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Swiss Asset Management Study 2020

An Overview of Swiss Asset Management

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Preface

The asset management industry is a growing segment of the Swiss financial center and offers a differentiating value proposition relative to private banking and wealth management. The strong expertise in asset management is highly relevant for Switzerland since it helps to diversify and complete the Swiss financial center. In this regard, the Asset Management Association Switzerland has the goal to further establish Switzerland as a leading provider of high quality asset management services and products domestically and abroad.

In this context, the following study provides a comprehensive overview of the current status and various developments in the Swiss asset management industry and consists of two parts. The first part starts with Chapter 1 in which a definition of asset management is provided and the methodological framework of the study is outlined. Chapter 2 gives an overview of the environment and discusses the political/legal, economic, social and technological developments relevant for the asset management industry. Chapter 3 takes an international view by discussing key trends and predictions from a global perspective and includes an update of the asset management hub ranking. Chapter 4 is based on survey data and gives some insights into market size, business models, asset allocation, business performance and industry sentiment among asset management firms operating in Switzerland. In chapter 5, we challenge the conventional wisdom on active versus passive investment management and try to provide a more differentiated view on this controversial debate. Finally, the first part of this study ends with chapter 6 where a conclusion of the study's main findings is given.

In the second part of the study, the factsheets of 58 asset managers that participated in the survey are presented. These factsheets depicted in chapter 7 contain information on the companies' business models such as their value propositions, customer segments, and the offered asset management services.

At this point, we would like to thank all the parties who contributed to this study. Very special thanks goes to the Asset Management Association Switzerland for their financial and content-related support. We would also like to express our appreciation to our partners the Swiss Bankers Association and the Swiss Insurance Association as well as to all the asset management companies that participated in our survey and provided valuable data and information. Last but not least, our thanks go to Cyrill Schönenberger for his research assistance.

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Executive Summary

Financial and insurance services contribute substantially to Switzerland's gross domestic product and are an important pillar of the Swiss economy. Switzerland has made itself a name for its strong position in private banking and wealth management. However, in recent years, asset management has established itself as an important sector with a differentiating value proposition. In this study, asset management is defined as the production and management of investment solutions in the form of collective investment schemes or individual, institutional mandates. Asset managers play several important roles in the economy. A key role of the asset management industry is to provide an investment channel between investors and the financing needs of the real economy. In addition, asset management companies contribute to a sustainable pension system by effectively managing pension fund assets and thereby contributing actively to close the increasingly widening pension gap.

The Swiss Asset Management Study 2020 provides an overview of the scope and breadth of the asset management industry in Switzerland. Based on a survey among Swiss-based asset managers, the study captures the facts, current dynamics as well as the most important challenges and opportunities faced by the industry. Moreover, the PEST analysis describes the political, economic, social and technological environment with the aim to highlight and analyze the key industry developments. From an international perspective, trends and predictions for the global asset management industry are discussed. An updated version of the hub ranking compares the conditions for asset managers in Switzerland to other asset management hubs globally.

Asset management is important for the economy and Switzerland continues to offer good conditions for the asset management industry

Switzerland has a high level of political stability combined with a progressive legal regulatory framework, moderate corporate tax rates and a highly skilled labor force. Among European asset management hubs, Zurich and Geneva take the leading position with respect to offering favorable conditions for the industry. The market size of assets managed in Switzerland by banks, fund management companies, securities dealers and FINMA-supervised asset managers at the end of 2019 amounted to CHF 2'519 billion, which corresponds to a year-on-year growth of 16.5 percent. Net new asset inflows in 2019 are estimated to be almost CHF 100 billion. The assets managed in Switzerland are more than three times the size of the Swiss GDP and about 250 percent of the assets held in Swiss pension funds. Furthermore, our estimates suggest that approximately 10'000 jobs are directly related to the asset management industry and 45'800 people are indirectly employed in services associated with the industry in a wider scope.

Asset allocation among Swiss-based asset management firms is diverse and mostly dominated by active management

The asset allocation of asset managers in Switzerland is diverse and depends on the size and ownership structure of the respective firm. While smaller and independent asset management firms have a stronger focus on alternative asset classes, larger, as well as bank- and insurance owned asset management firms allocate more AuM to traditional core asset classes. Overall, active management is still the dominant investment approach. Aggregated, about 60 percent of the AuM in discretionary mandates and about 80 percent of the AuM in collective investment schemes are actively invested. However, while the largest asset management companies allocated about half, bank-owned asset managers allocated more than 60 percent of the AuM in discretionary mandates to passive products.

Product specialization and sustainable investments are the most promising opportunities for the Swiss asset management industry

Focusing on a product niche and sustainable investments are identified as the most promising strategies for Switzerland as an asset management hub. Our analysis shows that sustainable investments and specialization are not only assessed as the most promising strategies for the future, but that they have gained in importance relative to the previous year. In this regard a persistently strong client demand is identified as a key driver for the strong growth in sustainable investments.

Swiss asset management shows a strong business performance
Swiss-based asset managers are profitable and cost-efficient. The median profit margin is estimated to be 19.5 basis points of AuM while the median cost-income ratio is about 64 percent. In particular, high margin alternative asset classes contribute substantially to profitability. The total net revenues of the Swiss asset management industry is estimated to be about CHF 13.85 billion and total profits are about CHF 4.95 billion.

Swiss-based asset managers no longer see regulation as the most pressing challenge
Regulation is no longer evaluated as the biggest concern of Swiss-based asset managers. The sentiment analysis reveals that finding customers is now perceived as the most pressing challenge in the industry. Global markets offer great potential for Swiss asset management as for example Asia is subject to significant growth. In this regard, Swiss-based asset management firms need to offer their products and services on an international scale, since organic growth in the domestic market is rather limited. Overall, about 70 percent of the AuM are managed for domestic clients, while 30 percent are managed for clients abroad. The majority of Swiss-based asset managers serve both domestic and international clients and about one third only serves domestic clients.

The conventional wisdom on the value of active management is too negative
An analysis of the more recent research about active management shows that active managers have some sort of skill and tend to make value-added decisions. Under certain circumstances, actively managed funds appear to create added value for investors even after fees are taken into account. In particular, small cap funds or funds that exhibit a higher degree of activity tend to outperform their benchmark. Moreover, active investment approaches contribute to an enhanced market efficiency. Overall, according to the state of the literature, the conventional wisdom on the value of active management is too negative and the positive findings on active management are not fully recognized.

1. Definition & Framework of Asset Management

By Thomas Ankenbrand & Jürg Fausch,
Institute of Financial Services Zug IFZ

In this first chapter, we describe the overall framework and the methodologies applied to analyze the asset management industry in Switzerland. In order to determine the scope of this study we first provide a definition of the term "asset management". Second, the PEST approach is illustrated, which is used to evaluate the macro-environmental factors that affect the asset management industry. In section three of this introductory chapter, we use the business model canvas of Osterwalder and Pigneur (2010) to describe asset management as a business model. Finally, in section four a description of the methodological framework applied to evaluate the sentiment of Swiss-based asset management firms is given.

1.1. Definition of Asset Management

In this study, we define asset management as follows:

> Asset management is the production and management of investment solutions in the form of collective investment schemes or individual, institutional mandates.

This definition reveals that asset management firms offer their products and services in the form of discretionary mandates to institutional clients such as pension funds, insurance companies, sovereign wealth funds, governments, corporations or family offices and include the management of funds that are pooled in collective investment schemes (CIS). An important feature of this definition is that wealth management firms and private banks without an asset management unit are not taken into account in this study. However, wealth managers and private banks are an important distribution channel for products developed and managed by asset managers. Consistent with the above asset management definition, the main objective of this study is to analyze the asset management industry in Switzerland with a clear focus on the production side as illustrated in figure 1.1.

This production view goes beyond the simple booking of assets and requires that Switzerland is the physical location where investment decisions are made and portfolios are managed. In terms of the value proposition, asset managers have an intermediary function with a fiduciary responsibility and manage collective investment schemes and institutional discretionary mandates for a fee, on behalf and in the best interest of their customers. The main objective in this context is to develop and implement an investment strategy that is in line with the investment goals and risk preferences of their clients. Hence, the primary objective of an asset manager is to maximize returns at an appropriate and predefined level of risk. To achieve this goal, asset managers conduct sophisticated research on financial markets, the real economy, various industries and individual companies to identify sustainable and productive investment opportunities. In order to implement the defined strategy, asset managers use a broad set of various asset classes across public and private markets and construct portfolios. This investment universe consists of traditional asset classes such as

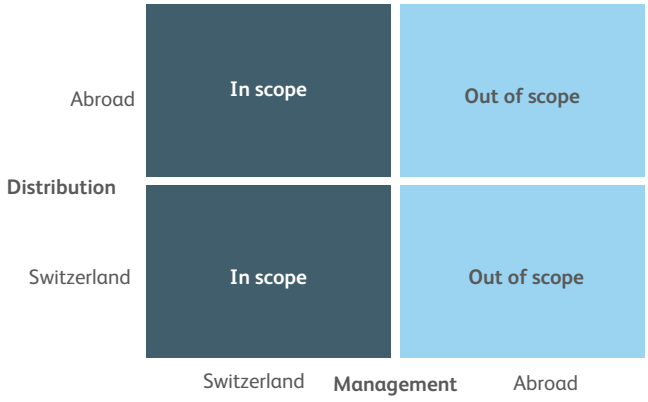

Figure 1.1: Switzerland as an asset management production location

stocks and bonds but is also based on alternative asset classes like private equity, private debt or hedge funds.

1.2. PEST-Approach

To analyze the macro-environmental factors surrounding the asset management industry we use the widely applied and established PEST approach. More specifically, the PEST framework analyzes the business environment an industry or firm operates in by examining opportunities and threats due to political, economic, social, and technological factors. With respect to the asset management industry the political/legal dimension covers factors such as the national and international regulatory framework, the reliability of the political system, tax laws or global market access. The economic dimension deals with the current macroeconomic environment, the stance of monetary policy, the developments on financial markets as well as the savings behavior in the economy. The main focus of the social dimensions is to analyze customer preferences, demographic developments as well as the availability of talent and skill which are a key resource in asset management. The final dimension of the PEST analysis provides a deeper analysis of how major technological innovation impacts the asset management industry. The focus of this dimension is to evaluate the financial market infrastructure and to gain insights how the adoption of artificial intelligence and digital asset management will shape the future of the industry.

1.3. Business Model Canvas

The business model canvas is a widely established strategic management tool and consists of a visual representation that describes the rationale of how an organization creates, delivers, and captures value (Osterwalder and Pigneur, 2010). The business model canvas is an integral approach to describe and define a business model, which means a holistic approach is adopted to cover all elements that are required for the operability of a company. More specifically, the business model canvas consists of nine building blocks, which represent the four major aspects of every business: customer, offer, infrastructure, and financial viability. Because the focus of this study is to analyze the asset management industry from a production view, distribution of asset management products is only of marginal importance. A direct implication of this perspective is that the building blocks "Channels" and "Customer Relationship", which account for the way the company interacts and communicates with its customer segments, are excluded from the analysis. However, the remaining seven building blocks, which are colored dark blue and framed with red dashed lines in figure 1.2 are essential for a comprehensive analysis of asset management as a business model and are thus incorporated in the corresponding company factsheet in chapter 7 of this study. A detailed description of these building blocks with respect to the asset management industry are given below.

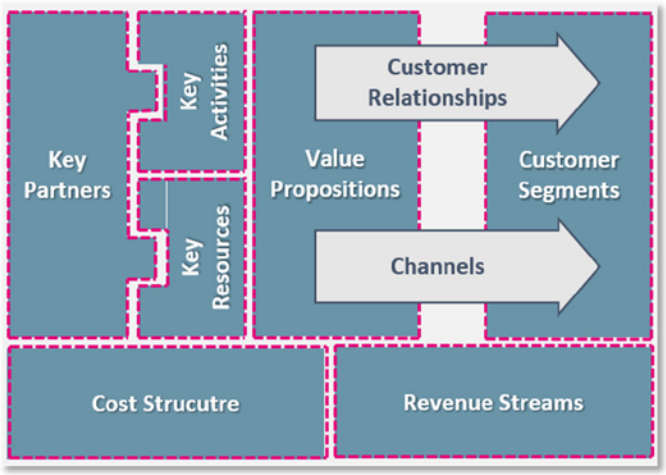

Figure 1.2: Business model canvas (Osterwalder & Pigneur, 2010)

Customer Segment		Description
Product Group	**Discretionary Mandate**	Mandate given by a client to an institute to manage a portfolio of assets and execute orders in compliance with a predefined set of rules and principles at the institute's sole and full discretion in order to achieve the predefined investment objectives.
	Collective Investment Scheme	Collective Investment Scheme (CIS) as governed by Swiss or foreign law on Collective Investment Schemes. An exchange traded fund is not considered a CIS in the survey.
	Exchange Traded Fund	Marketable security that tracks a commodity, bond, or a reference portfolio, often an index fund. An ETF trades like a common stock on a stock exchange. In this survey, an ETF shall be distinguished from CIS.
Type	**Private**	Beneficial Owner that entered a mandate contract or invested in a CIS or ETF and is a private person.
	Institutional	Beneficial Owner that entered a mandate contract or invested in a CIS or ETF and is a legal entity or institution.
Geography	**Switzerland**	The institute focuses on serving customers in Switzerland.
	International	The institute focuses on serving international customers (Switzerland included).

Table 1.1: Customer segments of asset management companies

Customer Segments

The building block "Customer Segments" defines the customer base the asset management firms wants to offer its products and services to and is key to every business model. An asset manager groups its customers into distinct segments with common characteristics in order to better satisfy their specific needs. In this context, we distinguish among three different aspects: a segmentation in terms of product groups, i.e., discretionary mandate, collective investment scheme or exchange traded fund, a segmentation according to the type of customer, i.e., private or institutional, and a geographical segmentation, i.e., national or international.

Value Propositions

The "Value Propositions" building block is the core of the business model canvas and describes the bundle of products and services offered to create value and serve customer needs (table 1.2). These products and services are the main reasons why customers are interested in a company. In terms of products, asset management firms offer the following solutions:

Product	Description
Money Market	Cash or cash equivalents with stated maturity of one year or less.
Bond	Fixed income securities with maturity of more than one year.
Equity	Investments in the stock market.
Multi-Asset	Investments in a combination of equity, fixed income and other asset classes.
Commodity	Investments in commodities, directly or indirectly via derivatives.
Real Estate	Investments in real estate directly or indirectly.
Infrastructure	Investments in infrastructure projects.
Private Equity	Investments in companies generally not traded and exhibiting equity-like features.
Private Debt	Investments in the private lending market broadly consisting of leveraged loans and private credit.
Hedge Fund	Investments in a variety of assets, often with aggressive and skill-based investment strategies.
ILS Fund	Investment in insurance linked securities (ILS) including catastrophe (CAT) bonds.
Other	Investments in other asset classes not attributable to the above.

Table 1.2: Value propositions in terms of asset management companies

Value Proposition		Description
	Active Portfolio Management	The company follows an active investment strategy with the aim to generate a positive alpha by outperforming a reference portfolio (benchmark).
	Passive Portfolio Management	The company follows a passive investment strategy by creating a portfolio allocation that is the same as or similar to the reference portfolio. The purpose of passive portfolio management is to generate a return that is the same as the chosen reference portfolio.

Table 1.3: Value propositions in terms of investment strategy of asset management companies

Revenue Stream	Description
Management fee	Proportional to the value of assets being managed and charges are typically expressed as a percentage of assets under management.
Performance fee	The asset management firm is paid contingent on some measure of the underlying performance of their service.

Table 1.4: Revenue sources of asset management companies

Moreover, the value proposition of asset management firms is also separated with respect to the chosen investment approach where a distinction between active and passive investment management is made.

Revenue Streams

The building block "Revenue" describes how the company earns money from each customer segment and is a key indicator of the success of a business model. Asset managers favor a fee-based compensation for their services where a distinction between management and performance fees is made. Management fees are a fixed percentage of assets under management, with fee levels differing across management styles and asset classes while performance fees are contingent on the relative performance of asset managers with respect to market indices used as benchmarks. However, it is important to note that a significant part of these fees is used to cover distribution and administration expenses. For example, on aver-

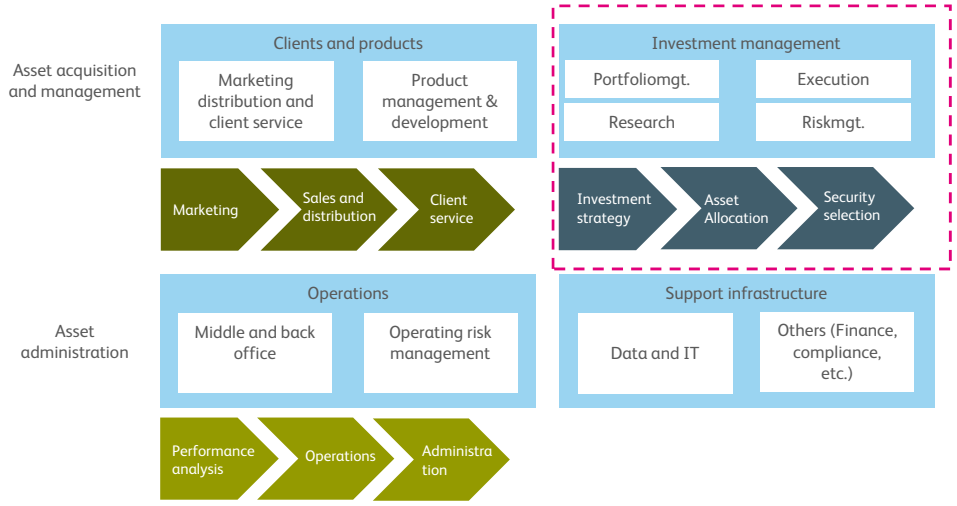

Figure 1.3: Asset management operating model (based on Oliver Wyman, 2015)

Key Activities	Description
Portfolio Management	Process of combining assets in a portfolio tailored to the investor's preferences and needs (based on the investment strategy), monitoring that portfolio, and evaluating its performance.
Research	Economic and financial market research to provide fundamental information for investment decisions.
Execution	Manual or automated completion of a buy or sell order for an asset in the market.
Risk Management	Forecast and evaluation of risks that have an adverse impact on the assets under management together with the identification of procedures to avoid or minimize their impact on the portfolio.
Investment Strategy	Development of an investment strategy consistent with client needs and preferences.
Asset Allocation	Allocation of funds to different asset classes, which can be based on an active, a passive or a combined approach.
Security Selection	Security selection is the process of implementing the asset allocation by determining which specific securities are included in the portfolio.

Table 1.5: Key activities of asset management companies

age 60 percent of the management fee of an actively managed fund consists of distribution fees. Ten percent are related to administration and 30 percent to asset management (Fuchs, 2012). In asset management, the revenues in a fee-based compensation model depend fully on the assets under management. Adverse market movements or a decline in assets under management due to client withdrawals results immediately in lower revenues for the corresponding asset management firm.

Key Activities

Any business model is based on a variety of processes and activities, which are fundamental to deliver the value proposition and generate revenue streams. The building block "Key Activities" emphasizes the most important processes required to operate a business successfully. The key activities in asset management are derived from the asset management operating model illustrated in figure 1.3. A more detailed description of each of these key activities is given in table 1.5.

Key Resources

The building block "Key Resources" constitutes the foundation for value creation and describes the company's most important resources required for operating a business model. These resources allow a company to create a value proposition, reach markets, maintain customer relationships, and earn revenues. A key resource in the asset management industry are employees. In this study, we distinguish between employees involved in core asset management tasks or supportive tasks (see table 1.6). Core asset management tasks include the investment strategy, investment research, asset allocation, security selection, and risk management while supportive tasks to asset management involve sales, middle office, compliance, asset administration and other services (e.g., Human Resources (HR), Information Technology (IT) etc.).

Key Partners

The presence of "Key Partners" is an important element of any business model. Some of these partnerships are essential to create and deliver the value proposition. The motive to enter a strategic alliance

Key Resources		Description
	FTE Core Task	Indicates how many human resources in terms of full time equivalents (FTE) are currently deployed to perform a core asset management task, i.e., investment strategy, investment research, asset allocation, security selection, and risk management.
	FTE Supportive Task	Indicates how many human resources in terms of full time equivalents (FTE) are currently deployed to perform a supportive asset management task, i.e., sales, middle office, compliance, administration, and other services (e.g., HR, IT) etc.

Table 1.6: Key resources of asset management companies

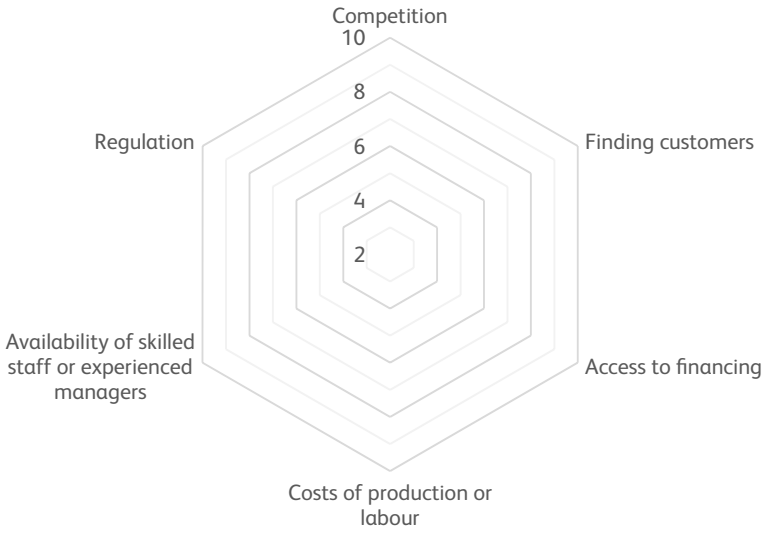

Figure 1.4: Challenges of the Swiss Asset Management Industry

or partnership is diverse. Cost and/or risk reduction, business model optimization or the acquisition of resources are possible reasons. For an asset management firm operating in a business-to-business context, distribution partners like private banks and wealth management firms, insurance companies, and pension funds are identified as key partners.

Cost Structure
The building block "cost structure" provides a description of all resulting costs that are generated while operating under a particular business model. In the asset management industry the most significant cost blocks are related to staff expenses, administration costs (office, IT infrastructure, marketing costs), and distribution fees.

1.4. Sentiment Analysis of Asset Management Companies

To assess the challenges and opportunities faced by the asset management industry in Switzerland we conduct a sentiment analysis. The first part of this analysis evaluates the challenges faced by asset managers. The questionnaire used for this purpose is based on the *Survey on the Access to Finance of Enterprises in the Euro area*. This survey is conducted biannually, by the *European Central Bank* (ECB), among the member states of the European Union. The questionnaire includes the six challenges depicted in figure 1.4.

In this context, all the in-scope[1] asset management companies were asked to evaluate each of the corresponding challenges on a scale from 1 (not pressing)

[1] In-scope asset management firms consist of FINMA authorized banks and securities dealers, fund management companies, as well as asset managers of collective investment schemes licensed under the Collective Investment Scheme Act (CISA), which consider asset management as their main value proposition and are in line with our definition of asset management outlined in section 1.1. Further details about the set of surveyed companies are provided in section 4.1.

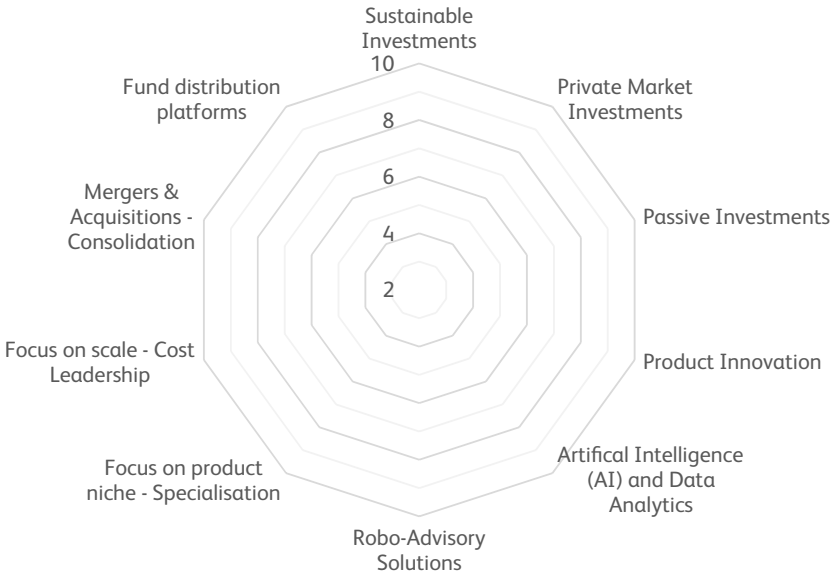

Figure 1.5: Opportunities for the Swiss Asset Management Industry

to 10 (extremely pressing). The second part of the sentiment analysis includes an evaluation of opportunities the asset management industry has. To be consistent with the first part of the sentiment analysis, we apply the same approach used to evaluate the industry challenges, meaning all the surveyed asset managers were asked to evaluate each of the following opportunities on a scale from 1 (not important) to 10 (extremely important).

2. The Swiss Asset Management Environment

2.1. Political & Legal Environment

By Markus Fuchs & Diana Imbach Haumüller, Asset Management Association Switzerland

2.1.1. Introduction

A reliable political and regulatory environment is essential for an internationally recognized financial center. As an international industry, asset management is particularly dependent on recognized standards and a sustainable regulatory framework. The participants of our 2019 Asset Management Study have also confirmed this. In the study 90 percent of the surveyed Swiss-based asset management firms evaluated the compliance of Swiss regulation with international regulatory standards as either important or very important for the exportability of Swiss asset management services and products. At the same time, however, the respective sentiment analysis indicated that regulation is also perceived to be the most pressing challenge for the industry which confirmed the findings of the Study in 2018[2]. Against this background it becomes evident that regulation is and will remain an important factor for the Swiss asset management industry. It is, however, key that Swiss regulation is elaborated in a smart manner ensuring on the one hand that Switzerland complies with international standards but, on the other hand, that asset managers in Switzerland can benefit from regulatory changes.

In this chapter we provide a brief overview of the most important aspects in the political and legal dimension of the PEST-analysis. The main focus of this part of the study lies on the regulatory and supervisory aspects related to asset managers in Switzerland.

2.1.2. Regulation as a Key Factor for Exportability

2.1.2.1. International Rules for International Markets

As a small economy with a strong financial center, Switzerland depends on its financial service providers being able to offer their products and services abroad too. In principle, this applies to all financial services providers such as banks and asset managers. However, it is particularly relevant for asset managers as in this area, the potential for growth within Switzerland is limited. In contrast, global growth forecasts are considerably higher[3]. Therefore, it is crucial for Swiss-based asset managers to be able to provide their services not only nationally, but also on a cross border basis to clients abroad. The exportability of asset management is a vital precondition for a strong Swiss asset management industry.

A basic prerequisite for the exportability of asset management services is compliance with internationally accepted standards. Regulation and, in particular, appropriate rules of conduct as well as a reliable supervisory regime are becoming increasingly important at an international level. On the one hand, in the selection process of an asset manager, institutional clients such as pension funds or fund providers, are increasingly focusing on internal governance and the applicable regulatory framework as a part of their internal due diligence processes. Therefore, a weak regulatory framework constitutes a competitive disadvantage for asset managers. On the other hand, corresponding requirements for "equivalent" regulation and memoranda of understanding (MoU) between supervisory authorities, which are generally based on similar requirements, also play an important role[4].

Therefore, if the Swiss financial center strives to continue to be a strong international asset management hub, there is no way around implementing international standards in Swiss regulation. Besides the general improvement of client protection and achieving a level playing field between different financial products and service providers in Switzerland, this was one of the main reasons why in March 2012, the Federal Council commissioned the Federal Department of Finance (FDF) with the structuring of a legal basis for the cross-sector regulation of financial products and services and their distribution[5]. This project led to the new Financial Services Act (FinSA) and the Financial Institutions Act (FinIA) which were approved by the Swiss Parliament on June 15, 2018 and entered into force on January 1, 2020[6].

[2] See IFZ/AMP Asset Management Study 2019: An Overview of Swiss Asset Management, p 3; p. 42 seqq.
[3] See BCG (2018) for further details.
[4] See section 2.1.2.2
[5] See Federal dispatch, BBl 2015 8901, e.g. p. 8938.
[6] SC 950.1 (FinSA) and 954.1 (FinIA)

2.1.2.2. Cross Border Regimes Abroad

Swiss asset managers who seek to provide services in other jurisdictions are essentially faced with three different regulatory concepts: the EU/EEA system, the US regime, and the Asian regimes. The EU/EEA system is based on a high degree of harmonization and cooperation, which allows for efficient access across borders given that certain conditions are fulfilled. On the contrary, the US regime does not allow for access based on a certain degree of equivalence, but rather requires a registration with the national supervisory authority. The Asian system lies between the two and requires cooperation with the authorities and/or local presence as well as additional supervisory parameters for access to the local market.

A convergence towards the EU/EEA regulation with regards to the possibility of a non-discriminatory market access is essential and makes sense from an economic and commercial perspective. For the asset management industry, this implies that Swiss-based asset managers should be able to manage EU-based collective investment schemes, provide asset management services for pension funds, and sell Swiss financial products in the EU. A punctual and static equivalence would probably lead to a state of permanent amendments and negotiations. Thus, Switzerland should strive for an integrated solution, which should at the least provide a clear mechanism for continuous updates and ensure equivalence. In the best case, it should provide complete access to the free movement of services. Needless to mention that against the background of the current political challenges, amongst others due to the Brexit, achieving this goal remains a challenge.

For the US market, it is particularly important for Switzerland to avoid any negative listings. For access in Hong Kong, the recognition by the Swiss Financial Market Supervisory Authority (FINMA) is a requirement. Of importance in this context therefore, is the recently achieved equivalence of the inspection regime. In addition, a sustainable process for the exchange of information would have to be established. The access to Singapore is to be achieved by bilateral agreements. In line with the national guidelines, it will be hard to avoid the requirement for physical local presence, but at least access for Swiss asset managers should be able to be facilitated and the process accelerated.

Some jurisdictions (USA, Hong Kong, Singapore) do not differentiate between asset management and advisory services from a regulatory perspective, and thus attach the same legal consequences to both of them. Others, in particular the European system (to which the Swiss system was made compatible with various guidelines such as the Market in Financial Instruments Directive (MiFID)), differentiate between the two services and apply the element of discretion, but demand prudential supervision as soon as, for example, the border of MiFID relevant services is crossed. To enable market access for Swiss providers who are subject to the condition of equivalence, the creation of a licencing system is required.

Jurisdictions with policies strongly focused on asset management have created a balance between investor protection and the encouragement of competition within their supervisory approach. Whether FINMA, which has an explicit mandate to encourage competition within the domestic market, should be equipped to deal with the needs of investors, is part of an ongoing controversial debate. Increasingly, a trend towards a system of diversified licensing and supervisory practice, to support risk and protection needs, is being observed. Switzerland also pursues this approach with the FinIA. Any loopholes or possible “Swiss finish”-approaches within the Swiss asset management regulation framework should be revised. In addition, Switzerland should strive to develop a coordinated strategy with the inclusion of all stakeholders to promote the country internationally as a hub for asset management services.

Also, a continuous and binding dialogue between the authorities and the asset management industry is vital in order to ensure that the interests of the industry are taken into account and that developments, as well as experience, are integrated into the regulatory and supervisory process. The practical experiences made in the last few years support this claim. Never before has asset management received such a high degree of attention from the public, politics, and media as it does today.

2.1.2.3. Standard Setting on an International Level

A sustainable framework is vital, especially for the implementation in and compliance of international standards with the regulatory and supervisory system. In the last few years, many new standards were introduced abroad. Switzerland, as a diversified global

financial center, was strongly affected by this trend. Important decisions on economic cooperation, the development of the financial system, and the regulation of financial markets are made within standard-setting organizations like the OECD, G20, FSB, and IOSCO. It is important for Switzerland to have access to any of those organizations and to be able to participate actively in the development of these rules and standards. Moreover, for Switzerland as a financial center it is fundamental to provide its know-how, in order to contribute towards the design of a stable and open global financial system. This is a significant condition for sustainable growth, which should be accompanied and supported by political efforts.

2.1.3. Overview of Asset Management Regulation

2.1.3.1. Change of the Regulatory Framework

Traditionally, financial market regulation in Switzerland had a primarily sectoral structure. The provisions regulating the management and distribution of collective investment schemes were primarily governed by the Collective Investment Schemes Act (CISA)[7] and its implementing ordinance CISO[8] and CISO-FINMA[9], FINMA circulars[10], and SFAMA self-regulation[11]. The same sectoral structure applied to the regulation of banks and securities dealers, governed by their specific acts, ordinances, FINMA-, and self-regulation. A special case were so called independent asset managers (IAM) which, unlike all other financial service providers managing client assets, were not subject to prudential supervision. Only in the area of money laundering prevention there was some mandatory supervision to a certain extent. In the area of conduct rules, self-regulation typically ensured a minimum standard for these service providers[12]. On an international level, the lack of prudential supervision of IAM triggered also a need for explanation[13].

In addition, customer protection in the area of financial services was traditionally based on general contract law, practice of authorities and courts, or interpretation of doctrine. Hence, the regulation in this area was highly fragmented which sometimes led to legal uncertainty for financial service providers and their customers. The goal to implement uniform rules for same services ("same business same rules") and to thus achieve a level playing field between different types of providers such as banks, asset managers or advisors, was another reason triggering the new FinSA and FinIA.

With FinSA and FinIA the regulatory framework has been transformed from its previous sectoral structure into a horizontal structure. Hence, the FinSA introduces uniform cross-sector regulations for the provision of all financial services and the offering of financial instruments. Consequently, the provisions at the point of sale for all financial services, including asset management services, are governed by the FinSA. This includes rules on client segmentation (art. 4 seq.), conduct rules concerning the duty of providing clients with information (art. 8 seqq.), appropriateness and suitability tests (art. 10 seqq.), documentation requirement and the duty to render account (art. 15 seqq.), the regulation on conflicts of interest (Art. 25 seqq.), or the registration of services providers who are not prudentially supervised by FINMA (art. 28 seqq.).

Besides adequate rules of conduct, a further essential standard is the supervision of all asset managers, which was introduced by the FinIA. With the new act, all financial services providers who render asset management services to clients require a FINMA license and are subject to ongoing supervision. This includes now also IAM (Art. 17 seqq. FinSA). However, unlike all other asset managers, for IAM, ongoing supervision will be conducted by newly established and FINMA authorized supervisory organisations (SO). It is also interesting to note that with the FinIA external man-

[7] Systematic collection of laws in Switzerland (SC) 951.31.
[8] SC 951.311.
[9] SC 951.312.
[10] For an extensive overview see website FINMA: <https://www.finma.ch/de/dokumentation/rundschreiben/> (as of 3 July 2020).
[11] For an extensice overview on SFAMA self-regulations see website SFAMA: <https://www.sfama.ch/de/selbstregulierung-musterdokumente> (as of 3 July 2020).
[12] See e.g. Swiss Banking, Portfolio Management Guidelines, Basel 2017.
[13] In its report on the Financial System Stability Assessment (FSAP) in Switzerland of 2013 (2014) the IMF stated that Switzerland only partially fulfils the corresponding IOSCO standards with regard to financial intermediaries, as so-called independent asset managers are not subject to a licensing requirement or other supervisory obligations. The IMF had already identified this topic in its 2002 report and recommended appropriate measures. See IMF Country reports on Switzerland 2002/2014.

agers of pension assets are subject to the same legal requirements regarding authorization and supervision as fund managers (art. 24 seqq.). Before the introduction of FinIA, asset managers of pension funds were not subject to prudential supervision. They were considered IAM but had to register with the Supervisory Commission for Occupational Pension Funds.

Also, under the new regime product or client specific regulation will continue to exist, but only to a limited extent. One example are fund specific provisions in the CISA, governing product specific requirements such as conduct rules for the management and administration of funds (art. 20 new CISA) or rules for the valuation of assets in funds. Such rules will generally not apply to the conduct at the point of sale, as this area is exclusively covered by the new FinSA. However, if for instance, a fund management company delegates asset management functions to another asset manager, depending on the different tasks, both regimes should be considered. Another example for client specific regulation is the area of pension funds. Here, the ordinance on occupational old-age, survivors' and invalidity insurance (BVV2) continues to provide for specific requirements for the management of pension funds.

