The Journey of Discovering the European Landscape of Passive Index Investing: A Cross-Country Horse Race

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Abstract

The European financial markets have witnessed two erupting trends in the last decade: passive index investing and sustainable investing. This research builds a unique data set that maps out the capital flows toward passive index investments over the last decade for six European countries. Continuing, we build a data set for the capital flows towards sustainable index investments on an aggregated European level. As such, we examine country-specific trends, as well as investment trends for Europe as a whole. We discuss the trajectory of each country and find complex growth patterns that may be explained by investor sentiment, economic cycles, and regulations. This research gives a preliminary snapshot of the growing and quickly evolving landscape of passive index investing.

The authors of this paper want to thank Bo Becker for his guidance. May this research be the starting point for mapping the unknown European landscape of passive index investing

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1 Definitions

1.1 Active Managed Fund

An active fund is actively managed by a fund manager who hand-picks stocks that they think will outperform the market. The aim is to beat the market to generate 'alpha', which leads to active funds having a higher expense ratio than passive funds (Fichtner et al., 2017).

1.2 Passive Index Fund

In line with the definition by Fichtner et al. (2017), the term passive index fund includes index mutual funds and exchange-traded funds. Although the two funds are technically different, they are fundamentally alike in terms that both funds aim to replicate existing stock indices. Furthermore, both mutual index funds and ETFs try to minimize the expense ratio. Thus, in line with previous literature (Fichtner et al., 2017), we deem it fair to coin the term passive index funds. In essence, a passive index fund aims to replicate an existing stock index by buying shares of the underlying firms of that particular index.

1.3 Sustainable Index Fund

Sustainable index funds include index mutual funds and exchange-traded funds, per the definition this paper uses for passive index funds. Continuing, this paper denotes sustainable funds as green funds in the graphs.

2 Introduction

Over the last decade, two trends have erupted in the financial industry that have had important implications for the flow of capital. The first is the shift of capital towards passive investing, and the second is the increasing adoption of sustainable investing (Harris & Staal, 2021).

The rise of passive investing became particularly clear after the global financial crisis in 2008. According to Paquin (2020), since 2008, index-tracking funds and ETFs have grown seven times in size, and the market share has doubled, implying that roughly 20% of the global AUM are now passive investments. Fichtner et al. (2017) further explain that there has been a massive shift towards passive from active investment strategies since the crisis. From 2008 to 2015, investors sold up to $800 billion of actively managed equity mutual funds while simultaneously investors bought passive funds worth about $1 trillion. By the end of 2015, the passively managed equity fund totaled approximately $4 trillion (Fichtner et al., 2017).

The gravitation towards passive investing can primarily be attributed to the high fees charged by actively managed funds. In addition to the cost advantage, passive funds track indices that are transparent and offer diversification benefits (Paquin, 2020). Before the 2008 financial crisis, investors had a higher tolerance for fees with the hopes that an active investment strategy would yield superior returns. In contrast, data shows that actively managed funds have not been able to consistently generate returns that exceed those of benchmark indices (Fichtner et al., 2017).

The demand for sustainable funds, including active and passive, has been increasing. In 2020, Morningstar reported a record second-quarter of inflows, with ESG funds totaling nearly one-third of all the sales of European funds, attracting 63% more new capital inflow compared to traditional equity funds (Bioy, 2020). The heightened interest in sustainable funds is in part because of the disruption caused by the coronavirus pandemic. The pandemic highlighted the importance of having a business model that is both sustainable and resilient on the basis of multi-stakeholder considerations. Another part that contributed to the inflows was the expansion of the sustainable fund universe in terms of increasing the number of product offerings. By the end of March 2020, the number of funds that applied

ESG as one of the key criteria when screening for securities increased from 2,584 to 2,703 (Bioy, 2020).

The growth of passive and sustainable investing overlap. Between 2014 and 2019, Lynx Asset Management reported that passive ESG funds increased at an average annual rate of 33%. Compared to active ESG funds during the same period, the passive grew three times faster. The overlap can be explained by smart beta, in other words, the strategy where index providers use a specific factor to tilt the investment portfolio. For example, the factor can range from value or low volatility to ESG criteria. Thus, investors get the benefits, such as the cost advantage, of an index-based passive investment strategy in parallel with elements from an active investment strategy (Harris & Staal, 2021).

Historically, the compatibility of passive investing and sustainability has been questioned. However, there is a growing understanding that passive index investing and sustainability engagement is the approach towards responsible investments. Harris and Staal (2021) imply that corporate engagement from passive investments may be one of the driving factors to implement a market-wide change towards sustainable investing. Paquin (2020) emphasizes that index managers are in the ideal spot to interact with corporate management and influence corporate behavior through the use of voting.

Various dimensions of passive investing and sustainability have been analyzed in previous literature. Fichtner et al. (2017) explore how the passive index fund industry is ruled by BlackRock, Vanguard, and State Street and the implications that follow in terms of corporate ownership and financial risk. Chaffee (2021) discusses the hypocrisy of passive investing and the trilemma that occurs when seeking profit, diversification, and ESG objectives. Millo et al. (2023) find that in regard to ESG investing, the active community seems to believe that only they hold the ability to incorporate ESG factors into the investment strategy. The behavior is described by the term "epistemic opportunism". Epistemic opportunism, as per Millo et al. (2023), is the active investment communities' *"convoluted and self-serving attempts to demonstrate superior knowledge".*

Given the extensive research already existing on active versus passive index funds,

and the increasing importance of sustainable investing, it is of interest to examine the growth of passive relative to sustainable index funds. The scope of this research focuses specifically on the flow of capital to passive index investing and sustainable index investing over the last decade in Europe. To date, the idea of comparing passive versus sustainable index funds in a cross-country horse race type of setting has not been proposed nor examined. Our observation encourages us to build a unique dataset consisting of primary data retrieved from Morningstar.

3 Literature Review

3.1 The Rise of Passive Investing

The shift from active to passive investing is well documented by previous literature. However, the trends in passive investing are far less extensive, especially in European countries. Sushko and Turner (2018) explore the rise in popularity of passive investing through index mutual funds and ETFs. The growth in the passive industry has been rapid over the past years. In total, passive funds contributed to 20% of the assets under management for investment funds in June 2017, an 8% increase compared to a decade earlier.

According to Sushko and Turner (2018), the growth in passive funds is most prominent for US equities, which account for 15% of the share of securities held by passive investment funds. The rationale for investors to prefer a passive investment vehicle is built on the efficient market hypothesis. The theory implies that the security prices include all available information, and thus, any excess future return is not predictable. Even if one chooses to ignore the market efficiency theory, a passive investment vehicle can be considered the optimal strategy given that outperforming the market is a "zero-sum game". If an active investment strategy manages to outperform the market, the average return would still equal the market return net of fees (Sushko and Turner, 2018).

Various factors affect the rise of passive investing. One of the key contributing factors, states Sushko and Turner (2018), is that active equity funds fail to consistently generate returns that exceed the market benchmarks. More recently, passive funds have benefitted from structural shifts within the financial advocacy indus-

try. These include, but are not limited to, introducing fiduciary requirements and a greater regulatory focus on transparency regarding fees. Passive investment funds are considered low-cost investment vehicles. The majority of the money is flowing to the largest fund managers as they can offer the lowest-cost funds. The pattern sets in motion economies of scale as more money flows to these funds which mechanically reduces the expense ratio and allows for cost reduction (Sushko & Turner, 2018).

Secondly, the development of passive investing has benefitted from the use of information and computational technology. The marked expansion of indices beyond the traditional market indices has expanded the indices universe, opening up more diversification opportunities than previously accessible to investors. Thirdly, another factor that may have contributed to the popularity of passive investing is related to volatility and high correlation between asset classes. Sushko and Turner (2018) find that over periods of turbulence and stress episodes in the market, such as the equity market turbulence in 2015 and the US presidential election in 2016, passive mutual funds are the least volatile in terms of capital flow. Evidently, passive investors do not appear to exit their positions in times of stress (Sushko & Turner, 2018).

3.2 The Passive Sustainable Fund Universe

In parallel to passive investing, sustainable investing has been gaining traction over the last decade. Bioy and Lamont (2018) state that the sustainable investing trend is driven by regulations, a rising focus on long-term risks, and the lack of evidence regarding the underperformance often associated with sustainable investment vehicles. Over the past decade, portfolios that include ESG factors have increased over 600%, amounting to $23 trillion globally.

