

Is Your Investment Manager Good Value?

I looked at ten years of data for 4,468 multi-asset funds denominated in GBP, USD, EUR and AUD. Of the funds examined (which included exchange-traded funds, and funds comprising wholly or significantly passive holdings), only 178 (4%) outperformed a rules-based passively managed index portfolio of one global equity index and one global bond index, for equivalent volatility.

Introduction – How Should We Benchmark Multi-Asset Investment Products?

Benchmarking a multi-asset fund is different to benchmarking a fund in a single asset class or subclass. In the latter case, once having selected the category, an investor uses the relevant traditional index as a comparative aid in fund evaluation or selection from the available set. However, when it comes to multi-asset funds, a two-dimensional benchmark is more helpful, recognising that a goal of portfolio construction is to optimise the risk-return trade-off.

I propose a risk-return locus of passive index portfolios (PIPS line) as a user-friendly ‘at a glance’ benchmarking method for evaluation of multi-asset funds (and potentially other portfolio management services). This approach benefits from being independent and rules-based, with no need to reference peer-group measures such as sector averages.

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"Good Lord! This is appalling," my father exclaimed from behind his morning newspaper. "What is this country coming to? According to this league table, almost fifty percent of schools are performing worse than the national average. Someone needs to answer for this!"

I heard the paper rustle and could sense him looking at me. I didn't look up from my cornflakes, but said, "Well, there's some good news in there too, Dad. About half of schools are doing better than average."

"Ah, yes." he said solemnly. I glanced up, keeping my face straight.

My mother ignored the exchange, getting on with breakfasty stuff, but then stared at us in surprise when Dad and I burst out laughing at our privately shared joke.

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Evidence-Based Investing & The Active vs Passive Debate

Passively managed investment funds (usually exchange-traded funds, ETFs, but not always) are a good choice for core long-term portfolio holdings. They are commonly called ‘index trackers’ because they track the performance of an index – a *rules-based*, formulaic construction, with no human intervention. For example, FTSE100, S&P500, MSCI World Index. Passive funds tend to be relatively low-cost and give easy access to the asset class or sub-class.

Research evidence shows that actively managed funds (wherein human managers make the investment decisions) mostly don’t beat their benchmark index in the long run; especially in large and well-developed markets. SPIVA (<https://www.spglobal.com/spdji/en/research-insights/spiva/>) is a useful resource; for example, the data show that over the last ten years, less than 10% of actively managed US large cap funds have outperformed the S&P 500 index.

Evidence-based investors, aware of the research, generally prefer passive index-tracking investments for their portfolios. However, well-chosen actively managed funds can still have a place, for example in cases where investible indices aren’t available to match a specific requirement. Also, some nominally active funds are quasi-passive, in that the asset selection process, and entry and exit criteria, are so rigorous that the fund is essentially rules-based.

Opinions range from evangelist to agnostic in the passive-versus-active debate. Logic tells me that my initial investment universe for portfolio construction should be ‘everything’. I won’t rule out investment options based on generalisation; but I will, based on evidence that I can understand. I prefer to examine the specific, rather than assume the stereotype.

Trying to assess multi-asset funds objectively isn’t straightforward. However, recognising the growth of interest in multi-asset funds and their big sisters MPS (model/managed portfolio services), and DFM (discretionary fund management), I wanted to explore this particular rabbit hole.

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‘Evidence-based’ simply means to understand the relevant academic research and evidence, and take account of it in professional practice.

Question: What is the optimal operating room temperature for best patient outcome after open heart surgery? Answer: I have no idea; but I do know that there’s lots of detailed research and evidence that hospitals follow, and build into their standard procedures.

Your investment holdings may not be life-or-death, but wouldn’t you want your portfolio construction to be guided by the evidence?

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What Are Multi-Asset Funds?

Component holdings of multi-asset funds (also called mixed-asset funds) can include equities, bonds, cash, gold and precious metals, property, private equity, hedge funds, commodities, and other alternative asset classes.

Assets can be held directly (i.e. owning shares of a company directly), or indirectly (i.e. via funds or ETFs). Multi-asset funds that are mostly or exclusively indirect are often termed ‘fund of funds’ or ‘multi-manager’ funds. Many multi-asset funds hold a blend of actively managed and passive funds.

Multi-asset funds can be designed for specific objectives such as long term-term capital growth, or for income, or a mix of both. Target dated multi-asset funds have a ‘glide-path’ and gradually adjust the asset allocation (the relative proportions of different categories of investment) over time, becoming more conservative as investors get closer to retirement. Some multi-asset funds are known as ‘risk-targeted’, because as a priority they aim to keep volatility within a specific range.

There are several ways that multi-asset funds are deployed, including:

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|-------------|--|
| Core | A multi-asset fund is used as a ready-made core for a portfolio, and additional funds or direct shares are added to complete the portfolio as desired; |
| Complete | A multi-asset fund stands alone as a complete portfolio in itself, with no additional investments required; |
| Combination | A multi-asset fund is combined with others, which may be from the same family, and perhaps as part of a model or managed portfolio service offered by an investment management firm. |

Evaluating Multi-Asset Funds

The above discussion regarding active-versus-passive relates to *single asset category* funds – global equity, investment grade bonds, etc. There are an extraordinary number of indices available, for pretty much every region, sector, or theme you can think of. This makes it easy to compare an active fund against an independent, rules-based, index benchmark.

For example, if I’m investigating an actively managed US Large-Cap Blend fund, the relevant index might be the Russell 1000. If I’m looking at an Asia Equity fund, the benchmark might be MSCI AC Asia ex-Japan. A GBP High Yield bond fund might be referenced against the ICE BofA Sterling HY index.

However, for multi-asset funds, the world is completely different. How do we benchmark an investment fund that’s a mixed portfolio of different types of asset?

The portfolio weightings of each asset class and sub-class are at the fund manager's discretion. So, if the asset allocation isn't rigorously rules-based, then the *multi-asset fund itself is actively managed*, even if every individual holding is passive.

Uh, hold on. Hasn't it already been established that most active managers don't reliably beat their benchmark over time? When evaluating a multi-asset fund, how can we check that the emperor is wearing any clothes? An independent, rules-based, benchmarking method would be helpful. They are harder to find than you'd imagine.

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Benchmarking Resources For Multi-Asset Funds & Portfolios

I looked at a variety of indices and benchmarking methods for multi-asset funds, including:

- ARC Private Client Indices;
- Bloomberg US Multi-Asset Indices;
- Financial Express Adviser Fund Indices;
- FTSE Russell UK Private Client Indices;
- Investment Association Mixed Asset Fund Sectors;
- Morningstar Categories & Target Allocation Indices;
- MSCI PIMFA Private Investor Index Series; and
- S&P Multi-Asset Target Risk Indices.

Brief notes and links for these are given in Annex 1.

Many providers take a two-step approach:

- (i) Starting with data from a set of multi-asset funds, break the funds into categories, i.e. peer-groups, by some method such as nominal asset allocation, or risk measure;
- (ii) Create an index per peer-group, for example by averaging actual performances, or setting index asset-allocation rules by averaging the peer-group, or even by committee.

As you might guess from the introduction, my father wouldn't have approved of any index methodology that relies on peer-group data, even if it is rules-based. Half of funds may perform better than average, and half worse. But is the average any good in the first place?

Furthermore, an index that is in any way active (i.e. not fully rules-based) isn't much help either. I want something independent and absolute, not discretionary or relative.

I like the Bloomberg US and the S&P Target Risk indices (although unfortunately they're USD only). However, if index families consist of only a small number of indices defined by fixed asset allocation (for example 80/20, 60/40, 40/60, 20/80) then how do I know which index is the right comparator for a multi-asset fund under investigation? Consider a fund that by asset allocation should, in theory, be compared with the Bloomberg EQ:FI 80:20 index, where it's rating by total return is middle-of-the-pack. What if the fund has delivered substantially lower volatility than the peer-group, and could more properly be compared with the EQ:FI 60:40 index, where total return makes it leader-of-the-pack? Assessing a multi-asset fund, or indeed any portfolio, is about the risk-return trade-off, after all.

I also like the ARC PCI methodology, because categorisation is by volatility of the actual submitted portfolios (ARC PCI are designed principally for the DFM industry, but also embrace MPS and some multi-asset funds). This approach helps to partly dilute the 'Is this the right index to be comparing against?' question, but each index in the family is again a peer-group average, not absolute.

Risk-return charts such as those provided by FT.com (example, 'risk' tab at <https://markets.ft.com/data/funds/tearsheet/risk?s=GBooB3TYHH97:GBP>) and CityWire (scroll down at <https://citywire.com/selector/fund/dimensional-world-allc-60-or-40-gbp-dist/c371109?periodMonths=36>) are extremely helpful to quickly compare a fund against a peer-group, but again, all relative, no absolutes.

Building The Benchmark – Back To Basics

The existence of independently created indices is what enables emotionless matter-of-fact benchmarking of active fund performance. That's what I want in the multi-asset domain.

What is the essence of portfolio construction? It's deciding a mix of different types of investment asset, with the intention of achieving a return commensurate with the level of risk taken.



Portfolio Construction Involves Optimising The Risk-Return Trade-Off

So, it seems natural that a benchmark methodology for multi-asset portfolios would take account of *both* dimensions of the risk-return trade-off.

Portfolio Construction. Glamorous, It Ain't.

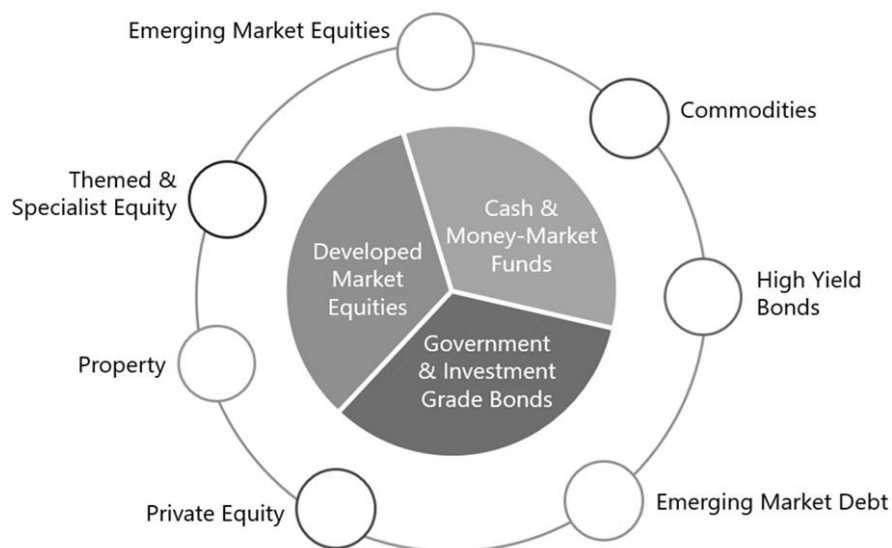
Portfolio construction is, or should be, boring. Step one, get an idea of your risk appetite. Step two, decide on your portfolio core holdings. That's the heavy lifting sorted. The rest is... well, decoration really. If you want a step three, it's to not over-decorate, and stay hands-off as much as possible. (Do please note, dear reader, I said boring, not easy.)

Typical core assets include developed market equities (shares), and quality fixed income (bonds), often implemented via low-cost exchange traded funds (ETFs). Well-chosen core investments can be held for many years, perhaps even the lifetime of the portfolio.

On the other hand, the decoration, or satellite holdings, may be shorter term and more tactical - perhaps focused on specific themes, sectors or regions. The idea of satellite investments is typically to increase diversification or improve overall portfolio performance; though it's important to resist the urge to unnecessarily tinker or allocate too much to them. This can be a difficult urge to overcome, for private investors and professionals alike.

