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Crypto Assets Study 2021

An overview of the Swiss and Liechtenstein crypto assets ecosystem

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1. Introduction

Developments in distributed ledger technology (DLT) have led to the emergence of a new type of assets in recent years. These so-called "cryptographic assets" can serve different purposes and have increasingly become the focus of investors due to their characteristics as a new and independent asset class, including their potential for portfolio optimization or diversification (see, e.g., Ankenbrand and Bieri (2018), or, more recently, Bianchi (2020)). As a result, an ecosystem has emerged over time to facilitate exposure to such investments through the use of traditional investment vehicles, such as funds, but also through the ongoing facilitation of access to direct investment through providers, such as crypto exchanges, wallet providers, or recently, more and more regulated banks. However, the market microstructure of this ecosystem, as well as the volume of the different business models in the market for crypto assets in Switzerland and Liechtenstein, is still quite unclear and has not yet been investigated and surveyed in a structured manner. The present study aims to fill this gap in the research. In particular, the study aims to structure the Swiss and Liechtenstein ecosystem for crypto assets, identify the relevant participants, and highlight their business models and business volumes as accurately as possible.

The remainder of this chapter defines the term "cryptographic assets", or "crypto assets" for short, as it is the subject of the present study, followed by an assessment of the relevance of the corresponding ecosystem in Switzerland and Liechtenstein, and descriptions of the methodological approach and structure of the study.

1.1. Definition

The lack of a globally accepted definition for crypto assets has led to each publication in the field interpreting the term differently. In this study, the term "cryptographic assets" is defined relatively broadly as follows:

Cryptographic assets include digital representations, like claims, values or rights, issued on a distributed ledger, such as a blockchain protocol, in the form of tokens.

In this study, the class of crypto assets is further divided into two subtypes in order to account for recent developments observed in the sector. The first type is tokenized assets, which are defined as tokens based on or representing a well-defined underlying collateral. This collateral can take various forms, such as tangible assets, like precious metals, mineral resources, real estate, securities or works of art, or intangible assets, like licenses, rights, graphics or documents. Tokenized assets have gained relevance in Switzerland in recent months with the introduction of a new type of uncertificated security, named "ledger-based security" (Registerwertrecht), which creates a robust legal basis for the tokenization of assets (rights), such as shares, bonds and other financial assets, as well as their transfer.[1] The second type is cryptocurrencies, which are usually understood as alternative means of payment, but in this study, they group together all tokens without any clearly defined collateral.

It should be noted that other publications employ different classifications of crypto assets, and that even this main term is not used universally. For example, the Swiss Financial Market Supervisory Authority (FINMA) distinguishes between three token types, namely payment, utility and asset tokens, which differ in their economic purpose (FINMA, 2018). Other publications use additional or simply differently named token archetypes, such as governance or platform tokens, and/or introduce further terms, such as stablecoins or central bank digital currencies (CBDCs). A more comprehensive classification framework for all types of assets, i.e., not just crypto assets, is proposed by

[1] For more details on ledger-based securities, see Section 2.2.3.2.1 of the IFZ FinTech Study 2021.

Ankenbrand, Bieri, Cortivo, Hoehener, and Hardjono (2020), using various characteristics, such as how consensus on the asset's state is reached or the associated information complexity, as distinguishing factors.

1.2. Importance of the Crypto Assets Ecosystem

Since the creation of the Bitcoin network, originally designed in a white paper by Nakamoto (2008) and launched in 2009, the space for crypto assets has developed rapidly, with the market being subject to different cycles, as shown in Figure 1.1.[2] After the first sharp increase in total market capitalization toward the end of 2017, the market cooled down in 2018 and 2019. As of the first quarter of 2020, the total capitalization of the market has increased again and amounted to over USD 750 billion at the end of said year. By the end of September 2021, this positive trend continued, with the total market capitalization more than doubling to over USD 1.7 trillion within nine months (CoinMarketCap, 2021a). It is worth noting that of the total crypto market capitalization at the end of September 2021, Bitcoin (around 43 %) and Ether (around 18 %) accounted for more than 60 % and therefore still occupy the most dominant role in the sector (CoinMarketCap, 2021b).

Comparing the market for crypto assets with established asset classes shows that it is significantly smaller. For example, the market capitalization of all listed companies worldwide was USD 93.7 trillion at the end of 2020 (The world bank, 2021). At that point, the crypto asset market represented about 0.8 % of the global equity market. The global gold market, as another example, had a size of about USD 12.3 trillion at the end of 2020 (Finasko, 2021), about 16 times larger than the market for crypto assets.

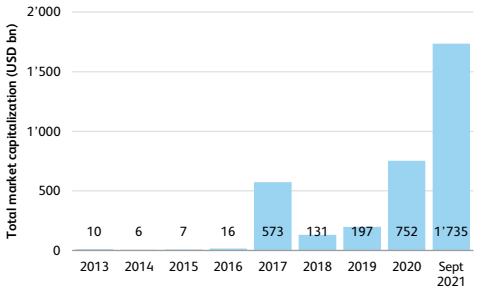

Figure 1.1: Total market capitalization of crypto assets, by end of period (source: CoinMarketCap (2021a))

However, with the sharp increase in the total market size for crypto assets in recent years, an entire ecosystem has emerged in Switzerland and Liechtenstein to deal with investment matters in this area. This ecosystem covers, for example, the issuance and custody of crypto assets, but also largely with investment solutions, whether directly in DLT-based tokens or via indirect investment vehicles. In addition to new market participants, traditional financial institutions have also positioned themselves and offer a variety of products and services in this area.

Besides the increasing number of traditional financial institutions providing solutions for crypto assets, the relevance of the ecosystem in Switzerland can be illustrated by the number of FinTech companies related to DLT. While there were 41 companies at the end of 2017, the number rose to 127 by the end of 2018, representing an increase of 86 companies, which can be attributed to the emergence of the so-called "Crypto Valley" in and around the canton of Zug. The number of FinTech companies applying DLT has leveled off at 120 companies by the end of 2020. Of these companies, 54 provide a DLT-based banking infrastructure (e.g., crypto exchanges or wallets), 35 provide investment management solutions (e.g., staking or brokerage services), 24 provide payments solutions (e.g., stablecoins), and 7 provide services related to deposit and lending (e.g., decentralized lending protocols) (Ankenbrand, Bieri, Frigg, Grau, & Lötscher, 2021).

[2] Note that the figures presented include the aggregate market capitalization of all crypto assets listed on CoinMarketCap, a website providing a variety of information related to the crypto market. These are not comprehensive, as the provider does not list certain tokens which are, for example, classified as suspected fraud or are not publicly traded. Additionally, non-fungible tokens (see paragraph "Other" in Section 4.3), as well as tokenized assets, are not consistently included.

1.3. Methodological Approach

The aim of this study is to shed light on the microstructure of the Swiss and Liechtenstein market for crypto assets, to identify relevant market participants and business models, and to provide indications of corresponding business volumes.

To achieve this, the following approach was taken. In a first step, companies in Switzerland and Liechtenstein offering investment-related products and services for crypto assets were identified through desk research of public sources and screening of the proprietary FinTech database of the Lucerne University of Applied Sciences and Arts. In a second step, a survey was conducted among the identified companies, firstly to capture their business models in a structured manner, and secondly to obtain information on the related business volumes. The companies were informed that the information on the business model in the study would be published in the form of factsheets (see Chapter 6), while the key business figures would be treated confidentially and only reported in aggregated form so that no conclusions could be drawn about individual survey participants. In order to obtain the most comprehensive picture of the activities in the market for crypto assets, additional information was collected alongside the data on business volumes generated by the survey. With regard to indirect investments, e.g., data related to crypto-related financial products, additional data was sourced from the subscription-based data providers Bloomberg and Morningstar as well as from SIX. Data enrichment is more difficult for direct investments in crypto assets, as clear delineation of publicly available information, such as the global network activity of different blockchain protocols, in Switzerland and Liechtenstein is inherently difficult due to the anonymity of network participants as a result of the underlying DLT. Therefore, to draw conclusions about the direct investment activities, we determined the trading volume of the largest centralized and decentralized crypto exchanges. In a next step, we estimated the percentage of this volume for Switzerland by analyzing the webpage traffic share. Furthermore, the present study refers to external publications on direct investments in crypto assets in Switzerland and Liechtenstein where possible, provided that these are based on comprehensible methodological procedures that allow for robust findings.

1.4. Structure of the Study

After the introduction in this first chapter, the study is divided into five chapters. While Chapter 2 presents a structuring framework regarding the ecosystem for crypto assets, Chapter 3 shows an assessment of the business models of the companies that participated in the survey, with the corresponding complete company factsheets being listed in Chapter 6. Chapter 4 covers an analysis of the market activities in the crypto asset ecosystem in Switzerland and Liechtenstein, and Chapter 5 concludes the study.

2. Structure of the Ecosystem for Crypto Assets

In this chapter, we provide a structured overview of the emerging Swiss and Liechtenstein crypto assets ecosystem and its various participants. Based on the different services and products that crypto asset companies offer, as well as the type of technology and governance model used to deliver these solutions, the crypto asset sector is systematically structured in Section 2.1, taking an investment perspective. The subsequent sections then briefly introduce identified market participants and generally describe their business models.

2.1. Overview

In a first step, the Swiss and Liechtenstein investment ecosystem for crypto assets, based on which the market activities are analyzed in the following chapters, is described in a structured way. A corresponding framework is given in Figure 2.1. The three vertical layers *Off-Chain*, *Centralized On-Chain* and *Decentralized On-Chain* refer to the provision of crypto asset-related financial products and services, as well as the degree of centralization of the provider. Specifically, *Off-Chain* includes all products and services which are offered in connection with indirect investment vehicles in crypto assets by financial service and infrastructure providers, while *Centralized On-Chain* and *Decentralized On-Chain*, in contrast, focus on direct investments in crypto assets, implying the direct involvement of DLT. With respect to the latter two layers, we distinguish between centralized and decentralized provision of crypto-related products and services. In the former, central intermediaries offer products and/or services, while in the latter, investors interact directly via (smart contract-based) software protocols in a DLT network. In general terms, smart contracts, first proposed in the 1990s by Szabo (1997), are blockchain-based programs that execute when certain predefined conditions are met.

The horizontal axis lists five different main processes provided in the crypto assets ecosystem from an investment perspective, along with the layer *Investors*, which includes different investor types. While the layer *Issuers* includes all participants that create crypto assets or related products and services, *Investment Services* focuses on investment-focused service providers, *Trading Infrastructure* on providers offering trading venues, and *Post-trading Infrastructure* on providers of services but also technological solutions involved after a change in ownership of a crypto asset.

In general, the roles in the crypto assets investment ecosystem outlined in Figure 2.1 are not mutually exclusive. Therefore, individual companies can take on multiple roles, which are described in the following sections in more detail.

2.2. Issuers

In general, issuers are service providers that develop, create and sell crypto assets or related investment products. A distinction can be made between investment product providers, tokenizers and miners/validators.