2.1.3.2. Implementation of the new regulatory regime

On 6 November 2019, the Federal Council adopted the ordinance texts relating to the FinSA and FinIA and set 1 January 2020 as the date for the entire package of regulation to enter into force[14]. The respective two-year transition period applicable to most of the new obligations in the FinSA and the extremely short deadline for implementing the amendments to the CISA (roughly six weeks) would have created numerous regulatory gaps for the fund and asset management industry and thus considerable legal uncertainty. Therefore, the ordinance texts also contain detailed provisions on the transition from the old CISA[15]. In summary, the pre-existing conduct and organizational rules under CISA will continue to apply to financial service providers until they have implemented the FinSA at the point of sale. This means also that most pre-existing agreements and processes can be maintained during the transition period of maximum two years, even if they are no longer fully compliant with the revised law. At the same time, however, it also means that only providers that have implemented the FinSA fully will be able to take advantage of relaxed rules on sales under the new legislation. Significantly shorter transition periods apply to the registration in the register of advisers and with the ombudsman.

Against this background, the implementation of the new rules bears some challenges also for asset managers. So far however, Swiss asset managers seem to be on track.

2.1.4. Conclusion

Many trade associations currently demand cutbacks to the waves of regulation and more power to act internationally. It is important to realize that with the new FinSA/FinIA regulatory framework Switzerland is not giving up a competitive advantage, but rather is preventing the risk of being considered a dubious financial center without the respective regulation. But even if the regulatory preconditions are set for a strong asset management industry, it is clear that other aspects are equally important for the success of Swiss-based asset managers. One of those topics are the Swiss withholding tax and stamp duty, which are particularly crucial for Swiss-based managers of collective investment schemes in Switzerland or abroad. Against this background it is important to emphasize, that an ongoing dialog within the industry but also with FINMA, the Federal Administration, and the Swiss parliament is crucial to create an even better understanding of the needs of the industry and its potential to make a major contribution to the creation of value in Switzerland.

[14] See the respective media release of the Federal Council dated 6 November 2019: <https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-76957.html> (as of 3 July 2020).
[15] See e.g. art. 105 seq. FinSO.

2.2. Economic Environment

By Jürg Fausch, Institute of Financial Services Zug IFZ

In this section, we give an overview about the role asset managers take in the economy and briefly illustrate the macroeconomic environment. We show that the high savings rate in Switzerland drives wealth creation and builds the foundation for a strong home market with a broad variety of asset management products and services provided by Swiss-based asset managers.

2.2.1. Asset Management in the Economy

Financial and insurance services contribute substantially to Switzerland's gross domestic product (GDP) and are an important pillar of the Swiss economy. In 2019, 9.2 percent of total economic output, corresponding to about CHF 64 billion in value creation, is generated by the financial sector. Moreover, for every franc of value creation in the financial industry, CHF 0.31 of value added is generated in other sectors. This indirect value creation of 19.8 billion leads to a total GDP contribution of the financial sector of more than CHF 80 billion. An international comparison reveals that with Luxembourg (26.8%), Hong Kong (18%) and Singapore (13.1%) only small economies, specializing in financial services, have a more important financial industry than Switzerland (SIF, 2020; BAK Economics, 2019). With respect to employment at the end of 2019, approximately 5.2 percent of overall employment in Switzerland was related to the financial sector, including activities auxiliary to financial services and insurance activities, which corresponds to 206'419 full time equivalents (SIF, 2020). Moreover, the financial sector contributes considerably to tax revenues on the federal, cantonal and municipal level. The total fiscal effect of direct and indirect taxes in 2018 was estimated to be CHF 17.6 billion, which is about 12 percent of total fiscal revenues (BAK Economics, 2019).

Switzerland is well-known for its strong position in private banking and wealth management. According to the *Deloitte International Wealth Management Centre Ranking 2018*, Switzerland is evaluated as the leading center in terms of competitiveness, size and performance (Deloitte, 2018). However, in recent years, asset management has established itself as an important sector and a pillar of the Swiss financial center. Our estimates indicate that Swiss-based asset management companies manage more than CHF 2'500 billion on behalf of domestic and foreign clients[16], which corresponds to about 360 percent of Swiss GDP[17]. To put this number into perspective, assets in Swiss pension schemes (excluding vested pension assets and pillar 3a pension schemes) reached about 146 percent of GDP at the end of 2019, which corresponds to about CHF 1'020 billion (Willis Towers Watson, 2020). However, the strong wealth management sector in Switzerland is an important distribution channel for asset management products and services.

Asset managers play several important roles in the economy. A key role of the asset management industry at a macroeconomic level is to provide an investment channel between investors and financial markets. Asset managers make markets more efficient by gathering information about businesses and the development of the real economy and incorporate this information through their trades. The increased market efficiency can improve real outcomes, because the capital market is the tool to allocate resources in the economy (Pedersen, 2015). More specifically, financial markets contribute to an efficient allocation of capital to those companies with good growth prospects allowing them to raise capital and finance new projects. In this intermediary role, asset managers reduce information asymmetries between companies and investors, stimulate long-term economic growth and create jobs. Another useful role of asset managers is the provision of market liquidity to investors who need to buy or sell assets, need to hedge or buy insurance or simply want to buy certain types of securities (Pedersen, 2015).

From a microeconomic perspective, asset managers develop and implement investment strategies on behalf of their clients with differing levels of risk, return and maturity on an agency basis. This means asset managers have a fiduciary duty in order to allocate

[16] Section 4.2 gives a detailed overview of the market size and the structure of the Swiss asset management industry.
[17] According to SECO, based on seasonally and calendar adjusted data, GDP in Switzerland at the end of 2019 was CHF 698'706.

their clients capital to various asset classes, investment products and markets. This process of diversification is supported by the asset managers' expertise in risk management. In this context, asset management firms monitor current developments in industries, countries and regions and thereby lower investment risk. Overall, asset managers provide access to a wide range of investment solutions in a very cost-efficient way due to economies of scale on the side of the asset management firm. Asset managers are set functionally apart from other financial intermediaries like banks, since they do not perform intermediation on their balance sheets, with the implication that capital requirements for the asset management industry are considerably lower.

A characteristic of the asset management industry is the high market concentration. On a global scale, the top 20 of the largest 500 asset managers control 42 percent of assets under management (Thinking Ahead Institute, 2019) while 10 companies account for almost one third of total assets under management (zeb, 2019a). Moreover, in the US the share of stock holdings by the ten largest institutional investors has increased substantially from around 6 percent of total equity assets in 1980 to more than 25 percent in 2016 (Ben-David et al., 2018). In this context, concerns by regulators have been raised whether this increase in industry concentration pose systemic risks. Ben-David et al. (2018) provide empirical evidence using US data that the increased concentration led to more volatile stock prices held by large institutional investors. However, a more recent study by Feldman et al. (2020) uses a theoretical model to show that a higher concentration (less competition) of the active fund management industry provides stronger managerial incentives to exert efforts in the search for alpha due to lower search costs and more unexplored investment opportunities. Empirically Feldman et al. (2020) find indeed that a decrease in the US mutual fund industry concentration over the sample period January 1979 to December 2014 is associated with a decrease in its net alpha (after management fees).

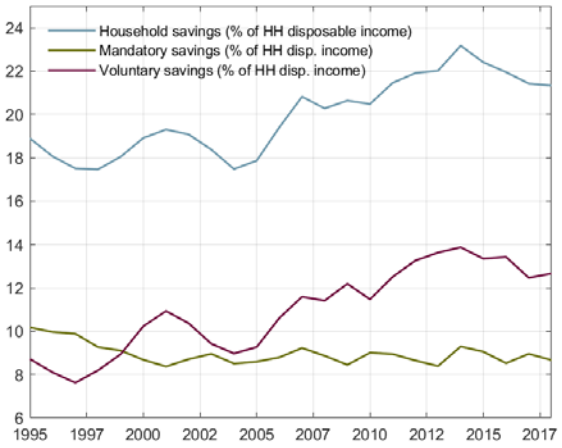

Figure 2.1: Household savings in Switzerland
(Source: Federal Statistical Office)

2.2.2. Saving

In an international context, Switzerland has one of the highest saving rates.

Considering the savings behavior of households, the most recent available estimates of the *Federal Statistical Office* for the year 2018 indicate that 21.3 percent of disposable income, adjusted of mandatory savings, has been saved[18]. More specifically, 8.7 percentage points of these gross savings are due to mandatory savings (i.e. second-pillar pension saving) while the remaining 12.7 percentage points are related to voluntary savings. This observed high propensity to save of Swiss households is also reflected in a large current account surplus of around ten percent of GDP. The time series development of household savings and its distinction in mandatory and voluntary savings is depicted in figure 2.1. An interesting feature of this development is that the increase in household savings over time is driven by the increase in voluntary savings of Swiss households. From 1995 to 2018, the share of mandatory savings decreased from 10.2 percent to 8.7 percent while over the same time period the share of voluntary savings increased from 8.7 to 12.7 percent. Standard macroeconomic models consistent with the Life-Cycle/Permanent Income hypoth-

[18] The disposable income adjusted of mandatory savings is the sum between the gross disposable income and the adjustment for the change in net equity of households in pension funds reserves. Gross savings is computed as the difference between disposable income adjusted of mandatory savings and consumption expenditures.

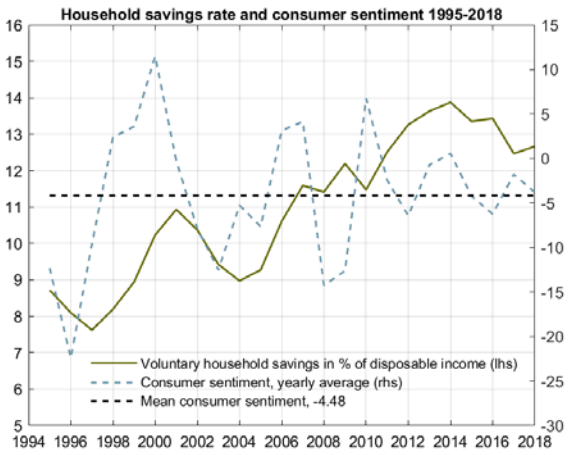

Figure 2.2: Household savings in Switzerland
(Source: Federal Statistical Office)

esis (Modigliani and Brumberg, 1954; Freidman, 1957) imply that households use savings to smooth consumption over time. In these models, a household is assumed to borrow and dissave at a young age, accumulate savings during middle age and dissave again after retirement. Figure 2.2 shows the development of voluntary household savings and the yearly average of the Swiss consumer sentiment index.

Over the 1995 to 2018 period, these time series data reveal a positive relationship between consumer sentiment and voluntary household savings in Switzerland. However, between 2010 and 2014 a decrease in consumer sentiment was associated with an increase in the households savings rate, which could potentially be interpreted with higher precautionary savings by Swiss households and motivated by the fact that households rationally did expect a decline in future income. Overall, the time series data indicate a long-term upward trend in voluntary savings. The empirical and theoretical literature provides evidence that household saving rates increase strongly with household income (e.g. Hugget and Ventura, 2000). Measured in US dollars, using purchasing power parity, both annual gross earnings before taxes and net income after taxes are highest in Switzerland among all OECD countries. For example, the net income of a household consisting of a married couple with two children is USD 134'294 while the OECD average is USD 71'548 (OECD, 2020). In addition to the high level of income, demographic developments and an associated increase in life expectancy further contribute to the high propensity to save in Switzerland. The key mechanism underlying this demographic transition across advanced economies is that households anticipate that they will live longer and spend more time in retirement. Households are therefore willing to transfer more of their income during work life to the future in order to maintain a smooth consumption stream. Moreover, slower population growth and an increased longevity imply that the total population consists of a larger share of older households. Both these developments increase the level of aggregate savings to GDP over time (Lisack et al., 2019). For asset managers, these large savings of Swiss households indicate a large demand for asset management services and products since households seek to convert savings into managed investments.

2.2.3. Asset Management and the Pension System

In Switzerland, the pension system consists of three pillars providing an earnings related public pension with a minimum pension, a mandatory occupational pension system where the contribution rates increase with age as well as tax-supported voluntary pension plans (pillar 3a). Among all developed economies, structural and demographic shifts have an adverse impact on the sustainability, adequacy and overall health of the pension system. According to the most recent Melbourne Mercer Global Pension Index the Swiss pension system has a sound structure with many good features but some areas of improvement compared to peer economies are identified (Mercer, 2019). In particular, between 2008 and 2018, both public and private pension funds in Switzerland were forced to lower technical interest rates by more than 1.5 percent and reduce effective average conversion rates from 6.79 percent to 5.87 resulting in a combined drop of first and second pillar pensions by ten percent (McKinsey, 2020). In this context, pressure persists on the system to maintain adequate and financially sustainable levels of pensions as longevity is constantly increasing in advanced economies. More specifically, the remaining life expectancy at age 65 in the OECD is expected to increase on average from 19.8 years in 2020 to 22.6 years in 2050 (OECD, 2019a). In the recent past, various measures have been suggested to reform the pension system. Among others, these reform recommendations include a general increase in the statutory retirement age, to

link retirement to life expectancy, providing incentives to work longer or raise contribution rates of public and private pension schemes (OECD, 2019a; 2019b) to close the benefit gap. However, all these proposals under debate focus on changing the structure of contributions and benefits but do not consider the importance of the achieved performance on pension assets. While the growth in second-pillar pensions assets was mainly driven by the combined employer and employee contributions, about one third of the growth in second-pillar pensions assets is due to investment performance (McKinsey, 2020; Swiss Bankers Association, 2017)[19]. However, a recent study by *McKinsey* revealed that Swiss second-pillar pension funds underperformed their Dutch and Canadian peers by roughly 60 to 90 bps per annum, respectively (McKinsey, 2020). This finding clearly reveals that higher investment performance would substantially benefit the pension system in Switzerland. Asset managers are in a good position to contribute to better investment results by providing their expertise in investment strategies, research, asset allocation or risk management. Moreover, asset managers can offer cost-efficient investment solutions to institutional investors due to economies of scale. According to the 2020 edition of the Global Pension Assets Study conducted by *Willis Towers Watson* about CHF 1'020 billion of assets are managed in Swiss pension schemes. A simple back-of-the-envelope calculation shows that if the investment performance on these assets could be increased by 10 bps an additional CHF 1.02 billion could be generated annually for beneficiaries. Moreover, according to the *Swisscanto* Pension Fund Study 2019 an additional investment return of on average 70 bps could close the benefit gap (Swisscanto, 2019).

2.2.4. Macroeconomic effects of Covid-19

The global economy is facing an unprecedented, simultaneous supply and demand shock caused by the Covid-19 pandemic and the lockdown measures implemented to contain the spread of the virus. As a result, economic activity is projected to contract sharply in 2020. The International Monetary Fund (IMF) expects a severe recession for the world economy and forecasts global growth at -3.0 percent, which is a substantially stronger correction compared to the 2008/2009 global financial crisis. In advanced economies, where countries like the United States are experiencing a more widespread and severe outbreak, economic growth is predicted to decline by 6.1 percent (IMF, 2020a). For Switzerland, the KOF Swiss Economic Institute (KOF) projects a negative real GDP growth of 5.5 while the State Secretariat for Economics Affairs (SECO) is more pessimistic and projects a decline in real economic activity of around 7.0 percent (KOF 2020; SECO 2020). These negative global growth perspectives will have an adverse impact on the labor market. In the United States the unemployment rate did rise above 10 percent during the first two quarters of the year from a record low of 3.5 percent at the beginning of 2020. In Switzerland due to suitable economic policy measures, like short-time work compensation, a strong increase in unemployment could be prevented. However, it is expected that the unemployment rate in Switzerland, using the definition of the *International Labour Organization*, will rise from 4.5 to 5.3 percent by the end of the year (KOF, 2020). Moreover, as illustrated in figure 2.3 consumer sentiment has dropped sharply which implies Swiss households are rather pessimistic about the economic outlook.

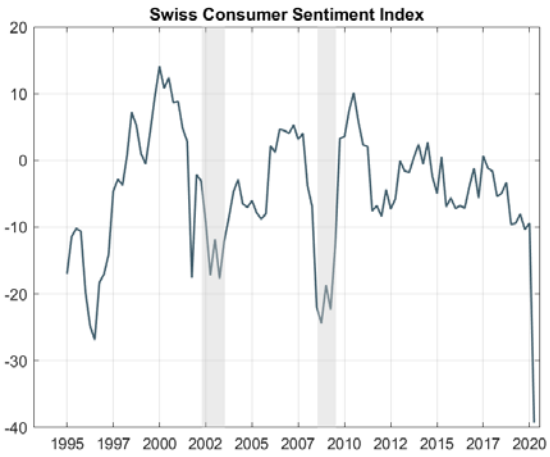

Figure 2.3: Consumer sentiment in Switzerland (Source: SECO), grey shaded areas indicate recession periods.

[19] The information platform https://www.dritterbeitragszahler.ch/ provides further information about this issue.

The labor market situation and the pessimism in consumer confidence will potentially have an additional adverse impact on private consumption[20]. Moreover, it is very likely that the increased economic uncertainty will dampen firm's investment dynamics. Overall, the current macroeconomic environment is very vulnerable and the development of economic recovery is highly uncertain. Projections of the IMF expect a global growth of 5.8 percent in 2021 and a growth of 4.5 percent for the group of advanced economies (IMF, 2020a). For Switzerland, real GDP is projected to grow by 5.4 percent in 2021 (KOF, 2020). These growth forecasts are well above trend and reflect the normalization of economic activity from very low levels. However, it is important to be aware that the strength of the expected rebound in 2021 depends critically on the pandemic fading in the second half of 2020 and the gradual back scaling of containment measures as well as restoring consumer and investor confidence. In this context, significant economic policy measures have been taken globally to mitigate the recession. These measures include short-time work, the provision of government secured credit facilities to bridge liquidity shortfalls as well as support measures for specific sectors most affected by the Covid-19 pandemic. In this context, it is very likely that various economies implement further fiscal stimulus packages to boost economic recovery. For instance, the German government is implementing a EUR 130 billion stimulus package to strengthen broad consumption as well as incentivizing private and public investments. Among others, these measures include a temporary cut in value-added taxes, a one-time transfer to families of EUR 300 for each child and subsidies for those who buy electric cars (Bundesministerium der Finanzen, 2020). For Switzerland, as a highly export-oriented economy, running a large trade surplus, the speed of the economic recovery from the Covid-19 shock will also depend on the recovery of its most important trading partners, like the EU, the United States and China. The implemented stabilization measures and potential stimulus packages will have an adverse impact on government debt. However, Switzerland (federal government, cantons and municipalities) has one of the lowest government-debt to GDP ratios (41 percent in 2018) among all OECD countries and thus fiscal room to increase public debt in order to absorb the cost of the temporary Covid-19 shock. In this setting, a more flexible implementation of the debt break has been discussed which allows a more discretionary approach to public finances (e.g. Danthine, 2020; Gersbach and Sturm, 2020).

The commitment of governments around the world to use fiscal policy measures to mitigate the economic impact of the pandemic are key to stabilize the economy. Moreover, central banks are using conventional and unconventional monetary policy measures to help the economy absorb the shock of the Covid-19 crisis. As such, many central banks cut their policy rates substantially. For example, the Bank of Canada and the US Federal Reserve reduced their policy rates by 150 bps while the Bank of England did lower interest rates by 65 bps. In addition, non-standard monetary policy tools (e.g. quantitative easing) have been implemented to support access to credit for firms and households, increasing bank' lending capacity and preserving financial stability. In the Euro area, the European Central Bank (ECB) has launched an additional EUR 1.35 trillion asset purchase program of private and public sector securities (Pandemic Emergency Purchase Program, PEPP) to support financial markets and the real economy, while the US Federal Reserve introduced facilities to support the flow of credit. The magnitude of the Covid-19 shock forced central banks in Canada, Australia or New Zealand for the first time to use unconventional monetary policy measures to mitigate the economic impact of the shock (IMF, 2020b). Comparing these developments in monetary policy with the policy measures taken during the financial crisis reveals that these interventions have been unprecedented in magnitude in such a short timeframe. With respect to the price level, the sharp drop in aggregate demand due to the containment measures and the increased uncertainty with respect to the future economic development could potentially cause some deflationary pressure (Leduc and Liu, 2020). However, Christensen, Gamble IV and Zhu (2020) find that based on the forward-looking information in nominal and real government bond yields the perceived risk of a decline in the price level over the next 12 months has barely changed in Canada, France, Japan and the United States. For Switzerland, according to SNB's most recent conditional inflation forecast (June 2020), the inflation rate is projected to be in negative territory, at a rate of -0.7

[20] In Switzerland, private consumption contributes about 52 percent to GDP.

percent by the end of the year. This decrease in the price level is due to lower oil prices and significantly weaker growth prospects (SNB, 2020). Due to the contraction in economic activity and the uncertain global economic outlook, it is very likely that monetary policy will be very accommodative and policy rates for all major currency areas will remain in low territory for the time being. For example, the Federal Reserve indicated in its June Federal Open Market Committee (FOMC) meeting that it expected to maintain the federal funds rate near zero until 2022 (Federal Reserve, 2020).

In general, economic uncertainty has a substantial impact on decisions made by firms and households. Baker, Bloom and Davis (2016) developed an index to proxy economic uncertainty regarding fiscal, regulatory and monetary policy. The index is based on the frequency of major news discussing economic policy-related uncertainty. Baker et al. (2016) provided empirical evidence that economic policy uncertainty shocks cause declines in investment, output and employment.

As illustrated in figure 2.4, the economic policy uncertainty index (EPU) in the United States more than doubled since the beginning of the year and reached a record high in May 2020. Moreover, while the S&P 500 stock market index has been seeing large losses in March, the implied volatility index (VIX), as a strong indicator for market sentiment, did rise sharply in the same time period to levels last seen during the financial crisis. These developments show how the uncertainty around the Covid-19 pandemic did impact the stock market. At an unprecedented speed, global stock markets lost around 30 percent within a few weeks. However, stock markets did recover very quickly and are approaching the level before the Covid-19 shock. In a very recent paper Caggiano, Castelnuovo and Kima (2020) predict the cumulative loss in world output one year after the uncertainty shock due to Covid-19 to be about 14 percent.

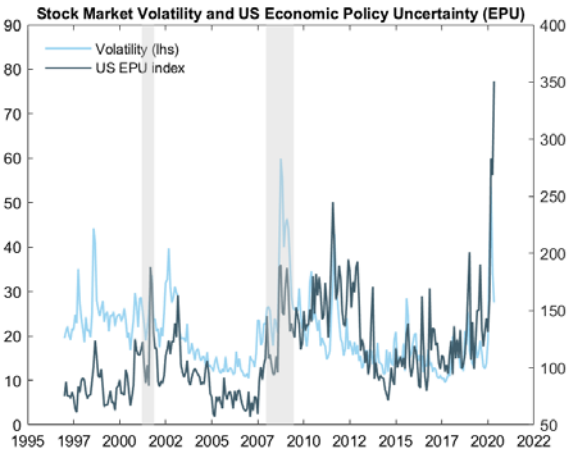

Figure 2.4: Volatility index (VIX S&P 500) and US economic policy uncertainty index (US EPU). Monthly data. The vertical grey shaded areas indicate US recessions (Source: St. Louis FED, PolicyUncertainty.com)

2.3. Social Environment

By Jürg Fausch, Institute of Financial Services Zug IFZ

2.3.1. Sustainable Investing

Sustainable investing is an investment approach that considers not only financial but also environmental, social and governance (ESG) factors in asset allocation and portfolio management (GSIA, 2018). Initially, this approach was based on imposing negative screens and excluding certain industries that investors wish not to finance, but has expanded its scope significantly in recent years (Pástor et al., 2020). The scope of ESG factors is very wide and based on an extensive set of issues supposed to generate positive impacts on society. The Global Financial Stability Report of the *International Monetary Fund (IMF)* published in October 2019 provides the following taxonomy of ESG issues:

A common definition of sustainable investing includes in addition to the exclusionary approach, integration (systematic combination of ESG factors with traditional financial factors) and impact investing (a positive and measurable impact on society or the environment in addition to achieving a financial return) as well as various sustainable investment styles (Harvard Business Review, 2019a). According to the Global Sustainable Investment Alliance (GSIA) the following activities and strategies are defined as sustainable investing:

- **Negative/exclusionary screening:** The exclusion from a fund or portfolio of certain sectors, companies or practices based on specific ESG criteria;
- **Positive/best-in-class screening:** Investment in sectors, companies or projects selected for positive ESG performance relative to industry peers;
- **Norms-based screening:** Screening of investments against minimum standards of business practice based on international norms, such as those issued by the OECD, ILO, UN, and UNICEF;
- **ESG integration:** The systematic and explicit inclusion by investment managers of environmental, social, and governance factors into financial analysis;
- **Sustainability themed investing:** Investment in themes or assets specifically related to sustainability (for example clean energy, green technology or sustainable agriculture);
- **Impact/community investing:** Targeted investments aimed at solving social or environmental problems, and including community investing, where cap-

Key Pillars	Key Themes		Key Issues
Environment	Climate Change	Carbon footprint	Vulnerabilities from climate change events
	Natural resources	Natural resources Sourcing of raw materials	Water efficiency Usage of land
	Pollution and waste	Toxic emissions Wastewater management Hazardous materials management	Air quality Electronic waste management
	Opportunities and policy		Green buildings Environmental and biodiversity targets and investments
Social	Human capital Product responsibility		Employee engagement, diversity, and inclusions Labor practices (e.g. wages, working conditions) Customer privacy and data security Access to products
	Relations		Civil society
Governance	Corporate Governance		Executive compensation and management effectiveness Ownership and shareholder rights
	Corporate behavior		Competitive behavior Management of business environment (e.g. legal, regulations) Transparency on tax and related-party transactions

Table 2.1: Scope of ESG factors (Source: IMF, 2019)

ital is specifically directed to traditionally underserved individuals or communities, as well as financing that is provided to business with a clear social or environmental purpose; and
– **Corporate engagement and shareholder action:** The use of shareholder power to influence corporate behavior, including direct corporate engagement (i.e., communicating with senior management and/or boards of companies), filing or co-filing shareholder proposals, and proxy voting that is guided by comprehensive ESG guidelines.

ESG issues can have a profound impact on a firm's corporate performance and risk profile and on the stability of the financial system (IMF, 2019). In the past, governance failures at banks and other financial institutions lead to excessive risk taking which contributed to various financial crises, like the Asian and the global financial crises (IMF, 2014). Social risks in the form of growing inequality in income and wealth may lead to financial instability due to the political response of expanding lending to low- and middle-income households in order to support consumption despite stagnant incomes (Rajan, 2010).

Moreover, climate change and environmental concerns are key risks for investor portfolios. In this context, a growing, but still in early stages academic finance literature provides theoretical and empirical evidence that institutional investors should consider climate related risks in their investment process. In a recent survey, Krueger, Sautner and Starks (2019) find that institutional investors consider climate risks to be important investment risks. Moreover, Bansal, Kiki and Ochoa (2016) highlight climate change as a long-run risk factor in asset pricing models, while Hong, Li and Xu (2019) as well as Bolton and Kacperczyk (2019) provide empirical evidence for the importance of climate risks in the cross-section of stock returns. In a theoretical model of investing based on ESG criteria Pástor, Stambaugh and Taylor (2020) show that in equilibrium green assets have negative CAPM alphas, whereas brown assets have positive alphas[21]. The reason for this is that brown asset have higher climate betas than green assets, which pushes up the expected return of brown assets in the model to compensate investors' exposure to climate risk. The source of green assets' negative alpha stem from investor's preferences for green holdings and from green stocks' ability to hedge climate risk.

According to the *Network for Greening the Financial System* (NGFS), a network consisting of central banks and supervisory authorities, climate change may result in physical and transition risks that can have system wide impacts on financial stability and may adversely affect the macroeconomy (NGFS, 2019). Physical risks consist of extreme weather events and broader climate trends that cause damage to property, infrastructure and land. Transition risks are related to the price changes in stranded (i.e. unusable) assets[22] and broader economic disruption due to evolving climate policy, technology and changes in consumer preferences during the adjustment to a lower-carbon economy (NGFS, 2019). Figure 2.5 provides an overview how physical and transition risks affect asset prices and financial stability in the economy.

In exposed sectors, like coal, the combination of regulatory actions and large-scale divestments can have major impacts by making capital and insurance more costly to obtain (IMF, 2019).

Institutional asset owners such as pension funds or sovereign wealth funds are increasingly taking ESG into account and demand corresponding strategies from asset managers. A recent study by *Responsible Investor* in partnership with *UBS* among 613 global asset owners, representing more than EUR 19 trillion in assets, reveals that the main reasons asset owners give for ESG investing are:

– Materiality of risk associated with not taking ESG into account.
– Positive effect of ESG integration on financial performance.
– ESG integration is consistent with fiduciary duty.

In terms of ESG adoption among survey respondents, Europe had the highest proportion of asset owners

[21] Green firms generate positive externalities for society, while brown firms impose negative externalities.
[22] Real and financial assets whose value depends on the extraction or usage of fossil fuels and other carbon-intensive resources experience a substantial loss in value (ESRB, 2016).

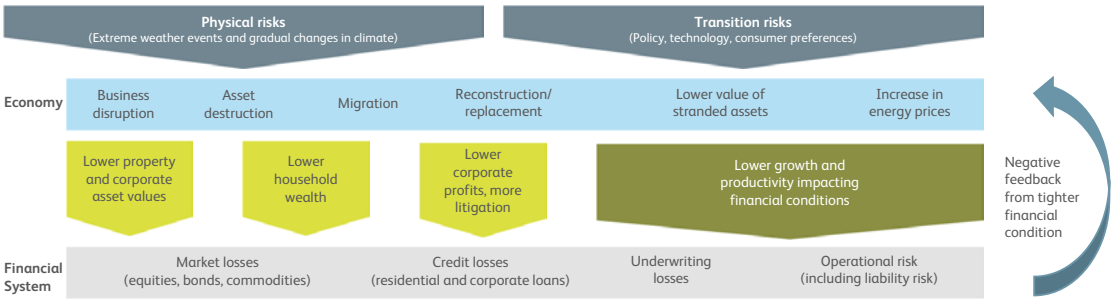

Figure 2.5: Financial and economic risks from climate change (Source: IMF, 2019, adapted from NGFS, 2019)

who are active in ESG investing (82%). Moreover, European asset owners expect that systematic environmental factors will be more material to their investments in the next five years than financial factors (Responsible Investor, 2019). Sustainable investment strategies are applicable to all asset classes but started in equity investments by investors looking for long-term value-creating information or trying to avoid specific risk exposure (IMF, 2019). Table 2.2 provides an overview how ESG is applied in sustainable investment strategies across various asset classes.

Asset Class	Breakdown	Examples
Equities	–	ESG can be adopted in traditional equities through a number of strategies. The most prominent has been negative (exclusionary) screening over the years, but it has moved to others such as engagement and positive (best-in-class) screening.
Debt Fixed Income	Traditional corporate bonds	Incorporating material ESG criteria into corporate credit analysis to better identify credit risk.
	Traditional sovereign bonds	Integrating ESG factors, together with traditional analysis that focuses on financial and macroeconomic variables to identify sovereign credit risks.
	ESG money market funds	Applying ESG factors to the investment of money market instruments.
	Green bonds	Specific bonds that are labeled green, with proceeds used for funding new and existing projects with environmental benefits.
	Social bonds	Bonds that raise funds for new and existing projects that create positive social outcomes
	Sustainability bonds	Bonds with proceeds that are used to finance or refinance a combination of green and social projects.
	Green mortgage-backed securities (MBS)	Bonds with proceeds that are used to finance or refinance a combination of green and social projects.
Debt Bank Loans	Green loans	Loans that have proceeds used to finance or refinance green projects. Including other related and supporting expenditures such as R&D. Their size is 70-80 percent smaller than green bonds, but they have been growing fast recently.
	Sustainability-linked loans	Loans and/or contingent facilities such as guarantees or letters of credit that incentivize the borrower to meet predetermined sustainability performance goals.
Alternative Investment	Green real estate investment trusts (REIT), Private Equity (PE) and venture capital (VC)	REITs with a portfolio exposure to properties that are environmentally certified. Private funds that, for example, back startups in areas such as energy, mobility, and buildings.

Table 2.2: Sustainable investment strategies based on ESG across asset classes (Source: IMF, 2019)

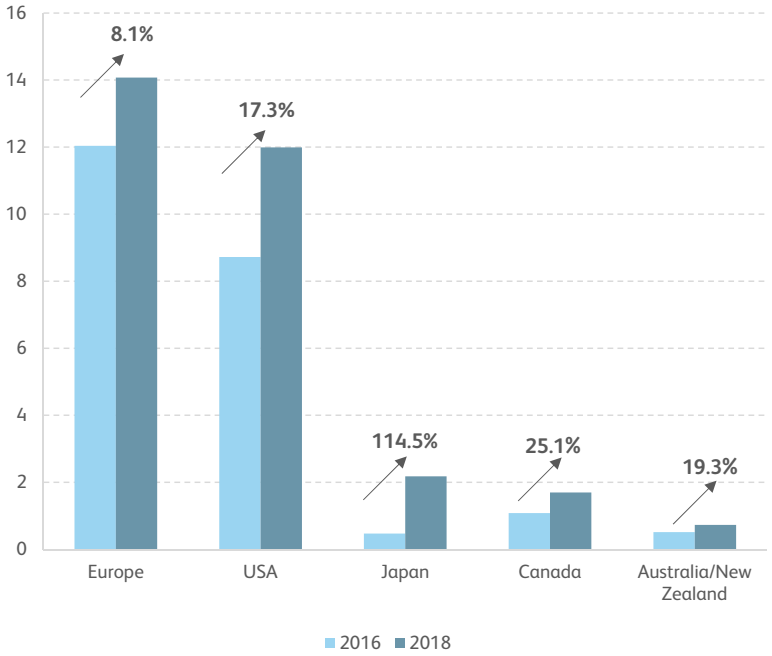

Figure 2.6: Sustainable investment assets under management, in USD trillion and compound annual growth rate 2016-2018 (Source: GSIA, 2018).

In terms of asset allocation, sustainability extends to all major asset classes commonly found in diversified portfolios. However, the majority of sustainable investing assets based on data for Europe, the USA, Japan and Canada are found in public equity (51%) followed by fixed income (36%), real estate (3%) and private equity/venture capital (3%). Sustainable investments can also be found in hedge funds, commodities or infrastructure (GSIA, 2018). The global asset size related to ESG is estimated to be about USD 30.7 trillion in the five major markets (Europe, USA, Japan, Canada, Australia/New Zealand) at the start of 2018. Figure 2.6 indicates that Europe is the largest market with respect to ESG inclusion while the largest compound annual growth rate from 2016 to 2018 with 114.5 percent was observed in Japan.

For Switzerland, the IFZ Sustainable Investments Study 2019 shows that the number of sustainable investment funds has grown by 34 percent on an annual basis, while the assets managed in these funds grew by about 22 percent from 161 billion in June 2018 to 196 billion in June 2019 (Stüttgen and Mattmann, 2019). Another recent study conducted by Swiss Sustainable Finance (SSF), based on the responses to a market survey reveals that the total volume of sustainable investments consisting of funds, mandates and asset owners reached about 1'163.3 billion in 2019. In terms of asset classes, equity is the most popular category for sustainable investments among asset owners and asset managers in Switzerland, followed by corporate and sovereign bonds. Considering sustainable investment strategies, the study indicates that the largest volumes are allocated to ESG integration, exclusion and ESG engagement (Swiss Sustainable Finance, 2020).

Looking at investors' preferences for sustainability there is empirical evidence that investors value sustainability as a positive company attribute. The introduction of sustainability ratings for mutual funds by Morningstar in March 2016 provided the basis for a natural experiment. Using US mutual fund market data, Hartzmark and Sussman (2019) provide causal evidence that mutual funds being categorized as low sustainability, resulted in net outflows of more than USD 12 billion while those being categorized as high sustainability led to net inflows of more than USD 24 billion. This be-

havior is consistent with the psychological literature on categorization and that investors mainly respond to extreme-ranked categories. The authors provide experimental evidence, suggesting that investors have a strong belief that better sustainability ratings positively predict future performance, but they did not find empirical evidence that high-sustainability funds outperform low sustainability funds. Moreover, nonpecuniary motives (altruisms, warm glow or social norms) seem to influence investment decisions towards sustainability (Hartzmark and Sussman, 2019). In a similar analysis, Ammann et al. (2019) find strong evidence that retail investors shift money away from low-rated into high-rated ESG funds, while institutional investors did react much more weakly to the publication of sustainability ratings.

