.

28 See Chapter II.B for a brief explanation of this term.

29 *Cachin/Vukolic*, Blockchain Consensus, 24; *Castor*, Guide Consensus Protocols.

30 *Walport*, Distributed ledger technology: Beyond blockchain (2017) 17–18, available at <https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/492972/gs-16-1-distributed-ledger-technology.pdf> (retrieved 01/13/2021); hereafter quoted as: *Walport*, DLT.

31 *Walport*, DLT, 17–18.

32 *Dünser*, Legalize Blockchain! How states should deal with today's most promising technology to foster prosperity (2020) 18; hereafter quoted as: *Dünser*, Legalize Blockchain.

33 *Bundesrat der Schweizerischen Eidgenossenschaft*, Bericht zu virtuellen Währungen in Beantwortung der Postulate Schwaab (13.3687) und Weibel (13.4070) vom 25.06.2014 (2014) 8 and 30, available at <<https://www.news.admin.ch/news/message/attachments/35361.pdf>> (retrieved 11/10/2020); hereafter quoted as: *Bundesrat*, Beantwortung Postulate Schwaab/Weibel 06/2014.

34 There are DLT that do not require miners. Therefore, *miners* primarily is blockchain terminology.

tamper-resistant.³⁵ Some argue the innovative potential of DLT might introduce a whole new way of information processing, ultimately displacing the common established systems; for example, land register records, transaction systems and the transfer of rights.³⁶ DLT forms the underlying technology for decentralized blockchain network systems. A copy of the ledger is distributed to the computers or servers owned by the network participants.³⁷ This means, DLT can potentially provide multilateral, multinational, globally spread data bases. Those networks can be openly accessible for any user, independent of his or its location. Therefore, regulation based on residency is no longer effective and the legal regimes may require adaptations to live up to new realities. The administration, principles, and processes underlying DLT also break through the confines of common conduct of business. Up until now financial providers and several other institutions are based on hierarchical principles instead of opensource and cooperative or even democratic approaches for data validation.³⁸ Digital ledger technology introduces a shift in competency, trustworthiness, and administration from centralized governmental or central counterparty registers towards a decentralized, widespread data base that creates trustworthiness of its own accord. While traditionally authenticity of information is guaranteed by magisterial maintenance, governmental authorities, or central counterparties.

DLT also builds the base for digital representation of physical goods and of rights. It may introduce securitization of those, widen accessibility for investors and lead to a vivid market in untapped fields or for yet non-tradable goods and rights.³⁹ Such vehicles or digital representatives are usually referred to as tokens.⁴⁰ Current technologies require at least two days for the settlement of security transfers while DLT could shorten the processes towards real-time settlement.⁴¹

B. Blockchain and Trusted Technology

Distributed ledgers and especially blockchains have primarily become known for their key role in the rise of

cryptocurrencies⁴². Although, the terminology *blockchain* was not used in the paper introducing the concept of Bitcoin.⁴³ However, there is a multitude of potential fields of application for this technology, for example in the later addressed token economy.⁴⁴ The blockchain protocol is a subform of the DLT, originally intended to prevent double spending of digital cash, and is a transaction ledger.⁴⁵ Different from distributed ledgers which store records one after the other in a continuous ledger, blockchains sort data into blocks and then add them together in chains once a quorum of the participants is reached.⁴⁶ The trustworthiness and validity of transactions results from the implemented cryptographic processes and distributed ledger technology.⁴⁷ The records are never in possession of a single individual but rather in copies possessed by many; and a single network participant can never exercise control over the data alone.⁴⁸ Transactions or information exchange is transmitted *peer-to-peer*; that means directly between the network participants without any intermediary.⁴⁹ When person A intends to transfer information or undertake a transaction to person B, he registers the transaction to the public register. For this purpose, A needs to enter his own private key and transmit the public key of the recipient with the transaction message. The network then automatically processes (or rejects) the transfer which cannot be stopped or interrupted by the sender anymore.⁵⁰ A blockchain can be utilized to record orders and business conduct between two parties efficiently, in a verifiable and durable way. All agreements and transactions are permitted, signed, and validated digitally. These actions are recorded in the protocol, resulting in extremely

35 Walport, DLT, 14.

36 Abadi/Brunmermeier, Blockchain economics (2019) 2, available at <https://scholar.princeton.edu/sites/default/files/markus/files/blockchain_paper_v7a.pdf> (retrieved 12/01/2020).

37 Vernehmlassungsbericht, 13.

38 Walport, DLT, 17–18.

39 Wandmacher/Wegmann, Tokenization and Securitization – A Comparison with Reference to Distributed Ledger Technology, Thorhauer/Kexel (publ.) Facetten der Digitalisierung. Schriften der accadis Hochschule (2020) 157; hereafter quoted as: Wandmacher/Wegmann, Tokenization and Securitization.

40 See chapter II.C.

41 Klein/Groß/Sandner, Der digitale Blockchain-Euro: Sind Central Bank Digital Currencies die Zukunft? (2020) 40.

42 As one of the major distinctive features from common legal tender Nakamoto claimed it were impossible to steer cryptocurrencies with common or any monetary policy measures since the distribution mechanisms are embedded in the code of the underlying blockchains. Nakamoto, Bitcoin, 4. For an overview of different characteristics of cryptocurrencies please also refer to Balzli, Blockchain und Kryptowährungen, 428–429 mn 35.

43 Wahab/Memood, Survey of Consensus Protocols, 1; Nakamoto, Bitcoin.

44 For further use cases please also refer to Balzli, Blockchain und Kryptowährungen, 422–424 mn 22–27.

45 Bianchi/Bollinger, A (Legal) Perspective on Blockchain, CapLaw 5/2016, 25, available at <[https://www.walderwyss.com/user_asets/publications/A-Legal-Perspective-on-Blockchain.pdf](https://www.walderwyss.com/user_assets/publications/A-Legal-Perspective-on-Blockchain.pdf)> (retrieved 11/11/2020).

46 Walport, DLT, 14.

47 Dünser, Legalize Blockchain, 16.

48 Adams/Parry/Godsiff/Ward, The future of money and further applications of the blockchain, Strategic Change 26(5) (2017) 417.

49 De Filippi/Loveluck, The invisible politics of Bitcoin: governance crisis of a decentralized infrastructure, Internet Policy Review Journal on internet regulation 5(3) (2016) 1 and 3–5; Meisser, Kryptowährungen, 80.

50 Graham-Siegenthaler/Furrer, The position of blockchain technology and Bitcoin in Swiss law, Jusletter 8.5.2007 (2007).

high transparency of all actions undertaken.⁵¹ The participants authenticate blocks cryptographically and store copies of the chain on their servers or computers. Each transaction block consists of:

- ▷ a message or an information (for example one block in the Bitcoin network contains information about approximately 1500 transactions),
- ▷ a header containing meta data and links to the previous block, and
- ▷ a time stamp protocol.

Furthermore, every block contains a cryptographically generated hash that connects it indivisibly to the previous block.⁵² This is also described as a cryptographic fingerprint.⁵³ By the suggested creation and verification methods, a new block is inseparably linked to the signature of network participants that created the previous block and to the hash generated from the previous block. Such a hash can be understood as a check sum.⁵⁴ Ultimately, this results in tamper protection and dramatically increases the authenticity of the recorded data. The trustworthiness is created by the network technologies themselves, independently of characteristics of the transaction partners.⁵⁵ The functioning principle was illustrated by *Nakamoto* like depicted below by Figure 1.⁵⁶

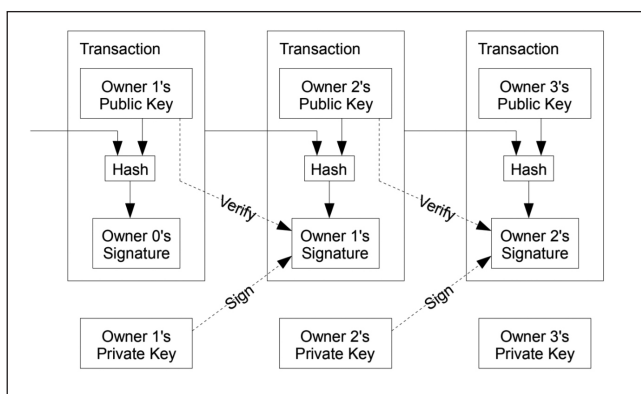


Figure 1: Functioning principle of a blockchain, based on *Nakamoto*, Bitcoin.

The storage devices and the stored copies of the blockchain are called *nodes*.⁵⁷ While every node can read recorded data only *full nodes* can trace back all transaction parameters. The protocol or code of the respective blockchain specifies the selection of full nodes. This competence allows them to ensure the integrity of new transactions and adding them to the chain.⁵⁸

As seen, *trustworthy technologies (TT)* can be used as a term describing technological systems and processes that create trustworthiness from within themselves. It results from the principles and mechanisms they base on, for example the authentication, validation, registration and recording rules implemented in the code of a blockchain. The initiator of Bitcoin focused on transactions of monetary units of a digital currency only.⁵⁹ However, TT do not only allow for financial transactions. Also, they are not limited to the transmission of information but instead feature secure storage of information which makes them a possible surrogate for traditional ledgers such as the land register or registers that record rights in general.⁶⁰ Based on trustworthy technologies digitized assets and legal entities that possess claims to them can be assigned to each other in tamper-proof manner. Hence, the system itself can identify entitlements. In consequence, intermediaries that are commonly involved in several transactions or in transfers of rights are dispensable.⁶¹ The Liechtenstein lawmaker introduced the term trustworthy technologies to its law instead of blockchain. Due to his intentions to implement an abstract definition of the term blockchain because in future other technologies might evolve that strive for the same goals as blockchains.⁶²

In accordance with any specific use case, it is essential to define an appropriate rulebook and code for the underlying blockchain. Then, existing networks like Ethereum can be used. If there exists no blockchain that offers the intended functionality yet, a new blockchain needs to be programmed and the network needs to evolve.⁶³

51 *Iansiti/Lakhani*, The truth about blockchain, Harvard Business Review 95(1) (2017) 118–119.

52 *Nägele/Bergt*, Kryptowährungen und Blockchain-Technologie im liechtensteinischen Aufsichtsrecht, Regulatorische Grauzone?, LJZ 39 (2018) 64; hereafter quoted as: *Nägele/Bergt*, Blockchain, Regulatorische Grauzone?.

53 *Tinu/SojaRani*, Blockchain technology – an extensive study on its users and applications, Global Journal of Engineering Science and Researches 5(7) (2018) 28.

54 *Langer*, Das liechtensteinische Steuerrecht, 243.

55 *Büch*, Die Blockchain und das Recht, LJZ 39 (2018) 56; hereafter quoted as: *Büch*, Blockchain und Recht.

56 *Nakamoto*, Bitcoin, 2.

57 *Balzli*, Blockchain und Kryptowährungen, 419 and 421.

58 *Büch*, Blockchain und Recht, 56.

59 *Nakamoto*, Bitcoin.

60 Chapter V will analyze the scope of representation of rights through trusted technologies under the scope of the Liechtenstein Blockchain Act.

61 *Büch*, Blockchain und Recht, 56 and 58.

62 Bericht und Antrag 54/2019, 6.

63 The TVTG governs several roles that might be involved in such blockchain systems. Please refer to chapter V for a legal analysis of several practical and theoretical questions related to use cases of SME funding through tokenization.

C. Token(ization), Token Economy, Token Container Model

1. General Terms

After *Nakamoto*, the next famous blockchain pioneer, *Buterin* presented his concept for a blockchain in 2015. His system serves as a platform for programmable smart contracts. *Smart contracts*⁶⁴ are tokens that consist of code that automatically executes features stipulated in the underlying contract and enables tokens to communicate with other tokens.⁶⁵ They usually follow an IF... THEN... structure. For example, if a payment is transferred from A to B, then property rights must be transferred from B to A⁶⁶. So, with smart contracts law becomes code.⁶⁷ Their purpose exceeds the supply of digital currencies by far; it intends to create automatable contracts that can interact with each other.⁶⁸ At the end of chapter II.A, the process of digital representation of rights or goods was briefly introduced. This procedure is usually known as tokenization.⁶⁹ *Tokens* are digital representatives of assets or a piece of information that represents rights.⁷⁰ So, tokens are containers that do not create rights of their own accord but rather represent rights that already existed. In supervisory practice, furthermore, tokens are distinguished by the kind of information or right they represent. Most times they are grouped into utility tokens, security tokens, and currency or payment tokens.⁷¹

Derived from tokens the term of *tokenization* evolved. It can basically be understood as attaching a digital representation of rights concerning an asset to the asset. Thereby those rights can be transferred independently of a physical transfer of the asset.⁷² The wide range of possible applications for tokenization leads to the concept of a *token economy*. In such a digitalized, blockchain based economy physical items are linked to tokens which can represent all sorts of rights. Among others, this might be ownership rights, exhibition rights, lien, exploration rights, entitlements, rights connected to a loan, mezzanine, or equity contract. The token economy utilizes tokens for proof of ownership, to represent digital contracts, access and usage rights, theft protection, for transactions, as collateral, as insurance certificates, as fingerprintable certificates for physical goods, to retrace transportation chains and as certificate of origin.⁷³ In token economy, ideally each asset is linked to a unique and clearly identifiable token. Whenever rights regarding the asset are granted or transferred, these actions are recorded in a decentralized digital ledger via transfer of the token. If digital equivalents of every or at least many business transactions are created a digitalized economy can evolve, the so-called token economy. This could lead to a higher level in security and less opportunities for fraud and might increase efficiency of economic transactions.⁷⁴

Different types of tokens can be compared to equivalents from the non-Blockchain economy. For example, shares and the rights of shareholders correspond to security tokens, cash money can be transferred into digital cash or stable coins and software licenses match utility tokens. For purposes of this study, cryptocurrencies will not be covered in-depth, however, it is important to distinguish them from the other types of tokens. Since there is no non-blockchain world equivalent that is comparable to them.

The Liechtenstein blockchain law understands tokens as (legal) containers that represent rights or another function. So, with the TVTG the *token container model* was implemented. For example, Bitcoin would be referred to as an empty container while a security token corresponds to a container filled with property rights in a security.⁷⁵ Hence, the container only functions as a shell and all legal consequences depend on the contained right and its application. The emission of tokens

64 The term *smart contract* was first introduced by *Szabo* in *Szabo*, The Idea of Smart Contracts, available at <<http://fon.hum.uva.nl/rob/courses/informationinspeech/cdrom/literature/lotwinterschool2006/szabo.best.vwh.net/idea.html>> (retrieved 10/08/2020); *Szabo*, Smart Contracts: Building Blocks for Digital Markets, available at <<http://www.truevaluemetrics.org/DBpdfs/BlockChain/Nick-Szabo-Smart-Contracts-Building-Blocks-for-Digital-Markets-1996-14591.pdf>> (retrieved 10/08/2020).

65 *Dünser* defines it as: »Smart contracts are programmed legal contracts which can be executed automatically [and] their execution might include transfer of tokens.« *Dünser*, Legalize Blockchain, 31.

66 *Nägele/Bergt*, Blockchain, Regulatorische Grauzone?, 64.

67 *Dünser*, Legalize Blockchain, 32.

68 *Buterin*, A next generation smart contract & decentralized application platform. Ethereum White Paper (2013), available at <https://blockchainlab.com/pdf/Ethereum_white_paper-a_next_generation_smart_contract_and_decentralized_application_platform-vitalik-buterin.pdf> (retrieved 10/08/2020); *Buterin*, Visions, Part 1: The Value of Blockchain Technology (2015), available at <<https://blog.ethereum.org/2015/04/13/visions-part-1-the-value-of-blockchain-technology/>> (retrieved 10/08/2020).

69 *Wandmacher/Wegmann*, Tokenization and Securitization, 157.

70 *Langer*, Das liechtensteinische Steuerrecht, 244; Art 2 1 c) TVTG.

71 This thesis will not evaluate the differences, since, there is already an enormous amount of literature discussing those topics. Therefore, also the definition at this place will be kept rather simple. Further literature, for example, is provided by *FINMA*, Wegleitung für Unterstellungsanfragen betreffend Initial Coin Offerings (ICOs). Ausgabe vom 16. Februar 2018; hereafter quoted as: *FINMA*, Wegleitung; *FINMA*, Ergänzung der Wegleitung für Unterstellungsanfragen betreffend Initial Coin Offerings (ICOs). Ausgabe vom 11. September 2019; *EBA*, Report

with advice for the European Commission on crypto-assets (9 January 2019) (2019). Furthermore, an overview of advantages and disadvantages of DLT technology can be found in *Balzli*, Blockchain und Kryptowährungen, 425–426.

72 *Dünser*, Legalize Blockchain, 28.

73 *Dünser*, Legalize Blockchain, 28–30.

74 *Dünser*, Legalize Blockchain, 38.

75 Bericht und Antrag 54/2019, 58–59.

could occur privately, via an exchange platform or with the aid of a bulletin board. The tokenization process differs depending on the handling of private keys and on the platform or instrument used to trade the tokens.⁷⁶ It is possible that investors hold and trade assets directly in and from their own wallet with a private key, without the aid of custodians and brokers. Private keys, though, may also be given in custody, for example to an exchange platform.⁷⁷ *Wandmacher/Wegmann* describe four different handlings that depend on the place where offer and demand matches and on how private keys are held.⁷⁸ Furthermore, from the emission of tokens publication and anti-money-laundering (AML) duties might result.⁷⁹

2. The Roles or Functions in Token Economy

Like mentioned above, token economy attempts to create digital equivalents of the traditional economy and all its transactions. Therefore, the Liechtenstein lawmaker designed the token container model to create tokens as a vehicle that reflects real world rights digitally in a legally certain way. For achieving this, several roles and systems are needed to generate trust. The roles that might be needed, depending on the specific transaction or contract, are the following.

▷ A token generator:

The process of token generation is of crucial importance for the establishment of trust in the whole tokenization process. Therefore, technical aspects like the programming of the code of the blockchain and of the tokens or of smart contracts must meet highest standards to make sure that it cannot be manipulated or altered after emission. Also, it needs to be ensured that transfers and records on the blockchain work free from any defects. So, this function builds the foundation and guarantees that token owners can feel certain that they also are the true owner of the rights represented by the respective token.⁸⁰ The token generation, though, does not necessarily fall together with the token emission. It is possible that tokens are generated first and then held by the original right owner, for example a SME, before the tokens then are emitted and transferred in a later step.⁸¹ Chapter V concerns details about legal questions connected to emission, for example publication duties and consumer protection.

⁷⁶ *Wandmacher/Wegmann*, Tokenization and Securitization, 170.

⁷⁷ *Wandmacher/Wegmann*, Tokenization and Securitization, 164.

⁷⁸ Please refer to *Wandmacher/Wegmann*, Tokenization and Securitization, 165-167. They also illustrate the differences graphically in an insightful manner.

⁷⁹ Please refer to Chapter V.C.

⁸⁰ *Dünser*, Legalize Blockchain, 62.

⁸¹ Bericht und Antrag 54/2019, 78.

▷ A token storage function:

Once the role and commercial relevance of token economy increases it is important that there are safe storage options for tokens as well as private keys. Although, token and key owners could store them in a physical wallet. Private keys could even be printed on paper since they are just an (alpha)numeric sequence. However, users might prefer digital storage for several reasons of practicability. IT-solutions must be secure and protected from any hacking or fraud to sustain trust. Also, it is recommended to use several different wallets to increase theft protection and accessibility.⁸² Professional safekeeping could be offered by custodians and fiduciaries; maybe even by those who are experienced in the analog world and have already proven their trustworthiness.⁸³

▷ Token transfer systems and transfer occasions:

Token transfers can occur on personal level or with strangers. Transferred tokens could either be of high value or rather possess utility functions, or anything in-between. They could be certificates of ownership or of speculative financial character, or anything in-between. Therefore, various systems might be appropriate to connect sellers and buyers. This could be a simple bulletin board or a sophisticated online exchange market that matches interests automatically and transfers tokens automatically, maybe even between different cryptocurrencies or different blockchains.⁸⁴ In this regard several regulatory legal questions might arise. Chapter V.D covers some of them and especially deals with questions related to secondary market transfers.

▷ Physical validation:

There might be several cases in which it is necessary to validate that tokenized assets even exist or that rights related to those assets do not exist twice, or if different rights and transfer collide. For example, if property in a gold bar is tokenized it is important that the gold bar will not be alienated physically without knowledge and approval of the token owner. Also, in the first place before buying such a gold bar token somebody should ensure that the gold bar exists at all.⁸⁵ Those and related functions can be fulfilled by a physical validator which will be addressed later, again, by Chapter V.

▷ A (currency) exchange service provider:

This role provides exchange services for legal tender and cryptocurrencies or between two cryptocurrencies

⁸² *Dünser*, Legalize Blockchain, 63-64.

⁸³ Another risk is private key loss, which will be addressed by Chapter V.B.4.

⁸⁴ *Dünser*, Legalize Blockchain, 64-65.

⁸⁵ *Dünser*, Legalize Blockchain, 65.

whenever it is required to transfer cryptocurrencies instead of legal tender. It is important to prevent the infiltration of illegal money to the token economy via the gate of exchange services. Therefore, anti-money laundering regulation is important.

▷ Blockchain interoperability:

As mentioned earlier, token economy is not based on one single blockchain but rather there are several blockchains operated parallelly, provided by different networks. It might become necessary to transfer tokens from one to another blockchain or smart contracts might trigger an execution of transactions on several blockchains at the same time. Therefore, systems should be developed that allow for interoperability and communication between different blockchain networks.⁸⁶

▷ Aggregated easily accessible token databank:

Investors need proper and broad information when searching for investment opportunities. Therefore, it would be desirable that some information provider maintains a databank that collects basic information about as many tokens as possible. This databank could even aggregate or conduct ratings and valuations for the token issuers respectively the underlying rights. In this regard allocation of information is in the interest of token issuers as well as the buyers. Token economy could be promoted by public records in depth and width if such a databank shows the multitude of use cases in the token economy.

Finally, with all systems and roles properly aligned, through tokenization liquidity for assets that are notoriously illiquid could be generated by fractioning as well as by their digital representation.

D. Historical Review of Blockchain Legislation in Liechtenstein

Right after the rise of Ethereum, also in Liechtenstein the first blockchain enthusiasts became active. So that in 2016 the initial coin offering (ICO) of *aeternity* was announced.⁸⁷ Less than two years later this company would even reach a market capitalization of 1 billion US Dollars.⁸⁸ In the meantime consultation on a Liechtenstein Blockchain Act had been started and in 2019 the parliamentary discussion took place. Ultimately, with effect on January 1st, 2020 the TVTG became law.

The milestones in Blockchain and trusted technologies regulation in Liechtenstein can be summarized like depicted in Figure 2.⁸⁹

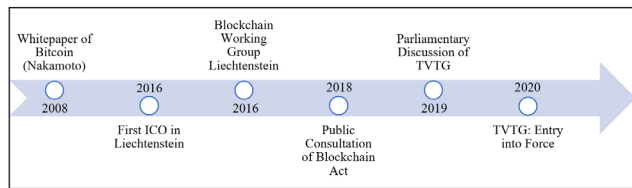


Figure 2: From Bitcoin whitepaper to TVTG – historical milestones.