Bioy and Lamont (2018) explain that investors have different reasons for wanting to allocate their money towards sustainable investing. Firstly, investors may want their portfolios to be a reflection of their values. Secondly, investors are increasingly believing that applying ESG criteria to the investment portfolio can result in better long-term returns or act as a vehicle to manage risk, in other words, as a diversification tool. Thirdly, the authors (2018) state that investors may just want their investment to make an impact in the world.

The sustainable index universe can be defined by two overlapping groups, namely 'Broad' and 'Thematic'. The indices that are categorized as broad-based consist of indices that apply ESG criteria when screening while still maintaining the broad-market characteristics. Thematic indices are tilted towards specific sustainable topics. The same overarching categories can be applied to funds (Bioy & Lamont, 2018). Bioy and Lamont (2018) find that, globally, broad-based ESG funds are the most sought-after in regard to sustainable funds. Specifically, in Europe, these broad-based ESG funds amount to more than 90% of the total sustainable passive investment universe. As broad-based ESG funds act as substitutes for regular equity funds, which make up the lion's share of assets in the passive investment universe, the finding is logical (Bioy & Lamont, 2018).

3.3 Sustainable Responsible Investments

The rise of sustainable passive funds in prior literature is a bit of a gray area. Riedl and Smeets (2017) explore the reasoning behind why investors are likely to invest in socially responsible mutual funds. According to the authors (2017), socially responsible investments (SRIs) are gaining increasing economic and financial importance. For instance, in the United States, every one in nine dollars is linked to SRIs in professionally managed assets.

The possible explanations that influence investors' decisions to choose SRIs are multifold. The most robust finding that Riedl and Smeets (2017) find is intrinsic social preferences, which signifies prosocial motivations that do not constitute any future benefit to the individual in a material way. Riedl and Smeets (2017) find a significant positive correlation that a stronger intrinsic social preference increases the likelihood of investing in an SRI manner. The effect is likely to be long-lasting as the growth of SRI investments is steadily on the rise, which could have implications on asset prices as investors drive up prices for socially responsible companies (Riedl & Smeets, 2017). Interestingly, Riedl and Smeets (2017) find no significant relation between strong social preferences and the amount invested in SRI equity funds. Hence, a strong social preference is needed to buy an SRI fund in the first place but does not influence the percentage allocated to the SRI fund once the first investment is made.

Furthermore, Riedl and Smeets (2017) establish that another factor that influences the behavior of investors is signaling. Signaling, as per the authors (2017), implies that investors who are prone to talk about their investments are more inclined to invest in a socially responsible manner. The motive for the investor is to improve one's reputation, thus showing off to others that one invests responsibly. In addition, Riedl and Smeets (2017) identify that investors who have weak social preferences yet strongly signal their investments allocate a significantly smaller fraction in SRIs. The finding implies that relatively selfish investors who invest with the intention of signaling minimize the share of SRI they hold.

Additionally, Riedl and Smeets (2017) find that financial motives influence the percentage of investors who choose to invest in SRI funds. Predominantly, the results indicate that investors who have larger portfolios invest a smaller percentage in the SRI funds, with the likely objective of diversification. SRI investors and conventional investors have similar perceptions of the risk concerning SRI equity funds. However, SRI investors are a bit more positive towards returns from an SRI fund compared to conventional investors. Riedl and Smeets (2017) conclude that financial motives are unlikely to be the primary incentive for investing in SRIs.

3.4 Research Question

As of today, to the best of our understanding, mapping out the European landscape of passive index funds has never been done in previous literature. Due to the lack of research done, the subject calls for further investigation. This research aims to provide a complete dataset that will be the starting point for future research. Consequently, this research will investigate the following question:

How has the flow of capital towards passive index funds evolved across six European countries since 2009, particularly in comparison to the growth and development of European sustainable index funds?

To answer the research question, we will analyze the cumulative fund sizes of index funds on a bi-annual basis. Continuing, we will compare the dynamics of the index fund with the primary benchmark against country-specific market indices. The market indices will have a net equity percentage of at least 90% allocated towards

that specific country. The goal is to understand the relative scale and trends of passive index investments in these country-focused index funds and then compare them to the investments in sustainable funds across Europe on an aggregated level.

Moreover, to further indulge in our curiosities, we will seek to find a few explanations of why the trends have evolved in this particular manner. Although there will be a multitude of reasons that may have affected the flow of capital, it is important to note that the aim is not to give a comprehensive list of reasons. As the lion's share of this research will be around the data collection progress and building out the index panel, the analysis of why the capital flow is this particular way will be high level, and further use cases for this data set will be discussed in the future research section.

Finally, by exploring the flow of capital toward passive index funds in the respective countries and toward sustainable investing in Europe as a whole, we come to find many limitations. Hence, a portion of this research will be dedicated to the limitations of finding relevant data, specifically in terms of sustainable data. It is in the interest of this thesis to highlight the lack of readily available data and what implications that has for doing research in an ever-evolving field. We acknowledge that pursuing research in an unknown field will come with implications of finding suitable data, and thus, our thesis aims to bring that process to light.

4 Data Collection

4.1 Scope of Investigation

This paper builds a unique data set to examine the flow of capital from six European countries to passive index investing over the last decade. The aim of creating the data set is to understand the capital flows within each of these countries, how much is allocated towards passive index investing, and how the growth has evolved. For each country, we are using relevant market indices and cross-referencing with passive funds that follow these indices. For the sustainable index funds, we look at Europe as a whole and investigate the growth trajectory of these funds over the last decade. The flow of capital is determined by the total fund sizes bi-annually to examine if the capital has increased or decreased over time.

To determine the relevant market indices from each of the six countries, we are using Morningstar to narrow the selection down. Given the extensive financial data available with Morningstar, we deemed it sufficient to gather the relevant data required for the purpose of this paper. Furthermore, Morningstar has an extensive selection of both passive and sustainable funds, ensuring as many matches with the market indices as possible to create a comprehensive data set.

The selected geographical scope for this research is six European countries, namely Germany, Switzerland, Spain, France, Italy, and the UK. To avoid inconsistencies when examining this topic, we chose to base our study on developed European financial markets. As per Wright and Hamre (2021), the UK is the largest market in Europe in terms of market capitalization of listed companies per exchange, followed by France, Germany, Switzerland, and the Netherlands. These countries are followed by Sweden, Italy, and Spain. The noteworthy market capitalization in these countries makes it worthwhile to track the capital flows to passive investing in their domestic markets.

Furthermore, we screen these countries depending on the investor base for ETFs. According to Andrew (2022), Germany is the largest market in terms of ETF AUM by investor base in Europe, followed by the UK, Italy, Switzerland, France, Benelux, and Spain. For this research paper, we chose to exclude the Netherlands because of insufficient data regarding sustainable passive index funds. Sweden is out of scope due to the lack of ETF AUM by investor base, and Benelux is omitted as we focus on the single countries.

Market Values of Listed Companies by Country

Country	The market value of listed companies by exchange, €bn 2019
United Kingdom	2,997
France	2,595
Germany	1,872
Switzerland	1,624
Netherlands	1,080
Sweden	739
Spain	711
Italy	644
Total European market value	€14.2tn

Table 1: *This table represents the market value of listed companies per each country's exchange in 2019. The table excludes the smaller exchanges from the remaining countries in Europe. (Source: Wright & Hamre (2021))*