The results of Hartzmark and Sussman (2019) and Ammann et al. (2019) imply that investor demand seems to be an important driver for asset managers to develop sustainable investment products. A recent survey[23] conducted by the *Asset Management Platform Switzerland* (AMP) in September 2019 supports this finding. Over 60 percent of the surveyed investment experts see client demand as the main driver for future growth in sustainable investments while about 25 percent identify regulatory requirements as the key reason for future growth. With respect to assets under management, half of the surveyed asset managers are already investing more than 25 percent of the assets in a sustainable way. Two factors that are believed to be preventing clients to invest in sustainable investment products are lack of transparency due to the wide range of criteria and labels used as well as an insufficiently long track record (AMP, 2019). Moreover, the lack of consistent methodologies and reporting standards and mixed evidence of performance are other challenges for investors to incorporate ESG into their investment process (IMF, 2019). With respect to performance a meta-study of more than 2'000 academic papers by Friede et al. (2015) shows that about 90 percent of these studies do not find a negative relationship between ESG criteria and corporate financial performance.

Based on *IMF* data, figure 2.7 indicates that the performance of sustainable and conventional funds is comparable. However, during this year's COVID-19

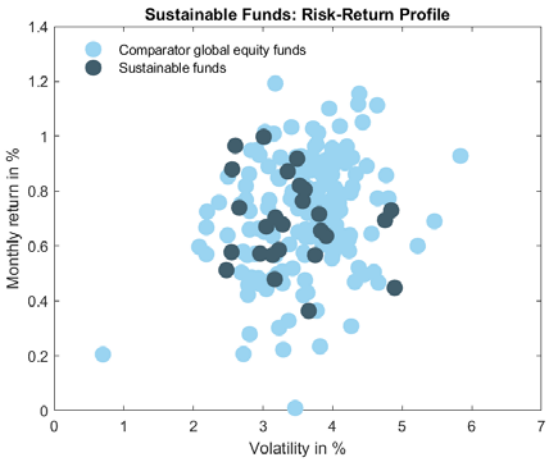

Figure 2.7: Sustainable funds: Risk-Return profile based on sustainable funds and comperator global equity funds (Data source: IMF, 2019).

pandemic, at least in the first quarter of 2020, sustainable investing funds have provided a comparable or better performance than conventional funds (Morningstar, 2020b). Moreover, there is anecdotal evidence suggesting that fees of sustainable active management often exceed those of other active funds, posing a potential hurdle for a wider adoption (IMF, 2019).

In terms of regulatory requirements, *European Union* financial services regulation requires the asset management industry to make disclosures on the integration of sustainability risks in their investment decision-making process. This also includes pre-contractual disclosures like the fund prospectus, which must provide information how sustainability risks are integrated in investment-decisions and an assessment of the likely impact of these risks on financial performance (KPMG, 2019). It is important to note that these requirements will be applied for all asset managers independent of whether they pursue sustainable investment strategies or not (PwC, 2019). Moreover, financial products having a sustainable investment objective must disclose methodologies used to assess or measure the impact of sustainable investments. Finally, amendments to the Markets in Financial Instruments Directive (MiFID II) and the Insurance Distribution Directive (IDD) require asset man-

[23] 41 asset management institutions managing asset of around CHF 2'000 billion in Switzerland participated in the survey.

agers to take ESG preferences into account when assessing client's investment objectives as well as to incorporate sustainability risks into their internal procedures and investment processes. The main body of this regulation will start to apply between July 2020 and December 2022 (KPMG, 2019).

In Switzerland, the Asset Management Association Switzerland together with Swiss Sustainable Finance developed a set of recommendations for the Swiss asset management industry regarding the broad integration of ESG factors into all investment processes. These recommendations are on a voluntary basis and provide a general overview of how these factors are supposed to be implemented, such that the investment process can be considered sustainable[24]. According to the AMP Swiss Asset Managers' survey H1/2020, next to promoting Switzerland as a leader in sustainable investing, setting a set of minimum standards via recommendations and guidelines, without preventing competition of ideas among market participants, is seen as the most promising strategy to boost Switzerland's role as a leading hub for sustainable asset management (AMP, 2020).

2.3.2. Talent & Skill

Asset management is a knowledge intense and dynamic industry and a key resource to operate in such a business environment are a broad variety of skilled and well-educated specialists. In a survey conducted by *PwC*, 70 percent of financial services CEOs see the limited availability of skills as a threat to the growth of their business (PwC, 2016). Another more recent study conducted by *EY*, among alternative fund managers' (hedge fund and private equity), finds that talent management has been ranked by 25 percent of the respondents (N=205) as top strategic priority (EY, 2016). In particular, the disruptive impact of new technologies, new regulation, and changing customer expectations requires employees with a very diverse skill set (PwC, 2016). A global survey conducted by the *CFA Institute* among their members and candidates corroborates these findings. The study reveals that the two trends most cited driving change in the roles of investment professionals are machine learning, AI methods, and alternative data for portfolio construction as well as greater customer need integration (CFA Institute, 2019a).

Fostering a skilled and educated workforce is a key requirement for a strong and competitive economy and of great importance for all industries. According to the IMD World Talent Ranking 2019, Switzerland is at the top of the ranking for the sixth consecutive year followed by Denmark (2), Sweden (3), Austria (4) and Luxembourg (5). The ranking evaluates three factors among 63 economies. The appeal factor evaluates the extent to which a country attracts local and foreign talent. The investment and development factor is a measure for the commitment of resources to cultivate homegrown human capital, while the readiness factor quantifies the attractiveness of an economy for local and foreign talent and the quality of skills of the resident work force. In the 2019 ranking, Switzerland takes a leading position in appeal and is ranked second in investment and development as well as readiness. The overall top strengths of Switzerland are an effective implementation of apprenticeships, the total expenditure on education per student, the attractiveness for foreign highly-skilled personnel, remuneration and the effectiveness of universities and management education. However, the *IMD* ranking reveals some weaknesses at the indicator level with respect to the growth in the total labor force, the female percentage of total labor force or the pupil-teacher ratio in primary and secondary education. In particular, second and third placed Scandinavian economies Denmark and Sweden perform better with respect to growth and the percentage in females in the total labor force. Another striking result is that the first nine of the ranking's top ten countries are located in Western Europe. Singapore is the only non-European country in the top ten of the ranking. Singapore's top ten position is mainly driven by its performance in the sub-factor readiness, including PISA educational assessment, percentage of graduates in sciences and the effectiveness of the primary and secondary education. (IMD, 2019).

The findings of the IMD ranking illustrated above are confirmed by the World Economic Forum (WEF) Global Competitiveness Report 2019, which concludes that Switzerland has the most highly skilled workforce globally. The country was ranked highest in the world for vocational training, on-the-job training and the employability of its graduates (WEF, 2019). An important factor in this context is Switzerland's leading role

[24] In these recommendations, sustainable investing is used as a synonym for responsible investment and ESG investing.

in higher education at the tertiary level, which is of particular importance for the asset management industry. International university rankings highlight Switzerland's strong position with various higher education institutions among the best in the world. According to the 2020 QS World University Ranking, seven Swiss universities are placed among the top 200 institutions globally (QS Top Universities, 2020a). In asset management, industry leaders predict that technological innovation and disruption are the trends that potentially have the largest impact on the profession (CFA Institute, 2019). Against this background the two *Swiss Federal Institutes of Technology* in Zurich and Lausanne (ETH Zurich and EPF Lausanne) are ranked 4th and 11th in the world in the subject rankings engineering and technology and 6th and 11th in the natural sciences which assures graduates possess the state-of-the art knowledge required in the industry (QS Top Universities, 2020b). Many positions in asset management such as portfolio management, risk management or research require a strong quantitative background. Graduates with degrees in mathematics, quantitative finance, economics/econometrics, natural sciences, computer science and technology are thus of particular interest for the asset management industry. Graduates from these disciplines possess the qualifications required to progress the change to a more technology driven asset management industry and are a driver of innovation. However, to foster innovation more broadly in the field of asset management, research collaborations between academia and asset management firms are important. According to the WEF Global Competitiveness Report 2019, Switzerland is ranked 4th with respect to multistakeholder collaboration, which evaluates among others to what extent businesses and universities collaborate on research and development (WEF, 2019). An example of such a collaboration between the financial industry and research universities in Switzerland is the *Swiss Finance Institute (SFI)*. The SFI has a strong focus on conducting academic research in financial markets, the education of doctoral students in finance as well as providing further education courses. However, to boost the scientific knowledge about asset management and to enhance and further develop the domestic skill pipeline a more intense collaboration between the industry and academia would be highly beneficial.

With respect to asset management specific education, many Swiss universities and universities of applied sciences offer courses and specialized tracks related to financial markets, investments, portfolio and risk management or quantitative methods in various bachelor and master's programs in economics or finance. Moreover, the Chartered Financial Analyst (CFA) program by the CFA institute, provides a comprehensive education in asset management and is widely recognized in the industry. Globally, the *CFA Institute* counts about 150'000 members and more than 300'000 candidates (CFA Institute, 2019a). Currently the number of CFA charterholders in Switzerland is close to 3'600 whereof about 60 percent work in core functions of investment management, which includes asset and wealth management as well as asset owners (CFA Institute 2020).

2.4. Technological Environment

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2.4.1. Technology & Innovation in Asset Management

In recent years, technology had a profound impact on almost every industry. Asset management firms utilize technology along various parts of the value chain like trading, risk- and investment management or operations. However, technology is evolving and technological innovations like artificial intelligence (AI) or distributed ledger technology (DLT) allow for new use cases within the asset management industry. In this subchapter, we provide an overview of major technological developments and evaluate their impact in the field of asset management. Moreover, the current edition of the IFZ FinTech study provides a deeper overview of relevant trends and technologies from a FinTech perspective (IFZ FinTech Study, 2020). According to the technology radar of the information technology firm *Atos* ten key technologies are identified to build the foundation of the financial services ecosystem of the future. Some of these technologies are already adopted, while others are emerging and will unfold their transformative potential in the years to come (Atos, 2018). Recent research by Gartner (2019) confirms these findings.

Mainstream: Technology and financial services firms see a clear need and are currently implementing these solutions.

- **Hybrid cloud:** Enables the secure and seamless integration of private and public cloud platforms, thus exploiting the benefits of private and public clouds as well as taking advantage of the flexibility and power of cloud-native applications.

Early adoption: Technologies where financial services firms are starting to look for solutions.

- **Instant payments:** The move towards a cashless society and more connected devices is making the payments sector evolve rapidly, driven by data and better customer experiences.
- **Robotic process automation:** Will manage repetitive tasks and thereby reduce the cost of administrative and regulatory processes while improving quality and speed. Beyond robotic process automation (RPA), an integrated set of technologies, known as intelligent business process management suites (iBPMSs), are implemented to manage long run processes. In this context hyperautomation is key in combining RPA with technologies like artificial intelligence.
- **API platforms:** Allows financial services and products to be distributed across third parties.

Adolescent: Technologies that are discussed more widely by analysts and thought leaders in the financial industry and first use cases are implemented.

- **Augmented and virtual reality:** Allows customers and employees to engage with financial services within the context of the current environment.
- **Prescriptive security:** Uses AI, real time monitoring, and automation to detect potential threats before they strike. Applications range from cyber protection to fraud management and compliance.
- **Blockchain:** Enables data storage and processing without establishing prior trust relationships and could revolutionize audit trails, automated contracting and the microservice economy.
- **Artificial intelligence (AI):** Supports human cognitive capabilities and knowledge engineering and will impact customer service, trading and compliance.

Emerging: Technologies that are mainly seen in academia and are in an early stage.

- **Quantum Computing:** Brings advances in risk analysis and high-frequency trading as well as curbing cyber security by breaking traditional cryptographic standards.
- **Smart machines:** Will potentially change the nature of customers, with smart things working on behalf of their owners and transform go-to-market strategies.

Each of the above technologies can be depicted on a two-dimensional grid where technologies are classified according to their level of adoption (adopt, trial, assess, explore) as well as their potential business impact (low, medium, high, transformational). Each color on the grid represents the current maturity of each technology (mainstream, early adoption, adolescent, emerging). For example, distributed ledger and artificial intelligence are currently in an assessment stage where potential implications of the tech-

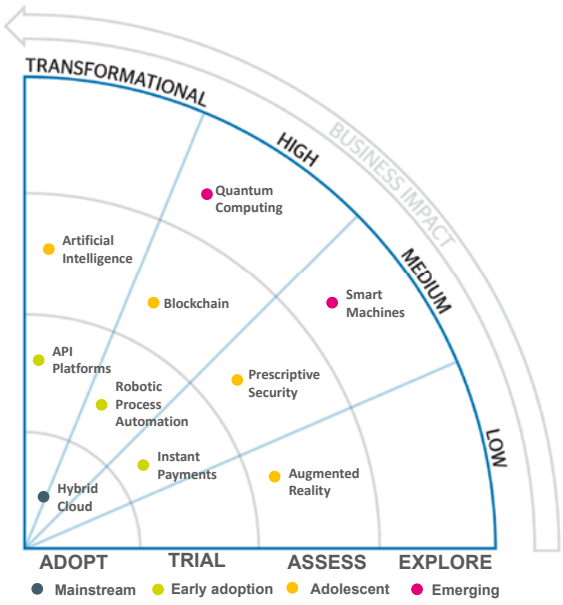

Figure 2.8: Disruptive technologies in the financial services industry (Source: Atos, 2018)

nology are evaluated and first use cases are implemented. In terms of business impact, AI is evaluated as transformational while the influence of DLT is rated as high. With respect to maturity, both technologies are in their adolescent phase, in the sense that they are discussed more widely by analysts and thought leaders in the asset management industry.

The new technologies illustrated above build on the existing systems and technology infrastructure utilized by asset managers. The ultimate goal for the use of technology is to improve efficiency, manage risk and enhance decision-making. According to *BlackRock* (2019), asset management technology can be separated into three main categories:

– **User experience and interfaces**
  Technology allows to meet changing customer needs and builds the foundation for digital investments solutions. Digital investment solutions allow investors to better gain access to financial markets and asset management products or receive digital investment advice at lower costs

– **Operational efficiency**
  Asset management is a data-driven field and various functions along the asset management value chain rely heavily on data provided by internal and external sources. Technology helps to streamline and manage the processing of these large amounts of data as well as increase efficiency in post-trade operational processes.

– **Investment process**
  Machine Learning, a sub-field of AI, is at the forefront of the technological development in asset management and used to facilitate different aspects of the investment process. In particular, the analysis of various datasets as inputs to the investment decision-making process, the creation of smart beta portfolios or a more comprehensive understanding of investment risks related to a portfolio are common applications of ML algorithms.

2.4.2. Artificial Intelligence and Machine Learning

The terms artificial intelligence and machine learning are often used interchangeably. However, AI is a broader term for the use of machines to replicate human thought processes. AI is based on a broad field of science encompassing not only computer science and mathematics but also economics, linguistics, neuroscience, psychology and philosophy (Russell and Norvig, 2010). The methodology common to all AI is that machines process inputs which subsequently pass through functions to reach a computer-generated decision as an output (BlackRock, 2019). Machine Learning is a subfield of AI and uses statistical methods that provide computer models with the ability to find patterns in large data sets and make inferences based on these learning processes without explicit programming instructions (Emerson et al., 2019). A common example where ML is used on a daily basis is the successful detection of unwanted e-mails. ML algorithms are trained by exposing them to many different examples of e-mails that are manually identified as being spam or not. The algorithm learns to find patterns, like the combination or occurrence of certain words that determine the probability of an e-mail being spam or not (Géron, 2017). This form of learning is referred to as supervised learning which means input data (features) as well as the desired output are given by humans (Wilmott, 2019). A second major category of machine learning techniques refers to unsupervised learning algorithms. This domain of statistical learning uses unlabeled data and the system tries to learn without human inputs. A classic example of unsupervised learning are

clustering algorithms to detect similarities or anomalies in a dataset (Géron, 2017).

Asset managers analyze traditional financial and economic data to support their investment decision-making process. Traditional data are stored in relational databases and very often provided by third party data vendors. However, in order to generate superior returns for actively managed portfolios, asset management firms started to make use of alternative or unstructured data that are very often in text, image or voice formats and thus not readily processable. Sources of these alternative data sets are social media feeds, earnings conference call recordings, geospatial data or satellite images. Machine learning algorithms have proven to be effective in analyzing the vast amounts of data generated through these sources. Despite the fact that alternative data is relatively new the number of alternative data provider's amounts to 445 according to *AlternativeData.org*. In 2017, total buy-side spend on alternative data was about USD 400 million while in 2020 a spending of more than USD 1.7 billion is expected (AlternativeData.org, 2020). These numbers illustrate the increasing importance for the use of alternative data in active investment strategies.

A key reason to apply ML in quantitative asset management is the ability of these algorithms to uncover complex (non-linear) patterns and hidden relationships that are often difficult or even impossible to detect with traditional statistical and econometric methods. For instance, Audrino, Sigrist and Ballinari (2019) used machine learning techniques (sentiment classification technique) to investigate whether sentiment and attention measures contain predictive information for realized stock market volatility.

Another advantage of ML techniques compared to linear models is that these algorithms are more effective when explanatory variables are correlated (Rasekhschaffe and Jones, 2019). However, a lot of traditional investment research relies on academic research in empirical asset pricing where linear factor models are used to model risk premia (e.g. Fama and French, 1993, Fama and French, 1996, Carhart, 1997 or Harvey et al., 2015). In the asset management industry, investment strategies derived from this line of research are usually referred to as smart beta. In a recent paper Gu, Kelly and Xiu (2018) examined the efficacy of machine learning techniques in empirical asset pricing by predicting individual stock returns using a large set of firm characteristics and macroeconomic variables. In a comparative analysis, they examined how various ML algorithms perform and found that the best performing methods result in a significantly improved prediction accuracy compared to linear ordinary least-squares (OLS) regressions. This outperformance is attributed to the ability of ML models to uncover nonlinear patterns that are missed by other methods. In order to identify which areas in quantitative asset management use machine learning techniques Emerson et al. (2019) conducted a literature review across a sample of 67 academic papers. The analysis revealed that the most common use-cases were return forecasting, portfolio construction and risk modelling and account for about half of the papers. However, despite the empirical evidence that ML algorithms are promising for the development of trading strategies, it is important to note that financial data have a low signal-to-noise ratio, which might lead to the detection of false patterns and results. Overfitted models that have a good in-sample performance but little predictability when applied to unseen data are not very useful in applications. A direct implication of this, when it comes to train an algorithm is to find patterns in the data that also generalize out-of-sample (Rasekhschaffe and Jones, 2019). Moreover, the dynamic character of financial markets further exacerbates the challenge for machine learning models to cope with low-signal-to noise ratios. If a signal useful for predictability is identified, investors act on it and prices adjust. This information is eventually absorbed by the market and the data generating process changes (AQR, 2019).

Another question of relevance is how widespread is the use of artificial intelligence in the asset management industry. A study by *Element22* and *UBS* among 59 asset management firms in North America and Europe with more than USD 15.6 trillion of assets under management shows that more than two thirds of the surveyed asset managers use analytics[25] and alternative data to have an investment edge. Across

[25] In this context analytics refers to the extensive use of data, statistical and quantitative analysis as well as the use of explanatory and predictive models to drive decisions (Davenport and Harris, 2007).

these 59 firms, 46 follow an active investment approach and 13 have a focus on both active and passive investing. A key finding of the study is that asset management firms are at various stages in the process of realizing tangible value from their advanced analytics and alternative data program. The majority of the surveyed asset managers are just starting to formalize foundational data programs or are in an early stage in developing advanced analytics capabilities. Currently, only seven percent of the surveyed asset managers have realized significant success with advanced analytics and alternative data programs. However, these asset management firms are characterized by large investments in the corresponding programs. Among all 59 respondents, 67 percent of total annual investment can be attributed to the four asset managers with the largest spending. These investments are needed to create an appropriate technology infrastructure, develop data sources and attract the right talent. In terms of FTEs, the median size of the data team across all surveyed asset managers is 12 of which five are data scientists. However, some leading asset managers employ more than 500 people in data and analytics whereof about 200 build the data science team (Element22 & UBS, 2019).

A recent survey by the *CFA Institute* to evaluate the state of adoption of different AI technologies in the investment process revealed that only 10 percent of the respondents (N=230) working in portfolio management (208 portfolio manager, 22 chief investment officer) have used AI/ML techniques to improve their investment process. However, about 50 percent of the respondents used linear regression analysis in their investment strategy. Moreover, only a minority of the surveyed investment professionals are using coding languages typically utilized in ML such as Python, R and MATLAB. This is as well consistent with the finding that the prevalence of AI/ML techniques in trading strategies is low. According to the survey, 69 percent of the portfolio manager respondents did not use any AI/ML algorithm for creating trading algorithms. However, those investment professionals who did utilize these methods indicate a wide range of use cases. ML algorithms are used for identifying prevailing factors driving the market, predicting asset price direction or finding signals from noisy data as well as determining market trends or regimes. Among the used ML algorithms are supervised techniques like classification algorithms (e.g. support vector machines, logistic regression), various forms of regression models (e.g. lasso, ridge regression) or neural networks (e.g. deep learning) as well as unsupervised learning algorithms used for clustering or dimensionality reduction (e.g. principal component analysis). The most frequently used ML approach among the surveyed portfolio managers was using classification to arrive at buy or sell decisions based on macroeconomic, fundamental or market input variables (CFA Institute, 2019b).

2.4.3. Digital Investment Management

As illustrated before asset managers must deal with technological innovations such as artificial intelligence, machine learning, big data and blockchain technology to thrive in the current market environment, which implies far-reaching structural changes. Digitalization is disrupting the asset management value chain, thereby transforming the industry's DNA and opening a larger market for digitalized asset managers with a high annual growth potential of 20–40 percent compared to only six percent predicted for traditional asset and wealth management (Roland Berger, 2018). In this chapter, we will provide examples of how digitalization is affecting some crucial steps along various parts in the asset management value chain, starting from research and development of investment products through portfolio and risk management, up to the subsequent fund distribution and distribution operations.

One of the most prominent technology-led trends in the research and development of investment products is the use of big data to extract evidence from non-database sources. The idea is that this timely, focused, and often unique information can be used in quantitative models to provide better forecasts. Potentially interesting data for the asset management industry include measurements related to popularity and sentiment (social media, search engines, blogs, news etc.), business performance of individual companies (satellite images of parking occupancy, annual reports, company news, interviews etc.) and overall economic environment (satellite images of cargo volumes at ports, press conferences of central banks etc.). This shift towards new informational sources has gained importance as well-known investment strategies based on value or momentum, which used to be the edge of quantitative asset managers, have become available through low-cost ETFs (Morningstar, 2019). Moreover, even the popular index fund market has reached saturation. It has shown a strong

Figure 2.9: Technological trends in asset management

growth after the financial crisis, but this growth is predicted to half in the coming years (Gerber, 2019a).

Although many asset management companies are starting to talk about incorporating big data into their investment management processes, the leaders in this field are the big players like *BlackRock's* Systematic Active Equity (SAE) team and *Goldman Sachs'* Quantitative Investment Strategy team, who have been analyzing this alternative data for over a decade. As a result, already about one third of the signals that BlackRock and Goldman Sachs use to forecast equity prices in their models is based on non-traditional data sources (Morningstar, 2019). According to Simon Weinberger, Head of *BlackRock's* SAE team in Europe, the *BlackRock* team processes three terabytes of data daily to monitor an investment universe of 15'000 stocks worldwide (Handelszeitung, 2018). The resulting offering ranges from highly active strategies that employ big data as one of several return drivers to low-cost, low tracking error strategies that compete with established smart beta strategies to replace passive core investments.

While *BlackRock* launched its first big data funds branded 'Advantage Series' in 2017, the implementation of big data has significant challenges, making it difficult for smaller asset managers to stay competitive in this respect. One of the key challenges for asset managers is to gain access to reliable, meaningful, and unique big data sources. In addition, the resulting strategies need to evolve constantly as competitors may quickly copy successful strategies, thereby reducing or eliminating alpha. In consequence, big data usage is associated with high costs for both development and maintenance. For instance, *BlackRock's* big data team consists of eighty members, which is beyond the size of an average Swiss asset manager, and the company spends around USD 10 million on data every year (Handelszeitung, 2018). In the financial sector, along with prominent asset managers such as *BlackRock,* it is mainly the big banks who can afford the development of big data capacities. As an example, *UBS Asset Management* uses card payment information to monitor sales data against earnings estimates and potential share price impacts (IFZ/AMP Asset Management Study, 2019). Likewise, *Credit Suisse Asset Management* has established the joint venture 'Systematic Investment Management' (Simag) with the *ETH Zurich* in 2018, which uses big-data processing to optimize investment decisions for the bank's institutional clients (Citywire, 2018).

Though big data analysis is one of the most prominent applications of machine learning, the algorithms can also be applied to more traditional data or even simulated data. Hence machine learning algorithms may still represent an affordable solution for smaller asset management companies. However, while some asset managers use machine learning within a black box approach and/or for marketing purposes only, according to Marcos López de Prado, it should rather be used scientifically to build better financial theories (Financial Times, 2019). In particular, López de Prado, who has been at the forefront of machine learning innovation in finance, emphasizes that asset managers should see machine learning as a research tool,

rather than a forecasting tool. Once theories are developed and tested, asset managers should 'throw the machine away' (Time, 2019). Machine learning can therefore not replace human judgement and should ideally be combined with human interaction (Harvard Business Review, 2019b).

A more pragmatic way to combine human touch and machine power are rule-based strategies, whereby investment decisions are taken based on clearly defined mathematical rules. In contrast to ML-algorithms, where rules are both designed and implemented by machines, in the rule-based approach they are implemented by machines but designed by humans. These rules are based on empirical evidence, tested with historical data to ensure their suitability for different market situations and are fixed after their definition and therefore free of emotional biases[26]. Moreover, unlike complex quant models or artificial intelligence approaches, rules are simple, transparent and prove to be robust. The resulting portfolio composition is flexible and can be based on ETFs, index funds, single stocks, and bonds to ensure cost efficient, transparent and highly liquid strategies (Chishti and Puschmann, 2018). While rule-based strategies are not new and have been successfully implemented by Swiss asset managers like *Dufour Capital, Finreon* or *OLZ Asset Management* for over a decade now, they remain highly popular and suitable as a digitalization tool for asset managers as they can be coded and thus automated.

Once investment strategies are developed, they need to be maintained through portfolio and risk management. The main source of digital disruption at this level can be attributed to what is referred to as an asset management support platform. In general, the ability to outsource secondary tasks enables asset managers to focus resources on core activities such as product development and distribution. Outsourcing of fund administration, transfer agency, collateral management, clearing and settlement have existed for many years. For large scale asset managers this approach has already been extended to the entire value chain. The integrated asset management support platforms enable standardization of processes and centralization of data and information, which is especially important for big asset management companies to run their businesses more efficiently. There are only a few providers that support the full range of investment management operations. The two most well-known are *BlackRock's* Aladdin and *SimCorp* Dimension. The most influential of the two in the US is *BlackRock's* Aladdin – Asset Liability and Debt and Derivatives Investment Network, while *SimCorp* has a greater presence in Europe. Aladdin is an operating system, available as an end-to-end platform, combining portfolio management, analytics and risk management, trade execution and investment operations, or on a stand-alone basis as a risk management or accounting tool. Among others, *Vanguard* and *State Street Global Advisors*, the largest fund managers after *BlackRock*, the three biggest US public companies *Apple, Microsoft* and *Alphabet*, as well as half of the top ten insurers measured by assets are users of the platform (Financial Times, 2019). With *Credit Suisse*, the first Swiss bank joined this prominent customer list in 2019 by transferring USD 320 billion into Aladdin (Gerber, 2019b). Other big asset managers in Switzerland, such as *AXA Investment Managers, Schroders, Swiss Life Asset Managers, UBS Asset Management, Unigestion* or *Zurich Insurance* rely on services of *SimCorp*. In recent years, fully integrated platforms, such as *Complementa's* Allocare and AssetMetrix, have also become available for smaller players.

In general, digital platforms can refer not only to the support systems, but also to platforms that connect buyers and sellers online and thereby act as digital distribution channels. The disruption that such digital platforms bring to any industry can be attributed to a dramatic increase in efficiency and a resulting cost reduction. In asset management, one of the examples of such digital distribution platforms are robo-advisors. The biggest asset management product providers such as *BlackRock, Charles Schwab, Fidelity, Invesco,* and *Vanguard* have recognized a natural added value of robo-advisory as a product distribution channel and have either launched in-house robo-advisory solutions or acquired existing providers (IFZ/AMP Asset Management Study, 2019).

The term 'robo-advisor' is often used in the media to describe quite different types of digital investment management. However, in a narrow sense, robo advisors are passive and purely digital investment manag-

[26] See Hens and Bachmann (2008) for an extensive overview on behavioral biases that investors are subject to.

ers without human intervention. In the Swiss market, many providers deviate from this narrow definition by offering more sophisticated asset management instead of purely passive investments and/or by providing more personalized and human-supported advice in addition to a digital user interface. As a result, a very heterogeneous range of digital investment solutions, based on these two dimensions, has developed in the Swiss market in the past decade. The transition between the "real" robo advisory solutions and the digitally supported, classic investment management in the Swiss market is rather smooth (see figure 2.10).

Despite a rapidly growing number of providers and increasing diversity in the range of products and services, the development of the Swiss robo-advisory market in terms of asset under management in recent years was rather disappointing (e-foresight & IFZ, 2019). Excluding Pillar 3a solutions (among others, the FinTech company *VIAC* already manages CHF 500 million), the two currently most important market players are Swissquote (CHF 225 million) and True Wealth (CHF 290 million). From an asset management perspective, the distribution of asset management products in Switzerland is still dominated by private banks and wealth managers.

As a result, the B2B segment whereby robo-advisors offer technology platforms for institutional clients has started growing in recent years. *True Wealth*, one of the biggest Swiss robo advisors, has made several strategic partnerships with banks including *BLKB* (2017), *Regiobank* (2019), and *Erste Bank Group* (2019), with more undisclosed partnerships planned for 2020. Also, *Raiffeisen* is planning to launch a digital offering based on the technology of *Vontobel's* Volt app in summer 2020. In general, banks use these digital sources either to distribute their own products or to offer cost-effective ETF-based solutions to attract mass affluent clients, thereby indirectly acting as distributors for big asset management companies manufacturing passive investment products.

On the other hand, distribution of investment funds produced by active asset managers is becoming less attractive for banks mainly due the established stricter rules on inducements that distributors used to receive from asset management companies. As a result, alternative distribution channels for active asset managers have arisen in recent years. Two examples of platforms that connect asset managers and retail customers in the Swiss market are *Descartes Finance* and *Plattform Säule Schweiz* (PSS), which offer access to active asset management for mass affluent clients.

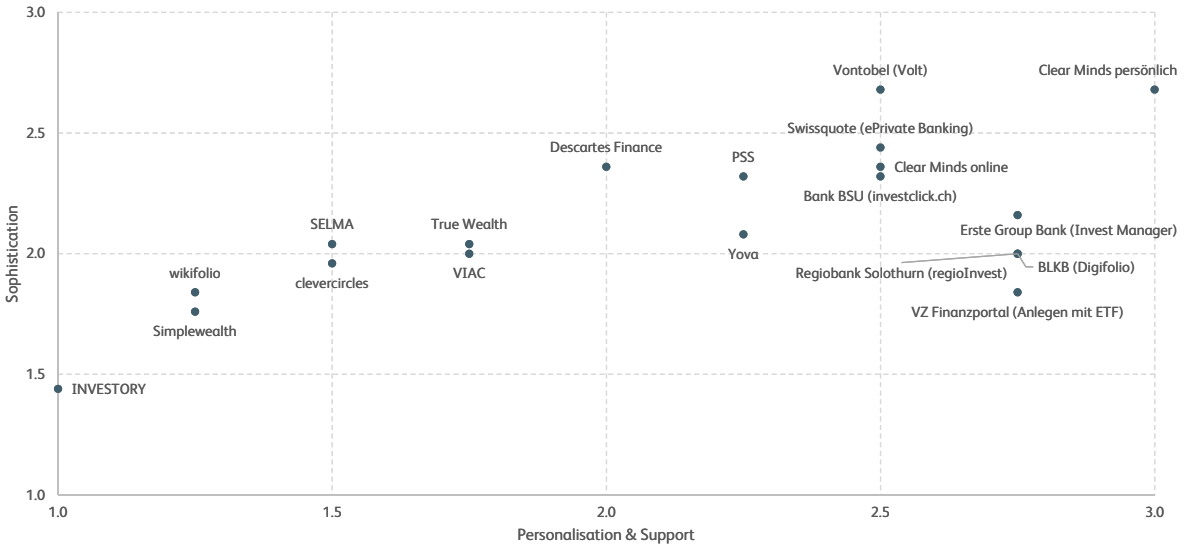

Figure 2.10: Business models of digital investment management in Switzerland (Swisscom & IFZ, 2019)

While PSS opens investors access to asset management know-how of Swiss pension funds by replicating their strategy in investable retail funds, Descartes Finance provides retail investors with mandates of various established asset managers, like *OLZ Asset Management, Invesco, Lakefield Partners, DWS, BlackRock* and *Swiss Rock* via its platform. In this way, mass affluent retail clients get access to the investment opportunities otherwise available only for institutional investors, whereas independent asset managers and even pension funds get a more direct access to a new client base.

While robo-advisors compete with traditional fund distributers like banks, other digital innovations attempt to challenge existing providers of distribution operations like fund platforms. In particular, the implementation of regulations which have put a strong emphasis on fair pricing and transparency in the funds industry have led to a trend towards disintermediation in fund distribution. As of today, the fund distribution operations involve a high number of commercial and operational intermediaries. The value chain between investors, distributors and asset managers includes - depending on jurisdiction – fund platforms, clearing and settlement houses, transfer agents and custodians, each performing a certain role in the fund distribution process. Eliminating redundant activities of certain counterparties would reduce the costs of fund distribution and unlock the opportunity for asset managers to work more directly with the client and provide products that better suit the needs of individual investors (ALFI, 2018). One of the recent technological advances that facilitates distribution operations in asset management is the implementation of Distributed Ledger Technology (DLT), commonly known as blockchain (see figure 2.11).

In simple terms, a distributed ledger is a digital database where every transaction is represented online as a 'block' which is shared (validated and approved) by all members of the network and recorded upon validation (added to a 'chain' which makes the transaction immutable). When combined with smart contracts, i.e. computer codes which in near real-time digitally verify and execute an agreement, based on conditions designed and agreed upon by all users of the chain, it enables an efficient, fast, transparent and secure fund transaction processing (Calastone, 2019). The prerequisite for this model to work is the 'tokenization' of assets, a process of issuing a blockchain token that digitally represents a real tradeable asset. Essentially, any security can be digitalized, but in the case of the asset management industry, the most straightforward application would be the tokenization of investment funds. These tokenized funds can be subdivided, traded, and stored in a digital wallet. A new simplified fund distribution model under blockchain could then look as follows (Chishti and Puschmann, 2018; Fundchain, 2017):

– An investor with a digital identity sends a fund subscription order which triggers a smart contract.
– The smart contract performs background checks and client onboarding. Upon a successful completion of the checks the order gets accepted.
– Once the smart contract receives the computed net asset value, it performs a series of checks. Once val-

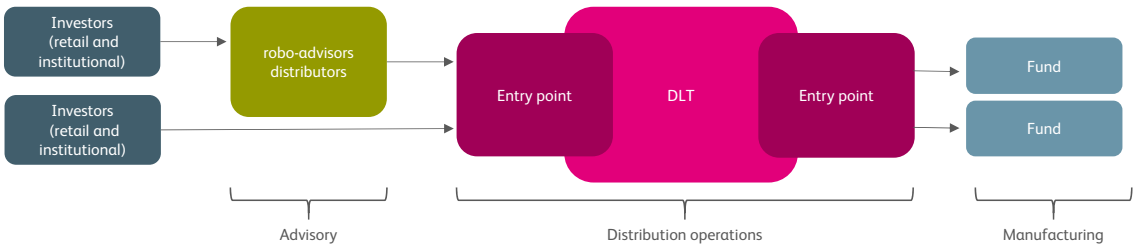

Figure 2.11: Target model with Distributed Ledged Technology (ALFI, 2018)

idated, the transaction is settled, digital currency and asset wallets are updated accordingly, and the transaction confirmation is sent to the investor.