The core of a portfolio is the engine-room of long-term growth. Satellite holdings help to distract from the boredom, like fiddle-toys for investors struggling with action bias (the human tendency to prefer action over inaction, even when there's no good reason).

Figure: Example of Core & Satellite Concept



Source: Roy Walker.

The Mystery of Investor Risk Profiling

Your personal attitude to investment risk guides your portfolio construction, via the asset allocation. Diversification smooths out the ups and downs of your portfolio, and the risk profiling process helps to gauge how much expected 'growth' (mostly via equities) you're prepared to sacrifice by holding a portion your assets in relative 'safety' (generally cash and bonds).

Risk profiling commonly involves completing a questionnaire, the output of which places you on a scale somewhere between very defensive and very adventurous. Your position on this scale is then used to suggest an outline asset allocation. Choice of specific investments (funds, securities) follows after that.

This process is wildly inconsistent across the financial industry. There are two major issues:

- (i) There is no generally accepted set of risk profiling questions, or investor risk scale;
- (ii) There is no generally accepted means of deriving asset allocation from a client's individual risk profile.

For (i) above, the questionnaire methodology varies from a few simple 'tick the boxes', to detailed 'investor personality' surveys offered online by specialist behavioural finance firms.

For (ii) above, using the results of the questionnaire to steer towards an asset allocation, there seem to be as many solutions as there are people thinking about the problem.

Which is mysterious to me, because as a wealth adviser, one of the most crucial aspects of my job is to understand a client's investor risk profile (incorporating personal attitudes, the need to take risk, the ability to take risk, and time horizon, amongst others) and from there sketch out and explain an investment policy. This applies regardless of whether I implement the portfolio directly, or delegate to a third party such as a model portfolio service or a discretionary fund manager. My engineer DNA craves a more logical and systematised navigation from risk profile through to asset allocation.

As an aid to explaining portfolio basics, an investor risk scale like the one below might be used as a starting point. This is of course only an example, all caveats apply.

Table: Example Risk Profile Scale

Risk Profile		Description	Growth (Equities)	Safety (Bonds etc)
1	Very Defensive	Protecting capital is more important than potential return.	5%	95%
2	Defensive	A minimal amount of investment risk. Only a limited amount of riskier assets will be included in the portfolio.	20%	80%
3	Cautious	A small amount of investment risk. Focus on investments providing lower returns but present lower risk to capital.	35%	65%
4	Balanced	A measured amount of investment risk in order to increase the chances of achieving a positive return, whilst still protecting a sizeable proportion of capital.	50%	50%
5	Moderately Adventurous	A portfolio suitable for many investors, aiming to generate returns over time, above the rate of inflation.	65%	35%
6	Adventurous	A high level of investment risk, for the potential of improved longer-term returns.	80%	20%
7	Very Adventurous	Substantial degree of investment risk, in return for the prospect of higher long-term investment performance.	95%	5%

Source: Roy Walker.

Client Perception of Risk

Investment practitioners often use the terms ‘risk’ and ‘volatility’ interchangeably. However, to many investors, risk means the chance of *actually losing money*, i.e. funds not being there when you go to withdraw. This definition of risk is more real and visceral than a theoretical calculation of annualised standard deviation of monthly returns.

Therefore, I find that client conversations about volatility benefit from illustrating variations of the same portfolio. For example, the chart below shows the performance of three portfolios (in ‘total return’ terms, i.e. dividends reinvested), each with the same constituents but in different proportions. The portfolios are 30% equity, 50% equity, and 70% equity, with the remainder being bonds.

Chart: Historical Performance of Three Variations of the Same Portfolio

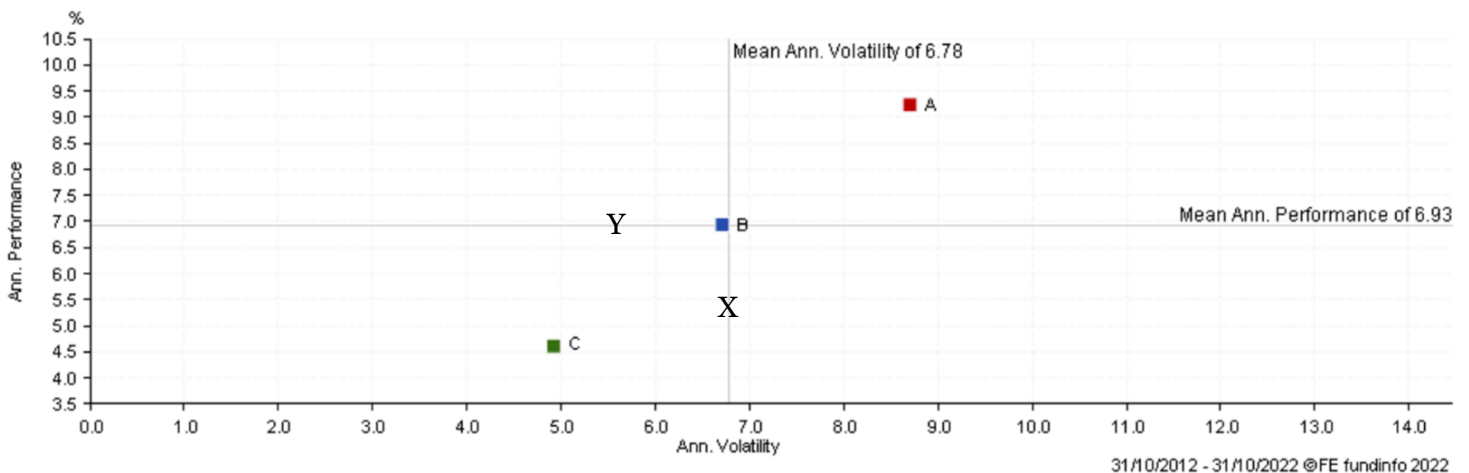


31/10/2012 - 31/10/2022 Data from FE fundinfo 2022

Such a chart makes it easy to discuss the concept of risk-return trade-off. The differences in peak-to-trough drawdown during the 2020 pandemic are clearly seen, as are the differences in volatility during the market decline of 2022. Volatility is, of course, the amount of up-and-down-iness.

Another way of looking at the same data is with a scatter diagram of portfolio performance (which can be either annualised returns, or aggregate growth for the period) versus volatility. This is often colloquially called a 'risk-return' chart.

Chart: Risk-Return Chart of Three Variations of the Same Portfolio



31/10/2012 - 31/10/2022 @FE fundinfo 2022

Key	Name	Annualised Performance	Annualised Volatility
■	A Examples - GBP 70% Equity Portfolio TR in GB	9.24	8.70
■	B Examples - GBP 50% Equity Portfolio TR in GB	6.94	6.71
■	C Examples - GBP 30% Equity Portfolio TR in GB	4.62	4.92

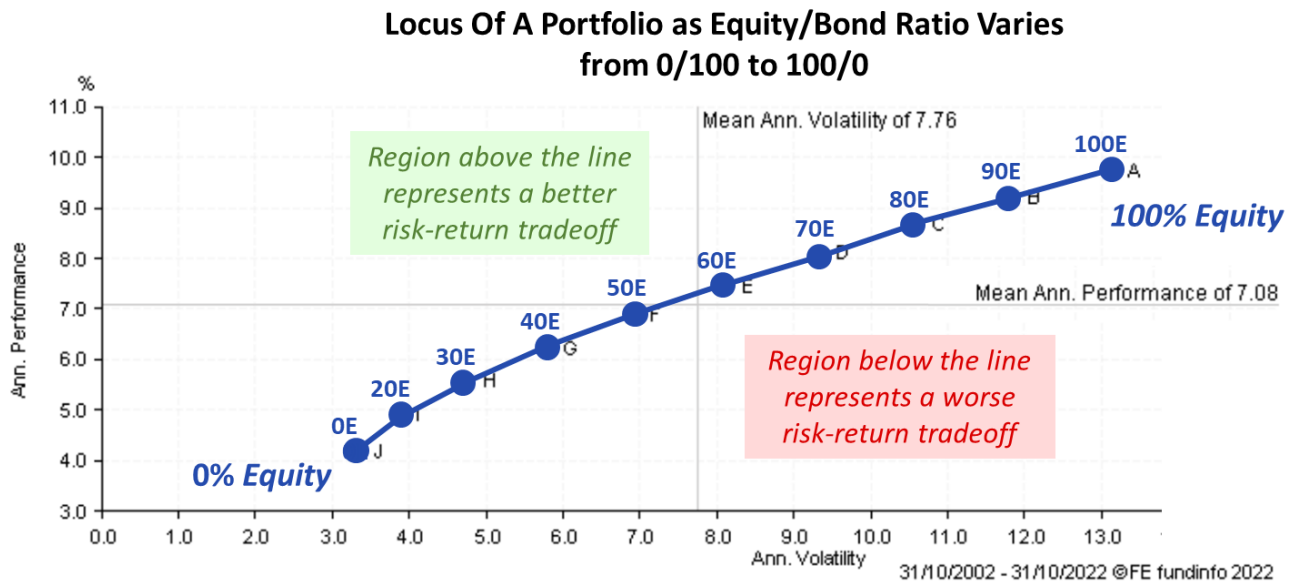
The above two charts illustrate the same effect: over the long run, better returns tend to come from more volatile investments. However, the risk-return chart is the more useful of the two for decision-making. The top-left quadrant is 'better' (less volatile and better performance), and the bottom-right quadrant 'worse' (more volatile and poorer performance), in terms of the risk-return trade-off.

The three portfolio variations A (70% equity), B (50% equity) and C (30% equity) are 'well-behaved', lining up nicely on the chart, because they are systematic variations of the same portfolio constituents. So, a choice between A, B, or C is simply a matter of deciding how much volatility (risk) we can live with, noting the relative differences in expected performance (return).

If we wanted to compare portfolio B above with a different alternative, X, that has the same volatility but lower returns (i.e. plotted vertically below B on the chart), then we should prefer B over X. And, if we wanted to compare B with an alternative Y that has the same returns but lower volatility (i.e. plotted horizontally to the left of B), then we should prefer the alternative Y over B.

We can take this concept further, by plotting more points and connecting the dots.

Chart: Example Locus of Portfolio as Equity/Bond Ratio Varies (10 Years)



This isn't ground-breaking stuff, and anyone with a smattering of investment background will have seen similar charts before. The important thing is that by plotting the locus, the portfolio line, we can *instantly* evaluate competing portfolios against the set defined by that line. Plot *any* other portfolio Z on the chart – if it lands above the blue portfolio line, then Z is a better choice in terms of risk-return trade-off. If Z lands below the blue portfolio line, then it's worse. Note that the period of observation is important; data for 10 years or more is good, 5 years of data is probably ok, 1 year cannot be relied on (especially in current market conditions).

Passive Index Portfolios

I want a set of passive index portfolios ('PIPS'), that I can plot on a risk-return chart, and use to benchmark and compare historical performances of multi-asset funds. Here's some criteria:

Simple	Uncomplicated, minimalistic. Easy to explain.
Index Data	Plenty of it available, ideally decades worth. Accessible without extortionate subscription fees.
Investible	Implementable in practice, i.e. there exist funds or ETFs that track the selected indices. (I was initially prepared to sacrifice this criterion, but it turned out I didn't need to.)
Home Bias	None. Disproportionately emphasising shares in companies that happen to be listed locally makes no sense to me.
Currencies	Ideally GBP, USD, EUR, and AUD. These are the base currencies for 99% of my clients.
Rebalancing	Portfolios rebalanced (percentages reset) just once per year. I chose January.
Return Basis	Gross, Total Return – no tax considerations, dividend income reinvested.