The government has founded its strategy for the financial market on four principles, symbolized by the pillars P1 to P4 in Figure 3. By proper and far-seeing legislation, the lawmaker intends to aim at four goals, represented by the pillars G1 to G4 in Figure 3 below.

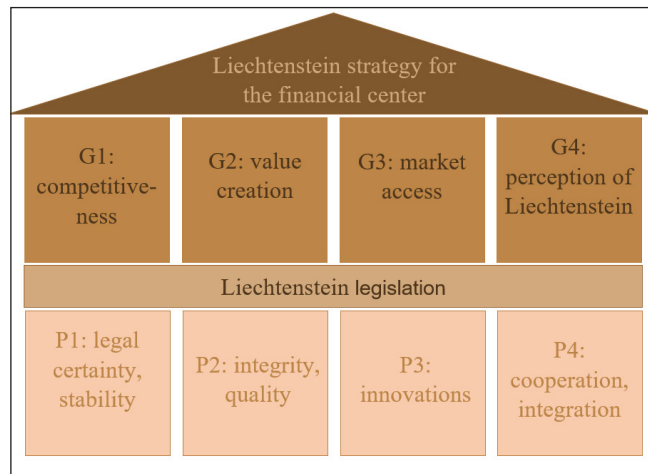


Figure 3: Liechtenstein strategy for the financial center.

The principles forming the foundation or legislative attitude are the following:

- ▷ P1: legal certainty and stability
- ▷ P2: integrity and quality
- ▷ P3: innovations
- ▷ P4: cooperation and integration

They drive the lawmaker towards the goals:

- ▷ G1: to strengthen the competitiveness of the local hub
- ▷ G2: to preserve and expand the creation of value
- ▷ G3: to protect and extend market access
- ▷ G4: to strengthen the positive perception of the location.⁹⁰

⁸⁶ Dünser, Legalize Blockchain, 68.

⁸⁷ Salzgeber, Happy Birthday, Aeternity! (2018), available at <<https://www.ico.li/de/happy-birthday-aeternity-de/>> (retrieved 11/25/2020).

⁸⁸ Liechtensteiner Vaterland, Eine Milliarde wert (2018), available at <<https://www.vaterland.li/regional/region/eine-milliarde-wert;art198,329135>> (retrieved 11/25/2020).

⁸⁹ Own illustration based on Bericht und Antrag 54/2019.

⁹⁰ Regierung des Fürstentums Liechtenstein, Finanzplatzstrategie der Regierung des Fürstentums Liechtenstein (2019) 9–12, available at: <<https://www.regierung.li/media/attachments/Finanzplatzstrategie-fuer-Liechtenstein.pdf?t=637433295331805256>> (retrieved 12/02/2020).

In the best case, new legislation and legislative reforms live up to all four principles and support the fulfillment of all goals. Therefore, Liechtenstein adapts to financial or technological innovations and digitalization trusting that pioneer work creates niches and supports its competitive position.⁹¹ Concerning the TVTG, the lawmaker's motivation apparently is of economic origin too. Since the trust and banking industry might be able to access new business fields and develop products and services related to blockchain and tokenization, for example as custodians. Previously the lawmaker had already aligned the reform of the PGR⁹² to economic-political interests.⁹³ Now, this doctrine continues with the TVTG.

The introduction of the TVTG aims to provide legal certainty regarding token economy for users as well as service providers, to promote token economy and to provide necessary guidelines concerning requirements for service providers, the basic information sheet and AML requirements. Thereby, the market perception is intended to be strengthened and new business fields shall evolve.⁹⁴ He emphasizes that trust in the jurisdiction is indispensable for the growth of the token economy. The lawmaker's intentions are driven by the conviction that token economy bears high potential as driver for the evolving digital economy and that clear, appropriate, supportive rules would foster its evolution.⁹⁵ Since the financial sector contributes 27 percent to the Liechtenstein gross domestic product the government also hopes to strengthen this sector in particular.⁹⁶

As there are already many coins and blockchains, it is a just question to ask why a blockchain law would be needed in Liechtenstein and if it is meeting any demand. However, this law provides the unique feature that Liechtenstein became a pioneer jurisdiction in the field of tokenization. The TVTG is considered a promising framework legislation that breaks ground in the treatment of this new technology.⁹⁷ From this starting point, businesses like SME funding may emerge. If the blockchain legislation will live up to the expectations and hopes, will be proven in the coming years.

E. Small and Medium-Sized Enterprises in Liechtenstein

Since this research paper primarily focuses on small and medium-sized enterprises it is important to introduce a definition for them. The government of the Principality of Liechtenstein uses a uniform definition in all its laws and as far as it can be observed by this thesis also in all online resources and publications. The definition goes back to the definition on European level for small and medium-sized enterprises. Which is the following:

- ▶ micro enterprise: less than ten employees and annual turnover below two million Euro;
- ▶ small enterprise: less than fifty employees and annual turnover or annual balance sheet below ten million Euro;
- ▶ medium-sized enterprise: less than 250 employees and annual turnover below 50 million Euro or annual balance sheet below 43 million Euro.⁹⁸

The Liechtenstein lawmaker on several occasions refers to this definition, too. Therefore, this shall also be the definition used for the scope of this thesis. There is no aggregated SME statistic published in Liechtenstein since most publication duties concerning annual financial statements apply only to a small fraction of the local enterprises. However, at least the employment statistics contain some information about number of companies sorted by the criterion of the number of their employees.⁹⁹ The historical development from 2010 to 2019 is shown by Table 1 below. The first line refers to micro enterprises, followed by small businesses, medium-sized companies, and ultimately large corporations.

91 *Gallarotti*, Der Finanzplatz Liechtenstein rüstet sich für die Zukunft (2019), available at <<https://www.nzz.ch/wirtschaft/liechtenstein-finanzplatz-ruestet-sich-fuer-die-zukunft-ld.1461731>> (retrieved 12/02/2020).

92 [German: Personen- und Gesellschaftsrecht] for *personal and corporate law*.

93 *Büch*, Blockchain und Recht, 55.

94 Bericht und Antrag 54/2019, 84–93.

95 Bericht und Antrag 54/2019, 6–7.

96 *Dünser*, Legalize Blockchain, 119; *Langer*, Das liechtensteinische Steuerrecht, 242–243.

97 *Frick/Reiff-Näscher*, Zukunft des Finanzplatzes Liechtenstein – Ausblick 2020, *liechtenstein-journal* 4/2019, 105.

98 *European Commission*, Empfehlung der Kommission vom 6. Mai 2003 betreffend die Definition der Kleinunternehmen sowie der kleinen und mittleren Unternehmen (Text von Bedeutung für den EWR) (K(2003) 1422) OJ L 124, 20. 5. 2003, 39.

99 *Amt für Statistik Fürstentum Liechtenstein*, Beschäftigungsstatistik 2019 (2020), 103.

▶ Table 1

Employment criterion/year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Micro enterprise	3301	3485	3554	3621	3766	3941	4025	4154	4305	4469	88.5 %
Small enterprise	437	449	443	442	468	434	438	443	461	464	9.2 %
Medium enterprise	72	77	83	85	80	90	87	96	95	99	2 %
Large enterprise	17	17	17	17	17	17	17	17	17	18	0.3 %
Total	3827	4028	4097	4165	4331	4482	4567	4710	4878	5050	

Table 1: Number of companies per employment criterion from 2010 to 19 and percentage in 19.

In the most recent published year, over 97 percent of the local enterprises were either micro or small-sized and further 2 percent medium-sized companies existed. In total the statistic shows that most of the companies in Liechtenstein are part of the SME classification, at least concerning the employment criterion. Therefore, this thesis could be relevant for most companies in Liechtenstein; at least for those who are interested in an evaluation of funding alternatives. Large corporations might benefit from the findings in the legal analysis, although those firms are not in the center of the discussion.

III. Methodology

A. Literature Research

The published information is gathered through a standardized literature research. This will be conducted, following the approach suggested by *vom Brocke et al.*¹⁰⁰ Primarily, it serves the gathering of public statements, opinions, and comments about Liechtenstein Blockchain legislation, information concerning SME funding (in Liechtenstein) in general and definitions such as tokenization, blockchain or distributed ledger. It might also collect information relevant for the business concept if such information is available. The purpose of this literature research is obtaining a solid foundation to respond to the research questions mentioned above and in particular for the definitions chapter. The screening, clustering, and reviewing will follow a multi-step set-up structured approach. It has its origins in literature reviews in the scientific field of information systems. However, collecting and processing existing academic literature should not depend on the area of research.¹⁰¹ Therefore, it can be ap-

plied to financial topics as well. It is composed into four parts, illustrated below by Figure 4.¹⁰²

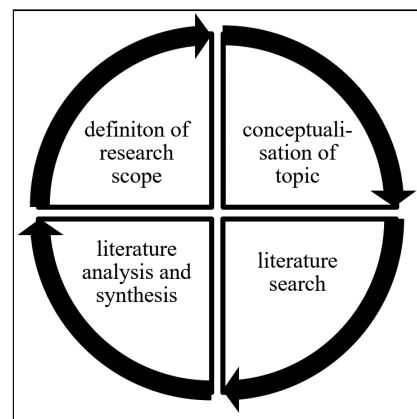


Figure 4: Framework of the literature review.

The first step encompasses the definition of relevant keywords such as *tokenization*, *TVTG*, *token*, *SME Liechtenstein*, *blockchain*, among others and in both languages, English as well as German. Those are then used as an input for different data banks of research publications (eg jstor and researchgate), also for the university Liechtenstein library search mask (primio search). It might become necessary to search literature regarding some topics related to the research questions that are not exactly matching the research questions. The findings are collected in a Microsoft Excel file to gather the search results and allocate key words as well as excerpts to the respective paper, derived from their abstracts, titles and contents. Also, literature will be backward scanned (ie, read through their reference lists) to find previous studies that built the base of them and might be important, too. Since the field of tokenization is a very new business (ie, about five to ten years old) there is not much outdated literature to be expected. Therefore, all publications are included to the list if they contain relevant

¹⁰⁰ *Vom Brocke et al*, Reconstructing the giant: On the importance of rigour in documenting the literature search process (2009); hereafter quoted as: *vom Brocke et al*, Literature search.

¹⁰¹ *Vom Brocke et al*, Literature search, 6–9.

¹⁰² Own illustration based on *vom Brocke et al*, Literature search, 7.

information and give evidence of sufficient quality. Papers considered include academic research published in journals but also publications by well-recognized business consultants or even press releases. After reading through the studies, they will be rated subjectively by relevance, indicated with asterisks from one to three. The structured output allows for quick access to the collected papers and provides a plain overview of the information pool at any time. By using such an overviewing table, also interconnections are expected to be recognized more easily. In the next step, the literature will be analyzed in depth and insights are synthesized by building several clusters from the obtained information. Those clusters form together with the research questions and the results obtained from the other methods the base for the subchapters of the thesis.

The literature review concerns all subsequent chapters of this master's thesis. However, like already mentioned in chapter I.B it is to be expected that there will be almost no literature that is concerning the current legal status. Since, the TVTG has just become effective in 2020 and Liechtenstein forms a rather small, albeit pioneer jurisdiction. Hands-on experiences with the law, either by business practitioners or legal consultants might be quite rare and poorly documented. For the brief definition chapters and concerning the blockchain history of Liechtenstein more publications can be expected. To compensate for a possible lack in literature several other methods are applied to generate a broader data base. Furthermore, the legal analysis which will represent the largest part of the thesis by its nature is heavily based on legal verbatim interpretation and interpretation of documents that were recorded during the law-making process instead of classical scientific publications.¹⁰³

B. Qualitative Analysis

1. SME Survey

Since the field of tokenization and the suggested business model are not well established yet, it cannot be expected to find extensive of literature. In consequence, as second method, to broaden the body of source material, own research in the form of expert interviews and surveys is performed.

The survey among small and medium-sized enterprises and the expert interviews¹⁰⁴ with potential investors

and a legal expert follow a qualitative research approach. Strictly speaking both can be categorized as expert interviews. Since there is no distinction between survey and expert interview based on the number of interviewed persons.¹⁰⁵ The procedures described here, therefore, are applicable and valid for the interviews with potential investors and the legal expert, too. In case of this study the only difference between the so-called SME *survey* and the (other) *expert interviews* results from the content and purpose of the questions as well as the members of the target groups. In both cases semi-standardized interviews will be conducted. That means the questions' wording and order is given but not all answers need to be chosen from given alternatives and instead some questions are asked as open questions.¹⁰⁶ Especially concerning open questions it is crucial to record the entire response. If, instead, comments are summarized meanings of their contents might get lost or could be impaired.¹⁰⁷ Active listening and, if the response was not easy to understand, queries are important because the recorded answers should never contain assumptions. Instead, statements should not be noted before they are clearly understood.¹⁰⁸

There is a large variety of opinions, techniques and philosophies revolving around interviews and a standard definition or standard procedure is hardly to find. Nonetheless, interviews are widely accepted as a suitable form of data generation for fields that lack in literature, for example due to their currency.¹⁰⁹ However, the interpretation of the generated data forms the core of such an analysis.¹¹⁰ The purpose of interviews, though, can be summarized as creating a broader and holistic information base by considering individual opinions that offer different perspectives.¹¹¹ This allows for judgment concerning specific questions or in the case of this thesis concerning the interaction between investors and investment targets as well as the procedures connecting them.

The questionnaire was predefined and then tested in a revision process under real interview conditions with a manager of a Swiss SME. Afterwards, the interview was

¹⁰³ Only literature published before 08/01/2020 (August 2020) is considered. *Nägele*, Sekundärmarkt forms an exception because *Nägele* also served as an expert interview to this thesis, which naturally involves considering his latest works.

¹⁰⁴ Please refer to chapter II.B.2 for further remarks regarding the expert interviews.

¹⁰⁵ *Gläser/Laudel*, Experteninterviews und qualitative Inhaltsanalyse³ (2009) 40; hereafter quoted as: *Gläser/Laudel*, Experteninterviews³.

¹⁰⁶ *Gläser/Laudel*, Experteninterviews³, 41; *Schnell*, Survey-Interviews. Methoden standardisierter Befragungen² (2019) 69; hereafter quoted as: *Schnell*, Survey-Interviews².

¹⁰⁷ *Schnell*, Survey-Interviews², 71.

¹⁰⁸ *Gläser/Laudel*, Experteninterviews³, 173–176.

¹⁰⁹ *Bogner*, Experteninterviews. Theorien, Methoden, Anwendungsfelder (2009) 8.

¹¹⁰ *Mayring*, Qualitative Inhaltsanalyse. Grundlagen und Techniken (2015) 22–24.

¹¹¹ *Thomas*, How to do your case study (2016) 3; *Eriksson/Kovalainen*, Qualitative methods in business research (2016) 4–6.

evaluated, and the interviewee also provided feedback not only on the questions but also on the procedure. The question set was refined, the order of questions was improved.¹¹² The final version that has resulted from this trial consists of the following structure. Both, the SME surveys, and the investor interviews begin with questions concerning the person or company interviewed to gain information about their background.¹¹³ Afterwards, the following hypotheses are tested with the aid of the SME survey:

- ▷ SMEs experience bank funding as insufficient, expensive, or impossible due to required collateral that they cannot provide,
- ▷ SMEs are willing to acquire equity or debt from other persons or institutions if some criteria are fulfilled,
- ▷ under certain conditions they would use financing through tokenization even if they are not familiar with blockchain, tokens, or trusted technologies yet.

Furthermore, those criteria and conditions are determined and aggregated. They are interpreted in the context of the total responses made by all participants.

The main body of the questionnaire starts with a technology neutral part. It consists of questions addressing:

- ▷ The means of funding formerly used,
- ▷ unsuccessful growth and investment plans and reasons for the failing,
- ▷ the current financing structure and capital access,
- ▷ satisfaction with banking conditions and characteristics appreciated about the house bank,
- ▷ conditions and criteria a non-bank financier needed to fulfill to be an attractive funding partner to the SME.

This is followed by a section related to funding based on tokenization. The contents of this part involve:

- ▷ Conditions and criteria that needed to be fulfilled by financing through tokenization to be an attractive funding concept for the SME,
- ▷ criteria necessary to feel safe with tokenized funding,
- ▷ forms of influence, collateral, or control and return they would grant to token investors.

When conducting such a survey two major concerns regarding representativity arise. To a great extent the financing structure of a small and mid-sized company depends on strategic decisions made by the owners or the management of the enterprise. They might be refusing

any involvement of outside Investors although such investors could contribute equity and therefore increase the base for possible debt financing. Those who decide to not cooperate with external investors will always be limited to funds they can contribute themselves or they can generate within the conduct of their business. There are neither statistics in Liechtenstein that provide insights into the funding structure or preferences of small and medium-sized enterprises nor about the degree of external financing. Therefore, it is difficult, if not impossible to define a sample that would be representative for the actual financing structure within the SME sector of Liechtenstein. Additionally, the affinity for innovative funding structures and innovative services might differ greatly in-between different managers and owners of SME or different industries. There is no statistic or data source that would indicate the level of openness to new technologies and especially to tokenization among such individuals. Therefore, it is nearly impossible to define a sample that would be representative concerning the affinity for tokenization. Both obstacles basically deal with the same issue which is sample size and sample composition. For solving both issues one solution could be performing a survey with a very large group of participants, for example a survey that covers eighty percent of the Liechtenstein SMEs or more, which would be approximately a number up to three thousand. However, it is doubtful if representativity really matters for the subject of this thesis.

Like specified earlier, the aim of the survey¹¹⁴ is gaining insights, opinions, and impressions regarding the affinity for funding solutions based on tokenization. This especially includes collecting concerns, expectations, requirements and relevant questions for SME managers and owners regarding the TVTG and the funding opportunities resulting from it. Therefore, the survey does not strive for representativity or objectivity because the Liechtenstein SME market is diverse, and every company owner or management makes their own strategic decisions. If a new financing opportunity is attractive at least for some entrepreneurs, it will already provide value. Since any additional way of funding provides an alternative to the limited bank funding. Therefore, the survey primarily aims to evaluate if there is any potential interest for financing through tokenization. Gaining a multitude of diverse insights and opinions would be the most beneficial outcome of such a survey because it would provide the broadest base for the legal analysis in chapter V. Also, it accumulates the largest quantity of information which could later be used by policy makers and other institutions to foster the acceptance for the

¹¹² Schnell, *Survey-Interviews*², 123–125.

¹¹³ Hennink/Hutter/Bailey, *Qualitative research methods* (2011) 112–114.

¹¹⁴ As well as the aim of expert interviews that are explained in the next chapter.

tokenization industry by addressing the statements and contributions made through this SME survey.¹¹⁵

Due to the importance of vivid conversations and still a reasonable number of responses, it might be helpful to cooperate with a well-known local organization, institution, or the government. Therefore, the *Wirtschaftskammer*¹¹⁶, which is the Liechtenstein Economic Chamber and forms the largest SME association in the country with approximately four to five thousand members, was attracted as a partner. This might increase the response rate drastically. The *Wirtschaftskammer* is divided into sections among the different industry sectors and each section is represented in the board by a section president. The managing director of the economic chamber thankfully provided a list with all their contact data. The section presidents will be approached by the interviewer via phone and kindly asked to participate in a personal meeting to participate in a standardized survey regarding the financing of SMEs. This first contact always follows the exact same approach and wording. Also, an emphasis is put on the survey's nature as a co-operative project with the *Wirtschaftskammer* and it is clarified that the contact information was provided by the managing director. Signaling the cooperation is prompting a sense of importance and responsibility, too. The inquiries are also performed via telephone to have the greatest possible degree of personal contact in a hope to increase the response rate. When inquiring the interviewees, the topic of tokenization, digitalization, or innovative financing is not mentioned. Instead, it is regarded in the most neutral manner.

The interview candidates are asked to agree on a personal meeting so that potential queries can be answered easier and explanations can be made in a more visual manner. Also, a personal meeting allows the interviewer to reveal the questionnaire question by question to prevent any interdependence between answers and the following questions. If the interviewee had access to all questions at one time, his peripheral vision of the following questions might influence answers on preceding questions. Restraining the questionnaire from him will also hold back the information that tokenization and blockchain will be addressed during the interview. This intends to reduce bias as well. The approach used during a survey must be chosen wisely since there is a high risk of low response rates or reticent answers. As protective mechanism the target group of surveys and interviews is analyzed thoroughly before contacting them. This means for example that Liechtenstein's

distinctive first-name culture is respected during the interview. All responses are treated anonymously which might increase the degree of openness and the extent of answers. Also, this survey will be conducted in Liechtenstein dialect, except one standard German speaking participant. Addressing the interviewees in their native language might lead to the most authentic answers and makes the process easier for them.¹¹⁷ Furthermore, the wording and tone during a conversation is adjusted to characteristics inherent to the addressed person, for example the candor and volubility. This contributes to an increased flow of speech and fosters the ambience of the interviewing.¹¹⁸ The results are collected in standard German in an Excel sheet and the data analysis will then be performed in English and contributes to chapter IV.

Like stated above, some questions are implemented as open questions, others will provide a selection of alternatives to choose from. All questions are formulated in a neutral way, leading questions are avoided.¹¹⁹ The analysis of the survey results as well as the expert interviews will follow a structured order and be performed in chapter IV. Questions are set in relation to other questions that concern similar topics. Answers of the respondents are also set into relation to each other and are evaluated in their context.¹²⁰ The evaluation of the survey responses will also check for a tendency to mean values. It might occur that in the beginning of the survey the answers are quite diverse and will then shift to a mean, for example in a sense that interviewees always pick the first response option or always choose all options or become reluctant to answering at all. Therefore, even the amount of time spent on the individual questions will be observed and managed, as well as the amount of time required by the entire interview process itself. This serves two purposes, firstly it controls if the interviewee starts to rush to the end at some point. Also, it checks if the interviewer accidentally reduces the required amount of time from interview to interview because he subconsciously intends to shorten the process by himself. Both behaviors could lead to a loss in information.

2. Expert Interviews

The SME survey is complemented by several expert interviews.¹²¹ Those regard to two different expert groups. First, the investors' side shall be investigated, and secondly

115 Chapter V will then address legal questions SME managers or owner could be confronted with when evaluating financing with the aid of tokens.

116 See <<https://wirtschaftskammer.li/wirtschaftskammer/die-organisation/>> (retrieved on 10/12/2020).

117 Schnell, Survey-Interviews³, 177–181.

118 Bogner/Littig/Menz, Interviews mit Experten: Eine praxisorientierte Einführung (2014) 28.

119 Gläser/Laudel, Experteninterviews³, 135–139.

120 Gläser/Laudel, Experteninterviews³, 200–210.

121 Please refer to chapter III.B.1 for more theoretical background information on the conduct of interviews.

a legal expert will be heard regarding the secondary market for tokens. In each case semi-standardized structured interviews will be conducted. Contrary to the SME survey it is openly communicated that the interview serves as part of a thesis covering tokenization for SME funding. The interview questions are related to the questions asked in the SME survey but regard to the contrary perspective, supply of funds instead of demand. The interviews will also begin with a general part concerning financing of SMEs and the investing experience of the interviewed experts before then shifting towards tokenization. A plausibility test checks for knowledge concerning tokenization and if needed the experts will be introduced to the blockchain law and to the tokenization process.

