

# Net Performance and Alpha of EU Equity Mutual Funds: A Cross-Country Analysis

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**Abstract:** *This paper examines whether equity mutual funds domiciled across European Union countries deliver systematically different outcomes for individual investors. Using a cross-country dataset, we analyze performance through quarterly fund returns and benchmark-adjusted alpha, focusing on full distributions rather than averages. Results show that raw returns differ across countries, with larger markets exhibiting more stable distributions and smaller or peripheral markets displaying higher volatility and downside risk. After adjusting for benchmarks, however, cross-country differences compress markedly. Alpha distributions cluster around zero, indicating that persistent outperformance is uncommon. A small group of Northern and core countries shows a slightly higher incidence of positive alpha, though effects remain modest. Overall, findings suggest that EU equity mutual funds can generate positive returns, but consistent market beating is rare and concentrated. Common market exposure and implementation costs dominate investor outcomes, implying that country domicile matters less for alpha than for raw return volatility across markets.*

**Keywords:** equity mutual funds, returns, alpha, performance evaluation, European Union.

## 1. Introduction

Equity mutual funds remain one of the most widely used investment vehicles for individual investors across the European Union. Despite increasing market integration, regulatory harmonization, and the growing availability of cross-border investment products, investors continue to allocate capital predominantly into funds domiciled in their home countries. Prior research suggests that such home bias may persist even within integrated financial markets and may expose investors to systematic differences in performance outcomes (Otten & Bams, 2002; Ferreira et al., 2013). This raises an important question: does the country of fund domicile matter for investor outcomes in the European context? In particular, it remains unclear whether investors can expect systematically different performance when investing in equity mutual funds domiciled in different EU countries.

The primary motivation of this study is to examine whether cross-country differences exist in the performance of EU equity mutual funds, and whether these differences persist once market movements are taken into account. We focus on two complementary dimensions of performance. First, we analyze the distribution of quarterly fund returns, capturing the direct investment experience of individuals. Second, we examine benchmark-adjusted alpha, defined as the difference between fund returns and benchmark returns, which allows us to assess whether funds deliver value beyond passive market exposure. This distinction is crucial, as a large body of

literature shows that while active funds may generate positive raw returns, their ability to produce persistent alpha net of costs is limited (Sharpe, 1991; Fama & French, 2010).

By employing a cross-country perspective and analyzing the full distributions of returns and alpha, this paper contributes to the literature in several ways. First, it extends earlier European mutual fund studies- largely focused on averages or single markets- by providing a distributional and country-level comparison of performance outcomes (Ferreira et al., 2013; Cuthbertson et al., 2022). Second, it offers new evidence on whether certain EU countries are associated with systematically higher investor outcomes or more frequent benchmark outperformance. In doing so, the study addresses a question of direct relevance to individual investors and policymakers alike: whether differences in fund performance across EU countries reflect genuine value creation or merely common market exposure combined with country-specific implementation effects.

## 2. Methodology and Data Description

In our article we are working with sub database called Open End and Exchange Trade Funds which is part of Morningstar Direct database. We primarily focus on equity mutual funds domiciled in selected EU countries. Selection of equity mutual funds was based on the following criteria:

- Inception Date  $\leq$  31.12.2007 (fund is still active till now)
- Global Broad Category Group = Equity
- Base Currency = Euro

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- UCITS = Yes
- Minimum Investment (Base Currency) <= 200,000 €
- Domicile =All Europe countries.

We were not able to extract all necessary information about UCITS equity mutual funds for all EU countries, so we are working with the following 22 EU countries: Austria (AT), Belgium (BE), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (GR), Iceland (IS), Ireland (IE), Italy (IT), Latvia (LV), Liechtenstein (LI), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Norway (NO), Portugal (PT), Slovenia (SI), Spain (ES) and United Kingdom (GB). We analyze the selected equity funds over the last 11-year period, on a quarterly basis, from 1Q 2008 to 4Q 2018. Figure 1 below shows us number of analyzed funds according to domicile and according to fund size. Overall, we analyze 3,870 funds with total 1,386 B. €. Most mutual funds are domiciled in Luxembourg (1,381 funds, 36.68% of all analyzed funds), while the fewest are domiciled in Iceland, Latvia, and Lithuania (1 fund per country, 0.03% of all analyzed funds). In this analysis, we exclude the period from 2020 onwards, as it was marked by elevated volatility due to the COVID-19 pandemic and, subsequently, the war in Ukraine.