Commonly, multi-asset funds contain at least some global developed market equity, and at least some quality bonds. Fund managers may add their 'house style' recipe of ingredients such as emerging markets, home bias, real estate, gold, alternatives, inflation-linked, high yield, factor tilts, ESG, etc, etc; but a core holding of developed market equity plus quality bonds is the cooking stock, the broth, the common denominator across the mainstream multi-asset industry.

So, let's do that, then. What would be on any financial adviser's shortlist for the 'simplest portfolio in the world'? Here are its two, and only two, component indices:

Equity - MSCI World (USD)

The MSCI World Index is a broad global equity index that represents large and mid-cap equity performance across 23 developed markets countries:

- Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the UK and the USA.

The MSCI World index covers approximately 85% of the free float-adjusted market capitalization in each country.

Index or fund currency is rather unimportant when looking at equities (because exposure is to the currencies of the underlying assets), so we may as well stick with USD by default.

Bonds - Bloomberg Global Aggregate (H-GBP, H-USD, H-EUR, & H-AUD)

The Bloomberg Global Aggregate Index is a well-known measure of global investment grade debt from 28 local currency markets:

- Americas: CAD, CLP, COP, MXN, PEN, USD.
- EMEA (Europe, Middle-East & Africa): CHF, CZK, DKK, EUR, GBP, HUF, ILS, NOK, PLN, RON, RUB, SEK.
- Asia-Pacific: AUD, CNY, HKD, IDR, JPY, KRW, MYR, NZD, SGD, THB

The Bloomberg Global Aggregate index includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers.

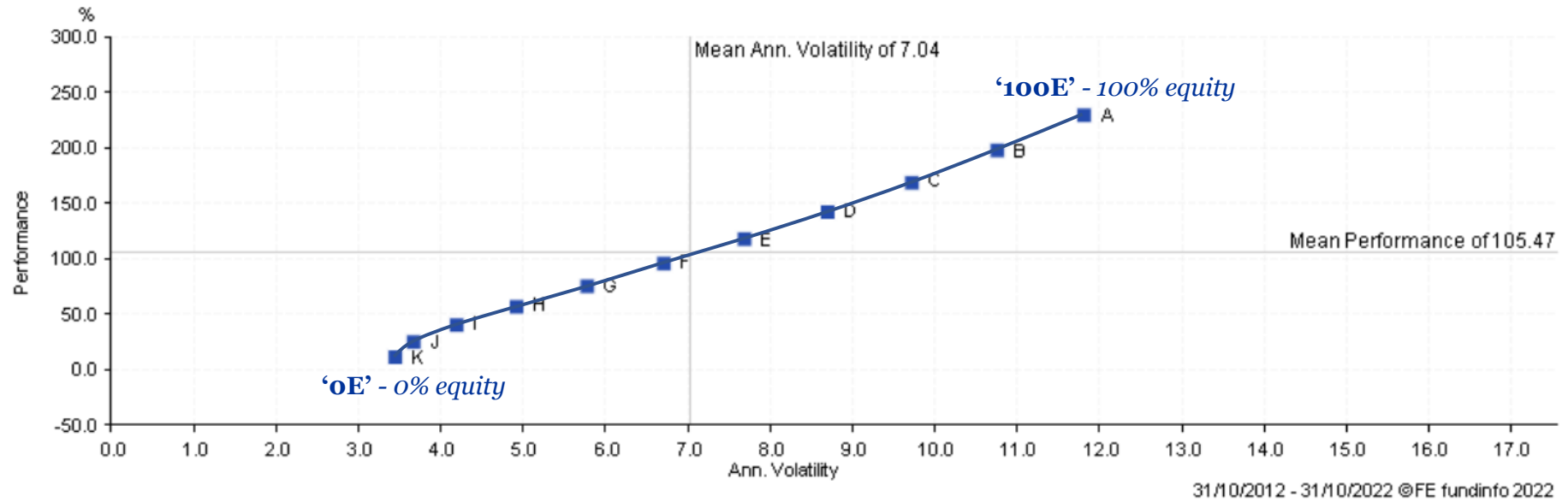
Because bonds are 'cash-like' in a way that equities are not, for a core holding we hedge back to the base currency for each passive index portfolio. For example, my PIPS for benchmarking GBP-oriented multi-asset funds would be MSCI World USD + Bloomberg Global Aggregate H-GBP (meaning, hedged to GBP). Similarly for USD PIPS (bond index is H-USD), EUR PIPS (H-EUR), etc.

Plotting The PIPS Line

Using just these two indices, we can chart a PIPS line by varying the equity/bond ratio and plotting any number of points on a chart.

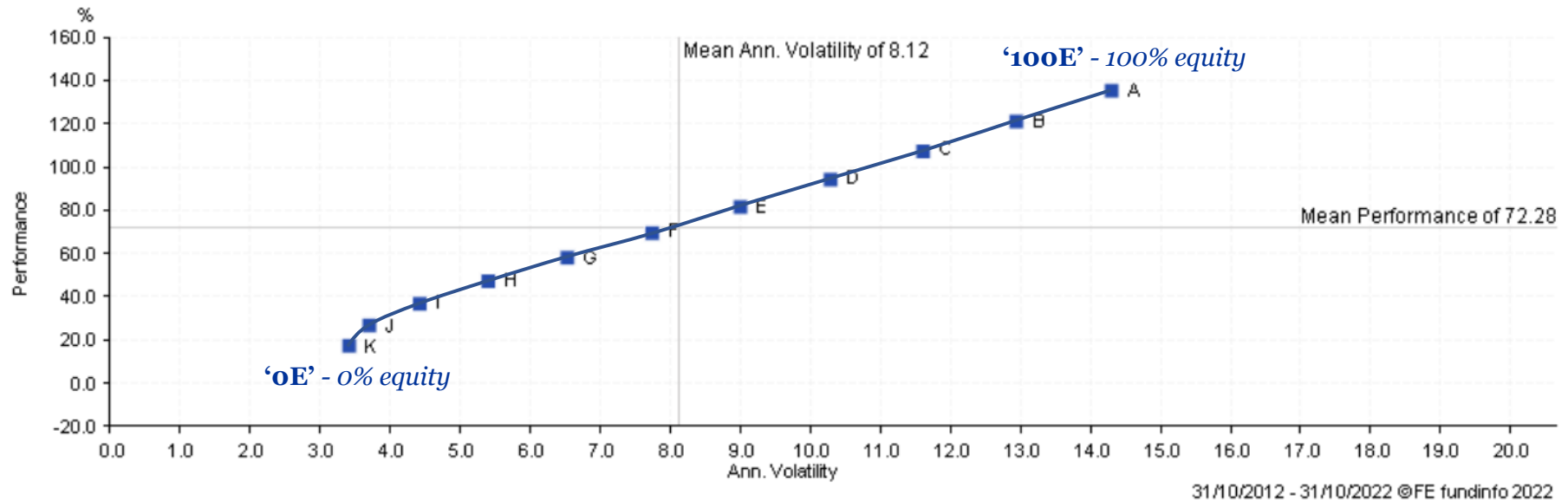
The 4 charts below plot the PIPS lines for GBP, USD, EUR and AUD; in each case constructed as the locus of 11 passive index portfolios, ranging from 0% equity/100% bonds ('0E') to 100% equity/0% bonds ('100E').

Chart: GBP PIPS Line – 10 Years to 31/10/2022



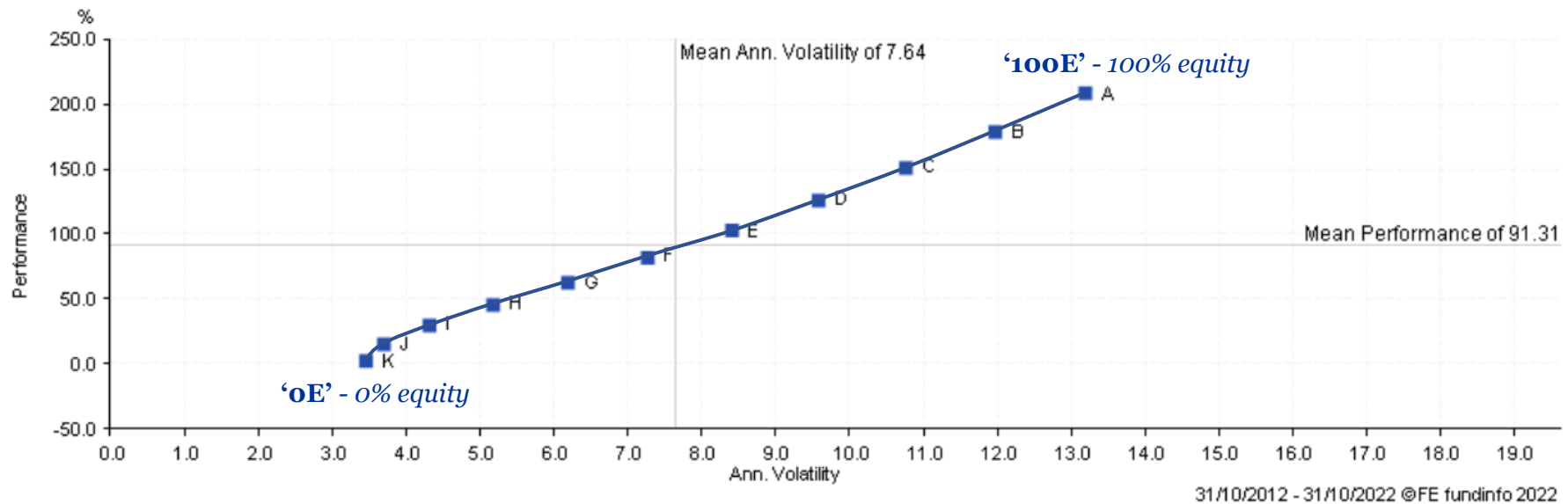
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	229.31	11.81
■ B	Walkers - PIPS-GBP-Index-90E TR in GB	197.61	10.76
■ C	Walkers - PIPS-GBP-Index-80E TR in GB	168.58	9.72
■ D	Walkers - PIPS-GBP-Index-70E TR in GB	142.02	8.70
■ E	Walkers - PIPS-GBP-Index-60E TR in GB	117.74	7.69
■ F	Walkers - PIPS-GBP-Index-50E TR in GB	95.59	6.71
■ G	Walkers - PIPS-GBP-Index-40E TR in GB	75.40	5.78
■ H	Walkers - PIPS-GBP-Index-30E TR in GB	57.02	4.92
■ I	Walkers - PIPS-GBP-Index-20E TR in GB	40.31	4.19
■ J	Walkers - PIPS-GBP-Index-10E TR in GB	25.15	3.67
■ K	Walkers - PIPS-GBP-Index-0E TR in GB	11.40	3.45