Market Values of Listed Companies by Country - Map

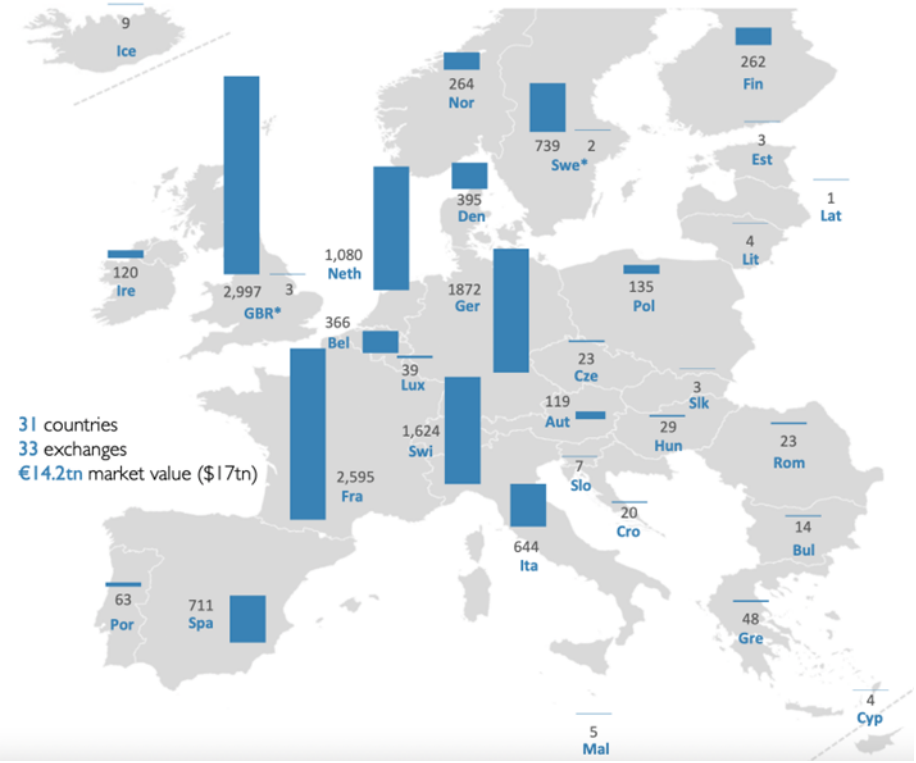

Figure 1: *This picture maps out the table above, including the smaller exchanges. The data is from 2019 and covers 31 countries and 33 exchanges, totaling a market value of €14.2tn. (Source: Wright & Hamre (2021))*

In this study, we give a timely review of the flow of capital to passive index investing for each respective country from the start of 2009 to the end of 2022. To eliminate noise from the financial crisis in 2008 and reflect the rise of passive investing that resulted from the crisis, we limit the scope to the beginning of 2009. To get a sufficiently large data sample to represent the capital flows, we chose to end the study in December 2022.

The focus of this study is passive equity investments, in line with previous research (Lobe and Walkshäsul, 2014; Malkiel and Radisich, 2001; Millo et al, 2023). Lobe and Walksäsul find that passive equity investments offer advantages to active investment strategies in terms of no transaction costs, managerial skills, or timing activities, thus giving the most undistorted view of performance and style of strategies for SRIs. Continuing, Millo et al. (2023) state that the gravitation towards passive funds is due to the lower cost compared to active funds. For example, the authors observe that an index equity fund costs 10 cents per $100 of assets compared to an active fund, which costs 70 cents. Thus, we deemed passive equity investments to be the appropriate investment vehicle to measure the capital flows to the selected countries.

4.2 Selection Process

4.2.1 Market Indices

For the construction of the capital flows to the selected countries through passive index investing, we use relevant market indices as proxies to represent the country. We use data from Morningstar to select the relevant market indices from each country.

We define a country-specific market index by selecting market indices that have a net equity percentage in the given country over 90%. The net equity percentage entails how much of the assets under management in the indices are allocated towards the specific country. By setting a minimum limit of 90%, we can ensure that the chosen market index has a connection with the country that they are representing. Moreover, this criteria enables us to focus on the capital flow of each country separately when matching the funds that are tracking these market indices.

France Market Indexes - Snapshot

Name	**DJ FR PR EUR**	**DJ Titans FR 30 PR EUR**	**DJ Titans FR 30 TR EUR**
Investment Type	Index	Index	Index
Equity Country FR %(Net)	95.68901	94.76584	94.76584
FundId	FSUSA07IDW	FSUSA07BJL	FSUSA07BJL
Index Family Id	0C000023HA	0C000023HA	0C000023HA
SecId	FOUSA05UKH	FOUSA05NIQ	FOUSA05NIR
Base Currency	Euro	Euro	Euro
Domicile	France	France	France
Firm Name	Dow Jones Indices	Dow Jones Indices	Dow Jones Indices
Inception Date	01/31/92	01/14/04	01/2/92
Total Ret 1 Yr EUR	19.56316	20.56645	23.44047

Table 2: *These three market indexes are an example from our complete data set containing the French market indices.*

4.2.2 Sustainable Market Indices

The initial approach for the sustainable market indices is to use the same list data set created for the passive ones. However, when examining that data set, several concerns arise. Firstly, none of the market indices in the list for passive market indices in the respective countries contains a suffix that typically denotes sustainability, such as ESG, Sustainability, or Climate. We find, through investigating the list of passive market indices, that no country has a sustainable market index with a net equity percentage above 90% allocated to a specific country. We, therefore, realize the difficulties of using the same market indices data set for the passive index funds as for the sustainable index funds. To circumvent this initial problem, we decided, if possible, to filter the market indices with the help of a Morningstar sustainable filter. To our disappointment, no such filter exists, and thus, the extensive process begins to create our own sustainable filter to apply to the passive market indices universe.

By looking at the prospectus from several sustainable funds, we created a list of characters that are commonly used to denote sustainability. These include, but are not limited to, Sustainability, SUST, ESG, and the Paris Agreement. Continuing, the list could then be used to screen for market indices that include any of these suffixes. This yielded an initial list of market indices, which we then looked at the net equity percentage for each relevant country. To our surprise, none of the

market indices that we come to classify as sustainable has a net equity percentage of more than 50% allocated to a single country. Thus, we find the explanation as to why none of the market indices in the list for the passive ones yielded results for a sustainable screening; there is simply not enough net equity percentage to meet the initial criterion of 90%.

In an ideal world, the data set for the passive market indices would include the sustainable ones as well, but given the current circumstances, there are limited ways of extracting the country-specific sustainable market indexes. Hence, we decided to look at Europe as a whole to gain a more profound understanding of the flow of capital to sustainable investing. When looking at Europe at an aggregated level, we set the net equity percentage to 60% to ensure that the majority of AUM is related to European countries.

4.2.3 Passive Index Funds

The sample for the passive index funds is retrieved from Morningstar. To only include the relevant funds for our analysis, we applied several criteria to narrow down the extensive fund universe. For the analysis of the capital flows toward passive index investing, we select passive equity funds that are still active. Other types of funds are out of the scope. The equity funds included are categorized as either open mutual funds or ETFs. An issue that arises is that many of the funds are listed on several exchanges and in different currencies. To avoid repetition, only one instance of the fund is included, and thus, we ignore the listed exchanges and currency differences. Continuing, the funds are valued with the Morningstar euro exchange rate.

Furthermore, we chose to ignore the domicile in the selection criteria. The majority of the funds in the data set are domiciled in Luxembourg or Ireland, even though the funds cater to different financial markets. This is most likely due to the favorable tax treatment and regulations in these countries. We refrain from using the domicile as the screening criteria as it limits the fund universe. Thus, for the aim of our research, filtering by domicile is not optimal.

Continuing, we choose to ignore the country of sale for the funds. Labeling the funds as belonging to one particular country is impossible by using the country of sale

France Index Fund - Snapshot

Name	**Afer Index CAC 40 Dist**	**AXA Indice Fr C**	**Lyxor CAC 40 (DR) ETF Acc**
Investment Type	Open-End Fund	Open-End Fund	Exchange-Traded Fund
Exchange	0	0	Euronext - Euronext Paris
Base Currency	Euro	Euro	Euro
Domicile	France	France	France
Region of Sale	France	France	France
Firm Name	Amundi Asset Management	AXA Ivst Managers Paris	Amundi Asset Management
ISIN	FR0013526696	FR0000172066	FR0013380607
SecId	F000016HFR	F0GBR0537E	F000011WW0
Ticker	0	0	CACC
PBB	Euronext Paris CAC 40 GR	Euronext Paris CAC 40 GR	Euronext Paris CAC 40 GR
PBB Id	F00000H58E	F00000H58E	F00000H58E
PBB FundId	FSFRA00KBK	FSFRA00KBK	FSFRA00KBK
PBB Index Family Id	0C000024C9	0C000024C9	0C000024C9
Inception Date	15/09/20	04/12/92	13/12/18
Fund Size Date	14/09/23	14/09/23	14/09/23
Fund Size EUR	44,387,046	52,442,000	3,267,087,765
Total Ret 1 Yr (Daily) EUR	20.20637	19.91072	20.88254
Fund Size - 31/12/2022	29,865,395	44,150,000	2,923,114,034
June-22	23,739,301	42,260,000	2,954,568,315
December-21	15,537,658	52,131,748	3,960,476,142
June-21	9,853,105	50,180,089	4,043,825,400
December-20	0	46,310,000	3,805,564,327
June-20	0	42,777,000	3,648,101,586
December-19	0	47,967,000	3,618,825,361
June-19	0	4,669,5000	4,386,310,098

Table 3: *These three funds are an example from our complete data set containing the French passive index funds, dating back to June 2009 (not shown here).*

as the vast majority of funds have their region of sale marked as "European Cross-Border" with few exceptions of funds that are exclusively sold in a single country. The aim is to understand the flow of capital towards passive index investing in the selected countries, regardless of where the investor is based.