The following topics are covered:

- ▷ Familiarity with Investments in the SME sector,
- ▷ considerations of tokenization in the professional environment,
- ▷ experience with innovative financial instruments,
- ▷ characteristics and difficulties of SMEs and SME investments,
- ▷ suggestions to improve SME capital access,
- ▷ requirements concerning a SME token investment and the involved procedure,
- ▷ expected forms of influence, collateral, or control and return expectations.

The interviewees belonging to the above-mentioned group are investment specialists and the interview is conducted anonymously. Therefore, they are all assigned a number (E01 to E04). Their background is listed in bullet point form below:

- ▷ E01: secretariat director asset managers association
- ▷ E02: senior client advisor in private banking
- ▷ E03: independent asset manager and CEO of an asset managing company
- ▷ E04: business angel who is also investing in Liechtenstein SMEs

Those role descriptions are common and widely used for many professionals in Liechtenstein. Therefore, they are not suitable for the identification of the actual identities; a re-identification is impossible.¹²²

Like the survey, interviews were conducted in dialect and then translated to English by the author. Collectively with the questionnaire the answers are listed in an Excel document.¹²³ The aim of the conversations is producing

valuable insights about requirements, challenges and other aspects concerning SME investing through tokenization. Expected characteristics of the procedure and the involved token issuers will be determined. Together with the SME surveys, the expert interviews will result in an information pool concerning both sides, potential investors as well as SMEs who could potentially issue tokens. Hesitations, reservations, or questions raised by investors will also be addressed by the contents of chapter V. The insights gained from SMEs and investors ultimately help to determine the attractiveness and feasibility of SME financing through tokenization.

The interviewee who served as legal expert, *Thomas Nägele*, is not anonymized because his publications were also used as a source for this thesis. Since he is an expert in a highly specialized topic disclosing his name might be beneficial to following researchers. Therefore, after transcription of the interview his approval of the transcript was requested and granted.¹²⁴

C. Legal Analysis

This research study primarily is a legal thesis. The technical, economical, or business aspects related to it build a base for the legal analysis, so to speak the starting point. However, they are not in the center of attention. The thesis is concerning domestic legislation, particularly the so-called Blockchain Law of the Principality of Liechtenstein (TVTGL). Related laws or fields will be included if it is necessary for auxiliary purposes. The mentioned research questions will be considered in the context of each other. The aim is to analyze the legal doctrine, reveal crucial legal provisions, address possibly problematic aspects, or even required adjustments, and where relevant also discuss interconnections to supervisory issues. Existing literature as well as expert opinions collected through interviews will be used for this purpose. Publications and the legal situation by August 2020 will be included to this work. Aim of the examination is the determination of the lawmaker's intentions and to review the compatibility of the provisions with the business model that serves as case study. The law makers intentions are determined by all conventional interpretation methods and structures which will be outlined below. Those interpretation elements are equally important and used coequally without any primacy. All indications for the lawmaker's intentions need to be considered. Considered legal texts are mentioned in verbatim whenever deemed appropriate, allowing for a first access to the content of the respective legal provision, and the interpretation elements that are referring to this verbatim.

¹²² *Medjedovic/Witzel*, Wiederverwendung qualitativer Daten. Archivierung und Sekundärnutzung qualitativer Interviewtranskripte (2010) 75–77.

¹²³ Please refer to Appendix 2.

¹²⁴ See Appendix 3.

The interpretation elements consist of 1) the historical elements during an interpretation as they attained high importance for the content of the legal provision, for instance through competence interpretation especially in from of originalism or through the evidence that can be revealed by the legislative process itself; 2) the systematic interconnections that allow conclusions about the content of the legal provision under investigation; 3) and also the telos, ie the purpose from the point of view of legal policy that was aimed at by the law-maker, although its implementation does not always succeed appropriately.¹²⁵ The results that are generated by those means shall then be part of a rational assessment; examining if all apparent evidence was considered for the determination of the content of the legal provision under investigation. Also, if there was evidence for contradicting content it needs to be examined if a plausible, rationally comprehensible assessment of all circumstances was undertaken. This aims at an evaluation if the extracted results of the content determination are ultimately justifiable. All hypotheses that can be extracted from the gained evidence must be examined on base of all traceable evidence. The selection of the preferred norm hypothesis must follow an argumentation that is based on an understandable chain of reasoning resulting in a comprehensible explanation why it can be classified as the intention of the law maker. The conventional interpretation methods, their origin and more details regarding the methodology will be outlined below and is mainly based on the approaches presented by *Kerschner*.¹²⁶

In the first stage, once relevant legal norms are identified, they need to be structured or »translated« to comprehend their structure and the relation between the specific sentences within an article. Some articles of a statute are divided into general rule and exceptions, others serve as legal definitions and still others might describe very distinct case configurations. Also, provisions might contain superordinate and subordinate categories where the first-named group more specific matters into a term that collectively represents them. For example, paragraph 871 of the ABGB¹²⁷ concerns fallacy (superordinate) which stands for and can be divided into mistake in the utterance, error in motivation and other subcategories. Concerning the text apprehension hermeneutics and several interpretation methods come into play. Interpretation methods serve as toolbox for

the hermeneutical process. Legal interpretation is the investigation of the meaning of a legal norm through argumentation and evaluative decision. *Kerschner*¹²⁸ defines legal doctrine as: »[translated by the author] explaining the contents and meanings of the legal norms found in a specific legislation, and whenever necessary expanding or narrowing these.« So, legal doctrine is focusing on the recognition of the enacted, applicable law. Whereas legal dogmas are the overlapping norms of all existing, usually positive law.

The comprehension of legal texts necessitates use cases that are analyzed, concretized, and specified by the user of the legal doctrine when investigating the application of law.¹²⁹ Hand in hand with this goes an analysis of the lawmaker's intentions concerning the use case and all the legal norms that were identified as relevant at a certain function, part or stage of the use case. For such analyses publications and judicature are evaluated. This aims to identify if partial aspects of the use case or of the research questions were already examined. During this process views and standpoints of third parties are identified and challenged. Also, further questions of interest can be found that were raised by other researcher or practitioners, concern the research field, and are not fully answered yet or should be considered from an additional angle.¹³⁰

When performing a legal analysis in many cases there is a shortage of judicature and literature, especially in smaller jurisdictions like Liechtenstein. This might also be the case for the underlying topic of this thesis. In such situations a common approach is drawing a fictional use case which then serves as the baseline for the analysis.¹³¹ For this purpose chapter IV will introduce case studies for tokenization as means of SME financing. Along the hypothetic case, chapter V contains a legal doctrine analysis of the TVTG provisions involved in the process of SME financing through tokenization. Expert interviews and a SME survey, whose methods both were introduced in the earlier chapters, serve to provide a broader qualitative base. They might invoke further aspects that need to be addressed by the legal analysis. For this purpose, primarily the provisions of the TVTG are analyzed, as well as other laws for auxiliary purposes whenever needed.

Subsequent, the procedures, mechanisms and methods of legal interpretation are laid out that will be applied later in chapter V. The purpose of the legal analysis is the determination of the legal situation concerning SME financing through tokenization. To meet this

125 *Raschauer*, Strukturprobleme des Europäischen Bankenaufsichtsrechts (2010) 6–8.

126 *Kerschner*, Methodenlehre⁶ serves as the primary reference guide for the legal analysis conducted within the presented thesis. Especially students, researchers and practitioners of Austrian law, Liechtenstein law and within the German speaking community will be familiar with *Kerschner's* publications.

127 § 871 ABGB.

128 *Kerschner*, Methodenlehre⁶, 33.

129 *Kerschner*, Methodenlehre⁶, 33.

130 *Kerschner*, Methodenlehre⁶, 209.

131 *Kerschner*, Methodenlehre⁶, 210.

goal in a scientific way, it is necessary to follow a method that can be verified.¹³² According to *Kerschner*¹³³ and *Kramer*¹³⁴ it is critical to prevent a petition principii¹³⁵. It oftentimes occurs when the researcher is strongly convinced by an opinion even before he performs the actual analysis. Therefore, the choice of a specific interpretation method should not be influenced by a conjecture concerning the outcome nor by considerations which method would fit best to the assumed outcome. The presented thesis will follow a legal dogmatic approach that argues along codified norms. As part of the subsumption the artificial case scenario will be brought into line with the TVTG, as far as possible. For this purpose, the specific use case will be compared to the often abstractly formulated facts of the case in the legal norms. It will be investigated if and which constituent elements are fulfilled and are applicable to the presented specific case. Based on this, it can be concluded if and which legal consequences that were formulated in the law are applicable to the specific case. The illustration below depicts this procedure in Figure 5¹³⁶:

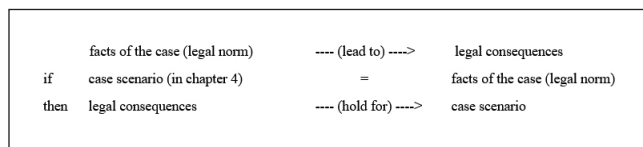


Figure 5: Subsumption process.

During the subsumption content, meaning and scope of the facts of the case formulated in the law are identified and interpreted. To conduct this process and to detect the intended meaning of a legal norm interpretation methods are complied with. Interpretation provisions were even defined by the legislator as early as in the year 1811 when the ABGB¹³⁷ was introduced. The paragraphs 6 to 8 contain judicial interpretation methods codified in the Principality of Liechtenstein. Translations by the author for paragraphs 6 and 7 are displayed below and underscored in different styles to highlight several provisions that can be extracted from them:

§ 6 ABGB (Liechtenstein): »Interpretations of the law different than those resulting from the original meaning of the words in their context and the

different from the distinct intention of the law-maker may not be attributed to the law.«¹³⁸

§ 7 ABGB (Liechtenstein): »If a legal case cannot be solved based on the words, nor from the original meaning of the law, then similar cases that are clearly solved need to be considered. Also, motives of other, with these laws related laws need to be considered. If the legal case remains dubious, it may be decided based on thoroughly collected and carefully considered circumstances that follow from the natural legal principles.«¹³⁹

The classical exegesis methods comprise¹⁴⁰:

- ▷ grammatical or verbatim interpretation,
- ▷ systematic-logical interpretation,
- ▷ historic interpretation,
- ▷ objective-teleological interpretation.¹⁴¹

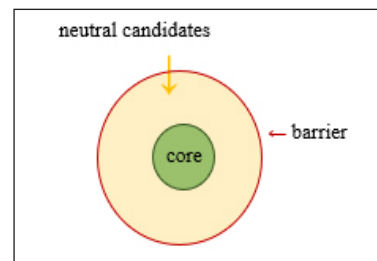


Figure 6: Verbatim interpretation – core and barrier.

For this thesis, at first a verbatim interpretation will be conducted, whenever considering a legal norm. Primarily this will be supplemented by a historic interpretation which analyzes the original intentions of the lawmaker. Information regarding the lawmaker's intention can be extracted for example from the annotations to the draft of the TVTG and the motion submitted by the government to the parliament, as well as other publications by government officers or members of parliament, if available. Such documents contain indications regarding intentions and purposes of the codified law. Overall, a legal positivistic approach is adhered to that puts grammatical and historic interpretation in the center of attention. Additionally, the remaining methods might be considered whenever needed for completion of the argumentation.¹⁴² The verbatim interpretation serves as plausible starting point because it makes the reader at

132 *Kerschner*, Methodenlehre⁶, 29.

133 *Kerschner*, Methodenlehre⁶, 30.

134 *Kramer*, Juristische Methodenlehre⁴ (2013) 123.

135 [Latin] for circular reasoning, also called begging the question.

136 This illustration is based on an illustration in *Kerschner*, Methodenlehre⁶, 34 which was extended. *Kerschner* provides handy instructions not only for methodological procedures but also to every researcher who enters the field of (scientific) legal analyses.

137 [German: Allgemeines Bürgerliches Gesetzbuch], for [translated by the author] *General Civil Code*.

138 § 6 ABGB.

139 § 7 ABGB.

140 The style for the underlining is equivalent to the underscores used in the quote of §§ 6–7 ABGB above to highlight how those principles result from those norms.

141 *Kerschner*, Methodenlehre⁶, 35–36. For detailed information on the meaning and for tools related to those interpretation methods, please consider *Kerschner*, Methodenlehre⁶, 38–40.

142 On this occasion, it should be remarked that the method of comparative law will not be considered since it would exceed the scope of this thesis project.

first familiar with the considered norm, its wording and asks for an authentic interpretation of the contained terms and grammatical structure. A first example is shown above in the presentation of §§ 6–7 ABGB. Also, it is quite handy to introduce legal definition by this approach. When analyzing the meaning of an article or paragraph of a law for a specific case or situation, it might be worthwhile to determine the intended normal case first.¹⁴³ During the interpretation of the meaning of words and terms, it is of great importance to detect the interpretation core and barriers for the interpretation of the wording. This is also shown by the illustration (Figure 6).¹⁴⁴ Since, there is a certain risk to read meanings into words that are not intended by the lawmaker within this constellation. The core describes the cases of application that everyone would agree on; also called positive candidates. Outside and around the core the interpretation consent declines further and further. Those additional meanings of the terms, or neutral candidates, are still accepted by some or even many legal practitioners but they are much less intuitive interpretations. Ultimately, a barrier is reached. On the other side of this margin only such interpretation will be found that are crude or at least extremely controversial. The space outside represents interpretation which result if words, structures, and terms are taken for more than what they mean and when they are forcefully used out of context. Those interpretations therefore are called negative candidates.¹⁴⁵ When conducting the subsumption differences between the intended normal case and the specific situation subject to the analysis serve as an appropriate starting point for the analysis of the applicability of the law in the investigated case. It might also allow for the identification of limits for the applicability of the respective article or it might identify regulatory gaps. Furthermore, arguments supporting the applicability in the considered case might be ascertained.¹⁴⁶ The falsification method serves as another approach which is applied after the own argumentation position was determined, especially concerning neutral or possibly negative candidates. For this purpose, the own position is challenged in an attempt to falsify the presented arguments that were given prominence earlier.¹⁴⁷

In case the considered law does not contain provisions concerning the investigated case arguments from analogy are needed to add to the codified provisions

if articles are applied that seem to be not intended for cases like this. Proponents of the (strict) legal positivism, however, refuse any additions to the meaning of norms that are not explicitly contained within the norm. They limit the legal interpretation on sheer description of the codified provisions. Proponents of the pure theory of law even argue that whenever the law is silent it results that there simply is no regulation defined yet.¹⁴⁸ The presented thesis abstains from judgement over both aforementioned schools, however, follows less strict legal interpretation approaches. The systematic-logical argumentation forms conceptual models through induction and deduction to fill regulatory gaps and specify imprecise terms.¹⁴⁹ Induction is method to reason from an individual case to the general meaning, while deduction derives interpretations for specific cases from the general understanding. Jurisprudence of interests and jurisprudence of values is based on the concept that every legal norm and the legislative process follow a weighing of interests. It results that a researcher should ask which interests the lawmaker was aware of and how he balanced them during the legislative act.¹⁵⁰ Especially the report on the legislative consultation process and the comments to the bill initiated by the government can be examined for evidence. In this process, it is crucial to focus on valuations and considerations undertaken by the historic lawmaker instead of perceived moral assessments.¹⁵¹

IV. Findings of the Qualitative Analysis (Market Sentiment)

A. Business Model Sketch: Starting Point for Survey and Interviews

Like mentioned in the introduction, tokenization can serve at least two purposes in the context of SME financing. First, it can connect investors and SMEs that would not find each other because the SME is not yet traded at a traditional stock exchange and has no listed bonds. The business process provides an environment that links parties who have not been aware of each other. The second purpose is found in the capital allocation to companies that do usually completely depend on bank financing due to their company size being too small for public bond or stock offerings at conventional exchanges. Such a financing model is typically referred to as ICO.¹⁵²

¹⁴³ Kerschner, Methodenlehre⁶, 212.

¹⁴⁴ Own illustration based on Kerschner, Methodenlehre⁶, 36.

¹⁴⁵ Kerschner, Methodenlehre⁶, 34–35. At this point it is refrained from showing practical interpretation examples since Kerschner and others serve many enough examples. However, in chapter V illustrations might emerge from the legal analysis of the TVTG.

¹⁴⁶ Kerschner, Methodenlehre⁶, 212.

¹⁴⁷ Kerschner, Methodenlehre⁶, 215.

¹⁴⁸ Kerschner, Methodenlehre⁶, 60–61.

¹⁴⁹ Kerschner, Methodenlehre⁶, 62.

¹⁵⁰ Kerschner, Methodenlehre⁶, 63.

¹⁵¹ Kerschner, Methodenlehre⁶, 65.

¹⁵² Langer/Nägele, Blockchain- und Tokenbasierte Unternehmen Liechtenstein – Steuerliche und rechtliche Fragen und Antworten, IWB 6/2018, 242, hereafter quoted as: Langer/Nägele, IWB 6/2018.

The simplest way of connecting an investor and a company seeking for capital funds might occur in form of a bulletin board. On a bulletin board the owner or manager of a small or medium-sized enterprise can post recent capital fund requirements. For example, company A desires to buy a large machine or building for two million Swiss Francs. However, it is not in possession of the required funds and has no sufficient lending commitment by a bank or is required to increase equity to obtain a bank lending commitment. The manager is confident, though, that the company will increase its returns significantly once the machine is producing the intended goods. Furthermore, he even can quantify the expected returns from this hypothetical new machine or building. The manager, who for example needs an additional one million Swiss Francs to reach the two million funding goal, posts an offer at a bulletin board. For example, stating that he expects for each Swiss Franc invested over the course of the next 10 years 1.5 Swiss Francs will be paid back by the increased company returns. He further states that he is seeking for a debt or equity investor and notes

his contact data. The bulletin board as well as the posting and the contact information could of course be provided electronically on an electronic bulletin board platform. Investor B who has liquid funds at his disposal and is interested in a worthwhile, maybe even long-term investment searches at the bulletin board for attractive investment opportunities. Once he comes across the offer posted by manager A, he gets curious and contacts him. A and B now can agree on a contractual agreement freely, designed by them and defined by their common interests. For example, A could offer B a 10 percent share in the stock of the company which B happily agrees on. They decide to administrate the transfer through a blockchain because such a trustworthy technology in their opinion provides the base of trust that is required for a transaction of such a magnitude. The other way around, at such a bulletin board alternatively investors could also post offers for lending and would then be contacted by SMEs who seek for funds. The graph below shows in Figure 7 a sketch of the structure of a SME funding process based on tokenization.¹⁵³

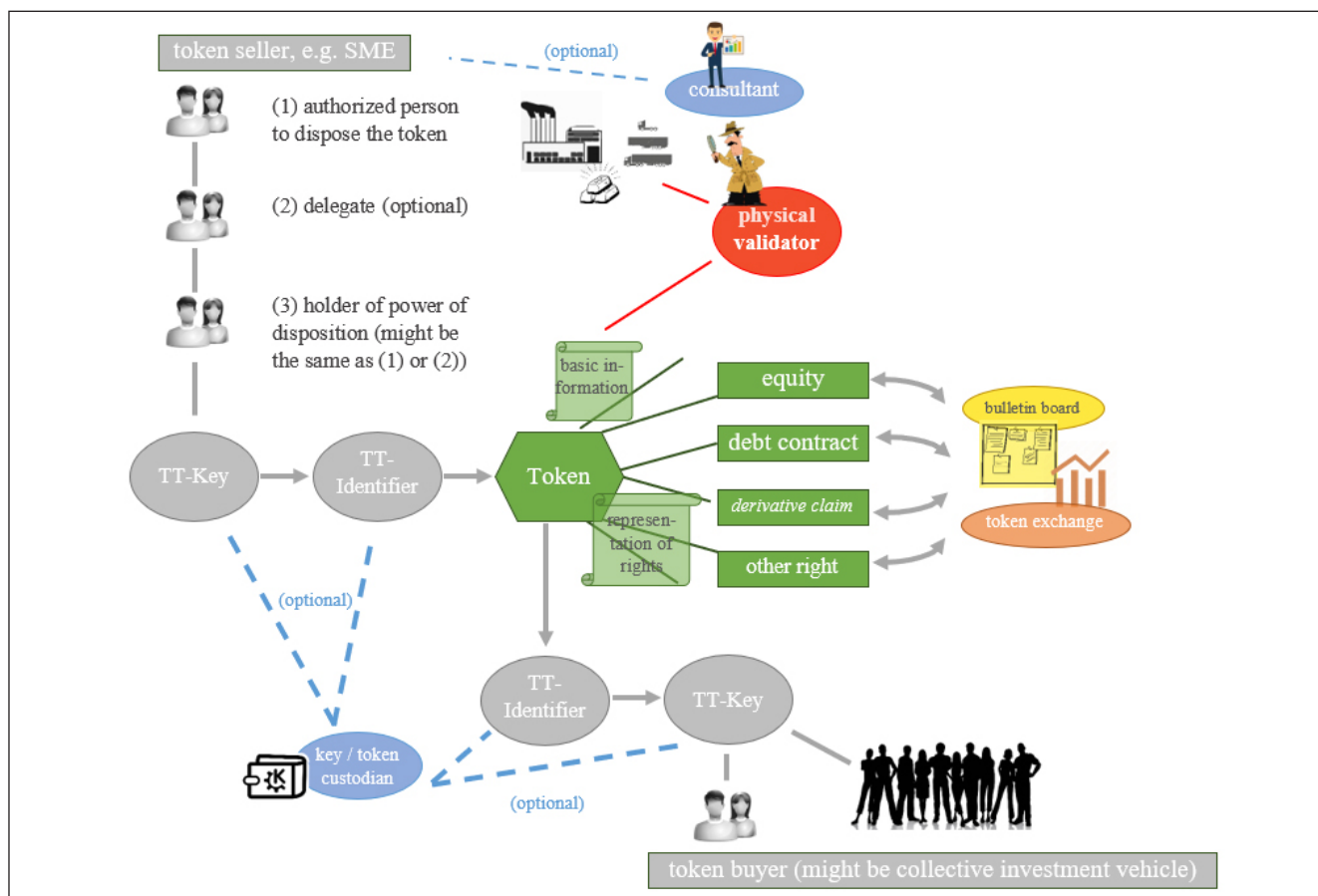


Figure 7: Sketch SME funding process based on tokenization.

153 The graph does not show all roles that might be involved and serves illustrative purposes only. Own illustration. Refer to chapter II.C for roles and functions in token economy as well as chapter V regarding the legal aspects. A similar illustration was presented during the SME survey.

In an alternative scenario, A does not get connected with one large investor but instead with a multitude of maybe 500 smaller investors who each are willing to contribute an amount of 2000 Francs on average, some more, others less. Since tokens are a vehicle to fractionalize assets

tokenized debt can be made available to a larger crowd of small investors. In return for the contribution, they receive an equivalent number of shares in the debt, represented by a certain number of tokens. Those tokens could also represent equity and thereby grant shareholder rights as well as the right to receive a dividend and they can also be used to identify the shareholder at the annual (remote) shareholder meeting. The company owner in this example manually needs to agree on 500 contracts with up to 500 different capital amounts if there is no automation in the administration.