Investment Product Providers

Investment product providers create various types of financial products that can typically be bought or sold by investors through traditional exchanges or over the counter. In the context of this study, investment product providers issue investment products related to crypto assets. Such products include, for example, tracker certificates that track the price of a single or a

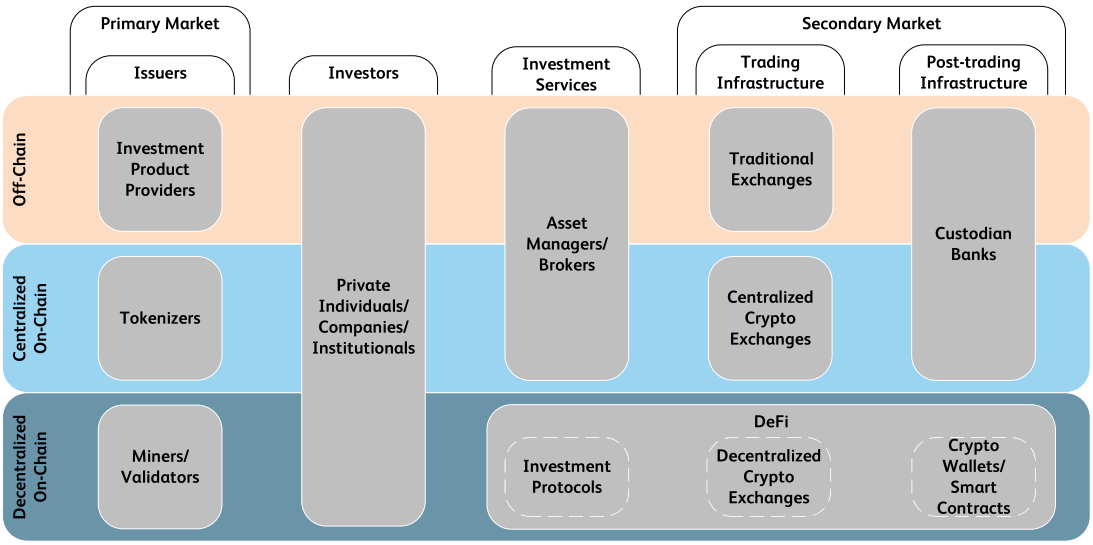

Figure 2.1: Structure of the ecosystem for crypto assets (own representation)

basket of different crypto assets, and exchange-traded products (ETPs). Note that issuers of investment products may themselves assume the role of an investor if direct investments in crypto assets serve as the underlying asset of the product or if they hedge some of the risk associated with the issuance of their products through direct investments.

Tokenizers

The corresponding centralized on-chain counterparts to off-chain issuers are tokenizers. In broad terms, tokenization is the process of issuing tokens on a blockchain that digitally represent an asset, such as a good or right. A tokenizer is responsible for the transmission from the off-chain asset to an on-chain token representative(s), which can then be traded, for example, using crypto asset exchanges. When the value of traditional financial assets, such as shares, is to be converted to tokens, legal requirements may arise. In such cases, tokenizers can help with their expertise by issuing regulations-compliant tokens.

Miners/Validators

In public blockchain networks, the validation of the network is done by miners or other forms of validators, depending on the consensus mechanism. In a proof-of-work-based system, the validation is based on a computationally intensive task. In particular, miners use computational power to find a valid block by finding a "hash" that satisfies the conditions set by the network protocol (Bitcoin Suisse, 2021b). Each miner who finds a valid block first is compensated with newly created units of the corresponding blockchain-native crypto asset (e.g., Bitcoin in the Bitcoin network). Proof-of-stake is another type of consensus mechanism that a blockchain can use to agree on a single true state of the system. While proof-of-work involves miners expending energy to mine blocks, proof-of-stake involves validators who commit stakes to propose and attest blocks on a blockchain. They do this by staking the blockchain-based crypto assets on the network and making themselves available to be randomly selected to propose a new block. If this block is attested by a certain number of other validators, the block is added to the blockchain

and the randomly selected validator, as well as the attestors, are compensated with newly issued crypto assets (Consensys, 2020). Hence, miners and validators can therefore be considered issuers of crypto assets.

2.3. Investors

Investors are individuals, companies or institutional investors who seek exposure to crypto assets through holding either off-chain investment products (i.e., indirect investments) or on-chain tokens (i.e., direct investments). Although there are efforts in research to classify investors seeking exposure to crypto assets (see, e.g., Lammer, Hanspal, and Hackethal (2019)), this is particularly difficult for investors in on-chain crypto assets, as public blockchain networks allow any investor to hold crypto assets without revealing their true identity. As a consequence, this study does not deal more specifically with different types of investors, but focuses on the activities of the overall market.

2.4. Investment Services

Investment servicing includes the acquisition, management, structuring, trading and control of crypto asset investments. Although asset servicing encompasses an entire service line, a distinction can be made between asset managers, brokers and investment protocols.

Asset Managers

Asset management can be defined as the creation and management of investment solutions in the form of collective investment schemes or individual, institutional mandates (Fausch, Agnesens, Frigg, & Grau, 2021).[1] As crypto assets can be seen as an individual asset class (see e.g., Ankenbrand and Bieri (2018)) and offer a diversification benefit to traditional portfolios, they have attracted increasing interest from private and institutional investors. Asset managers help investors manage their exposure to crypto assets. In doing so, the types of investment services can differ widely. While certain asset managers offer only services for indirect investment, there are some that offer direct or both investment possibilities.

Brokers

Brokers are companies or individuals that act as financial intermediaries for investors who wish to exchange money for crypto assets (or vice versa) through indirect or direct investments. They typically facilitate the trading of crypto assets through an exchange or over the counter. Brokers can also facilitate trading between investors and issuers of crypto investment products, such as structured products or ETPs. Acquiring or selling crypto assets or related financial products through a broker may be easier and more user-friendly for certain investors than trading through traditional or crypto asset exchanges themselves because, for example, brokers typically allow the trading of large volumes and investors do not need special technological skills, such as an ability to use crypto wallets.

Investment Protocols

Before investment protocols are discussed, a definition of decentralized finance (DeFi) is needed. DeFi generally refers to the transition from conventional, centralized financial systems to a decentralized financial model without intermediaries. Investment protocols in DeFi are, therefore, autonomous programs tailored to specific problems in the traditional investment servicing industry. Smart contract protocols that automate contractual terms between buyers and sellers or lenders and borrowers make decentralized protocols possible without third parties. These protocols provide the opportunity for all people, regardless of their location or wealth, to access financial services through a blockchain network.

2.5. Trading Infrastructure

Trading infrastructures provide a venue for buyers and sellers to match their offers, i.e., they enable the exchange of crypto assets and/or related investment products. One recent development in this regard is the

[1] For a comprehensive overview of asset management in Switzerland, see: https://www.am-switzerland.ch/en/asset-management/swiss-asset-management-study-2021.

introduction of the DLT Act by the Federal Council. With the new legislation in force since August 1, 2021, licenses for DLT trading venues can be granted by FINMA in Switzerland.[2] In the following, we distinguish between traditional exchanges, where investment products are traded, and crypto exchanges, where crypto assets can be traded for fiat money or against each other.

Traditional Exchanges

Traditional exchanges are centralized and regulated trading venues where, in addition to traditional investment products, indirect investment instruments for crypto assets, such as exchange-traded products or structured products, can be bought and sold. In Switzerland, such indirect investment products can be purchased through two exchanges: SIX Swiss Exchange and BX Swiss.

Crypto Exchanges

Crypto exchanges are platforms where crypto assets can be bought or sold against fiat money or other crypto assets. Generally, a distinction is made between centralized and decentralized crypto exchanges.

As with traditional exchanges, centralized crypto exchanges are operated by a central party and often require know-your-customer identification, although some platforms still operate in a partially unregulated environment. Examples of centralized crypto exchanges include Binance, Coinbase and the SIX Digital Exchange (SDX), which received the licenses required to act as a stock exchange and central securities depository, also with regard to crypto assets, in September 2021 (FINMA, 2020a). Organized trading facilities (OTFs) are a special form of centralized trading venues that are not treated as financial market infrastructure by the Financial Market Infrastructure Act and can be operated by banks and securities firms, for example.[3] Several OTFs already exist in Switzerland and Liechtenstein, including Sygnex by Sygnum and TDX by Taurus.

[2] For more information, see: https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-84035.html.

[3] See (FINMA, 2020b) for a detailed definition of organized trading facilities.

Note that centralized trading venues often also act as custodians for their customers.

A decentralized crypto exchange (DEX) is an unregulated platform where there is no intermediary and settlement is done entirely on a blockchain using smart contracts. Only crypto assets can be traded on these exchanges and settlement usually takes longer than on a centralized exchange as a blockchain transaction is required once a trade takes place. The true identity of the market participants is usually unknown. In addition, the use of DEXes usually requires investors to take custody of the crypto assets to be traded using crypto wallets.

2.6. Post-trading Infrastructure

Post-trading refers to all services that take place after crypto assets or related investment products have been traded. These services can be provided by custodian banks for indirect investment products and by wallets and smart contracts for direct crypto assets investments.

Custodian Banks

Custodian banks are providers of safekeeping and security services for financial products related to crypto assets, such as exchange-traded products, for their clients. Custodian banks may also hold crypto assets from direct investments or, more precisely, the keys associated with the respective tokens. For this, a crypto wallet is needed.

Crypto Wallets/Smart Contracts

If investors want to manage crypto assets on their own, they need a public address based on a public key. While, the public address is visible to everyone on a public blockchain and can be used to receive transactions, the private key behind each address, in contrast, is secret and should only be known to the owner as it can be used to authorize transactions to transfer crypto assets. To generate private and public keys and to protect the former from unauthorized access, a secure crypto wallet is required (Swisscom, 2021). Generally, a distinc-

tion is made between cold and hot wallets, i.e., wallets that are disconnected from the Internet or connected to it, respectively. Since hot wallets are connected to the Internet, they offer instant access and higher flexibility. However, hot wallets are exposed to cyber risks because of their online presence. Cold wallets, on the other hand, can offer a higher security standard but are more difficult to access instantly due to their lack of permanent connection to the Internet.

In public blockchains based on a proof-of-stake consensus algorithm, smart contracts take on a kind of custodian role, as validators must use them to lock the blockchain-native crypto asset in order to participate in the network's validation process. These assets serve as a collateral that is slashed[4] if the corresponding validator misbehaves on the network (e.g., attacks the network). Therefore, smart contracts can also be considered custodians in the context of staking.

[4]Most proof-of-stake blockchain networks have reward and penalty mechanisms. Well-behaving validators receive rewards for both validating and proposing blocks to the network. In contrast, malicious behavior or inactivity by validators is punishable by a penalty on their stake, known as "slashing" (Trails, 2021).

3. Overview of Providers of Crypto-related Products and Services

In this chapter, key activities and customer segments in the Swiss and Liechtenstein crypto assets investment ecosystem are analyzed. The findings are based on a survey among Swiss and Liechtenstein companies active in the investment area of crypto assets that qualify under the definition presented in Chapter 1. The survey was conducted between July 2021 and September 2021 in accordance with the steps described in Section 1.3. In total, 77 companies that offer different products and services with regard to crypto assets were identified, of which 20 took part in the survey, resulting in a response rate of approximately 26 %. Factsheets about these companies are listed in Chapter 6. Note that not all information collected in the survey is reflected in the company factsheets in Chapter 6. The diversity of products and services offered in the Swiss and Liechtenstein crypto assets ecosystem by the end of 2020 is illustrated in Figure 3.1. Note that the fields highlighted in magenta in Figure 3.1 and also in Figure 3.2 mean "applicable" and the blue fields mean "not applicable".