Hence, by not limiting ourselves to the country of sale, we get a greater sample size to represent better how the capital allocated towards passive and sustainable index investing has fluctuated for each country over the last decade.

4.2.4 Sustainable Index Funds

The sustainable funds are selected based on the same criteria as the passive ones. In addition, we select 'yes' in the Morningstar criteria of 'Sustainable Investment'. Given the considerable number of different ways of defining sustainable investing, this selection ensures that each fund follows the same level of granularity when defining sustainable investing.

According to Morningstar (Stafford & Viola, 2019), for a strategy to be deemed as a 'Sustainable Investment,' it needs to be described *"as focusing on sustainability, impact, or considering ESG factors in its prospectus, offering document, or regulatory filings."* This selection criteria is the most broad definition in the Morningstar sustainable investment framework (Stafford & Viola, 2019). To investigate the trends in sustainable investing, a more granular definition of sustainability is simply out of scope.

4.3 Matching Process

The challenging part of the data collection process is to match the funds with the corresponding market index. The matching is essential for our analysis, as it tells us the capital flows to these funds that are following market indices linked to the countries. The method that resulted in the most matches is using the benchmark details from the primary prospectus of each listed passive index fund. This process is followed by retrieving the fund IDs. The fund IDs are essential as these are what link the funds with the underlying market index.

Following the extracting of the benchmarks and fund IDs, the matching process begins in order to build the passive index investing panel. Each of the funds is matched to the relevant benchmark by using the VBA function in Excel. The program loops through the entire sample of index funds for every given market index to find the relevant match. To prevent double counting, given that in many cases, an index fund appears in 2 or more instances, we round the fund size up to the third decimal and only include one unique match. This process is repeated for passive index funds across each country. After completing the matching process, the fund size is collected at the end of June and December of each year by using

the "Monthly Comprehensive Fund Size" data point. The comprehensive fund size is the foundation for examining whether the capital flow has increased or decreased over the period in a particular country.

The collected fund sizes are then summed up on a bi-annual basis for all the funds in the sample. As previously mentioned, to avoid repetition, only one instance of the fund is taken into consideration. We ignore any recurring instances of currency differences, funds listed on different exchanges, or different share classes. The total fund sizes are utilized to examine the evolving landscape of passive and sustainable index investing within the six selected countries.

5 Analysis

The unique data set created in this study can be used in a multitude of situations. As the objective of this research is to map out the flow of capital toward passive investing in the selected European countries, we will first describe the data for each country and give a few possible reasons why the capital flows in this particular way. Important to note that we are not making any claims about the movements, simply highlighting a few points that may have influenced the capital movements. Finally, we will discuss how retrocession payments could have affected the growth trajectory of passive index investing. A more detailed explanation is out of scope and deemed suitable for future research.

5.1 Overview: Passive Index Funds

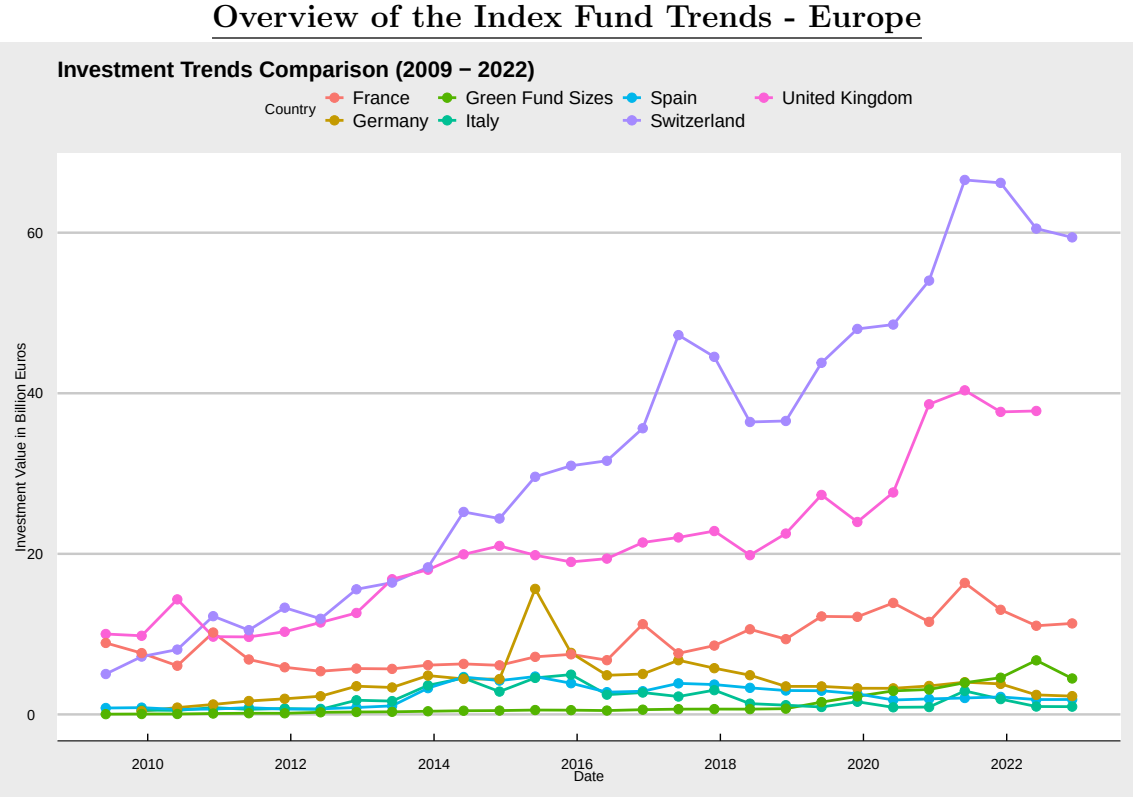

Figure 2: *This graph reports the capital flows to passive investing by matching passive funds to the corresponding market indices. The graph includes the UK, Switzerland, Spain, Italy, Germany, and France from June 2009 to December 2022, sourced from Morningstar. The funds are valued using Morningstar's euro exchange rate and are reported in billion euros.*

The capital allocation trends, as depicted here, represent distinctive patterns of potential market behavior and investor sentiment when viewed through a comparative lens across the selected European countries from June 2009 to December 2022.

5.2 Switzerland

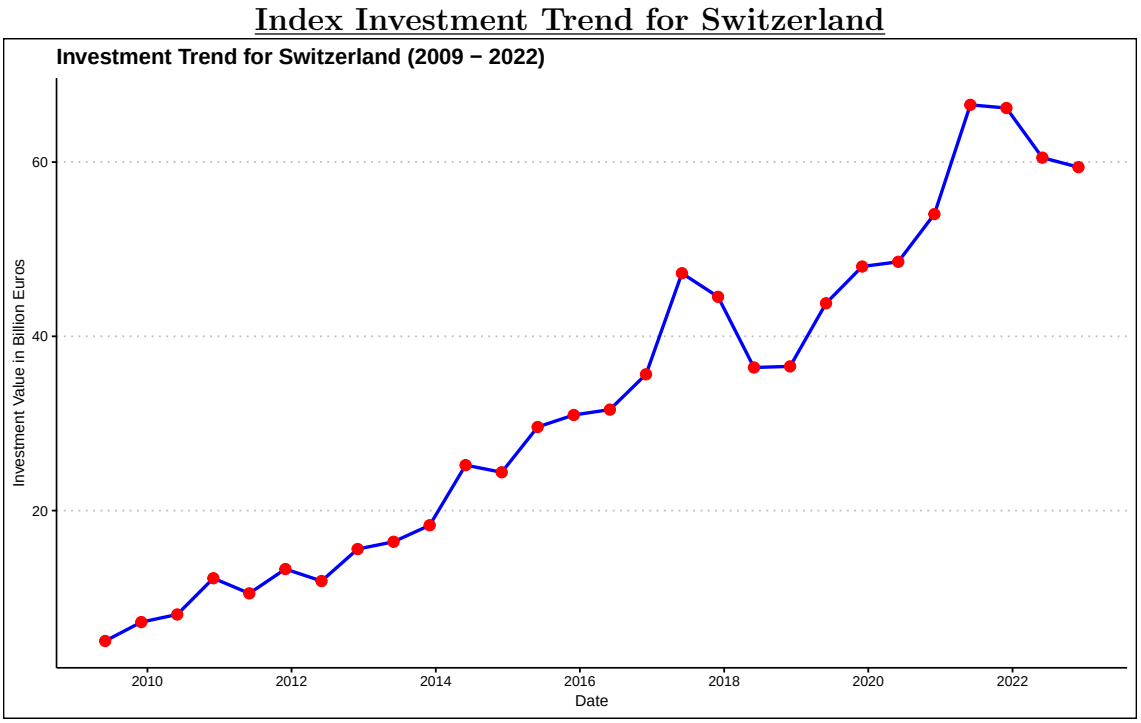

Figure 3: *Passive index funds with a net equity percentage of above 90% allocated towards Switzerland. Data sourced from Morningstar, covering 2009-2022 in billion euros.*