Chart: USD PIPS Line – 10 Years to 31/10/2022



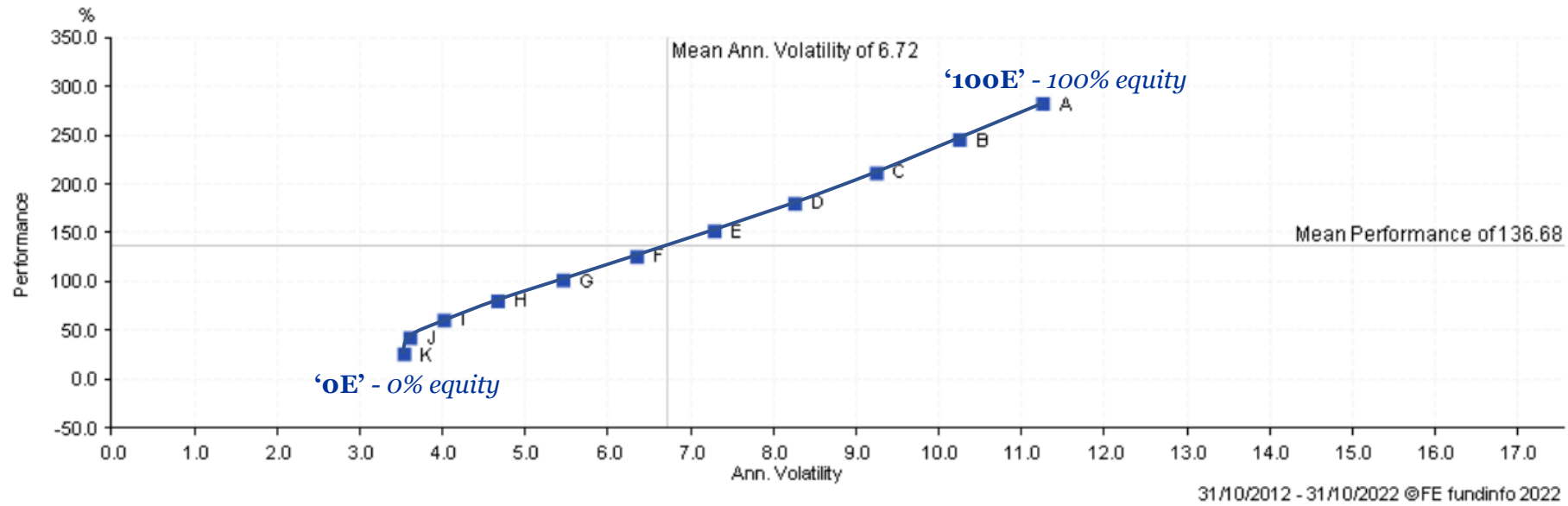
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-USD-Index-100E TR in US	135.34	14.30
■ B	Walkers - PIPS-USD-Index-90E TR in US	121.03	12.94
■ C	Walkers - PIPS-USD-Index-80E TR in US	107.30	11.61
■ D	Walkers - PIPS-USD-Index-70E TR in US	94.14	10.29
■ E	Walkers - PIPS-USD-Index-60E TR in US	81.55	9.00
■ F	Walkers - PIPS-USD-Index-50E TR in US	69.52	7.74
■ G	Walkers - PIPS-USD-Index-40E TR in US	58.04	6.53
■ H	Walkers - PIPS-USD-Index-30E TR in US	47.11	5.40
■ I	Walkers - PIPS-USD-Index-20E TR in US	36.71	4.42
■ J	Walkers - PIPS-USD-Index-10E TR in US	26.83	3.70
■ K	Walkers - PIPS-USD-Index-0E TR in US	17.47	3.41

Chart: EUR PIPS Line – 10 Years to 31/10/2022



Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-EUR-Index-100E TR in EU	208.55	13.19
■ B	Walkers - PIPS-EUR-Index-90E TR in EU	178.50	11.97
■ C	Walkers - PIPS-EUR-Index-80E TR in EU	150.99	10.76
■ D	Walkers - PIPS-EUR-Index-70E TR in EU	125.82	9.58
■ E	Walkers - PIPS-EUR-Index-60E TR in EU	102.84	8.41
■ F	Walkers - PIPS-EUR-Index-50E TR in EU	81.89	7.27
■ G	Walkers - PIPS-EUR-Index-40E TR in EU	62.80	6.19
■ H	Walkers - PIPS-EUR-Index-30E TR in EU	45.44	5.18
■ I	Walkers - PIPS-EUR-Index-20E TR in EU	29.68	4.32
■ J	Walkers - PIPS-EUR-Index-10E TR in EU	15.40	3.70
■ K	Walkers - PIPS-EUR-Index-0E TR in EU	2.47	3.46

Chart: AUD PIPS Line – 10 Years to 31/10/2022



Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-AUD-Index-100E TR in AU	281.64	11.26
■ B	Walkers - PIPS-AUD-Index-90E TR in AU	244.77	10.25
■ C	Walkers - PIPS-AUD-Index-80E TR in AU	210.89	9.25
■ D	Walkers - PIPS-AUD-Index-70E TR in AU	179.82	8.26
■ E	Walkers - PIPS-AUD-Index-60E TR in AU	151.35	7.29
■ F	Walkers - PIPS-AUD-Index-50E TR in AU	125.31	6.35
■ G	Walkers - PIPS-AUD-Index-40E TR in AU	101.54	5.46
■ H	Walkers - PIPS-AUD-Index-30E TR in AU	79.86	4.67
■ I	Walkers - PIPS-AUD-Index-20E TR in AU	60.13	4.02
■ J	Walkers - PIPS-AUD-Index-10E TR in AU	42.22	3.61
■ K	Walkers - PIPS-AUD-Index-0E TR in AU	25.97	3.54

When Does A Multi-Asset Fund Beat The PIPS Benchmark?

A multi-asset fund outperforms PIPS if it lies above the PIPS line on a risk-return chart. This means that the fund has delivered better historical returns for the same volatility, i.e. the fund has a better risk-return trade-off than PIPS.

If the fund has lower volatility but higher returns than the 0E PIPS (0% equity, i.e. the performance of the Bloomberg Global Aggregate H-[ccy] Index), then it has also outperformed.

In my analysis I also consider that any fund with higher returns than 100E PIPS (100% equity, i.e. the performance of the MSCI World Index) has outperformed PIPS, regardless of volatility. (This approach could be improved, but anyway it works for the present analysis.)

Example 1 – Better risk-return trade-off than PIPS: a GBP multi-asset fund is plotted and lands *above* the PIPS line on a risk-return chart. This means that the fund has delivered better historical returns than a fully passive index portfolio comprised of [E% MSCI World USD + (1-E)% Bloomberg Global Aggregate H-GBP], for the same volatility, over the period of observation.

Example 2 – Worse risk-return trade-off than PIPS: a GBP multi-asset fund is plotted and lands *below* the PIPS line on a risk-return chart. This means that a fully passive index portfolio comprised of [E% MSCI World USD + (1-E)% Bloomberg Global Aggregate H-GBP] has delivered better historical returns than the fund being examined, for the same volatility, over the period of observation. (E% can be interpolated from the chart.)

Test Of PIPS Benchmark Concept Against Real-World Multi-Asset Fund Data

If you're anything like me, at this point you're keen to see some hot benchmarking action.

Citywire Selector (<https://citywire.com/selector/>) is a fascinating website that serves the investment management community, mostly in the UK. Available on this site are details of thousands of funds and their performance histories. Citywire very nicely breaks out multi-asset funds, and sub-categorises them by 'balanced', 'aggressive', 'flexible', 'conservative' and 'absolute return'.

Wanting to validate PIPS as a benchmarking technique, I collected the data for *every* GBP multi-asset fund on Citywire, then plotted each fund on a risk-return chart together with the PIPS line. I only used funds with at least a ten-year history.

I then did the same for all USD multi-asset funds (excluding target maturity date funds). Then all EUR multi-asset funds. Ditto AUD.

Below are the tabulated results. The charts are presented in the subsequent pages.

CityWire Selector Fund Database - Analysis vs PIPS (GBP/USD/EUR/AUD)

https://citywire.com/selector/asset-class/mixed-assets/h23 - Accessed 28/11/2022

Mixed Assets - ALL GBP	All Funds (Min 3mths History)	Funds With 5yr+ History	Funds With 10yr+ History
Mixed Assets - Balanced GBP	492	359	248
Mixed Assets - Aggressive GBP	436	272	177
Mixed Assets - Flexible GBP	218	140	79
Mixed Assets - Conservative GBP	201	123	69
Mixed Assets - Absolute Return GBP	51	51	28
	1398	945	601
Funds Outperforming PIPS As Percentage			6 1.0%

Mixed Assets - ALL USD <i>(excluding Target Maturity Funds)</i>	All Funds (Min 3mths History)	Funds With 5yr+ History	Funds With 10yr+ History
Mixed Assets - Balanced USD	373	274	204
Mixed Assets - Aggressive UD	251	189	153
Mixed Assets - Flexible USD	364	257	137
Mixed Assets - Conservative USD	190	148	108
Mixed Assets - Absolute Return USD	5	4	1
	1183	872	603
Funds Outperforming PIPS As Percentage			81 13.4%

Mixed Assets - ALL EUR	All Funds (Min 3mths History)	Funds With 5yr+ History	Funds With 10yr+ History
Mixed Assets - Balanced EUR	1432	987	672
Mixed Assets - Aggressive EUR	832	590	438
Mixed Assets - Flexible EUR	2851	1879	1200
Mixed Assets - Conservative EUR	1339	988	680
Mixed Assets - Absolute Return EUR	83	77	57
	6537	4521	3047
Funds Outperforming PIPS As Percentage			71 2.3%

Mixed Assets - ALL AUD	All Funds (Min 3mths History)	Funds With 5yr+ History	Funds With 10yr+ History
Mixed Assets - Balanced AUD	107	88	62
Mixed Assets - Aggressive AUD	138	119	94
Mixed Assets - Flexible AUD	39	35	14
Mixed Assets - Conservative AUD	68	59	47
Mixed Assets - Absolute Return AUD	0	0	0
	352	301	217
Funds Outperforming PIPS As Percentage			20 9.2%

Total Number of GBP, USD, EUR, & AUD Funds Analysed	4468
Number of Funds Outperforming Their Relevent PIPS	178
As Percentage	3.98%

In the total sample of 4,468 multi-asset funds, only 178 (4%) delivered performance better than a rules-based, passive index portfolio of one equity index and one bond index, for the same volatility.

Next, for interest, I did the same exercise for Mixed-Assets Balanced USD category from Citywire Middle East, after reading an article entitled ‘*Top-performing multi-asset funds available in GCC*’ (<https://citywire.com/middle-east/news/top-performing-multi-asset-funds-available-in-gcc/a2403537>). Of the 26 funds plotted, none outperformed PIPS.

Then I got carried away with a range of comparisons of indices, multi-asset funds and fund families against PIPS. You can browse through these in Annex 2.



Two campers were settling down for the evening, when suddenly they heard a bear crashing towards them through the woods. One of the campers jumped up and started pulling on his boots.