This business model based on blockchain results in greater liquidity, faster and cheaper transactions through smart contracts and excluding intermediaries, as well as more transparency and accessibility as investment funds become available for a larger set of investors (Deloitte, 2019). Big players in the fund industry have been actively testing the application of DLT to facilitate fund distribution operations and are starting to move from research and trial into live use. For instance, in December 2018, *Credit Suisse Asset Management* has coordinated and completed a fund order via the FundsDLT blockchain (Credit Suisse, 2019). FundsDLT is a pioneer in this industry, offering asset managers a possibility to sell their funds either directly to end customers, or to fund distributors. FundsDLT was originally created by the *Luxembourg Stock Exchange* and its subsidiary Fundsquare, with the participation of *KPMG*. In March 2020, *Credit Suisse Asset Management*, the *Luxembourg Stock Exchange, Cleastream,* and *Natixis Investment Managers* announced a financing round to further develop Funds DLT (Gerber, 2020) and increase efficiency of fund distribution operations. Overall, developments in the distributed ledger technology have led to an increasing transformation of traditional financial markets into crypto-based markets and to the emergence of so-called crypto assets. While the characteristics for the most common types of assets from traditional finance, e.g. stocks and bonds, are largely known, the characteristics of crypto assets, e.g. in terms of regulation, utility or valuation drivers, were and still are relatively unclear. A taxonomy for the systematic classification of all types of assets, be it of physical, digital or tokenised nature is proposed by Ankenbrand et al. (2020). Based on existing classification frameworks the authors identify 14 different attributes by which the characteristics of each type of asset can be properly classified. In this way, the taxonomy creates clear terminology for both worlds, i.e. traditional and crypto finance, and helps various stakeholders, not only in the asset management industry, to maintain an overview of existing assets of different types and, in particular, of their design and individual characteristics. The 14 attributes include the claim structure, technology, underlying, consensus-/validation mechanism, legal status, governance, information complexity, legal structure, information interface, total supply, issuance, redemption, transferability, and fungibility, with each attribute comprising a set of at least two characteristics[27].

While most asset management companies start off their digitalization with one or two key initiatives, *BlackRock* provides an example of what a fully digitalized asset management company might look like in the future. That is, *BlackRock* is a fully vertically integrated digital asset management platform with digitalization-driven products ranging from iShares ETFs to big data funds, their digital management tool, Aladdin, and several online distribution channels like *FutureAdvisor, Scalable Capital* and *Acorns*. According to quarterly results of *BlackRock* for 2019, its technology revenue highly driven by Aladdin has reached USD 974 million in 2019, which is only 6.7 percent of the company's total revenue, but remains one of the fastest growing areas. In 2017, BlackRock's CEO Larry Fink said "…five years from now… if we do our job right, 30 percent of our revenue could be from that platform." The strategy of the world's biggest asset manager confirms the importance of technological innovations for the asset management industry.

The Swiss financial center appears to be on the right track towards digitalization of the asset management industry. At the end of 2019, a total of 382 financial technology companies were based in Switzerland, representing a growth rate of seven percent compared to the previous year. Roughly 38 percent of Swiss FinTech companies offer solutions in the product area of investment management. 16 percent serve the Swiss market only, while 84 percent have an international orientation. In parallel to the international orientation, business models that focus on corporate customers (B2B), or on corporate and private customers (B2B & B2C) are particularly relevant. With regard to revenue models pursued in the Swiss FinTech sector, figure 2.12 shows that companies offering investment management solutions rely relative to other FinTech product areas more on IT- and data-driven revenue models. FinTech's with license fee

[27] See Ankenbrand et al. (2020) for a detailed description of the attributes and for selected classification examples based on the proposed taxonomy.

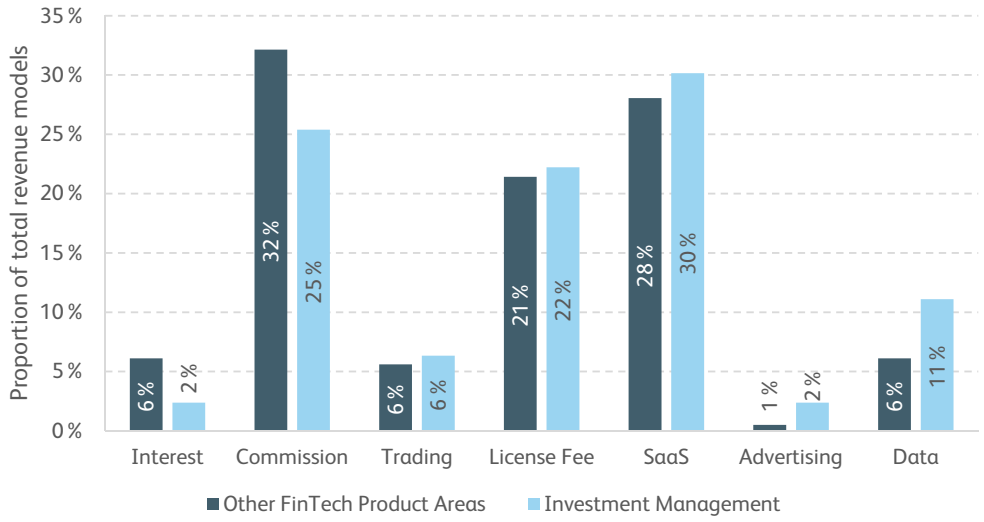

Figure 2.12: Revenue models in the Swiss FinTech sector

models account for 22 percent, Software-as-a-Service for 30 percent, and selling (analyzed) data for 11 percent of all revenue models in the respective FinTech product area. Revenue models from the traditional financial sector are comparatively less relevant. The relatively high share of data-driven revenue models is in line with the data-intensive technologies used by FinTech companies offering investment management: In particular, the majority of companies in said FinTech product area apply technological concepts from the fields of analytics, big data, and artificial intelligence (37.4%). This share is higher in comparison to other FinTech product areas which predominantly focus on process digitization, automatisation, and robotics (44%). On the other hand, only roughly one quarter of the FinTech companies providing investment management solutions use DLT. With 35 percent, this share is higher for other FinTech product areas (IFZ FinTech Study, 2020).

3. Asset Management – An International Perspective

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3.1. Introduction

In the first part of this chapter, we provide an overview of the global asset management industry. We present among others a market sizing and industry developments in the last years. We also briefly discuss the key trends and predictions for the global asset management industry, including the growth of Chinese asset management, the dominance of the world's largest asset managers, the constant shift from active to passive investing and increasing popularity of ESG investments. This overview is based on the well-known global asset management industry reports and ratings. In the second part, we provide an update of the asset management hub ranking, which builds the foundation for evaluating the competitiveness of Switzerland as a global asset management center.

3.2. The Global Asset Management Environment

The global asset management industry managed assets worth around CHF 90 trillion[28] by the end of 2018[29], 57 percent of which in North America. With CHF 50 trillion, North America is the leader in this market, followed by Europe and Asia. Together, these three regions share approximately 95 percent of the worldwide asset management market. In Europe, the biggest asset management countries are UK, France, Germany, Switzerland, and Netherlands (figure 3.1). The UK is not only the biggest asset management center in Europe but also the second biggest country in terms of AuM after the USA. In the USA, the asset management industry is clearly dominated by independent asset managers, while in Europe it is more fragmented with independents lacking behind insurances and banks (Bloomberg, 2019).

Currently Europe is by far the second largest asset management market worldwide, accounting for 32 percent of global AuM. However, it is expected that China will surpass Europe in the coming years. Surprisingly, by the end of 2018 the top-100 asset manager list of the *Thinking Ahead Institute* included only three Chinese players, Chinese AuM are expected to more than triple till 2025 following positive regula-

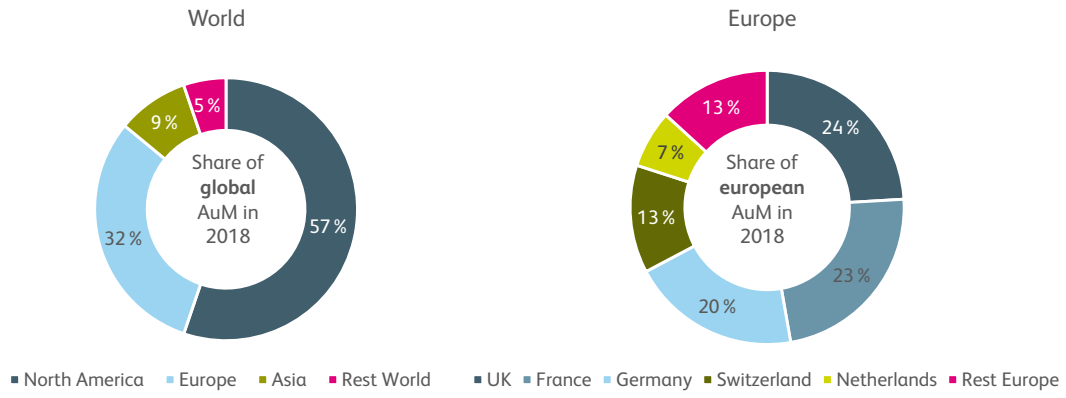


Figure 3.1: Market shares per region as of 2018 (Thinking Ahead Institute, 2019)

[28] The exchange rates as of 31.12.2018 were retrieved from www.investing.com.
[29] As a proxy we take assets under management (AuM) of the top-500 asset managers from the Thinking Ahead Institute rating. Importantly, the 2019 report includes AuM as of end 2018. The newest numbers are not yet available.

tory changes opening the Chinese market to foreign asset managers (BCG, 2019).

Worldwide, the top-10 companies account for almost one-third and the top-30 companies hold over a half of the total industry's AuM. Of the top-10 asset managers, seven are US managers and three are European *(Allianz, Amundi, Axa)*. The top-5 players hold around 20 percent of the total market and have not changed their ranking position at least in the last five years (see figure 3.2). The world's biggest players, except for Vanguard, also serve a significant share of external, Europe-domiciled institutional clients. Out of the CHF 9.8 trillion assets managed by the top-50 European institutional managers, around one-third is managed by the top-10 global players depicted in figure 3.2.

The largest asset managers also capture more than 80 percent of the industry's fund inflows, with the most inflows directed to passive strategies. This is not a coincidence but a continuation of a trend for the past 15 years (BCG, 2019). The shift from active to passive management has been most pronounced in the US, where in 2019 passive funds accounted for 35.3 percent of total assets. The European asset management industry still lags the US in this respect. In 2019, only 21.6 percent of European assets were passive, but the growth rate turned to be higher than in the US (Morningstar, 2020a).

According to figure 3.3 the popularity of active products is decreasing globally not only at the expense of passive products but also the alternatives. The core active investments category, including actively managed domestic large-cap equity, domestic government and corporate debt, money market and structured products has shrunk the most from 60 percent of total AuM in 2003 to 33 percent in 2019. At the same time passive products and alternatives accounting for 8 percent and 9 percent of global AuM in 2003 have increased their shares to 21 percent and 16 percent, respectively. The revenue split is already evenly distributed between active asset classes and alternatives and is expected to shift more towards alternative investments. This trend of squeezing out tradi-

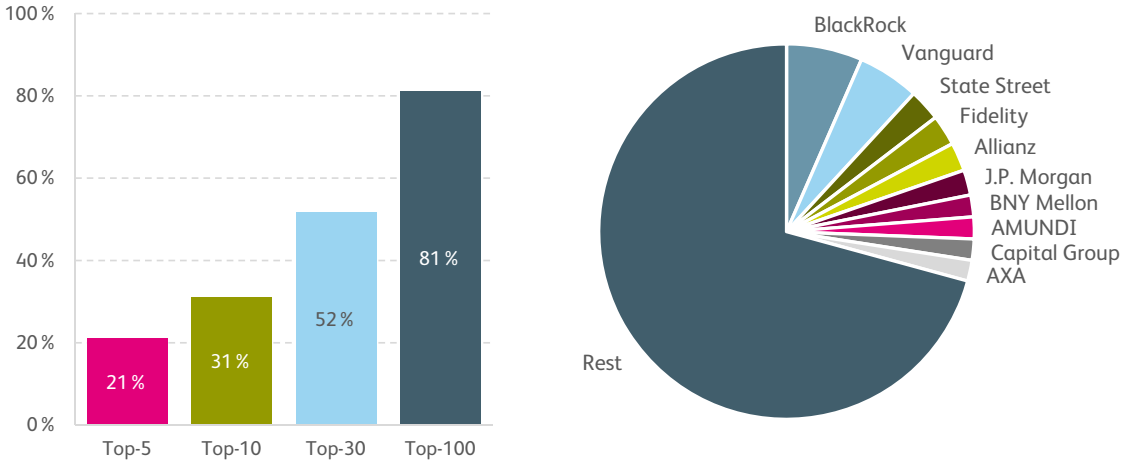


Figure 3.2: The world's top asset manager market shares (IPE[30], 2019)

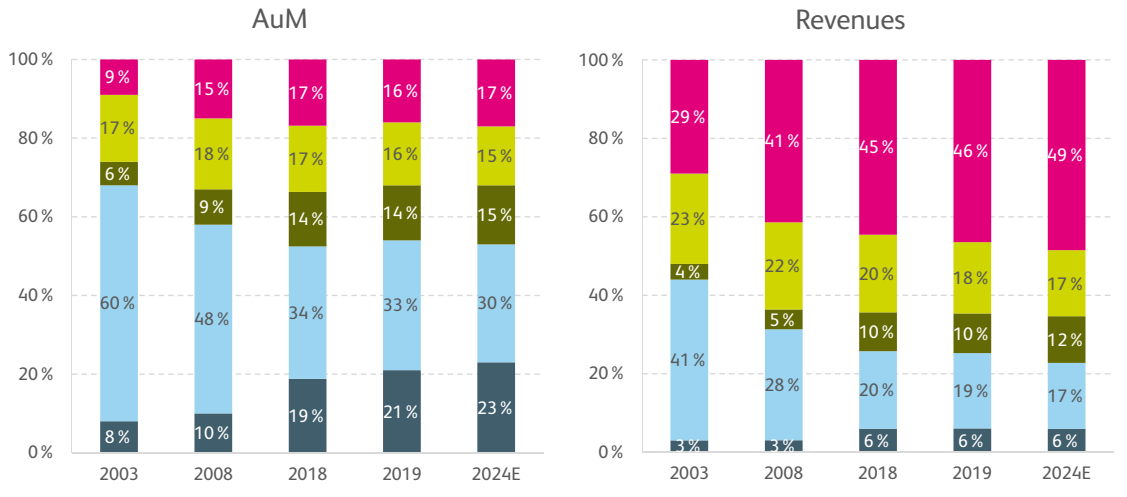
[30] In this article we use two major asset manager rankings, Thinking Ahead Institute and IPE. The industry concentration numbers (left side of Figure 3.2) are consistent among both ratings. Nevertheless, we have chosen the IPE rating to show market shares of top-10 global asset managers (right side of Figure 3.2) as IPE's definition of asset management is consistent with the one used in this study.

tional active investments is predicted to continue at least through 2023 (BCG, 2020).

Another accelerating trend in asset management is the increasing popularity of sustainable investing. In this respect Europe is ahead of the US, where regulations are less strict and consumer preferences towards sustainability are less clear. Globally, assets invested into ESG mandates grew by 23.3 percent in 2018 (Thinking Ahead Institute, 2019). Moreover, during this year's Covid-19 pandemic, at least in the first quarter of 2020, sustainable investing funds have provided a comparable or better performance than conventional funds (Morningstar, 2020b). It is expected that investor focus on sustainable investing will further increase after Covid-19 with a special emphasis put on social topics such as healthcare, access to medicines, education, sustainable tourism, and social bonds (UBS, 2020).

Overall, the global asset management industry has shown a steady growth in the last 11 years. The global AuM have more than doubled from 2008 to 2019. The positive momentum lapsed in 2018, but AuM losses have been more than compensated in 2019. This historical growth of both AuM and net new money was stable over the years due to bullish markets. The recent Covid-19 pandemic, which led to a strong negative market reaction, poses some uncertainty on the asset management industry at least in the short term and is expected to facilitate the continuation of the 'winner-takes-all trend', whereby the distribution powerhouses with AuM exceeding USD 1 trillion, will continue to hold the largest market share (BCG, 2020).

Contributing to this trend is also the growing popularity of passive investing, as inflows into passive funds only benefit asset managers that have reached a certain scale and cost efficiency enabling them to handle lower revenues and run passive strategies profitably. Indeed, as of 2019 the revenues from these strategies account for only 6 percent in the global revenue split. In this respect, the future success strategy for smaller asset managers (less than USD 100 billion) lies in operating as a performance-focused 'boutique alpha shops'. Asset managers that are predicted to



Passive

Active core (actively managed domestic large-cap equity, domestic government and corporate debt, money market, and structured products).

Solutions/LDI/Balanced (target-dated, global asset allocation, flexible, income, liability-driven, and traditional balanced investments. Includes actively managed domestic large-cap equity, domestic government and corporate debt, money market, and structured products).

Active specialities (equity specialties (foreign, global, emerging markets, small and mid caps, and sectors) and fixed-income specialties (emerging markets, global, high yield, and convertibles)).

Alternatives (hedge funds, private equity, real estate, infrastructure, commodities, private debt, and liquid alternative mutual funds (such as absolute return, long and short, market-neutral, and trading-oriented); private equity and hedge fund revenues do not include performance fees).

Please note, that the bar charts may not add up to 100 % because of rounding.

Figure 3.3: Global AuM split by product (BCG, 2020)

suffer the most in the coming years are mid-sized companies with neither sufficient scale nor outstanding performance (BCG, 2019).

The big uncertainty for the global asset management industry is a possible disruption from big tech companies such as *Alphabet, Amazon, Apple* and *Facebook* in the US and *Alibaba, Tencent* and *Samsung* in Asia. The tech giants are rapidly expanding their businesses into the financial services sector and have already recognized the attractiveness of the asset management industry due to its profitability, sustainable market growth and relatively low regulatory capital requirements. In 2014, *Alibaba* founded *Ant Financial* and its *Yu'e Bao* money fund has already become the largest money market fund worldwide. In 2018, *Tencent* obtained a license to sell mutual funds to its *WeChat* users (zeb, 2019b). 'If the likes of *Amazon* and *Google* step up, as their peers in China are starting to do, the disruption will be rapid and powerful' (BCG, 2019).

3.3. Comparison of Asset Management Hubs

In this section, we provide an update of the asset management hub ranking published in the first two editions of the IFZ/AMP Asset Management Study. The aim of this subchapter is to evaluate the competitiveness of Switzerland as a center for asset management on a global scale by deriving a ranking of multiple asset management hubs. The ranking evaluates the conditions for asset management in a country based on the PEST-analysis described in section 1.2. The ranking framework and applied methodology are outlined in greater detail in the next section.

3.3.1. Ranking Methodology

To evaluate and compare the conditions asset managers find in various asset management hubs we conduct a hub ranking based on quantitative factors. The ranking methodology follows the same approach as in previous editions of our asset management study. In this year's hub ranking Brussels (Belgium), Madrid (Spain) and Seoul (South Korea) are newly included in the analysis. In total, the ranking is based on 59 (updated) indicators, either on the city- or country -level, from publicly available sources.[31] No updated figures could be found for five of the 59 indicators.[32] Therefore, these indicators are based on the latest available figures and thus remain unchanged relative to last year's ranking. Compared to the 2019 ranking due to the lack of data availability one indicator from the social dimension (Graduates in Social Science, Business and Law) had to be excluded, while no new additional indicators have been added. Based on these data the hub ranking is then generated in four steps:

1. Each of the 59 indicators is categorized into one of the four PEST dimensions.
2. For each indicator, an individual ranking for the 38 in-scope asset management hubs is derived, resulting in 59 individual scores ranging from 1 (worst performance) to 38 (best performance).
3. For each hub, the four PEST dimension scores are obtained by averaging the underlying indicator rankings of each dimension. This procedure implies that the PEST dimension scores are bound between 1 and 38 and that a higher score in a dimension is associated with a better performance.
4. The final hub ranking is obtained by aggregating the four PEST dimensions scores for each asset management hub using equal weights and sorting the hubs in descending order.

3.3.2. Asset Management Hub Ranking

The methodological approach outlined in the previous section leads to the hub ranking depicted in figure 3.4. As in the previous two editions, the leading position is taken again by Singapore. In a year-on-year comparison, the Swiss asset management hubs Zurich and Geneva did slightly lose ground and take position four and eight in the current ranking. However, a deeper analysis of each dimension evaluated in the ranking shows that Zurich did improve in the social and technological dimension and could keep its strong position in the political/legal and the economic dimension.

A similar conclusion applies for Geneva with the exception that Geneva only improved in the social dimension and lost one rank in the economic dimension. With respect to competing asset management hubs, Geneva performs slightly worse in the city spe-

[31] The list of indicators and corresponding sources are listed in the Appendix.
[32] Each indicator that has not been updated is marked in the list of indicators provided in the Appendix.

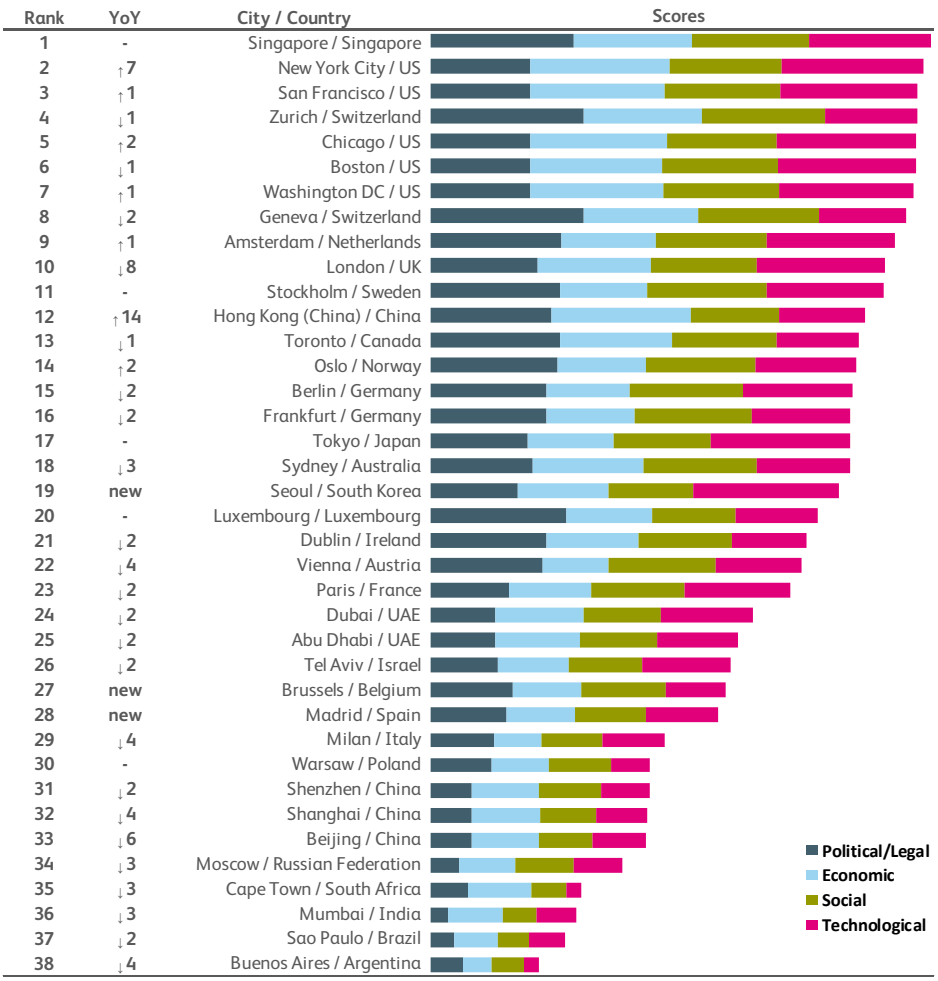


Figure 3.4: Asset management hub ranking

cific indicators Global Financial Centres Index and Global Cities Competitiveness Index which explains the loss of one position in the economic dimension of the ranking. Overall, the loss of one respectively two positions for Zurich and Geneva in the hub ranking is mainly due to the strong performance of US asset management hubs in this year's ranking. This implies in absolute terms that Switzerland offers still favorable conditions for asset management companies to thrive. Among the top ten hubs, the largest increase is observed for New York City, which gained seven positions on a year-to-year basis and is currently ranked second, while the largest decrease is observed for London, which lost eight position and is now ranked tenth. The top ten are completed with asset management hubs in the United States (San Francisco (3), Chicago (3), Boston (6), Washington (7)) as well as Amsterdam (9). In comparison to last year's ranking no new asset management hubs entered the top ten. Moreover, the ranking in figure 3.4 reveals that the asset management hubs ranked on position two to eleven perform very similarly and differ only marginally in their competitiveness as well as the dominance of Singapore is less evident in the current ranking compared to previous years. A second cluster of relatively similar performing cities is ranked between position twelve and 19. This cluster of runner-up asset management hubs is led by Hong Kong followed by Toronto, Oslo, Berlin, Frankfurt, Tokyo, Sydney and Seoul.

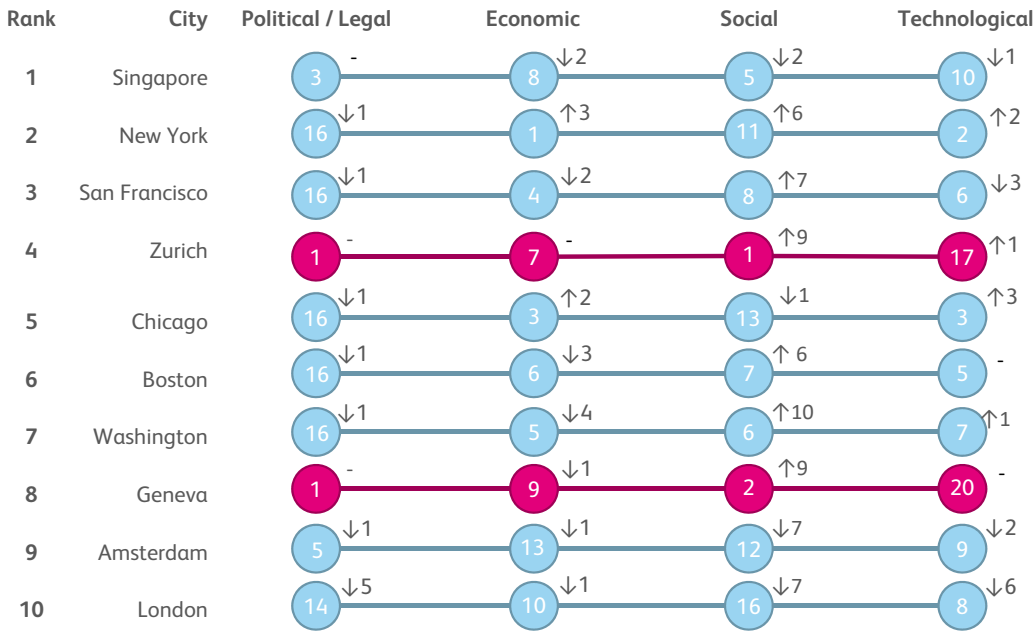


Figure 3.5: Ranking in each PEST-dimension and year-on-year changes

By comparison, the largest position change in the overall ranking is observed for Hong Kong, which gained 14 positions and is now ranked on position twelve. Hong Kong could compensate for the dramatic loss in last year's ranking and made up ground in all four PEST dimensions. In the current ranking, Hong Kong almost reached the position held in the first edition of the hub ranking, where it was ranked tenth. However, it is important to note that the indicators used in this ranking are time-related and react with a lag to certain events. In this context, the 2019 Hong Kong protests and the associated political tensions are probably not fully reflected in the indicators with respect to political stability. Thus, changes in ranking positions are to be interpreted with caution.

Figure 3.5 illustrates the ranks of the top ten asset management hubs in each PEST dimension together with the corresponding year-to-year change. The most striking feature in this context is that London lost eight positions on a year-to-year basis and is now ranked tenth. It appears that all indicators in each dimension have now incorporated the implications and uncertainty following the Brexit referendum from June 2016. London lost substantially in the political/legal, social and technological PEST dimension but only one rank with respect to economic indicators. Another striking feature of the current hub ranking is the large improvement of New York City from position nine to position two. This development can be partly explained with the strong position of US cities in the economic dimension, where all hubs are ranked in the top six. This allows to conclude that US asset management hubs are embedded in a slightly stronger economic environment, which can be explained by the size and importance of US financial markets, the size of the domestic market and the large number of high net worth individuals. New York City achieves the highest scores among all ranked cities in the Global Cities Competitiveness Index for their demonstrated ability to attract capital, business and talent and in the Global Financial Centres Index where New York City is ranked as the leading financial center in the world. Another driver that explains the strong position of US asset management hubs in general is the relatively strong improvement in indicators along the social dimension of the ranking. Among others, these indicators are a lower unemployment rate, a higher

enrolment in tertiary education or a higher labor force quality. The difference in total scores between San Francisco (109.92 points) and Zurich (109.70 points) is only very marginal which implies the two hubs can be considered equally competitive.

The key strengths of the Swiss asset management hubs are as in the previous years the political and legal environment. Zurich and Geneva jointly lead this dimensional ranking. Switzerland has a high level of political stability combined with a progressive legal regulatory framework and moderate corporate tax rates. A strong improvement is observed along the social dimension where Zurich (1) and Geneva (2) improved by nine positions and are now the leading hubs with respect to this dimension. The data indicate that Switzerland has a strong talent environment, internationally leading universities and a highly skilled labor force. Furthermore, Switzerland did improve year-on-year in the Hayes Global Skills Index, which measures among others labor market flexibility, the level of talent mismatch, wage premiums paid to worker in high skilled jobs or the flexibility of the education system to meet the needs of the labor market (Hayes, 2019).

Considering only European asset management hubs among the top ten in the ranking, it follows that Zurich takes for the first time the leading position, followed by Geneva, Amsterdam and London. In summary, the results of this year's hub ranking show again that Switzerland offers favorable conditions for the asset management industry and that Switzerland could maintain its strong position as a global asset management hub. A key driver for the domestic success of the asset management industry is the size of the home market. Switzerland has a high savings rate, which stimulates the demand for asset management products and services. In this context a recent study by *Willis Towers Watson* found that in 2019 assets in Swiss pension schemes (excluding vested pension assets and pillar 3a pension schemes) reached 146 percent of GDP, which corresponds to about CHF 1'020 billion (Willis Towers Watson, 2020)[33].

However, to achieve further growth Swiss-based asset management firms need to offer their products and services on an international scale, since growth in the domestic market is rather limited. A basic requirement for the exportability of Swiss asset management services abroad is the compliance with major international regulatory standards. In this context, the *Financial Services Act (FinSA)* and *Financial Institutions Act (FinIA)* brought into force on January 1, 2020 are part of a new financial market architecture that is supposed to support Switzerland's regulatory competitiveness and is a prerequisite for a non-discriminatory access to international markets. In particular, FinSA sets out rules for offering financial services and distributing financial instruments. The regulation is based on various EU directives (MiFID II, Prospectus Directive, PRIIPs) with adjustments to consider Swiss specific circumstances. Next to these rules of conduct, a further essential regulatory standard is the supervision of all asset managers, which is ensured by FinIA. The main implications of the FinIA act is that all financial services providers who render asset management services to clients need a *FINMA* licence and are subject to ongoing prudential supervision (Federal Department of Finance, 2020). As a non EU/EEA country and due to its geographic proximity, access to the European single market based on equivalence and a standardized principle-based recognition process at the EU level are essential for the Swiss asset management industry (Swiss Bankers Association & BCG, 2018). Even if the conditions for regulatory equivalence are technically fulfilled, without the recognition of the EU, a non-discriminating access to the European single market will not be possible. However, it is important to be aware that the EU is not the only market of relevance for Swiss-based asset managers. On a global scale, the largest asset management market is North America with an estimated size of USD 42.0 trillion, followed by Europe (USD 22.8 trillion) and Asia-Pacific region representing a combined USD 17.8 trillion (BCG, 2020). It is assumed that over the next decade China will become the second-largest region for asset management, ahead of continental Europe (BCG, 2019). Moreover, regulatory changes are starting to open up the previously restricted market to foreign asset managers. For foreign asset management firms it is possible to set up private fund management firms as wholly foreign-owned enterprises (WFOEs), which allows them to

[33] As reported by Willis Towers Watson (2020) only the Netherlands (187.3%) and Australia (150.9%) have a higher Asset/GDP ratio than Switzerland (146.4%) with respect to assets managed in pension funds.

serve qualified investors onshore through private fund investments in onshore assets. A fully liberalized Chinese asset management market to foreigners is supposed to be realized by 2021 (Roland Berger, 2019). A strong growing segment of particular interest for foreign asset managers in China is the market for mutual funds. According to estimates by the consultancy firm *Roland Berger* this segment of China's asset management market will display double digit growth over the coming decade (Roland Berger, 2019).

4. Asset Management Companies in Switzerland

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In chapter 2 we analyzed the Swiss asset management environment based on a PEST analysis. In this chapter, we provide deeper insights into Swiss asset management by presenting the aggregated results of our annual survey conducted among asset management firms in Switzerland. The methodology and structure used in this chapter follows in general the same approach as in the previous two editions of the study and is described in subsection 1.3. The descriptive analysis includes among others a market sizing and studies the most pressing challenges and opportunities faced by the industry in the context of a sentiment analysis.

4.1. Scope and Methodology

The foundation for the data request in our annual asset management survey consists of FINMA authorized banks and securities dealers, fund management companies, as well as asset managers of collective investment schemes licensed under the Collective Investment Schemes Act (CISA). Among these institutions, we identified 181 companies, which consider asset management as their main value proposition and are in line with our definition of asset management given in subsection 1.1. In order to avoid double counts, we removed five firms having more than one FINMA license, which leaves us with 176 asset managers to be considered in the survey. The data request consists of a quantitative and qualitative questionnaire. The quantitative questionnaire serves as the baseline for the market sizing while the qualitative questionnaire contains the sentiment survey and provides information about various operational data points depicted in the company factsheet of each participating asset management firm. All these factsheets are presented in chapter 7 of this study.

As illustrated in figure 4.1 out of 176 surveyed asset managers, 58 participated in the study and returned at least one questionnaire (market sizing, sentiment) as well as the company factsheet. This corresponds to an overall response rate of about 33 percent.