The growth of passive index funds in Switzerland has, for the most part, been continuous throughout the last decade. In June 2009, the cumulative fund size amounted to approximately five billion euros. Similar to the UK, the total fund size peaks in June 2021 to almost 66 billion euros and has decreased in the following periods, representing peaks and troughs that mostly align with economic cycles and global events.

The initial uptick post-2009 can be credited to the post-recession recovery phase, where the passive index investments became a vehicle carrying the market's collective momentum. Switzerland managed to avoid the brunt of the crisis by a 'miracle', which consisted of avoiding huge debts and even reducing the state-level debt (Mombelli, 2018). Furthermore, the Swiss National Bank intervened in 2011 by introducing a minimum exchange threshold for the Swiss franc against the euro, supporting Swiss export companies' profit margin, especially in niche markets and

high-quality products, helped soften the blow of the financial crisis and ensure a much quicker recovery (Mombelli, 2018).

As we go further, the increase in 2015 coincides with the 2015 quantitative easing package from the European Central Bank. The quantitative easing by the ECB aims to stimulate the EU economy and add liquidity to the euro market. The Swiss National Bank (SNB), in an effort to protect the Swiss franc, lowered the Swiss franc's interest rate before the QE started. In January 2015, the euro devalued around 15% against the Swiss franc in two weeks as the SNB declared that it would discontinue the minimum exchange rate between the two currencies (Min, 2016). However, we cannot be sure of the effect QE had on passive index investments.

The decline observed in the graph towards 2018 coincides with a global market downshift, with increasing geo-political tensions and FED increasing the interest rate (Frazee, 2018). We note an uptick in cumulative fund size following the COVID-19 pandemic in 2019. A possible reason for the increase could be that passive index funds offer broad market exposure as the fund tracks an established market index, which is likely to appeal to investors during volatile times. For example, Sushko and Turner (2018) found in their research that passive index mutual funds were the least volatile during the equity market turbulence in 2015.

5.3 United Kingdom

Index Investment Trend for United Kingdom

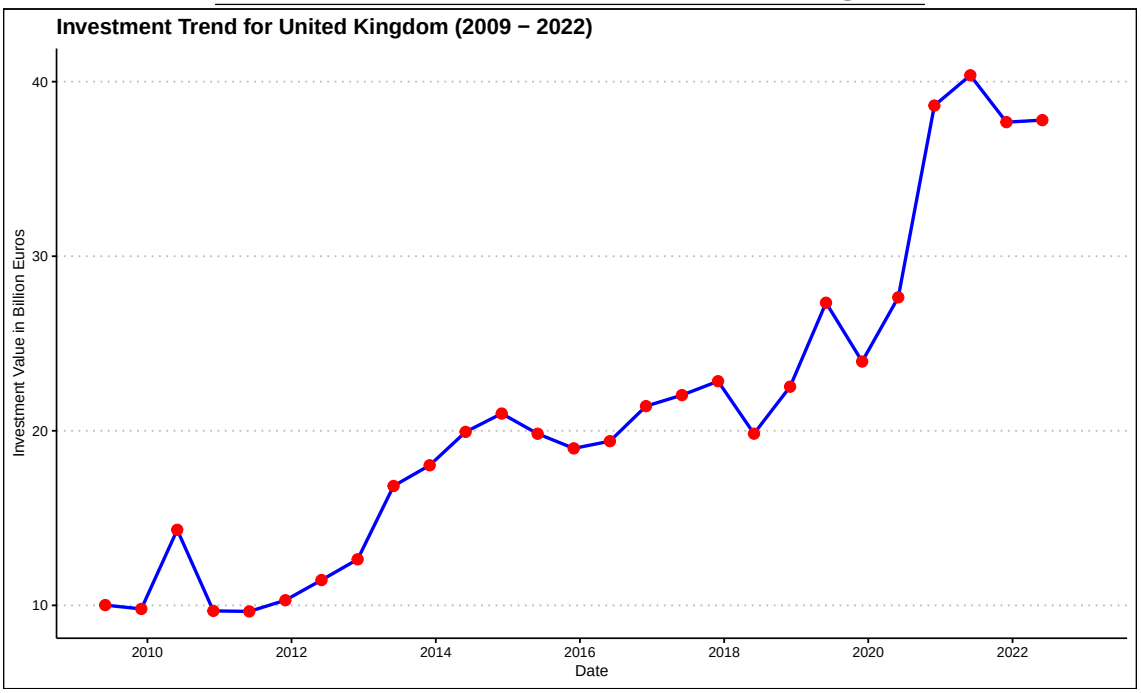

Figure 4: *Passive index funds with a net equity percentage of above 90% allocated towards the UK. Data sourced from Morningstar, covering 2009-2022 in billion euros.*

As of June 2009, the fund sizes of passive investing amount to c.10 billion euros. Growth across the decade has not been uniform, but overall, there is a trend of increased capital flow towards passive investing. The upward trajectory in the graph post-2009 does align with the UK's recovery from the global financial crisis, as indicated by a uniform growth in the UK's real GDP, which ultimately regained pre-downshift levels by 2013's third quarter (Office for National Statistics, 2015).

From 2009 to 2012, the cumulative fund size has been relatively stable. One interesting thing to note here is that during this period, the rate of GDP growth in the UK exceeded that of the population growth, despite the adverse effects of the downshift as the GDP per head in 2014 was less than that of back in 2007 (Office for National Statistics, 2015).

The growth of passive index investing takes off in 2013 and continues for the

majority of the decade, with a few instances of decline, which correspond to periods of economic uncertainty, particularly during the years of the Brexit referendum. The uncertainties brought upon by Brexit negotiations and outcomes likely influenced investment sentiments, potentially leading to the variability we observe in the graph (Bank of England, 2021). All in all, over the last decade, the cumulative fund size in the UK has increased, peaking at c.40 billion in June 2021.

5.4 Germany

Figure 5: *Passive index funds with a net equity percentage of above 90% allocated towards Germany. Data sourced from Morningstar, covering 2009-2022 in billion euros.*

Germany's passive fund investments from 2009 to 2022 show a complex profile characterized by steady growth with occasional volatility, with the initial modest growth signaling a post-2008 economic recovery phase. The slowdown around 2011-2012 corresponds with the Eurozone debt crisis, where the potential decline could have been a lot more severe had it not been for Germany's strong economic policies. As such, in 2012, five years post the financial crisis, the German financial system

grew increasingly robust, with banks having higher quality tier 1 capital. Thus, the increasing resilience of the German financial system may have attracted passive investment inflows (Deutsche Bundesbank, 2012).

When investigating the cumulative fund size in 2015, we found an interesting pattern. Almost all of the funds increased, with a few exceptions, enormously in size, some by several hundred percent. However, we could not pinpoint the exact reason for this pattern. In 2015, the two most important features of the German economy, as stated by the Deutsche Bundesbank (2015), were the exceptionally low-interest rates and modest growth. At this time, the Eurosystem also adopted a quantitative easing program to ensure financial stability. The monetary policy instrument was targeted to operate on credit, risk incentives, and pricing of asset prices. Although 2015's remarkable peak coincides with the ECB's asset purchase program, we cannot draw a plausible connection between the two to explain the peak. Deutsche Bundesbank (2015) shows that total assets in open-ended investment funds increased drastically in 2015. As stated by Deutsche Bundesbank (2015) *"Investment funds are heavily interconnected with the rest of the financial system via both assets and liabilities"*, and thus, the economic environment may have influenced the rise in passive index funds during that time period.