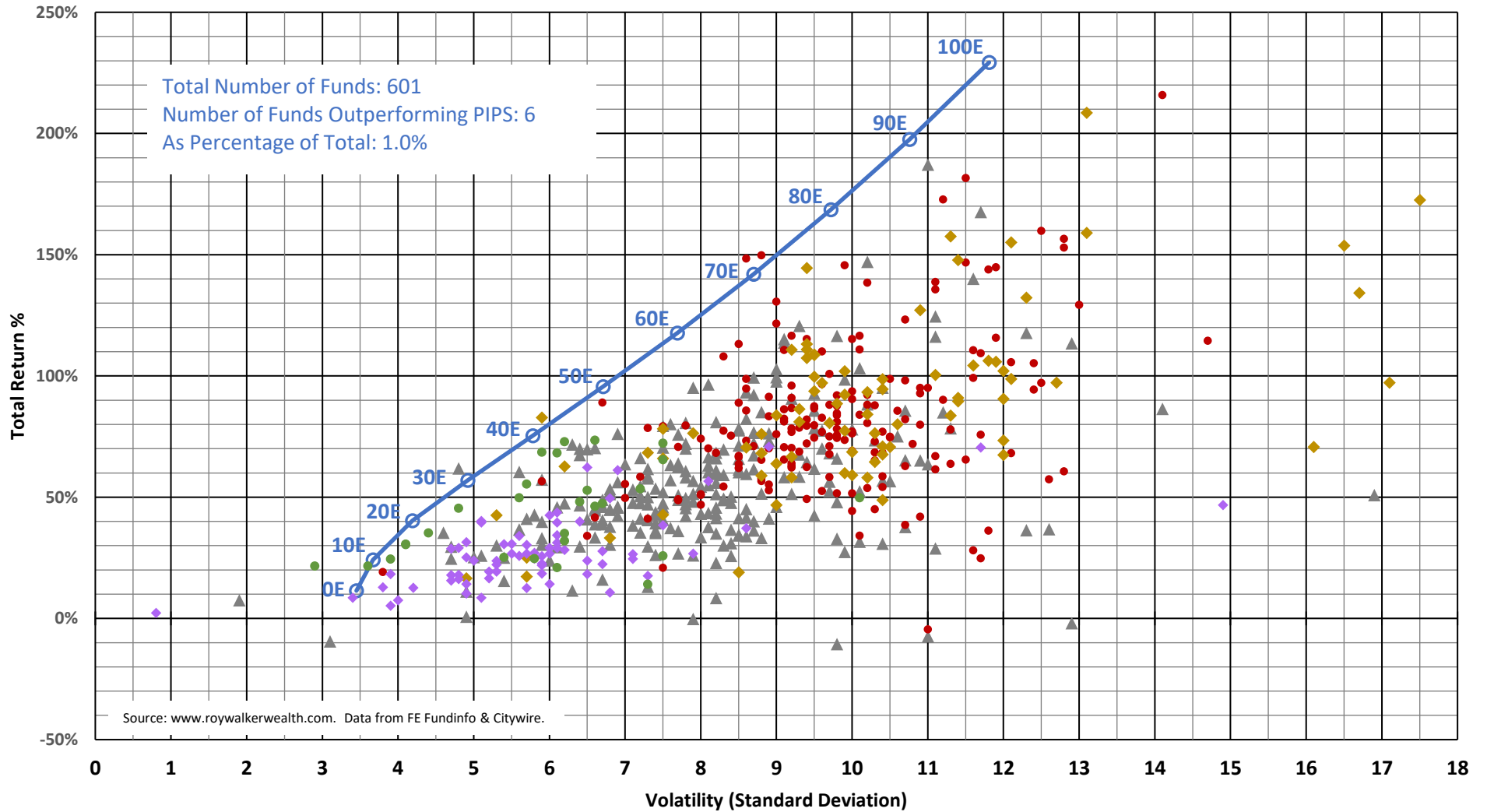
“What are you doing?”, asked the other camper. “You know you can’t out-run a bear!”

“I don’t need to out-run the bear, I only need to out-run you!”, shouted the first camper as he sprinted away.

As he rounded a bend in the trail, the first camper was confronted by a second angry bear. With his final conscious thought, he noticed the bear had the letters ‘PIPS’ emblazoned across its T-shirt.

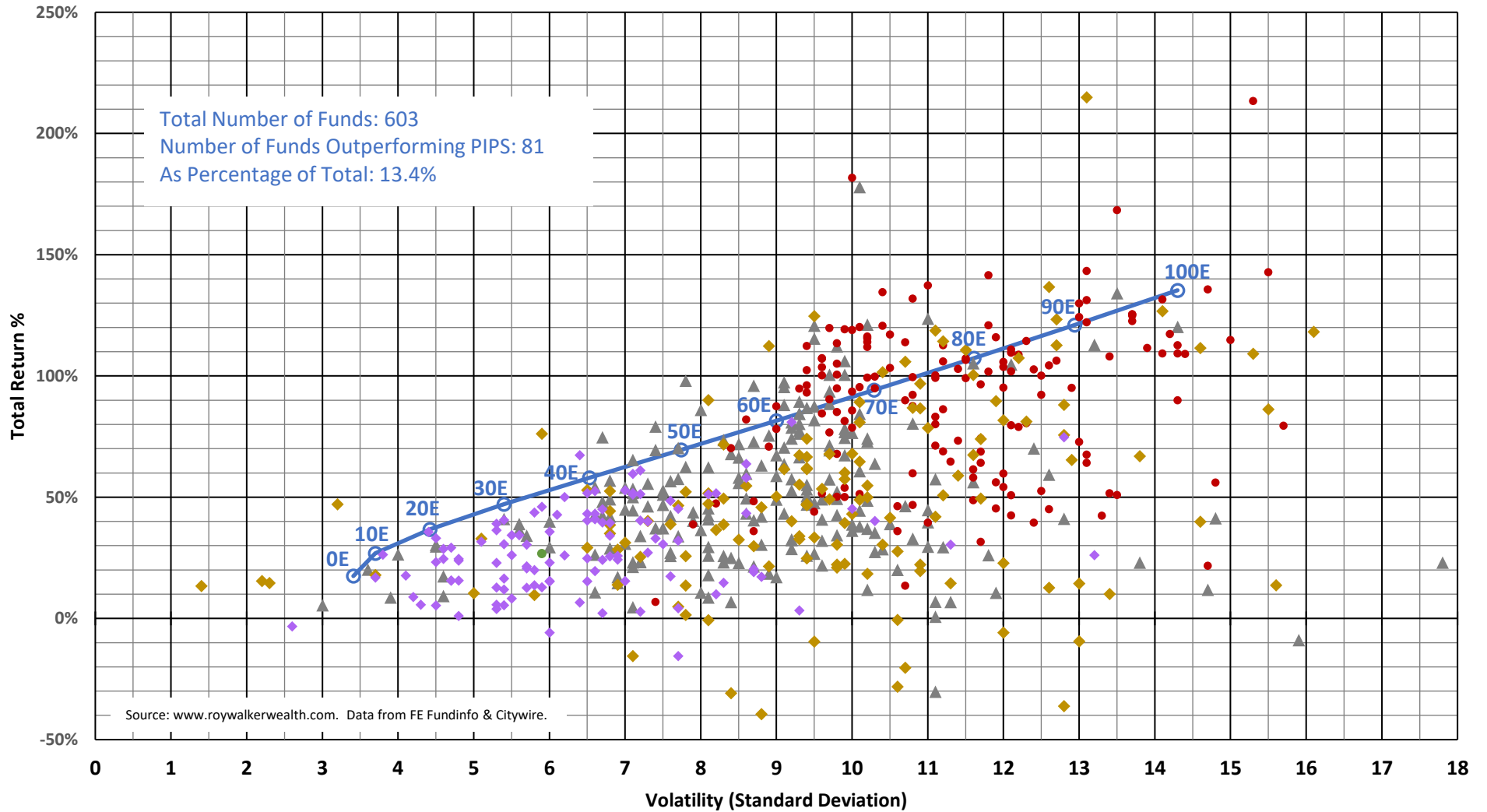


Total Return-vs-Volatility Scatter Chart - All Citywire Selector Multi-Asset **GBP** Funds, Plotted Together
 With Locus of GBP Passive Index Portfolios ('PIPS Line'), 10 Years to 31/10/2022



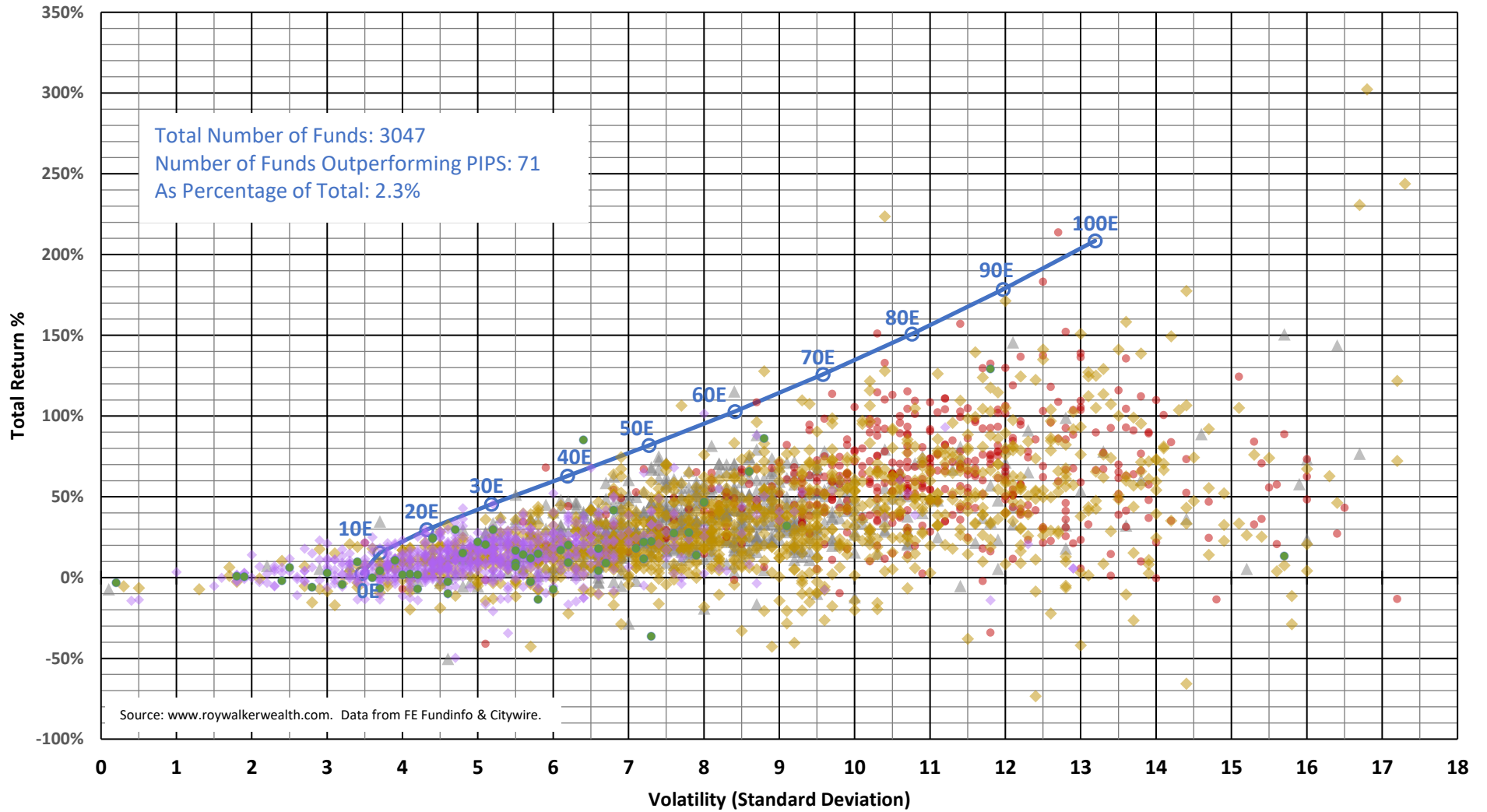
▲ Balanced GBP ● Aggressive GBP ◆ Flexible GBP ◆ Conservative GBP ● Absolute Return GBP —○— PIPS-GBP-Index

Total Return-vs-Volatility Scatter Chart - All Citywire Selector Multi-Asset USD Funds, Plotted Together
 With Locus of USD Passive Index Portfolios ('PIPS Line'), 10 Years to 31/10/2022