Among all respondents are 39 asset management firms that operate under the collective investment schemes act (31% response rate), 13 fund management companies (57% response rate) and six institutions that possess a banking/securities dealer license (21% response rate). In comparison to all in-scope Swiss-based asset management firms (176), fund management companies are relatively overrepre-

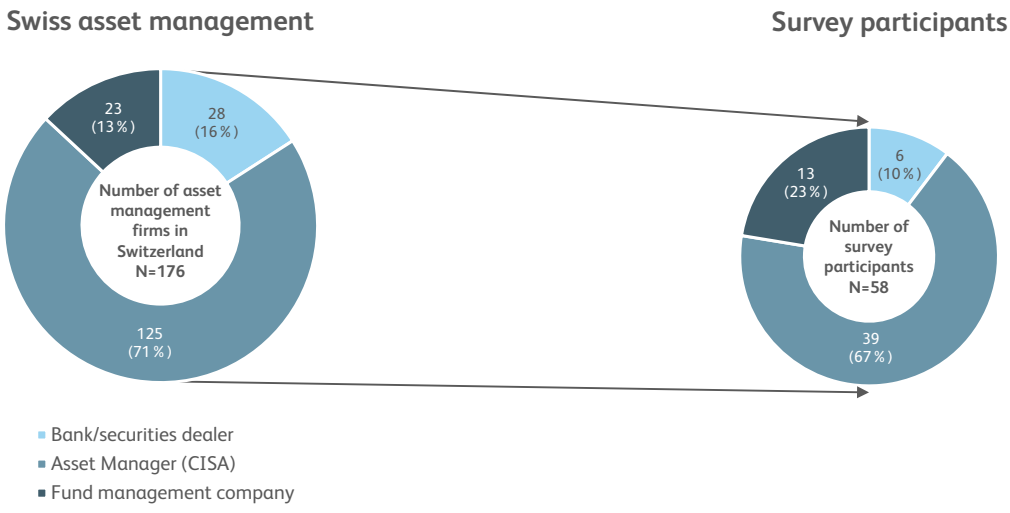
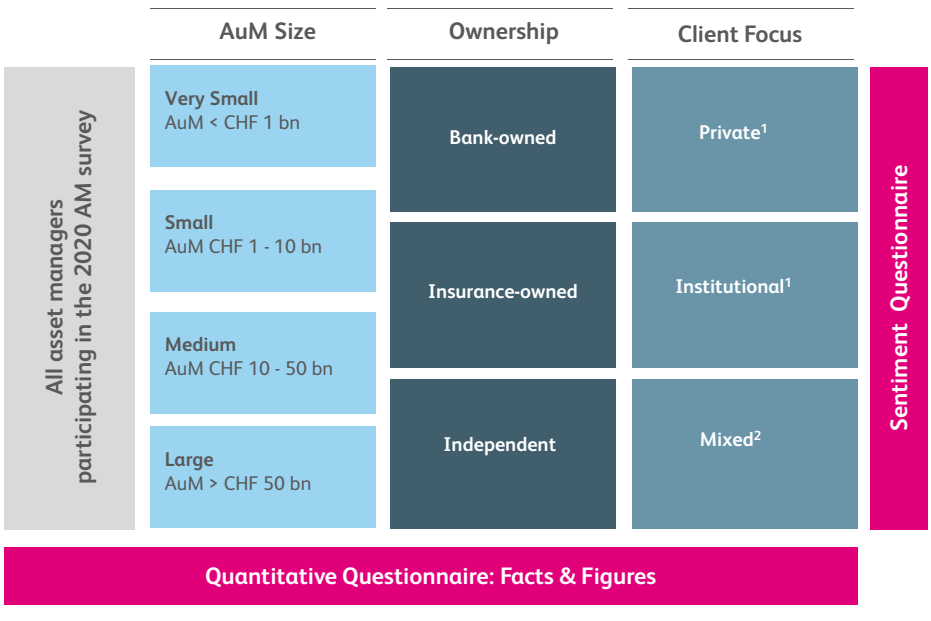


Figure 4.1: Asset management firms in Switzerland and number of respondents by institution

sented among all survey participants while CISA asset manager and banks/securities dealers are slightly underrepresented. However, the participating companies rank among the largest and best-known asset managers in Switzerland. In this context, our analysis shows that of all asset management firms that provided quantitative data (N=41) for this survey, the ten largest asset managers represent more than 80 percent of the assets under management.[34] Moreover, it is important to note that from a methodological vantage point, all findings and conclusions in this chapter are based on descriptive statistics and no statistical inference is applied. However, when it comes to the market sizing, extrapolation techniques are used to determine the size of the Swiss asset management industry in terms of assets under management.

In order to gain deeper and more detailed insights in the following analyses, all asset management firms that participated in the survey are segmented according to the grid structure illustrated in figure 4.2.

Consistent with our definition of asset management and the focus of this study our analysis reveals that almost all of the surveyed asset managers have a focus on institutional clients. Due to the lack of client variability, we focus our analysis on the segments size (measured by AuM[35]) as well as ownership (bank-owned, insurance-owned, independent) and do not provide further insights with respect to client focus. Figure 4.3 shows the number of asset management firms along the size and ownership dimension that did participate in this year's survey. A striking feature of this illustration is that the largest asset managers are bank- and insurance-owned while only one is independent. Furthermore, independent asset managers account for the largest proportion in the sample.



1 Asset Managers with more than two thirds of total AuM in Private or Institutional.
2 If Institutional AuM between 35 % and 65 % of total AuM.

Figure 4.2: Segmentation of Swiss-based asset management firms

[34] An in-depth analysis of the market size and structure is provided in subchapter 4.2.
[35] Compared to the 2019 survey, we have adjusted the size categories in the current survey in order to achieve better comparability with other asset management studies while still taking into account the characteristics of the Swiss asset management industry.

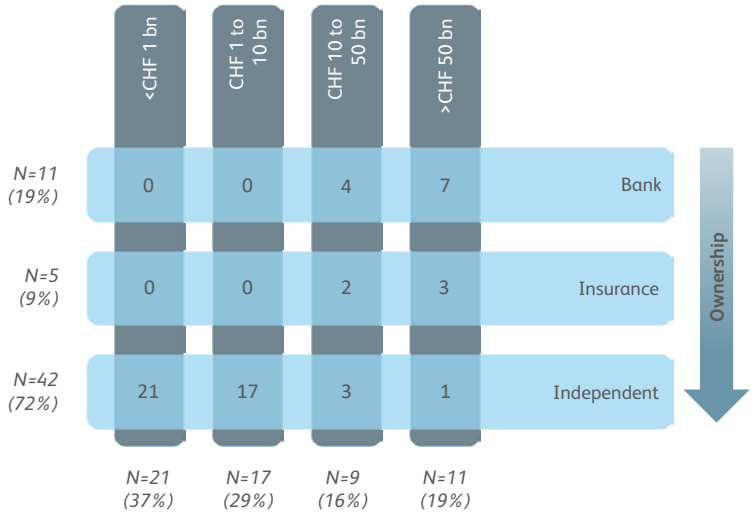


Figure 4.3: Survey participants with respect to size and ownership (N=58)

Asset management has become a rather concentrated industry, meaning that a relatively small number of competitors manage the majority of assets[36]. Overall, our data imply that the surveyed asset managers which provided quantitative data (N=41) account for more than 85 percent of the total volume of assets managed in Switzerland. Analyzing the surveyed data using well-known indicators to measure concentration and inequality allows us to further investigate this issue for Switzerland.

The concentration curve as illustrated in panel A of figure 4.4 shows the percentage of total AuM held by the largest *n* asset managers. The curve clearly re-

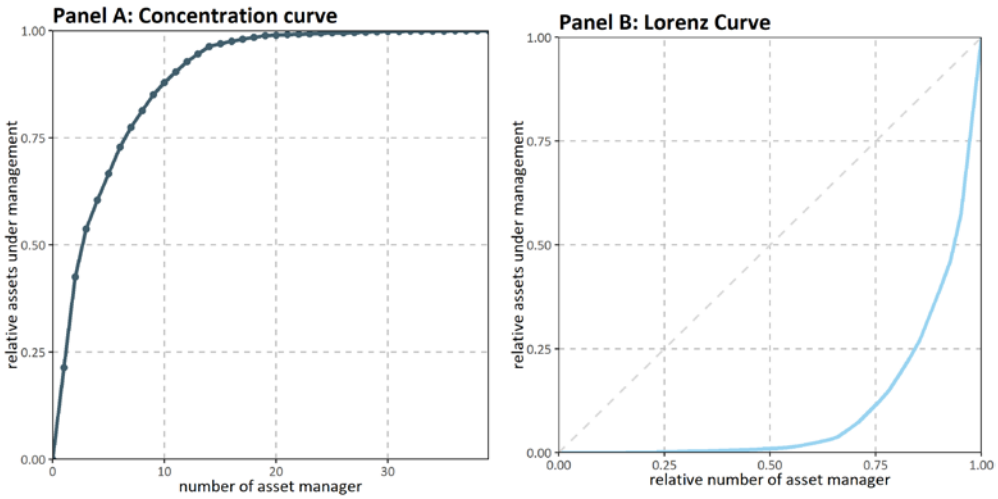


Figure 4.4: Concentration and Lorenz curves based on survey data (N=41)

[36] See section 3.2 for an international perspective.

veals a large industry concentration among the participating institutions in this survey[37]. In panel B of figure 4.4 an empirical Lorenz curve is plotted, which shows the cumulative percentage of AuM relative to the cumulative percentage of asset managers. The curve indicates that the top 25 percent of the participating asset management firms have about 85 percent of the assets under management[38].

4.2. Market Sizing

According to our asset management definition outlined in subchapter 1.1 the market sizing is based on discretionary institutional mandates and collective investment schemes including exchange traded funds. It is important to note that we base our estimates not on a booking center view of asset management, but rather on a production view that takes into account that these assets not necessarily need to be held at a custodian bank in Switzerland, but are delegated to an asset manager in Switzerland for management purposes. In the context of this survey-based market sizing, 41 institutions provided quantitative data. Among these participants are six bank-owned, four insurance-owned and 31 independent asset managers. With respect to size, 15 firms manage less than CHF 1 billion, twelve asset managers have AuM between CHF 1 and 10 billion, the AuM of six companies is between 10 and 50 billion and eight companies manage more than CHF 50 billion on behalf of their clients.

The methodological approach for estimating the market size is the same as in last year's study. In a first step, the growth rate of AuM managed in discretionary mandates from 2018 to 2019 (as of December 31) of all surveyed asset managers are computed[39]. Because these asset management firms vary substantially in size, each growth rate is weighted with the corresponding AuM and thus a weighted average is computed. This weighted average serves as an approximation for the year-on-year growth in the segment of institutional discretionary mandates and is estimated to be 14.0 percent. For the year 2018, a total of 918 billion was estimated to be managed in discretionary mandates in Switzerland. Applying the estimated growth rate to this volume implies that at the end of 2019, the AuM managed in these mandates increased to CHF 1'048 billion.

In addition to the assets managed in discretionary mandates, we add the volume of assets in collective investments schemes (CIS) under Swiss law. In this regard, we assume that all these CIS are effectively managed in Switzerland. In this context, it is important to note that this assumption could lead to a slight overestimation of the volume managed in this product group. The relevant data are taken from the Swiss National Bank (data.snb.ch). The assets managed in CIS under Swiss law increased from CHF 856 billion in 2018 to CHF 1'030 billion in 2019, which implies a year-on-year growth of about 20.3 percent.

Finally, the volume of assets held in CIS under foreign law and managed by asset managers in Switzerland are estimated. For this purpose we proceed in four steps: First, we sum the assets in foreign CIS of those asset management firms that reported numbers in the survey. Second, based on a cluster analysis (insurers, domestic banks, international banks/asset managers, alternative asset managers, others (small asset managers)) where we identify groups of firms with similar business models and value propositions (peer groups), we compute the average ratio of foreign CIS relative to total CIS (foreign law and Swiss law) for each cluster. This ratio serves as a proxy for the share of foreign CIS for those asset managers in each cluster that only reported the total volume of assets managed in CIS. Third, we apply this peer group specific ratio for each firm in the cluster that did not make a distinction between CIS under foreign law versus CIS

[37] The Herfindahl-Hirschman index (HHI), as an indicator of competition in an industry, confirms this finding with a value of 0.12. To put this number into context it is helpful to go through a thought experiment. If it were assumed that every asset manager has an equal large market share, the HHI would be 0.024 (1/N). A higher number of the HHI thus implies a higher market concentration.

[38] The corresponding Gini coefficient, measuring the inequality in terms of the AuM distribution on a scale from 0 (no inequality) to 1 (highest inequality) is estimated to be 78 percent which provides evidence of an unequal distribution of AuM.

[39] In last year's study, due to the data availability, we relied on the ten largest asset management firms to compute the corresponding growth rate in discretionary mandates. However, the data quality in this year's survey was very good so that we were able to incorporate all asset management firms that provided relevant data for this section. As a robustness check, we did also compute the growth rate in discretionary mandates only for the ten largest surveyed asset management firms. The obtained growth rates differ only marginally and are thus considered equivalent.

under Swiss law to determine the share of assets attributable to foreign CIS. Fourth, to consider firms who did not participate in the survey but are within the scope of this study, we use data provided by *Swiss Funds Data*. In particular, we consider funds domiciled abroad that are managed by these non-participating asset management companies and assume that all these funds are indeed managed in Switzerland. This assumption is plausible because these asset managers are relatively small and it is not very likely that they have a subsidiary abroad. Based on this methodological approach our estimates indicate that about CHF 441 billion AuM are managed in the form of foreign CIS in Switzerland. Compared to 2018, this implies a growth rate of about 14.0 percent in this segment.

Overall, the data provided by the surveyed asset managers and our estimates indicate that the total volume of assets managed by banks, securities dealers, fund management companies, and FINMA-supervised CISA asset managers in Switzerland at the end of 2019 amounts to CHF 2'519 billion. A year-on-year comparison reveals that AuM managed in Switzerland did grow by 16.5 percent (see figure 4.5).

A decomposition of this estimated growth rate of 16.5 percent (+ CHF 356.97 billion) in net new asset flows and performance reveals that 4.6 percentage points (+ CHF 98.95 billion) are due to net new assets and thus organic growth while the remaining 11.9 percent percentage points (+ CHF 258.02 billion) are attributed to performance. About 80 percent of these net new assets have been allocated to active strategies while 20 percent to passive products. Since 2016, with respect to AuM, the Swiss asset management industry has seen sound growth. Over this four-year period, AuM managed in Switzerland (production view) did grow by 27.9 percent, which corresponds to a compound average annual growth rate (CAGR) of 8.5 percent. Figures provided by McKinsey (2019) show that global AuM grew at a slower rate (CAGR of 6.6 percent) over the last five years.

4.3. Overview of Asset Management Companies in Switzerland

Asset managers offer their services and expertise to a variety of clients. For 2019, figure 4.6 shows that more than 70 percent of institutional assets under management in Switzerland are managed on behalf of pension funds and insurers. Compared to 2018 this is an increase of more than 10 percentage points. Another striking feature of these data is that the fraction of other asset owners is 20 percentage points lower relative to 2018. However, as illustrated in the figure, these numbers vary along the size and owner-

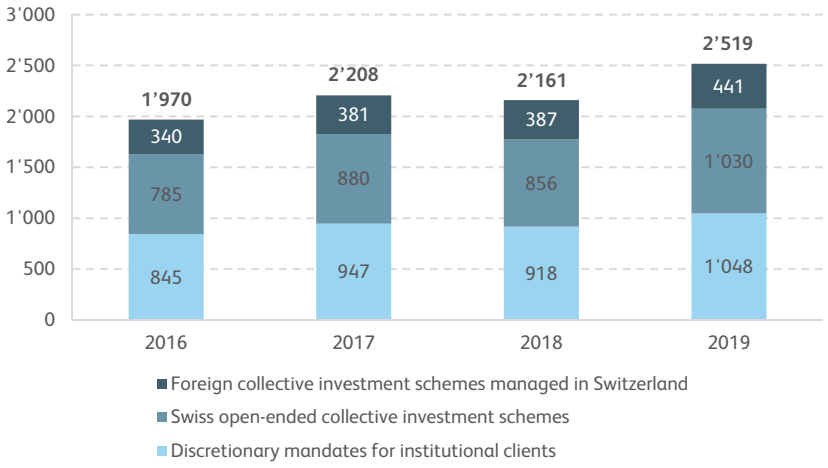


Figure 4.5: AuM managed in Switzerland for corporate and institutional clients from 2016 to 2019, in CHF billion

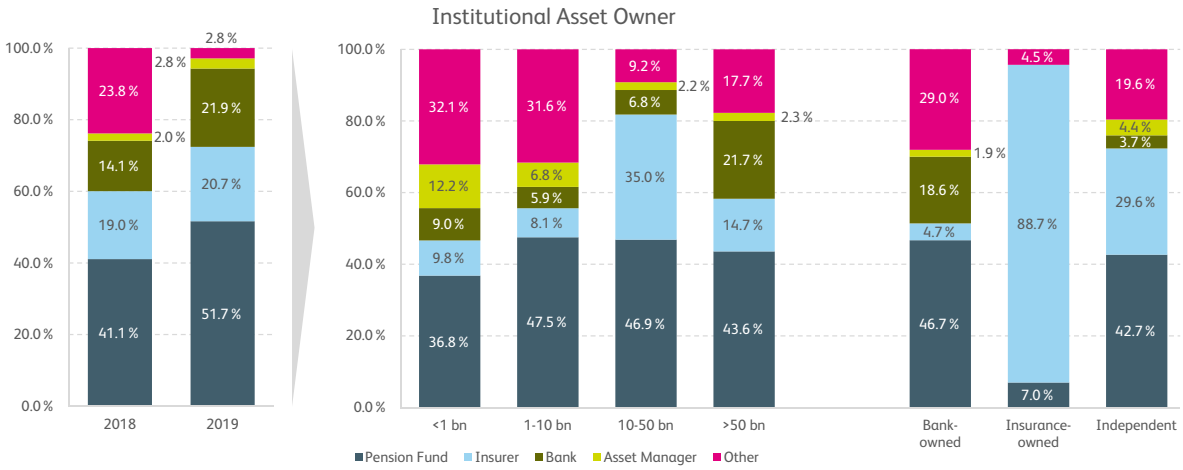


Figure 4.6: Relative share of institutional asset owners in AuM

ship dimension. Overall, in 2019, pension funds are the largest asset owners and make up 52 percent of these assets. Along the various size categories between 37 and 48 percent of the assets are managed on behalf of pension funds, while bank-owned and independent asset managers manage 47 and 43 percent, respectively for these clients. Moreover, it is no surprise that insurers are the largest asset owners (89%) in terms of insurance-owned asset management firms.

With regard to asset owners, a further distinction is made between domestic and foreign clients. Figure 4.7 reveals that domestically and abroad, pension funds are still the largest asset owners. However, banks ac-

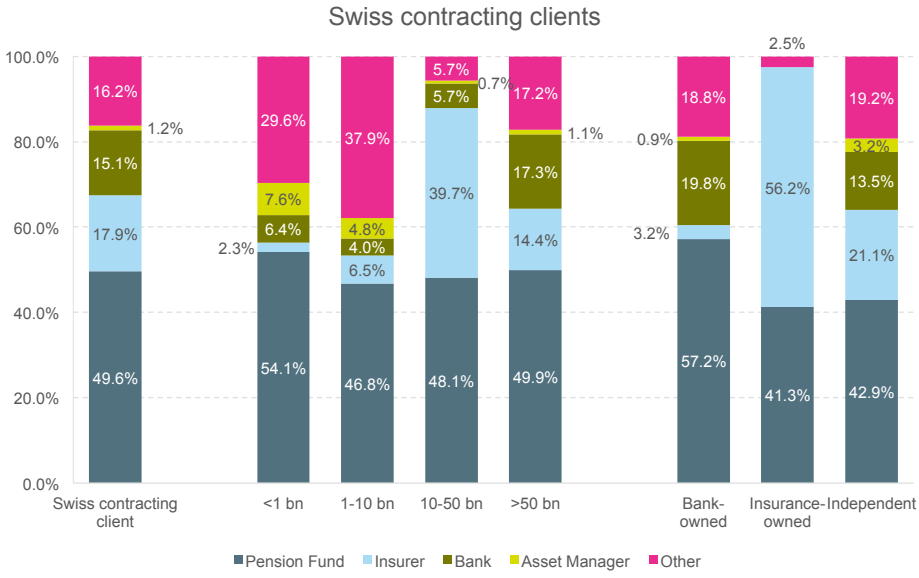


Figure 4.7: Relative share of institutional asset owners in AuM – Swiss contracting client vs. contracting client abroad

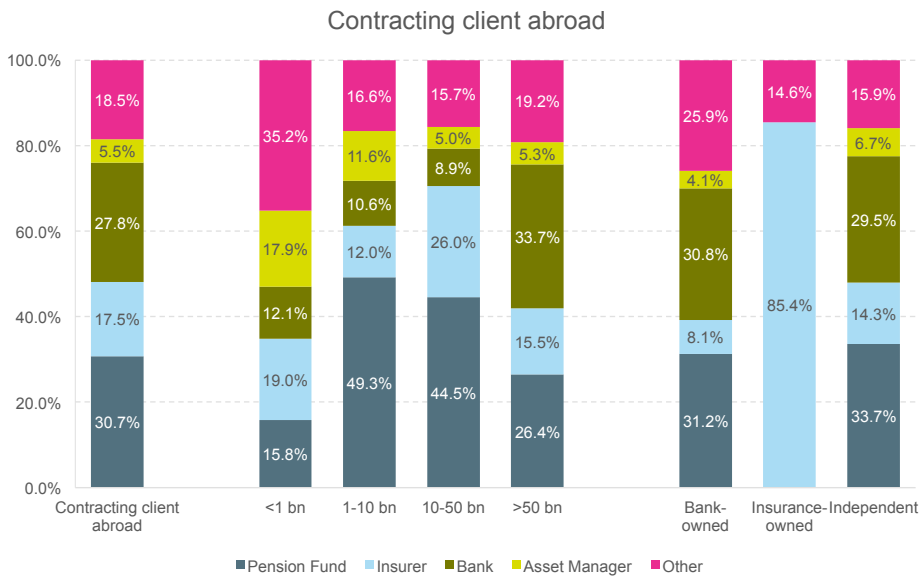


Figure 4.7 continued: Relative share of institutional asset owners in AuM – Swiss contracting client vs. contracting client abroad

count for around 28 percent of asset owners abroad and are therefore almost as important as pension funds in terms of AuM. Along the size and ownership dimension, there is some variation in the relative importance of asset owners, but one striking feature is the dominant role of pension funds from a domestic market perspective. For the largest asset management firms, banks are the most important client segment abroad while for bank-ownened asset managers pension funds are of major importance in terms of AuM managed for foreign clients. Another interesting observation is pensions funds abroad are not customers of insurance-owned asset managers in Switzerland.

Overall, about 70 percent of the AuM are managed for domestic clients, while 30 percent are managed for clients abroad. The majority of Swiss-based asset managers serve both domestic and international clients and about one third only serves domestic clients. Among the asset managers with a domestic client focus are mainly smaller, more specialized independent asset management firms as well as insurance-owned asset managers.

Our survey data reveal that the value proposition of Swiss-based asset managers is broad and diverse, meaning that asset management companies offer products and expertise in a variety of traditional and alternative asset classes[40].

Compared to the data collected in the previous two editions of this asset management survey no substantial changes with respect to offered asset classes are observed. Figure 4.8 shows that equity (74.1%) and bonds (53.4%) are the dominant asset classes, followed by multi asset (51.7%) and money market (34.5%) Furthermore, it is evident that Swiss-based asset management firms have a strong position in alternative asset classes. The survey data reveal that hedge funds and real estate (each 36.2%) are the most frequently offered alternative asset classes within collective investment schemes or discretionary institutional mandates, followed by commodity (29.3%), infrastructure (27.6%), private equity (25.9%), insurance linked securities (20.7%) and private debt (17.2%). The matrix in table 4.1 provides some further insights how the offered asset classes vary along the size and ownership dimension.

[40] Alternative asset classes in this study include, real estate, hedge funds, commodity, private equity, insurance linked securities (including catastrophe bonds), infrastructure and private debt. Note: Private debt has been newly added as an asset class in the current survey.

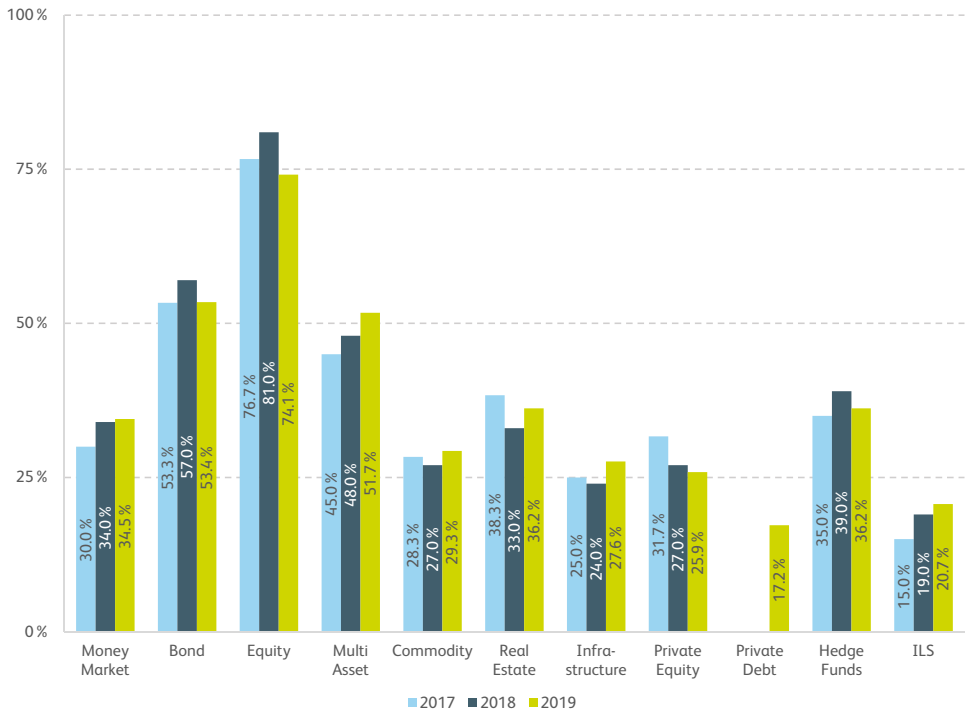


Figure 4.8: Asset classes managed by surveyed asset management firms in Switzerland (N_{2019}=58, N_{2018}=67, N_{2017}=56)

		Size (AuM)				Ownership		
	Aggregate 2019 (N=58)	< 1 billion (N=21)	1 to 10 billion (N=17)	10 to 50 billion (N=9)	> 50 billion (N=11)	Bank-owned (N=11)	Insu-rance-owned (N=5)	Indepen-dent (N=42)
Money Market	34.5	9.5	29.4	55.6	72.7	81.8	60.0	19.0
Bond	53.4	23.8	52.9	77.8	90.9	100.0	80.0	38.1
Equity	74.1	57.1	76.5	77.8	100.0	100.0	80.0	66.7
Multi Asset	51.7	14.3	47.1	100.0	90.9	100.0	100.0	33.3
Commodity	29.3	9.5	17.6	55.6	63.6	90.9	20.0	14.3
Real Estate	36.2	14.3	29.4	44.4	81.8	63.6	80.0	23.8
Infrastructure	27.6	4.8	23.5	55.6	54.5	45.5	80.0	16.7
Private Equity	25.9	0.0	17.6	66.7	54.5	63.6	40.0	14.3
Private Debt	17.2	9.5	5.9	33.3	36.4	27.3	60.0	9.5
Hedge Funds	36.2	19.0	17.6	66.7	72.7	81.8	60.0	21.4
ILS	20.7	9.5	5.9	55.6	36.4	45.5	60.0	9.5

Table 4.1: Asset classes managed by Swiss-based asset managers, in percentage. Note: Not all surveyed asset management firms provided information about their AuM (Size) managed in Switzerland

A striking feature of these data is that larger asset managers as well as bank-owned and insurance owned asset management firms offer a broader range of asset classes while independent and smaller asset management firms tend to be more focused on a particular set of asset classes[41]. Overall, a large number of asset managers independent of size and ownership offer core asset classes, like equity and bonds.

Another important aspect of this survey is to gain a more comprehensive understanding of the asset allocation of asset managers based in Switzerland as illustrated in figure 4.9. Traditional asset classes (bond, equity, multi asset, other[42]) make up 78 percent of total assets under management among the surveyed asset management firms while about 22 percent of the AuM are allocated to alternative asset classes[43]. Due to the increasing importance of private debt, we have collected data for this asset class for the first time in this year's survey.

According to our data, 1.7 percent of the AuM are allocated to private debt. In a year-on-year comparison, there was a marked shift in the equity and bond share. While the allocation to equity increased from 24.8 to 27.1 percent the allocation to bonds decreased by 2.3 percentage points from 27.6 to 25.3 percent. In addition, multi asset recorded a respectable increase, gaining 1.4 percentage points on the previous year. These changes can be explained mainly with the very good performance of international stock markets in 2019 and not with a fundamental change in asset allocation or investment strategies. In this regard, for example, the MSCI World Index did gain 25.2 percent in value and the Swiss Market Index even 26.5 percent. In contrast, the Bloomberg Barclays Global Aggregate Bond Index did achieve an annual return of 6.8 percent. With respect to alternative asset classes, private equity showed a moderate increase of 0.7 percentage points, while hedge funds (-0.4% points) and commodity (-0.1% points) lost some ground in the asset allocation of Swiss-based asset managers. Assets

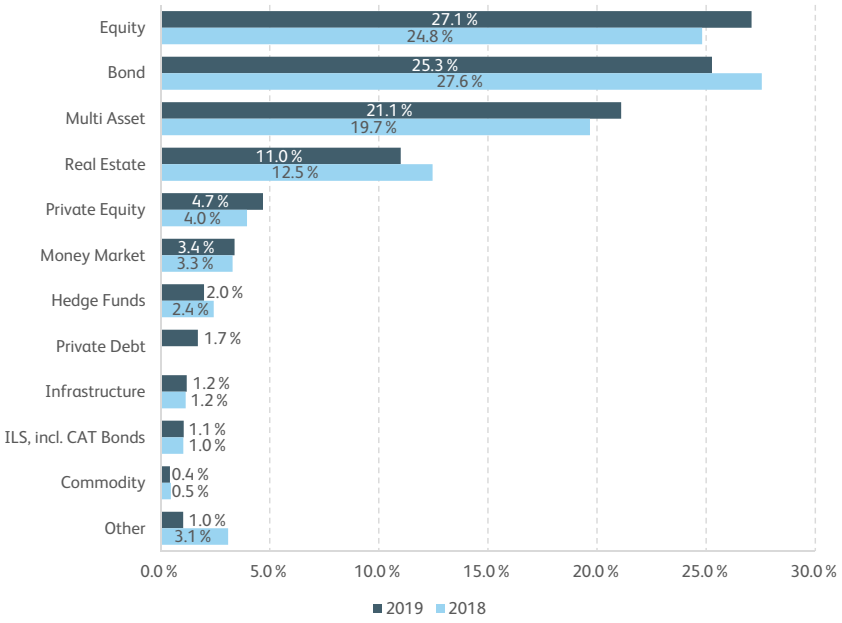


Figure 4.9: Asset allocation of asset management firms in Switzerland

[41] In this context, it is important to note, that bank-owned and insurance-owned asset managers are very often among the largest asset management firms.
[42] Note "other" may include alternative asset classes.
[43] The global average of assets allocated to alternative asset classes was estimated to be 15 percent in 2017 (Swiss Bankers Association & BCG, 2018).

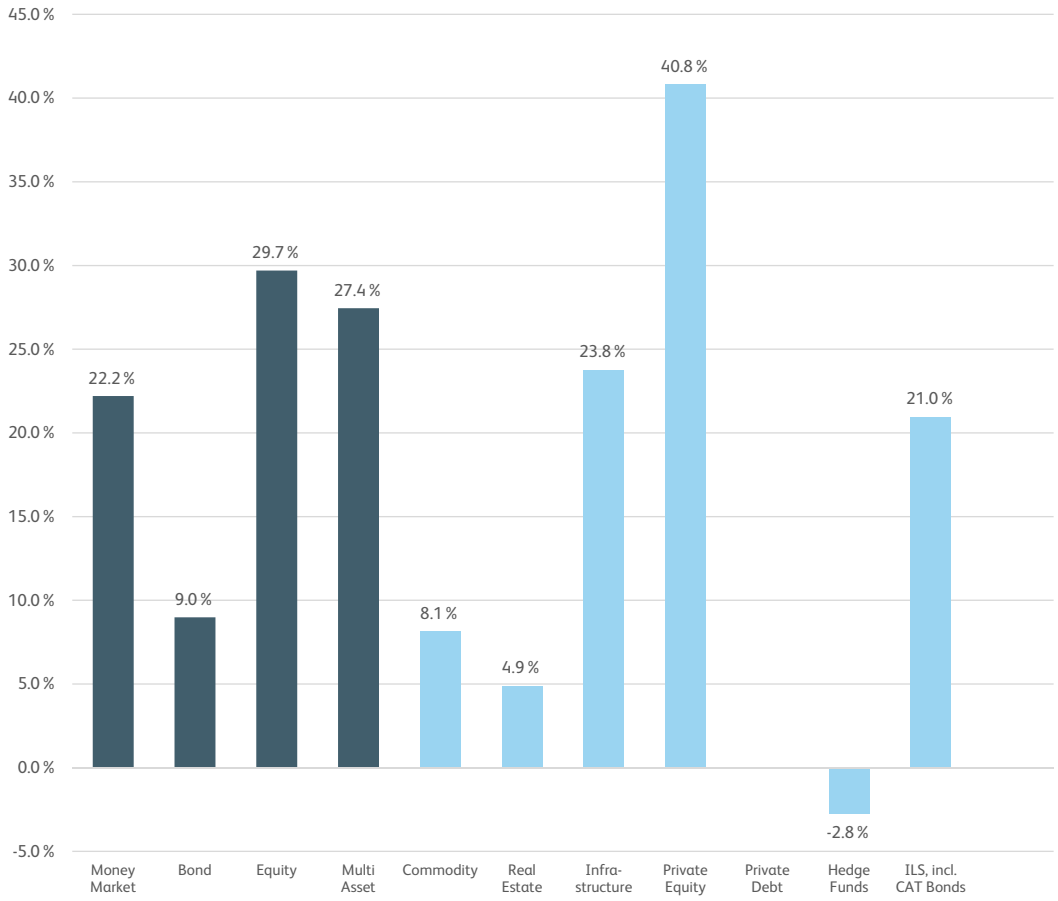


Figure 4.10: Growth in asset classes (year-on-year), traditional (dark blue) and alternative (light blue)

allocated to insurance linked securities gained marginally, while infrastructure remained unchanged. In addition, analyzing the growth in AuM in the corresponding asset classes (see figure 4.10) shows that the largest growth on a year-on-year basis took place in private equity (+40.8%), followed by equity (+29.7%), multi asset (+27.4%) and infrastructure (+23.8%). Private equity has a relative low share in the asset allocation of asset managers in Switzerland, but it has been the fastest growing asset class. One potential and very likely explanation for this development is found in the low interest rate environment in all major currency areas and the associated search for yield, which favours an allocation to non-traditional, less liquid and more risky asset classes such as private equity[44].

Another important question to be examined is whether the asset allocation depends on the size and ownership of asset management firms.

Figure 4.11 shows that there is substantial variation in the asset allocation with respect to the size of the asset manager. Small asset management firms with assets of less than CHF 1 billion have allocated more assets to alternative asset classes than larger asset management firms. However, the asset allocation of large asset managers (> CHF 10 billion AuM) has a strong focus on core asset classes (bond, equity, multi asset) that account for about 70 to 75 percent of the assets under management, while about 25 to 30 percent are allocated to non-traditional assets.

[44] The return of the Cambridge Associates Global Private Equity Index in 2019 was 17.24 percent.