Of course, the bulletin board procedure seems to be quite old-school. Instead, a fully automated process is desirable. It could automatically match interested investors and SMEs as well as exchange the invested capital amounts for tokens. In situations when investors want to provide loans instead of equity they might require collateral; for example a heavy gold bar privately owned by the company owner. Interest rate payments and the redemption payments could be executed fully automated, linked to the tokens if they are containing a somewhat intelligent contract. Such an automatized market could also serve as an exchange platform for a token secondary market. It could ultimately provide liquidity to tokens and allow investors to sell their debt tokens before maturity of the debt contracts, or their equity tokens to strangers who are interested in investing in SME equity titles.

In theory, the most obvious advantage of tokenization is the distinct determinability of any asset or contract that is linked to a token because this token, so to speak represents its unique identification tag. However, this comes with various requirements. Firstly, those ID tags or tokens need to be assigned to each asset. Then, some, probably physical, validation of the bookkeeping needs to take place. A physical validator ensures the consensus between the characteristics of the asset and the characteristics represented by the token. For example, if the token represents a 1/100 share of a 5 kilograms gold bar, somehow it must be ensured that the physical bar of precious metal indeed is made of gold and does not contain any contamination or even counterfeit material. Thirdly, it is crucial that assets are not already used as conventional collateral, for example in a bank loan contract, when they are tokenized. Since it would be difficult if not impossible to determine a hierarchy of tokenized versus non-tokenized liabilities during liquidation processes. The properties of the token should also allow for a reasonable allowance of depreciation to reflect the accounting treatment in accordance with accounting laws. Obviously, tokenization does not create a fully new product, but it allows to use established processes in a digitalized way and scale them down to smaller volume due to efficiency gains.

Once the contents of a token and all financial information is developed it is also important to think about prospect duties which are important within the whole process of tokenization.¹⁵⁴ To connect both parties, of course, technological infrastructure is required for the tokenization process and to operate a blockchain. Usually, several processes and IT service providers need to be involved. This is based on the assumption that the SME is not equipped with the technology and services required since most of those companies are not yet active in a blockchain business.¹⁵⁵ For technical decisions and differences between hard cap, soft cap, pricing mechanisms and presale considerations other literature can be referred to.¹⁵⁶

Please note that roles of functions mentioned here or depicted above are not necessarily all roles and functions covered by the TVTG. Legal questions SMEs might ask when they intend tokenizing their assets will be covered later.¹⁵⁷ This business sketch, instead, forms a base for the SME survey and the expert interviews with potential investors. Depending on the rights contained in a token, involved entities, preferences of investors and SMEs, and other specific characteristics, the tokens will vary. Since there are numerous thinkable examples for financing models based on tokenization basically imagination sets the only limits. Obtaining a frame of characteristics of token financing attractive to SMEs is the aim of the survey. Therefore, in the next chapter requirements, desires, and expectations by SMEs towards such a funding procedure and non-bank funding in general will be presented. By addressing them guidelines or barriers for practically relevant manifestations of SME funding tokens evolve. The results chapter will then link those to the requirements and statements uttered by potential investors.¹⁵⁸

B. Results of SME Survey: Requirements and Remarks by Local SMEs

An important part of the thesis is an evaluation of the receptiveness of SMEs to such a financing concept. It can be

¹⁵⁴ *Hays/Valek*, Crypto Research Report January 2019 (2019) 63, available at <https://cryptoresearch.report/wp-content/uploads/2019/01/Crypto-Research-Report-January_2019_EN.pdf> (retrieved 12/10/2020).

¹⁵⁵ *Hahn/Wilkens*, ICO vs IPO – Prospekt rechtliche Anforderungen bei Equity Token Offerings, ZBB 31 (2019) 11; *Hahn/Wons*, Initial Coin Offering (ICO): Unternehmensfinanzierung auf Basis der Blockchain-Technologie (2018) 26.

¹⁵⁶ For example: *Ritter*, Important steps and relevant decisions during the development process of a token in Liechtenstein – A case study approach (2019).

¹⁵⁷ See chapter V.

¹⁵⁸ The application of the TV and auxiliary laws as well as the legal feasibility of many questions that arise in the above-mentioned context are analyzed in chapter V.

summed up that the representatives of the sectors show great interest in token-based financing (while some were rather critical). Despite, all the aggregated statements, no matter if related to a specific company or to the sector, there might be companies in any sector who deviate from the recorded opinions. Within the over 4000 small and medium-sized companies in Liechtenstein there will always be some who remain reluctant towards any new technology and tokenization specifically.¹⁵⁹

In total, sixteen managers or owners of SMEs were contacted. Except one, all of them are also serving as section presidents within the Liechtenstein Economic Chamber. Fourteen were willing to participate in the survey and agreed on meeting in person despite the pandemic. One only agreed on a phone interview which later was cancelled by the interviewer due to possible negative implications on the overall result if the interview were conducted in a non-standard format.¹⁶⁰ Two persons that were contacted never answered the phone nor replied to emails. At the beginning of each interview the interviewer gave a short overview of the intended structure by the exact same phrase, which was:

»Before we start, I would like to provide you an overview of what I intend to do with you. First, I am going to ask you some general questions regarding your company, some concerning your preferences and the financing situation of your firm as well as your experience with banks and other financial institutions. Then we will take a short break which I will use to explain a specific funding model to you. Finally, I will collect your opinions, preferences, and comments regarding this financing structure, again based on standardized questions.«

This procedure and behavior intended to ensure that at no point bias about or prejudice against the yet unknown, not very established financing technology of tokenization or blockchain could arise. To support the explanations of the funding concept based in tokenization a graphical illustration was presented.¹⁶¹

The median number of workers employed by the participants is 15, reaching from 3 to 80. About a third of the companies employs less than 10 workers, another third up to 50 and the remaining third have a staff of 50 and larger. The oldest company was founded 145 years ago and the youngest is in its 6th business year, with a median age of 34 but six companies exist for already fifty years and longer. Previous funding experience

was addressed by the first seven questions. One hundred percent of the interviewees stated that they would usually prefer capital reserves as preferred means of financing. All stated that their reserves are under normal circumstances large enough to finance all growth and replacement from their own funds. Otherwise, they would wait or if necessary, inquire for bank financing respective leasing.¹⁶² 5 of 13 (approx. 40 percent) stated that they rely on leasing for machines or for the vehicle fleet. In the past, none used other funding means.¹⁶³ Furthermore, Question 3 checked for the plausibility of the responses to question 2, which was given for all interviewees. Most of the presidents were unable to make precise statements regarding their colleagues or competitors. However, this is no surprise since they are still in competition to each other and therefore only few do disclosure sensitive financial data. Though, in some manufactory sectors the funding structure is deemed to be homogenous. All those who made any statement emphasized that usually with growing company age the funding heavily shifts towards equity. They also noted that the early years are difficult for any company, no matter how great the idea or the product since bank funding was quite limited and banks were too risk-averse.¹⁶⁴ 23 percent had to cancel growth investments or were confronted with failed investment plans.¹⁶⁵ The most predominant were operational reason and one time the intended financing was cancelled due to dropped revenues.¹⁶⁶ Then the question was addressed if the interviewee would right now undertake a growth or replacement investment if they were today granted access to unlimited funds. About the half intended doing so.¹⁶⁷ Their response is an indicator that potential for worthwhile investments in their company exists but cannot be implemented due to the (natural) limitation of funds. However, if the funding base was larger, for example due to tokenization, business and growth opportunities were exploitable.

The next questions refer to the recent funding structure. Most of the respondents are financed by 80 to 100 percent with equity. Only one is heavily relying on debt and one company owner has granted large debt to his firm for tax reasons. Two of thirteen said they were occasionally using short-term loans.¹⁶⁸ Another question surveyed the satisfaction with their own relationship bank(s), school grades from 1 (worst) to 6 (best) were used. The results are presented below in Table 2.¹⁶⁹

¹⁶² Appendix 1, Question 2.

¹⁶³ Appendix 1, Question 3.

¹⁶⁴ Appendix 1, Question 4a and 4b.

¹⁶⁵ Appendix 1, Question 5.

¹⁶⁶ Appendix 1, Question 6.

¹⁶⁷ Appendix 1, Question 8.

¹⁵⁹ Langer, Das liechtensteinische Steuerrecht, 20.

¹⁶⁰ The thirteen agreements of participation are equivalent to a rate of 81 percent.

¹⁶¹ This is a simplified version of the sketch shown in chapter IV.A.

Grade for satisfaction with the own relationship bank	worst/unhappy		medium/decent			best/happy
	1	2	3	4	5	6
Count (of 13)	2	0	1	5	5	0

Table 2: Grade for satisfaction with own relationship bank.

Apparently, two are very unhappy with their banks, six are indecisive or would call the services decent, 40 percent while are quite satisfied with products and services offered to them (grade 5). This draws a rather heterogeneous picture and there is certainly potential either for the banks to improve or for non-banks to attract customers that are not exceptionally satisfied. However, most companies do not rely much on bank funding. Therefore, the grading does not necessarily mean banks were providing sufficient funds to pleasant conditions. Broader knowledge about the experience with banks and the reason for the grading was collected by the next question.¹⁷⁰ When asked, about qualities of their bank and characteristics about their bank they do appreciate, the participants stated that they value the relationship of trust, reliability, regionality and competency most. Therefore, in the absence of large debt exposure the bank grading might be primarily based on good experience with the services offered by banks, like payment transactions and online banking. Since those results are not very suitable for any conclusion about the affinity for non-bank funding, the following question aimed at identifying criteria that need to be fulfilled by a non-bank to agree on a funding contract with it.

They are:

- ▷ fair contractual agreement,
- ▷ investor of good reputation,
- ▷ attractive financial terms,
- ▷ trustworthiness,
- ▷ secure procedure,
- ▷ more flexibility than bank lending,
- ▷ reliable anti-money laundering measures,
- ▷ common vision and shared interests,
- ▷ additional benefits like knowledge or network,
- ▷ reliability.

One also emphasized they would only accept private investors who can financially cope well with a potential loss.¹⁷¹ Those are characteristics rather similar to the positive comments made regarding banks. However, non-bank funding partners oftentimes might not possess the same reputation in financing as banks; they might

be less well-known and therefore it could be harder to trust them. This is an opportunity for technologies that create trustworthiness from within themselves, like blockchain and financing based on tokenization.

The findings of the first segment of the interview, furthermore, are used to doublecheck statements made in the following token-specific section. Thereby, it can be controlled for bias resulting from the sheer technology. This is important because some participants simply might have critical and inveterate opinions about digitalization. Always the exact same phrase was used to introduce the second part, which is:

»Now I would like to look with you at this funding concept based on digitalization of assets, shares and debt. Please think of the procedure as following. A unique identification certificate or ID number is assigned to any kind asset of your choice that is owned by your company or to shares in your company. However, it goes further, you could also assign an arbitrary number for example one hundred of those IDs to assets that usually are deemed indivisible. For example, you could divide your factory building into a hundred equally sized fractions by this process. Then you can take some of those fractions represented by or linked to the IDs and sell them or use them as collateral by transferring them with the aid of the IDs to investors. You do either already know the investor or you will find him, either with the help of a bulletin board or a somewhat automated marketplace. The financing agreement could either be negotiated between the two parties of you or be based on a standardized model contract. You will financially compensate him with interest or dividend payments just like with any other funding measures. However, it would be possible that you provide the investor with natural produce, a usufruct of some kind, special conditions on the services and products offered by your company, treatment as a preferred customer or other advantages, instead of or additionally to the financial compensation.«

The terms blockchain and tokenization usually were not used, to limit the bias. Interviewees were offered to ask queries before the questionnaire was continued. On this occasion, some mentioned terms like tokens, block-

168 Appendix 1, Question 9 to 11.

169 Appendix 1, Question 12.

170 Appendix 1, Question 13.

171 Appendix 1, Question 14.

chain law, TVTG or others by themselves. In some of those situations the interviewer mentioned that in 2020 the Liechtenstein parliament passed the blockchain act and that the previously explained funding concept is also covered by this law.

The next question asked for requirements fund suppliers need to fulfill so that the SME will do business with them. The same phrase was used as in the technology neutral section. Answers encompass the following:

- ▷ attractive financial terms,
- ▷ well-established or automatized processes,
- ▷ reliable anti-money laundering measures,
- ▷ certification process for market participants,
- ▷ legal certainty,
- ▷ uncomplicated, standardized procedure,
- ▷ do not act as a guinea pig,
- ▷ clear and fair contractual agreement,
- ▷ advice by an expert when emitting tokens.

Many prefer a direct, personal contact in business relationships, no matter how trustworthy the technology is. The responses do not deviate much from earlier. How-

ever, trustworthiness and other personal characteristics about the investor were not mentioned as frequently or not at all.¹⁷² This might be due to the trust-generating technology, but it is difficult to provide a definitive and reliable explanation for this observation.

The responses fortunately seem congruent with the answers provided in the generalized part of the interviews. Apparently, there is no significant rejection of tokenization as such. It is noticeable, though, that some of the stated requirements can be fulfilled easily. For example, legal certainty can be created by a proper legislative base. Standardized procedures, automation, clear rules, and market entry barriers can be achieved by proper coding of the token and the blockchain.

In a next step, Question 17 offered distinct options regarding a series of properties that might be important characteristics in a financing agreement based on tokenization.¹⁷³ They were presented to the interviewees, asking them to mark all those which are important to them during a tokenized funding. The participants could choose as many as they wanted. The results are, again, presented below, by Table 3.

property	count	property	count	property	count
experienced institutional investors	6	trustworthiness	13	small investors	1
receive funds as quick as from a bank	3	legal certainty	12	loans cheaper than bank	7
receive funds quicker than from bank	7	uncomplicated	10	international investors	0
retain control over the firm	11	standardized procedure	7	domestic investors	2

Table 3: What is important to you regarding funding with the aid of tokenization?

Regarding the characteristics of a potential funding partner, the half would prefer experienced investors while only two (less than a sixth) emphasize that he should be local. It is important to ten of thirteen that they keep the decision-making power. Concerning the financial terms seven demanded cheaper terms than bank lending. This observation corresponds with the answers to Question 20 which will be mentioned later. Ten would want to receive funds either quicker than through bank lending or within the same time. All require trustworthiness, almost all (except one) insist on legal certainty and four fifths require uncomplicated procedures. Furthermore, the half would prefer standardized processes and one person emphasized additionally to the options which could be chosen from that it is important to him that illicit funds cannot be ingested by the tokenization process.¹⁷⁴

When asked to choose between alternatives of either personal contact on a regular basis or anonymous business, nobody explicitly preferred anonymity, a quarter decided for personal contact and three quarters are indifferent. The participants were rather indifferent between standardized token contracts and individually negotiated contracts. Probably, there is a market for both variants. SME owners clearly would prefer support by an advisor that is experienced with tokenization. This is certainly related to a general lack in financial or legal knowledge among almost. Two thirds would like to use a platform that helps them finding potential investors. Some SME managers stated they would do this kind of business only with people they already know well.¹⁷⁵

The next question served as reinsurance if the interviewees had commented on security concerns in case, they had any. The results show that except the previous questions had been answered under the impression of safety matters, too. No new points were made and some

¹⁷² Appendix 1, Question 16.

¹⁷³ Appendix 1, Question 17a.

¹⁷⁴ Appendix 1, Question 17a.

¹⁷⁵ Appendix 1, Question 17b to 17e.

even stated that they believe blockchain technology creates safety of its own accord.¹⁷⁶ The company representatives were asked which collateral or rights they are willing to share with investors. Almost all would disclose their bookkeeping, except one. Depending on the size of investments five would grant veto rights to investors and three a seat in the management or supervisory board. While five would offer rights of lien and six would agree on mortgages.¹⁷⁷ The interviewees would either want to remunerate token investors like banks or even cheaper due to higher efficiency perception. However, some would also pay more under certain conditions, for example if the funds are provided quicker. Almost all would like to have a runaway option in case they make bad experience.¹⁷⁸

Due to the anonymity no statements regarding difference between different arts and sectors can be made.¹⁷⁹ In the very end the interviewees were informed that in fact the master thesis this survey contributes to specifically concerns SME financing by tokenization rather than SME financing in general. They were also told that the *Wirtschaftskammer* or the interviewer will get back to them with a survey report or presentation concerning the aggregated results of the survey and of the study, in a few months.

C. Results of Expert Interviews: Requirements and Remarks by Potential Investors

Also, comments, opinions and considerations provided by potential investors are highly relevant. They might not only provide insights about the attractiveness of a hypothetical SME token market but rather help to foster the token business itself by forming a requirements catalog, collecting investors' preferences, or suggesting certain appealing behaviors. Below the results of the interviews are considered and analyzed.¹⁸⁰

All participants were already familiar with tokenization. However, only two of four had heard about the abbreviation TVTG, although, all of them knew about the introduction of the Liechtenstein blockchain law. The result of Question 3 showed that one interviewee, who serves as an independent asset manager and a CEO of an asset managing company, was only aware of basics regarding tokenization.¹⁸¹ Therefore, the interviewer made some additional explanations to him before starting the

actual question set. All participants had conversed with co-workers about tokenization, read expert literature on their own initiative and upon suggestion by superiors or colleagues. Two interviewees had participated in meetings in their company concerning the implementation of tokens, of tokenization or blockchain products. However, none was yet developing blockchain solutions and products to date of the interviews. The same two experts had also participated in public blockchain or tokenization conferences; they are a senior client advisor in private banking and a business angel. Out of the four experts only the latter has already invested in SMEs. However, three of the four are experienced with alternative investments or innovative financial instruments. In addition to seed capital those have been classic cars, structured securitization, non-standard investment funds and specialized fund products like a Swedish hydropower fund.¹⁸²

Nonetheless, the experts were providing quite a lot of information regarding the characteristics that make an SME an attractive investment in their opinion. Some of the statements were made twice or three times, others only one time. They are listed below and a number in parentheses indicates how many times the characteristic was mentioned:

- ▷ unconventional asset class (2),
- ▷ investments in machinery and vehicle fleet might be attractive for some,
- ▷ potential development of the company and its growth potential (2),
- ▷ fundamentals might be attractive (underpriced),
- ▷ investing in forward-looking technology and growth market (3),
- ▷ risks possibly not fully correlated to stock market cycle and therefore, advantages result from SME investments in bear market situations (2).¹⁸³

Despite the apparent attractiveness of SMEs only one is familiar with investing in SMEs, like mentioned earlier. The following reasons for the hesitation and difficulties related to SME investments were described:

- ▷ information is less concise and less reliable than for listed companies (4),
- ▷ there is no exchange listing and therefore price determination is more complicated,
- ▷ SME investment requires intense due diligence or specialized fund manager (3),
- ▷ a large investor could take over the business,
- ▷ financial stability weaker than for larger corporations (2),

¹⁷⁶ Appendix 1, Question 18.

¹⁷⁷ Appendix 1, Question 19.

¹⁷⁸ Appendix 1, Question 20–23.

¹⁷⁹ This is also called *factual anonymity*; Metschke/Wellbrock, *Datenschutz in Wissenschaft und Forschung* (2002) 21–22.

¹⁸⁰ See Appendix 2 for the collection of the responses as well as the questionnaire.

¹⁸¹ Appendix 2, Question 1–3.

¹⁸² Appendix 2, Question 4–6.

¹⁸³ Appendix 2, Question 9.

- ▷ missing liquidity because no vivid secondary market exists,
- ▷ individual contracts with SMEs would be labor and time intense.¹⁸⁴

Resulting from this field of tension between attractiveness and obstructions, it is worthwhile to identify solutions that could improve the capital access of small and medium-sized enterprises. Among others, primarily the introduction of a publicly accessible platform that provides financial data and core information about the enterprise was named. Also, crowdfunding, a SME investment fund run by the government, and intensifying personal contacts between investors and SMEs are suggested.¹⁸⁵ The subsequent question was then testing which of those earlier named criteria would encourage each expert to consider investing in SMEs in future. Eo1 and Eo4 both require comprehensive basic information and a certification of the quality of this information or of the token. The responses by Eo2 were additionally concerning characteristics of the investment targets and investment process. This interviewee requires a healthy company with owners and employees of high quality and reliable TT service providers. In addition to the aspects mentioned by Eo1 and Eo4, Eo3 desires a liquid secondary market and potential government involvement.¹⁸⁶

In general, tokenized SME investments could take place without any personal communication between investor and enterprise, they could find each other on a marketplace and they could use standardized tokens, just like any investment in stocks or bonds. However, some might prefer personal contact over individual contractual agreements, and others might prefer fund investments. The interviewed experts show a variety of preferences and it seems like the existence of all those thinkable systems and relations is justifiable. There might be interested investors for each of the possible models described in chapter IV.A.¹⁸⁷ All investors expect to be compensated either with an access return or with a return equivalent to a broad stock market index. Also, all of them expect disclosure of the bookkeeping and two of four require a veto right if the SME wants to conduct a large investment. The independent asset manager might be interested in a seat in the executive board if the invested amount represents an exceptionally large fraction of the SME's total capital.¹⁸⁸

Another question concerned aspects that were also part of the SME survey. Namely, the experts were provided a list of criteria and asked to identify which of those they attach importance to when investing through tokenization. All require promising returns, a trustworthiness, standardized procedure, and legal certainty. All except the senior client advisor desire a diversification effect to their total investment portfolio. If the above-mentioned criteria are met all the interviewees will feel *safe* with a token investment.¹⁸⁹ Chapter V evaluates the legal framework and clears legal concerns.

V. Legal Provisions and Feasibility Analysis Based on TVTG

A. Token Emission

From the case study in chapter IV the following questions result regarding the basics concerning the emission of tokens:

- ▷ Question 1: Does the TVTG distinguish between different token classes?
- ▷ Question 2: Do the TVTG provisions differentiate between emissions of tokens that represent shares in a company, tokens that represent owning rights in company assets, tokens that represent »derivative claims (Bowie bonds)« and such tokens that are only representing debt backed by company assets?
- ▷ Question 3: Can inalienable rights be tokenized? Does tokenization allow for the transfer of rights that are not transferable?
- ▷ Question 4: Are tokens assets?
- ▷ Question 5: Is it possible for any Liechtenstein SME to emit tokens?
- ▷ Question 6: Who can buy tokens? What about Foreigners?

In the first step relevant provisions of the TVTG were identified which are listed in Table 4 down below. This is then followed by an analysis for each question.¹⁹⁰

184 Appendix 2, Question 10.

185 Appendix 2, Question 11.

186 Appendix 2, Question 12.

187 Appendix 2, Question 14.

188 Appendix 2, Question 16 and 17.

189 Appendix 2, Question 13 and 15.

190 All translations for TVTG provisions will be based on the unofficial translation that was published by the Liechtenstein government and can be derived from <https://www.regierung.li/media/medienarchiv/950_6_08_01_2020.pdf?t=2> (retrieved 11/11/2020). Please note, that the translation has no legal force and the administrative as well as judicial language in Liechtenstein is German.

	Legal norms, all are referring to TVTG if not mentioned differently
Question 1	Art 2 1) b) to d)
Question 2	Art 2 1) b) to d); Art 33
Question 3	Art 2 1) c) 1. ¹⁹¹
Question 4	Art 3; Art 4
Question 5	Art 2 1) g), k), l); Art 3; Art 12 1); Art 12 2) icw 13–17; Art 18;
Question 6	Art 3

Table 4: Overview of legal norms concerned by chapter V.A.