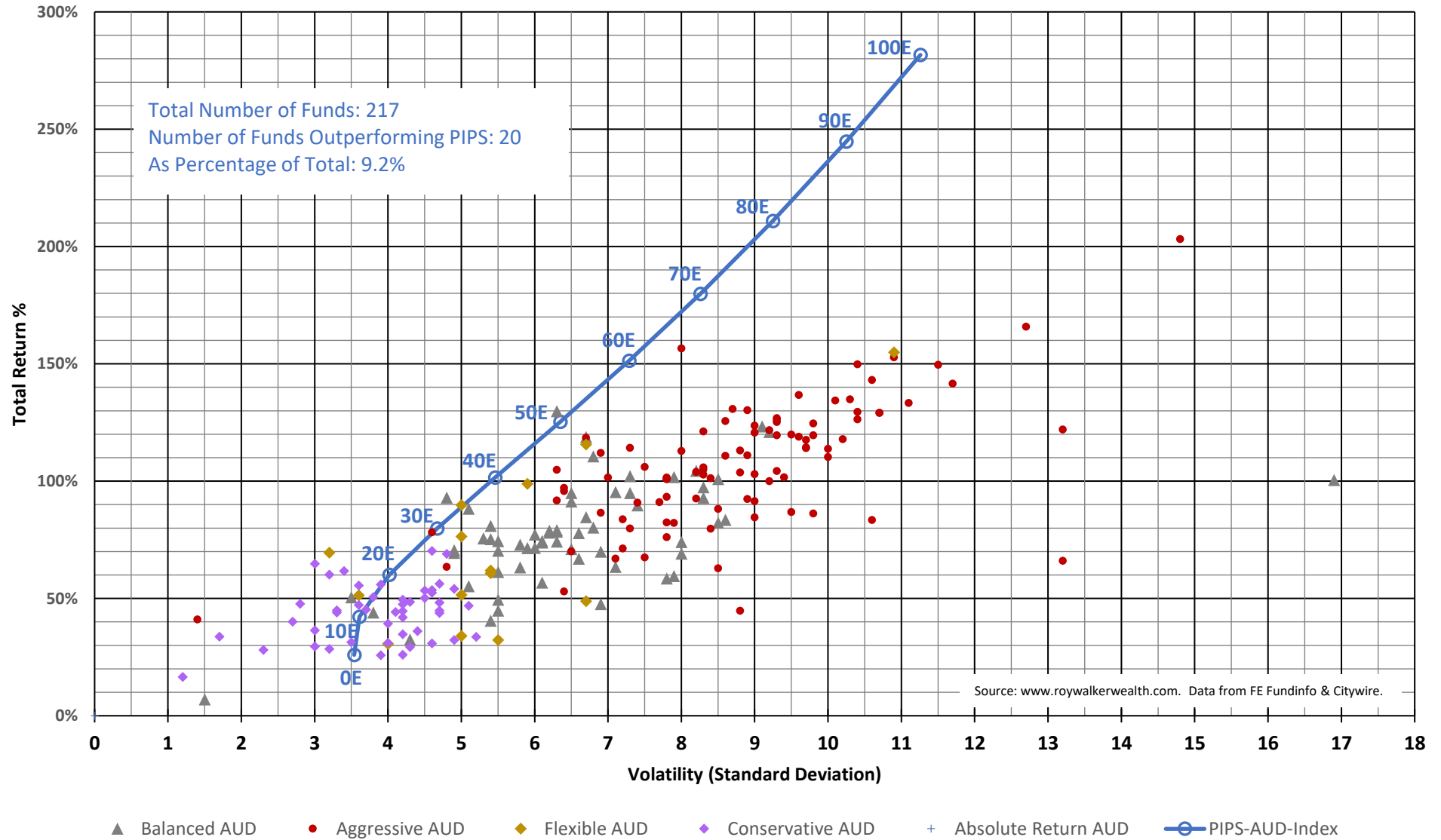
▲ Balanced USD ● Aggressive USD ◆ Flexible USD ◆ Conservative USD ● Absolute Return USD —○— PIPS-USD-Index

Total Return-vs-Volatility Scatter Chart - All Citywire Selector Multi-Asset EUR Funds, Plotted Together
 With Locus of EUR Passive Index Portfolios ('PIPS Line'), 10 Years to 31/10/2022

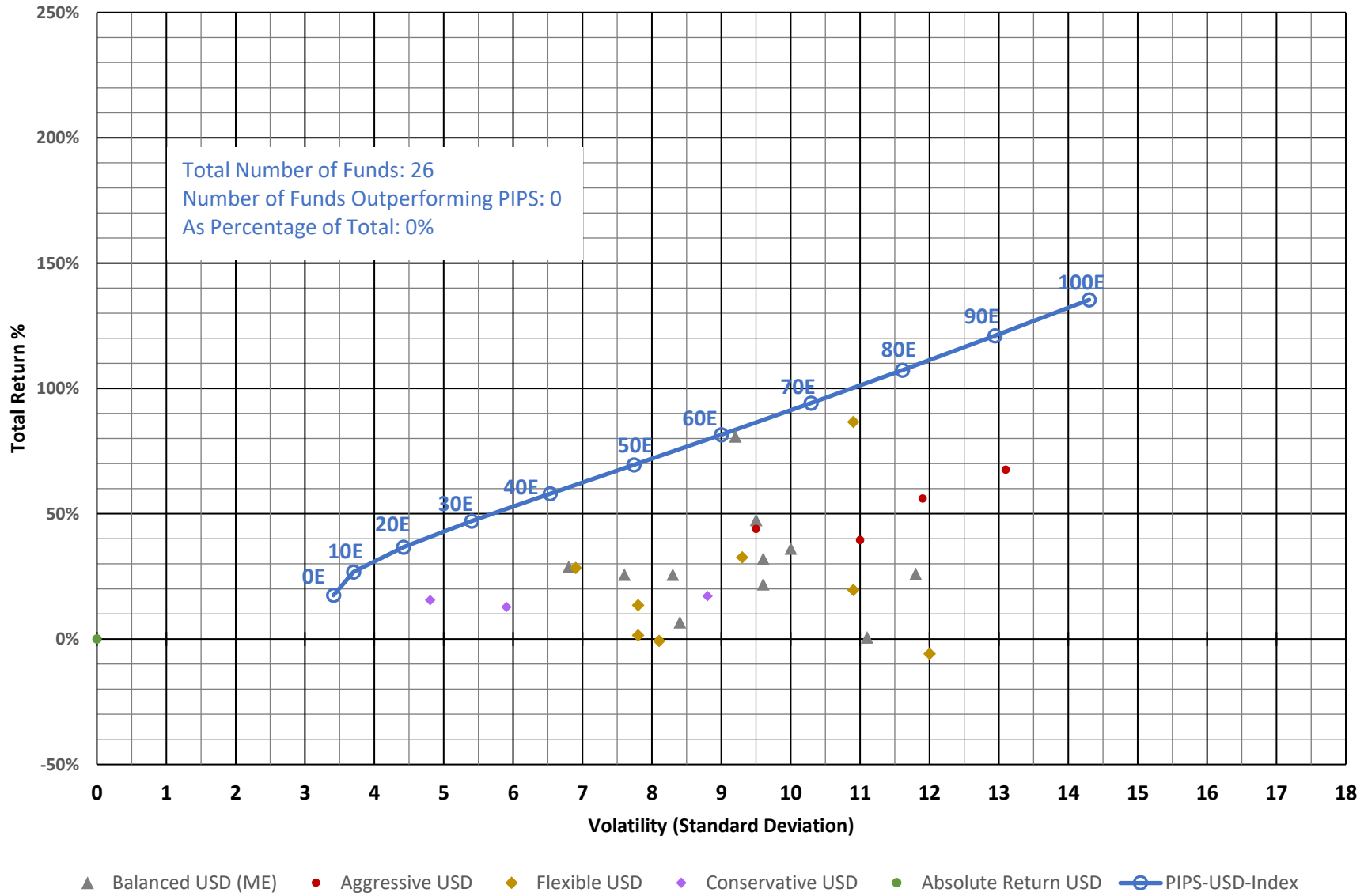


▲ Balanced EUR ● Aggressive EUR ◆ Flexible EUR ◆ Conservative EUR ● Absolute Return EUR —○— PIPS-EUR-Index

Total Return-vs-Volatility Scatter Chart - All Citywire Selector Multi-Asset **AUD** Funds, Plotted Together With Locus of AUD Passive Index Portfolios ('PIPS Line'), **10 Years** to 31/10/2022



Total Return-vs-Volatility Scatter Chart - All Citywire **Middle-East** Multi-Asset Balanced **USD** Funds, Plotted With USD Passive Index Portfolios ('PIPS Line'), **10 Years** to 31/10/2022



Is PIPS A Good Benchmarking Technique For Multi-Asset Funds?

I think yes. The PIPS-line methodology meets some key index criteria:

- Independent - not peer-group referenced;
- Passive rules-based - not active discretionary;
- Investible – index-tracking ETFs are available;
- Widely applicable – target a currency by hedging the global bond index to that currency;

A PIPS benchmark is intuitive, quick and easy to use. Consider the EUR multi-asset funds plotted together with EUR PIPS in the earlier above. Anyone, almost regardless of financial background, can quickly identify potential candidates for further investigation. Over 3000 multi-asset funds are instantly assessed versus benchmark, *by the human eye*.

PIPS can certainly help client conversations about the risk-return trade-off. Potentially, the PIPS concept could help in the creation of a more logical transit from risk profile through to core holdings; evaporating the gulf of fuzziness between wordy risk-profile description and asset allocation. ‘How much up-and-down-iness can you handle?’ is a wonderful question to ask when you have the right visuals, and clients are more intuitively connected with their portfolio construction.

Most Actively Managed Funds Don’t Beat Their Benchmark Index In The Long Run. Again.

We already know this to be true for single asset sub-classes (per SPIVA). The present analysis suggests this may equally be true for multi-asset funds, even where the benchmark is as simple as PIPS.

Are Shorter Term Results Different?

Yes, this can be true for some multi-asset funds. An example is AJ Bell. During the last 12 months AJ Bell multi-asset funds have certainly outperformed GBP PIPS. But if we look at a 36 months or longer period, the risk-return performance reverts to the long-term profile.

This behaviour is due to some multi-asset funds providing better downside protection than PIPS during the decline of 2022. I suspect this is a diversification benefit rather than skilful active management, noting that exactly the same effect is seen with the systematic Dimensional funds. But is it useful? Hardly. Let’s not fall into the trap of attempting to time the markets. It’s long-run returns that count; invest according to your long-term goals, not your short-term fears.