The fluctuations observed from 2016 to 2017 can possibly be traced back to Germany's political landscape, including reactions to Brexit and the US elections, with Germany being touted as the beacon of stability across Europe (de Vries & Hoffmann, 2017). The pronounced spike in 2017 further coincides with Germany's robust GDP growth and government budget surplus. In 2017, the economic growth in Germany surpassed the average rate of growth compared to the last decade. Compared to 2016, the GDP grew by 2.2% in 2017, which is almost 100 basis points higher than the average growth. The strong economic growth perhaps enhances the attractiveness of passive index investments in Germany (Destatis, 2018). In contrast, Germany's economy is slowing down, and mounting trade tensions could be credited for the decline observed in late 2018. Nonetheless, the surge right after could again be accounted for via COVID's impact on Europe's economy as a whole.

5.5 Spain

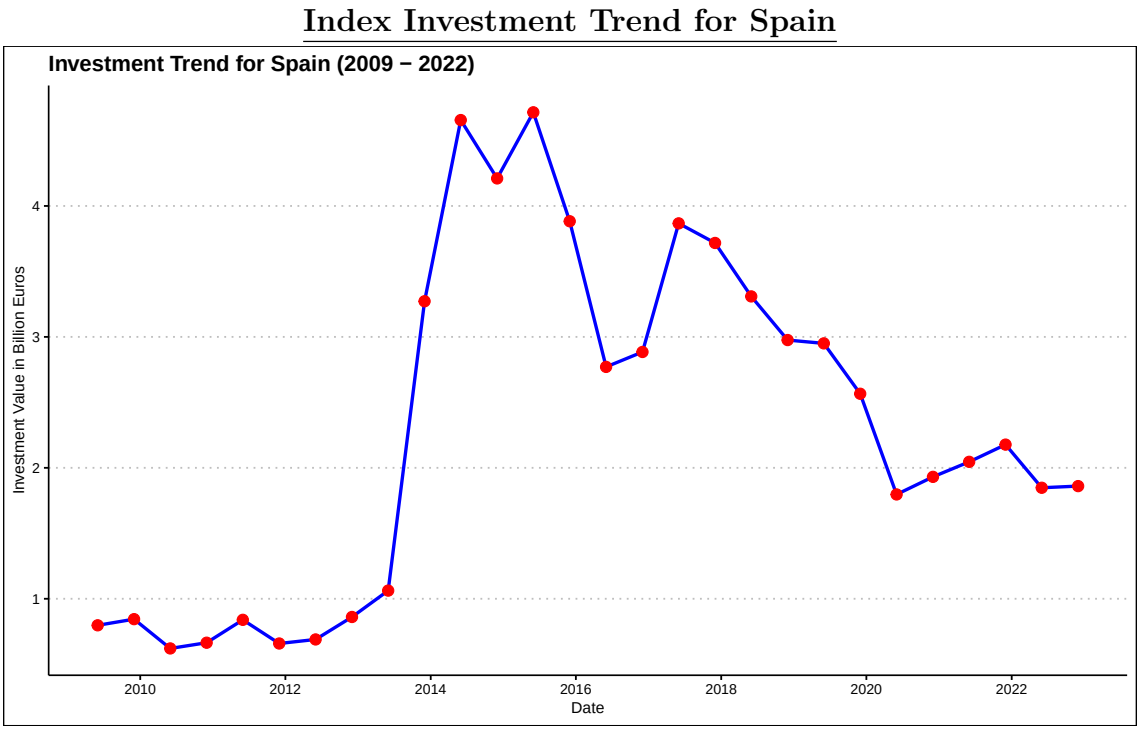

Figure 6: *Passive index funds with a net equity percentage of above 90% allocated towards Spain. Data sourced from Morningstar, covering 2009-2022 in billion euros.*

Spain's passive index fund investment graph exhibits a volatile and somewhat dynamic trajectory, reflecting a complex interplay of domestic economic factors and broader, more complex European fiscal dynamics. The initial phase shows modest growth, indicative of a recovering economy post-2008. Back in 2012, Spain adopted the European Stability Mechanism in order to reform the financial sector. During that time, Spain was suffering from the real estate bubble and the euro debt crisis, which had led to severe turmoil in the financial market. The efforts substantially improved the condition of the financial market, resulting in equity prices increasing above 50% (Teja et al., 2023). Spain's economic recovery, straightened in its pace by structural reforms, may be connected to the sharp incline observed around mid-2013. The volatility observed during 2018 can potentially be credited to certain political uncertainties and economic challenges, including the impact of general elections on market sentiment and the Catalan independence movement (ING, 2018).

Despite the pandemic around 2020, the graph shows a pronounced growth, which may be connected to Spain's resilience and the effectiveness of government measures such as the ERTE program. The ERTE is directly credited with having prevented a dramatic rise in unemployment during the period (Garcia-Clemente et al., 2022; Barghini, 2021). In addition, substantial benefits from the EU's NextGeneration plan, which boasts substantial investments in green technology and infrastructure, are expected to provide a medium to long-term boost to Spain's economy. However, the impact is still up for debate, with the medium-term growth potential being projected by Fitch Ratings at around 1.2% (Barghini, 2021).

The latter years display a recovery, suggesting growing investor confidence and indicating an inclination towards passive investment strategies. Spain's economic outlook remains cautiously optimistic, with this potentially being reflected in the passive index fund trends.

5.6 France

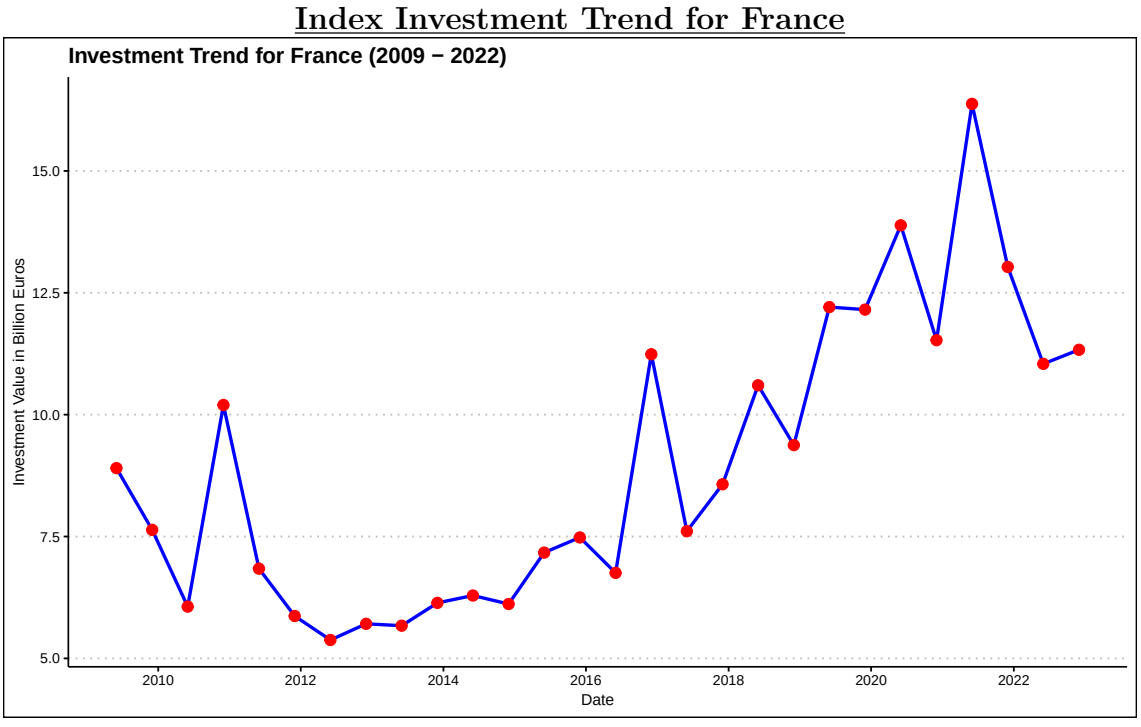

Figure 7: *Passive index funds with a net equity percentage above 90% allocated toward France. Data sourced from Morningstar, covering 2009-2022 in billion euros.*

France's graph shows a trend of progressive growth with noticeable fluctuations. Post 2010, France's gradual recovery from the financial crisis could be reflected in the growth of passive funds. The time frame captures the significant French GDP bounce back starting in the second quarter of 2020, following the sharp GDP decline in 2019 caused by the global pandemic (INSEE, 2022).