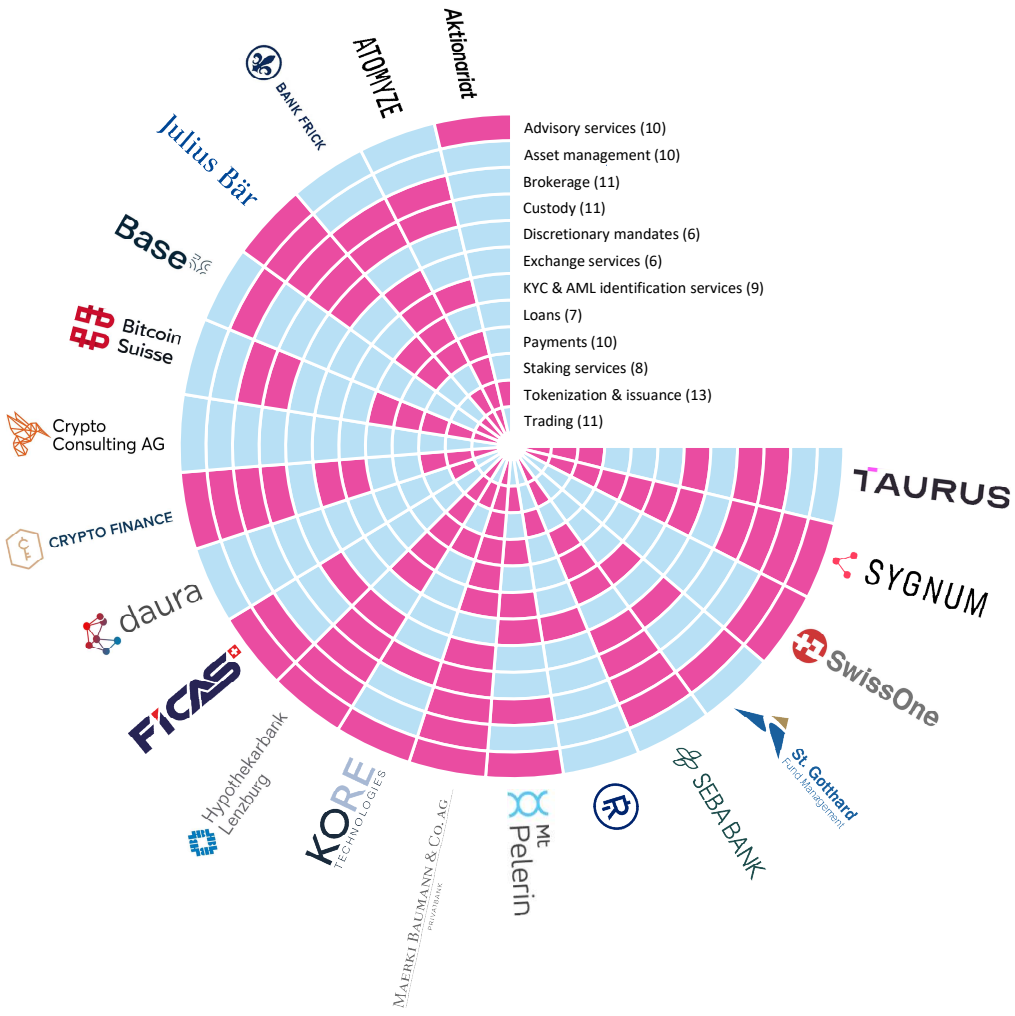

Figure 3.1: Key activities of companies from factsheets received

In general, services by crypto asset companies can be classified into twelve different areas from an investment point of view. These services include *Advisory services*, *Asset management*, *Brokerage*, *Custody*, *Discretionary mandates*, *Exchange services*, *KYC & AML Identification services*, *Loans*, *Payments*, *Staking services*, *Tokenization & issuance* and *Trading*.

Analyzing the companies based on the services related to crypto assets, it becomes apparent that, from the total of 20 companies that participated in the survey, 13 are active in the area of *Tokenization & issuance*, followed by the areas of *Brokerage*, *Custody* and *Trading*, which are covered by 11 companies each. Half of the companies surveyed offer *Advisory services*, *Asset management* and *Payments*. Slightly less than half provide *KYC & AML identification services* (9 companies), *Staking services* (8 companies) and *Loans* (7 companies). *Discretionary mandates* and *Exchange services* are offered by 6 companies each. These areas are thus covered the least by the companies.

There are highly diversified companies, such as Sygnum Bank AG, Maerki Baumann & Co. AG and Hypothekarbank Lenzburg AG, that cover 11 of the 12 business areas surveyed. SEBA Bank AG and Crypto Finance AG also offer a variety of products and services. However, there are also companies, such as Aktionariat AG, Base58 Capital AG, Relai AG, SwissOne Capital AG and daura AG, that specialize in selected crypto asset activities.

The companies were also asked about their product offering and customer segments. *Product offering* is divided into *Direct investments* into crypto assets and indirect investments through *Funds*, *Structured products* and/or *Derivatives*. The corresponding findings are shown in Figure 3.2 in the upper diagram. It reveals that with 16 of the 20 companies *Direct Investments*

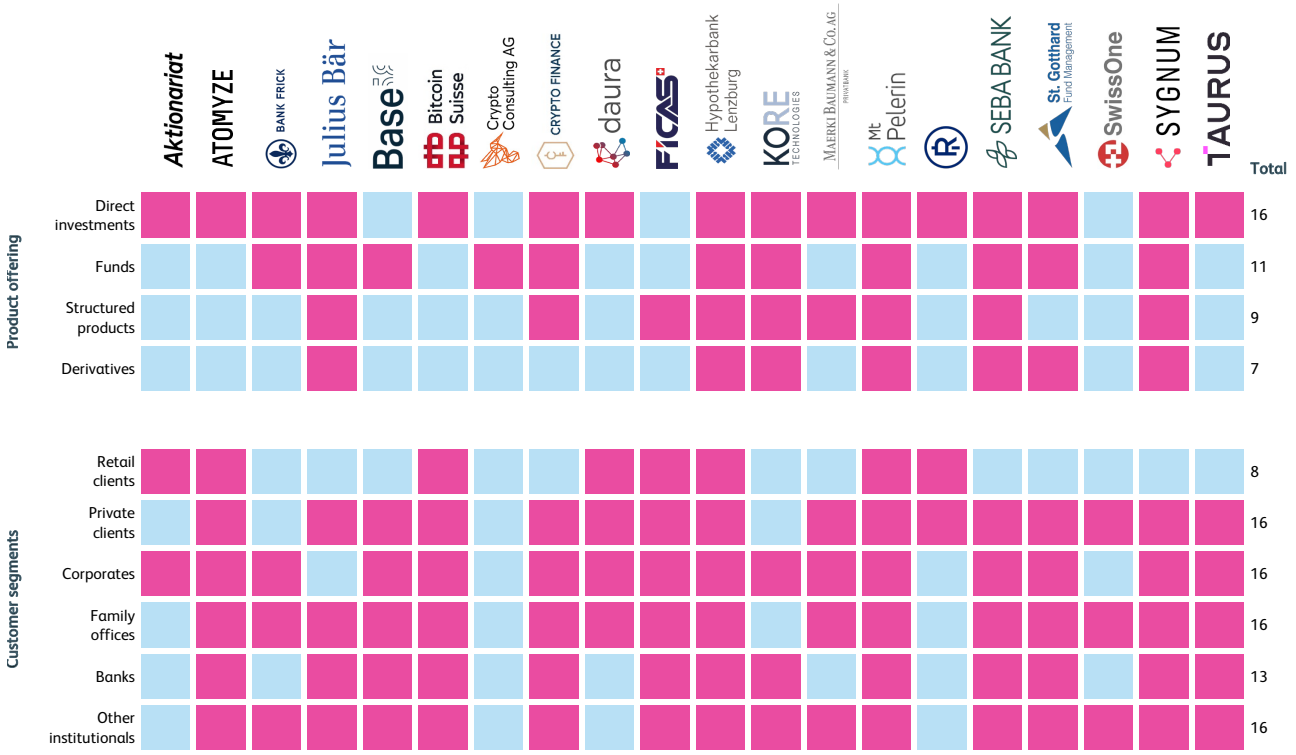

Figure 3.2: Product offerings and customer segments of companies from factsheets received

are the most frequently offered way of gaining exposure in crypto assets.

The offerings related to indirect investments, i.e., *Funds*, *Structured products* and *Derivatives* are individually provided by fewer companies than *Direct investments*. *Funds* are provided by 11 companies, *Structured products* by 9 and *Derivatives* by 7 companies. Note that with regard to indirect investments, not all companies with activities in this area act as issuers, but in some cases, they also offer related products or services. It is worth mentioning that Bank Julius Bär & Co. AG, Hypothekarbank Lenzburg AG, Kore Technologies AG, Mt Pelerin Group SA, SEBA Bank AG and Sygnum Bank AG cover all product and related service offerings.

The lower diagram of Figure 3.2 shows the distinction of services provided by the 20 companies into customer segments. The distinction is made between *Retail clients*, *Private clients*, *Corporates*, *Family offices*, *Banks* and *Other institutionals*. The customer segments *Private clients*, *Corporates*, *Family offices* and *Other institutionals* are targeted by 16 companies each. There are 13 companies that serve *Banks* as customers. With only 8 companies, *Retail clients* are the least targeted group. A total of 5 companies cover all customer segments.

In summary, companies in the Swiss and Liechtenstein investment ecosystem for crypto assets offer diverse products and services and have different levels of specialization. Tokenization and issuance of crypto assets (or related products) represents the most common service offered, while products and services for direct investments are offered more frequently than for indirect forms of investment. In terms of customer segments, there are comparatively few offerings for retail clients.

4. Overview of Market Activities

This chapter discusses the business volumes in the Swiss and Liechtenstein crypto assets ecosystem and selectively highlights market developments in the areas for which data are available.

The first section discusses activities related to indirect investments into crypto assets, while the second section focuses on direct investments. The third section sheds light on tokenization, e.g., with regard to stablecoins, while sections four and five look at the volumes of crypto assets under management and custody at companies incorporated in Switzerland or Liechtenstein, respectively.

4.1. Indirect Investments

Indirect investments are investments that do not require the actual purchase of the asset that ultimately generates the risk/return profile. They allow investing in crypto assets while using traditional financial instruments. These include investment vehicles like funds and structured products. In the field of crypto assets, exchange-traded products (ETPs) in particular have established themselves alongside structured products, such as tracker certificates or mini-futures. The number of launches of such crypto-related ETPs, as measured by individual ISINs[1], per month is given in Figure 4.1. The figure takes into account all corresponding crypto-related products that are either available for sale or are traded or domiciled in Switzerland and/or Liechtenstein.

It reveals that the number of individual ISINs of ETPs and open-end funds in the Swiss and Liechtenstein crypto assets ecosystem has increased steadily since the inception of the first corresponding financial product in October 2018. At the end of September 2021, there were already a total of 66 individual ISINs, representing a monthly average increase of a little under

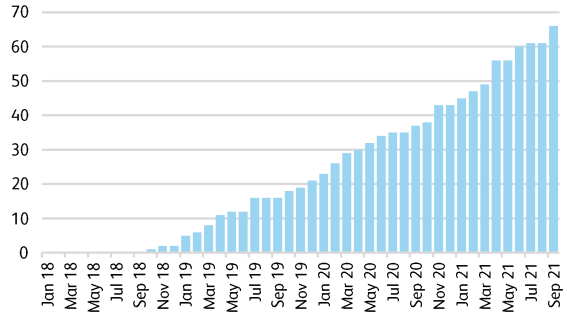

Figure 4.1: Number of individual ISINs of ETPs and open-end funds (source: Morningstar Direct)

two products. The majority of these products were registered by 21Shares AG (21 ISINs), CAIAC Fund Management AG (11) and Accuro Fund Solutions AG (10).

The development of the corresponding aggregated fund volume over time is shown in Figure 4.2. The left scale shows the volume in millions of Swiss francs, while the right scale reflects the volume in points of the SIX Crypto Market Index 10 (CRMI10) provided by SIX. The development of this index, which serves as a reference for the overall market development of crypto assets, is also shown in Figure 4.2 (right scale). The figure shows that the total assets of ETPs and open-end funds in Swiss francs has grown exponentially since October 2020, in contrast with the number of products, which, according to Figure 4.1, shows a relatively linear growth.

This exponential growth is driven in large part by the analogous rise in the CRMI10, representing the performance of largest and most liquid crypto assets (SIX, 2021d). As a result, the total assets of all products measured in points of the CRMI10 show a more constant positive growth, including when the overall market performance tends to be negative. The stronger growth in the volume measured in CRMI10 (average monthly

[1] The international securities identification number (ISIN) is a globally used standard to identify financial instruments (ISO, 2021).

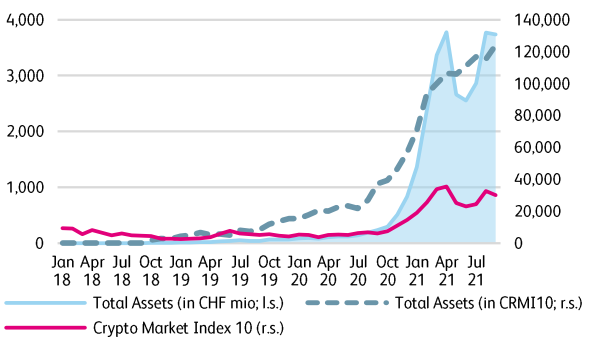

Figure 4.2: Total assets of ETPs and open-end funds (source: Morningstar Direct)

growth rate of 12.6 %) compared to the index performance (average monthly growth rate of 5.6 %) may indicate that new, conventional money has flowed into the crypto market – or more specifically, into the products considered – over the period.