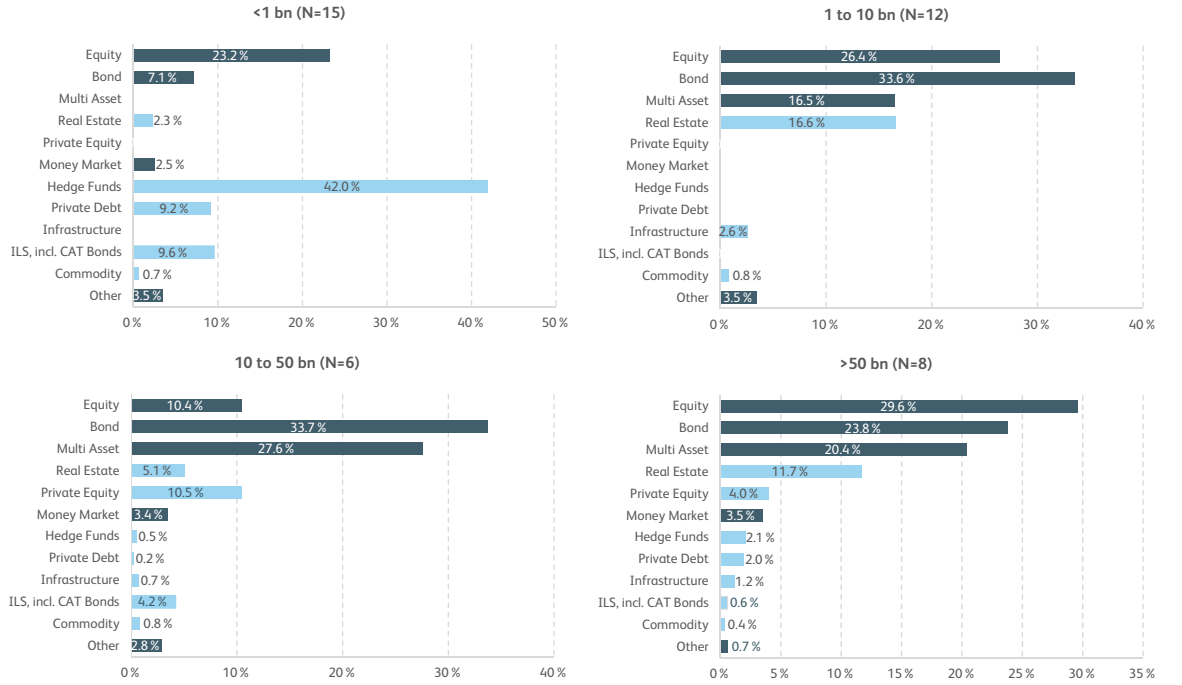


Figure 4.11: Size (AuM) of asset management firms and asset allocation in percentage

Figure 4.12 illustrates the asset allocation along the ownership dimension. A striking feature in this comparison is that insurance-owned asset managers allocate about 50 percent of their assets to bonds. This high share allocated to bonds can be explained by regulation which reflects the fact that insurance is a liability driven business and the asset management of insurers needs to be guided by the principle that claims are met when they are due. Moreover, the investment strategy of insurers needs to be compliant with the regulatory framework in the country they operate. For example, Solvency II in Europe and the Swiss Solvency Test (SST) in Switzerland are regulatory requirements that affect the asset allocation significantly. In this context, the SST requires an adequate amount of solvency capital for the assumed investment risk, which makes it costly for insurance companies to hold riskier assets such as equity or alternative

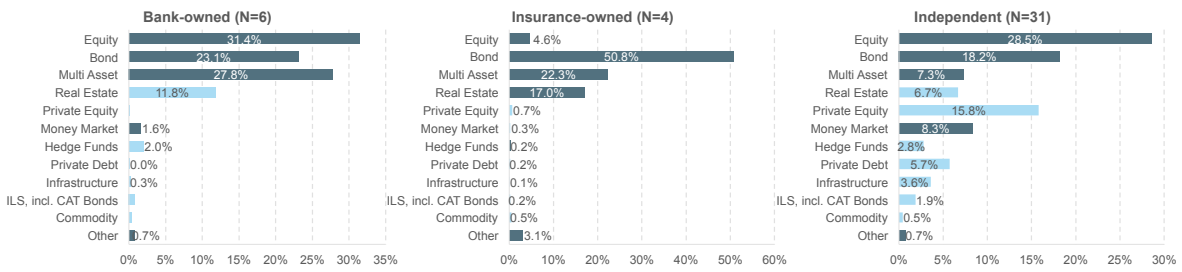


Figure 4.12: Ownership of asset management firms and asset allocation in percentage

asset classes, which is reflected in the asset allocation of insurance-owned asset management firms depicted in figure 4.12. The asset allocation of bank-owned asset management firms is strongly built on the traditional core assets classes equity, multi asset and bonds which account for about 82 percent of the AuM. Independent asset managers allocate relatively more assets to non-traditional asset classes (37.0 %), which reflects the fact, that these asset managers are very often specialized (niche players) in a certain market segment (e.g. private markets) in the alternative sphere.

Another important aspect of the value proposition of asset managers is related to the investment approach, where a distinction between active and passive management is made. Among survey respondents, about 80 percent claim to follow an active approach while the remainder follows a combination of active and passive management. With respect to managed assets illustrated in figure 4.13, the volume in active strategies is about 72 percent and virtually unchanged relative to the 2018 data. Moreover, our data for 2019 indicate that 62 percent of the assets in discretionary mandates are managed actively, while 38 percent are managed passively. Compared to the previous year, passive investment approaches in discretionary mandates increased by 4 percentage points.

For collective investment schemes incl. ETFs only 19 percent of the assets are managed passively and 81 are managed actively. A year-on-year comparison reveals that the share of actively managed CIS incl. ETFs did increase by 2 percentage points. A key requirement in producing passive investment products are economies of scale in order to maintain low operating costs to compensate for rather narrow revenue margins. The market for passive investment products is mainly dominated by Anglo-Saxon asset management firms[45], which already have the necessary scale to compete successfully in this market.

However, in this regard it is important to note that index funds, which are not exchange traded, might be an interesting passive investment vehicle for Swiss-based asset management firms. Compared to ETFs, for the purchase and sale of Swiss domiciled index funds no stamp duty is levied, while for foreign domiciled index funds only the sale is tax-exempt (VZ VermögensZentrum, 2017)[46].

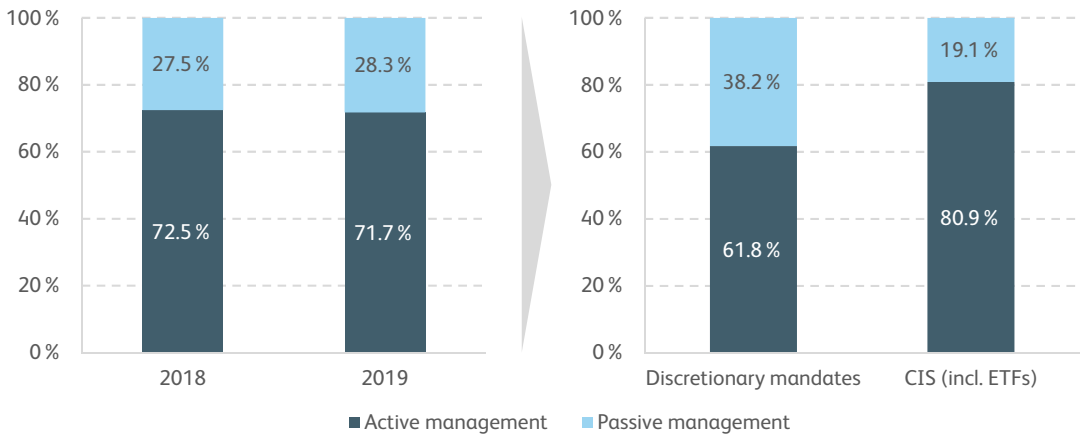


Figure 4.13: Active vs. passive management

[45] See chapter 3 for more details about the international asset management environment.
[46] The stamp duty for buying foreign domiciled index funds is 0.15 percent on turnover.

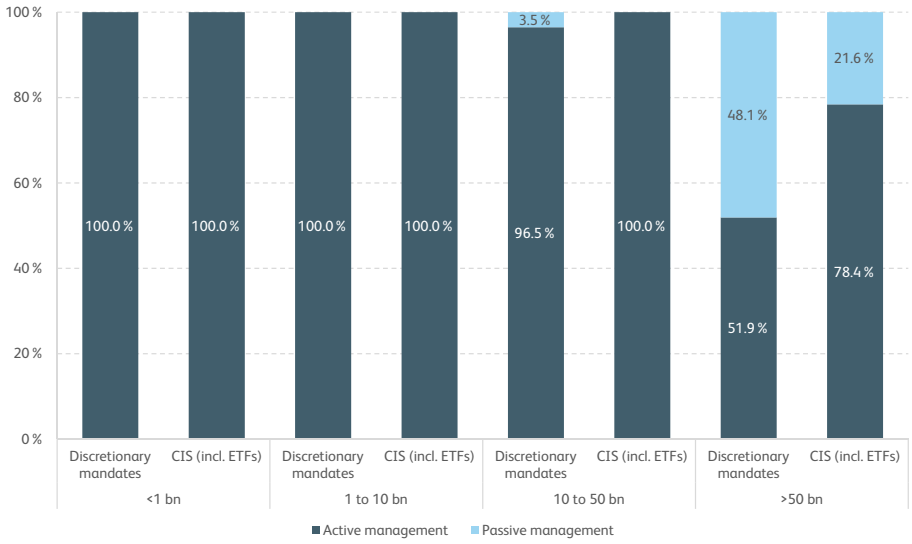


Figure 4.14: Active vs. passive management and size of the asset manager

With respect to size, figure 4.14 shows that all surveyed asset managers with AuM below CHF 10 billion follow an active management approach. This is consistent with the finding that smaller asset management firms have a larger exposure to alternative asset classes, which are very often based on an active portfolio management approach. In contrast, the largest asset management firms (AuM > CHF 50 billion) invest almost half (48.1%) of the AuM of discretionary mandates passively and about 20 percent of the CIS incl. ETFs are allocated to passive strategies. This is evidence that passively managed CIS are only offered by the largest asset management firms due to their greater scale required to compete in this market segment.

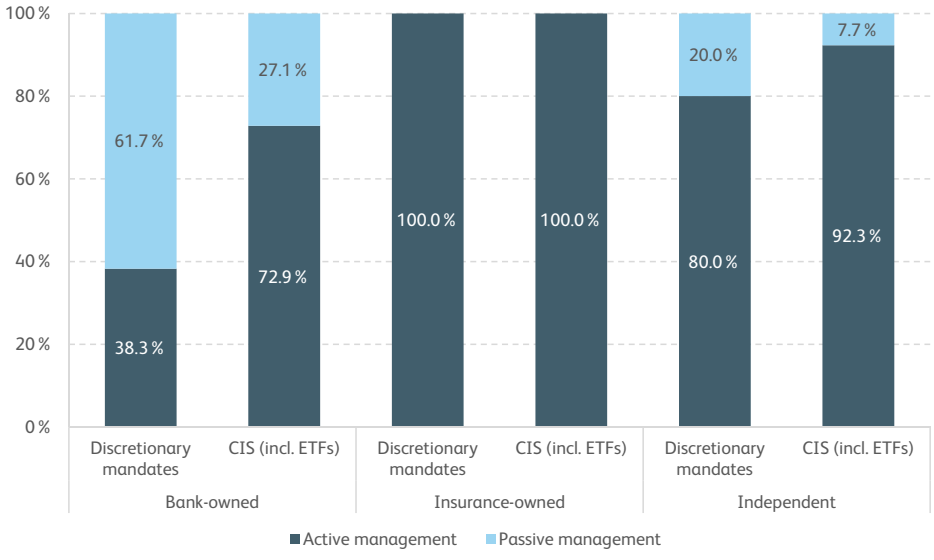


Figure 4.15: Active vs. passive management and ownership of the asset manager

		Size (AuM)				Ownership		
	Aggregate (N=58)	< 1 billion (N=21)	1 to 10 billion (N=17)	10 to 50 billion (N=9)	> 50 billion (N=11)	Bank-owned (N=11)	Insu-rance-owned (N=5)	Indepen-dent (N=42)
CIS	98.3	100.0	100.0	88.9	100.0	100.0	80.0	100.0
ETF	10.3	0.0	5.9	22.2	27.3	36.4	0.0	4.8
Discretionary Mandate	81.0	57.1	88.2	100.0	100.0	100.0	100.0	73.8

Table 4.2: Services offered by Swiss-based asset managers, in percentage. Note: Not all surveyed asset management firms provided information about their AuM (Size) managed in Switzerland

With respect to ownership, bank-owned asset managers are the largest providers of passively managed investment solutions. Our data indicate that about 60 percent of the AuM in discretionary mandates and 27 percent of the CIS incl. ETFs are managed based on a passive approach. Bank-owned asset managers are very often among the largest asset management firms in Switzerland, which is consistent with the previous finding that these asset managers allocate a larger fraction of their AuM to passive strategies. For independent asset management firms about 20 percent of the AuM managed in the form of discretionary mandates and about 8 percent of the CIS are passively managed, while insurance-owned asset managers that provided corresponding data indicate to manage all AuM actively (see figure 4.15).

Clients of asset managers very often use a combination of investment funds and discretionary mandates for their investments. Table 4.2 provides an overview of the services offered to clients by Swiss-based asset managers. Almost all surveyed asset management firms independent of their size and ownership offer collective investment schemes as investment solutions to their clients. Moreover, 81 percent of asset management companies manage their client's assets in the form of discretionary mandates. However, there is substantial variation with respect to size and ownership. While all large (AuM > CHF 10 bn) asset managers offer discretionary mandates, only 57 percent of the small asset management companies and 74 percent of the independent asset managers provide this service. Finally, table 4.2 shows that exchange traded

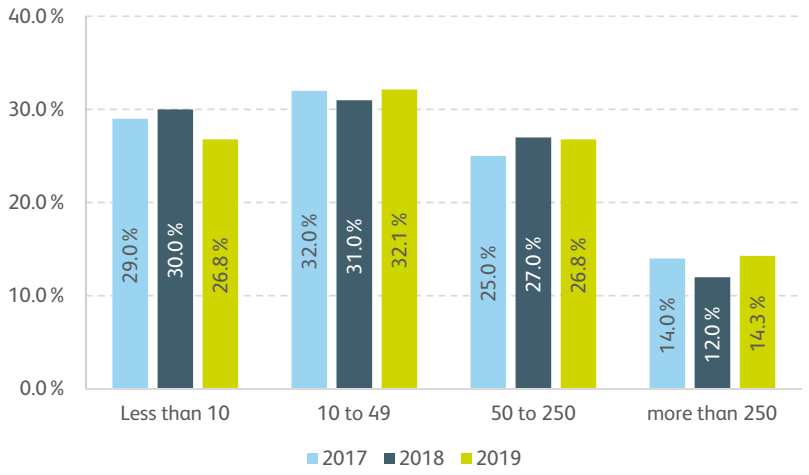


Figure 4.16: Proportion of asset management companies by employees in Switzerland (N_{2019}=56, N_{2018}=67, N_{2017}=56)

funds (ETFs) are offered by a relatively small fraction of asset management firms. Not surprisingly due to their size, bank-owned asset managers are the largest provider of these investment vehicles (36 %).

Qualified employees are a key resource in asset management as illustrated in subsection 2.3.2 of this study. Figure 4.16 shows that over 85 percent of the asset management companies participating in this survey employ no more than 250 people, measured in full-time equivalents. This implies the majority of asset management firms are small and medium-sized enterprises (SMEs)[47].

The number of FTEs is larger in insurance and bank-owned asset management firms where all companies surveyed have more than 50 employees. For independent asset managers only about 19 percent have a workforce that exceeds this threshold. More precisely, only 2 per cent of independent asset management companies employ more than 250 people, while this is the case for 20 per cent of the asset managers owned by insurance companies and for 60 per cent of the asset management companies owned by banks.The average Swiss-based asset management firm employs about 164 people while the median number of FTEs is 31. Our survey data indicate that about 9'170 FTEs are directly employed in Swiss asset management. In order to obtain an estimate about the total number of employees working in the asset management industry in Switzerland we extrapolate this number proportional to the estimated AuM. Based on this approach, we estimate that around 9'970 people are directly employed by Swiss-based asset managers, which corresponds to a moderate growth in employment of 0.71 percent relative to last year's survey. This moderate growth in FTE is consistent with the expectations provided by respondents in our last year's asset management survey, where approximately 40 percent of the surveyed asset managers did expect no growth in employment and about 50 percent projected a moderate growth in their workforce in 2019. The level of direct employment is an important indicator of the contribution of an industry to the overall economy. However, from a macroeconomic perspective not only direct employment in asset management is important, indirect employment associated with related services and support functions such as accounting, auditing, custodianship, IT, legal, marketing, distribution and research needs to be considered as well (EFAMA, 2019). In this regard, estimates of the French asset management association indicate that every direct employment in asset management gives rise to 4.6 FTE jobs in related services (AFG, 2011). Applying this ratio for Switzerland implies that about 45'800 people are indirectly employed in services related to asset management. Based on this assumption we estimate that the Swiss asset management industry accounts for about 55'800 jobs in total. Using the same methodology, the *European Fund and Asset Management Association* (EFAMA) estimates that total employment in the European asset management industry corresponds to approximately 610'000 FTE jobs (EFAMA, 2019). Since 2018 total employment (direct and indirect) in the Swiss asset management industry did grow by 3.1 percent which corresponds to a CAGR of 1.5 percent.

Among the asset managers (N=29) that revealed information about their expectations of future growth in FTE jobs in the Swiss asset management industry approximately 48 percent see no further growth in employment in 2020, while about 45 percent expect moderate growth in their workforce[48]. These expectations are slightly more conservative compared to the previous year's survey where more than half of the survey respondents expected moderate growth in the industry. This assessment is consistent with the survey results of the *AMP Swiss Asset Managers Survey H1/2020* where about 60 percent of the respondents predict their overall headcount to stay at the current level and only 13 percent expect their company to increase the number of employees over the next 12 months (AMP, 2020).

In this part of our analysis, we aim to provide a few deeper insights into the Swiss asset management industry by providing aggregate information for several key performance indicators (KPI). These indicators

[47] In Switzerland 99 percent of the companies are SMEs, which employ about two-thirds of the workforce (Federal Statistical Office, 2019e).

[48] Note: The data collection started on the onset of the COVID-19 lockdown in Switzerland, which could have affected respondents' expectations.

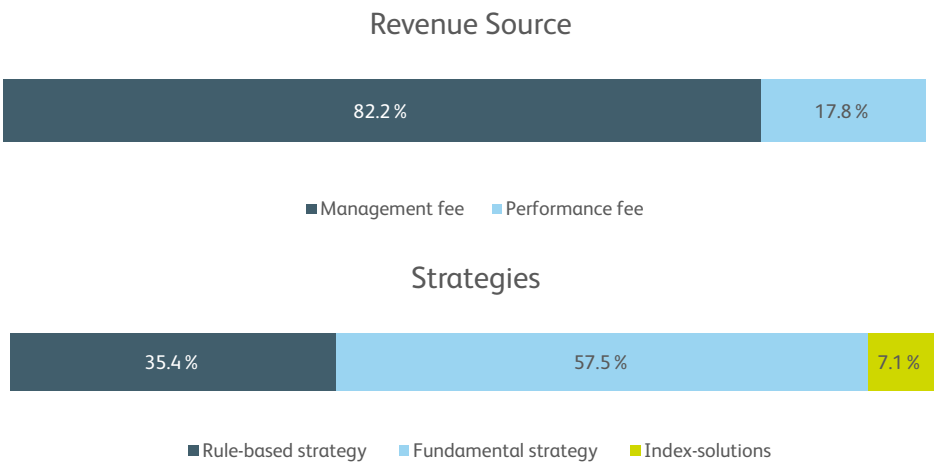


Figure 4.17: Revenue shares

are related to revenues, costs and profitability. Of all survey respondents (N=41) that made available quantitative data, 24 firms (59%) provided detailed information for this part of the study. These asset managers are of various size with respect to AuM and include bank-, insurance-owned and independent asset management firms. However, not all 24 firms provided information for all the surveyed KPIs. Figure 4.17 gives an overview of the way in which asset managers generate revenues as well as the profit share of the individual asset classes. Our data show that on average 82 percent of the revenues are achieved through management fees and only 18 percent by charging a performance fee. With respect to investment strategies or investment styles, on average the largest revenue share is due to fundamental strategies[49] (57.5%), followed by rule-based strategies[50] (35.4%) and index-solutions[51] (7.1%).

Another important aspect in this part of the analysis is related to profitability and cost-efficiency. For that purpose, we rely, as illustrated in figure 4.18, on the widely used industry measures profit margin and cost-income ratio (CIR).

Based on our survey data the median[52] profit margin is estimated to be 19.5 bps of AuM and the median cost-income ratio is 64.5 percent. In comparison,

[49] **Fundamental strategy:** Assessment of a firm's intrinsic value by examining related economic and financial factors with the goal to see whether a security is undervalued or overvalued compared to its current price. Fundamental strategies may be influenced by an asset manager's opinion to a greater degree.

[50] **Rule-based strategy:** An investment strategy based on various pre-determined investment rules. Its investment approach is systematic and research driven. Quantitative strategies (incl. Algorithms, Machine Learning etc.) would be an active example of rule-based investing.

[51] **Index-solutions:** Index funds pursue a passive investment style with the aim of reflecting the return and risk characteristics of a benchmark index as accurately as possible. The investor thus participates in the performance of the respective benchmark index. In contrast to ETFs, the subscription and redemption of units in index funds are fully exempt from Swiss stamp duty.

[52] Due to the small sample size of surveyed asset managers that provided data about their profitability and costs we report median values to mitigate the impact of potential outliers.

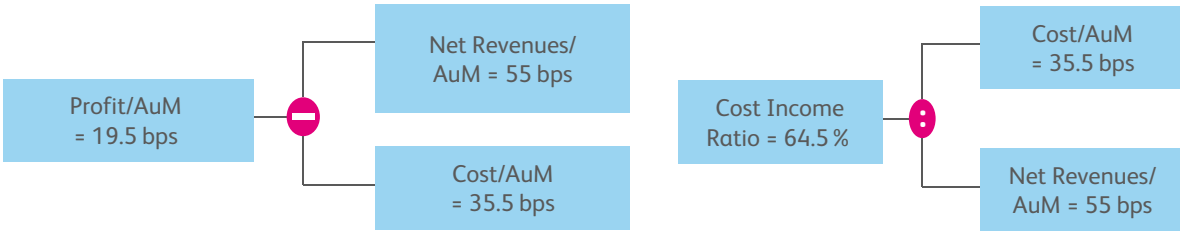


Figure 4.18: Profit margin and cost-income ratio (median values, based on a sample of N=15)

data collected by the consultancy firm *zeb*, for their 2019 European Asset Management Study[53], show that the average profit margin for European asset managers is about 10 bps while the CIR is estimated to be 67 percent (zeb, 2019a). Survey data of *McKinsey* for asset managers in Western Europe reveal an average profit margin of about 12.5 bps and a cost-income ratio of 64 percent (McKinsey, 2019) over the 2013 to 2018 period. Relative to these data our estimates imply that Swiss-based asset managers tend to be more profitable and have a comparable or even slightly higher cost-efficiency. The higher profit margin of Swiss-based asset managers could possibly be explained by the relatively large share of alternative investments, which offer higher margins compared to core asset classes. Applying the estimated median revenue margin of 55 bps to the CHF 2'519 billion AuM managed in Switzerland (production view) implies a net revenue pool of about CHF 13.85 billion. However, it is important to note that these conclusions need to be considered with care because the data sample is rather small (N=15) and not all surveyed asset managers provided relevant data. Nevertheless, our estimates provide some first insights with respect to the business performance of Swiss-based asset management firms.

[53] The data collected by *zeb* refer to the year 2017.

4.4. Sentiment Analysis of Asset Management Companies in Switzerland

In the context of this sentiment analysis, we provide some insights into the intensity of selected challenges posed to Swiss-based asset management firms. Moreover, we evaluate where asset managers see potential and opportunities for their business. The sentiment analysis follows the methodology and approach outlined in section 1.4. For both sentiment questionnaires, asset managers were asked to evaluate each of the corresponding challenges and opportunities on a scale from 1 (not pressing challenge, not important opportunity) to 10 (extremely pressing challenge, extremely important opportunity). The results of the sentiment survey are discussed in the next two subchapters.

4.4.1. Challenges for Asset Management

Figure 4.19 illustrates the average results of the sentiment survey with respect to challenges faced by asset managers operating in Switzerland. For comparison purposes, the results of the 2018 and 2019 survey are depicted as well.

The most significant change compared to the results of the 2018 and 2019 survey is that regulation is no longer seen as the most pressing challenge. On an aggregated level with an average score of 7.0, finding customers is now considered the most important challenge among Swiss-based asset management firms, followed by regulation (6.8) and competition (6.6), the availability of skilled staff or experienced managers (6.1), the cost of production or labor (5.3) and access to financing (2.8). A year-on-year comparison reveals that the relative importance of all challenges increased, except for regulation which decreased by 0.4 units. A potential explanation for these lower regulatory concerns might be that with FinSA and FinIA (see subchapter 2.1) a new regulatory framework entered into force on January 1, 2020.

As illustrated above the two most pressing challenges are finding customers and competition. This development is not a surprise since these two challenges have been among the top three industry challenges for the third consecutive year. The domestic market in Switzerland is limited in size and the competition in the industry is global and very intense. A direct implication for a mature and competitive product market that is not supply constrained, is that prices tend to

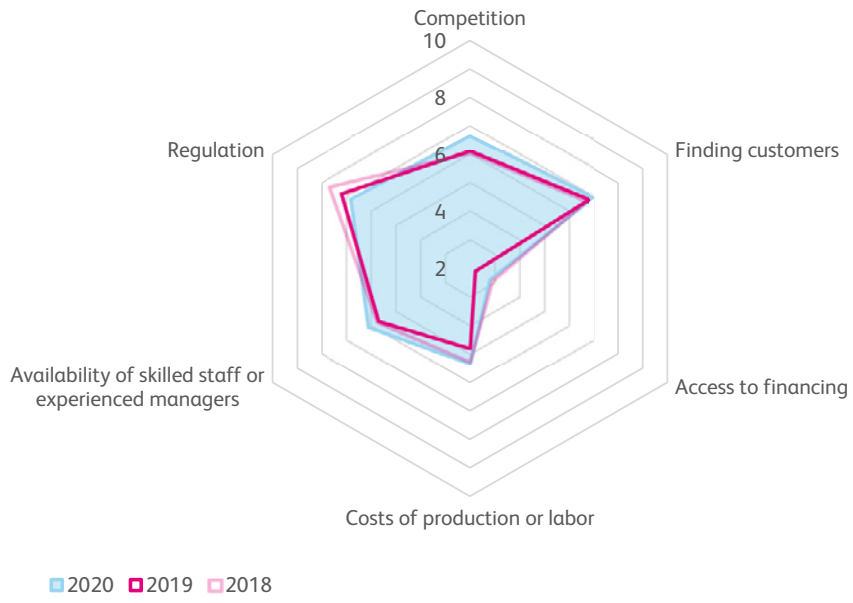


Figure 4.19: Challenges for asset management companies (N_{2020}=57, N_{2019}=67, N_{2018}=58)

move down. In this context, a recent survey by *Deloitte* among major European asset managers reveals that fee pressure is evaluated as the biggest distribution challenge (Deloitte, 2019). In order to face declining fees, asset managers need to develop new growth opportunities like ESG products, alternative asset classes or growing their customer base by expanding to new markets and geographies.

European asset managers see a high potential for growth in the next three years in Asia-Pacific and some Latin American countries, whereby Asia remains the most attractive region (Deloitte, 2019). As discussed in chapter 2.1, compliance with major international regulatory standards is a prerequisite for international market access. Availability of skilled staff and experienced managers is another challenge that gained importance on a year-on-year basis. This implies that Swiss-based asset management firms have a high demand for qualified employees, which corroborates the view that access to a skilled labor force is important to keep a competitive edge in the asset management industry. In particular, access to labor from abroad could alleviate the potential mismatch of supply and demand of skilled labor domestically. As in previous sentiment surveys, costs of production of labor (5.3) and access to financing (2.8) are identified as the least pressing challenges in the industry. Since asset management services do not involve own balance sheet transaction, capital requirements are substantially lower compared to the insurance and banking sector. To obtain a more differentiated view how asset managers in Switzerland evaluate challenges in the industry we analyze to which extent the surveyed challenges depend on firm size measured by AuM and ownership (independent, insurance-owned, bank-owned).

Figure 4.20: Challenges faced by asset management firms in Switzerland relative to their size (AuM) and ownership

Figure 4.20 illustrates the average scores of challenges perceived in the asset management industry attributed to size and ownership[54]. There is a consensus among asset managers of different size and ownership structure that finding customers and regulation are evaluated as very pressing challenges while access to financing is unanimously named the least pressing challenge. In both categorizations, the largest dispersion in average scores is observed with respect to competition. Smaller asset management firms evaluate competition as less intense, while larger asset managers perceive competition as substantially more pressing. With respect to ownership, insurance- and bank-owned asset managers see competition as a more important challenge relative to independent asset management firms. A potential explanation for these observations might be that smaller asset management firms and independent asset managers tend to operate more often in a niche market. In such an environment, competition might not be experienced as intense, but at the same time the market potential for the offered services and products is not large enough such that finding customers is still perceived as a pressing challenge. Moreover, larger firms have a more global focus, which implies these firms are facing a global competition. Two further challenges, which exhibit a relatively wide dispersion of average scores, are cost of production or labor and the availability of skilled staff or experienced managers. While larger asset management firms and bank-owned asset managers put relatively more weight on the challenge of attracting skilled staff, smaller and independent asset managers appear to be less affected by this issue. A similar pattern can be observed with respect to cost of production or labor.

Overall, the challenges faced by Swiss-based asset management firms are qualitatively similar to the results from the 2019 survey. However, in this years' survey, finding customers was identified as the most pressing challenge followed by regulation and competition. Moreover, the newly implemented segmentation of surveyed asset managers in size and ownership categories has allowed to gain further insights and to obtain a more comprehensive understanding to what extent these challenges vary among the dimension size and ownership.

4.4.2. Opportunities for Asset Management

The aggregated results from the second part of the sentiment analysis are depicted in figure 4.21, which shows how various opportunities in the industry are ranked on a scale from 1 (not important) to 10 (extremely important) among Swiss-based asset management firms. The figure contains the average scores of all surveyed asset managers.

As in the 2019 survey, focusing on product niche – specialization (7.7) and sustainable investments (7.6) are identified as the most promising strategies for the Swiss asset management industry. The biggest year-on-year difference in the rating is also related to these two categories with an increase in the average score by 1.0 and 0.8 units, respectively. The biggest year-on-year difference in the rating is related to sustainable investments with an increase of 1.0 unit. This result shows that sustainable investments. together with specialization, is not only assessed among the most promising strategies for the future, but has gained in importance compared to the previous year. In this regard, the most recent Swiss asset managers' survey H1/2020 conducted by *AMP* shows that asset managers identify a persistently strong client demand as well as increasing regulatory requirements as key drivers for the strong growth in sustainable investments. Moreover, the survey reveals that product innovation by asset managers is also driving growth in this segment. In addition, a year-on-year comparison reveals that product innovation (5.9) did gain two positions and is now ranked as the third most important opportunity in order to stay successful in the industry, followed by fund distribution platforms (5.8), AI and data analytics (5.7), and private market investments (5.2). Moreover, the sentiment analysis revealed that focus on scale and cost leadership (4.9) as well as consolidation (4.1) in the form of mergers & acquisitions are only of minor importance as strategies for the future. The lowest scores in this part of the sentiment survey are given to robo-advisory solutions (2.9) and passive investments (2.5), which implies Swiss-based asset management companies see little benefit in them for the future. On a year-on-year basis the largest decrease in average scores is found for robo-advisory solutions (-0.4 units). The decline in relative importance of robo-advisors and the overall low ranking score supports the view discussed in section 2.4.3 of the PEST analysis that private banks and wealth man-

[54] It is important to note, that the sample size of some segments is rather small (see Figure 4.3) which implies that the reported average scores are sensitive and must be interpreted with some caution.

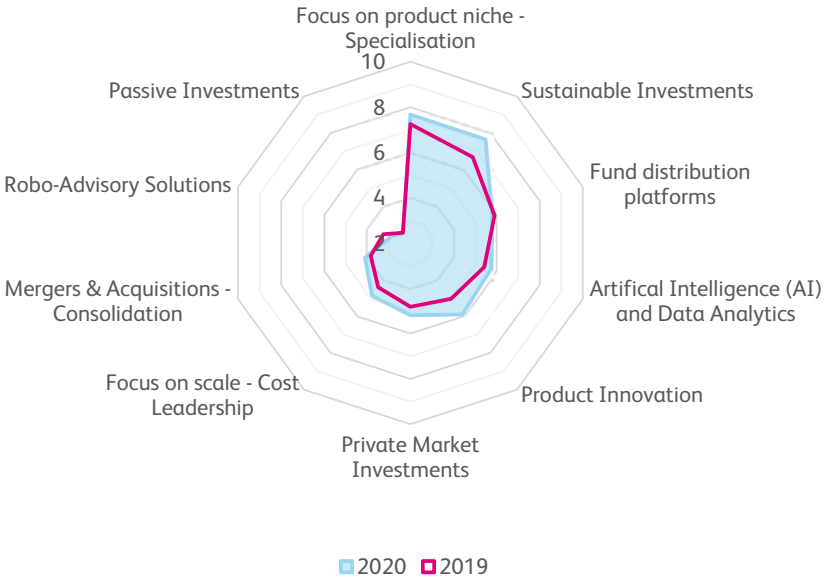


Figure 4.21: Opportunities for the asset management industry (N_{2020}=57, N_{2019}=67)

agers dominate the distribution of asset management products in Switzerland. In this regard, robo-advisory solutions are currently being evaluated as an additional distribution channel of minor importance for the asset management industry in Switzerland.

To obtain a more comprehensive understanding of how Swiss-based asset management firms evaluate opportunities in the industry, we provide some deeper insights to which extent the surveyed opportunities vary with respect to firm size and ownership[55]. Figure 4.22 shows that sustainable investment is seen as the most important opportunity by large asset management firms (> CHF 10 bn) while small asset managers (< CHF 10 bn in AuM) see the biggest potential for their business to gain a competitive advantage as

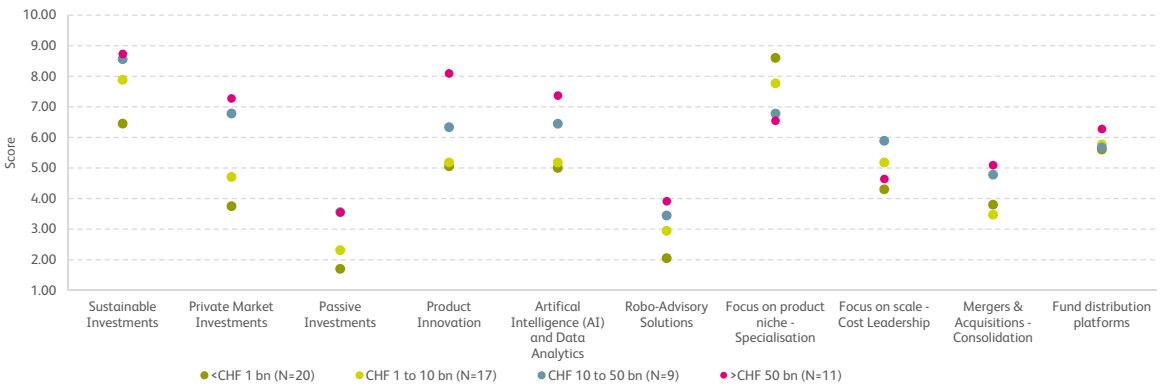


Figure 4.22: Opportunities evaluated by Swiss-based asset management companies relative to their size measued by AuM

[55] The segmentation into size and ownership is in accordance with Figure 4.2.

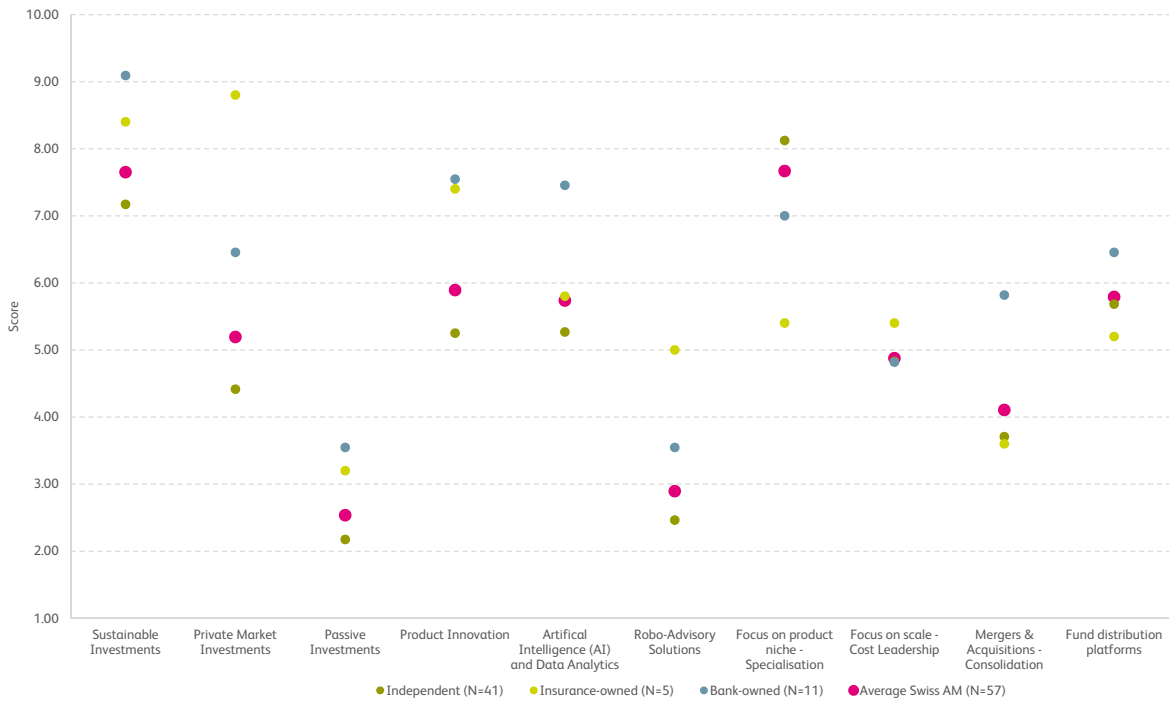


Figure 4.23: Opportunities evaluated by Swiss-based asset management companies relative to ownership

niche providers. Moreover, the largest asset management companies (> CHF 50 bn in AuM) have the highest scores with respect to all opportunities except for the focus on specialization and on cost leadership. Overall, the dispersion in evaluating opportunities is rather wide among the various size categories and reveals that asset management firms of different size evaluate the potential of strategies for the future differently. Another key finding is that passive investments and robo-advisory solutions are ranked lowest, independent of the respondents' size. In particular, the smallest asset management firms in the survey see no potential in neither of these two opportunities.