1. Token classes – Does the TVTG distinguish between different token classes?

Like shown earlier, a token is usually considered as a digital information unit.¹⁹² With the Swiss FINMA leading the way, several financial market authorities were differentiating tokens according to three main manifestations; utility, currency, and security tokens.¹⁹³ In this respect, it is important to start the investigation without too much attention for this preconception. Based on the TVTG it should be reviewed (verbatim) if the Liechtenstein lawmaker has adopted the Swiss position or if the local token classification differs. Also, it is of relevance to unveil the intention if another definition was suggested (historic interpretation) by the government and passed by the parliament. If no information can be identified, other methods will be applied.¹⁹⁴

A brief search within the provisions of the TVTG shows that this law contains several legal definitions and designations for crucial terms used within the Blockchain legislation. It defines *token* as:

Art. 2 1) c)¹⁹⁵: »Token«: a piece of information on a TT System which: 1. can represent claims or rights of memberships against a person, rights to property

191 To allow for easier navigation through the law and this thesis legal norms are quoted in the style they are named in the TVTG, although, many legal scholars cite laws in standardized ways that might differ from the numbering in the original law. For example, some would cite this provision as *Art 2 par(a) 1 lit c Nr 1* instead. The chosen style shall especially serve entrepreneurs who could be confused by numberings unfamiliar to them and differing from the style used by the lawmaker in its publication of the law.

192 Eggen, Was ist ein Token? AJP Praxis 27 (2018) 561.

193 For an overview concerning other jurisdictions, also refer to Wurzer, Practical Applications TVTG 50–56; FINMA, Wegleitung ICO.

194 Please refer to chapter III.C for an introduction to the methods applied for the legal analysis.

195 If not stated differently, quoted norms do always refer to the TVTG. Also, references will be provided at the end of any quote.

or other absolute or relative rights; and 2. is assigned to one or more TT Identifiers;«.¹⁹⁶

Apparently, it is necessary to define the terms *TT System* and *TT Identifier*, too. Which can be found in:

Art. 2 1) b): »TT Systems«: Transaction systems which allow for the secure transfer and storage of Tokens and the rendering of services based on this by means of trustworthy technology;«¹⁹⁷ as well as

Art. 2 1) d): »TT Identifier«: an identifier that allows for the clear assignment of Tokens;«.¹⁹⁸

A verbatim interpretation allows for the identification of several key elements of tokens, which are:

- ▷ information unit
- ▷ representing claims, membership rights, property rights, absolute or relative rights
- ▷ assigned to TT identifier and stored on as well as transferred through a TT system.

In a more intuitive way, a TT identifier could be described as a public key¹⁹⁹ that allows for an assignment of the token to an owner.²⁰⁰ None of these characteristics refer to any distinction between token classes nor asset classes. However, Art 2 1) c) 1. specifies several different rights that can be represented by a token. Although, tokens are not differentiated by the type of right they represent. In a pellucid way tokens can be viewed as a container which may contain almost all sorts of rights.²⁰¹

Furthermore, the introductory article, Art 1 TVTG, describes the purpose and object of this law. Among other clarifications it specifies that tokens are used to represent rights:

Art. 1 1): »This law ...in particular governs a): ...the representation of rights through Tokens ...«.²⁰²

This provision does also use a uniform term for tokens, independent of any specific arrangements or characteristics; this differs a lot from FINMA. Also, in the BuA the government had defined tokens simply as entries

196 Art 2 1) c) TVTG.

197 Art 2 1) b) TVTG.

198 Art 2 1) d) TVTG.

199 A *public key* is a cryptographic combination of numbers, letters or both that is unique and is one half of an encryption code. While the second half, the private key is kept under wraps by its owner. Keys are needed to have tokens at one's disposal (or to transfer them). The identity of the owner can be bound to the public key and therefore serve as identification feature. Bericht und Antrag 54/2019, 146–148; Langer, Das liechtensteinische Steuerrecht, 244.

200 Bericht und Antrag 54/2019, 146–148.

201 Question 2 will be aligning this illustration with the business case(s) introduced in chapter IV.

202 Art 1 1) TVTG.

on a TT system. In its annotations to the draft and application of the TVTG the government even mentions that authorities in other jurisdictions apply the earlier mentioned tripartite when defining the characteristics of tokens. The lawmaker explains that they refrained from such an approach because tokens bared potential to represent many different rights.²⁰³ So, it can be argued that the government's and lawmaker's intention was defining token simply as what it is, namely pieces of information that are recorded on trustworthy (digital) systems without putting it into distinct boxes. This, however, is a rather broad definition and within the provisions of the TVTG no indications are given for a distinction for example between security tokens, equity tokens and currency tokens. It can be assumed that this approach was chosen to promote the token container model and to provide for the greatest degree of technological neutrality and openness. By restraining from a narrow definition, the lawmaker intended to create an environment that allows for a multifaceted token economy.²⁰⁴ However, *lex specialis*²⁰⁵ must be considered, depending on the rights that are represented by the token and so to say contained within the container. The legal classification of a token, ultimately, is linked to the rights it represents, although the TVTG does not distinguish between different token classes.²⁰⁶ It is of critical importance to refer to all relevant laws cumulatively. The TVTG does not replace regulations that previously existed, especially not in terms of supervision and financial market regulation.²⁰⁷

2. Underlying assets – Do the TVTG provisions differentiate between emissions of tokens that represent shares in a company, tokens that represent owning rights in company assets, tokens that represent derivative claims and such tokens that are only representing debt backed by company assets?

Regarding this question, again, it can be referred to the above-mentioned legal norms, codified in Art 2 1) b) to d) TVTG. There is only one kind of tokens and they can contain various different rights, like mentioned above. During the legislative process by consultation questions were raised if the government intends that token can represent the right of ownership of any kind of asset.

The government specified that in some cases it might be necessary to represent different rights than simply ownership. Since, in specific ownership matters other laws might prevent a direct representation of ownership by a token or those laws would be violated if the token were deemed to represent ownership of the respective assets. As an example, tokenization of real estate was introduced. In this case the container would rather represent the legal claim of the right of alienation. For, tokenization of ownership in real estate is incompatible with the land registration provisions of the GBV.²⁰⁸ In this case the token cannot act as what colloquially would be called an ownership certificate for the real estate but rather it only represents the claim of the right of alienation. So, for an actual transfer of a piece of land linked to a token the token would be transferred and, also the GBV provisions would need to be fulfilled.²⁰⁹ However, once an investor becomes owner of a token that contains the aforementioned claim, this investor can demand transfer of property and the proper registration in the cadastre in line with the GBV provisions. So that finally he will also become legal owner of the land.

Like mentioned at the end of the previous chapter, when classifying the legal scope of a token *lex specialis* must be considered that is linked to the nature of the rights which are represented by the token. Another example, additionally to the real estate example can be the following. If tokens represent owning rights in securities that are subject to the WPPG then all WPPG provisions that are applicable to the security are also applicable to the respective token.²¹⁰ Or, in other words, *lex specialis* cannot be ruled out by tokenizing the owning rights (or any other rights) in an asset that would be subject to the *lex specialis*. Those examples illustrate that other laws might be involved, depending on the rights represented by the token and on the type of asset that is intended to be sold (or used as collateral etc.). The tokenization, however, can be brought into accordance with the respective *lex specialis* if the token is formed carefully.

This shows that by the introduction of a container model the lawmaker created provisions that allow for the tokenization of almost any kind of asset. It is achieved through the Art 2 1) c) TVTG bypass of tokenization of several rights instead of only regulating the tokenization of owning rights. According to Art 33 1)

203 Bericht und Antrag 54/2019, 141–142.

204 Bericht und Antrag 54/2019, 41.

205 This is of crucial importance whenever securities and capital market law could be involved.

206 Bericht und Antrag 54/2019, 182–183.

207 If the practitioner is not fully confident regarding his awareness of other laws, it is highly advisable to seek legal consultation.

208 Bericht und Antrag 54/2019, 141.

209 At this point the GBV requirements will not be explained because it would exceed the scope of this thesis. However, basically the transfer of land ownership needs to be registered in the cadastre which is not yet possible through blockchain technology but rather ruled by the provisions in the GBV and involves the office of deeds.

210 Bericht und Antrag 54/2019, 150.

TVTG, additionally, the basic information²¹¹ must elucidate which rights are represented by a token. This could also be intangible rights like claims against future revenues or license fees.

3. Inalienable rights – Can inalienable rights be tokenized? Does tokenization allow for the transfer of rights that are not transferable?

The wording of the provision in

Art. 2 1) c) 1: »1. can represent claims or rights of memberships against a person, rights to property or other absolute or relative rights«²¹²

at first sight does not specify if inalienable rights like limited personal easements, for example the usufruct of Art 216 ff. SR and the right of residence of Art 248 ff. SR²¹³, are also comprised and if they can be transferred with the aid of tokens. Since the verbatim analysis seems to be rather vague and no other provisions can be identified within the TVTG, the historical interpretation of the lawmaker's intention takes a key role. The BuA unveils that the lawmaker intends to permit the transfer of rights with restricted transferability. It mentions the example of registered shares with restricted transferability. However, the government specifies that the transfer of (ownership) rights in such assets requires a sufficient technical design of such tokens. The above-mentioned publication does not refer to usufruct and comparable limited personal easements, though. Instead, it mentions that absolutely non-transferable rights like the personal rights cannot be made transferable through tokenization.²¹⁴ A solution for usufruct and others might be identified with the support of the *lex specialis* argument mentioned in the two previous chapters. In other words, if rights come into existence for example by entry in the land register and are deemed inalienable, they could only be transferred if the token contains a claim to receive those rights. For example, a token could contain a set of rights that lead to registry of a usufruct for the benefit of the token owner (or someone else) upon the token owner's request.

4. Asset – Are tokens assets?

This question sounds quite trivial but contributes a lot to a better understanding of the nature of tokens as well as their function. Like mentioned earlier, tokens

are codified as containers and represent rights.²¹⁵ Therefore, it is quite intuitive to assume that they are not assets themselves. However, the TVTG reads in

Art. 4: »If Liechtenstein Law is applicable according to article 3, the Token is considered to be an asset located in Liechtenstein.«²¹⁶

And the mentioned reads as:

Art. 3: »2) It applies if: a) Tokens are generated or issued by a TT Service Provider with headquarters or place of residence in Liechtenstein; or b) Parties declare its provisions to expressly apply in a legal transaction over Tokens. 3) Articles 4 to 6 and 9 also apply correspondingly to Tokens that do not represent any rights.«²¹⁷

From these provisions it can be concluded that:

▷ some tokens do not represent any rights.

Therefore, the argumentation that a token could not be an asset since it was simply a legal container that represents rights is invalid. At least some tokens might be *empty containers* but would still be governed by this law. A plain example could be a blockchain coin that is used as quasi-monetary exchange medium by some users. Such a medium would not contain any rights but still were valuable to its users. Its value might result from the trust in the mutual acceptance by the participants of the related Blockchain. It can be concluded that empty tokens can be valuable under some constraints (for example, trust into mutual acceptance as means of exchange).

The above-mentioned provisions further lead to a very distinct statement in Art 4:

▷ tokens are assets.

Different from the example of a blockchain coin that could gain value from mutual acceptance, one might still ask if tokens that are not used for quasi-monetary purposes can really bare any value by their own effort. This question cannot be answered in verbatim by the law. However, the lawmaker provided an argument quite similar to the coin argument but still different. The emphasis can be put on the function of tokens as exchange medium. Tokens can be used for the exchange of rights; the token issuer transfers rights to an investor who in return does not necessarily provide monetary value but could also provide other rights to his counterparty. A very simple example could be the following: person A provides the right to use a parking spot on his premises to person B. This parking spot is located in an underground

²¹¹ Basic information is covered in chapter V.C.1 and V.C.2.

²¹² Art 2 1) c) 1. TVTG.

²¹³ Art 216–250 SR lay the provisions for usufruct and the right of residence down by law.

²¹⁴ Bericht und Antrag 54/2019, 143–144.

²¹⁵ See chapter V.A.1 and V.A.2.

²¹⁶ Art 4 TVTG.

²¹⁷ Art 3 2) TVTG.

garage and the gate is accessible only by a barcode linked to the token that can be stored on a wallet²¹⁸ application on smartphones. Also, B is allowed to share his usage right with friends, family or if he wants even strangers. In return, B provides A with the right to occasionally use the swimming pool in the backyard owned by person B, which also is in an electronically restricted area. To both parties the rights they receive are of some value otherwise they would not agree on the contract.²¹⁹ Without the token the access to the parking lot and the swimming pool would be more complicated and the (garage) access rights could not easily be passed to other people. Therefore, it can be argued that the token which bares those rights indeed has some inherent value. Apparently, the lawmakers must have inferred in some similar way but probably on a more theoretical level than this handy example. Nonetheless, some might still be not fully convinced on the asset character of tokens. Under Liechtenstein law, however, to those shall be responded it is undisputed that the lawmaker's intention and the government's suggestion was to codify tokens as asset, no matter if and which rights they represent.²²⁰

5. Issuer – Is it possible for any Liechtenstein SME to emit tokens?

The first and rather neglectable question is if the law at all applies to issuers or token generators situated in Liechtenstein. This can easily be answered from the verbatim:

Art. 3: »1) This chapter governs the qualification of Tokens and their disposal on TT Systems under civil law. 2) It applies if: a) Tokens are generated or issued by a TT Service Provider with headquarters or place of residence in Liechtenstein; or b) Parties declare its provisions to expressly apply in a legal transaction over Tokens. 3) Articles 4 to 6 and 9 also apply correspondingly to Tokens that do not represent any rights.«²²¹

218 Wallets are used to administer tokens. A *wallet* can be understood as digitalized purse that contains one or more public keys related to tokens or addresses of tokens or cryptocurrency. The person who has access to the wallet can dispose over those tokens. For example, a wallet can contain Bitcoins and might be used to pay for goods in Bitcoin units; but it could also contain a utility token that allows for access to restricted areas like the above-mentioned. *Langer*, Das liechtensteinische Steuerrecht, 244; *Bundesrat*, Beantwortung Postulate Schwaab/Weibel 06/2014, 8 and 30.

219 And in this case at least person B could transfer his right to use to someone else.

220 Bericht und Antrag 54/2019, 184.

221 Art 3 TVTG.

The law may even be applicable to parties that are situated outside of Liechtenstein but make use of the opt-in provision in section 2) b). This provision was also intentionally included to the TVTG by the government.²²² The definition of a token issuer might be of greater importance. Since it is imaginable that there are some provisions a SME cannot fulfill. However, the TVTG reads in the statutory definitions in

Art. 2 1) g): »Token Issuance«: the public offering of Tokens;«²²³

and in

Art. 2 1) k): »Token Issuer«: a person who publicly offers the Tokens in their own name or in the name of a client;«²²⁴

The law imposes no restraints on the emission of tokens except that the offering needs to be publicly. However, blockchains themselves are usually publicly distributed databases or ledgers and tokens are stored as well as exchanged on blockchains.²²⁵ In the TVTG also no other articles could be identified that restricted the token emission in any other way. Solely, Art 12 imposes registration duties on those who intend to emit a token and Art 30 icw. Art 31 define the obligation to compile and publish basic information and to display the token issuance. The wording of both can be analyzed to investigate if these requirements could potentially affect the ability of Liechtenstein KMU to emit tokens:

Art. 12: 1) Persons with registered office or place of residence in Liechtenstein who wish to professionally act as TT Service Providers must apply to be entered into the TT Service Provider Register in writing (article 23) with the FMA before providing a service for the first time. 2) Token Issuers with headquarters or place of residence in Liechtenstein who issue Tokens in their own name or in the name of a client in a non-professional capacity must apply to be entered into the TT Service Provider Register in writing with the FMA before beginning their activity of Tokens in the amount of CHF 5 million or more will be issued within a period of twelve months.²²⁶

Apparently, subparagraph 1) does not refer to SMEs but rather to professional TT service providers. The provisions concerning SMEs though are also quite broadly defined. It can be summarized from the wording that SMEs

222 Bericht und Antrag 54/2019, 176.

223 Art 2 1) g) TVTG.

224 Art 2 1) k) TVTG.

225 See chapter II.B.

226 Art 12 TVTG.

emitting tokens in their own name²²⁷ do not even need to apply for registration in the TT service provider register if their emission remains below CHF 5 million within a year. Otherwise, a registration is inevitable. The lawmaker justifies the exception by stating that the provision primarily served the purpose to protect investors in large emission or such who buy whenever professional TT service providers are involved.²²⁸ The registration requirements are codified in Art 13 TVTG in detail. Some of the provisions might be challenging especially for micro enterprises, for example the capital requirement of Art 16 TVTG. However, the requirements still do not exclude any enterprise from token emission. Since they still could call on the services of a TT service provider instead.²²⁹ Therefore, these provisions will not be quoted in detail. Furthermore, the Art 13 to 23 contain several provisions that mainly apply to professional TT service providers, including details about the register and the registration form or exclusion from rendering a TT service if the reliability violates certain criteria.²³⁰ None of these are applicable to a Liechtenstein SME, under the presumption that the business operation of the SME is anything except providing TT services.²³¹

In Art 30 TVTG provisions regarding the publication of basic information are stipulated. However, those requirements do also not limit the group of those who are permitted to emit tokens.²³²

6. Investors – Who can invest in a Liechtenstein SME when tokenization is used to administer the financing? Are foreigners eligible to be financing contract partners of a Liechtenstein SME when tokens are used?

In the TVTG no norm could be identified that regulates specifically the nationality or country of residence of token purchasers. There might be provisions in the residence country of investors that prohibit them from buying assets in Liechtenstein. An analysis of the lawmaker's intentions based on the BuA also does not lead

to many insights. Although, it mentions that consumers may not be disadvantaged by token issuers when the opt-in provision of Art 3 TVTG is used, compared to the regulations of the laws applicable in the country of residence of the consumers. However, tokens are containers that represent rights and contractual agreements. Depending on the (tangible or intangible) asset the represented rights are referring to, regulations might be applicable that would be applied if those rights were executed in other ways than with the aid of tokenization. For example, when the sale of a specific asset or the usage as collateral were conducted in the common non-tokenized legal and business environment.²³³

B. Token Transfer and Transfer of Rights, Storage of Tokens and Keys, Lost Key, Collateral

Tokenization will only be a vivid instrument if tokens (and represented rights) can be transferred. Storage of tokens and keys might make matters easier for some investors that are not as technophilic as others. Historically the loss of keys to crypto wallets led to losses of tremendous crypto treasures. Therefore, some might be afraid of key loss. Hence, it is in the interest of potential investors and of issuers and worthwhile to investigate the following questions:

- ▷ Question 1: How are tokens and rights represented by tokens transferred according to the TVTG?
- ▷ Question 2: How are tokens stored according to the TVTG?
- ▷ Question 3: How are keys stored according to the TVTG?
- ▷ Question 4: Can lost keys be redeemed or replaced according to the TVTG?
- ▷ Digression: Can tokens be used as collateral and/or represent collateral rights?

The legal norms listed in Table 5 down below were identified in a first step and build the initial point for a comprehensive analysis of each question.²³⁴

227 »Or in the name of a client in a non-professional capacity«, Art 12 2) TVTG.

228 Bericht und Antrag 54/2019, 218.

229 TT service providers could generate and offer the tokens for them. In this case, of course, the SME emission would also not be limited in any way.

230 Please note that the unofficial English translation of the TVTG contains an error in Art 14 1) a) as well as b), where it incorrectly reads »they have not« instead of »they have«.

231 The purpose of this thesis, briefly, is to analyze if and how non-TT services proving Liechtenstein SME can facilitate the TVTG to finance themselves with the aid of tokenization. Therefore, those provisions are not within the scope of the analysis that is performed within this publication.

232 Details regarding the basic information, therefore, will be discussed in chapter V.C.1 and V.C.2.

233 The scope of this thesis cannot be extended to a civil law analysis concerning the sale (or usage as collateral) of any specific asset category under the Liechtenstein laws nor foreign laws. However, if it is assumed that any foreign investor can buy any Liechtenstein asset then also any foreigner would be legally able to enter a financing contract that is facilitated with the aid of tokenization.

234 Again, the same methodology as in chapter V.A is applied which was outlined earlier in chapter III.C.

	Legal norms, all are referring to TVTG if not mentioned differently
Question 1	Art 2 1) e); Art 5; Art 6; Art 7; Art 9; Art 38 1) SR
Question 2	Art 2 1) n) to o); Art 5 1) and 2); Art 6 1) and 2); Art 9; Art 17 1) d); Art 16 1) c); Art 25 1)
Question 3	Art 2 1) m); Art 16 1) b); Art 17 1) c); Art 25 2) and 4)
Question 4	Art 10; Art 17 1) c)

Table 5: Overview of legal norms concerned by chapter V.B.

1. Transfer of tokens and rights represented by tokens – How are tokens and rights represented by tokens transferred according to the TVTG?

Tokenization might serve as a new method of providing funds to small and medium-sized enterprises. However, investments into such tokens are only half as attractive as they could be when investors cannot sell or transfer the tokens they own. Therefore, it is important to conduct an analysis of the conditions and the provisions regarding the transfer of tokens and of rights represented by tokens. Since, without transferability there will never be a secondary market.²³⁵

In the TVTG the following articles need to be considered in verbatim:

Art. 5: »1) The TT Key holder has the power of disposal over the Token. 2) It is further assumed that the person possessing the power of disposal over a Token also has the right to dispose of the Token. For every previous holder of the power of disposal, it is presumed that he was the person possessing the right of disposal at the time of his ownership...«²³⁶

and

Art. 6: »1) Disposal is: a) the transfer of the right of disposal to the Token; or b) the justification of a securities or a right of usufruct to a Token.«²³⁷

Like stated verbatim, the condition for transferability is that the person who intends to transfer the token has full power of disposal²³⁸ and the transfer of the token takes place by transferring the power of disposal. Alternatively, a collateral agreement could be set up or usufruct could be established.

The lawmaker intended that rights represented by a token are transferred with the token.²³⁹ This is codified in

Art. 7 1): »1) Disposal over the Token results in the disposal over the right represented by the Token.«²⁴⁰

The wording clearly shows, the intention is fulfilled, when the power of disposal of the token is transferred also the rights represented by the token will be transferred.

The receiving person (eg the buyer) will become at disposal once three conditions are fulfilled:

- ▷ the transfer of the token is settled according to the rules of the TT system²⁴¹
- ▷ the transferring and receiving party have agreed on transfer of the power of disposal or on the establishment of a restricted in rem right²⁴²
- ▷ the transferring entity was free to dispose.²⁴³

Like showed above, according to Art 7 1) TVTG then also the right contained within the token is disposed. Article 9 specifies the conditions for a bona fide transaction.²⁴⁴ They depend on the respective asset.²⁴⁵ They should also be evaluated in the respective transfer. The action of a token transfer going hand in hand with the transfer of disposal of represented rights, is called a »[translated by the author] coordinating instruction« by the lawmaker²⁴⁶ as they occur coordinated with each other.

The verbatim of Art 7 2) is as follows:

»2) If the legal effect under (1) does not come into force by law, the person obliged as a result of the disposal over the Token must ensure, through suitable measures, that: a) the disposal over a Token directly or indirectly results in the disposal over the represented right, and b) a competing disposal over the represented right is excluded.«

Like quoted above, the transfer of rights represented by a token through disposal of the token is restricted to those rights that are transferable by law. This was already slightly mentioned above in the chapters V.A.2 and V.A.3. In some cases, rights are ought to be transferred that require additional or different steps codified by special law until the power of disposal can actually be

²³⁵ Nägele, Sekundärmarkt, 10.