Domicile	Number of funds	Share of funds to total analyzed funds	Fund size	Ranking based on Fund size	Average fund size per fund	Ranking based on average fund size per fund
Austria	298	7.82%	27 321 808 259,00 €	8	91 683 920,33 €	13
Belgium	182	4.78%	39 822 913 759,00 €	6	218 807 218,46 €	9
Denmark	4	0.11%	253 471 953,00 €	18	63 367 988,25 €	14
Estonia	3	0.08%	74 053 874,00 €	19	24 684 624,67 €	17
Finland	189	4.96%	39 862 848 500,00 €	5	210 914 542,33 €	10
France	798	20.95%	181 649 553 378,00 €	2	227 631 019,27 €	7
Germany	264	6.93%	151 247 328 792,00 €	3	572 906 548,45 €	3
Greece	11	0.29%	318 684 982,00 €	16	28 971 362,00 €	16
Iceland	1	0.03%	2 290 443,00 €	21	2 290 443,00 €	21
Ireland	216	5.67%	111 664 556 234,00 €	4	516 965 538,12 €	5
Italy	94	2.47%	20 622 421 877,00 €	9	219 387 466,78 €	8
Latvia	1	0.03%	3 053 736,00 €	20	3 053 736,00 €	20
Liechtenstein	19	0.50%	871 512 773,00 €	13	45 869 093,32 €	15
Luxembourg	1 366	35.86%	738 737 409 531,00 €	1	540 803 374,47 €	4
Malta	3	0.08%		17	94 923 306,33 €	12
Netherlands	35	0.92%	10 266 115 453,00 €	11	293 317 584,37 €	6
Norway	3	0.08%	5 252 942 103,00 €	12	1 750 980 701,00 €	1
Portugal	36	0.95%	786 974 318,00 €	14	21 860 397,72 €	18
Slovenia	34	0.89%	607 979 922,00 €	15	17 881 762,41 €	19
Spain	233	6.12%	31 722 979 926,00 €	7	136 150 128,44 €	11
United Kingdom	19	0.50%	11 783 299 443,00 €	10	620 173 654,89 €	2
Total	3 809	100.00%	1 373 156 969 175,00 €	-	360 503 273,61 €	-

**Figure 1:** Basic information about amount of funds analyzed and their size according to domicile based on Morningstar Direct Database (2019)

The commercial database from Morningstar Direct provides two data series for benchmarks: the fund's own benchmark, referred to as the Primary Prospectus Benchmark, and the assigned benchmark, referred to as the Morningstar Category Benchmark. The first is based on research done on the Prospectus of every fund individually and represents the benchmark specifically mentioned by the UCITS management company. The second is a concept developed by the data provider to show the "true" benchmark of a fund – that is, in cases where the Prospectus does not mention a market index or it does, but it is not representative for the fund's strategy and asset allocation, the Morningstar Category Benchmark is the result of a qualitative analysis of all fund characteristics that would allow to determine which is, in fact, the true market counterpart. Therefore, for the purpose of this research, the analysis is primarily performed on the Primary Prospectus Benchmark and, when the latter is unavailable, using the Morningstar Category Benchmark. In table below

we show number funds with used benchmark type for each country domicile which we are using in our article.

**Table 1:** Number of funds benchmark based on Morningstar Direct Database (2019)

Domicile	Primary Prospectus Benchmark	Morningstar Direct Benchmark	No benchmark
Austria	142	154	4
Belgium	151	31	2
Denmark	4		
Estonia		3	6
Finland	146	43	2
France	566	234	2
Germany	139	125	1
Greece	8	3	
Iceland	1		
Ireland	153	67	16
Italy	60	35	
Latvia		1	
Liechtenstein	10	9	
Lithuania			1
Luxembourg	1077	283	21
Malta	3	1	
Netherlands	28	7	
Norway	3		
Portugal	4	32	1
Slovenia	8	26	3
Spain	111	122	2
United Kingdom	19		
Total	2633	1176	61
Relative share	68,04%	30,39%	1,58%

Totally 2,633 funds have available information for the Primary Prospectus Benchmark and only 1,176 funds have available information for Morningstar Direct Benchmark. From all 3,870 funds, only 61 funds do not have available information about any type of benchmark, so we excluded those funds from analyses.