Moreover, at the start of 2022, the European economy experienced turbulence from the Omicron wave and rising oil prices while simultaneously being surrounded by persistent geopolitical tensions. However, for the French economy, the economic consequences appear to be less severe than in other European countries, and the effects seem to be limited and mainly temporary (INSEE, 2022). This may have contributed to the recovery in passive index investments. Since 2022, the graph showcases a consistent upward trajectory, signifying that capital is once again flowing to passive index investments.

5.7 Italy

Figure 8: *Passive index funds with a net equity percentage of above 90% allocated towards Italy. Data sourced from Morningstar, covering 2009-2022 in billion euros.*

Italy's passive index fund investments from 2009 to 2022 are characterized by a notably volatile trajectory. Starting with subpar growth, the graph oscillates to mirror Italy's economic instability and recovery efforts. Like many European countries, Italy grapples with significant economic challenges. Most remarkably, Italy's debt-to-GDP ratio was more than 300% around 2010 (Basmajian, 2022). Economic research considers that when the debt-to-GDP ratio reaches the threshold of 300%, economic growth often declines, and living standards start to fall (Basmajian, 2022; de Rugy & Salmon, 2020). The crisis in Italy resembles the broader European crisis that started in Greece, engulfed in a period of high debt and political instability. However, what compounds this issue more is the fact that in 2012, the growth of the prime-age population in Italy turned negative, entailing a smaller working-age population (Basmajian, 2022).

The sharp upward trend in Italian passive fund investments post-2019 replicates the global trends in passive index investing during the COVID-19 pandemic. As stated by Canepa (2022), the ECB has helped finance government deficits for the last decade, especially during the pandemic. During the pandemic, European governments responded by deploying several fiscal actions, which can be broadly classified into three main pillars: firstly, payroll support; secondly, tax cuts and tax moratoria; and thirdly, other support.

According to ECB (2021),*"As for support in the form of tax cuts and tax moratoria, one-third of firms in Italy said that they had benefited from such support."* In Italy, around 70% of SMEs took advantage of the government's fiscal support deployed in response to the pandemic (De Santis et al., 2021). Furthermore, the dip in the graph may be connected to the GDP contraction that followed the pandemic, as the Italian GDP decreased by 5.4% in Q1 of 2020 and fell by another 12.4% in Q2 of 2020. The contraction mainly resulted from the decline in domestic demand and a slump in investing (Squire Patton Boggs, 2020).

5.8 Passive Index Sustainable Funds

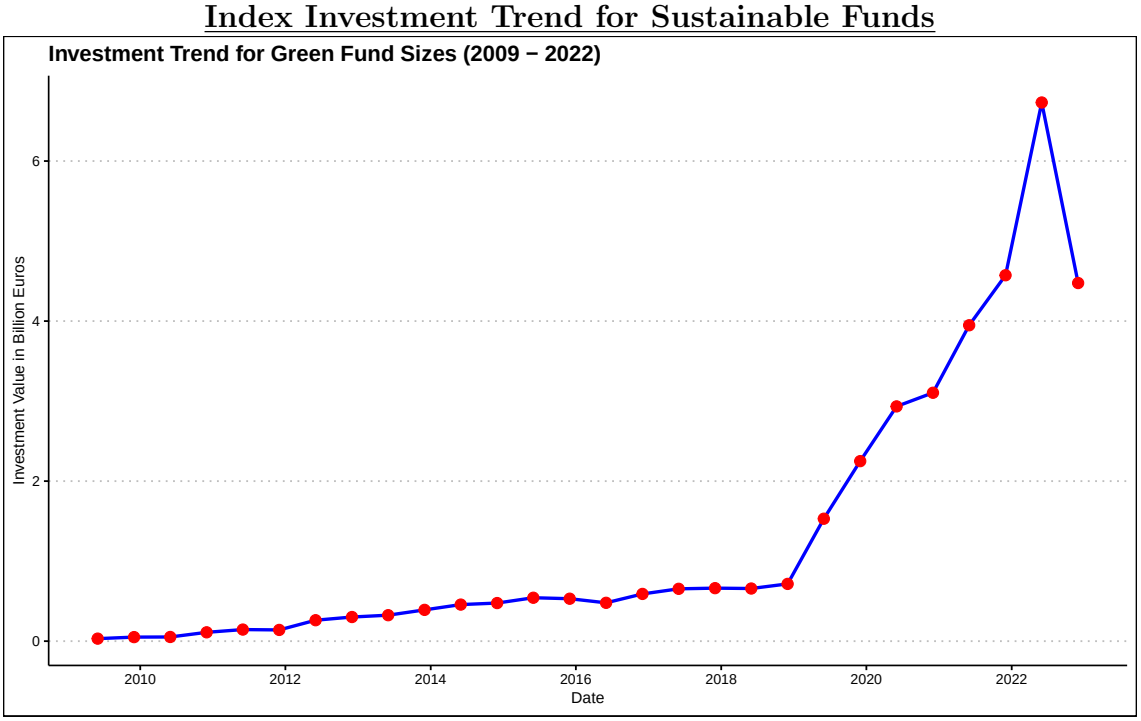

Figure 9: *This graph depicts the growth of sustainable passive investments from 2009 to the end of 2022. The data is sourced from Morningstar and presents the passive sustainable funds with a net equity percentage of above 60% allocated towards Europe.*

The graph of investments in passive sustainable index funds showcases a peculiar pattern. From the beginning of 2009 until 2019, the growth has been un-noteworthy, increasing very slightly each year. However, in 2019, the graph exhibits a sharp increase that continues well into 2022. The turning point for sustainability reaching mainstream exposure is attributed to the Paris Agreement, signed in 2015 by 196 countries at the UN Climate Change Conference (zeb, Morningstar, 2021). In 2019, the uptick in the graph can be related to the uptake of Paris-aligned portfolios that happened during that year.

The rise can also be connected to the increasing regulatory initiatives that have been implemented in recent years. The regulations aim to establish robust frameworks for a more concise and cohesive definition of what makes an investment sustainable. For example, in March 2021, the EU implemented the Sustainable Finance

Disclose Regulation (SFDR) with the purpose of enhancing transparency in regard to sustainability risks and the potential impacts sustainable products have. Later, in 2023, the EU also requires detailed and standardized information on sustainability from a product level basis (Walhter et al., 2023).

The continued growth since 2019 may be related to the growing sustainable finance landscape. As economies have started transitioning towards a more climate-resilient society, the interest in sustainable investment is gaining momentum. According to Walther et al. (2023), the growing interest in sustainable finance is reflected in the increasing flow of capital allocated towards sustainable assets. As the graph depicts, after the outbreak of the COVID-19 pandemic, sustainable funds attracted large inflows of capital in both 2019 and 2020. One potential reason for the finding, to quote Walhter et al. (2023), is *"Evidence from the coronavirus pandemic indicates that sustainable funds are relatively more resilient to the materialization of tail risks".*

Continuing, studies have shown that sustainable funds are attractive to investors who have greater patience when it comes to returns. This patience indicates that the demand for sustainable funds in volatile times is rather stable and that sustainable funds are less likely to have large redemptions. On the contrary, the graph takes a steep dip in 2022 as the war in Ukraine starts and has a great impact on the European economy. As the inflation and interest rates surge amidst an ongoing energy crisis across Europe, the inflow to passive sustainable investing subsided abruptly (Walhter et al., 2023).

5.9 Commission, Rebates, and Retrocession Payments

As mentioned, we note that the growth in fund sizes in the UK and Switzerland deviates from the rest of the sample. Although there are a multitude of potential reasons to explain this phenomenon, we choose to discuss how retrocession payments may contribute to this. Retrocession payments refer to the commission that asset managers pay to distributors, such as banks and advisors, for selling a particular product.

As per the EU's MiFID II directive, retrocession payments are permitted if dis-

tributors *"provide execution-only services or offer access to third-party products from a competitor while also providing a"high level" of service, such as ongoing financial advice."* (Johnson, 2020). Retrocession commission is a heavily discussed topic in the financial industry as it encourages impartiality and favoritism from the advisor to induce products where the advisor receives a commission. It raises the question of whether or not advisors are doing what is in the best interest of the clients versus what is in the best interest of the advisor. The commission is usually discrete and thus not visible to the clients (Twin, 2022). Retrocession payments incentivize distributors to sell expensive, actively managed funds. Distributors receive commissions from asset managers to distribute these funds, which puts the passive funds at a disadvantage as there tends to be no equivalent inducement for passive funds (Johnson, 2020).