The aggregate sizes of all ETPs and open-end funds amounted to roughly CHF 3.7 billion at the end of September 2021. Figure 4.3 shows a breakdown of this sum into the following three different perspectives and all of their overlaps:

- **Distribution perspective (in blue):** Includes all ETPs and open-end funds that are available for sale in Switzerland and/or Liechtenstein. This does not preclude these products from also being offered for sale in other countries.
- **Exchange perspective (in green):** Includes all ETPs and open-end funds that are traded on a traditional exchange based in Switzerland.[2] This does not preclude these products from also being traded on exchanges in other countries.
- **Production perspective (in magenta):** Includes all ETPs and open-end funds that are domiciled in

[2]Note that Liechtenstein does not have a traditional stock exchange.

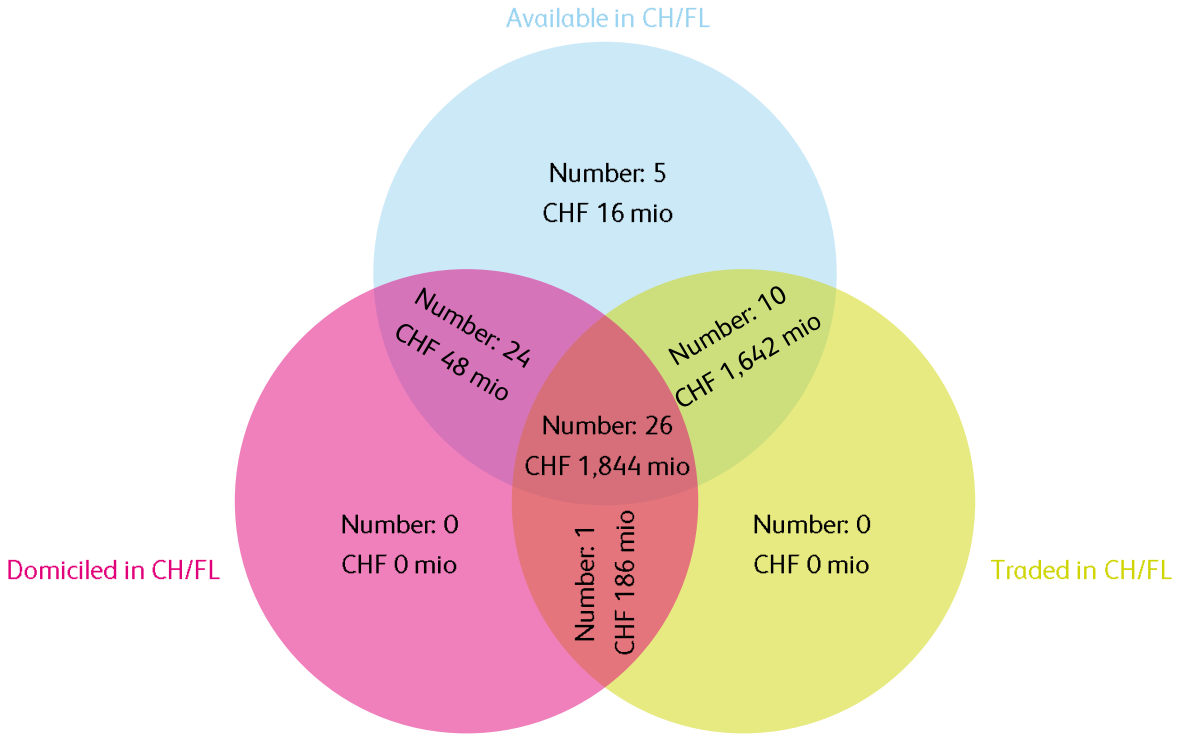

Figure 4.3: ETPs available, domiciled and/or traded in Switzerland or Liechtenstein (source: Morningstar Direct)

Switzerland or Liechtenstein. The term "domicile" refers to the country where the product is legally registered and not to the country where it is managed.

Figure 4.3 shows that of the total 66 individual ISINs for ETPs and open-end funds, 65 are available for sale, 51 are domiciled, and 37 are traded in Switzerland and/or Liechtenstein. At CHF 1.844 billion, the largest aggregated fund volume is accounted for by 26 products that are available for sale, domiciled and traded in at least one of the two countries. The second largest aggregated fund volume (CHF 1.642 bn) is accounted for by 10 products domiciled abroad but available for sale and traded in Switzerland and/or Liechtenstein. The overlap between the exchange and distribution perspectives is therefore high and largest in terms of the volume of aggregated assets. Therefore, the following paragraphs focus on the exchange activities in the field of crypto assets in Switzerland. In addition to ETPs and open-end funds, structured products are also discussed, as they play a significant role in the field of indirect investments. Note that the analysis does not include over-the-counter (OTC) transactions, as these are not centrally cleared and the corresponding activities are therefore difficult to measure. The lack of information on OTC trading is not unique to the market for crypto assets; it can also be observed in other asset classes, such as stocks. However, certain estimates suggest that OTC transactions account for about 35 % of the total trading volume related to crypto assets (Bain & Company, 2021).

Figure 4.4 gives an overview of the temporal development of the total number of crypto-related financial products traded on the SIX Swiss Exchange from the perspective of product types (left-hand chart) and product underlying (right-hand chart).[3] The left-hand chart reveals that while the number ETPs traded has increased continuously since August 2020, the month in which the first data in this regard is available, the number of structured products has decreased. With regard to the latter, the decline is driven by the decreasing number of mini-futures as they overcompensate for the increase in the number of tracker certificates and the comparably stable development of the small number of reverse convertibles. At the end of September 2021, ETPs accounted for 56 % of all crypto-based financial products on the SIX Swiss Exchange, while structured products accounted for 44 %. With 38, 30 and 25 financial products, Leonteq Securities AG, Bank Vontobel AG and 21Shares AG were the largest providers as of the end of September 2021 (SIX, 2021b).

[3] Note that in some cases, multiple financial products are listed under a single ISIN.

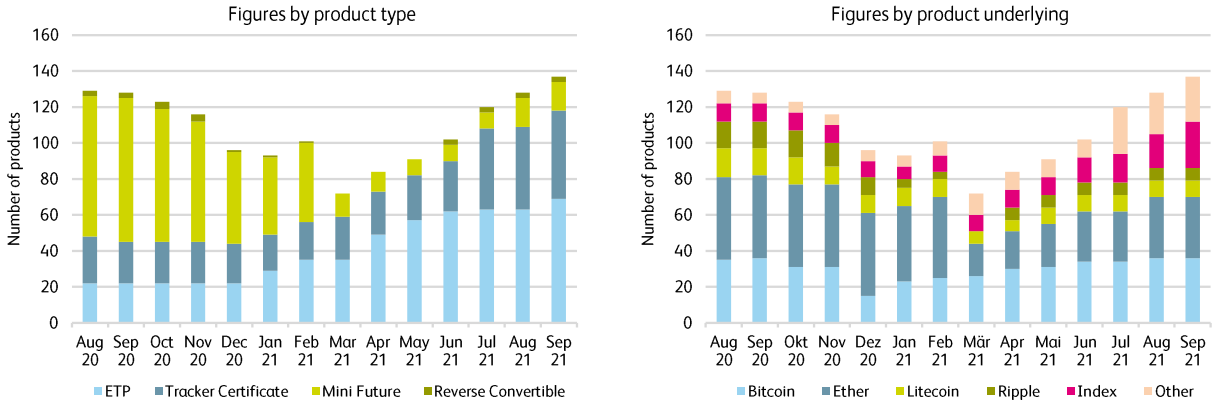

Figure 4.4: Number of crypto-related financial products traded on the SIX Swiss Exchange per month by product type (left-hand graph) and underlying asset (right-hand graph) (source: SIX Crypto Reports)

The right-hand chart of Figure 4.4 reveals the underlying crypto assets of the listed financial products. As of September 2021, Bitcoin (36 financial products) served as the most used underlying asset, followed by Ether (34), indexes (26), i.e., baskets of multiple crypto assets, other crypto assets (25), Litecoin (9) and Ripple (7). From a temporal perspective, there is a slight shift from Ether, Litecoin and Ripple as underlying assets toward index products and other crypto assets (e.g., Tezos and Solana).

The market turnover, i.e., trading volume, of the crypto-related financial products traded on the SIX Swiss Exchange is illustrated in Figure 4.5. The left-hand chart shows the volumes in CHF millions for ETPs and structured products and reveals that the trading volume started to increase significantly in November 2020. Trading volumes peaked in February 2020 at over CHF 1.2 billion per month, of which ETPs and structured products each accounted for around half. Thereafter, the monthly trading volume shows a relatively volatile pattern that correlates with the price development of the market. Comparatively higher trading volumes can be observed in months with positive performance than in months with negative market performance. Comparing the figures of the aggregate crypto assets market turnover between October 2020 and September 2021 of roughly CHF 7.0 billion (SIX, 2021a) with the overall turnover on the SIX Swiss Exchange of around 1.4 trillion (SIX, 2021c) reveals that trading activity for crypto-based indirect investment products is still comparably small.

The right-hand chart of Figure 4.5 illustrates the share of ETPs and structured products in the total trading volume over time. While structured products were mainly responsible for trading activity in the first months of the observation period, this has shifted toward ETPs over time and is thus congruent with the development of the absolute number of financial products on the SIX Swiss Exchange in these two categories. Since October 2019, the month in which the lowest share for ETPs in the total trading volume of crypto-based products can be observed, ETPs have steadily gained relevance. As of September 2021, ETPs were accountable for about 86 % of total trading volume.

The absolute number of monthly trades in crypto-related financial products on the SIX Swiss Exchange shows a similar trend to the trading volume. While 837 transactions were counted in November 2018, of which structured products accounted for around 80 %, by September 2021, the figure had risen to 35,681, with ETPs accounting for over 90 % of all trades.

Regarding the trading currencies for crypto-based financial products on the SIX Swiss Exchange, the major-

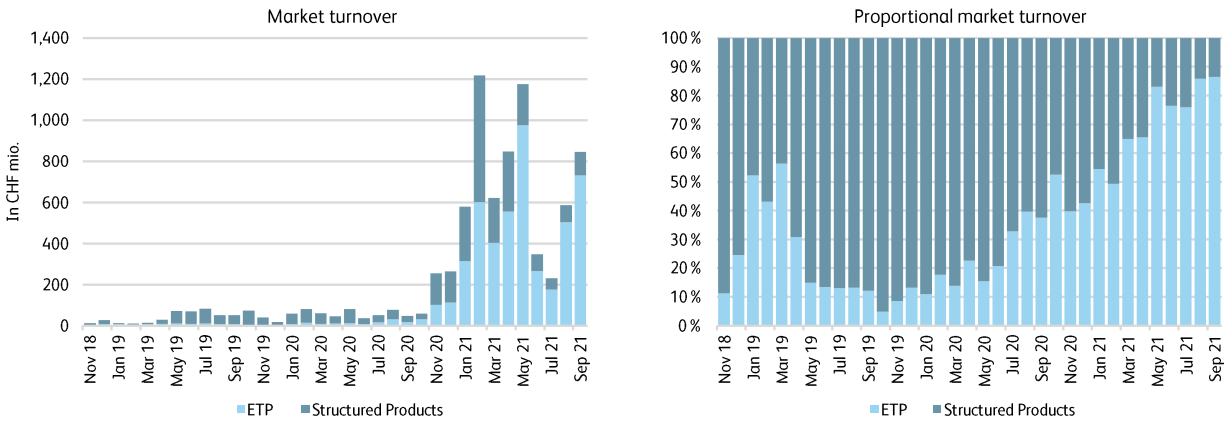

Figure 4.5: Market turnover by month (source: Data provided by SIX)

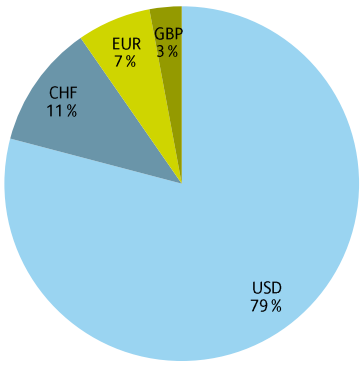

Figure 4.6: Proportion of turnover by currency in September 2021 (source: Data provided by SIX)

ity of trading activity is conducted in foreign currencies, as shown in Figure 4.6. The chart shows that in September 2021, the US dollar was the most popular trading currency, accounting for around 79 % of the trading volume. The Swiss franc accounted for 11 %, followed by the euro (7 %) and the British pound (3 %).