For selected mutual funds we calculate three key indicators which are used for mutual funds comparison generally in theoretical and practical finance. The  $f(r)$  and represents the price change of the fund during the selected time period. The second indicator is called alpha ( $\alpha$ ), which represents relative performance to the benchmark. Alpha is the difference between the return of the fund and that of the benchmark, hence it can be positive or negative, while excess return is by essence positive. If alpha is positive, the fund manager proved the ability to "beat" the benchmark and delivered excess return to an investor. If alpha is negative, the fund manager simply underperformed the benchmark (particular market) and delivered a lower return than an investor may have achieved if invested passively into a financial instrument tied to the market benchmark or actually buying the market.

In finance, many financial professionals and academics have used many different financial ratios to evaluate performance of financial tools or funds. In our article we are focusing on three basic ratios which we apply to measure mutual funds' performance in selected countries.

First, we calculate quarterly ( $t$ ) return ( $r$ ) for each fund ( $i$ ) and benchmark ( $b_i$ ) from their quarterly prices ( $P$ ) as follows:

$$r_{i(b_i),t} = \frac{P_{i(b_i),t} - P_{i(b_i),t-1}}{P_{i(b_i),t-1}} \quad (1)$$

where  $t \in \{1, 2, \dots, T\}$  and  $T = 44$ .

As a second ratio we calculate alpha ( $\alpha$ ) on quarterly basis for each fund  $i$  in time  $t$  as follows

$$\alpha_{i,t} = r_{i,t} - r_{b_i,t} \quad (2)$$

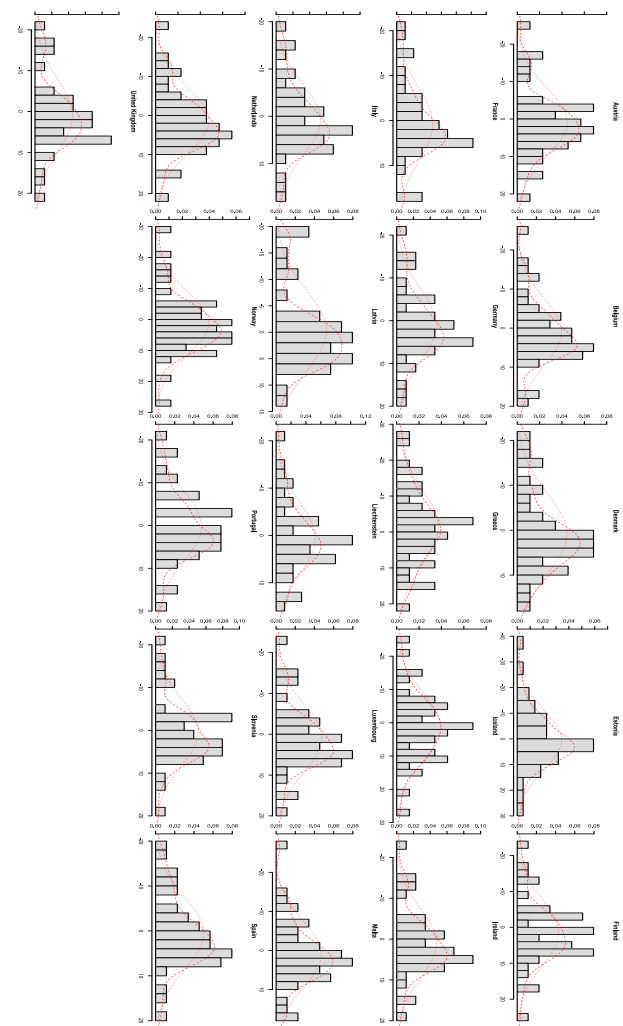
We calculate the alpha (excess return) using quarterly data on each fund's performance compared to its benchmark.

### 3. Results and Discussion

Figure 2 below presents the distribution of quarterly returns for selected countries over the sample period, as well as the distribution of alpha estimates for the selected countries (Figure 3). Across panels, the distributions are unimodal and centered near zero to mildly positive returns, but they are not normal: several countries exhibit fat tails and a slight left skew, indicating that large drawdowns occur more often than equally large gains. This pattern accords with well-documented “stylized facts” of equity returns—heavy tails, volatility clustering, and asymmetry—which imply that Gaussian models understate downside risk (Cont, 2001; McNeil, Frey, & Embrechts, 2015). In practice, this means sample averages can look benign while tail risk remains material, especially over quarterly horizons.