Back in 2012, the UK was the first country in Europe to fully prohibit inducements with the implementation of the Retail Distribution Review (RDR) and the Financial Advice Market Review (Martino et al., n.d.). The Reviews aim to align the interests of financial advisors with the interests of their clients, increase market competition, and increase the trust in financial advisors. After the implementation of the ban, the FCA, which is the financial regulator in the UK, investigated the impact on the financial market from 2017-2020. From the investigation, the FCA found that retail clients, to a larger extent, relied on advisors. Continuing, the FCA finds, on the one hand, that sales decreased on products that had a high commission before the RDR. On the other hand, sales increased on products that had no commission or low commission pre-RDR (Martino et al., n.d.).

Interestingly, in 2012, the highest court in Switzerland ruled that the end investor is entitled to rebates, which can amount to up to 2% of assets (Johnson, 2020). Historically, Swiss distributors have received commissions from asset managers, who have encouraged distributors to push their products on the clients (Riding, 2019). As of 2012, the Swiss court has banned banks from keeping commissions, entailing that the investors can claim such commissions back. The commissions now belong to the end investors. To give an example, clients who have invested large amounts using Swiss banks may be entitled to recover sums in the millions, as the investors are granted a 5 percent interest on the amount invested per year (Riding, 2019).

Following the court ruling, passive investments soared to 58.7% of the Swiss market (Johnson, 2020).

However, in Germany, France, Italy, and Spain, the growth of passive index funds is hampered by the "kickback" model. As a result, one may argue that countries that still use a "kickback" model prevent index-tracking funds from following the trajectory seen in other countries that do not implement such a model (Johnson, 2020).

6 Limitations

After investigating the European landscape of passive and sustainable index investing, we have come across a few limitations. Firstly, even though Morningstar has a comprehensive list of funds, there are still a lot of fields missing in their data. This lack of completed field makes it difficult to construct a complete list during the matching process, and thus there are funds missing from our data set that are supposed to be included. As the data from Morningstar becomes more complete in the future, this limitation is easy to solve and we conclude that given the resources we have, our sample is fit for our purpose.

Continuing, the data available in regard to sustainable funds is limited. The initial plan of constructing the in and of flows of capital towards sustainable passive investing in each respective country needed to be abandoned as there is not enough available data at the moment. As we needed to create our own filter for the sustainable market indices, the sample may display some characteristics of sampling bias. We used the most common ways to denote sustainability; market indices using such suffixes have a higher probability of being included. This process may have led to the exclusion of market indices using a less-known way of denoting sustainability.

We acknowledged that in the current landscape of sustainable investing, the majority of funds are actively managed (Walther et al., 2023). For the purpose of this paper, we have chosen to only look at passive funds, and we recognize that we limit the size of sustainable investments by doing so. Even though it may have yielded a larger sample to look at actively managed funds, we deem the passive segment as a great opportunity to get more insight into a growing field in the

financial markets. The market share of passive sustainable funds has been gaining a lot of traction in recent years, especially in Europe (Walther et al., 2023).

As we have previously mentioned, the variables we chose to explain the in and out flows of capital are based on qualitative factors. Thus, another limitation of this paper is that we do not cover all the variables that may have affected the movements across the countries but simply give a few suggestions. Even if we were to conduct statistical analysis on the cumulative fund size, our sample is too small to yield any fruitful insights. The final limitation of our sample is that it is constrained by survivorship bias. We have only included passive equity index funds that are alive and excluded the dead ones.

7 Future Research

Given the limited time frame to conduct our research, we see many possibilities that this data set can be used in the future. Starting, it would be interesting to extend the geographical scope to cover Europe completely. One possibility could be to compare this data set to the US and explore the differences between the markets. To take it one step further, the same sampling method could be used for passive index funds worldwide to create the complete data set of capital flows toward passive investing globally.

Furthermore, future research can use this data set as a starting point to determine what factors may have an impact on the flow of capital toward passive index investing. The factors could be, to mention a few, interest rates, taxes, corporate governance, and sustainable policies in each respective country. Understanding if there is a correlation between the factors and the flow of capital toward passive investing could potentially help determine what the future has in store for passive investment vehicles.

For sustainable index funds, a major limitation is the lack of available data, as previously mentioned. As sustainable investing continues to develop and gain more importance in the financial community, it would be of great interest to replicate our data collection in the future. One possibility would then be to investigate country by country and see how the size of sustainable index funds has evolved over a period

of time, and not on a European level, as this research paper has done. If the data regarding sustainable index funds becomes readily available, it would be interesting to discover what type of sustainable fund is driving the growth and how that differs from country to country. Another aspect that might be of value is to examine how different sustainable funds are performing compared to each other and how that correlates to overall market trends in regard to sustainability.

The data set can be used to compare the growth of European index funds to either European market indices or global benchmarks. By comparing the index funds to, for example, the S&P 500, one could explore how passive index funds are growing relative to the broader market and draw conclusions on why specific countries are gaining more traction than others and how that compares to the global market. One could then compare the performance of the European index funds to the market indices to gain insight into country-specific exposure and the diversification benefits of investing in a certain country.

The data set may be used to discover how fund sizes are affected by major economic or political events. This can be done on an aggregated European level or per specific country. An interesting aspect to examine would be to see how Brexit affected the passive index funds in the UK, and what effects it had on investor sentiments in regards to passive index investing. Continuing, it would be valuable to discover what affects the flow of capital towards sustainability. One might survey investors in each country to determine how important sustainability is and then compare it to the flow of capital toward sustainable index funds. One step further would be to look at a more granular level of sustainability. In our research, we have disregarded the sectors that the funds are exposed to. A future research topic could isolate different sectors to see how the capital flows to specific sectors and the underlying reasons.

The analysis could explain which sectors are driving the growth of passive index investing in each country and find commonalities and differences across European countries. One aspect could be to compare the performance of the funds tilted towards a specific sector across countries and discover what makes country-specific sector funds perform differently.

Given that our data shows the in and out flow of capital, an area of further investigation may be to understand when and why investors decide to take up and exit their positions. As the data covers the last decade, many instances can be examined. Understanding why investors decide to exit their positions might give insight into investor risk appetite and how that differs from country to country. The data set we have created can provide many insightful perspectives on investor sentiment for the respective countries and how it has evolved.

Moreover, given the extensive data set we have created, one can derive a lot of information in regard to the largest asset managers. According to Fitchner et al. (2017), the passive index industry is ruled by the "Big Three", namely BlackRock, Vanguard, and State Street. Our data set could help give insight into whether the "Big Three" are dominating within each of the respective countries and which other asset managers are challenging this position. There is a lot in previous research regarding the "Big Three" (Fitchner et al., 2017; Chaffee, 2021), and the data set could be used to conduct similar research on a European level.

8 Conclusion

This thesis has investigated and mapped the European landscape of passive index investing using fund sizes. The countries of interest in this research have been the UK, Switzerland, Germany, France, Italy, and Spain. Continuing, this study has aimed to do the same process for sustainable index funds but to no avail. Instead, we have looked at Europe at an aggregated level. The purpose of this study is to follow the in and out flows of capital towards passive index investing over the last decade, starting in 2009 and finishing in 2022. The flow of capital is measured by the cumulative fund size on a bi-annual basis.

We find no uniform growth across the countries. The countries each have unique growth patterns, but one thing we can derive is that from the beginning of the time scope in 2009 to the end of 2022, all the countries vary a lot in terms of cumulative fund size for passive index funds. Furthermore, to our disappointment but not to our surprise, the available data for sustainable market indices is poorly documented and difficult to obtain. One interesting finding we could derive from the limited

existing data is a preview of the growth of sustainable index funds. We find that these funds have had almost no growth until 2019. It suggests that sustainable index funds have only recently gained traction in the market.

For the closing remarks, we want to emphasize that we have created a unique data set to the best of our abilities with the existing data. Such a process has previously never been done before. Our findings open the door to many new possible research topics. Thus, we succeeded with our goal for the thesis, to create a data set that can be used as the starting point in future research regarding passive and sustainable index investing.

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