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**Working Paper**

## "Towards an index for investable security tokens": A feasibility study

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“Towards an Index for Investable Security Tokens” – A Feasibility Study

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# “TOWARDS AN INDEX FOR INVESTABLE SECURITY TOKENS”

## A FEASIBILITY STUDY

**Henrik Christian Ohlrogge**

**Prof. Dr. Franz Isselstein**

### **Abstract**

Security tokens have the potential to reshape finance through blockchain technology. The Boston Consulting Group forecasts a \$16 trillion opportunity in tokenizing global illiquid assets by 2030. These tokens offer transparency and efficiency in transactions, enabling fast and decentralized capital raising. However, several factors hinder rapid adoption by the buy and sell sides. Along with regulatory uncertainty, a lack of transparency and liquidity also hampers their progress. To address this, our research investigates the feasibility of creating a security token index as a benchmark for tracking their development. Our findings suggest that constructing such an index, despite certain limitations, is feasible and could provide value to various stakeholders.

**KEY WORDS:** *Blockchain, Security Token, Security Token Market, Security Token Indexation, Security Token Market Limitations*

**JEL: G17, G20, G30**

## Autoren



**Henrik Christian Ohlrogge** is a former student in the bachelor program “International Management, majoring Finance & Accounting at IU University in Bad Honnef (03/2024). During an Internship at PricewaterhouseCoopers, he focused on exploring the feasibility of a security token index as part of the Hedgetoken-project group.

As of April 2024, Henrik is pursuing an MSc in Digitization Management at Fern Universität Hagen. Additionally, he has started his studies at Charles III University of Madrid (UC3M) for an MSc in Innovation Management.



**Dr. Franz Isselstein** has been a Professor of Corporate Finance and Accounting at IU(BH) since 2013. His main research interest is in fundamental stock valuation, tactical asset allocation and FinTech. He is the inventor of the ValueSimulator research platform providing financial models and intelligence for 30.000 companies worldwide that is delivered as a 3rd party service to investment professionals and Bloomberg Terminal users. He is a member of EuroIRP (European Association of Independent Research Providers) and advisor to Cannonball Capital GmbH, an independent investment office based in Munich. Franz is an active investor and mentor in FinTech companies and has participated in several successful funding rounds. Earlier he worked for more than 10 years in senior investment banking positions in Corporate Finance and Corporate Strategy.

## **Introduction**

In recent years, buzzwords like "blockchain," "Bitcoin," and "NFTs" have reshaped finance but face hurdles due to fraud and regulatory uncertainties. Amid this, emerging technologies like security tokens offer the potential to revolutionize finance by merging blockchain benefits with regulatory protection, facilitating cheap capital raising and fractional investments. However, their adoption is hindered by limited awareness. This research explores the feasibility of constructing a security token index (STI) to provide a benchmark for tracking their development. This investigation, the first of its kind, lays the groundwork for further study in this evolving field.

## **Blockchain**

In the past decade, blockchain technology has evolved far beyond its initial association with cryptocurrencies like Bitcoin and NFTs. Originating from Satoshi Nakamoto's seminal 2008 paper, blockchain operates on the principle of a decentralized infrastructure, enabling trustless transactions validated across a network of nodes (Nakamoto, 2008; Xu, Chen, & Kou, 2019).

The consensus mechanism, such as Proof of Work (PoW), ensures transaction integrity while incentivizing participants through cryptocurrency rewards. This decentralized nature challenges traditional financial intermediaries, offering enhanced transaction efficiency, security, and cost-effectiveness, thus heralding a new era of decentralized finance (DeFi) (Kiayias, Koutsoupias, Kyropoulou, & Tselekounis, 2016).

Blockchain technology is finding applications in various industries and gaining importance as a transformative tool for data management and transaction processing. As research and innovation continue, blockchain's potential remains evident, serving as the technical foundation for further advancements in various domains. Additionally, blockchain technology underpins the creation of tokens, facilitating innovation in finance and enabling novel financial instruments and platforms.

## **Token**

Blockchain-driven tokens represent a promising technology with the potential to revolutionize finance by offering unique characteristics. In addition to security tokens, various other types of tokens exist, broadly classified into payment tokens, utility tokens, and security tokens. Payment tokens serve as a digital representation of value for exchange, utility tokens provide access to specific products or services within decentralized ecosystems, and security tokens represent ownership stakes in assets like equity shares or debt instruments on blockchain networks (Guseva, 2020; World Economic Forum, 2023).