Chart: AJ Bell GBP (Red) vs PIPS GBP (Blue) – 12 Months to 30/11/2022

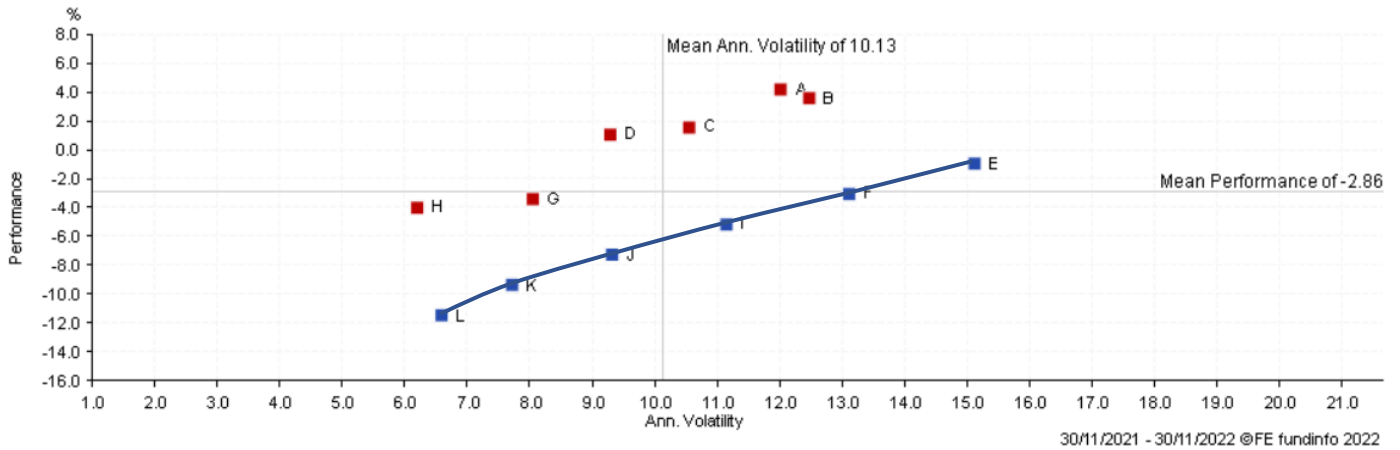
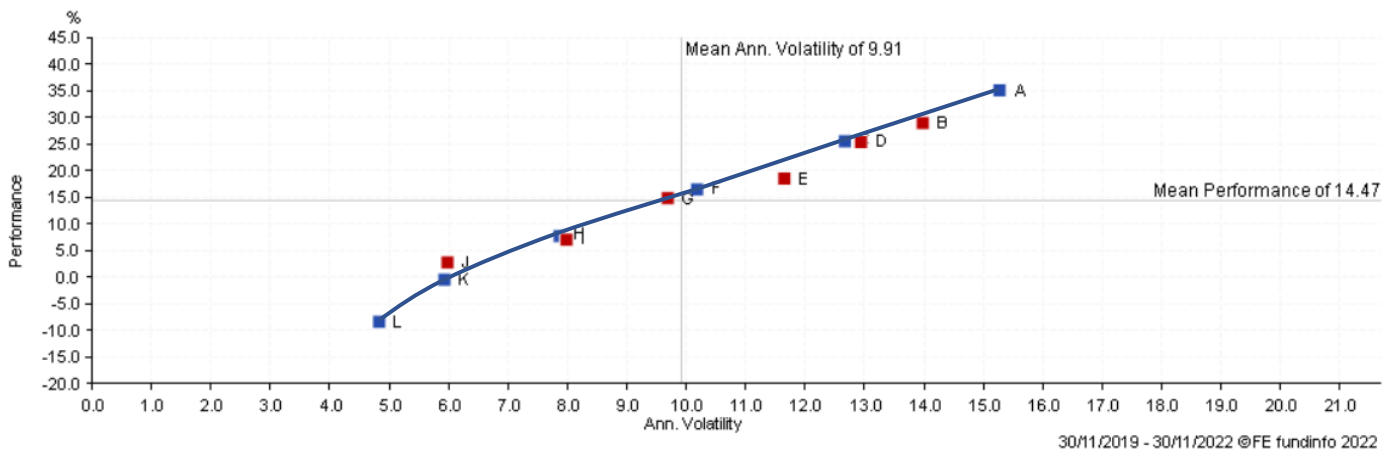


Chart: AJ Bell GBP (Red) vs PIPS GBP (Blue) – 3 Years to 30/11/2022



Maybe These Findings Aren't Applicable To Certain Types of 'Core' Multi-Asset Funds?

I don't see why. If your multi-asset fund is designed to be core only, and you'll add other funds to construct a complete portfolio, then fair enough. But, this doesn't mean the core holding itself shouldn't present the best possible risk-return trade-off. Surely you want the optimal core fund for your given risk appetite?

This issue is more significant than one might first think. If the multi-asset fund you select for your core holding exhibits a much poorer risk-return performance than the PIPS benchmark, then your overall portfolio is likely handicapped. This is because: to match benchmark returns at the portfolio level, you are now required to augment the core with satellite funds with higher expected returns, and consequently higher volatility, than otherwise. In other words, a poorly chosen multi-asset core fund could impair the chances of the overall portfolio ever achieving the risk-return performance of a simple PIPS benchmark. This has important implications for any professional adviser or investment manager who recommends multi-asset funds as core holdings for clients.

Can PIPS Benchmarking Be Applied To Any Portfolio?

I don't see why not. I started my research intending to focus purely on multi-asset funds, due to the good availability of fund performance data. However, I hadn't realised the degree to which the investment management industry benchmarks itself using peer-group indices. An independent, passive index portfolio benchmark is a foil to self-congratulatory comparisons against average performance.

If most multi-asset funds don't outperform a PIPS benchmark over time, then there's at least some chance the same is true for MPS (managed or model portfolio services) and DFM (discretionary fund management). Further research required.

The ARC Private Client Indices give good insight into the discretionary fund management industry, as they represent *actual real-world portfolios managed for clients*. The data collection and validation rules are strict, and data are submitted by dozens of respected fund and portfolio managers. ARC PCI is a truly excellent facility for those wanting to compare portfolio management services of different providers. But their indices are averages per peer-group: Cautious (0-40% relative risk to equities), Balanced Asset (40-60% relative risk to equities), Steady Growth (60-80% relative risk to equities), and Equity Risk (80-110% relative risk to equities).

Chart B.2., in Annex 2, plots the ARC PCI GBP indices vs PIPS GBP. Here are the figures for Balanced Asset, Steady Growth, and Equity Risk.

Table: ARC PCI GBP Indices vs PIPS GBP - 10 Years to 30/11/2022

ARC PCI Indices vs PIPS GBP - 10 Years to 30/11/2022

Data from FE FundInfo

	Growth <i>Higher is better</i>	Volatility (Std.Dev.) <i>Lower is better</i>
Walkers PIPS GBP Index 70E	146.07%	8.73
ARC Sterling Equity Risk PCI GBP	88.30%	9.68
<i>Underperformance (wrt PIPS)</i>	<i>39.55%</i>	<i>10.88%</i>
Walkers PIPS GBP Index 60E	121.46%	7.72
ARC Sterling Steady Growth PCI GBP	69.85%	8.07
<i>Underperformance (wrt PIPS)</i>	<i>42.49%</i>	<i>4.53%</i>
Walkers PIPS GBP Index 40E	75.80%	5.83
ARC Sterling Balanced PCI GBP	49.22%	6.32
<i>Underperformance (wrt PIPS)</i>	<i>35.07%</i>	<i>8.40%</i>

According to the Investment Association (<https://www.theia.org/sites/default/files/2022-09/Investment%20Management%20Survey%202021-22%20ofull%20report.pdf>), assets under management of members reached £10 trillion in 2021; £780 billion of which is the private client sector. Looking at the table above, are you thinking what I'm thinking?

Home Bias Needs To Be Justified.

Relatively speaking, the percentage of multi-asset USD funds beating PIPS is rather higher than that for GBP, EUR, and AUD. I don't know, but maybe this is due to the prevalence of home bias in investment portfolios generally. Home bias in the USA is less of an issue than other countries, because USA is the world's largest equity market and accounts for almost 70% of the MSCI World Index (which is market capitalisation weighted). On the other hand, over-enthusiastic home bias in smaller economies distorts allocation to the global equity market as a whole.

It Takes More Than Just Holding Passive Funds.

An important point, perhaps especially so for DIY fans of evidence-based investing: even if all your funds held are passive index-trackers, your portfolio's risk-return performance could still under-achieve an investible PIPS benchmark. Is it worth checking? It's not so difficult; Excel has a standard deviation function built-in.

Simple Is Good. Decorate Less. Do More Core, Less Satellite.

Intellectual fire-power of investment managers, wonderful graphics and highly plausible economic analysis, and hypnotic narratives on portfolio strategy, don't all add up to mean complexity is good. Or good value.

Medium and long-term investors can be well served by a simple and straightforward core-satellite portfolio approach. For example tracking a 60% equity PIPS as core, or using a systematic multi-asset core fund from say Dimensional, Vanguard, or iShares. Carefully chosen satellite holdings can be added, should there be any desire for excitement, adventure, and really wild things. But not too much. Complication doesn't equal outperformance.

Concluding Thoughts

The title of this paper compels the question, "*How Should We Benchmark Multi-Asset Investment Products?*", which is the principal matter I addressed in my research. I found there is a predominance of relative performance methodologies based on peer-group indices. I believe that independent and absolute indices and methodologies may better unravel the problem.

Moreover, the problem is two-dimensional: portfolio assessment requires benchmarking on both the risk and return axes. Such volatility-return charting is already well established in the industry – we just need a good benchmark. As it turned out, I found that the locus of an annually rebalanced portfolio of $(E\%) \text{ MSCI World Index USD} + (1-E\%) \text{ Bloomberg Global Aggregate Index H-[ccy]}$ is a valid and useful multi-asset benchmark. In one chart plotted, this passive index portfolio line ('PIPS') allows an observer to immediately identify 'best' candidates from a set of 3,047 multi-asset funds; just 71 of which outperformed PIPS in terms of risk-return trade-off.

The relatively small percentage of multi-asset funds that beat a simple PIPS benchmark might seem surprising, but is in line with existing single-asset research: most actively-managed funds don't beat their benchmark index in the long run. It seems that a multi-asset portfolio is no less difficult to actively manage than a portfolio of assets within just one class or sub-class. Are investment managers making the problem more complex than it needs to be? It would be interesting to explore for common characteristics among multi-asset funds that *do* outperform PIPS.

Although the proposed PIPS is investible via funds that track the two components, it's purpose is a benchmark, not a specific investment recommendation. Having said that, it does underline the importance of a well-chosen portfolio core, and illustrates the long-run benefit of simple over complex.

Finally, PIPS is a useful tool to help answer the question posed in the title, "*Is Your Investment Manager Good Value?*"



Important Disclaimers

Do not make any financial decisions based on this document. This is not financial advice, tax advice, nor recommendation to take, or not to take, any kind of financial transaction nor whether to add the milk before or after the hot water. I've made reasonable efforts to ensure the validity of all data referenced herein, but don't take responsibility for accuracy, correctness, or validity of any findings or opinions expressed or implied. I expressly disclaim and deny any claim or liability for anything, at any time. Opinions expressed or implied herein are my own and not necessarily those of any other person or organisation.

Contact Information and Feedback

Any kind of feedback is very welcome. Please contact me at roy@roywalkerwealth.com, especially if you're seeking a crotchety old cynic to be your wealth manager.

Sources of Data

Data for the MSCI World and Bloomberg Global Aggregate indices, and the performance data of constructed PIPS portfolios, come via the FE Analytics service provided by FE Fundinfo at <https://www.fefundinfo.com>.

Performance and volatility data for the main multi-asset funds analysed comes from Citywire Selector at <https://citywire.com/selector/>, and middle-east fund data comes from Citywire Middle East at <https://citywire.com/middle-east/>.

Credit and Reference

I can't say whether the contents is original, but it's original to me. I spent quite some time searching the web while carrying out the research. Probably not enough time; but hey, I have a day job. If my work overlaps with yours, please do reach out. The PIPS-line concept is so simple and obvious, surely it must have already been looked at; let me know.

Please use as a reference "*Is Your Investment Manager Good Value?*", Roy Walker, 24th December 2022; available at www.roywalkerwealth.com.

I had difficulty deciding whether to take a blog-style approach to this paper, or use more academic structure and conventions. Ultimately, I went with less formal, hoping the subject matter might be more broadly accessible.

'Passive index portfolios' acronymises nicely to PIPS, which is coincidentally what you find at the heart of any core. My 'Walkers PIPS' is specifically the risk-return locus of MSCI World Index USD combined with the Bloomberg Global Aggregate Index currency hedged. Who knows, maybe sometime there'll be a 'Jones's PIPS', a 'Smith's PIPS', or a 'Fotherington-Sproget's PIPS'.