Figure 4.23 provides deeper insights into how the various opportunities for the Swiss asset management industry are assessed in relation to ownership and to the average score obtained for all surveyed asset management companies. Sustainable investment is ranked highest among bank-owned asset managers; independent asset managers see the most promising strategy in focusing on a product niche while insurance-owned asset management firms rate private market investments as the most important opportunity. However, the dispersion in assessing opportunities is quite large in the ownership dimension, but there seems to be a consensus among surveyed asset managers that passive investments are not considered as a potential opportunity for the Swiss asset management industry. Moreover, the analysis reveals that bank-owned asset management firms rate sustainable investments, product innovation, AI/Data Analytics, fund distribution platforms and passive investments higher than average and attribute more potential to consolidation in the form of mergers & acquisitions relative to independent and insurance-owned asset managers. The fact that passive investing seems to be relatively more important for bank-owned asset managers can be aligned with the finding that mergers & acquisitions are more important for these firms in the current survey. Passive models require, due to lower margins, a certain scale in order to be operated profitable. Only insurance-owned asset managers see some potential for robo-advisory solutions within their asset management unit while independent and bank-owned firms are more skeptical and rate this opportunity as of minor importance.

5. Active versus Passive Investing – A Differentiated View on a Heated Debate

By Thomas Ankenbrand, Jürg Fausch & Moreno Frigg, Institute of Financial Services Zug IFZ

5.1. Introduction

The debate whether and to what extent an active investment approach offers added value for investors has been ongoing for several decades. For example, among Swiss-based asset managers about two thirds of the AuM are managed actively[56]. However, many academic researchers rarely find evidence that active investing is outperforming the benchmark persistently. Very often these findings are interpreted as evidence that active management does not add value and a passive approach should be preferred. However, these conclusions must be put into context and a careful interpretation of the arguments is required. This means that this debate is supposed to be approached in a multi-layered way as certain arguments may otherwise be overlooked or misinterpreted.

The complexity of this debate is addressed by means of a stylized investment process. This allows to elaborate in which part of the process the aforementioned debate is mainly taking place. Furthermore, in order to determine where active management might be favorable, the complexity of research findings are being decomposed and put into a differentiated context. Although there are many different factors such as performance, taxes, behavioral finance etc. that likely have an impact on the decision whether pursuing an active or passive investment approach, the primary focus of this chapter lies on the performance dimension. The review of the most recent literature suggests that the conventional wisdom on the value of active management is too negative and that active managers have some sort of skill and tend to make value-added decisions.

The remainder of this chapter is structured as follows: First, a short overview of the stylized investment process is given. Second, a literature review is conducted with respect to the different parts of the investment process. Finally, the arguments are synthesized to illustrate in which context an active approach may indeed be beneficial.

5.2. Stylized Investment Process

Within the key activities in investment management (see section 1.3), a stylized investment process is defined. The process itself and its influences are illustrated in figure 5.1. According to Franzen and Schäfer (2018), the investment process is heterogeneous and can vary considerably depending upon investor type. The authors argue that the process for private investors is in general significantly less complex than the one for institutional investors (pension funds, insurance companies etc.) that are supervised by financial authorities. This is partly due to several laws and guidelines that these institutional investors must comply with.[57] Furthermore, within this group of investors, several individuals are involved in the process.

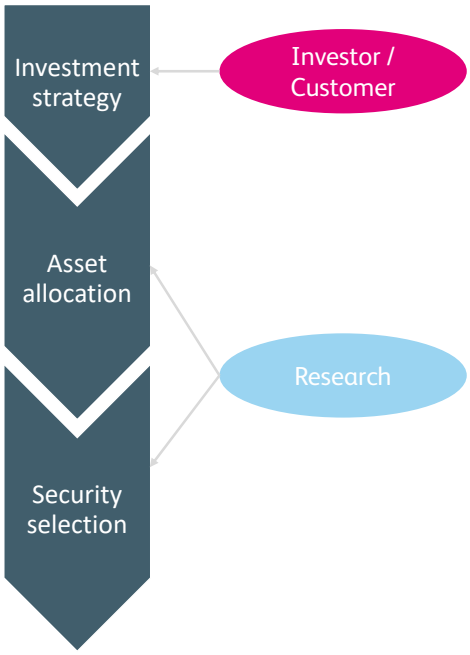


Figure 5.1: Stylized Investment Process

[56] See section 4.3 of this study for more details.
[57] See subsection 2.1.3 for an overview of the regulatory framework.

The definition of the investment strategy is the first step of the stylized investment process. Whereas in the case of a private investor the investor and the advisor jointly define the investment strategy, the definition of the strategy for an institutional investor is more complex. As mentioned before, this higher complexity results, amongst others, from the various parties involved. Franzen and Schäfer (2018) hereby mention the management and the investment committee of the investor as well as possible external advisors as involved parties. Although the level of complexity in defining the investment strategy is different, in both cases the investor's needs and preferences are of major importance. Examples of these constraints may include the risk profile, investment horizon, liabilities as well as general investment objectives.

Once the investment strategy has been defined, the next major step focuses on the asset allocation. In this part of the process, the allocation to several asset classes such as equities, bonds, real assets or various alternative assets is specified as well as the proportional distribution across these classes (Pedersen, 2015; Franzen and Schäfer, 2018). Both decisions are strongly influenced by long-term market expectations such as interest rates, inflation or asset returns provided by internal or external research. In most cases, the allocated proportions are not fixed, but rather expressed in terms of a range. Furthermore, these ranges may vary, since the market is subject to changes over time. As a result, the asset allocation is reviewed at regular intervals and adjusted if required (Franzen and Schäfer, 2018). Within the asset allocation process, a further step involves a tactical decision by specifying whether the strategy should be implemented based on an active or passive investment management approach or a combination of both. These distinct investment approaches can be further separated. In the context of active investing, approaches like a constant rebalanced asset allocation, a liquidity-based asset allocation, a risk-based asset allocation or risk parity investing can be applied (Pedersen, 2015). Franzen and Schäfer (2018) point out that the investment approach is market dependent. As a rule, actively managed strategies should only be pursued for markets where a weak form of market efficiency exists[58]. The asset allocation results in a target portfolio consistent with investor's preferences and the definition of one or multiple benchmarks to evaluate the chosen investment strategy (Franzen and Schäfer, 2018).

The investment process is completed by selecting the corresponding securities. This involves deciding which securities to buy and sell in line with the investment strategy and asset allocation (Franzen and Schäfer, 2018). The decisions of buying and selling certain securities are thereby influenced by the short- to mid-term market expectations provided by research. The selection of securities is particularly important in the context of active investment strategies since an active approach has the aim to select and/or overweight securities that are likely to outperform the specified benchmark. In contrast, the aim of a passive approach is to replicate the performance of the benchmark as accurately and cost-effectively as possible (Franzen and Schäfer, 2018).

5.3. Investment Process: Practical Insights from the (Academic) Literature

5.3.1. Investment Strategy

Defining the needs and knowing investor's preferences is key to develop a tailor-made investment strategy. For private investors, the time horizon, current financial situation, and risk tolerance are important factors in understanding what risk the investor is able and willing to take. Within the time horizon dimension, a trade-off between short- and long-term goals has to be specified. In the context of the current financial situation, savings and the level of debt must be determined. Finally, the risk tolerance defines the way an investor reacts to certain, mainly adverse, market developments. This means that the level of risk tolerance defines how comfortable an investor feels in volatile market situations (Fidelity, 2020). The investment strategy needs thus to fully comply with these constraints.

For institutional investors such as pension funds or insurance companies, the existing liabilities are of major importance when defining an investment strat-

[58] The concept of efficient markets, known as the efficient market hypothesis (EMH), goes back to Fama (1970) and is discussed in further detail in subsection 5.3.3.

egy. According to the OECD (2006), the investment policy of pension funds should be consistent with the retirement income objective and thus with the corresponding liabilities. For example, the primary goal of a pension fund is to finance the plan liabilities (Stockton, 2014). Recently, the concept of liability-driven investing (LDI) gained more attention from academic researchers as well as practitioners. By dividing the balance sheet into two different parts (liabilities and matching assets & other assets and surplus) van Bragt and Kort (2011) illustrate that such an approach can lead to improved asset allocation decisions. More specifically, an LDI approach is based on the assumption that all subsequent asset allocation decisions take the effect on relevant pension plan metrics into account. In this context LDI strategies have a focus on managing interest rate risk due to the fact that interest rate risks are not compensated by a risk premium but are hedgeable. Moreover, since pension liabilities are based on present values, interest rate (discount rates) changes are thus the largest driver of liability changes (Stockton, 2014).

5.3.2. Asset Allocation

The importance of asset allocation is debated within the academic literature. As an example, Sharpe (1992) mentions that this part of the investment process is accountable for a large part of the variability in portfolio returns. More specifically, Ibbotson and Kaplan (2000) provide empirical evidence that about 90 percent of the variability in fund returns over time is explained by asset allocation. Furthermore, they show that the asset-allocation policy accounts for 40 percent of the cross-sectional variation of returns among funds. In a more recent study, however, Xiong et al. (2010) show that the impact of a fund's specific asset allocation policy on performance is approximately the same as with active management. Based on this insight Ibbotson (2010) concludes that although asset allocation is highly important, the return variation caused by a specific asset allocation mix is not even close to 90 percent, since most of the return variation is attributed to market movements.

A proper asset allocation results in a diversified portfolio as suggested by modern portfolio theory (Markowitz, 1952). However, the traditional mean-variance optimization algorithm can lead to an optimal portfolio consisting of extreme and counterintuitive weights (corner solutions). A complementary asset allocation model has been suggested by Black and Litterman (1992), which allows to combine the market equilibrium with additional market views of the investor. Recently, the approach of risk parity has gained attention among academic researchers and practitioners. The underlying concept of the risk parity approach is to equally distribute the overall risk (portfolio volatility) in an asset allocation among the invested asset classes to ensure that each asset class contributes the same amount of risk to the portfolio (Qian, 2005; Maillard, Roncalli and Teiletche, 2010; Anderson, Bianchi and Goldberg, 2012; Asness, Frazzini and Pedersen, 2012). A recent study by Hummel (2018) for the period from 2001 to 2018 indicates that for Swiss pension funds, a strategy based on the risk parity approach yields a 0.57 percent higher return relative to the corresponding benchmark (Credit Suisse Pension Fund Index). However, in terms of statistical significance, the return of the risk parity portfolio does not differ from the index return. Considering risk-adjusted returns, according to the author the risk parity and the minimum variance approach have been evaluated as the best performing strategies.

5.3.3. Efficient Market Hypothesis (EMH)

A fundamental principle in finance is the efficient market hypothesis (EMH) proposed by Fama (1970). The hypothesis is based on three forms (weak-, semi-strong- and strong) each consisting of a different set of information. According to Fama (1970), within the weak form of market efficiency asset prices reflect all information regarding historical prices or return sequences. In addition, the semi-strong form contains all publicly available information while the strong form states that asset prices reflect all available, relevant information (public and private). After the publication of Fama's paper in 1970, a controversial discussion about market efficiency took place. Jensen (1978) formulated a weaker version of the hypothesis building on the argument that prices are just reflecting information to the point where the marginal benefits of acting on information is not higher than the marginal costs of collecting the information. A similar argument was proposed by Grossmann and Stiglitz (1980) as they point out that an informationally efficient market is impossible due to the costs of information. They argue that investors will only have an incentive to gather and uncover new information if such activity results in higher investment returns. These findings led Fama (1991) to revise his initial position on market efficiency, by concluding that there are indeed positive information and trading costs and

therefore the extreme version of market efficiency does not hold. In view of this findings, active and passive investment approaches can be evaluated. Advocates of the efficient market hypothesis believe that active management does not provide an added value and is unlikely to justify the associated costs. Therefore, they suggest a passive investment approach that makes no attempt to beat the chosen benchmark. However, it is important to note that the degree of efficiency differs across various regions and markets. For the Swiss stock market, Ammann and Steiner (2009) argue that there are probably differences of efficiency. For example, the efficiency of large-caps seems to be high, whereas in the small and mid-cap-market the efficiency is assumed to be much lower. This might be attributable to the lower analyst coverage of small- and mid-cap relative to large-cap stocks. In this regard an active investment approach might be sensible. Further insights on this issue are provided in subsection 5.3.4.

5.3.4. Security Selection

As described in section 5.2, the definition of the investment strategy and asset allocation results in a target portfolio. Furthermore, a decision whether to follow an active, passive or combined investment management approach has been taken. Based on the investment strategy and asset allocation, the security selection determines which specific securities are included in the portfolio. In this regard investment funds are frequently used as investment vehicle. For example, in Switzerland more than CHF 1'000 billion are managed in the form of collective investments schemes[59]. Due to the importance of equity as an asset class[60], equity funds are of particular interest for practitioners and academics alike. Against this background, academic research tends to focus whether actively managed equity funds out- or underperform their benchmark. Therefore, empirical findings for equity funds are well documented and an established econometric methodology can be used to measure the performance, the persistence in performance and the skill of equity fund managers. Thus, the focus of this chapter is on research findings regarding equity funds.

When analyzing the findings of the academic literature, the common consensus seems to be that actively managed equity funds fail to outperform their benchmark. Despite this fact, the issue must be analyzed in a more subtle manner. Various studies use slightly different methods, different time periods and examine different regions.

In the remainder of this subsection, which is divided into three parts, a review of the literature is given. In the first part, a review of the findings concerning the performance of equity funds is carried out. The second part addresses the findings of the persistence in performance of equity funds. Finally, evidence concerning the luck versus skill debate are summarized. Each of the three parts start with a focus on the US market, followed by providing an international perspective and finally turning to the Swiss evidence.

5.3.4.1. The Performance of Actively Managed Equity Funds

The performance of actively managed mutual funds is a well discussed topic in academic research. Most of the findings are covering the US market. An important theoretical contribution in this field is the model of Berk and Green (2004). In their model, the authors explain that in a competitive fund market, a fund is able to achieve a positive risk-adjusted excess return (alpha) before costs. However, as long as skilled fund managers achieve abnormal performance, they will attract new funds until the costs and complexity related to managing these extra funds drive alphas down to zero. This implies that manager skill will not show up in superior returns, but rather in the amount of assets under management. It follows that even if managers are skilled, positive alphas are a temporary phenomenon.

Although the theoretical model of Berk and Green (2004) is intuitively understandable, certain empirical studies illustrate that most actively managed funds are not able to realize a positive alpha. An early study by Malkiel (1995) shows that within the examined period (1971–1991) just a small number of funds can significantly outperform (gross and net) the bench-

[59] See market sizing discussed in section 4.2.

[60] Estimates of the Worldbank indicate that the global stock market capitalization amounts to about USD 43 trillion by the end of 2019 (Worldbank, 2020). In terms of asset allocation, Swiss pension funds for example allocate about one third into equity (Swisscanto, 2019).

mark. A similar conclusion is drawn in the paper of Carhart (1997). While examining the period from 1962 to 1993, the author concludes that just the top decile of funds was able to realize a positive alpha. Busse, Goyal and Wahal (2010) studied the performance of equity funds for institutional investors between 1991 and 2008. On average, the funds in the sample were not able to achieve a positive alpha. The authors conclude that on average these returns were not statistically different from zero. Lastly, Fama and French (2010) also revised the statement of Berk and Green (2004) and conclude that most of the funds are not able to achieve a high-enough alpha to cover their costs. Since many empirical studies showed similar results, the theoretical implication of the Berk and Green (2004) model seems empirically not to hold.

In many empirical studies a positive alpha is achieved mostly by a few superior funds. From a practical perspective, it is interesting to understand the determinants that explain fund performance. One metric that seems to have a positive impact on performance is the degree of activity. Cremers and Petajisto (2009) introduced a new metric, called active share, which measures how much the portfolio holdings of the respective fund manager deviate from the benchmark. The authors conclude that within the examined period from 1980 to 2003, a higher degree of activity was associated with a higher likelihood to outperform the benchmark. Another determinant for outperformance might be the age of the fund. Karoui and Meier (2009) show that within the period from 1991 to 2005, newly launched funds managed to achieve a higher alpha compared to existing funds. However, they also report that the portfolios of newer funds tend to be less diversified and therefore hold a higher fraction of unsystematic risk. Consistent with the Berk and Green (2004) model, Chen, et al. (2004) show that fund size seems to influence fund performance. The authors illustrate that fund returns are declining with lagged fund size, meaning the bigger the fund, the worse the performance. This particularly applies to small-cap funds. As a possible explanation for the fact that economies of scale erode fund performance, the authors name the interaction of liquidity and organizational diseconomies. A further metric that impacts the alpha of equity mutual funds may be the manager style (value/growth and size). However, in this context, for the sample period from 1965 to 1998, Davis (2001) finds no manger style that generates positive alpha. Furthermore, he provides evidence that value funds exhibit the worst performance, with a negative alpha of about 2.75 percent per year. More recently, investors tend to value sustainability (for further detail see subsection 2.3.1). Hartzmark and Sussmann (2019) examined if sustainability has an impact on fund performance. Although funds rated as sustainable had large asset inflows, the performance of these funds did not differ from the performance of non-sustainable rated funds.

In an international context several studies regarding the performance were published, covering different regions as well as different sample periods. In summary, the findings are similar to the USA, since most authors do not find evidence that actively managed equity funds are able to outperform the benchmark. This is especially true for later periods, as multiple authors reported that before 2001, equity funds were able to realize a positive alpha in certain markets (Dahlquist, Engström and Söderlind, 2000; Cuthbertson, Nitzsche and O'Sullivan, 2008; Flam and Vestman, 2017). Although positive alphas of equity funds seem to be rather scarce after 2001, various studies have identified certain fund characteristics that may positively influence the performance, such as fund affiliation, fund size and fund activity. For Europe, Clare (2020) reports that funds managed by boutique asset management companies[61] tend to perform better than funds managed by large asset management groups. While Ferreira et al. (2013) point out that for funds in the USA the performance deteriorates the larger the fund is, the connection is contrary for funds in all other examined regions. An opposite finding is proposed by Dahlquist, Engström and Söderlind (2000). For Sweden, they report that the fund size is negatively related with performance. Lastly, the paper published by Cremers et al. (2016) investigated the activity of actively managed funds. They report that a higher degree of activity is associated with a

[61] Clare (2020) identifies boutique asset managers by the following criteria: the principals held at least 10% of the equity in the firm; investment management was the firm's sole value proposition; the firm's AuM was less than USD 100bn; the firm was not offering exclusively smart beta or fund of fund strategies.

better performance. However, they find that in high-competition markets actively managed funds seem to be truly active, while in low competition markets there exists a significant number of funds that pretend to be actively managed but rather follow a passive investment approach.

Turning to the market in Switzerland, the literature regarding the topic is relatively scarce. Since 2001, three papers were published. The papers cover the time-period from 1977 to 2007 and include between 24 and 160 funds. The conclusion drawn by the different authors are very similar, as all of them report that Swiss equity funds seem to struggle achieving statistically significant positive alphas. Similar to international papers, the performance of the funds tends to be better in an early period (January 1989 – December 1999) and turning worse after 1999 (Ammann and Steiner, 2009). As an exception, Ammann and Steiner (2009) found that over the whole analyzed period (January 1989 to March 2007), small- and mid-cap funds are able to achieve a significant positive alpha of two percent per year. As a possible reason for the superior performance of these funds, the authors mentioned the lower market efficiency in this segment (see subsection 5.3.3).

5.3.4.1. The Persistence in Performance of Actively Managed Equity Funds

After discussing the performance of actively managed equity funds, the literature regarding performance persistence is discussed next. Most empirical papers studying the persistence in equity fund performance are carried out for the US market. Although there are various studies on the topic using international data no such analysis has been explicitly conducted for Switzerland. However, as an example, Ferreira et al. (2013; 2019) consider Switzerland in a sample of 27 countries.

Regarding the US market Malkiel (1995) was among the first papers to measure the persistence in performance of US equity funds. The author finds some persistence but notes that these findings are likely to be influenced by survivorship bias and missing robustness over time. The documented persistence was present during the 1970s, but not during the 1980s. A seminal paper by Carhart (1997) finds in the sample period from 1962 to 1993 momentum in fund returns and that persistence among US winner funds is due to their exposure to the momentum factor. After using a four-factor asset pricing model, including momentum as a factor, persistence is only observed among the worst performing funds. Bottom line of Carhart's (1997) research is that funds with persistent poor performance should be avoided, that the persistence of superior performing funds is short lived, and investment costs (expense ratios, transaction costs etc.) have a direct negative impact on fund performance. Davis (2001) corroborates the findings of Carhart (1997) using a sample period from 1965 to 1998. He finds evidence that the persistence in performance is only existent in the short run, and attributable to superior performing growth funds and inferior small cap funds. These findings on short-term persistence for the top performing funds are supported by the analysis of Karoui and Meier (2009). Finally, Busse, Goyal and Wahal (2010) find only modest to little evidence of persistence when analyzing funds for institutional investors.

International evidence concerning the persistence in performance is mixed. Some studies find persistence for superior funds, persistence for inferior funds or for both. Finally, some of the authors find no persistence in fund performance at all. Regarding superior performing funds, Flam and Vestman (2017) find persistence for the Swedish equity fund market for up to two years. These findings for Sweden are confirmed by Ibert (2018) as he finds persistence that lasted for up to three years. Vidal-García et al. (2016) examined 35 markets and report performance persistence among top performing funds. Moreover, they confirm the finding that persistence seems to be a short-lived phenomenon. Cuthbertson, Nitzsche and O'Sullivan (2008) report for the UK in the sample period from 1975 to 2002 that persistence is only found among inferior performing funds. In a very recent paper, Leippold and Rueegg (2019) confirm these findings. Analyzing funds on a global scale, they find persistence in performance for inferior performing equity funds, distributed to retail customers. Finally, Pilbeam and Preston (2019) investigated the persistence in performance of Japanese equity funds. Their conclusion supports the hypothesis that persistence regarding the performance is stronger for inferior performing funds rather than for superior performing funds.

Ferreira et al. (2013) investigated the persistence in performance in 27 different countries during the sample period from 1997 to 2007. They find only persistence in performance for the US fund market. For other countries, the persistence seems to be much

weaker or nearly inexistent. Furthermore, Ferreira, et al. (2019) used a comparable dataset to measure persistence in performance with two different methodological approaches. They conclude, depending on the chosen approach, that persistence seems to exist in 15, respectively 19 out of 27 countries. According to them the performance persistence was found among superior and inferior performing funds. In conclusion, they note that persistence depends on competitiveness in the fund industry. The more competitive a market is, the more difficult it is to stay at the top and the more difficult it is to enhance performance for the funds at the lower end. Finally, Dahlquist, Engström and Söderlind (2000) examined the Swedish equity fund market during the period from 1992 to 1997. The authors find no proof for persistence in performance at all.

5.3.4.1. Luck versus Skill in the Performance of Actively Managed Equity Funds

To measure the skill of fund managers, Kosowski et al. (2006) applied a statistical approach called bootstrapping which allows to compare the realized fund alphas with simulated alphas in order to distinguish whether the realized alphas were attributable to luck or skill. The luck versus skill debate is best documented for the US market[62]. Kosowski et al. (2006) examined the US equity fund market from 1975 to 2002 and conclude that the performance of the best funds is not attributable to luck, but rather to skill of the fund managers. However, the same conclusion applies for the worst performing funds. Within these funds, the poor performance is not due to bad luck but rather to poor managerial skills. Another well-known paper regarding the application of the bootstrapping procedure is provided by Fama and French (2010). Their bootstrapping approach is a slight modification of the method used by Kosowski et al. (2006). Examining the period from 1984 to 2006, they report similar findings as Kosowski et al. (2006). Fama and French (2010) conclude that when measuring skill with net returns, a few funds demonstrate some sort of skill. Concerning gross returns, they state that the evidence is stronger for both, negative and positive skill. The metric of value added introduced by Berk and van Binsbergen (2015) provides an alternative approach to measure skill of fund managers. By using this approach, Berk and van Binsbergen (2015) conclude that the average fund manager in the USA is skilled and investors reward this expertise by allocating more capital into superior funds.

Turning to findings covering markets outside the USA, several papers covering different markets were published. For instance, Cuthbertson, Nitzsche and O'Sullivan (2008) analyzed the skill of UK equity fund managers from 1975 until 2002. Depending on the applied model, they conclude that between five and ten percent of the fund managers demonstrate skill. Regarding the market in Brazil, Laes and da Silva (2014) examined equity funds in the period from 2002 to 2012. Their analysis regarding the skill of equity fund managers revealed that some of the managers seem to possess skill. This is particularly true for large funds (in terms of AuM). In case of small- and medium-sized funds, there is little or no evidence for skilled managers. Flam and Vestman (2017) investigated the equity fund market in Sweden during the period from 1993 to 2013. Out of 124 analyzed funds, only one fund was identified where the manager demonstrated skill but nine funds possess bad skill (measured with gross returns). When analyzing the skill with net returns, no fund manager showed skill. Yang and Liu (2017) find no evidence that during the period from 2002 to 2013 equity fund managers in China possess skill. Furthermore, they show that the performance of the worst funds is not only attributable to bad luck but rather to bad skill. Finally, Pilbeam and Preston (2019) find over a rather short time period (2011 to 2016) that equity fund managers in Japan were not able to demonstrate some sort of managerial skill.

5.4. Conclusion

The insights from this differentiated view on the controversial debate about the value of active management illustrates that a broad range of arguments must be considered to determine whether an active or passive investment approach might be favourable. This chapter showed that both active and passive management have their merits. The previous analysis allows to summarize the main insights into five points.

First, it is important to note that the investment strategy and asset allocation are very important elements

[62] To the best of our knowledge, no comprehensive analysis exists for Switzerland.

in the investment process. While the investment strategy needs to be consistent with investor's preferences and investment objectives, a proper asset allocation ideally result in a diversified portfolio. Overall, implementing and maintaining an appropriate asset allocation is a fundamental requirement for long-term investment success. Second, it is shown that an active investment approach contributes to an enhanced market efficiency. This is due to the fact that active managers gather relevant information and act on it such that this information is reflected in asset prices. Third, most academic researchers find only moderate to little evidence that actively managed equity funds are able to beat the benchmark. However, this cannot be interpreted as a general statement, since certain types of equity funds seem to generate positive alpha. Among these are funds with a high degree of activity, small to mid-sized funds (in terms of AuM) and newly launched funds. Furthermore, the type of asset manager tends to have an impact on alpha. Moreover, small- and mid-cap funds were able to beat the benchmark significantly in certain markets. Fourth, it can be concluded that persistence in performance is rather short-lived and particularly existent for inferior performing funds. Fifth, various researchers provide evidence that a large part of fund managers do not demonstrate skill. However, there is some more recent research indicating that fund managers make value-added decisions and that in particular the performance of superior funds is attributable to the skill of the respective fund manager.

With this chapter, we hope that both practitioners and academics may take inspiration from this more differentiated view on the heated debate whether active or passive management is best. For practitioners our analysis provides some insights about the determinants of well-performing actively managed equity funds. For academic researchers the discussion reveals that empirical evidence for the Swiss market is rather scarce and further research is needed to get a more comprehensive understanding of the domestic market.

6. Conclusion & Outlook

The Swiss Asset Management Study gives an annual overview of the current state and various developments of the Swiss asset management industry. Based on our analysis and the findings presented in the previous chapters, we conclude with the following five statements/hypothesis.

Switzerland continues to offer good conditions for the asset management industry and asset management is important for the economy

Switzerland has a high level of political stability combined with a progressive legal regulatory framework, moderate corporate tax rates and a highly skilled labor force. Among European asset management hubs, Zurich and Geneva take the leading position with respect to offering favorable conditions for the industry. The market size of assets managed in Switzerland by banks, fund management companies, securities dealers and FINMA-supervised asset managers at the end of 2019 amounted to CHF 2'519 billion, which corresponds to a year-on-year growth of 16.5 percent. Net new asset inflows in 2019 are estimated to be almost CHF 100 billion. The assets managed in Switzerland are more than three time the size of the Swiss GDP and about 250 percent of the assets held in Swiss pensions funds. Furthermore, our estimates suggest that approximately 10'000 jobs are directly related to the asset management industry and 45'800 people are indirectly employed in services associated with asset management.

Swiss-based asset managers no longer see regulation as the most pressing challenge while specialization and sustainable investments are still evaluated as the most promising opportunities

Regulation is no longer perceived as the most pressing challenge among the surveyed asset managers in Switzerland. The sentiment analysis reveals that finding customers causes the most concerns in the industry. In this regard, to achieve further growth Swiss-based asset management firms need to offer their products and services on an international scale, since organic growth in the domestic market is rather limited. In particular, access to international markets based on equivalence are important for asset managers operating in Switzerland. The largest opportunities for the asset management industry in Switzerland are seen in product specialization and sustainable investments and the least opportunities in robo-advisory solutions and passive investments.

Asset allocation among Swiss-based asset management firms is diverse and mostly dominated by active management

The asset allocation of asset managers in Switzerland is diverse and depends on the size and ownership structure. While smaller and independent asset management firms have a stronger focus on alternative asset classes; larger, as well as bank- and insurance owned asset management firms allocate more AuM to traditional core asset classes. Overall, active management is still the dominant investment approach. Aggregated, about 60 percent of the AuM in discretionary mandates and about 80 percent of the AuM in collective investment schemes are actively invested. However, large asset management companies and bank-owned asset managers allocate relatively more to passive products, particularly within discretionary mandates.

Swiss asset management shows a strong business performance

Swiss-based asset managers are profitable and cost-efficient. The median profit margin is estimated to be 19.5 basis points of AuM while the cost-income ratio is about 64 percent. In particular, high margin alternative asset classes contribute substantially to profitability. The profit pool is estimated to be about CHF 5 billion.

The conventional wisdom on the value of active management is too negative

An analysis of the more recent academic literature about active management shows that active managers have some sort of skill and tend to make value-added decisions. Under certain circumstances, actively managed funds appear to create added value for investors even after fees are taken into account. In particular, small cap funds or funds that exhibit a higher degree of activity tend to outperform their benchmark. Moreover, active investment approaches contribute to an enhanced market efficiency. Overall, according to the state of the literature, the conventional wisdom on the value of active management is too negative and the positive findings on active management are not fully recognized.

7. Factsheets of Asset Management Companies in Switzerland

The last chapter of this study contains the factsheets of all asset management companies in Switzerland that participated in our survey. The factsheets are based on the Business Model Canvas of Osterwalder and Pigneur (2010), described in section 1.3. As mentioned earlier, they were created based on publicly available sources such as the companies' websites, newspaper articles, and academic studies. For the purposes of verification, correction and completion, these draft versions were then passed on to the respective asset managers. Note that the companies which did not return the factsheet are not presented in the following pages. Moreover, it is important to note that some participants were not able to provide specific information about their asset management unit. However, in order to provide a comprehensive overview of asset management companies in Switzerland we included these factsheets in the study as well but report numbers on a group level. The factsheets of these companies are marked explicitly. Moreover it is important to note that if an asset manager serves both Swiss and international customers, Swiss customers are included in the international customer segment. For example, if an asset management firm indicates to serve institutional international clients in the factsheet, it follows that the respective asset manager serves Swiss institutional clients as well. At this point, we would like to thank all companies that took part in our survey and supported the initiative to portray the Swiss asset management industry in a comprehensive way.

Companies

3V ASSET MANAGEMENT

3V Asset Management AG **www.3vam.ch**

Founded in 1997 *Headquarter* Zurich

We invest with a long-term perspective and are interested in a sustainable development of our companies. Also, we seek to achieve Corporate Governance and respect our shareholders rights.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	2
	… of which in CH	2
	AuM 2019 (m)	CHF 100
	... of which managed in CH (m)	CHF 100

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

IMMOFONDS
solid investiert – seit 1955

AG für Fondsverwaltung **www.immofonds.ch**

Founded in 1955 *Headquarter* Zürich

AG für Fondsverwaltung is a fund management company according to Swiss law. The company is managing the IMMOFONDS which is a leading real estate fund according to Swiss collective investment scheme.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	5
	… of which in CH	5
	AuM 2019 (m)	CHF 1’630
	... of which managed in CH (m)	CHF 1’630

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

AgaNola AG **www.aganola.com**

Founded in 2007 *Headquarter* Pfäffikon SZ

By the means of continuous performance, transparency and proximity to our institutional and private clients we were able to secure their trust and thereby gradually expand our client network and assets under management to over 1.5 billion CHF. (translation from website)

Key & Cooperation Partners	Key Resources	
Credit Suisse Asset Management	Employees in 2019	6
	… of which in CH	6
	AuM 2019 (m)	CHF 1'600
	... of which managed in CH (m)	CHF 1'600

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Albin Kistler

Albin Kistler AG **www.albinkistler.ch**

Founded in 1995 *Headquarter* Zürich

Our investment success is based on timeless principles and disciplined and independent financial analysis performed by approximately 20 analysts in the field of equities, issuers, interest rates and currencies.

Key & Cooperation Partners	Key Resources	
As of December 31st 2018, Graubündner Kantonalbank owns 51 % of Albin Kistler AG. However, with regards to the selection of custodian our clients may choose amongst 5 different custodians (custody banking solutions).	Employees in 2019	37
	… of which in CH	37
	AuM 2019 (m)	CHF 5'500
	... of which managed in CH (m)	CHF 5'500

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

AMG Fondsverwaltung AG **www.amg.ch**

Founded in 2011 *Headquarter* Zug

We invest our investors' money professionally, sincerely and responsibly.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	9
	… of which in CH	9
	AuM 2019 (m)	CHF 829
	... of which managed in CH (m)	CHF 829

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Artico Partners AG **www.artico-partners.com**

Founded in 2004 *Headquarter* Zürich

We are an asset management company specialized in fundamental bottom-up stock selection. Our main focus is to identify and to invest in good companies globally. Companies we invest in have a simultaneous superior score in terms of GROWTH, PROFITABILITY, FINANCIAL HEALTH, VALUATION, ESG SCORE anda LOWER CARBON FOOTPRINT. This combination is unique and is the basis for our past track record and the reason for a higher ouperformance probability in future.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	6
	… of which in CH	6
	AuM 2019 (m)	CHF 350
	... of which managed in CH (m)	CHF 350

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

AXA Asset Management Schweiz **www.axa.ch**

Founded in 1875 *Headquarter* Winterthur

AXA Switzerland Asset Management offers tailor-made investment solutions for second pillar clients such as collective foundations, pension schemes and pension funds.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	68
	… of which in CH	68
	AuM 2019 (m)	CHF 34'059
	... of which managed in CH (m)	CHF 34'059

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

AXA Investment Managers Schweiz AG **www.axa-im.ch**

Founded in 2006/1996 *Headquarter* Zürich (Local Headquarter) / Paris (Group Headquarter)

AXA Investment Managers works with its clients today to provide the solutions they need to help secure a better tomorrow for their investments, while creating a positive change for the world in which we all live.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	2'362
	… of which in CH	81
	AuM 2019 (m)	CHF 870'687
	... of which managed in CH (m)	CHF 50'985

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Baloise Asset Management AG **www.baloise-asset-management.com**

Founded in 2001 *Headquarter* Basel

Baloise Insurance has been successfully managing its insurance assets for more than 150 years. Nowadays, its investment expertise is grouped under Baloise Asset Management, which looks after both the Baloise Group's own assets and the investments of its clients. As one of Switzerland's 20 biggest asset managers, we know how to seize opportunities in today's complex market and offer tailored investment solutions with attractive performance prospects to meet our clients' needs.