The dispersion differs across markets. Large, liquid core markets—such as Germany, France, the United Kingdom, and the Netherlands—show tighter, more symmetric distributions clustered close to zero. By contrast, smaller or less liquid markets—e.g., Iceland, Latvia, Estonia, and Malta—display wider spreads and heavier tails. The cross-country contrast is consistent with evidence that market size and trading frictions (illiquidity, costs, and turnover) amplify volatility and the probability of extreme returns, particularly outside the largest markets (Amihud, 2002; Aberdeen Investment, 2024).

Country profiles also reflect episodic stress. Southern European markets such as Greece, Portugal, Spain and Italy show more prominent left tails, consistent with periods of elevated downside risk seen during regional shocks (e.g., the euro-area sovereign crisis), when volatility spillovers across European markets increase tail dependence and downside comovements (Diebold & Yilmaz, 2012; Kenourgios, Samitas, & Paltalidis, 2011). In contrast, several Northern/core markets (e.g., Belgium, the Netherlands, Finland, Denmark) appear more balanced with mass slightly to the right of zero, suggesting a higher share of positive quarters in the sample. Overall, the panels indicate that while the *typical* quarter is modest, tail behavior varies markedly by market depth and stress exposure; therefore, reporting medians, interquartile ranges, and the share of positive quarters by country is warranted, and modeling should allow for fat-tailed (e.g., Student-t or skew-t) innovations rather than normality (McNeil et al., 2015).



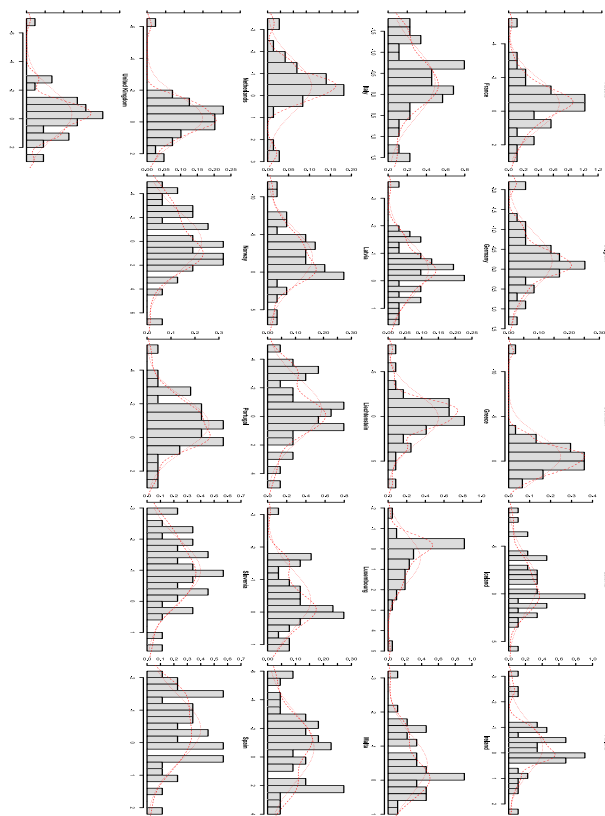
**Figure 2:** Distribution of quarterly returns for each analyzed country based on Morningstar Direct Database (2019)

Across countries, alpha distributions are tightly centered around zero (as expected for benchmark-relative performance) but they are not perfectly symmetric. Many panels display a slight left tilt consistent with fees, trading frictions and occasional tracking slippage. The largest core markets (Germany, France, the United Kingdom and the Netherlands) show narrow dispersion with alphas clustering very close to zero, indicating that funds there typically match rather than beat their benchmarks on a quarter-by-quarter basis. In smaller or less liquid markets (notably Iceland, Latvia, Estonia and Malta) we observe heavier tails and wider spreads, implying more frequent deviations from benchmark due to implementation costs and market microstructure effects.