4.2. Direct Investments

In contrast to indirect investment vehicles, direct investments describe the actual purchase of crypto assets. According to Chainalysis, more than 158,000 people in Switzerland owned crypto assets in the period between July 2019 to June 2020, which is about 2 % of the Swiss population (tripleA, 2021). A survey conducted by market research firm Intervista on behalf of Migros Bank, involving 1,500 people living in Switzerland and published in September 2021, concluded that 7 % of people aged between 18 and 55 years hold crypto assets in their portfolio (Swiss Info, 2020). As part of the Statista Global Consumer Survey, more than 1,000 Swiss people were polled online in the course of the year 2021. Of all respondents, 10 % stated that they use or own crypto assets (Buchholz, 2021). In May 2021, Avaloq (2021) conducted a survey of a range of affluent to ultra-high-net-worth individual investors in ten countries across Europe and Asia. A quarter of Swiss participants responded that they are invested in crypto assets. The widely varying survey results in terms of the number of people who have investments in crypto assets in Switzerland underscores how difficult it is to draw conclusions about direct investments in crypto assets and the corresponding investment activities. This is because network activity in many of the large public blockchain networks is conducted using public addresses rather than true identities. This difficulty applies not only to the percentage of individuals holding crypto assets in Switzerland, but also to other metrics, such as trading volumes or number of transactions executed by the Swiss population.

Due to the inherent anonymity or, more accurately, pseudonymity of public blockchain networks, the geographic allocation of market activity is difficult. However, estimates for different market volumes are derived in the following paragraphs. First, we address the trading volumes on crypto exchanges. To estimate the trading volume for Switzerland specifically, we use an approach based on internet traffic analysis.[4]

The estimation of the trading volume on crypto exchanges, i.e., the venues where crypto assets are traded directly, for Switzerland is based on data provided by CoinGecko (2021)[5]. In particular, global trading volumes of the largest centralized and decentralized crypto exchanges were sourced from this provider. In order to estimate the trading volume originating from Switzerland on crypto exchanges, the assumption was made that the percentage of traffic from Switzerland on the leading crypto exchange websites corresponds to the percentage of trading volume of the Swiss population. Hence, we assume that the average trading volume associated with a website visit from Switzerland and the rest of the world is identical. This assumption might be rather conservative, as wealth in Switzerland is higher than the global average. The web traffic data were taken from the analytics provider Semrush (2021). Note that the following estimates are based on the 15 largest centralized and decentralized exchanges as of

[4] Note that we can only carry out the analysis for Switzerland, as the web traffic metric is not available for Liechtenstein.

[5] CoinGecko is a data aggregation and tracking service for crypto assets that provides comprehensive data, such as prices, trading volumes and information on crypto assets, and offers users tools for analyzing blockchain transactions.

the end of September 2021, which cover a large portion of the total global trading volume.

Centralized Crypto Exchanges

The results for centralized crypto exchanges are shown in Table 4.1. Total global trading volume between October 1, 2020, and September 30, 2021, amounted to CHF 16.2 trillion, with the largest exchange, Binance, accounting for nearly half of it. While Bitstamp has the highest percentage of Swiss users, BtcTurk Pro recorded almost no site visits from Switzerland. The table reveals that the estimated total trading volume originating from Switzerland is CHF 92.6 billion over the observed 12 months. Comparing this figure with the total trading volume of indirect investment products for crypto assets on the SIX Swiss Exchange during the same period of around CHF 7.0 billion, it can be concluded that in Switzerland, the direct investment trading volume through centralized crypto exchanges is much higher than that of indirect investment products. Comparing it with the total trading volume on the SIX Swiss Exchange of CHF 1.4 trillion, however, reveals that it is still small compared to the turnover related to traditional asset classes.

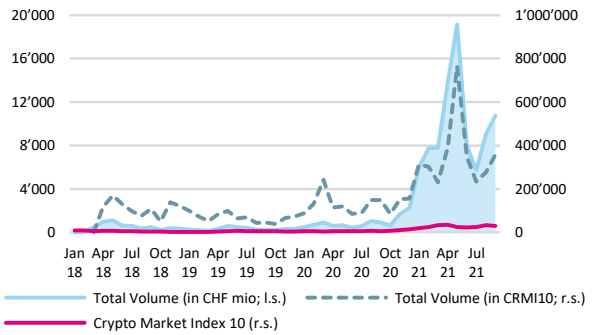

Figure 4.7: Monthly trading volume of the 15 largest centralized crypto exchanges for Switzerland (listed in Table 4.1) (source: CoinGecko (2021), Semrush (2021))

The development of the trading volume for Switzerland on the 15 centralized crypto exchanges over time is shown in Figure 4.7, in millions of Swiss francs (left scale) and in points of the SIX Crypto Market Index 10 (CRMI10; right scale), next to the development of the

Table 4.1: Annual trading volumes of the 15 largest centralized crypto exchanges, Oct. 1, 2020 to Sep. 30, 2021 (source: CoinGecko, SEMrush)

Platform Name	Total Trading Volume in CHF mil.	Traffic Share CH in %	Trading Volume CH in CHF mil.
Binance	7,411,225	0.58	42,700
FTX	2,527,525	0.64	16,245
Huobi Global	2,302,502	0.41	9,539
Coinbase Exchange	1,087,305	0.64	6,930
Bitrue	500,195	0.29	1,432
Kraken	472,974	1.08	5,089
Bitfinex	362,682	0.99	3,601
KuCoin	341,706	0.77	2,632
Gate.io	250,038	0.12	305
Bitstamp	211,549	1.40	2,964
Binance US	202,227	0.08	159
Crypto.com Exchange	180,277	0.43	776
BtcTurk PRO	131,802	0.01	12
BitFlyer	102,648	0.06	64
AscendEX	82,789	0.24	195
Total	**16,167,445**	–	92,642

CRMI10 (right scale) as a reference for the overall market development. The figure shows that trading volumes on the 15 largest centralized crypto exchanges have grown significantly since October 2020. This exponential growth is not only driven by the analogous increase in crypto asset prices, as the trading volume in points on the CRMI10, as well as in Swiss francs, is growing strongly.

Decentralized Crypto Exchanges

Table 4.2 shows the yearly trading volumes for the 15 largest decentralized crypto exchanges (DEXes) globally. Over the period from October 2020 to September 2021, the total trading volume on these trading venues amounted to CHF 4.0 billion, which is significantly less than the trading volume on centralized crypto exchanges. This might be explained by the fact that DEXEs are still in an earlier stage of development than their centralized counterparts. In addition, according to Lin et al. (2019), decentralized crypto exchanges have a higher trading latency, lower liquidity, and typically less intuitive user interfaces compared to centralized exchanges. Due to the last point, DEXes are still predominantly used by investors with a comparably high level of technological expertise. Another reason for the large difference might be that centralized crypto exchanges often allow fiat money to be exchanged for crypto assets, while this is not feasible for decentralized exchanges. Therefore, centralized crypto exchanges act as a bridge from the traditional to the crypto assets ecosystem (fiat-on-ramps). Table 4.2 also reveals that some of the largest decentralized crypto exchanges are almost entirely unused by Swiss-based clients, which is a further reason for the lower trading volume originating from Switzerland compared to centralized crypto exchanges. However, note that certain DEXes from Table 4.2 reveal a higher trading volume than some of the 15 largest centralized crypto exchanges from Table 4.1.

The development of the total trading volume for Switzerland over time for the 15 largest decentralized crypto exchanges is shown in Figure 4.8, in millions of Swiss francs (left scale) and in points of the SIX CRMI10 (right scale), next to the performance of the CRMI10 (right scale) as a reference for the overall market de-

Table 4.2: Annual trading volumes of the 15 largest decentralized crypto exchanges, Oct. 1, 2020 to Sep. 30, 2021 (source: CoinGecko, SEMrush)

Platform Name	Total Trading Volume in CHF mil.	Traffic Share CH in %	Trading Volume CH in CHF mil.
Uniswap (v2)	282,652	0.80	2,262
Sushiswap	108,784	0.05	32
Compound Finance	66,984	0.43	288
Curve Finance	60,295	0.01	3
Uniswap (v3)	159,698	0.80	813
Mdex BSC	70,548	0.00	0
JustSwap	22,473	0.00	0
Tokenlon	17,153	0.00	0
Bancor Network	16,576	0.82	103
Dodo (Polygon)	21,090	0.00	0
Quickswap	35,597	1.10	130
PancakeSwap (v2)	42,997	0.93	314
Serum DEX	7,293	0.00	0
Raydium	23,667	0.00	0
Sushiswap (Polygon POS)	10,809	0.03	6
Total	**946,615**	–	3,952

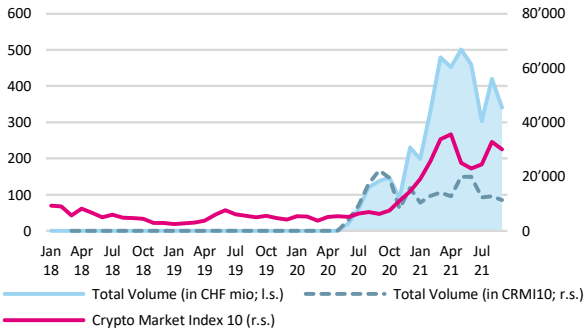

Figure 4.8: Monthly trading volume of the 15 largest decentralized crypto exchanges for Switzerland (listed in Table 4.1) (source: CoinGecko (2021), Semrush (2021))

velopment. The figure shows a similar development as for the centralized crypto exchanges, namely that the total trading volume on the 15 largest decentralized crypto exchanges has grown strongly since June 2020. The significant growth after October 2020 is, however, mainly due to the increase in the prices of crypto assets in general, as the trading volume in points of the CRMI10 remains at a similar level. Since many of the largest decentralized crypto exchanges, as of the end of September 2021, are relatively young or successors to previous versions (for example, Uniswap v2 as the successor to Uniswap v1), there is no trading volume in Figure 4.8 before June 2020.

4.3. Tokenization

As described in Chapter 2, tokenization describes the digital representation of any type of assets on a blockchain. As it is difficult to obtain a comprehensive overview of tokenization activities due to the lack of public data, selected developments with regard to equities, currencies and other assets are highlighted in the following paragraphs.

Equity

Several companies are active in the field of equity tokenization in Switzerland and Liechtenstein.[6] Aktionariat AG, for example, tokenized its own shares and offered them publicly via the company's website. As of October 1, 2021, the company has exceeded CHF 1.5 million in investment and is continuously raising funds through an investor relations page created with its proprietary technology (startupticker.ch, 2021). Aktionariat AG also lists ten Swiss companies on its website that have tokenized their shares with Aktionariat AG or other tokenizers, of which seven can be traded using the company's trading application called "Brokerbot" (Aktionariat, 2021). As a further provider of tokenization services, daura AG provides the technology to maintain the share register based on DLT. As of the end of October 2021, 28 companies keep the share register using this solution (Daura, 2021). Wecan Group SA helps with tokenization, including issuance, distribution, custody and exchange of tokens. The company has issued more than 80 million tokens and onboarded around 250 clients with an average investment of CHF 800,000, resulting in a total investment of CHF 200 million (Wecan, 2021).

Currencies

In Switzerland, however, not only have shares been tokenized, but also Swiss francs. With Bitcoin Suisse AG, Mt Pelerin Group SA and Sygnum Bank AG, three providers were identified which provide corresponding stablecoins, i.e., tokens that are directly linked to the value of the Swiss franc.