²³⁶ Art 5 1) to 2) TVTG.

²³⁷ Art 6 1) TVTG.

²³⁸ In conjunction with the assumption of Art 5 2) TVTG.

²³⁹ Bericht und Antrag 54/2019, 165.

²⁴⁰ Art 7 1) TVTG.

²⁴¹ Art 6 2) a) TVTG.

²⁴² Art 6 2) b) TVTG.

²⁴³ Art 6 2) c) TVTG.

²⁴⁴ Art 9 TVTG.

²⁴⁵ Bericht und Antrag 54/2019, 209.

²⁴⁶ Bericht und Antrag 54/2019, 168.

transferred. In those cases, like mentioned by the above quoted provision, the obligated person²⁴⁷ is required to fulfill the conditions as required to perform the actual transfer of the rights contained within the token. Those requirements depend on the respective rights or the respective assets and are codified in special laws. A handy example would again be the transfer of property rights in real estate which requires obedience to the GBV and SR.²⁴⁸ Property rights in real estate cannot be transferred unless the transfer is recorded in the land register.²⁴⁹ Furthermore the contractually agreed transfer is proven by a written contract that bears legally attested signatures.²⁵⁰ These conditions have suspensive effect.

As introduced in chapter IV especially the transfer of debt contracts is relevant for the financing of SMEs. Since it is a direct alternative to bank loans. Rights certified by such contracts can be relatively easy transferred by a transfer of a token representing the rights to receive the repayment and connected interest payments.²⁵¹ Shareholder rights can either be granted to them through book-entry securities, through securities or without any security character.²⁵² Depending on their form different forms and regulations for their transfer are applicable, represented by Figure 8 below.²⁵³

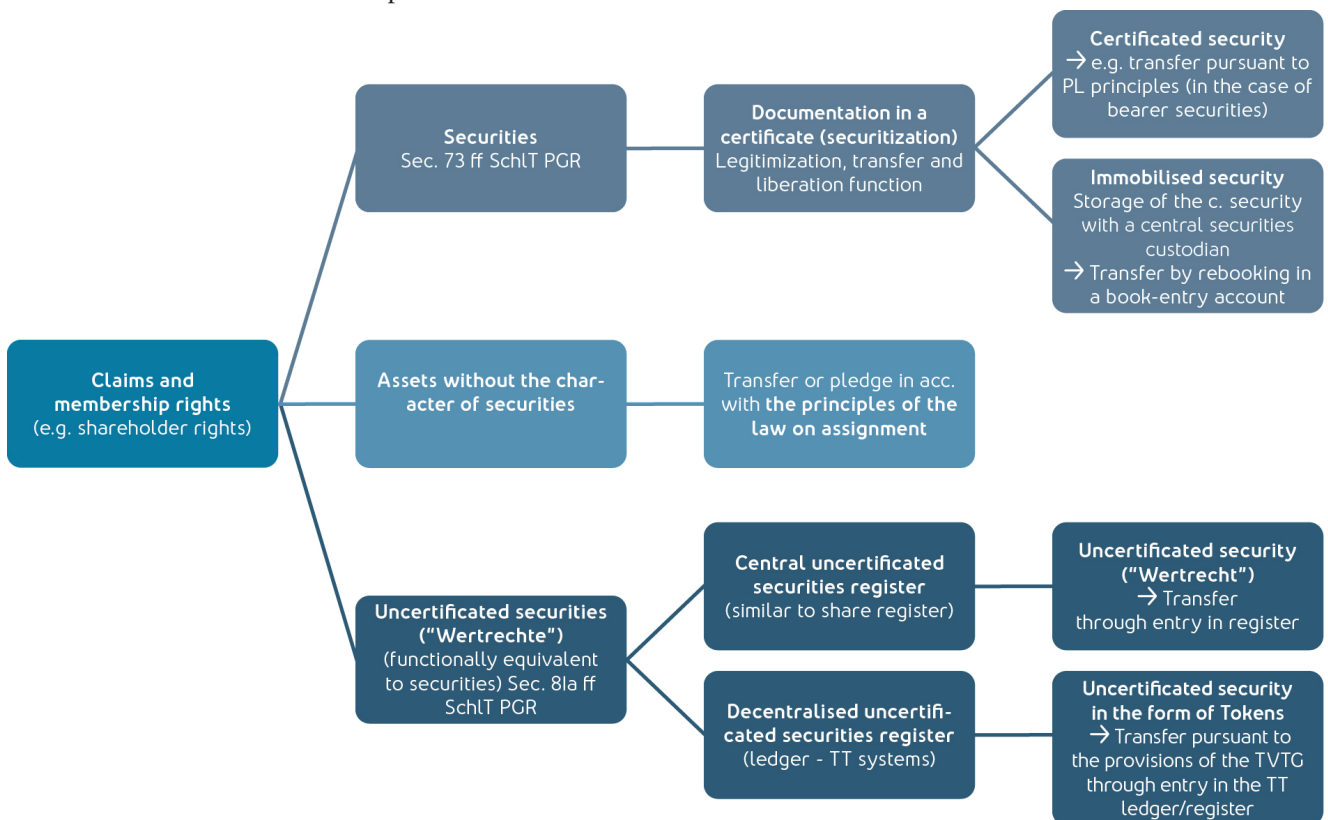


Figure 8: Forms and regulations of transfer for different types of claims and membership rights

247 The transferring person.
 248 Also see chapter V.A.2.
 249 Art 38 1) SR.
 250 Art 44 1) a) and 2) GBV.

251 *Layr/Marxer*, Rechtsnatur und Übertragung, 14.
 252 For further information also refer to *Nägele*, Sekundärmarkt, 13; *Layr/Marxer*, Rechtsnatur und Übertragung, 15–19.
 253 This graph was derived from *Nägele*, Sekundärmarkt, 13; which should be considered for further information.

The regulations concerning disposal were adopted from the SR.²⁵⁴ Therefore, the relation between the right of disposal and the power of disposition can be illustrated as follows. TT keys allow for disposal over tokens, they are used by the holder of the right of disposal to identify himself as holder of the right of disposal. With the aid of the TT key, he can prove that he is free to dispose over the token.²⁵⁵ If a valid disposal of a token was conducted it leads according to the law to a disposal over the represented right.²⁵⁶ The power of disposition and the right of disposal can fall apart if the person that holds the right of disposal transfers the power of dispositions to another entity or person, based on a custody agreement. For example, person A is the holder of the right of disposal over a token which represents property rights in a luxury watch and by a custody agreement A has ordered a TT service provider (B) to hold or keep the token in safe custody. By this order A has transferred the power of disposition to B without giving up or transferring his right of disposal.²⁵⁷

2. Token Storage – How are tokens stored according to the TVTG?

In the TVTG two roles are codified that can hold or safeguard tokens on account of others. These are:

Art. 2 1) n): »TT Token Depository«: a person who safeguards Token²⁵⁸ in the name and on account of others;«²⁵⁹

as well as

Art. 2 1) o): »TT Protector«: a person who holds Tokens on TT Systems in their own name on account for a third party;«²⁶⁰.

The lawmaker identified embezzlement by the TT token depositary or TT protector as a risk associated to the token economy. In consequence internal and control mechanisms²⁶¹ are codified as well as a minimum capital requirement²⁶². The first mentioned includes the duties

of »establishing suitable security measures which in particular prevent the loss or abuse of TT Keys; ... the clear assignment of Tokens to customers; ... the execution of customers' orders in line with contracts; ... (and) the maintenance of the services in the event of interruptions.«²⁶³

By the above-mentioned norms, which cover the aspects of abuse, loss, confusion and business continuity management, the lawmaker's intention appears to be implemented in the TVTG.²⁶⁴ Additionally, the duty to separate clients' tokens from the TT token depositary's assets in case of bankruptcy was introduced so that user's tokens remain separated from the service providers assets.²⁶⁵ It requires that those tokens were transferred via TT systems. For such a transfer, requirements stated by Art 5 need to be fulfilled. Namely that »the TT Key holder has the power of disposal over the Token (and) ... the right to dispose of the Token.«²⁶⁶ The disposal of a token requires a »transfer of the right of disposal«²⁶⁷ which can only take place if »the transfer is concluded in line with the regulations of the TT System.«²⁶⁸ Therefore, tokens cannot be transferred without involving a TT system. However, there might be situations in which the transferring party did not possess the right of disposal.²⁶⁹ In such cases the recipient party is protected by law if he was acquiring the tokens in good faith, according to the conditions of Art 9 TVTG.²⁷⁰ Furthermore, the lawmaker specifies that situations like key loss or theft are excluded from the bona fide norm.²⁷¹ So, if for example the right to dispose of tokens that were stolen is transferred to a token depositary, then this transfer remains invalid.

The security against manipulation of blockchains²⁷² (or TT systems) and their immutability constitute the conditions required for a conviction of a bona fide transaction. Concerning moveable properties bona fide transactions require a sufficient conviction of good faith with can be concluded from the possession of the property.²⁷³ Such a conviction could result from a confirmed portfolio account statement.²⁷⁴ When applying the underlying logic to TT systems it can be concluded that a sufficient conviction can result from a registry entry naming the transferring party as the party possessing the right of disposal.

254 Layr/Marxer, Rechtsnatur und Übertragung, 17–18.

255 Art 2 1) e) TVTG.

256 Nägele, Sekundärmarkt, 11; Art 7 1) TVTG.

257 Regierung des Fürstentums Liechtenstein, Stellungnahme der Regierung an den Landtag des Fürstentums Liechtenstein zu den anlässlich der ersten Lesung betreffend die Schaffung eines Gesetzes über Token und VT Dienstleister (Token- und VT-Dienstleister-Gesetz; TVTG) und die Abänderung weiterer Gesetze aufgeworfenen Fragen (BuA Nr 93/2019) (2019) 30; hereafter quoted as: Bericht und Antrag 93/2019.

258 This word is mistranslated and translates instead as: »Tokens« in plural.

259 Art 2 1) n) TVTG.

260 Art 2 1) o) TVTG.

261 Art 17 1) d) TVTG.

262 Art 16 1) c) TVTG.

263 Art 17 1) d) 1, 3. to 5. TVTG.

264 Bericht und Antrag 54/2019, 43.

265 Art 25 1) icw. Art 17 1) d) 2. TVTG.

266 Art 5 1) and 2) TVTG.

267 Art 6 1) a) TVTG.

268 Art 6 2) a) TVTG.

269 Bericht und Antrag 54/2019, 208.

270 Art 9 TVTG.

271 Bericht und Antrag 54/2019, 209.

272 Refer to chapter II.B for the definition of a blockchain.

273 Subhash/Knobl, Die Schaffung und Übertragung von Wertrechten via Blockchain-Technologie, wbl 33 (2019) 617–618.

274 Micheler, Wertpapierrecht zwischen Schuld- und Sachenrecht (2003) 252–287.

3. Key Storage – How are keys stored according to the TVTG?

For those who do not want to store their private key²⁷⁵ on a personal smartphone or other device²⁷⁶, maybe due to the risk of theft or losing it, the role of a TT key depositary is codified in

Art. 2 1) m): »TT Key Depositary«: a person who safeguards TT Keys for clients;«²⁷⁷

The verbatim purpose is obvious. This entity is ought to store private keys for TT system users to increase security. The lawmaker was aware of at least three types of TT key depositaries²⁷⁸:

- ▷ wallet providers: they store keys on servers and therefore provide protection against loss or theft of physical storage media;
- ▷ offline storage providers: they store keys disconnected from the internet and provide protection against hacking as well as loss or theft of physical media that are privately stored;
- ▷ crypto exchanges: they register keys to the account of their user and execute cryptocurrency transactions automatically without requirements to enter the key again into the system.

The lawmaker identified the risk that depositaries could either misuse their access to the stored information, or that in case of bankruptcy the keys would become part of the liquidated assets and were used to satisfy creditors.²⁷⁹ To increase confidence of the users, it introduced the duty to separate clients' TT keys from the TT key depositary's assets in case of bankruptcy.²⁸⁰ Also several internal and control mechanisms need to be met in order to obtain receive a registration²⁸¹ as TT key depositary and a minimum capital requirement is in place²⁸².

4. TT Key Loss – Can lost TT keys be redeemed or replaced according to the TVTG?

The verbatim analysis shows that the law contains provisions for cases if

- 275 A *private key* is a sequence of numbers and symbols that permits access to tokens or coins that are assigned to this private key. Private keys need to be stored secretly like passwords or bank vault keys to prevent unauthorized disposal over tokens. *Langer*, Das liechtensteinische Steuerrecht, 244.
- 276 Keys can be stored on private media; Bericht und Antrag 54/2019, 42.
- 277 Art 2 1) m) TVTG.
- 278 Bericht und Antrag 54/2019, 76–77.
- 279 Bericht und Antrag 54/2019, 77.
- 280 Art 25 2) and 4) iew. Art 17 1) c) 2. TVTG.
- 281 Art 17 1) c) TVTG.
- 282 Art 16 1) b) TVTG.

Art. 10 1): »...a TT Key is unaccounted for or a Token is otherwise not functional...«²⁸³

By including a provision for malfunctioning tokens, the lawmaker intends to provide protection against programming errors.²⁸⁴ The more likely situation, though, might be a loss of the key. Like losing a wallet is a real world horror scenario, losing the TT key can result in even more severe financial damage which the lawmaker intends to prevent.²⁸⁵ When applicable, the litigation will take place at the Landgericht and the applicant, ie the person whose key got lost or is malfunctioning, is required to present proof that convinces the court of its power of disposal as well as the loss or disfunction.²⁸⁶ The »...person obliged from the right represented in the Token.«²⁸⁷ acts as the legal respondent during the lawsuit.

If the court agrees on the applicant's argumentation, »...the Token (shall be) cancelled in non-contentious proceedings.«²⁸⁸ It is the lawmaker's intention that the exact same TT key cannot be recovered. This provision aims at ensuring the integrity of the TT system as such.²⁸⁹ In consequence of the cancellation of the TT key²⁹⁰, the following provision will come into effect:

Art. 10 5): »The applicant may also assert their right without the Token upon cancellation or demand the generation of a new Token at their own expense.«²⁹¹

Furthermore, TT key depositaries are obligate to put measures into place that prevent the loss of keys stored by them.²⁹²

5. Digression – Can tokens be used as collateral and/or represent collateral rights?

The lawmaker specifies that tokens can also be subject of a lien and that tokens can fulfill the legal scope of collateral or of legal institutions that were developed by the legal practice. The lawmaker further listed several of those legal institutions and clarified that not only can tokens be subject of a lien, but they could also (even at the same time) represent a right of lien that concerns

283 Art 10 1) first half TVTG.

284 Bericht und Antrag 54/2019, 211.

285 Bericht und Antrag 54/2019, 39 and 76.

286 Art 10 2) TVTG.

287 Art 10 3) TVTG.

288 Art 10 1) second half TVTG.

289 Bericht und Antrag 54/2019, 75.

290 Which shall be published according to Art 10 4) TVTG.

291 Art 10 5) TVTG.

292 Art 17 1) c) 1. TVTG.

an article of property.²⁹³ Although, the matter is too interesting for fully withholding it from the reader. For further details it is recommended to refer to the mentioned source, since a detailed discourse of those matters would exceed the purpose and scope of the discussion at this point.²⁹⁴

C. Duties of Issuer, Physical Validation and FMA-Supervision

The tokenization process, the issue of tokens might also involve supervisory and prospect duties as well as diligence roles. Therefore, again based on involved legal issues an inspection of the TVTG provisions will be conducted below. The considered questions comprise:

- ▷ Question 1: Are prospectus duties regulated by the TVTG?
- ▷ Question 2: Are those provisions applicable to all SMEs who intend to finance growth and investments by tokenization, too?
- ▷ Question 3: Who validates the authenticity of tangible or intangible assets that underlie the emitted token?
- ▷ Question 4: Are any measures codified to prevent illegal money from being used for token purchases; who is supposed to authenticate the origin of invested funds?
- ▷ Question 5: Does the TVTG contain provisions concerning a supervisory authority?

The legal norms listed in Table 6 down below were identified in a first step and build the initial point for a comprehensive analysis of each question.

	Legal norms, all are referring to TVTG if not mentioned differently
Question 1	Art. 2 1) h); Art 17; Art 30–35; Art 6 LV; Art 4 WPPG
Question 2	Art. 30; Art 31
Question 3	Art. 2 1) p); Art 16 1) e); Art 17 1) e); Art 33 1) f)
Question 4	Art. 2 1) k) and m) to q); Art 3 3) a) BankG; Art 2 1) l ^{bis}) SPG; Art 3 3) h) SPG; Art 3 1) r) to t) SPG; Art 5 2) SPG; Art 9 5) SPG; Art 9b 2a) SPG; Art 17 SPG; Art 20 SPG
Question 5	Art. 12–13; Art 18–19; Art 23; Art 30c); Art 39; Art 43

Table 6: Overview of legal norms concerned by chapter V.C.

²⁹³ Bericht und Antrag 54/2019, 173–175.

²⁹⁴ Also refer to *Layr/Marxer*, Rechtsnatur und Übertragung, 14–16.

1. Basic information – Are any prospectus duties regulated by the TVTG?

Until the introduction of the TVTG prospect duties based on the European regulatory framework²⁹⁵ were primarily codified in the WPPG²⁹⁶ and would be applicable for example for the emission of stocks.²⁹⁷ As scholars outline, tokens would be covered by those provisions too under certain requirements, depending on their characteristics. *Langer and Nägele* analyzed those criteria and the applicability of the WPPG before the introduction of the TVTG.²⁹⁸ However, the TVTG in Art 30 TVTG introduced provisions regarding the publication of so-called basic information specifically for tokens. These legal norms refer to tokens as such rather than only to tokens that for example represent proprietary rights in a stock company.

Basic information is legally defined as:

Art. 2 1) h): »Information about Tokens to be offered to the public, enabling the user to make a judgement about the rights and risks associated with the Tokens as well as the TT service providers.«²⁹⁹

Therefore, this publication fulfills the aim to inform potential investors about the purpose of a token emission which can be determined from the rights it represents. Also, this publication duty provides information for risk assessment. During the application process the government emphasized that the basic information primarily aims for protection of investors' rights and interests.³⁰⁰ The lawmaker drew an analogy between the basic information and the so-called white paper which is usually released by token issuers to the public during an ICO.³⁰¹

The provisions concerning basic information are found in

Art. 30: »Subject to (31)³⁰², before issuing Tokens Token Issuers must: a) prepare basic information according to the following provisions; b) publish the basic information in an easily accessible way; and c) report the Token Issuance to the FMA.«

²⁹⁵ European law exceeds the scope of this thesis which does focus on national enforcement. However, for a review of the European regulation especially refer to the Directive 2003/71/EC of the European Parliament and of the Council of 4 November 2003 on the prospectus to be published when securities are offered to the public or admitted to trading and amending Directive 2001/34/EC.

²⁹⁶ [German: Wertpapierprospektgesetz], for [translated by the author] Securities Prospectus Law.

²⁹⁷ *Langer/Nägele*, IWB 6/2018, 244.

²⁹⁸ For further details on their analysis please refer to *Langer/Nägele*, IWB 6/2018, 244.

²⁹⁹ Art 2 1) h) TVTG.

³⁰⁰ Bericht und Antrag 54/2019, 79.

³⁰¹ Bericht und Antrag 54/2019, 151.

³⁰² This refers to Art 31 TVTG; the reference has gotten lost by translation.

Before issuance, as stated in the law token issuers are required to

- ▷ prepare,
- ▷ and publish the information in an easily accessible way.

Additionally, the law demands from TT service providers when they act as token issuers »(to disclose) ...basic information (articles 30 to 35) ...for at least ten years afterwards;«³⁰³.

Some further requirements to the basic information are ruled in Art 32 TVTG which can be summarized as:

- ▷ »...easy to analyse and understand,
- ▷ ...in one or several documents ...[with] a brief summary
- ▷ ...published in German or English.«³⁰⁴

Especially the latter provision is notable since German is the exclusive official language in Liechtenstein which even is codified by the constitution.³⁰⁵ This provision expresses the openness to foreign (non-German speaking) business and willingness to attract investors and token issuers from abroad.³⁰⁶ Several representatives inquired the government regarding different aspects of this norm codified in Art 32 4) TVTG, although, none directly addressed legal risks that could result from this provision. The historic analysis at least unveils some arguments the government used to justify the language choice. Those revolve around English as commonly used business language and that an English-speaking publication would provide a greater protection of investor's rights to some. Such arguments do not address the potential collision with the constitution, though.³⁰⁷

The required contents of the basic information are stipulated by Art 33 TVTG and will not be reproduced here in detail. Mainly, the involved TT systems, purchase, and transfer provisions, represented rights, risks, and involved TT service providers are required to be published. The following two articles then codify

addendum and liabilities for incorrect or incomplete basic information.³⁰⁸

Depending on the situation, different liabilities for different entities will result. For example, for the physical validator or the token issuer. From Art 35 1) icw. Art 33 3) and 4) results that »those who are responsible for the content... (and) ...those who are responsible for the technical and legal functionality of the Token«³⁰⁹ will be held responsible if damages result from a lack of care as prudent businessman while preparing the basic information.³¹⁰ Several situations can lead to liabilities claims against physical validators, too. As stated in Art 17 1) e) they are liable »in the event that rights to property guaranteed by the Physical Validator cannot be enforced in accordance with the contract;«³¹¹ The government clarified that physical validators can be held liable if the holder of the right of disposal of the token is unable to execute his claims due to misconduct of the physical validator.³¹² Proper behavior would involve best efforts to safeguard the ability to execute claims and rights of disposal. This might involve holding the tokenized item in custody, for example in a safe. If the validator does not want to hold it in custody or cannot hold it in custody because it is intangible, too large, too heavy, or too far away the physical validator could also fulfill its duties by entering an insurance or guarantee agreement with an insurance provider or someone who offers such contracts.³¹³ There might be a multitude of other situations that can lead to liability claims against TT service providers or token issuers, especially fraudulent statements in the basic information. Capturing all possible claims and all opportunities of fraud and misconduct, though, would exceed the boundaries of this thesis.³¹⁴

Like introduced earlier, there is a parallelism to the WPPG which the lawmaker intended, for example concerning legal definitions.³¹⁵ From the wording of the mentioned provisions follows that the supervisory authority though is not required to approve any of the publications. This is a remarkable deviation from the approval process codified by the WPPG.³¹⁶ The lawmaker argues that this logic results from the matter of fact that not all token emissions serve investment purposes and not all tokens are bought with financial or yield prospects. Therefore, the basic information served a broader audience and a

303 Art 17 1) a) 1. TVTG.

304 Art 32 TVTG.

305 Art 6 LV.

306 Since the official language is German, it is likely that courts would demand a translation by an acknowledged translator. However, if the dispute concerns the very wording of an English-speaking document it is difficult to anticipate if a translation to German would be sufficient and which procedures or ruling were implemented by a court. A comparison to WPPG shows that Art 10 WPPG at least requires the publication of a German translation of a summary to the prospectus. Although an exclusively English publication is permitted, it is advisable to publish it also in German to seek for greater audience and prevent from any complications.