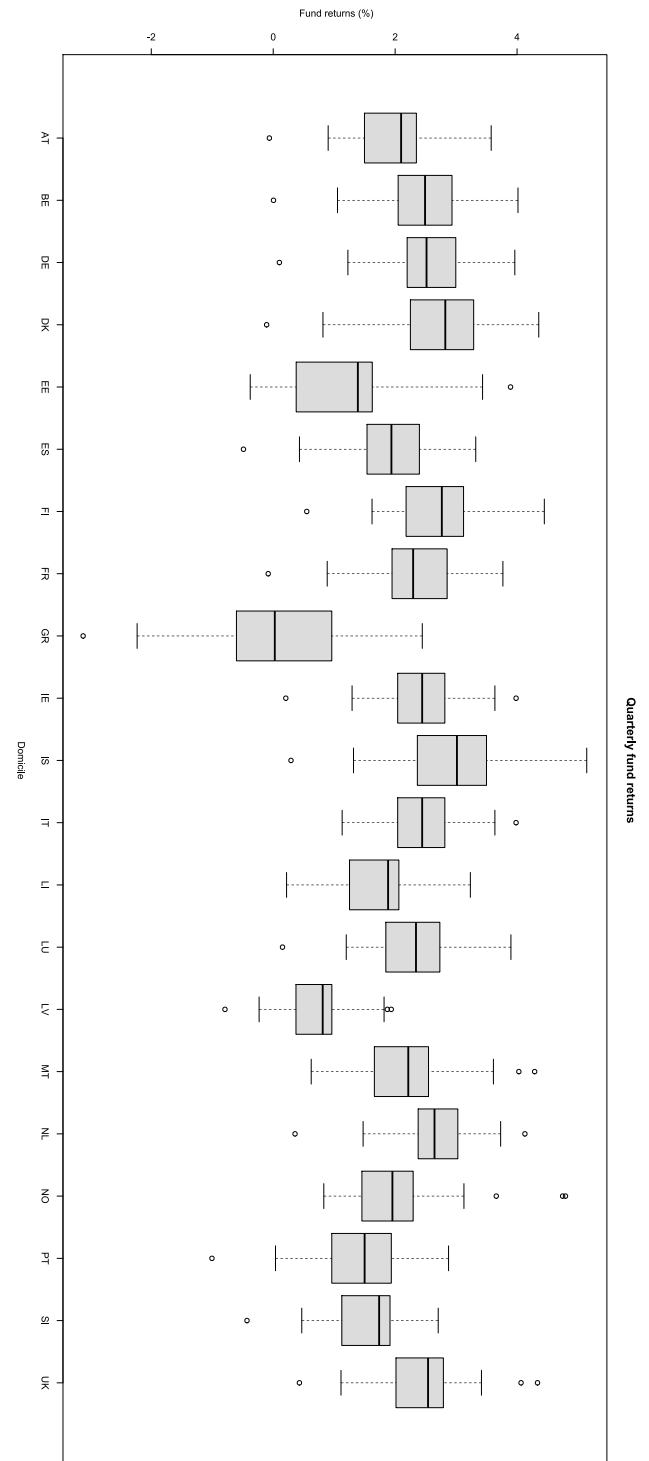
A visual reading suggests a higher incidence of positive alpha in several Northern/core markets. Funds in Belgium, the Netherlands, Finland, Denmark, and, based on a clearly right-shifted center, Norway show more mass to the right of zero, indicating a greater tendency to outperform their benchmarks in a typical quarter. By contrast, negative-leaning or left-tailed profiles are more visible for Greece, Portugal, Spain and Italy, consistent with a higher frequency of negative alpha. These impressions should be corroborated in tables reporting, for each country, the share of positive-alpha quarters and the median alpha (alongside means and standard deviations).

These findings align with theory and recent evidence. The “arithmetic of active management” predicts that, net of costs, average alpha should be at or below zero (Sharpe, 1991), a conclusion that Europe-wide monitoring confirms over multi-year windows (ESMA, 2023; SPIVA Europe, 2023). At the same time, newer studies document heterogeneity and a right tail of persistent winners, which fits our observation of more frequent positive alpha in selected Northern/core markets (Cuthbertson, Nitzsche, & O’Sullivan, 2022). The fat-tailed and more dispersed alpha in smaller markets is consistent with the ETF/index literature on tracking difference/error, where fees, dividend-withholding frictions, replication choices and stress-period volatility drive time-varying deviations from benchmarks (Blitz, Huij, & Swinkels, 2012; Ehnes, Noman a Rahman, 2024; de Weerd, 2025).