Bitcoin Suisse AG is issuing the CryptoFranc Token (XCHF), a stablecoin 1:1 linked to the Swiss franc. The XCHF is issued on the Ethereum Blockchain as a standard ERC-20 token that can be transferred without limitation between Ethereum addresses. Based on an on-

[6] One initiative that is driving the tokenization of Swiss companies' shares is the Capital Markets and Technology Association (CMTA). The CMTA is an independent association founded by leading players from the financial, technology and legal sectors in Switzerland with the shared goal of creating common standards for the issuance, distribution and trading of securities in the form of tokens using distributed ledger technology (CMTA, 2021).

chain analysis, as of the end of October 2021, there are a total of 3 million tokens in circulation, which corresponds to a value of 3 million Swiss francs. Furthermore, there are a total of 320 token holders, and around 9,900 transactions have been conducted since the launch of the XCHF (Etherscan, 2021a). The stablecoin issued by Bitcoin Suisse AG is primarily intended as a means of payment for the Swiss blockchain ecosystem and therefore does not yield any returns for holders (Bitcoin Suisse, 2021a).

Sygnum Bank AG's token (DCHF) is an investment token and is comparable to a 3-month CHF time deposit product that generates a return of 0.75 % per year. It is intended to offer an alternative to holding traditional CHF, where investors are often charged with negative interest rates. The token's value is pegged to the Swiss franc, making it a stablecoin as well (Sygnum, 2021).

The Jarvis Synthetic Swiss Franc (JCHF) is a project of Mt Pelerin Group SA and was launched at the end of September 2021 with an issuance of 52,611 tokens, corresponding to a value of 52,611 Swiss francs. There are a total of 34 holders, and 504 token transfers have been registered (as of 10 October 2021) (Etherscan, 2021b). The token, like the XCHF by Bitcoin Suisse AG, is based on Ethereum's ERC-20 standard. However it is not directly tied to an off-chain fiat reserve. Instead, it tracks the price of the Swiss franc against the price of the US dollar via a linkage mechanism with USDC, one of the largest USD stablecoins on the market. The JCHF is intended for any kind of volatility-free payment or trading operations on the Ethereum blockchain (Pelerin, 2021).

Other

Besides equity and the Swiss franc, other assets have been subject to tokenization in the Swiss and Liechtenstein crypto assets ecosystem. In particular, so-called non-fungible tokens (NFTs), i.e., tokens that are not copyable, have become increasingly important in recent months. NFTs are basically digital certificates of authenticity and ownership, which has made them an increasingly popular way to buy and sell ownership of or rights to digital artwork, video clips, music etc. (Ethereum.org, 2021).

One example of tokenization of artwork originating in Switzerland is the project "The Hashmasks" by Suum Cuique Labs, which was launched in the canton of Zug at the beginning of this year. In a single weekend, a digital art collection created by over 70 artists worldwide, consisting of 16,384 unique digital portraits, was sold for USD 16 million. By the end of September, nearly 5,000 Ethereum addresses held at least one such portrait (HZ, 2021).[7]

4.4. Asset Management

As discussed in Section 4.1, providers of indirect investment products for crypto assets can hedge part of their risk by investing directly in the crypto assets the issued product is based on. This is reflected, for example, in the balance sheet of Bank Vontobel, which held crypto assets at a fair value of CHF 241.0 million at the end of 2019. The strong growth in the market for indirect crypto asset investments is also reflected in the growth of the fair value of crypto assets in the bank's balance sheet, which already amounted to CHF 985.5 million at the end of 2020, representing an increase of CHF 744.6 million, or a growth rate of 309 % in relative terms, in a year-over-year comparison (Vontobel, 2021).

21Shares, another provider of indirect products for crypto assets, held a total of USD 39.8 million in crypto assets at the end of 2019, which grew to 284.9 million by the end of 2020. This corresponds to an increase of USD 245.1 million in absolute terms, or a growth rate of 616 % in relative terms (21Shares, 2021).[8]

Leonteq, an expert in and issuer of structured products, does not explicitly report its crypto assets on its balance sheet. However, it does state that outstanding volumes in products with crypto assets as the underlying asset have increased from CHF 23 million at the end of 2019 to CHF 155 million at the end of 2020, representing an

[7] For more information, see: https://www.thehashmasks.com/.
[8] Note that trading inventories were not considered.

increase of CHF 132 million or 482 % in relative terms (Leonteq, 2021).

4.5. Custody

For public blockchain networks, there is typically no central control authority or point of contact, and private keys are the main element with which holders of crypto assets carry out transactions. Therefore, key management is critical. If an investor loses his/her private key, he/she cannot regain access to it from a central authority by requesting a new key. Recovering a private key is only possible if a suitable backup solution, such as secure management of seed phrases, is in place.

Custody solution providers for crypto assets are service companies that offer secure storage solutions by managing private keys for their clients. These services are developed for both institutional and private clients. Their main goal is to ensure the availability, confidentiality and integrity of private keys and the information needed to recover them in case of a loss. There are a number of Swiss and Liechtenstein companies providing custody services (see Figure 3.1), and more and more banks are entering the field. Bitcoin Suisse AG, for example, offers a custody service for affluent and institutional investors that is based on a cold storage concept for different accounts for 37 different crypto assets (as of 10 October 2021).[9]The accounts associated with this service have a combined value of CHF 5 billion. Note that companies that offer custody services may offer additional services, like Bitcoin Suisse AG, which also helps to stake crypto assets on behalf of their clients.

Private keys can also be stored in a wallet designed as a smartphone app. One provider of such a solution is Breadwinner AG, which offers a wallet to store different crypto assets, or more precisely, the corresponding private keys, such as Bitcoin, Ether and Bitcoin Cash. The total volume of crypto assets under custody of this solution, which is open to any investor, amounts to over USD 20 billion (as of 10 October 2021) (Breadwinner, 2021).

In the area of direct investments, centralized crypto exchanges often also offer custody solutions for customers. Among other things, this has the advantage that trading in crypto assets can be carried out flexibly and quickly without the tokens in question first having to be transferred from a private wallet to exchange accounts. The relevant public addresses used for the custody of clients' crypto assets are usually public, for example, for reasons of transparency. With respect to Bitcoin and Ether, the two largest crypto assets by market capitalization, the leading centralized crypto exchanges held tokens worth a total of USD 160 billion at the end of September 2021 (CryptoQuant, 2021). Applying a volume-weighted average to estimate the share for Swiss customers based on the web traffic listed in Table 4.1 would correspond to assets under custody of Swiss customers at centralized crypto exchanges of around USD 925 million as of the end of September 2021. Note that this volume does not include the assets under custody of Swiss and Liechtenstein custodian banks for which no corresponding figures are publicly available.

For decentralized exchanges, an alternative estimation for assets under custody can be derived by assessing the total volume deposited by liquidity providers in corresponding protocols. More precisely, assets under custody in the context of DEXes refer to the volumes locked in smart contracts of corresponding applications. As of the end of September 2021, this volume amounted to USD 50 billion globally (Stelareum, 2021). Applying a volume-weighted average to estimate the share of Swiss liquidity providers based on the web traffic listed in Table 4.2 would correspond to a total volume of USD 140 million. Here again, the assets under custody of Swiss and Liechtenstein custodian banks is not taken into account.

[9]For more information on different types of wallets, see Section 2.6.

5. Conclusion & Outlook

The first edition of the Crypto Assets Study provides an overview of the current state and developments in the Swiss and Liechtenstein crypto assets ecosystem. The findings are summarized in the following theses:

The Swiss and Liechtenstein crypto assets ecosystem provides a diverse product and service offering. Switzerland and Liechtenstein have a growing number of companies with an increasingly diverse offering of crypto assets-related products and services. This is, for example, underlined in the decreasing dominance of Bitcoin and Ether as underlying assets with regard to indirect investment products traded on the SIX Swiss Exchange. Instead, more products with other crypto assets and also crypto indexes as underlying assets are being offered. In addition, the diversification is also reflected in the broad range of services offered by the companies surveyed and the large range of centralized and decentralized crypto exchanges that are used.

The majority of companies surveyed focus on other customers than retail clients. High-net-worth individuals, family offices and other institutionals are the most targeted customer groups of the surveyed companies in the Swiss and Liechtenstein crypto assets ecosystem. Retail customers, in contrast, are the target group mentioned least often, although there is evidence from surveys that an essential part of the Swiss population holds crypto assets.

Strong growth in both direct and indirect investments. The Swiss market for crypto assets has seen strong growth over the past three years. This is reflected in the trading volume for direct investment into crypto assets, as well as corresponding indirect investments vehicles. Based on our methodology, the estimated annual trading volume on the largest 15 centralized and decentralized crypto exchanges, which cover a large part of the total trading volume, was CHF 96.6 billion in Switzerland from October 2020 to September 2021. Indirect investment products account for a trading volume of CHF 7 billion over the same observation period. A comparison with the total trading volume for all asset classes on the SIX Swiss Exchange of USD 1.4 trillion reveals that the trading volumes in the crypto assets ecosystem are, however, still comparably small.

Direct investment is leading in terms of trade volumes, but indirect investment is growing strongly. The high relevance of direct crypto asset investments is not only shown in the large trading volume but also in the high number of surveyed companies offering corresponding products and services. However, the steadily growing number of crypto-related ETPs traded on the SIX Swiss Exchange and the corresponding market turnover show the awakening and growing relevance of indirect investments in crypto assets.

Higher trading volume on centralized than decentralized exchanges for direct crypto assets investments. The estimated year-to-year trading volume of Switzerland-based investors on centralized crypto exchanges (CHF 92.6 billion) is much higher than on decentralized crypto exchanges (CHF 4.0 billion). This is because decentralized crypto exchanges are still in an early stage of development and thus have differences in latency, liquidity and user interfaces compared to their centralized counterparts.

More innovation to be expected. Although the Swiss and Liechtenstein crypto assets ecosystem already offers a variety of innovative solutions, like new financial products based on staking and tokenization, further innovations can be expected in the future. One of the building blocks for this could be the newly introduced law on DLT trading facilities. The granting of corresponding licenses by FINMA is expected to become a reality in the coming months.

6. Factsheets of Companies in the Swiss and Liechtenstein Crypto Assets Ecosystem

The last chapter of this study contains the factsheets of the companies that participated in our survey. At this point, we would like to thank all companies that supported our initiative to portray the Swiss and Liechtenstein crypto assets ecosystem in a most comprehensive way.

Companies

Aktionariat AG
https://aktionariat.com/

Aktionariat

Aktionariat AG offers a set of tools for Swiss companies to create a market for their shares on their own website. Open technology. No intermediaries. Powered by the Ethereum blockchain.

Domicile	Zurich	**Year of inception**	2020	**Valuation**	12 Mio.
Employees … of which in CH	**8** 7	**Total funding** … in 2020	**1.8 Mio.** 0.1 Mio.	**Date of last funding** State of last funding	Seed
Management team	Murat Ögat, Luzius David Meisser, Nicola Plain				
Board members	Murat Ögat, Luzius David Meisser				
Key partners	LEXR, Monerium				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Atomyze AG
https://www.atomyze.ch/

ATOMYZE

Our vision is to facilitate the digitization and tokenization of commodities by using Hyperledger Fabric distributed ledger technology (DLT) linked to existing financial and industrial ecosystem.

Domicile	Zug	**Year of inception**	2018	**Valuation**	
Employees … of which in CH	**25** 25	**Total funding** … in 2020		**Date of last funding** State of last funding	**September 21** Shareholders
Management team	Marco Grossi (CEO), Philipp E. Dettwiler (COO), Valerio Matriciani (CRO), Sibil Melliger (CLO), Michael Stockinger (CFO), Bertalan Vecsei (CTO)				
Board members	Alexander Michael Stoyanov, Hans Konstantin Nikolaus Graf Von Schweinitz, Alexander Freedland, Robert Michael Henry Osborne, Stephan René Arnet				
Key partners	Mining companies, industrial companies, manufacturing companies, custodians, market makers, exchanges, other raw material producers, investment houses, trading companies				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Bank Frick & Co. AG
https://www.bankfrick.li/

BANK FRICK

Bank Frick targets financial intermediaries. It focuses on customized fund solutions and also on modern blockchain banking services. With its comprehensive services, it enables one-stop banking for its customers.