Security tokens offer small and medium-sized enterprises (SMEs) decentralized means of raising capital, bypassing traditional intermediaries (Sigurdsson, Eriksson, & Lindh, 2022). This approach democratizes access to capital markets, fostering innovation in fundraising. Security token offerings (STOs) provide a cost-effective alternative to IPOs, enabling compliance with securities regulations while offering scalability. Additionally, security tokens enhance liquidity in traditionally illiquid markets, improving market efficiency and reducing transaction costs (Smith et al., 2019). Overall, security tokens have the potential to democratize access to capital, enhance liquidity, and streamline fundraising processes, driving innovation and disruption in traditional financial markets.

This aligns with increasing recognition in leading financial firms and the market itself. BlackRock's CEO Larry Fink and institutions like CITI-bank highlight the transformative power of security tokens. Fink predicts that financial securities' future lies in tokenization (Fintech News, 2023), while CITI-bank forecasts an 80x growth in tokenization, reaching nearly \$4 trillion by 2030 (The Tokenizer, 2023).

Furthermore, anticipation for the technology extends globally. South Korean Asset Manager "Asset Securities," managing over USD 500 billion, partnered with Polygon Labs to launch an exchange, facilitating real-world asset tokenization (Godbole, 2023). An outlook report by ADDX and the Boston Consulting Group forecasts a \$16 trillion opportunity in tokenizing global illiquid assets by 2030, around 10% of global GDP (ADDX & Boston Consulting Group, 2022). These developments highlight the widespread significance and potential impact of tokenization on financial markets.

## **Security Token Index**

Currently, there is no security token index available in the market to monitor the performance of existing token offerings. Indexation serves as a critical tool in finance, primarily as an overview, benchmark, and assessment tool. It provides investors with a standard measure to evaluate the performance of specific markets, sectors, or asset classes. By tracking the movements of an index, investors can assess market trends, monitor the overall health of an investment, and make informed decisions about their portfolios (Parasuraman & Ramudu, 2014). Additionally, indexes serve as benchmarks against which investment managers can compare their performance, providing a standardized yardstick for assessing investment strategies. Overall, indexation promotes transparency, standardization, and efficiency in financial markets, helping investors navigate complex investment landscapes and make sound investment decisions.

## **Methodology**

We applied an inductive research approach, allowing data to generate theories regarding the feasibility of constructing a Security Token Index (STI). This methodology involved a double-phase design, to incorporate both quantitative data collection methods from market analysis and qualitative data collec-

tion methods such as semi-structured interviews with industry experts. Stephan Flagel (Senior Management Director Advisory Company “Findexa”; Benchmark & Indexation Expert; fmr. Global Head of Benchmarks (Thomson Reuters), CEO STOXX Ltd); Dr. Eric Falk (Tech-Entrepreneur (ENT: Moniflo, Filedgr, Alpha Persei), Adjunct Professor (HEC-Liège), Advisor.) and an anonymous participant (Cryptocurrencies specialist & employee of a crypto-trading company). These interviews aimed to validate findings from market analysis regarding available security tokens suitable for inclusion in an index.

## Research Objectives

- Investigate and analyze the characteristics of security tokens in the current state of the security token market.
- Design and evaluate various methods for constructing an STI, including the study of index weighting procedures and other relevant factors.
- Evaluate the potential benefits and opportunities of an STI for investors and the overall market.
- Identify, analyze, and discuss the challenges and barriers to the development of the market, including the role of financial intermediaries.
- The ensuing sections present the research objectives and their corresponding resolutions. Reference to the quantitative market analysis findings can be found in the appendix.

## Addressing Research Objective 1:

- **Market Capitalization and Developmental Stage:** The total market capitalization of security tokens is approximately USD 18 billion, indicating that the market is still in a developmental stage compared to the broader cryptocurrency market, valued at USD 1380 billion. Expert assessment suggests that the market is underdeveloped, with limited liquidity posing a significant challenge.
- **Benefits and Potential of Security Token Technology:** Security tokens offer numerous benefits, including automation of transactions through blockchain and smart contracts. Experts believe in the technology's potential to open up private and illiquid markets to the public, streamlining processes, reducing costs, and enhancing efficiency. The technology's ability to cut out intermediaries and simplify asset ownership is particularly emphasized.
- **Value and Utility of Security Tokens:** The value of security tokens is closely tied to their underlying assets and intrinsic worth. The technology holds promise, especially in areas where assets face liquidity challenges or regulatory barriers. Experts highlight the potential for increased liquidity and efficiency in tokenizing valuable assets.