Key & Cooperation Partners	Key Resources	
Baloise Fund Invest, Perspectiva Sammelstiftung, Trigona Sammelstiftung, Bâloise-Anlagestiftung, Baloise Bank SoBa, Basler Versicherungen	Employees in 2019	154
	… of which in CH	154
	AuM 2019 (m)	CHF 61'477
	... of which managed in CH (m)	CHF 61'477

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Bank J. Safra Sarasin AG **www.jsafrasarasin.ch**

Founded in 1841 *Headquarter* Basel

Bank J. Safra Sarasin is part of the family-owned Safra Group. It is a highly regarded name in global Private Banking with a successful long-standing history and a strong focus on sustainable investments. Its Asset Management arm has been a pionneer in sustainable investing for more than 30 years and remains at the forefront of ESG investing.

Key & Cooperation Partners	Key Resources*	
	Employees in 2019	2'178
	… of which in CH	1'150
	AuM 2019 (m)	CHF 185'797
	... of which managed in CH (m)	Not disclosed

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

*Numbers reported on a group level and no detailed information on asset management unit provided.

Banque Cantonale Vaudoise **www.bcv.ch**

Founded in 1845 *Headquarter* Lausanne

Fifth-largest universal bank in Switzerland by total assets and the largest bank in Vaud, BCV offers comprehensive range of banking services through four customer-oriented divisions: Retail Banking, Private Banking, Corporate Banking, and Asset Management & Trading. Our mission is to contribute to the development of all sectors of the Vaud economy.

Key & Cooperation Partners	Key Resources*	
	Employees in 2019	1'921
	… of which in CH	1'921
	AuM 2019 (m)	CHF 97'840
	... of which managed in CH (m)	CHF 97'840

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Bellecapital Partners AG **www.bellecapital.com**

Founded in 1995 *Headquarter* Zürich

We provide fund solutions to mainly institutional investors. We are direct investors and operate free of benchmarks to optimize risk management and a long term investment approach.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	9
	… of which in CH	9
	AuM 2019 (m)	CHF 70
	... of which managed in CH (m)	CHF 70

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

*Numbers reported on a group level and no detailed information on asset management unit provided.

Bellevue Asset Management AG **www.bellevue.ch**

Founded in 1993 *Headquarter* Küsnacht

Bellevue Asset Management is an independent and highly specialized asset management boutique focused on managing healthcare equity strategies aswell as specialized equity and multi asset strategies. One of our core areas of specialty that already dates back more than 25 years is the global healthcare sector, for which we offer a diverse spectrum of top tier investment solutions. Our Swiss and European equity strategies focus on family and owner managed companies a field in which Bellevue is a pioneer. With BB Global Macro we also offer a multi-asset fund focused on absolute returns.

Key & Cooperation Partners	Key Resources	
RBC Investor Services, MDO Management Company SA, PMGFondsmanagement AG, Swisscanto Fondsleitung, Acolin Fund Services, ErsteBank, Julius Bär, Krebsliga Schweiz	Employees in 2019	58
	… of which in CH	47
	AuM 2019 (m)	CHF 8'800
	... of which managed in CH (m)	CHF 8'800

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

B&I Capital AG **www.bnicapital.com**

Founded in 2007 *Headquarter* Zürich

B&I Capital's primary goal is to give investors a means to replicate the risk-adjusted returns of multi-class Commercial Real Estate ownership, predominantly via the REIT market.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	15
	… of which in CH	10
	AuM 2019 (m)	CHF 1'130
	... of which managed in CH (m)	CHF 565

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

BLACKROCK

BlackRock Asset Management Schweiz AG **www.blackrock.com**

Founded in 1988 *Headquarter* New York

Our mission is to combine the global investment expertise of BlackRock for investors in Switzerland.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	14'900
	… of which in CH	113
	AuM 2019 (m)	USD 7'429'633
	... of which managed in CH (m)	Not disclosed

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

BLUE DIAMOND
asset management

Blue Diamond Asset Management AG **www.bluediamondgam.com**

Founded in 2009 *Headquarter* Pfäffikon SZ

Blue Diamond uses systematic, proprietary investment processes to capture opportunities arising in the equity volatility markets.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	11
	… of which in CH	11
	AuM 2019 (m)	CHF 910
	... of which managed in CH (m)	CHF 910

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Capital International Sàrl **www.capitalgroup.com**

Founded in 1963 *Headquarter* Geneva

Since 1931, Capital Group has been singularly focused on delivering superior, consistent results for long-term investors using high-conviction portfolios, rigorous research and individual accountability. Our Swiss company, Capital International Sàrl, was founded in 1963 and is active in investment research, investment management and distribution.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	7'783
	… of which in CH	132
	AuM 2019 (m)	CHF 1'997'000
	... of which managed in CH (m)	CHF 7'693

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Carnot Capital AG **www.carnotcapital.com**

Founded in 2007 *Headquarter* Zürich

Carnot Efficient Energy invests in public equities with a focus on the energy and resource transition The investment strategy is based on two pillars: (i) a 'traditional' quality strategy, which includes investment criteria such as proven business model, valuation (EV/EBIT, P/E, CF yield), solid balance sheet, quality of management; (ii) impact-analysis. This blended investment strategy results in a 'double bottom line, meaning a combination of financial and social / environmental return.

Key & Cooperation Partners	Key Resources	
Blue Orchard, AIL Structured Finance	Employees in 2019	6
	… of which in CH	6
	AuM 2019 (m)	CHF 75
	... of which managed in CH (m)	CHF 75

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Credit Suisse Asset Management (Schweiz) AG **www.credit-suisse.com**

Founded in 2017 *Headquarter* Zürich

Our Swiss Asset Management business is an important hub for our global Asset Management with total AuM of CHF 438 bn globally as of end 2019. It is managed to a large extent out of Switzerland and provides its Swiss and international clients abroad offering across various assets and product classes. This bundling of experience and expertise enables us to offer a high degree of product specialization – in alternative as well as traditional investment classes. Our asset management business is a leader in the Swiss market, offering equity, fixed income, real estate, insurance-linked, infrastructure, index and multi-asset class solutions. Our real estate and insurance-linked businesses are the clear market leader in Switzerland and notably one of the largest fund managers in Europe in the respective markets.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	1'195
	… of which in CH	Not disclosed
	AuM 2019 (m)	CHF 438'000
	... of which managed in CH (m)	Not disclosed

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

DWS CH AG **www.dws.ch**

Founded in 2002 *Headquarter* Zürich

DWS CH AG operates as an investment management company. The Company offers asset management, portfolio construction, funds, equities, investment strategies, financial planning and advisory services.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	4'122
	… of which in CH	49
	AuM 2019 (m)	CHF 834'400
	... of which managed in CH (m)	CHF 37'900

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

FISCH»Asset Management

Fisch Asset Management AG **www.fam.ch**

Founded in 1994 *Headquarter* Zürich

Fisch Asset Management is an asset manager specialising in select investment strategies. It offers onvertible bonds, corporate bonds and absolute return solutions. The company is owned by our employees and characterised by a corporate culture of respect, transparency and entrepreneurship.

Key & Cooperation Partners	Key Resources	
Independent Credit View: credit research partner since 2003, Fisch Asset Management owns a controlling stake	Employees in 2019	93
	… of which in CH	93
	AuM 2019 (m)	CHF 10'634
	... of which managed in CH (m)	CHF 10'634

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

FONTAVIS clean energy infrastructure

Fontavis AG **www.fontavis.ch**

Founded in 2011 *Headquarter* Baar

FONTAVIS is a European fund manager that delivers sustainable returns from investments in core and added value clean energy and infrastructure assets. We raise long-term capital to invest in assets and projects that produce renewable energy, improve energy efficiency or provide energy infrastructure. Companies are provided with capital, expertise and committment to steer the businesses to new levels of excellence. Since October 2019, Fontavis is a member of Swiss Life Asset Managers

Key & Cooperation Partners	Key Resources	
Die Mobiliar, UBS	Employees in 2019	13
	… of which in CH	13
	AuM 2019 (m)	CHF 1'127
	... of which managed in CH (m)	CHF 1'127

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

GAM Investment Management (Switzerland) AG **www.gam.com**

Founded in 1983 *Headquarter* Zürich

Our job is to help clients achieve their investment goals by putting their capital to work. We share insights, act with integrity and execute with purpose to make the right investment decisions for our clients.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	817
	… of which in CH	222
	AuM 2019 (m)	CHF 132'700 of which CHF 48'400 in Investment Management and CHF 84'300 in Private Labeling
	... of which managed in CH (m)	CHF 9'880 in Investment Management

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

GZC Investment Management AG **www.gzcim.com**

Founded in 2008 *Headquarter* Zug

GZC Investment Mangement is an alternative asset management firm managing fundamental and discretionary strategies in commodity and global macro markets.

Key & Cooperation Partners	Key Resources	
UBS JPM SFS Barclays	Employees in 2019	7
	… of which in CH	5
	AuM 2019 (m)	CHF 180
	... of which managed in CH (m)	CHF 180

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Hérens Quality Asset Management AG **www.hqam.ch**

Founded in 2003 *Headquarter* Pfäffikon SZ

We are one of the pioneers in systematic Quality investments worldwide. Over the years we have built up our own Research team with the aim to find the best Quality companies in the world – from both fundamental and valuation perspectives. We have proved that systematic Quality is a unique investment style with its own performance and risk character.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	24
	… of which in CH	15
	AuM 2019 (m)	CHF 980
	... of which managed in CH (m)	CHF 980

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Inoks Capital SA **www.inokscapital.ch**

Founded in 2004 *Headquarter* Geneva

We are an independent, alternative asset manager, authorized by FINMA and headquartered in Geneva (Switzerland). Our multi-disciplinary team is driven being the market leader providing capital for growth towards corporates in developing markets.

Key & Cooperation Partners	Key Resources	
Quadia, Stuart Redqueen, Sidra Capital, OPIM, PRI, SIFEM, GIIN	Employees in 2019	28
	… of which in CH	23
	AuM 2019 (m)	CHF 550
	... of which managed in CH (m)	CHF 550

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

LGT Capital Partners AG **www.lgtcp.com**

Founded in 2000 *Headquarter* Pfäffikon SZ

LGT Capital Partners is a leading global specialist in alternative investing. As a principal investor in our own strategies, we are well aligned with our clients. Partnering with investors in long-term relationships is the key measure of success for us.

Key & Cooperation Partners	Key Resources	
LGT Bank as well as other LGT Capital Partners entities outside of Switzerland	Employees in 2019	489
	… of which in CH	320
	AuM 2019 (m)	CHF 64'004
	... of which managed in CH (m)	CHF 41'884

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Lombard Odier Asset Management (Switzerland) SA **www.loim.com**

Founded in 1972 *Headquarter* Lancy

Lombard Odier Investment Managers is the asset management business of the Lombard Odier Group, which has been wholly owned and funded by its partners since its establishment in 1796. We provide a range of investment solutions to a group of clients that are all long-term oriented in their many and diverse ways. Our investment capabilities span Fixed Inocme, Convertible Bonds, Equities, Multi-Asset, Alternatives and Responsible Investing.

Key & Cooperation Partners	Key Resources	
Banque Lombard Odier & Cie SA	Employees in 2019	370
	… of which in CH	148
	AuM 2019 (m)	CHF 48'761
	... of which managed in CH (m)	CHF 32'222

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Luzerner Kantonalbank **www.lukb.ch**

Founded in 1850 *Headquarter* Luzern

The company culture is based on the company concept, the leadership comprehension and principle of sustainability.

Key & Cooperation Partners	Key Resources*	
	Employees in 2019	1'040
	… of which in CH	1'040
	AuM 2019 (m)	CHF 30'987
	... of which managed in CH (m)	CHF 30'987

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Man Investments (CH) AG **www.man.com**

Founded in 1994 *Headquarter* Pfäffikon SZ

Man Group is a global investment management firm, focused on generating outperformance for clients. This is achieved through a diverse spectrum of specialist active investment disciplines, empowered by the latest techonlogy.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	Not disclosed
	… of which in CH	Not disclosed
	AuM 2019 (m)	Not disclosed
	... of which managed in CH (m)	Not disclosed

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

*Numbers reported on a group level and no detailed information on asset management unit provided.

Mensarius AG **www.mensarius.com**

Founded in 2007 *Headquarter* Zollikon

Our mission is to challenge the conventional world of finance with our sense of fiduciary duty. We are value investors and focus primarily on European domiciled companies. Our strategy is to build long-term wealth for our investors by doubling the capital over a market cycle. Our philosophy centres on investing as owners of the business. Long-term investment returns are generated by investing in high quality and attractive business models at discounted prices on an investment by investment basis.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	12
	… of which in CH	12
	AuM 2019 (m)	CHF 1'006
	... of which managed in CH (m)	CHF 1'006

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

MFM Mirante Fund Management SA **www.mirante.ch**

Founded in 2003 *Headquarter* Lausanne

Our goal is to develop and maintain long-term relationships based on cooperation and transparency.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	21
	… of which in CH	21
	AuM 2019 (m)	CHF 650
	... of which managed in CH (m)	CHF 650

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Mirabaud Asset Management (Suisse) SA **www.mirabaud.com**

Founded in 2014 *Headquarter* Geneva

Mirabaud offers its Swiss and international clientele a range of bespoke financial and advisory services in three core areas of activity: wealth management, asset management and brokerage.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	116
	… of which in CH	49
	AuM 2019 (m)	CHF 7'230
	... of which managed in CH (m)	Not disclosed

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

OLZ AG **www.olz.ch**

Founded in 2001 *Headquarter* Bern

OLZ is an independent asset manager using systematic portfolio optimization with a risk-based approach. Since 2017, OLZ considers sustainability criteria (ESG) in the investment process of all funds. OLZ's methodology is available for equities, bonds and mixed mandates.

Key & Cooperation Partners	Key Resources	
Member of Swiss Sustainable Finance (SSF), Founding Member of Alliance of Swiss Wealth Managers (ASWM)	Employees in 2019	27
	… of which in CH	25.8
	AuM 2019 (m)	CHF 3'500
	... of which managed in CH (m)	CHF 3'500

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Partners Group AG **www.partnersgroup.com**

Founded in 1996 *Headquarter* Zug

Partners Group is a global private markets investment manager, serving over 900 institutional investors worldwide. We have USD 94 billion in assets under management and more than 1,400 professionals across 20 offices worldwide. We realize potential in private markets by financing and developing great companies, desirable real estate and essential infrastructure. We create value in our investments through active and long-term responsible ownership.

Key & Cooperation Partners	Key Resources	
Partners Group Holding AG is an independent company and is not affiliated with any other corporate group. The firm maintains independence from banks, insurance companies. Partners Group's employees are collectively the biggest shareholder group.	Employees in 2019	1'400
	… of which in CH	438
	AuM 2019 (m)	CHF 91'000
	... of which managed in CH (m)	CHF 91'000

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Pictet Asset Management SA **www.am.pictet**

Founded in 2007 *Headquarter* Geneva

We provide specialist investment services through segregated accounts and investment funds to some of the world's largest pension funds, financial institutions, sovereign wealth funds, intermediaries and their clients.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	1'016
	… of which in CH	447
	AuM 2019 (m)	CHF 201'144
	... of which managed in CH (m)	CHF 151'060

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Plenum Investments AG **www.plenum.ch**

Founded in 2001 *Headquarter* Zürich

Plenum Investments Ltd. Is a Zurich based asset management boutique, solely focused on insurance linked securities.

Key & Cooperation Partners	Key Resources	
None. Plenum Investments AG is fully independent.	Employees in 2019	9
	… of which in CH	9
	AuM 2019 (m)	CHF 418
	... of which managed in CH (m)	CHF 418

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Progressive Capital Partners Ltd **www.progressivecapital.com**

Founded in 2001 *Headquarter* Baar

Progressive Capital is specialised in Niche Alternatives and Liquid Alternatives and provides access to unique strategies through its PCP Partners offering. The company aims to provide institutional solutions with a low correlation to traditional asset classes and a diversifying characteristic.

Key & Cooperation Partners	Key Resources	
AIMA	Employees in 2019	15
	… of which in CH	15
	AuM 2019 (m)	CHF 800
	... of which managed in CH (m)	CHF 800

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

QCAM Currency Asset Management AG **www.q-cam.com**

Founded in 2005 *Headquarter* Zug

QCAM Currency Asset Management AG is a financial services provider with main focus on currency and liquidity management. The offering includes Currency Overlay, FX Best Execution, FX Alpha, FX Advisory & Structuring and Liquidity Management. The company is regulated by the FINMA and the SEC, the client base consists of pension funds, family offices, investment funds, asset managers, corporate and NGO's

Key & Cooperation Partners	Key Resources	
Company is run completely independent of any large service providers. Depending on clients needs, we work with different external partners.	Employees in 2019	12
	… of which in CH	11
	AuM 2019 (m)	CHF 4'830
	... of which managed in CH (m)	CHF 4'830

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Quantica Capital AG **www.quantica-capital.com**

Founded in 2003 *Headquarter* Schaffhausen

Quantica Capital is an asset management company focused on quantitative investment strategies. We provide sophisticated investment management services to our institutional and other qualified investors.

Key & Cooperation Partners	Key Resources	
NFA, CFTC, AIMA, UNPRI, Sbai	Employees in 2019	14
	… of which in CH	14
	AuM 2019 (m)	CHF 616
	... of which managed in CH (m)	CHF 616

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

RobecoSAM AG **www.robecosam.com**

Founded in 1995 *Headquarter* Zürich

Founded in 1995, RobecoSAM is an investment specialist focused exclusively on Sustainable Investing. Serving institutional asset owners and financial intermediaries, the company's asset management capabilities feature a strong track record in sustainability-themed strategies. All of RobecoSAM's investment strategies are designed to make a measurable environmental or societal impact and actively contribute towards meeting the UN Sustainable Development Goals (SDGs).

Key & Cooperation Partners	Key Resources	
Robeco, S&P Dow Jones Indices	Employees in 2019	100
	… of which in CH	100
	AuM 2019 (m)	CHF 6'700
	... of which managed in CH (m)	CHF 6'700

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Santro Invest AG **www.santroinvest.ch**

Founded in 2008 *Headquarter* Pfäffikon SZ

Santro Invest AG is a global, bank-independent asset manager consisting of three divisions: Mandate business, fund business and financial analysis. The main clients are Swiss institutional clients.

Key & Cooperation Partners	Key Resources	
keine	Employees in 2019	8
	… of which in CH	8
	AuM 2019 (m)	CHF 1'050
	... of which managed in CH (m)	CHF 1'050

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Schroder Investment Management (Switzerland) AG **www.schroders.com / www.schroders.ch**

Founded in 1988 *Headquarter* London

We are a global active asset manager with a strong Swiss hub approaching investment with a focussed perspective and an entrepreneurial attitude. As responsible investors and signatories to the UN's Principles for Responsible Investment (PRI) we consider long-term risks and opportunities that will affect the resillience of the assets in which we invest. Our overriding objective is to create long-term value for our clients and society as a whole.

Key & Cooperation Partners	Key Resources	
As a global player with a local footprint we have various key & cooperation partners around the world.	Employees in 2019	5'183
	… of which in CH	151
	AuM 2019 (m)	CHF 641'657
	... of which managed in CH (m)	CHF 22'623

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Schweizerische Mobiliar Asset Management AG **www.mobiliar.ch**

Founded in 2012 *Headquarter* Bern

Swiss Mobiliar Asset Management Ltd. is organized as a Fund Management Company and regulated by the FINMA (since 2012). Further the SMAM is responsible for managing the assets of the Swiss Mobiliar Group, the pension institutions of the Swiss Mobiliar, the five strategic funds and the real estate fund for institutional investors only. All funds are managed actively.

Key & Cooperation Partners	Key Resources	
Mobiliar Insurance	Employees in 2019	70
	… of which in CH	70
	AuM 2019 (m)	CHF 24'252
	... of which managed in CH (m)	CHF 24'252

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

INSURANCE INVESTMENT ADVISORS
SOLIDUM PARTNERS

Solidum Partners AG **www.solidumpartners.ch**

Founded in 2004 *Headquarter* Zürich

Solidum Partners AG is an independent investment management company specialised in insurance linked securities.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	6
	… of which in CH	6
	AuM 2019 (m)	CHF 210
	... of which managed in CH (m)	CHF 210

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

SUSI PARTNERS
SUSTAINABLE INVESTMENTS

SUSI Partners AG **www.susi-partners.com**

Founded in 2009 *Headquarter* Zug

SUSI Partners AG is a Swiss licensed asset manager, financing infrastructure relevant for the energy transition, while generally focusing on contracted returns and low risk exposure. SUSI offers funds and managed accounts to professional institutional investors. The company has developed market leading expertise on Renewable Energy Generation, Energy Efficiency Retrofits and Energy Storage, Smart Grid Solutions and E-mobility infrastructure.

Key & Cooperation Partners	Key Resources	
Carne Global Fund Managers (Luxembourg) S.A.The Bank of New York Mellon SA/NV, Luxembourg BranchDeloitte Audit S.à r.l.Simmons & Simmons Luxembourg LLP	Employees in 2019	56
	… of which in CH	43
	AuM 2019 (m)	CHF 1’140
	... of which managed in CH (m)	CHF 207

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Swiss Finance & Property Funds AG **www.sfp.ch**

Founded in 2001 *Headquarter* Zürich

Swiss Finance & Property AG is a specialised investment and advisory property company with a focus on asset management.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	86
	… of which in CH	86
	AuM 2019 (m)	CHF 6'399
	... of which managed in CH (m)	CHF 6'399

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Swiss Life Asset Managers **www.swisslife-am.com**

Founded in 1974 (Swiss Life Asset Management AG) *Headquarter* Zürich

We are a well-known, ambitious and reliable European asset manager and a leading institutional real estate asset manager in Switzerland, France, Germany, Luxembourg and the UK.

Key & Cooperation Partners	Key Resources*	
Swiss Life Group	Employees in 2019	1'796
	… of which in CH	856
	AuM 2019 (m)	CHF 254'399
	... of which managed in CH (m)	CHF 162'555

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

*Numbers reported include all AuM and not only third-party business.

Swisscanto Invest
by Zürcher Kantonalbank
Founded in 1870

www.swisscanto.ch
Headquarter Zürich

100 % Swiss Made Asset Management

Key & Cooperation Partners	Key Resources	
Other Kantonalbanken	Employees in 2019	228
	… of which in CH	228
	AuM 2019 (m)	CHF 174'120
	... of which managed in CH (m)	CHF 174'120

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Tavis Capital AG
Founded in 2014

www.tavis-capital.com
Headquarter Zürich

Asset Manager providing investment solutions in the Private Debt Market Switzerland. Currently two active funds under management: a) the Swiss SME Credit Fund I (CHF 137m) for mezzanine financing of Swiss SMEs and b) the Swiss Mortgage Fund I (CHF 1.0bn) for first-ranking mortgages orginated by Credit Suisse.

Key & Cooperation Partners	Key Resources	
Credit Suisse, UBS	Employees in 2019	10
	… of which in CH	10
	AuM 2019 (m)	CHF 950
	... of which managed in CH (m)	CHF 950

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Teleios Capital Partners GmbH **www.teleioscapital.com**

Founded in 2013 *Headquarter* Zug

Teleios Capital is an activist investment firm specialising in European midcap companies with the core objective of creating long-term value for all shareholders. We are an independent investment firm managing assets on behalf of an institutional client base of endowments, foundations and pension plans, as well as family offices.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	13
	… of which in CH	13
	AuM 2019 (m)	CHF 1'032
	... of which managed in CH (m)	CHF 1'032

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Tolomeo Capital AG **www.tolomeo-capital.com**

Founded in 2011 *Headquarter* Zürich

Tolomeo Capital is a systematic asset manager. It was established in 2011 as a spin-off of the quant and risk management unit of one of Switzerland's largest institutional family offices. The firm focuses on quantitative, technology-driven investment strategies with a strong emphasis on risk-adjusted returns.

Key & Cooperation Partners	Key Resources	
Morgan Stanley Intl., Northern Trust, Duff & Phelps Lux, Mercury Compliance, PwC Lux , BDO Switzerland.	Employees in 2019	8
	… of which in CH	7
	AuM 2019 (m)	CHF 53
	... of which managed in CH (m)	CHF 53

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

UBS Asset Management Switzerland AG **www.ubs.com**

Founded in 2019 *Headquarter* Zürich

UBS Asset Management Switzerland AG (UBS AM CH AG) is the largest asset management company in the Swiss market and as such operates the Swiss Asset Management business of UBS, mainly focusing on portfolio management and distribution activities. It is fully owned by UBS Asset Management AG and is the direct parent of all other Swiss Asset Management entities. UBS AM CH AG is classified as a Significant Regional Entity.

Key & Cooperation Partners	Key Resources	
-	Employees in 2019	520
	… of which in CH	520
	AuM 2019 (m)	CHF 261'000
	... of which managed in CH (m)	CHF 261'000

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Unigestion SA **www.unigestion.com**

Founded in 1971 *Headquarter* Geneva

Unigestion is an independent, specialist asset manager providing innovative, tailored solutions for investors worldwide. Since our creation in 1971, we have stayed true to our conviction that intelligent risk-taking is key to delivering consistent returns.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	240
	… of which in CH	150
	AuM 2019 (m)	CHF 22'600
	... of which managed in CH (m)	Not disclosed

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Vontobel

Vontobel Asset Management **www.vontobel.com**

Founded in 1924 *Headquarter* Zürich

Vontobel Asset Management is an active asset manager with global reach and a multi-boutique approach. Each of our boutiques draws on specialized investment talent, a strong performance culture and robust risk management. Our commitment to active management empowers us to invest on the basis of our convictions. We deliver value through our diverse and highly specialized teams. The goal of achieving excellent and repeatable performance has been fundamental to our approach since 1988. All our investment professionals are invested in the funds they manage to ensure our interests are aligned with our investors.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	434
	… of which in CH	240
	AuM 2019 (m)	CHF 137'695
	... of which managed in CH (m)	CHF 83'317

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

[vv] vermögensverwaltung ag
Committed to Swiss Values

VV Vermögensverwaltung AG **www.vv-ag.ch**

Founded in 1995 *Headquarter* Zug

We are an independent asset manager that specialized on Swiss small and mid caps. We do have a clear focus on the often mitigated small cap segment. Committed to Swiss Values.

Key & Cooperation Partners	Key Resources	
PricewaterhouseCoopers	Employees in 2019	3
	… of which in CH	3
	AuM 2019 (m)	CHF 750
	... of which managed in CH (m)	Not disclosed

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Wydler Asset Management AG **www.wydlerinvest.ch**

Founded in 2007 *Headquarter* Wilen bei Wollerau

As an asset manager Wydler Asset Management follows ist own path. We focus substantially on equities, are straightforward and have no obligations to any bank. At Wydler Asset Management, the decision makers are also the owners.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	5
	… of which in CH	5
	AuM 2019 (m)	CHF 700
	... of which managed in CH (m)	CHF 700

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

zCapital AG **www.zcapital.ch**

Founded in 2008 *Headquarter* Zug

zCapital AG is an independent asset manager specialised in Swiss equities and managing two investment funds.

Key & Cooperation Partners	Key Resources	
	Employees in 2019	8
	… of which in CH	8
	AuM 2019 (m)	CHF 1’525
	... of which managed in CH (m)	CHF 1’525

Customer Segments		Asset Management Services	
Private National	Private International	Collective Investment Scheme	Discretionary Mandate
Institutional National	Institutional International	Exchange Traded Fund	Advisory Mandate

Asset Classes			
Money Market	Bond	Equity	Multi Asset
Commodity	Real Estate	Infrastructure	Private Equity
Private Debt	Hedge Funds	ILS	

Revenue Model		Management Style	
Management Fee	Performance Fee	Active	Passive

Authors

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Tatiana Agnesens is a lecturer in Mathematics at the Institute of Financial Services Zug IFZ. She accomplished a Master in Quantitative Economics and Finance and a PhD in Economics and Finance at the University of St.Gallen. During her PhD studies she was working as a research and teaching assistant at the Group for Mathematics and Statistics. Her research interests include behavioral finance and behavioral asset management. Before joining IFZ in 2018 Tatiana gained practical experience in the areas of corporate finance and wealth management.

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Thomas Ankenbrand holds a Master's degree from the University of St. Gallen and a PhD from the University of Lausanne. He founded several companies and has broad experience as a CEO and board member of various companies in the financial industry. He is currently engaged in Asset Management and FinTech research at the Lucerne University of Applied Sciences and Arts. In addition, he is board member of different companies.

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Jürg Fausch is an economist and lecturer in Financial Economics at the Institute of Financial Services Zug IFZ. He conducted his graduate studies at the Stockholm School of Economics and Stockholm University and obtained a PhD in Economics from Stockholm University in 2017. Jürg has a research focus on quantitative macroeconomics and empirical finance. His research has been published in the Journal of Macroeconomics and Economics Letters. He gained practical experience in the asset management industry while he was involved in the constitution of the first microfinance investment fund in Liechtenstein.

Moreno Frigg
Moreno Frigg is a research associate at the Institute of Financial Services IFZ in Zug. He holds a MSc degree in Banking & Finance from the Lucerne University of Applied Sciences and Arts. His research interest are related to empirical asset pricing and mutual funds. In addition to research in asset management, Moreno is active as a lecturer in executive education seminars (CAS Asset Management) for practitioners at IFZ. In this context, he teaches an introductory course about derivatives.

Markus Fuchs
Markus Fuchs is the Managing Director of the Asset Management Association Switzerland. He has been working in the fund and asset management industry since 1992. He built up and headed the Products & Fund Services team at Bank Hoffman, a subsidiary of Credit Suisse in the nineties. From 2000 until 2004 he headed the fund product management team of Swiss Life as CEO of Swiss Life Funds AG. He then joined UBS AG as a Managing Director (Global Wealth Management & Swiss Bank / Products & Services) where he had the overall responsibility for proprietary hedge fund products. In November 2010 he joined the Swiss Funds Association SFA as a Senior Counsel, namely in charge of the areas asset management and alternative investments. In July 2013, he became the Managing Director of SFA, which since then operates under the name Swiss Funds & Asset Management Association SFAMA and was transformed into Asset Management Association Switzerland in September 2020. He obtained a degree in Economics from the University of Zurich and an Executive MBA from the IMD International Management Development in Lausanne.

Diana Imbach Haumüller
Diana Imbach Haumüller is a Senior Legal Counsel and Deputy Managing Director at the Asset Management Association Switzerland. She is a Swiss Lawyer specialized in financial services law and compliance matters. Diana has been working for several years as an attorney at law in international law firms in Switzerland and Australia (2006-2012). Before joining the Asset Management Association Switzerland, Diana had been working for the State Secretariat for International Financial Matters SIF (2012-2014). Diana holds an LL.M from the University of Sydney, Australia and a doctorate in law from the University of Zürich.

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Appendix

Indicator sources of the asset management hub ranking

Publisher	Factor	Source	Dimension
2think now	Innovation Cities	Innovation Cities Index 2015	Technological
CFA Institute	CFA Holder by Country	Member Directory	Economic
Credit Suisse	Number of HNWI	Global Wealth Databook 2017	Economic
Economist Intelligence Unit	Global Cities Competitiveness	Hot spots – Benchmarking global city competitiveness	Economic
Edbiz Consulting	Islamic Finance Country Index	Islamic Finance Country Index – IFCI 2017	Economic
Fraser Institute	Economic Freedom of the World	Economic Freedom of the World: 2017 Annual Report	Economic
Hays	Global Skills	Hays Global Skills Index	Social
Heidrick & Struggles	Quality of labor force	Heidrick & Struggles database	Social
Henley & Partners	Visa Restriction	Visa Restrictions Index	Political/Legal
ILO	Unemployment rate	ILO modelled estimates	Social
IMD	World Talent	World Talent Report	Social
University of Sydney, the Economist	Global Peace Index	Global Peace Index	Political/Legal
International Labour Organization	Employment in knowledge-intense services	ILOSTAT Database of Labour Statistics	Social
International Monetary Fund	Domestic Credit to Private Sector	International Financial Statistics and data files and World Bank and OECD GDP estimates	Economic
	Domestic Market Scale	International Monetary Fund Database	Economic
	Foreign Direct Investment Net Inflows	International Financial Statistics and data files and World Bank and OECD GDP estimates	Economic
	Government Debt as % of GDP	World Economic Outlook (April 2018)	Economic
	GDP per capita	World Economic Outlook (April 2018)	Economic
International Telecommunication Union	ICT Access	Measuring the Information Society	Technological
	ICT Use	Measuring the Information Society	Technological
InterNations	Expat Ranking	Expat Insider	Social
Knight Frank	Global Cities	Global Cities Report	Social
KPMG	Corporate Tax Rates	Corporate tax rates table	Political/Legal
Numbeo	Cost of Living City	Numbeo database	Social
	Local Purchasing Power Index	Numbeo database	Economic
	Quality of Life City	Numbeo database	Social
OECD	PISA Ranking	Programme for International Student Assessment (PISA)	Social
QS Quacquarelli Symonds Ltd	QS university ranking average score of top 3 universities	QS World University Ranking	Social

Publisher	Factor	Source	Dimension
Reporters without Borders	Press Freedom Index	World Press Freedom Index	Political/Legal
RobecoSAM	Environmental	Country Sustainability Ranking	Political
	Governance	Country Sustainability Ranking	Political
	Social	Country Sustainability Ranking	Social
Tax Justice Network Limited	Financial Secrecy	Financial Secrecy Index	Economic
The World Bank	Applied Tariff Rates	The Global Entrepreneurship and Development Institute website	Economic
	Ease of Getting Credit	Doing Business: Measuring Regulatory Quality and Efficiency	Economic
	Ease of Paying Taxes	Doing Business: Measuring Regulatory Quality and Efficiency	Political/Legal
	Ease of Protecting Minority Investments	Doing Business: Measuring Regulatory Quality and Efficiency	Economic
	Ease of Resolving Insolvency	Doing Business: Measuring Regulatory Quality and Efficiency	Economic
	Financial Market Sophistication	Market Efficiency	Economic
	Government Effectiveness	World Governance Indicators	Political/Legal
	Graduates in Social Science, Business and Law	World Bank Education Statistics	Social
	Stock Market Capitalization of listed domestic companies (% of GDP)	World Federation of Exchanges database	Economic
	Political Stability	World Governance Indicators	Political/Legal
	Regulatory Quality	World Governance Indicators	Political/Legal
	Starting a Business	Doing Business: Measuring Regulatory Quality and Efficiency	Economic
Transparency International	Corruption Perception	Corruption Perceptions Index	Political/Legal
UBS	Wage Level City	Preise und Löhne	Economic
UNESCO Institute for Statistics	Expenditure on Education	UIS online database	Social
	Graduates in Science & Eng.	UIS online database	Social
	Number of Students from Abroad	UIS online database	Social
	Research Talent in Business Enterprise	UIS online database	Technological
	Researchers	UIS online database	Technological
	Tertiary Enrolment	UIS online database	Social
United Nations Public Administration Network	Government Online Services	e-Government Survey	Technological
	Online E-Participation	e-Government Survey	Technological
World Economic Forum	Quality of Infrastructure	Global Competitiveness Report	Social
	Human Capital	The Human Capital Report	Social
	University/Industry Research Collaboration	Executive Opinion Survey	Technological

Publisher	Factor	Source	Dimension
World Federation of Exchanges	Market Capitalization	World Federation of Exchanges database: extracted from the World Bank's World Development Indicators database	Economic
	Total Value of Stocks Traded	World Federation of Exchanges database: extracted from the World Bank's World Development Indicators database	Economic
Z/Yen Group	Global Financial Centers	Global Financial Centers Index	Economic

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