Domicile	Balzers	**Year of inception**	1998	**Valuation**	
Employees … of which in CH	**138** 0	**Total funding** … in 2020		**Date of last funding** State of last funding	
Management team	Edi Wögerer, Michael Dolzer, Melanie Mündle				
Board members	Mario Frick, Roland Frick, Rolf Jermann, Michael Kramer				
Key partners					

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Bank Julius Bär & Co. AG
https://www.juliusbaer.com/

Julius Bär

Julius Baer is the international reference in wealth management, based on a solid Swiss heritage.

Domicile	Zurich	**Year of inception**	1975	**Valuation**	
Employees … of which in CH	**6606** 3407	**Total funding** … in 2020		**Date of last funding** State of last funding	
Management team	Philipp Rickenbacher, Yves Robert-Charrue, Jimmy Lee Kong Eng, Beatriz Sanchez, Nic Dreckmann, Nicolas de Skowronski, Yves Bonzon, Dieter A. Enkelmann, Oliver Bartholet				
Board members	Romeo Lacher, Gilbert Achermann, Heinrich Baumann, Richard M. Campbell-Breeden, Ivo Furrer, Claire Giraut, David Nicol, Kathryn Shih, Eunice Zehnder-Lai, Olga Zoutendijk				
Key partners					

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Base58 Capital AG
https://base58.ch/

We are a technology-driven investment firm specialized in crypto assets.

Domicile	Zug	**Year of inception**	2017	**Valuation**	
Employees … of which in CH	**4** 3	**Total funding** … in 2020		**Date of last funding** State of last funding	
Management team	Fabio Federici				
Board members	Ivo Sauter, Fabio Federici				
Key partners					

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Bitcoin Suisse AG
https://www.bitcoinsuisse.com/

Founded in 2013, Bitcoin Suisse is the Swiss crypto-finance and technology pioneer and market leader. Bitcoin Suisse has helped to shape the crypto and blockchain ecosystem in Switzerland and has been a driving force in the development of the "Crypto Valley" and "Crypto Nation Switzerland". As a regulated Swiss financial intermediary, Bitcoin Suisse offers prime brokerage, trading, custody, lending, staking and other crypto-financial services for private and institutional clients. Bitcoin Suisse has built a team of 200 highly qualified experts at its locations in Zug, Copenhagen, and Liechtenstein.

Domicile	Zug	**Year of inception**	2013	**Valuation**	302.5 Mio.
Employees … of which in CH	**>240** 194	**Total funding** … in 2020	**45.1 Mio.** 45 Mio.	**Date of last funding** State of last funding	**24.06.2020** Series A
Management team	Arthur Vayloyan, Stefan Lütolf, Andrej Majcen, Lothar Cerjak, Fabian Hediger, Michael Gauckler, Christian Holm, Søren Nielsen, Lars Hodel, Rolf Gätzi, David Riegelnig, Philipp Vonmoos, Mauro Casellini, Markus Perdrizat, Armin Schmid				
Board members	Niklas Nikolajsen, Urs Bigger, Roger Studer, Luzius Meisser, Giles Keating, Arthur Valyoyan				
Key partners	Worldline, CoinRoutes				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Crypto Consulting AG
https://cryptoconsultingag.ch/

Crypto Consulting AG

Your access to crypto investment products - active management, fundamental analysis.

Domicile	Zurich	**Year of inception**	2018	**Valuation**	
Employees … of which in CH	**2** 2	**Total funding** … in 2020		**Date of last funding** State of last funding	
Management team	Désirée Velleuer, Reto Stiffler				
Board members	Désirée Velleuer, Reto Stiffler				
Key partners					

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Crypto Finance AG - Group
https://www.cryptofinance.ch/

CRYPTO FINANCE

The Crypto Finance Group provides institutional and professional investors products and services with a level of quality, reliability, and security that is unique in the digital asset space today. The group provides asset management, with the first regulated asset manager for crypto asset funds authorized by FINMA; brokerage services for 24/7 crypto asset trading as a FINMA regulated Security House; and crypto asset storage infrastructure and tokenization solutions.

Domicile	Zug	**Year of inception**	2017	**Valuation**	
Employees … of which in CH	**50** 47	**Total funding** … in 2020	**36 Mio.** 14 Mio.	**Date of last funding** State of last funding	**March 2020**
Management team	Jan Brzezek, Jürg Egli, Bernadette Leuzinger, Rupertus Rothenhäuser, Stijn Vander Straeten, Sarina Christner				
Board members	Ming Shu, Philippe Cottier, Raymond J. Bär, Tobias Reichmuth, Jan Brzezek, Marc Bernegger				
Key partners	Crypto Fund AG, Crypto Broker AG, Crypto Storage AG				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

daura ag
https://www.daura.ch/

daura is the digital share platform for financing and investing in Swiss SMEs: Thanks to the blockchain technology, the existing share register is easily digitized, and capital increases are carried out quickly and inexpensively at the push of a button.

Domicile	Zurich	**Year of inception**	2018	**Valuation**	
Employees … of which in CH	**6** 6	**Total funding** … in 2020		**Date of last funding** State of last funding	
Management team	Peter Schnürer				
Board members	Johannes Höhener, Andreas Rudolf, Mathias Imbach, Valerio Roncone, Christian Wenger				
Key partners	Swisscom, MME, BDO, Raiffeisen Unternehmerzentrum, Custodigit, Sygnum, Wenger & Vieli, SIX Group				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

FICAS AG
https://ficas.com/

FiCAS is an investment company that offers investors the opportunity to diversify their portfolios by gaining exposure to the new class of crypto-assets through easy-to-access, liquid, products managed 24/7.

Domicile	Zug	**Year of inception**	2019	**Valuation**	
Employees … of which in CH	**7** 7	**Total funding** … in 2020	1.4 Mio.	**Date of last funding** State of last funding	**24.11.2020**
Management team	Ali Mizani Oskui, Niklaus Neddermann, Olga Vögeli, Marcel Niederberger, Darko Novakovic, Rolf Schmied, Hadi Nemati				
Board members	Daniel Diemers, Mattia Rattaggi, Ali Mizani Oskui, Sanjeev Karkhanis				
Key partners	SIX Swiss Exchange, CAIAC Fund Management AG, CryptoCompare, Flow Traders, Synum, coinbase, Bitstamp, Crypto Valley, Kraken, Crypto Broker, incore, Maerki Baumann & Co. AG, SEBA, GrantThornton, Bitcoin Capital AG				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Hypothekarbank Lenzburg AG
https://www.hbl.ch/

Hypothekarbank Lenzburg offers customized financial services for private and corporate customers such as savings accounts, salary accounts, online & mobile banking.

Domicile	Lenzburg	**Year of inception**	1883	**Valuation**	
Employees … of which in CH	**297** 297	**Total funding** … in 2020		**Date of last funding** State of last funding	**24.06.2020** Series A
Management team	Marianne Wildi, Rolf Bohnenblust, Roger Brechbühler, Reto Huenerwadel, André Renfer				
Board members	Thomas Wietlisbach, Gerhard Hanhart, Doris Agotai Schmid, René Brülhart, Andreas Kunzmann, Josef Lingg, Ursula McCreight-Ernst, Christoph Schwarz, Therese Suter				
Key partners					

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

KORE Technologies AG
https://www.kore-technologies.ch/

Leader in high-performance digital asset systems.

Domicile	Zug	**Year of inception**	2019	**Valuation**	Confidential
Employees … of which in CH	**10** 7	**Total funding** … in 2020	**Confidential**	**Date of last funding** State of last funding	Bootstrapped
Management team	Carla Bünger, Thomas Taroni, Michael Guzik				
Board members	Michael Guzik, Thomas Taroni, Carla Bünger, Robert Rogenmoser				
Key partners	IBM, Securosys AG, Phoenix Systems AG				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Maerki Baumann & Co. AG
https://www.maerki-baumann.ch/

Maerki Baumann & Co. AG is a family-owned private bank. The services range from investment advice to asset management.

Domicile	Zurich	**Year of inception**	1932	**Valuation**	
Employees … of which in CH	**66** 66	**Total funding** … in 2020		**Date of last funding** State of last funding	
Management team	Stephan A. Zwahlen, Lukas S. Risi, Alexander Ising				
Board members	Hans G. Syz-Witmer, Carole Schmied-Syz, Bruno Gehrig, Urs Lauffer, Michele Moor				
Key partners	InCore Bank AG				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Mt Pelerin Group SA
https://www.mtpelerin.com/

Mt Pelerin is a Swiss FinTech expert in asset tokenization and digital compliance. We create solutions to bridge the crypto economy with traditional finance and guide users into the new world of money.

Domicile	Neuchâtel	**Year of inception**	2018	**Valuation**	40 Mio.
Employees … of which in CH		**Total funding** … in 2020	**2 Mio.** 0 Mio.	**Date of last funding** State of last funding	**15.12.2018** Seed
Management team	Arnaud Salomon, Sébastien Krafft, Yann Gerardi				
Board members	Arnaud Salomon, Pierre Maliczak				
Key partners	BCN, CMTA, Lenz & Staehelin, Crypto Valley Association, ibani, Bitcoin Association Switzerland, ID Quantique				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Relai AG
https://relai.ch/

We're developing a smartphone app that allows everybody to invest in Bitcoin within one minute: no account, no verification, no deposit required.

Domicile	Zurich	**Year of inception**	2020	**Valuation**	11 Mio.
Employees … of which in CH	**10** 6	**Total funding** … in 2020	**2.6 Mio.** 0.3 Mio.	**Date of last funding** State of last funding	**11.05.2021** Series A
Management team	Julian Lucas Liniger, Adem Bilican, Fabian Dominguez, Maurizio Trenti				
Board members	Alexis Thomas Roussel, Julian Lucas Liniger, Lars Emil Jonas Diener				
Key partners	Bity SA				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

SEBA Bank AG
https://www.seba.swiss/

SEBA is a licensed and regulated Swiss bank that offers comprehensive, secure, and user-friendly bridge between digital and traditional assets. Its services include the storage, trading and management of cryptocurrencies, digital and traditional assets in one place.

Domicile	Zug	**Year of inception**	2018	**Valuation**	4 Mio.
Employees … of which in CH	**85** 85	**Total funding** … in 2020	**120 Mio.** 20 Mio.	**Date of last funding** State of last funding	**22.12.2020** Series B
Management team	Guido Bühler, Philipp Baretta, Urs Bernegger, Alistair Heggie, Oliver Deak, David Matter, Markus Blattman, Matthew Alexander, Nina Gartmann				
Board members	Päivi Elina Rekonen-Fleischer, Hans Kuhn, Sebastien Merillat, Choon Wee Chee, Evangelia Kostakis, Jin Hian Goh, Pak To Leung, Guy Vivian Ernst Schwarzenbach, Reto Kunz				
Key partners					

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

St. Gotthard Fund Management AG
https://stgfm.com/

St. Gotthard Fund Management is an independent wealth management company based in Switzerland. The company is managed by our partners with an extensive experience in the field of wealth & asset management, both on the institutional and the client side.

Domicile	Zug	**Year of inception**	2019	**Valuation**	
Employees … of which in CH	**5** 4	**Total funding** … in 2020		**Date of last funding** State of last funding	
Management team	Sergey Radchenko, Vladimir Vishnevskiy, Stefan Bollhalder, Christian Tanner, Daniel Egger				
Board members	Igor Vishnevskiy, Sergey Radchenko, Stefan Bollhalder				
Key partners	Bitcoin Suisse, Sygnum, Bank Frick, Anchorage, BitGo, Coinbase (Crypto Fund)				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

SwissOne Capital AG
https://www.swissone.capital/

SwissOne Capital is a niche asset manager with a focus on institutional grade crypto and blockchain investment funds.