In the earlier histograms of fund returns, many countries exhibited fat tails and negative skew, especially in smaller and Southern markets, reflecting episodic stress and elevated downside risk. The alpha histograms preserve this cross-country ordering of dispersion but pull the centers toward zero, since benchmark-relative measurement removes broad market moves. Thus, the alpha panels show similar tail behavior (heavier in smaller markets) but less variation in central tendency across countries; where we still observe a right-shifted center (e.g., Belgium, Netherlands, Finland, Denmark, Norway), it suggests repeatable implementation advantages rather than broad market beta.



**Figure 3:** Distribution of calculated Alphas for each analyzed country based on Morningstar Direct Database (2019)



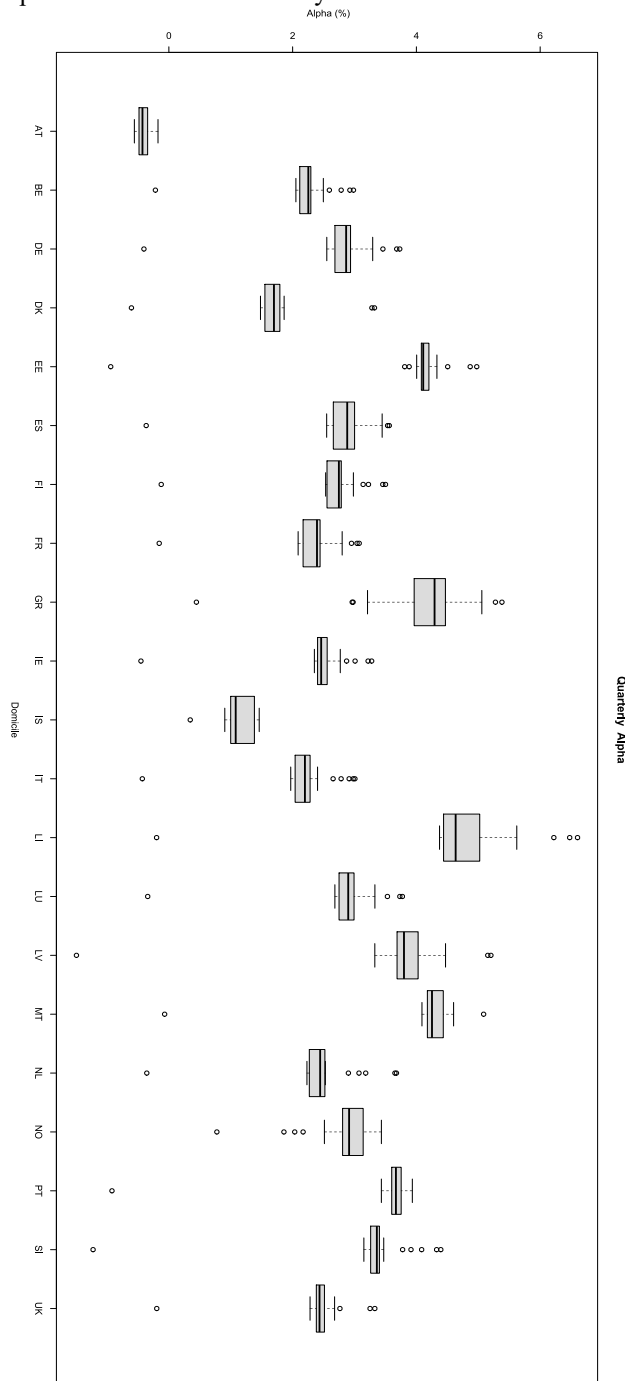
**Figure 4:** Boxplot of calculated fund returns for each country based on data from Morningstar Direct Database (2019).

The boxplots of quarterly fund returns (Figure 4) reveal substantial cross-country heterogeneity in both central tendency and dispersion. Most countries exhibit positive median returns, indicating that equity mutual funds generally delivered positive nominal outcomes over a typical quarter during the sample period. Higher medians are observed in several Northern and core markets, while Southern and smaller markets display lower medians and wider interquartile ranges, reflecting greater return variability. The presence of numerous outliers on both tails confirms that



quarterly performance is occasionally shaped by extreme market episodes rather than steady dynamics.