307 Bericht und Antrag 93/2019, 54–55.

308 Art 33–35 TVTG.

309 Art 33 3) and 4) TVTG.

310 Art 35 1) icw. Art 33 3) and 4) TVTG.

311 Art 17 1) e) TVTG.

312 Bericht und Antrag 54/2019, 235.

313 Bericht und Antrag 54/2019, 237.

314 Further remarks regarding the physical validator will be presented in chapter V.C.3.

315 Bericht und Antrag 54/2019, 79.

316 Art 4 WPPG explicitly requires prospectuses to be approved [by the FMA].

broader purpose than security prospectuses.³¹⁷ In consequence, there are also further exceptions codified by the TVTG, of which one application that bears relevance for SMEs will be covered by the next chapter.

Additionally, it is crucial to emphasize that publication provisions resulting from special law, for example concerning securities, are not ruled out by the TVTG but rather have precedence.³¹⁸

2. Basic information – Are those provisions applicable to all SMEs who intend to finance growth and investments by tokenization, too?

When investigating this question, the following provision figures prominently:

Art. 31 1): »The obligations pursuant to article 30(a) and (b) shall not apply for public offerings of Tokens if: ...b) the offer is geared towards fewer than 150 users; c) the sale price of the total issue does not exceed 5 million Francs or the corresponding equivalent in another currency; or d) there is already an obligation to publish qualified information about the public offering of Tokens according to other laws.«³¹⁹

First of all, we can see that this exception provision cannot be applied to Art 30 c) TVTG. Therefore, SMEs in any case are required to report the token emission to the FMA. They are exempted though from the preparation and publication of the basic information, under three alternative conditions:

- ▷ their tokens are offered to less than 150 users or investors or
- ▷ the emission values for a maximum of 5 million Swiss Francs or the corresponding value, if emitted in another currency or
- ▷ they are already obligated to other comparable publication duties³²⁰, e.g, due to norms of the WPPG.

This norm is especially helpful for businesses that are not engaged with finance a lot during the conduct of their business, for example a local woodwork company, a restaurant owner, or a paver. The government stated during the law-making process that they intended to unburden token issuers from excessive bureaucracy.³²¹

Additionally, if TT service providers are involved in the token emission, Art 31 1) a) allows for a waiver of the publication duty, if: »all recipient parties demonstrably declare that they waive the basic information before acquiring the Token;«³²². The lawmaker's intention for such an opt-out clause is founded on the requirement that such a waiver needs to be stated and recorded explicitly rather than conclusive.³²³ Furthermore, if tokens are traded with exclusion of the public³²⁴ or if they are *mined*³²⁵ the lawmaker's intention is that those are not subject to the TVTG, too.³²⁶

3. Physical Validator – Who validates the authenticity of tangible or intangible assets used to back the emitted token?

Evidence for an entity or person that validates the authenticity of assets that are connected to tokens can be found firstly in

Art. 2 1) p): »Physical Validator: a person who ensures the enforcement of rights in accordance with the agreement³²⁷, in terms of property law, represented in Tokens on TT systems;«³²⁸

Also, in

Art. 33 1): »[translated by the author] Basic information must in particular include ...f): for the issuance of Tokens that do represent property rights³²⁹: 1. evidence of a registered Physical Validator regarding ownership of the property; and 2. a confirmation from a registered Physical Validator, that the rights registered in the issued Tokens are also enforceable in line with the basic information.«³³⁰

relevant provisions are stipulated. These norms show that whenever the represented rights are rights in terms of property law a physical validator fills a role as enforce-

317 Bericht und Antrag 54/2019, 79–80. This thesis will not further cover provisions resulting from other laws, for example from the WPPG since its main purpose is an analysis of the TVTG provisions and their intentions.

318 Bericht und Antrag 54/2019, 275.

319 Art 31 1) TVTG.

320 Legal advice might be helpful to determine other involved laws when undertaking a tokenization project.

321 Bericht und Antrag 54/2019, 274.

322 Art 31 1) a) TVTG.

323 Bericht und Antrag 54/2019, 275.

324 Such deals are also called *over the counter* transactions.

325 *Mining* is a term that is used for some blockchains that reimburse network participants for verifying the authenticity of transactions. These technical aspects are not of greater importance for this study and therefore not covered more in-depth.

326 Bericht und Antrag 54/2019, 81.

327 This refers to the agreement between token issuer and token owner which stipulates the rights represented by a token. Issuer and owner fall apart whenever the issuer sells tokens either OTC or in a public emission to an investor or user. In many, not all cases this agreement is published as basic information; see chapter V.C.1.

328 Art 2 1) p) TVTG.

329 This sentence is mistranslated as: »for the issuance of Tokens, the rights to property represent« in the unofficial translation published by the Liechtenstein government. Therefore, this provision was translated by the author.

330 Art 33 1) f) TVTG.

ment entity. To validate this, it can be argued that the lawmaker intended to create an interface between the analogous world and blockchain technology. While the token certifies authenticity, origin, and value of a right or of assets, the physical validator ensures that the represented goods and rights do actually exist and are properly stored.³³¹ The lawmaker's intention was creating such a connecting entity between the token and the right that is represented by the token to ensure that the rights can be executed.³³² Like mentioned in the law the validator is testifying that the rights represented by the tokens are enforceable. By this, he plays a vital role whenever property and property rights shall be transferred. In case he notices at some point that for some reasons the property cannot be transferred anymore, the token issuer would be liable to compensate the token owner monetarily.³³³

Article 33 TVTG only is applicable if the issuer is obligated to prepare and publish³³⁴ basic information. It is disputable if a token issuer is required to employ a physical validator's services regardless of the amount of the token issue. Therefore, it is also unclear if a SME is obligated to use a physical validator's services when the emission is excepted from publishing the basic information.³³⁵ Since, the law does not contain any norm which would obligate those issuers that are not subject to the basic information provision. Also, a historic interpretation by analyzing documents published during the legislative process leads to no further insights to the lawmaker's intention. However, from practical reasoning it can be expected that usually investors would only buy tokens if the issuer involved a physical validator. Therefore, it can be assumed most investors would demand the involvement of such an entity whenever they deem it critical. Those issuers who offer a thinner safety net might seem less attractive compared to alternative market participants engaging with a physical validator or even publishing basic information. Possibly, most issuers would involve this service provider even out of a self-interest to provide an attractive investment to potential investors.

There are also some minimum capital requirements for physical validators codified in Art 16 TVTG. They state different capital requirements depending on the value of the property which enforcement of contractual

rights is guaranteed for.³³⁶ Furthermore, Art 17 1) e) requires internal control mechanisms are in place which ensure that the physical validator meets his: »...liability in the event that rights to property guaranteed ...cannot be enforced in accordance with the contract.«³³⁷

4- Anti-money laundering and know your customer – Does the TVTG codify any measures to prevent illegal money from being introduced to the token economy? Are emitting SMEs concerned by these respective provisions?

Since the TVTG is not considered a financial market law, supervisory activities concerning TT service providers are reduced to reporting and approval duties in accordance with the TVTG.³³⁸ To answer the legal issue, it is crucial to consider the SPG³³⁹ provisions for auxiliary purposes. Since this law is the relevant special law to prevent the influx of black or gray money into the token economy. Several of the roles for TT service providers that are involved during the tokenization process are also mentioned in SPG norms. The following provisions specify which TT service providers are subject to duty of care according to the SPG:

Art. 3 1) SPG: »[translated by the author] ...r) TT service providers subject to mandatory registration according to Art 2 1) k) and m) to q) TVTG; s) token issuers not subject to mandatory registration with domestic residence that emit tokens in their own name or non-professionally in the name of another party, for transactions of 1000 Francs and more... t) operators of trading facilities for digital currencies respective tokens;«³⁴⁰

It is necessary to consider this provision in conjunction with the norms mentioned within its wording. Those are:

Art. 2 1) k): »Token Issuer«: a person who publicly offers the Tokens in their own name or in the name of a client;«

Art. 2 1) m): »TT Key Depositary«: a person who safeguards TT Keys for clients;«

Art. 2 1) n): »TT Token Depositary«: a person who safeguards Token in the name and on account of others;«

331 Bericht und Antrag 54/2019, 155.

332 Bericht und Antrag 54/2019, 156.

333 FMA, FMA-Wegleitung 2020/1 – Registrierung als Dienstleister nach TVTG, available at <<https://www.fma-li.li/files/list/fma-wegleitung-2020-1-registrierung-als-dienstleister-nach-tvtg.pdf>> (retrieved 11/29/2020).

334 Also note chapter V.C.1 and V.C.2.

335 Such an exemption would be applicable if the volume remains below 5 million Swiss Francs; chapter V.C.2.

336 150 thousand Swiss Francs if the assets appreciate below or at 10 million Swiss Francs, otherwise 250 thousand Swiss Francs; Art 16 1) e) TVTG.

337 Art 17 1) TVTG.

338 Also refer to chapter V.C.5 concerning the role of the FMA in the TVTG.

339 [German: Sorgfaltspflichtgesetz] for *Duty of Care Act*.

340 Art 3 1) r) to t) SPG.

Art. 2 1) o): »TT Protector: a person who holds Tokens on TT Systems in their own name on account for a third party;«

Art. 2 1) p): »Physical Validator: a person who ensures the enforcement of rights in accordance with the agreement, in terms of property law, represented in Tokens on TT systems;«

Art. 2 1) q): »TT Exchange Service Provider:³⁴¹ a person, who exchanges legal tender against Tokens and vice versa and Tokens for Tokens;«³⁴²

So, token issuers, TT key depositaries, TT token depositaries, TT protectors, TT exchange service providers as well as physical validators are subject to duties of care. Also, SMEs and other issuers that emit tokens on their own behalf or others are obligated to care duties if the issue reaches a volume of at least 1000 Swiss Francs, like mentioned in the SPG. In accordance with the SPG the just mentioned token issuers, additionally, are required to notify the supervisory authority immediately about the commencement of their business.³⁴³ This provision de facto leads to a compulsory notification for almost all token issuers, or it could be called a soft registration duty.³⁴⁴ Albeit, this obligation does not select SMEs permissible as issuers nor restrict SMEs as non-permissible. Instead, it simply is a formal, bureaucratic requirement that needs to be complied with.

Within the token economy a multitude of exchanges between legal tender, cryptocurrency, and tokens or between tokens and tokens is conceivable. Apparently, the lawmaker was aware of this circumstance and therefore adjusted the SPG provisions during the application process of the TVTG to cover the new legal environment. Previous the passing of the TVTG, it was already analyzed if tokens fulfill the facts of the case of *deposits* in the way they are legally defined by the BankG.³⁴⁵ It was found that tokens as well as cryptocurrencies did not meet the criteria of deposits since they are neither legal tender nor unconditionally repayable funds.³⁴⁶

The duties of care are primarily codified in the Art 5 to 9a SPG. The obligations of TT service providers³⁴⁷ among others encompass duties to determine the identity of their contract partners and beneficial owners, keeping records of the origin of funds as well as the purpose of the business relationship and risk-appropriate

monitoring of the business connection. For SMEs, the slightly softer regulations of Art 5 2) SPG apply. Those do not obligate them of ongoing duties but when entering into a new business relationship, for example by selling a token to a new investor and whenever they have doubts in the integrity of the information they were provided by these persons, or if they suspect money laundering.³⁴⁸ If SMEs emit their tokens without the aid of any TT service providers, they will be obligated to meet all those obligations on their own.³⁴⁹ TT service providers³⁵⁰ »[translated by the author] ...are obligated to utilize computer-based systems for a risk-based evaluation of the tokens and virtual currencies circulating in the TT system...«³⁵¹ Furthermore, the Art 9 and Art 10 SPG describe simplified and intensified duties of care.³⁵² Additionally, there might be duties of care for entities or persons who are not involved in the token economy but who are affected by the rights that are contained within the token. For example, when property rights in financial instruments are tokenized entities engaging with the respective financial instrument might be obligated to prevent money laundering as well.

From the conduct of a proper risk analysis the documentation duties are resulting, stipulated by Art 9 5), Art 9a and Art 11 SPG. Especially Art 20 SPG though covers the documentation duties of those who are obligated to duties of care. They are required to document for ten years records of their clients, correspondence with them and of transaction receipts as well as other evidence of their business with clients and their business relation to them.³⁵³ Furthermore, Art 17 SPG contains a duty to inform the financial intelligence unit immediately upon any suspicions arouse regarding money laundering, organized crime or financing of terrorism or suspicion of preparations for those.³⁵⁴ For TT service providers (and token issuers) it is highly recommended to seek legal advice regarding their required processes in accordance with the SPG.

5. Role of the FMA – Does the TVTG contain provisions concerning a supervisory authority and how does it affect SMEs that emit tokens?

Concerning the supervisory authority, we find in

Art. 39: »The Financial Markets Authority (FMA) is responsible for the supervision of TT Service

341 This role is also codified in Art 2 1) l^{bis}) SPG in a similar way.

342 Art 2 1) k) and m) to q) TVTG.

343 Art 3 3) h) SPG.

344 Only those are exempt that emit tokens of less than 1000 Swiss Francs.

345 Art 3 3) a) BankG.

346 *Nägele/Bergt*, Blockchain, Regulatorische Grauzone?, 68.

347 Defined according to Art 3 1) r) SPG. This does not include token issuers codified by Art 3 1) s) SPG.

348 Art 5 2) SPG.

349 If the value of the issue does not remain below 1000 Swiss Francs.

350 Namely TT service providers according to Art 2 1) k) and m) to q) TVTG i.c.w. Art 9b 2a) SPG.

351 Art 9b 2a) SPG.

352 Those will not be analyzed in-depth; refer to Art 9–10 SPG instead.

353 Art 20 SPG.

354 Art 17 SPG.

Providers and the execution of the associated statutory provisions.«³⁵⁵

Therefore, it is obvious from the verbatim that the FMA serves as supervisory authority.³⁵⁶ Article 43 1) TVTG specifies that »...the FMA monitors compliance with the provisions of this Act and its associated ordinances.«³⁵⁷ Also, the following subparagraph mentions the duties in particular and the next subparagraph concerns the authorities granted to the FMA for the fulfillment of its duties. The subparagraphs 4) to 6) contain further instructions to and rights of the FMA.³⁵⁸ From those legal norms follows that in other matters the courts retain the competence, especially civil law matters.³⁵⁹

All mentioned provisions do primarily concern professional TT service providers rather than SMEs that act as issuer of tokens. SMEs themselves are regularly not affected by those provisions. For example, registration duties and the TT service provider register are primarily applicable to service providers that act professionally in the name or in favor of SMEs and others who emit tokens and choose to involve such a service provider.

In accordance with Art 12 in conjunction with 23 TVTG, the FMA furthermore keeps record of the TT service provider register. Though, in some cases³⁶⁰ SMEs must apply to be entered into the register. Article 13 concerns details about the registration requirements that applicants need to fulfill to be entered into the TT service providers register. Those concerns criteria like capability, reliability, technical ability, organizational and control mechanisms, and others. The very details then are regulated in following legal norms.³⁶¹ If they are not met, the registration cannot be performed. The contents of a registration application and its treatment by the FMA is ruled in detail by Art 18 TVTG. For example, it grants the FMA the right to request further documents if needed for the assessment.³⁶² Art 19 2) states a provision that might be good to know for SMEs if they are obligated to register, namely:

Art. 19 2): »The FMA must decide on the full application within three months.«³⁶³

Therefore, after submission of the required documents the conclusion of the registration process can be foreseen. However, the submitted documents need to be complete; otherwise the period will start after delivery of the additionally required or corrected documents.³⁶⁴ Once, the registration into the TT service provider register is completed they (or anyone who registers as a TT service provider) can legally emit their tokens (or provide their TT services).³⁶⁵ Also conditions for expiration and removal of a registration as well as its effects are codified but will not be covered here in detail.³⁶⁶ Additionally, the FMA receives notice about any token issuance.³⁶⁷ This is related to the lawmakers intention of keeping track of the number and possibly amount of issued tokens.³⁶⁸ Also, SMEs are subject to this obligation, even if the emission is below 5 million Swiss Francs, since, there is no exception provision.

Depending on the rights a token represents further competencies and responsibilities might be fulfilled by the FMA accordingly to special law provisions. In the case of financial instruments those will for example be provisions of the EWR-WPPDG based on (EU) VO 2017/1129.³⁶⁹ The competencies and the degree of supervision was criticized during the law-making process as too thin and weak, compared to supervisory duties for financial instruments. However, the government argued that the extend is intended in the way presented by the application of the law which was also passed by the parliament is this manifestation.³⁷⁰ It can be trusted that the logic behind the chosen approach results from the persisting validity of special law. Especially when financial instruments are tokenized there is no sign of week oversight since the special law provisions are stricter than the TVTG provisions, like alleged by those who deemed the TVTG provisions too weak.

D. Secondary Market and Token Investment Funds

1. Weighting represented rights against each other or: are security tokens always security tokens?

Although, tokenization might already improve capital access of SMEs due to quicker, cheaper, and easier emissions than traditional capital market emissions. The

³⁵⁵ Art 39 TVTG.

³⁵⁶ For penal provisions and in case of offences and infractions refer to Art 47 TVTG; 1) for the authority of the District Court (Landgericht) and 2) to 3) for the authority of the FMA in actions that do not constitute a criminal offense, 4) to 6) for further specifications for the previous paragraphs.

³⁵⁷ Art 43 1) TVTG.

³⁵⁸ Neither of those provisions will be quoted in detail here, please refer to the law.

³⁵⁹ Bericht und Antrag 54/2019, 284.

³⁶⁰ For example, an emission exceeding 5 million Swiss Francs; also see chapter V.A.5.

³⁶¹ Art 13–17 TVTG; again, the provision will not be reproduced here in detail since they are usually not concerning SMEs and especially not needed in detail to answer the question that is examined by this subchapter.

³⁶² Art 18 1) f) TVTG.

³⁶³ Art 19 2) TVTG.

³⁶⁴ Bericht und Antrag 54/2019, 249.

³⁶⁵ Art 19 5) TVTG.

³⁶⁶ Refer to Art 20–22 TVTG.

³⁶⁷ Art 30c) TVTG.

³⁶⁸ Bericht und Antrag 54/2019, 272–273.

³⁶⁹ Such special law provisions will not be covered by the thesis since it would exceed its scope.

³⁷⁰ Bericht und Antrag 54/2019, 285.

greatest improvements could of course be achieved by making those debt and equity tokens tradable between investors on a secondary market.³⁷¹ Whenever the terms secondary market or debt and equity come into play questions regarding the regulatory treatment arise. As mentioned earlier tokens can of course represent contractual relationships under the law of obligations as well as property rights.³⁷² Such a token can be called a *security token*.³⁷³ Some tokens additionally contain further benefits, like the right of access to a network or into a physical building. Those tokens could be named *hybrid tokens*. Obviously, in some cases the margins between a clearly defined security token and a hybrid token or a utility token might be thin, or the differences could obliterate. Therefore, it is crucial to question if a token that represents some security components would always be deemed a security instrument by the financial market authority and in consequences gain its attention or if the components of the token were weighted against each other and the predominant component decided about a supervisory treatment.

Since this question is not quite trivial and cannot be answered by evidence codified in the law³⁷⁴ considering the opinion of an expert³⁷⁵ in the field of tokenization in Liechtenstein might illuminate the matters. Leading experts assume that hybrid characteristics of tokens do not lead to a weighting of their components against each other. Instead, supervisory consideration would take place whenever at least some of the contained rights are rights concerning or representing financial instruments.³⁷⁶

2. Bulletin board – the analog secondary market

Nowadays, it would already be possible for a token owner to sell his tokens to a stranger with the help of a bulletin board. The bulletin board is an instrument buyers and sellers can post and read offers at. They will not be automatically matched but they could manually search for interesting contracting parties, then contact them and conclude on a purchase and transaction agreement. The

transaction of the property rights in shares of a company can then be performed on a TT system and the buyer will legally become the new owner of the shares.³⁷⁷ The only hurdle within such a scheme is the investor's (buyer's) identification. Since the stock company is obligated to be aware of the identity of its owners to fulfill all duties. Therefore, the agreement between seller and buyer of the token will only be executed if the stock company provides systems that are suitable to receive and store the information related to the buyer's identity.³⁷⁸ Although, it sounds complicated, this is a minor technical challenge.³⁷⁹

During the survey³⁸⁰ several SMEs showed interest in attracting new investors or shareholders with the aid of tokens through a bulletin board procedure. It would already be possible to search such investors through this procedure. However, a close involvement of the FMA is advisable.³⁸¹ Automatic matching systems instead are heavily regulated, and the burdens imposed on them make it impossible to use them currently.³⁸²

3. Digitalized token secondary market – a club for institutional investors only?

Another issue to consider is the characteristics of those actively investing into SMEs through tokenization. From regulatory perspective currently only the regulated market, MTFs and OTFs are suitable places to serve as an exchange for tokens.³⁸³ There is no regulated market in Liechtenstein.

The remaining solutions are not accessible to retail investors but require intermediary involvements. However, the MICA and DLT pilot-regime that was recently suggested by the European Commission would enable retail customers connect to an MTF, too. Then, by access to a MTF they were able to invest. If implemented, the necessary law-making on the European level will take up between two and four years, though.³⁸⁴

4. Local multilateral trading solution for Liechtenstein?

Access to a MTF or more precisely permitting a Liechtenstein MTF before European regulation is introduced

³⁷¹ So that they may be strangers to each other.

³⁷² Also note chapter V.A.1 and V.A.2.

³⁷³ Also note chapter II.B.

³⁷⁴ Because the TVTG does not distinguish between different categories of tokens and instead uses a uniform definition for tokens. Please also here refer to chapter V.A.1 and V.A.2.

³⁷⁵ Thomas Nägele is a Liechtenstein based lawyer, entrepreneur, and IT specialist. He also was part of the working group of the government of the Principality of Liechtenstein that drafted the TVTG; *Nägele, Sekundärmarkt*, 103. Solutions to the above-mentioned question and to topics considered below are based on the conversation with him.

³⁷⁶ *Nägele*, Interview, conducted with A. Walch on 11/19/2020 (transcription in Appendix 3), Question 1; hereafter quoted as *Nägele*, Interview.

³⁷⁷ Also note chapter V.B.1.

³⁷⁸ *Nägele*, Interview, Question 2.

³⁷⁹ For more details on TT system-based book-entry securities refer to *Nägele, Sekundärmarkt*, 14–19.

³⁸⁰ See also chapter III.B.1 and IV.

³⁸¹ *Nägele*, Interview, Question 3.

³⁸² *Nägele*, Interview, Question 2; For more details about the obstacles trading on MTFs and OTFs is currently facing refer to *Nägele, Sekundärmarkt*, 33–52.

³⁸³ For more details on central organized exchanges refer to *Nägele, Sekundärmarkt*, 30–45.