Domicile	Zug	**Year of inception**	2018	**Valuation**	
Employees … of which in CH		**Total funding** … in 2020		**Date of last funding** State of last funding	
Management team	Steffen Bassler, Antony Turner, Hugo van Veen, Kenny Hearn				
Board members	Cornelis Quirijns, Steffen Bassler, Antony Turner, Hugo van Veen				
Key partners	Crypto Finance AG, Maerki Baumann AG, Bank Frick AG, APEX Fund Services				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Sygnum Bank AG
https://www.sygnum.com/

Founded on Swiss and Singapore heritage, Sygnum empowers its clients to invest in the digital asset economy with complete trust.

Domicile	Zurich	**Year of inception**	2018	**Valuation**	300 Mio.
Employees … of which in CH	**110** 95	**Total funding** … in 2020	**90 Mio.** 15 Mio.	**Date of last funding** State of last funding	**February 2021** Strategic Investment Round
Management team	Mathias Imbach, Fabian Dori, Gino Wirthensohn, Martin Burgherr, Thomas Eichenberger, Guido Hüppin, Philippe Imbach, Firtz Jost, Martin Jost				
Board members	Peter Wuffli, Gabriela Maria Payer, Kim Leng Chua, Thomas Buess, Luka Müller-Studer, Manuel Krieger				
Key partners	Swisscom, Custodigit (joint venture with Swisscom and SIX), Daura (joint venture with Swisscom and SIX)				

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

Taurus SA
https://www.taurushq.com/

Taurus is a leading European provider of digital asset and blockchain infrastructure solutions for crypto-currencies, tokenized securities, and digital currencies. Taurus is operating TDX, one of the first European, independent, and regulated marketplace for tokenized assets and tokenized securities.

Domicile	Geneva	**Year of inception**	2018	**Valuation**	
Employees … of which in CH	**40** 40	**Total funding** … in 2020		**Date of last funding** State of last funding	Series A
Management team	Jean-Philippe Aumasson, Nicolas Bonvin, Lamine Brahimi, Sébastien Dessimoz				
Board members	Jean-Blaise Conne, Geoffroy De Ridder, Rani Jabban, Christian Gellerstad, Oren-Olivier Puder				
Key partners					

Product offering for cryptocurrencies / Tokenized assets		**Asset types offered**	
Direct investments	Structured products	Cryptocurrencies	Tokenized assets
Funds	Derivatives		

Customer segments			**Regulatory status**		
Retail clients	Private clients	Corporates	SRO	Bank	Securites firm
Family offices	Banks	Other institutionals	Asset manager	Portfolio manager	FinTech license

Key activities					
Custody	Tokenization & issuance	Trading	Loans	Exchange services	Advisory services
Discretionary mandates	Brokerage	Payments	Asset management	Staking services	KYC & AML services

References

21Shares. (2021). *Report of the statutory auditor to the general assembly of 21Shares AG, Zug.* Retrieved 09/11/2021, from https://21shares.com/documents/21Shares_AG_December_2020.pdf

Aktionariat. (2021). *Aktionariat webpage.* Retrieved 09/11/2021, from https://aktionariat.com/

Ankenbrand, T., & Bieri, D. (2018). *Assessment of cryptocurrencies as an asset class by their characteristics. Investment Management & Financial Innovations*, *15*(3), 169.

Ankenbrand, T., Bieri, D., Cortivo, R., Hoehener, J., & Hardjono, T. (2020). *Proposal for a comprehensive (Crypto) asset taxonomy*. In *2020 Crypto Valley Conference on Blockchain Technology (CVCBT)* (pp. 16–26).

Ankenbrand, T., Bieri, D., Frigg, M., Grau, M., & Lötscher, D. (2021). *IFZ FinTech Study 2021*.

Avaloq. (2021). *Why do people invest?* Retrieved 09/11/2021, from https://www.avaloq.com/en/why-do-people-invest

Bain & Company. (2021). *Kryptowährungen: Eine neue Assetklasse entsteht.* Retrieved 10/14/2021, from https://www.bain.com/de/ueber-uns/presse/pressemitteilungen/germany/2021/kryptowahrungen-eine-neue-assetklasse-entsteht/

Bianchi, D. (2020). *Cryptocurrencies as an asset class? An empirical assessment. The Journal of Alternative Investments*, *23*(2), 162–179.

Bitcoin Suisse. (2021a). *Swiss francs stablecoin on the blockchain.* Retrieved 09/11/2021, from https://www.bitcoinsuisse.com/cryptofranc

Bitcoin Suisse. (2021b). *What is proof of work?* Retrieved 02/11/2021, from https://www.bitcoinsuisse.com/fundamentals/what-is-proof-of-work

Breadwinner. (2021). *About breadwinner.* Retrieved 10/10/2021, from https://brd.com/about

Buchholz, K. (2021). *How common is crypto?* Retrieved 27/09/2021, from https://www.statista.com/chart/18345/crypto-currency-adoption/

CMTA. (2021). *The capital markets and technology association.* Retrieved 16/11/2021), from https://www.cmta.ch

CoinGecko. (2021). *CoinGecko Mainpage.* Retrieved 09/11/2021, from https://www.coingecko.com/de

CoinMarketCap. (2021a). *Total cryptocurrency market cap.* Retrieved 02/11/2021, from https://coinmarketcap.com/charts/

CoinMarketCap. (2021b). *Major cryptoassets by percentage of total market capitalization (bitcoin dominance chart).* Retrieved 01/11/2021, from https://coinmarketcap.com/charts/

Consensys. (2020). *What is proof of stake?* Retrieved 02/11/2021, from https://consensys.net/blog/blockchain-explained/what-is-proof-of-stake/

CryptoQuant. (2021). *BTC and ETH: all exchanges reserve.* Retrieved 27/10/2021, from https://cryptoquant.com/

Daura. (2021). *Die digitale Aktienplattform für die Schweiz.* Retrieved 09/11/2021, from https://www.daura.ch/

Ethereum.org. (2021). *Non-fungible tokens (NFT).* Retrieved 09/11/2021, from https://ethereum.org/en/nft/

Etherscan. (2021a). *CryptoFranc.* Retrieved 09/11/2021, from https://etherscan.io/token/0xb4272071ecadd69d933adcd19ca99fe80664fc08

Etherscan. (2021b). *Jarvis synthetic swiss franc.* Retrieved 09/11/2021, from https://etherscan.io/token/0x53dfea0a8cc2a2a2e425e1c174bc162999723ea0

Fausch, J., Agnesens, T., Frigg, M., & Grau, M. (2021). *Swiss Asset Management Study 2021 - An overview of Swiss Asset Management*.

Finasko. (2021). *Gold market cap (2021).* Retrieved 13/10/2021, from https://finasko.com/gold-market-cap/

FINMA. (2018). *Guidelines for enquiries regarding the regulatory framework for initial coin offerings (ICOs)*.

FINMA. (2020a). *FINMA issues first-ever approval for a stock exchange and a central securities depository for the trading of tokens.* Retrieved 09/11/2021, from https://www.finma.ch/en/news/2021/09/finma-issues-first-ever-approval-for-a-stock-exchange-and-a-central-securities-depository-for-the-trading-of-tokens/

FINMA. (2020b). *FINMA Circular 2018/1 organised trading facilities.* Retrieved 02/11/2021, from https://www.finma.ch/en/~/media/finma/dokumente/dokumentencenter/myfinma/rundschreiben/finma-rs-2018-01.pdf

HZ. (2021). *Non-fungible tokens: Der letzte Schrei in der Kunst*. Retrieved 09/11/2021, from https://www.handelszeitung.ch/panorama/non-fungible-tokens-auch-in-der-schweiz-ein-big-business

ISO. (2021). *International securities identification number (ISIN).* Retrieved 27/10/2021, from https://www.iso.org/news/ref2616.html

Lammer, D., Hanspal, T., & Hackethal, A. (2019). *Who are the bitcoin investors? Evidence from indirect cryptocurrency investments*.

Leonteq. (2021). *Leonteq results presentation full-year 2020.* Retrieved 09/11/2021, from https://common.leonteq.com/corporate/investors/annual-report/2020/leonteq-results-presentation-full+year+2020.pdf

Lin, L. X., Budish, E., Cong, L. W., He, Z., Bergquist, J. H., Panesir, M. S., … others (2019). *Deconstructing decentralized exchanges. Stanford Journal of Blockchain Law & Policy*, *2*.

Nakamoto, S. (2008). *Bitcoin: A peer-to-peer electronic cash system.* Retrieved 08/11/2021, from https://bitcoin.org/bitcoin.pdf

Pelerin, M. (2021). *jCHF, der Schweizer Franken stablecoin.* Retrieved 09/11/2021, from https://www.mtpelerin.com/de/waehrungsrechner/kryptowaehrung/jchf-schweizer-franken-stablecoin

Semrush. (2021). *Dashboard.* Retrieved 09/11/2021, from https://www.semrush.com/projects/

SIX. (2021a). *CryptooProducts traded on the swiss stock exchange.* Retrieved 01/11/2021, from https://www.six-group.com/dam/download/the-swiss-stock-exchange/trading/markets/crypto-products-reports/2020/crypto-products-report-2020.pdf

SIX. (2021b). *CryptopProducts traded on the swiss stock exchange - monthly report, September 2021.* Retrieved 27/10/2021, from https://www.six-group.com/dam/download/the-swiss-stock-exchange/trading/markets/crypto-products-reports/2021/crypto-products-report-2021-09.pdf

SIX. (2021c). *Monthly reports Swiss stock exchange.* Retrieved 09/11/2021, from https://www.six-group.com/en/products-services/the-swiss-stock-exchange/market-data/statistics/monthly-reports.html#tfl_V0c19saXN0=/year/2021

SIX. (2021d). *SIX crypto market index 10.* Retrieved 01/11/2021, from https://www.six-group.com/en/products-services/financial-information/indices/crypto-indices/crypto-market-index-10.html

startupticker.ch. (2021). *Crypto-startup aktionariat serves growing interest in blockchain-based shares.* Retrieved 08/11/2021, from https://www.startupticker.ch/en/news/crypto-startup-aktionariat-serves-growing-interest-in-blockchain-based-shares

Stelareum. (2021). *Total Value Locked (TVL) in dexes protocols.* Retrieved 27/10/2021, from https://www.stelareum.io/en/defi-tvl/dexes.html

Swiss Info. (2020). *Cryptocurrency gaining popularity among Swiss as an investment - SWI swissinfo.ch.* Retrieved 27/09/2021, from https://www.swissinfo.ch/eng/slow-but-steady-_cryptocurrency-gaining-popularity-among-swiss-as-an-investment/45563786

Swisscom. (2021). *Manage your cryptocurrency yourself.* Retrieved 02/11/2021, from https://www.swisscom.ch/en/magazine/new-technologies/crypto-wallet-manage-yourself/

Sygnum. (2021). *Sygnum launches a yield generating fixed deposit product on its digital CHF (DCHF) stablecoin.* Retrieved 09/11/2021, from https://www.insights.sygnum.com/post/sygnum-launches-a-yield-generating-fixed-deposit-product-on-its-digital-chf-dchf-stablecoin

Szabo, N. (1997). *The idea of smart contracts.* Retrieved 08/11/2021, from https://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/idea.html

The world bank. (2021). *Market capitalization of listed domestic companies (current US$).* Retrieved 13/10/2021, from https://data.worldbank.org/indicator/CM.MKT.LCAP.CD

Trails, B. (2021). *Slashing.* Retrieved 11/15/2021, from https://bisontrails.co/slashing/

tripleA. (2021). *Global cryptocurrency ownership data 2021 - TripleA.* Retrieved 22/09/2021, from https://triple-a.io/crypto-ownership/

Vontobel. (2021). *Geschäftsbericht 2020.* Retrieved 09/11/2021, from https://www.vontobel.com/siteassets/about-vontobel/downloads/2021-02-11_fr_geschaeftsbericht_de.pdf

Wecan. (2021). *Redefining investment experience.* Retrieved 09/11/2021, from https://wecangroup.ch/products/tokenisation/

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Suurstoffi 1
CH-6343 Rotkreuz

www.hslu.ch/ifz
ISBN 978-3-906877-92-1