- Applications for SME Funding and Market Fragmentation: Security tokens have the potential to revolutionize SME funding by making it more accessible and cost-effective for retail investors. However, the fragmented landscape of European exchanges presents challenges for broader adoption. Experts express surprise at the slow uptake of the technology, indicating a need for clarity on limitations and barriers to adoption.

## **Addressing Research Objective 2:**

- Analysis revealed that a capitalization-weighted index would be distorted by an outlier company, leading to an inaccurate representation of the market.
- Similarly, a price-weighted index would overemphasize certain tokens, resulting in a skewed representation.
- Equal-weighted index methodology emerged as the most suitable approach to accurately measure the overall market progression.
- Discussions with indexation expert Mr. Stephan Flagel emphasized the importance of benchmark indices for novel markets like security tokens.
- Segmentation and Indexation Strategies:
  - Segmenting the market based on market capitalization and industry sectors was proposed to provide a clear picture of the market and add value to stakeholders.
  - Excluding outlier companies like "Enegra Group" was advised to prevent index distortion (refer to appendix).
  - Quarterly rebalancing of the index was suggested to incorporate new token projects and accurately track market performance.

## **Addressing Research Objective 3:**

### **Benefits and Opportunities of STI:**

- STI provides an instrumental overview of the nascent security token market, aiding in financial decisions, investment strategies, and further research.
- Mr. Flagel emphasized the value of being first to market and the boost an STI would provide to the security token market.
- Stakeholders, including investors, researchers, and financial intermediaries, see an STI as a necessary and interesting tool for industry stakeholders.
- STI serves as a benchmarking tool, enabling investors to quickly measure and assess the market's progression, potentially enhancing market trust and awareness.

### **Enhanced Trust and Market Awareness:**

- STI can enhance trust in the market by adding a layer of trust through the methodology of index providers, thereby contributing to market development.
- The transparent methodology and branding of the index provider can establish trustworthiness and enhance market awareness, potentially accelerating technology adoption.

### **Challenges and Limitations:**

- The need for a separate token index is questioned due to the similarities between security tokens and traditional shares, leading to potential reluctance from index providers.
- The limited availability of publicly tradable security tokens poses a challenge for constructing an index that accurately represents the entire market.
- Dr. Falk predicts a shift towards publicly accessible security token offerings over time, correlating positively with the value of an STI.
- The STI's value lies in its ability to adapt to market dynamics through periodical rebalancing, providing historical development insights for researchers and stakeholders.

## **Addressing Research Objective 4:**

### **Lack of Regulatory Framework:**

- The fragmented regulatory environment surrounding security tokens across different jurisdictions creates uncertainty among investors.
- Disputes regarding security token projects are settled in the jurisdiction where the issuer is based, highlighting the need for international standards.
- Dr. Falk highlighted regulatory hurdles related to sanctions, investor messaging, and dividend payments, underscoring the complexity of regulatory compliance.
- Brokers offering security tokens must comply with jurisdictional security laws, implementing KYC and AML controls to identify investors.

### **Restricted Access for Investors:**

- Many brokers offer security tokens through private placements limited to accredited investors, simplifying onboarding processes and adhering to specific investor profile standards.

### **Incoherent Terminology and Complexity:**

- Inconsistent terminology and complex concepts related to security tokens, wallets, and transaction fees hinder understanding and adoption, especially for retail investors.

### **Reputational Limitations:**

- Fraudulent practices and market manipulations, exemplified by events such as the FTX collapse, have damaged the reputation of the technology and slowed its adoption.
- Financial intermediaries, particularly in Germany, are concerned about reputational risks associated with adopting security token technology.
- Adjusting terminology and using different phrasings could potentially improve adoption and enhance market reputation, as suggested by Mr. Flagel and Dr. Falk.
- Hesitancy Among SMEs:
  - SMEs may be hesitant to adopt security token technology due to concerns about liquidity and potential manipulation risks.
- Companies issuing security tokens may still prefer traditional banking infrastructure for underwriting STOs, as banks lack the technology to underwrite tokenized securities.