Dispersion differs markedly across countries. Larger and more liquid markets show more compact interquartile ranges, suggesting relatively stable return distributions, whereas smaller or peripheral markets exhibit wider boxes and longer whiskers, pointing to elevated volatility and higher sensitivity to country-specific shocks. Negative outliers are particularly pronounced in some Southern European markets, consistent with episodic downside risk observed during periods of regional stress. Overall, the return boxplots highlight that while positive performance is common, risk-adjusted experiences differ substantially across EU markets.



**Figure 5:** Boxplot of calculated fund alphas for each country calculated based on data from Morningstar Direct Database (2019)

In contrast to raw returns, the boxplots of quarterly alpha (figure 5) are tightly clustered around zero, underscoring the difficulty of generating systematic benchmark-adjusted outperformance. For most countries, median alpha lies close to zero, indicating that funds tend to track rather than consistently beat their benchmarks once market movements are stripped out. This compression relative to raw returns reflects the dominant role of common market factors and the impact of fees and trading frictions.

Nonetheless, meaningful cross-country differences remain. Several Northern and core markets display slightly positive median alpha and relatively compact interquartile ranges, suggesting a higher likelihood of modest but recurrent benchmark outperformance. By contrast, Southern markets tend to exhibit negative or near-zero medians, with wider dispersion and more frequent negative outliers, indicating less consistent value added. Smaller markets again stand out for their larger spread and occasional extreme alpha values, pointing to episodic deviations driven by liquidity constraints or implementation inefficiencies rather than persistent skill.

Comparing the two sets of boxplots reveals a key insight central to the article's research question. While the return distributions show clear cross-country differences in performance levels and volatility, the alpha distributions compress these differences substantially, pulling medians toward zero across all markets. This indicates that much of the variation observed in raw fund returns is attributable to shared market exposure rather than manager skill—an outcome fully consistent with the *arithmetic of active management*, which predicts that average benchmark-adjusted performance should converge to zero once costs are taken into account (Sharpe, 1991). Countries that appear attractive in terms of raw returns therefore do not necessarily exhibit superior alpha once benchmark effects are removed, a pattern also documented in recent European evidence on mutual fund performance (SPIVA Europe, 2023).

At the same time, the relative ordering of dispersion across countries is broadly preserved: markets with volatile return distributions also tend to display more dispersed alpha. This suggests that implementation quality and market microstructures such as liquidity conditions, trading costs, and replication efficiency—rather than exposure to country-specific growth, shape the likelihood of benchmark outperformance. Similar conclusions are reached in the recent mutual fund literature, which finds that while a small subset of funds may deliver positive alpha, cross-country and cross-fund differences are largely driven by costs and operational efficiency rather than persistent managerial skill (Cuthbertson, Nitzsche, & O'Sullivan, 2022).

#### 4. Conclusion

This study sets out to examine whether EU equity mutual funds differ systematically in their performance across countries, both in terms of raw returns and benchmark-adjusted alpha. The results show that quarterly fund returns do vary across countries, with noticeable differences in medians, dispersion, and tail behavior. Funds domiciled in larger and more developed markets tend to exhibit more stable return distributions, while funds in smaller or

peripheral markets display greater volatility and more pronounced downside risk. These findings suggest that the investor experience can differ meaningfully across countries when performance is evaluated purely in terms of return.

However, once benchmark effects are removed, cross-country differences in performance narrow substantially. The distributions of quarterly alpha are tightly centered around zero for most countries, indicating that consistent benchmark outperformance is rare. While a limited subset of countries—primarily in Northern and core Europe—exhibits slightly more frequent positive alpha, these differences are modest and far less pronounced than those observed for raw returns. Overall, the evidence indicates that much of the variation in fund performance across countries is driven by shared market exposure rather than persistent managerial skill.

Taken together, the findings imply that while EU equity mutual funds are generally capable of delivering positive returns over time, the ability to systematically beat the market is limited and concentrated in a small number of countries. For individual investors, this underscores the importance of costs, diversification, and realistic performance expectations. For policymakers and researchers, the results highlight that even within an integrated European market, country-level characteristics continue to shape return distributions, though not necessarily value added. Future research could extend this analysis by incorporating fund-level characteristics, factor exposures, or longer horizons to further explore the sources of cross-country performance differences.

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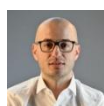
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