³⁸⁴ *Nägele*, Interview, Question 4.

would not automatically create a secondary market for tokens in Liechtenstein. Since, the primary challenge are the linkage to a central securities depository and booking requirements. Booking requirement for new emissions will aggravate from 2023 and for all circulating securities from 2025 onwards, no matter when they were emitted. Then, by 2025 the DLT pilot-regime might be in place, just in time. If the milestones would take place like outlined a bypass would prove successful but if the DLT regime is not implemented in 2025 tokens could not be traded anymore because they still could not fulfill the booking requirements.³⁸⁵

Therefore, one could think of seeking for a Liechtenstein-only solution. Either for the time until the passing of the DLT regime or in general in case the European regulators would not introduce such a regime at all. As the interviewee states, however, only Liechtenstein residents were permissible as addressed audience for legal reasons. Further, the Liechtenstein capital market would probably prove as too thin for yielding to a vivid and liquid secondary market due to the limited amounts of capital available. European market participants and their capital assets are basically needed to create any vital securities or tokens secondary market. Therefore, although it might be feasible a local MTF solution is a doubtful solution.³⁸⁶

5. Concept of a SME token investment fund – improving capital access by the bulk?

A token investment fund could potentially serve as a special form of a secondary market instrument. It is conceivable that a multitude of tokens emitted by different issuers could be concentrated in a collective alternative investment vehicle, for example tokens emitted by SMEs. Hereby, diversification effects could be unleashed, and small and medium-sized enterprises could become more attractive to investors who usually shy away from the risks associated with a single investment into one of those companies.³⁸⁷ Even if such a fund could not trade the purchased tokens on a secondary market, it would at least be able to hold them, to realize income, buy additional tokens and sell tokens through a bulletin board procedure.³⁸⁸ However, regulators are facing several questions regarding the applicability of the current fund regulation. There is consent though about the purpose of investment law which primarily serves as protection for investors.³⁸⁹ Also the European Commission is working on an improvement of

SMEs' capital access as well as an introduction of a harmonized secondary market for SME securities for many years.³⁹⁰

The interviewee agrees on the appeal of such a concept and the opportunity to improve capital access for SMEs in a shift from the traditional, bank focused European system towards a more capital market-oriented financing system like known in the United States. He further agrees that especially tokenization bears lots of disruptive potential. Such an investment fund would have to be structured as AIF and European regulations as well as its national implementation was applicable. Custodians, depository banks and other intermediaries were required. Potentially, it would also mean some effort to convince them offering a tokenized investment fund. From the regulatory perspective it would most probably be feasible. The potentially largest hurdle, though, can be identified by the costs and efforts caused by the due diligence, risk assessment and comprehensive investment decision process that needed to take place before each qualified investment decision. Overhead costs might outweigh the potential profits. This could lead to rather large ticket sizes in an approach to be cost-effective during the investment analysis. Hereby, the intended function of financing also small businesses would be inhibited. Although, it is an interesting approach, questions of cost efficiency remain.³⁹¹

Relevant provisions for alternative investment funds are codified in the AIFMG which is the national implementation of the Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 Text with EEA relevance.³⁹²

Before the introduction of the UCITSG and the AIFMG the IUG was in effect. Then, UCITS funds were instead covered by the UCITSG and the AIFMG covered alternative investment funds. It is indicated to evaluate if either the IUG or the UCITSG, additionally to the AIFMG, also contain provisions that result in a legal applicability of either of those laws in case of token funds. First, the IUG states regarding its purpose in

³⁸⁵ Nägele, Interview, Question 5.

³⁸⁶ Nägele, Interview, Question 7.

³⁸⁷ The results of the SME survey and interviews with potential investors are contained in chapter IV.B and IV.III.

³⁸⁸ See also chapter V.B.1 and V.D.2.

³⁸⁹ Dünser, Legalize Blockchain, 113.

³⁹⁰ Already in 2014, the European Commission published political guidelines suggesting initiatives to improve the capital access of SMEs. Juncker, COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN CENTRAL BANK, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE, THE COMMITTEE OF THE REGIONS AND THE EUROPEAN INVESTMENT BANK An Investment Plan for Europe/* COM/2014/0903 final */, available at <<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2014%3A903%3AFIN>> (retrieved 11/29/2020).

³⁹¹ Nägele, Interview, Question 9.

³⁹² Those provisions will not be covered since an analysis of the European law would exceed the scope of this thesis.

Art. 1 IUG: »[translated by the author] ...this law regulates the ...conduct... of investment companies and their management companies. ...«.

Furthermore, Art 3 IUG specifies: »[translated by the author] ...a) investment companies (are): any undertaking for collective investment in transferable securities... that is: 1. neither a UCIT according to the UCITSG nor an AIF according to the AIFMG; 2. that is exclusively addressing qualified investors; and 3. does not collect capital funds;«.³⁹³

Therefore, this law is ineligible for the above-mentioned token investment funds since they are treated as AIF according to the AIFMG.³⁹⁴ Secondly, an investigation of the UCITS legislation remains necessary. The UCITSG contains in Art 51 the permissible capital assets for UCIT funds. Tokens, however, are not object of this allowance. Rather, those asset classes usually referred to as traditional assets are covered. Which are for example stocks and bonds traded on a regulated market, sight deposits, derivatives with stocks, bonds, foreign exchange rates or deposits as underlying.³⁹⁵ In consequence, neither the IUG nor the UCITSG are applicable to token investment funds or alternative investment funds.

VI. Conclusion

A. Legal Framework

This thesis served several purposes. First and foremost, it intended to introduce a proof of concept that intensively examines the legal framework. Chapter V offers a wide range of solutions to many legal aspects and hurdles that might occur when emitting tokens in Liechtenstein. It provides guidance to SME managers as well as a broad overview to legal practitioners.

The considered legal cases start at the token emission. The government's and lawmaker's intentions were defining tokens as pieces of information that are recorded on trustworthy (digital) systems. The rather broad definition of the TVTG provisions provides no indications for a distinction, for example between security tokens, equity tokens and currency tokens. This approach was chosen to promote the token container model and to create an environment that allows for a multifaceted token economy.³⁹⁶ From a regulatory perspective, though, the legal classification of a token, ultimately, is linked

to the rights contained within the respective token.³⁹⁷ Therefore, it remains of critical importance to refer to all relevant laws cumulatively. The TVTG does not replace regulations that previously existed, especially not in terms of supervision and financial market regulation. This shows that by the introduction of a container model the lawmaker created provisions that allow for the tokenization of almost any kind of asset. It is achieved through the Art 2 1) c) TVTG bypass of tokenization of several rights instead of only regulating the tokenization of owning rights. According to Art 33 1) TVTG, additionally, the basic information must elucidate which rights are represented by a token. This could also be intangible rights like claims against future revenues or license fees. There are even *empty containers*, that is tokens which do not represent any right. Tokens are assets, no matter if and which rights they contain.³⁹⁸

The legal hurdles for SMEs who intend issuing a token are rather low. It can be summarized from the wording of the TVTG that SMEs emitting tokens in their own name do not have to apply for registration in the TT service provider register if their emission remains below CHF 5 million within a year.³⁹⁹ Some of the provisions, though, might be challenging especially for micro enterprises, for example the capital requirement of Art 16 TVTG. However, the regulations still do not exclude any enterprise from token emission. Since they still could call on the services of a TT service provider, instead.⁴⁰⁰ Nonetheless, it is wise for most companies to seek legal advice or technical consultation during the tokenization process. In the TVTG no norm could be identified that regulates specifically the nationality or country of residence of token purchasers. There might be provisions in the residence country of investors that prohibit them from buying assets in Liechtenstein, though.

Furthermore, aspects concerning transfer of tokens and rights, storage of tokens and keys, and key loss investigated.⁴⁰¹ Concerning safety aspects, which were multiple times mentioned during the interviews and the survey, it is remarkable that the lawmaker identified the risk that depositaries could either misuse their access to stored keys, or that in case of bankruptcy the keys would become part of the liquidated assets and were used to satisfy creditors.⁴⁰² To increase confidence of the users, the TVTG introduced the duty to separate clients' TT keys from the

³⁹³ Art 1 1) icw. Art 3 1) a) IUG.

³⁹⁴ Also, so far all cryptocurrency funds in Liechtenstein were treated as AIF and can only be offered to professional investors; *FMA, FAQ Umsetzung AIFMG (Stand 1.12.2020)* (2020) 8–9, available at <<https://www.fma-li.li/files/wp/faq-aifmg.pdf>> (retrieved 01/10/2021).

³⁹⁵ Art 51 UCITSG.

³⁹⁶ Bericht und Antrag 54/2019, 41.

³⁹⁷ Bericht und Antrag 54/2019, 182–183.

³⁹⁸ Bericht und Antrag 54/2019, 184.

³⁹⁹ Bericht und Antrag 54/2019, 218.

⁴⁰⁰ TT service providers could generate and offer the tokens for them. In this case, of course, the SME emission would also not be limited in any way.

⁴⁰¹ For details regarding token and right transfers as well as token storage, please refer to Chapter V.B.1 and V.B.2 since both topics are too sophisticated for a fair representation in few sentences.

⁴⁰² Bericht und Antrag 54/2019, 77.

TT key depositary's assets in case of bankruptcy.⁴⁰³ Also, by including a provision for malfunctioning tokens to the TVTG, the lawmaker intends to provide protection against programming errors.⁴⁰⁴ TT key depositaries are obligate to put measures into place that prevent the loss of keys stored by them.⁴⁰⁵ Both might bring a lot of relief to those who are skeptical about new technologies or insist on not being instrumentalized as guinea pigs. Additionally, under certain conditions lost keys even can be cancelled and contained rights may be executed without it.⁴⁰⁶

To protect investors several roles were implemented in token economy, for example the role of the physical validator. This is an entity or person who validates the authenticity of assets and the enforcement of rights represented by tokens. Whenever the represented rights are rights in terms of property law, a physical validator fills a role as enforcement entity. The lawmaker intended to create an interface between the analogous world and blockchain technology. While the token certifies authenticity, origin, and value of a right or of assets, the physical validator ensures that the represented goods and rights do actually exist and are properly stored.⁴⁰⁷ From practical reasoning it can be expected that usually investors would only buy tokens if the issuer involved a physical validator. Also, the interviewed experts mentioned they demand legal certainty and a confirmation that the promises written down in the code of a token are reliable. As ruled in the TVTG, the validator is testifying that the rights represented by the tokens can be executed. In case he notices at some point that for some reasons the property cannot be transferred anymore, the token issuer would be liable to compensate the token owner monetarily.⁴⁰⁸

Also, token issuers are facing a series of duties. The most prominent is the publication of basic information. With no exceptions, SMEs are required to report their token emission to the FMA. They are exempted, though, from the preparation and publication of the basic information if their tokens are offered to less than 150 users or investors, or the emission values for a maximum of 5 million Swiss Francs, or they are already obligated to other comparable publication duties, for example due to norms of the WPPG.⁴⁰⁹ The government stated during the law-

making process that they intended to unburden token issuers from excessive bureaucracy.⁴¹⁰

Preventing illicit funds from infiltrating the token economy is an important concern to the lawmaker, too. The TVTG is not considered a financial market law, therefore, supervisory activities concerning TT service providers are reduced to reporting and approval duties in accordance with the TVTG. When investigating the anti-money laundering provisions, it is crucial to consider the SPG provisions for auxiliary purposes. Since this law contains the relevant special norms to prevent the influx of black or gray money into the token economy. Several of the roles for TT service providers that are involved during the tokenization process are also mentioned in SPG norms. Token issuers, TT key depositaries, TT token depositaries, TT protectors, TT exchange service providers, as well as physical validators are subject to duties of care, documentation obligations, and the duty to inform the financial intelligence unit immediately upon any suspicions arouse regarding money laundering, organized crime or financing of terrorism or suspicion of preparations for those. For TT service providers (and token issuers) it is highly recommended to seek legal advice regarding their required AML processes in accordance with the SPG.

The TVTG also contains extensive supervisory provisions. The FMA as financial market authority comes into play in several situations and for different purposes. Some supervisory provisions are also applicable to SMEs. Although, many provisions do primarily concern professional TT service providers rather than SMEs acting as issuer of tokens. Additionally, the regulatory framework that is applicable when issuing tokens, regularly needs to be extended to securities law and other provisions. Since the TVTG does not overrule existing legislation but rather complements it with respect to matters related to the token economy.

It can be summarized that legal certainty concerning many areas of the token economy and regarding SME funding through token emission was created by the introduction of the TVTG. Additionally, this thesis offers a guidebook to major legal aspects and an entry point to evaluations of individual tokenization projects. Regulation on the European level and a token secondary market are still in the early stages of development, though.⁴¹¹

B. Market Sentiment

The market sentiment and market chances of SME funding in Liechtenstein based on tokenization was evaluated from both perspectives, capital demand and supply.

403 Art 25 2) and 4) icw Art 17 1) c) 2. TVTG.

404 Bericht und Antrag 54/2019, 211.

405 Art 17 1) c) 1. TVTG.

406 Please refer to Chapter V.B.4.

407 Bericht und Antrag 54/2019, 155.

408 FMA, FMA-Wegleitung 2020/1 – Registrierung als Dienstleister nach TVTG, available at <<https://www.fma-li.li/files/list/fma-wegleitung-2020-1-registrierung-als-dienstleister-nach-tvtg.pdf>> (retrieved 11/29/2020).

409 Legal advice might be helpful to determine other involved laws when undertaking a tokenization project.

410 Bericht und Antrag 54/2019, 274.

411 Some remarks on regulation on the European level are also made in the last chapter.

There are some conflicting stances, but evidently numerous common interests exist. Uniting and emphasizing those will strengthen the funding model. Overcoming discrepancies and solving conflicts of interest will ultimately increase the financial basis available to small and medium-sized enterprises.

First, potential investors and SMEs have collectively stated that they desire a tokenization process which fulfills the following requirements:⁴¹²

- ▷ A possibility of personal contact between investor and SME if desired by both.
- ▷ Well-established or automated processes,
- ▷ standardized procedure,
- ▷ certification of the quality of market participants,
- ▷ reliable TT service providers,
- ▷ trustworthy process,
- ▷ vivid secondary market,
- ▷ legal certainty,
- ▷ clear and fair contractual agreements, and
- ▷ reliable anti-money laundering measures.

The legal analysis has concerned many of those aspects, like shown in the earlier chapters. For some, though, time is needed so that the token economy and the token

market can evolve and grow. For example, with regards to the vitality of the secondary market and a certification process for provided information and regarding market participants. It was intensively shown in Chapter V that legal certainty is given and this thesis now provides a thorough reference guide to many questions that could arise during a token emission. The legal analysis further shows that the concerned aspects are regulated by the TVTG and auxiliary laws.

Potential investors described reasons for some hesitation and potential difficulties related to an investment in the SME sector in general.⁴¹³ The SME survey inquired which collateral and other powers SME managers or owners would grant to token investors. The following Table 7 indicates concerns raised by investors and shows how many mentioned it (x of 4). Furthermore, the table allocates provision of information, veto rights, collateral, co-determination, or other instruments that could reduce those obstacles if embodied in the token. Also, the percentage of SME owners that would be willing to provide the respective compensation measure is shown.⁴¹⁴ Potential solutions based on SME rating systems or other blockchain technology are indicated by an asterisk.

Concerns of potential SME investors	Mentioned by x of 4 investors	Instruments to reduce those obstacles and willingness by x % SMEs
information is less concise and less reliable than for listed companies	4	eg, validation of SME quality or SME rating through market participants on blockchain *; standardized provision of information *; publicly accessible platform that provides financial data and core information about the enterprise *; intensifying personal contacts between investors and SMEs *
SME investment requires intense due diligence or specialized fund manager	3	eg, validation of SME quality or SME rating through market participants on blockchain *; publicly accessible platform that provides financial data & core information about the enterprise *
financial stability weaker than for larger corporations	2	veto right 38%; right of lien 38%; mortgage 46%; participation in corporate management 23%; disclosure of bookkeeping 92%
there is no exchange listing and therefore price determination is more complicated	1	eg, pricing on a token exchange by the market powers *; disclosure of bookkeeping 92%
a large investor could take over the business	1	veto right 38%; participation in corporate management 23%
missing liquidity because no vivid secondary market exists	1	eg, token economy needs to be fostered and promoted *
individual contracts with SMEs would be labor and time intense	1	eg, standardized contracts provided by the bulletin board or by a token exchange *

Table 7: Potential difficulties in SME financing and instruments to reduce them.

412 Appendix 2, Question 12, 13 and 15; Appendix 1, Question 16.

413 Appendix 2, Question 10 and 11.

414 Appendix 1, Question 19.

There are ways to react on the concerns, either by measures offered by the SMEs themselves or through solutions provided by platforms, blockchains and other instruments. Some of them are not broadly developed yet, for example automated SME rating on a blockchain or a platform for standardized provision of SMEs' financial information. Concerns and instruments, of course, can be combined in arbitrary ways to balance each other out.

A comparison of the interviews and survey statements also shows conflicting financial interests. While the entrepreneurs hope to get access to cheaper financing, the investors expect higher returns. However, those positions might be reconcilable with each other based on cost reduction that makes tokenized funding cheaper for recipients of the funds and at the same time increases the net proceeds of investors. It is difficult to guess the magnitude of those effects, though, since the token economy is not well-established yet.

Another major point that was identified is information asymmetry. Investors are not keen to invest into SMEs if they do not have access to information and if information is not available publicly. However, almost all SME owners were willing to share their bookkeeping with investors. If ways are found to provide this data to a large audience chances are quite good that investors will be attracted. The legal regime also proves its openness to international investors and token issuers, which can for example be seen in the provisions concerning basic information that is permitted to be published in English instead of German. So, if bookkeeping, basic information and other data is published bilingually it might help to attract foreign investors and foreign token issuers. Thereby, such a platform contributes to the vision of a European secondary market for tokens. Also, technical systems can be implemented to reduce information asymmetry. A token exchange, or bulletin board, or offering platform could automatically provide a financial profile, quarterly financial statements, or even a rating for SMEs who are emitting tokens. Such ratings could be generated highly democratic, based on the experience of investors with the respective SME and vice versa. For example, the exchange could ask or demand investors to submit an investment experience report in form of a short query whenever they sell tokens. An automatic, authentic pool of reviews, or of democratic ratings, would result from such a mechanism. Additionally, its reliability would increase with each trade and each survey contributed.

C. Outlook and further research

By introducing blockchain legislation, the Liechtenstein lawmaker has proven his sagacious policy by taking on yet another pioneer role. If the policy makers, the

financial industry, and the SME sector do once again cooperate with deliberation, Liechtenstein can also become a pioneer in corporate funding based on tokenization. Thereby, solutions can be suggested and tested for an issue the European Commission is aware of already for many years if not decades. In consequence, the European role of the domestic financial hub could be strengthened, and new business might emerge.

Due to the legal hurdles regarding the secondary market, it will take time until a well-established, vivid market for tokens is in place. Three to five years for the further development might be realistic expectations.⁴¹⁵ Although the *Wirtschaftskammer* section presidents are extremely interested in this form of financing and in general in non-bank financing alternatives, they predominantly expressed that they preferred to see successful forerunners before joining the tokenized funding market themselves. This comes into play regarding a potential SME fund and the time that is needed until a secondary market can be established. An investment fund vehicle would not make much sense if there were only a small number of companies providing tokenized assets, even if it were legally possible to emit such a fund (which it is not yet). To invest larger capital amounts it is indispensable that there is a significantly large number of SMEs requesting funding through tokenization and that those tokens can be traded liquidly on a secondary market.

Further research could be conducted to determine if SME investment funds based on tokens can be managed cost-efficiently. Also, it would be interesting to investigate which openly accessible data platforms regarding SME financial data should be implemented. This could reduce the information asymmetry and therefore increase funding provided to SMEs by non-banks and by banks, too. The SME survey but also the expert interviews have shown that the public awareness regarding the potentials provided by the TVTG is not exceptionally large. Information events and maybe first runner activities by the government, a pension fund, or by a municipality could prove crucial in the attempts to foster the token economy Europe-wide and to establish funding through tokenization.

By the introduction of the TVTG the Liechtenstein government followed a *law is law* approach. It already leads to lots of legal certainty and promotes the Liechtenstein jurisdiction as potential hub for a tokenization funding industry. Hereby, it could contribute as another pillar to the future viability of the domestic economy. This thesis solves many legal questions that might occur during the tokenization process and regarding SME funding based on tokenization. However, it is of crucial importance that

⁴¹⁵ Nägele, Interview, Question 5.

on the European level legal certainty is created, too. Especially concerning the secondary market, MTFs, and all related issues further steps are required to foster tokenization and to improve SME funding.

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List of Abbreviations

- ABGB [German: Allgemeines Bürgerliches Gesetzbuch] for [translated by the author] *General Civil Code*
- AIF Alternative Investment Fund
- AIFMG [German: Gesetz über die Verwalter alternative Investmentfonds] for [translated by the author] *Alternative Investment Fund Manager Act*
- AML anti-money laundering
- Art [German: Artikel] for *Article*
- AZR [German: Abkürzungs- und Zitierregeln der österreichischen Rechtssprache und europarechtlicher Rechtsquellen] for *Austrian Legal Citation Style*
- BankG [German: Bankengesetz] for [translated by the author] *Banking Law*
- BuA [German: Bericht und Antrag] for [translated by the author] *Report and Application of the Government to the Parliament of the Principality of Liechtenstein Concerning the Creation of a Law on Tokens and TT Service Providers*
- DLT distributed ledger technology/technologies
- EWR-WPPDG [German: EWR-Wertpapierprospekt-Durchführungsgesetz]
- FMA [German: Finanzmarktaufsicht Liechtenstein] for [translated by the author] *Liechtenstein Financial Market Authority*

FINMA	[German: Finanzmarktaufsicht] for [translated by the author] <i>Swiss Financial Markets Authority</i>
GBV	[German: Grundbuchverordnung] for [translated by the author] <i>Enactment for Cadastre and Property Register</i>
ICO	initial coin offering
icw	in conjunction with
IUG	[German: Investmentunternehmensgesetz]
LJZ	Liechtensteinische Juristen-Zeitung
LV	[German: Landesverfassung] for [translated by the author] <i>Constitution of the Principality of Liechtenstein</i>
MICA	The European Commission's Regulation of Markets in Crypto-assets (MiCA) proposal
mn	margin number
MTF	multilateral trading facility
OTC	over the counter [i.e, a bilateral financial transaction that is not conducted on a public exchange]
OTF	organized trading facility
PGR	[German: Personen- und Gesellschaftsrecht] for [translated by the author] <i>Personal and Corporate Law</i>
SME	Small and Medium-Sized Enterprises
SPG	[German: Sorgfaltspflichtgesetz] for [translated by the author] <i>Duty of Care Act</i>
SR	[German: Sachenrecht] for [translated by the author] <i>Law of Property</i>
TT	trusted/trustworthy technology
TVTSG	[German: Token- und VT-Dienstleistungsgesetz] for [translated by the author] <i>Law on Tokens and TT Service Providers</i>
UCITSG	[German: Gesetz über bestimmte Organismen für gemeinsame Anlagen in Wertpapieren] for <i>Undertakings for Collective Investment in Transferable Securities Law</i>
WPPG	[German: Wertpapierprospektgesetz] for [translated by the author] <i>Law on Prospectus Duties</i>
ZBB	Zeitschrift für Bankrecht und Bankwirtschaft

Appendix

The following are not printed due to space reasons and can be requested digitally from the author (E-Mail: alex-walch@live.de).

Appendix 1: Results of the SME survey (data collection and evaluation sheet).

Appendix 2: Results of Expert Interviews with Potential Investors (data collection and evaluation sheet).

Appendix 3: Transcript Interview Nägele.

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