### **Limitations Faced by Financial Intermediaries**

#### **Technological Advancements:**

- Financial intermediaries, including banks, face challenges due to the lack of technological advancements in blockchain and Web3 applications.
- Dr. Falk highlighted the need for comprehensive IT applications and raised questions about access management, thresholds, and authorization control within blockchain systems.
- Implementing complex authorization systems directly into smart contracts may not be feasible due to the intricate processes involved, as smart contracts should primarily ensure the correct execution of financial transactions.
- Compatibility Issues and Trading Systems:
  - Financial intermediaries have specific trading systems tailored to their jurisdiction, leading to compatibility issues on a global scale.
  - A global trading system is required for technologies like security tokens, but the lack of infrastructure in banks for trading tokens and managing risk impedes adoption.
- Mr. Flagel suggested that until banks have the necessary infrastructure for trading tokens, widespread adoption by financial intermediaries is unlikely.

#### **Slow Adoption Timeline:**

- Dr. Falk predicted a lengthy adoption timeline of 20 to 30 years for financial institutions to implement necessary systems and adapt to security token technology.
- Despite the literature suggesting decentralization of tokens, financial intermediaries remain crucial in the security token realm, providing custody services and interacting with investors.
- Role of Financial Intermediaries:

- Financial intermediaries play a vital role in facilitating the adoption of security tokens by providing custody services, interacting with investors, and serving as trustworthy entities.
- While banks are key drivers of security token development, they are hesitant to adopt the technology due to issues like insufficient issuance and liquidity.
- The technology could benefit financial intermediaries by enabling instant settlement between parties and reducing costs associated with settlement and clearing processes.

## **Conclusion:**

This research concludes that constructing a Security Token Index (STI) is feasible and valuable for tracking and assessing the security token market. It identifies suitable tokens for inclusion and proposes a methodology for index construction. The study highlights key obstacles to market development, including regulatory uncertainties and hesitancy among financial intermediaries. Despite challenges, the STI is anticipated to facilitate market progress, offering a comprehensive overview, and informing decision-making.

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## Appendix

### Appendix 1: Quantitative Research Results

## Security token overview

Total Market CAP: **\$18,285,369,772.74**

Token Price summed up:

**\$768.88**

Average Last Day since **47.64102564**

Name:	abbr.	Industrie	Market Cap in USD	% from total CAP	Token Price in USD (20.oct)	Weight of each Token	Grouping	Days since last trade	Currency	Liquidity as indicator?
Enegra- group Price	EGX	Blockchain and Token	\$17,431,095,445.00	95.33%	\$200.63	26.09%	Energy	0	USD	✓
Boss Info AG	BOSS	ERP- Solutions	\$120,012,463.80	0.66%	\$11.35	1.48%	Digital Marketing	39	CHF	✗
vidby Shares SHA	VIDS	IT services with AI	\$93,839,302.75	0.51%	\$45.60	5.93%	Digital Marketing	0	CHF	✗
Tzero- Group inc.	Tzrop	Trading Exchange	\$77,673,069.00	0.42%	\$2.94	0.38%	Financial Services	1	USD	✓
INX- Live data	INX	Secuirty token trading	\$55,656,419.00	0.30%	\$0.45	0.06%	Financial Services	0	USD	✓
SiriHubA	SiriHubA	Real Estate	\$46,901,420.00	0.26%	\$0.24	0.03%	Real Estate	1	THB	✓
RealUnit Shares	REALU	Investment-banking	\$36,557,275.21	0.20%	\$1.19	0.15%	Real Estate	50	CHF	✗
Blockchain Capital Token	BCAP	VC	\$29,500,000.00	0.16%	\$3.24	0.42%	VC (Venture Capital)	17	USD	✗
TBo Shares SHA	TBOS	Tech	\$29,284,371.41	0.16%	\$162.03	21.07%	VC (Venture Capital)	108	CHF	✗
Axelra Tech Venture Building Sha	AXRAS	Tech Venture	\$26,910,954.22	0.15%	\$29.71	3.86%	VC (Venture Capital)	31	CHF	✗
Curzio Research	CURZ	Research Company	\$24,000,000.00	0.13%	\$2.00	0.26%	Technology	64	USD	✗
SPICE Venture Capital Pte.	SPICE	VC	\$23,500,000.00	0.13%	\$2.00	0.26%	VC (Venture Capital)	57	USD	✗
MS Token LLC	MSTO	NFT	\$23,500,000.00	0.13%	\$0.15	0.02%	VC (Venture Capital)	97	USD	✗
Science Blockchain Pte. Ltd.	SCI2	VC	\$23,400,000.00	0.13%	\$1.40	0.18%	VC (Venture Capital)	17	USD	✗
SiriHubB	SiriHubB	Real Estate	\$23,004,700.00	0.13%	\$0.24	0.03%	Real Estate	1	THB	✗
Aktionariat AG shares	DAKS	Trading platform	\$21,229,098.34	0.12%	\$15.03	1.95%	Financial Services	15	CHF	✗
Carnault AG Shares SHA	CAS	E-Cigarette	\$20,865,681.15	0.11%	\$12.50	1.63%	Producing	55	CHF	✗
XY Labs	XYLB	Data-manager	\$17,697,311.00	0.10%	\$0.36	0.05%	Technology	0	USD	✗
Draggable quitt.shares	DQTS	/	\$16,674,974.72	0.09%	\$9.31	1.21%	Service	4	CHF	✗
ARTLEASING	ARTS	Art	\$15,638,895.50	0.09%	\$3.93	0.51%	Service	7	CHF	✗
DillyShares SHA	DILYS	Socks	\$15,492,188.63	0.08%	\$1.02	0.13%	Digital Marketing	354	CHF	✗
Vereign Digital Shares SHA	VRGNS	Information managem	\$12,398,564.54	0.07%	\$79.14	10.29%	Service	39	CHF	✗
DDC Swiss Shares SHA	DDCS	Documentation Softwz	\$10,952,920.35	0.06%	\$3.36	0.44%	Technology	15	CHF	✗
PensionDynamics SHA	PDS	Pension	\$10,383,171.60	0.06%	\$1.20	0.16%	Financial Services	37	CHF	✗
Exodus Movement	EXOD	Crypto-wallet	\$9,400,000.00	0.05%	\$3.30	0.43%	Financial Services	0	USD	✗
Outlawz Food Community Shares	VEGS	Meat- subsitute	\$8,133,603.38	0.04%	\$1.35	0.18%	Producing	16	CHF	✗
Clever Forever Education AG Shar	CFES	Education	\$7,811,505.71	0.04%	\$0.52	0.07%	Service	78	CHF	✗
GMC AG Shares SHA	GMCS	Haicare products	\$6,367,632.87	0.03%	\$7.02	0.91%	Producing	8	CHF	✗
22X	22X	Private equity	\$5,900,000.00	0.03%	\$1.00	0.13%	VC (Venture Capital)	19	USD	✗
BEE Digital Growth Shares SHA	BEES	Digital Marketing	\$5,685,661.53	0.03%	\$5.29	0.69%	Digital Marketing	46	CHF	✗
Draggable Green Consensus SA SI	DGCS	Software-developer (p	\$5,609,634.35	0.03%	\$0.52	0.07%	Producing	131	CHF	✗
Fieldoo AG Shares FDOS	FDOS	Sport	\$5,180,407.27	0.03%	\$0.57	0.07%	Service	7	CHF	✗
TV PLUS AG Shares SHA	TVPLS	TV Company	\$5,068,198.07	0.03%	\$5.56	0.72%	Real Estate	254	CHF	✗
AyurVeda AG Shares	VEDA	cosmetics	\$4,846,892.91	0.03%	\$44.47	5.78%	Producing	57	CHF	✗
Aspen Digital inc.	ASPD	Real Estate	\$4,800,000.00	0.03%	\$3.79	0.49%	Real Estate	1	USD	✗
Protos	PRTS	Crypto provider ( helpe	\$4,100,000.00	0.02%	\$0.72	0.09%	Financial Services	17	USD	✗
FounderStudio AG CS SHA	FSAGS	FinTech	\$4,043,339.21	0.02%	\$4.49	0.58%	Financial Services	61	CHF	✗
TEMPLE	NYCE	Real Estate	\$2,100,000.00	0.01%	\$1.50	0.20%	Real Estate	35	USD	✗
EHC Kloten Partizipationsschein	EHCK	Eishockey-club	\$154,671.22	0.00%	\$99.76	12.97%	Service	119	CHF	✗