Very warmest regards, and compliments of the season.

Roy

ANNEX 1 – Benchmarking resources for multi-asset funds & portfolios.

Below are links and abbreviated notes from several of the multi-asset index families I looked at, plus some other resources.

<p>ARC PCI</p> <p>https://www.assetrisk.com/</p> <p>https://www.suggestus.com/</p>	<p>Methodology: a set of risk-based indices based on real performance numbers delivered to discretionary private clients by participating investment managers (Data Contributors).</p> <p><i>“No pre-set asset allocations; no asset class restrictions; no concentration limits; and no index performances used. Only actual performance numbers are included in the calculation of the indices. Each contributed data series is assigned to a PCI risk category by ARC according to its historical risk relative to world equities.”</i></p> <p><i>“ARC Private Client Indices provides unique insight into the actual returns being generated by investment managers for their discretionary private client portfolios, based on real performance numbers (net of fees) provided by participating investment managers in five major currencies.”</i></p>
<p>Bloomberg US</p> <p>https://www.bloomberg.com/professional/product/indices/multi-asset-indices/#/</p> <p>https://www.bloomberg.com/professional/product/indices/bloomberg-multi-asset-indices-fact-sheets-and-publications/</p>	<p>Methodology: Rules-based portfolios of indices, with fixed weighted, market value weighted, or risk weighted options.</p> <p>Bloomberg launched a set of USA-oriented multi-asset indices in May 2020, which are themselves comprised of Bloomberg indices across major asset classes with each index constructed as a composite of at least one fixed income and one equity index.</p> <p><i>“Bloomberg’s indices are rules-based and transparent to help measure a wide array of market exposures. Advisors can use the indices for traditional benchmarking activities, including measuring portfolio performance and risk exposures.”</i></p> <p>(Example for US EQ:FI 40:60 Index) <i>“Bloomberg US EQ:FI 40:60 Index is designed to measure cross-asset market performance in the US. The index rebalances monthly to 40% equities and 60% fixed income. The equity and fixed income allocation is represented by Bloomberg US Large Cap (B500T) and Bloomberg US Agg (LBUSTRUU) respectively.”</i></p>
<p>CityWire</p> <p>https://citywire.com/selector</p>	<p>Methodology: Data resource.</p>

<p>https://citywire.com/middle-east/</p>	<p>The CityWire Selector site is an excellent and comprehensive resource, with details on many thousands of funds from all the main categories and in the major currencies.</p> <p>CityWire Middle East is the regional site for the GCC.</p>
<p>Financial Express Adviser Fund Indices</p> <p>https://www2.trustnet.com/Tools/AdviserFundIndex.aspx</p>	<p>Methodology: Indices are constructed using recommended portfolios of an expert panel.</p> <p><i>“The FE Adviser Fund index, or set of indices, are designed to act as indicators of the UK funds market. The FE AFI provides a benchmark against which the investment community can compare fund portfolio performance, as well as offering a relevant flagship index for the funds market.”</i></p> <p><i>“The Adviser Fund Index (AFI) is made up of the recommended portfolios of a panel of leading UK financial advisers. Based entirely on the funds actually recommended to clients, the AFI Aggressive, Balanced, Cautious portfolios carry real-life credibility, and provide insight in terms of the benefits of holding top quality funds.”</i></p> <p><i>“The Panelists must assume that the 'client' is saving for a pension at 65. For example: FE AFI Cautious portfolio - Panelists would choose funds suitable for a person in their late 50s; FE AFI Balanced portfolio - Panelists would choose funds suitable for a person in their mid 40s; FE AFI Aggressive portfolio - Panelists would choose funds suitable for a person in their late 20s</i></p> <p><i>Panelists are also required to weight their fund selections accordingly.”</i></p>
<p>FTSE Russell UK Private Client Indices</p> <p>https://www.ftserussell.com/products/indices/private-investor</p>	<p>Methodology: Allocation funds from the Morningstar database are categorised by volatility, then index asset allocations are assigned using the average of each category.</p> <p><i>“The FTSE Private Investor Index Series is a multi-asset index series providing market participants in the UK with a set of asset allocation benchmarks covering equities, fixed income, cash, property and other investments. The indexes are calculated by blending underlying component indexes representing the performance of various asset classes, with the asset allocation weights derived from asset allocation levels of eligible funds reported in the Morningstar Fund Database.”</i></p>

	<p><i>“All funds categorised by Morningstar as Allocation Funds, will be ranked according to historical 3-year weekly (Wednesday to Wednesday) return volatility as of the data cut-off date from highest to lowest and the median fund volatility determined. A minimum of 52 weekly return observations are required to calculate volatility.”</i></p>
<p>Investment Association</p> <p>https://www.theia.org/industry-data/fund-sectors</p>	<p>Methodology: Sector classification by asset allocation, then performance comparison versus the peer-group sector average performance (data is compiled for the IA by Morningstar.</p> <p>(Example for Mixed Investment 40-85% Shares sector) <i>“Funds in this sector are required to have a range of different investments. However, there is scope for funds to have a high proportion in company shares (equities). The fund must have between 40% and 85% invested in company shares. Maximum 85% equity exposure (including convertibles). Minimum 40% equity exposure. No minimum fixed income or cash requirement. Minimum 50% investment in established market currencies (US Dollar, Sterling & Euro) of which 25% must be Sterling. Sterling requirement includes assets hedged back to Sterling.”</i></p>
<p>Morningstar Categories & Target Allocation Indices</p> <p>https://indexes.morningstar.com/our-indexes?assetClass=multi%20asset</p>	<p>Methodology: Categorisation by asset allocation, then direct comparison versus the category peer-group average. Additionally, comparison versus a category index which is itself constructed according to asset weightings of the peer-group.</p> <p>Morningstar has a complex approach to the problem of benchmarking multi-asset funds. Firstly, funds are allocated to categories on the basis of their portfolio holdings. For example, HSBC World Selection is in the “GBP Allocation 40%-60% Equity” category (https://www.morningstar.co.uk/uk/funds/snapshot/snapshot.aspx?id=F000002K5C). Fund performance is then compared against both the category (i.e. a straight peer-group comparison), and also a separate category index. In this example, the category index is “Morningstar UK Moderate Target Allocation NR GBP”. The constituent holdings of the index (https://indexes.morningstar.com/our-indexes/details/morningstar-uk-moderate-target-allocation-nr-FS0000G3JY?tab=holdings) are themselves Morningstar indices.</p>

	<p>However, “the underlying index weights are derived from eligible open-end funds in Morningstar’s fund holdings data.... These indexes have simple construction rules that reflect the aggregate asset allocation decisions of the multi-asset fund managers in a certain Morningstar Category.”</p> <p>(Example for UK Moderate Target Allocation index) <i>“The Morningstar Target Allocation Index family consists of indexes that offer a diversified mix of stocks and bonds created for local investors to benchmark their allocation funds. Morningstar’s Category classification system defines the level of equity and bond exposure for each index. The Morningstar UK Moderately (sic) Target Allocation Index seeks 50% exposure to global equity markets.”</i></p>
<p>Morningstar UK Managed Portfolio Database</p> <p>https://www.morningstar.com/en-uk/learn/mpdb</p>	<p>Methodology: Screener database only.</p> <p>A relatively new database designed to assist the evaluation of MPS and DFM services, which includes some managers making their strategies available via funds. Some 950 entries on last view.</p> <p><i>“The Morningstar Managed Portfolio Database, enables advisers to freely research managed portfolios across the only whole of market independent database; using Morningstar Proprietary metrics alongside standardised operational data.”</i></p> <p>The database provides information for screening funds across category (eg “GBP Allocation 40-60% Equity”), performance, asset allocation, risk, fees, and ESG criteria.</p>
<p>MSCI PIMFA Private Investor Index Series</p> <p>https://www.pimfa.co.uk/indices/current-asset-allocation-2/</p> <p>https://www.msci.com/pimfa-private-investor-indices</p>	<p>Methodology: Asset-allocation of the peer group, with portfolio weights set by the PIMFA Indices Committee.</p> <p><i>“The indices include weightings of equities, bonds, real estate, “cash” and “alternative” investments in proportions that reflect the longer-term objectives for each strategy. The weightings are determined by the PIMFA Private Indices Committee, which is responsible for regularly surveying PIMFA members and reflecting in each index the industry’s collective view for each strategy objective. The index weightings are updated when the Committee determines that strategy changes across the industry warrant a review.”</i></p>
<p>S&P Dow Jones Multi-Asset Target Risk Indices</p>	<p>Methodology: A set of four indices with fixed equity/bond proportions of 30/70, 40/60, 60/40 and 80/20.</p>

<p>https://www.spglobal.com/spdji/en/index-family/multi-asset/</p>	<p><i>“The S&P Target Risk Indices are multi-asset-class indices that correspond to a particular risk level. Each index is fully investable, with varying levels of exposure to equities and fixed income, and is intended to represent stock and bond allocations across a risk spectrum from conservative to aggressive.”</i></p> <p>Interestingly, this set of indices are constructed using iShares ETFs for each of the seven component assets. The indices are directly investible via corresponding iShares ETFs – Core Conservative/ Moderate/ Growth/ Aggressive Allocation. Available for USD only.</p>
<p>Trustnet</p> <p>https://www.trustnet.com/</p>	<p>Methodology: Data resource.</p> <p>Trustnet is a very useful and publicly accessible data and fund screener site powered by data from FE Fundinfo (the provider of FE Analytics which I have used for the charts in Annex).</p>

ANNEX 2 – A selection of risk-return charts.

All charts generated by FE Analytics, from FE Fundinfo. I try to plot using the longest data period available, so timescales vary.

Investible Trackers

Illustration of using ETFs to invest directly in PIPS.

- A.1. PIPS Investible Tracker GBP
- A.2. PIPS Investible Tracker USD

Indices

The FE AFI and ARC PCI indices are directly accessible on FE Analytics.

- B.1. FE FundInfo AFI GBP
- B.2. ARC PCI GBP
- B.3. ARC PCI USD
- B.4. ARC PCI EUR

Wholly Passive Components

A look at the multi-asset funds available from some well-known passive fund providers.

- C.1. iShares Core Allocation USD
- C.2. Dimensional World Allocation GBP
- C.3. Vanguard LifeStrategy GBP
- C.4. Vanguard LifeStrategy GBP vs Dimensional World Allocation GBP

Selection of Fund Families – UK & Offshore, Large & Small

I tried to illustrate a good mix of fund families; mostly focused on those available in GBP.

- D.1. 7IM AAP GBP
- D.2. AJ Bell GBP
- D.3. Allianz RiskMaster GBP
- D.4. BlackRock Consensus & Misc GBP
- D.5. BM SVS Brooks Macdonald GBP
- D.6. BM SVS Cornelian GBP
- D.7. Canaccord Genuity GBP
- D.8. Canaccord Genuity USD
- D.9. Close Managed & Tactical Select GBP
- D.10. Courtiers GBP
- D.11. Fidelity Allocator & Open GBP
- D.12. GAM Star GBP
- D.13. Hargreaves Lansdown Multi-Manager GBP
- D.14. Jupiter GBP
- D.15. L&G Mixed Investment GBP
- D.16. Momentum Diversified GBP
- D.17. Ninety-One GBP

- D.18. Premier Miton GBP
- D.19. Rathbone GBP
- D.20. Royal London GMAP GBP
- D.21. Royal London Sustainable GBP
- D.22. Schroder Misc GBP
- D.23. Scottish Widows GBP
- D.24. St. James Place GBP
- D.25. Quilter Cirilium Passive GBP
- D.26. Quilter Creation GBP

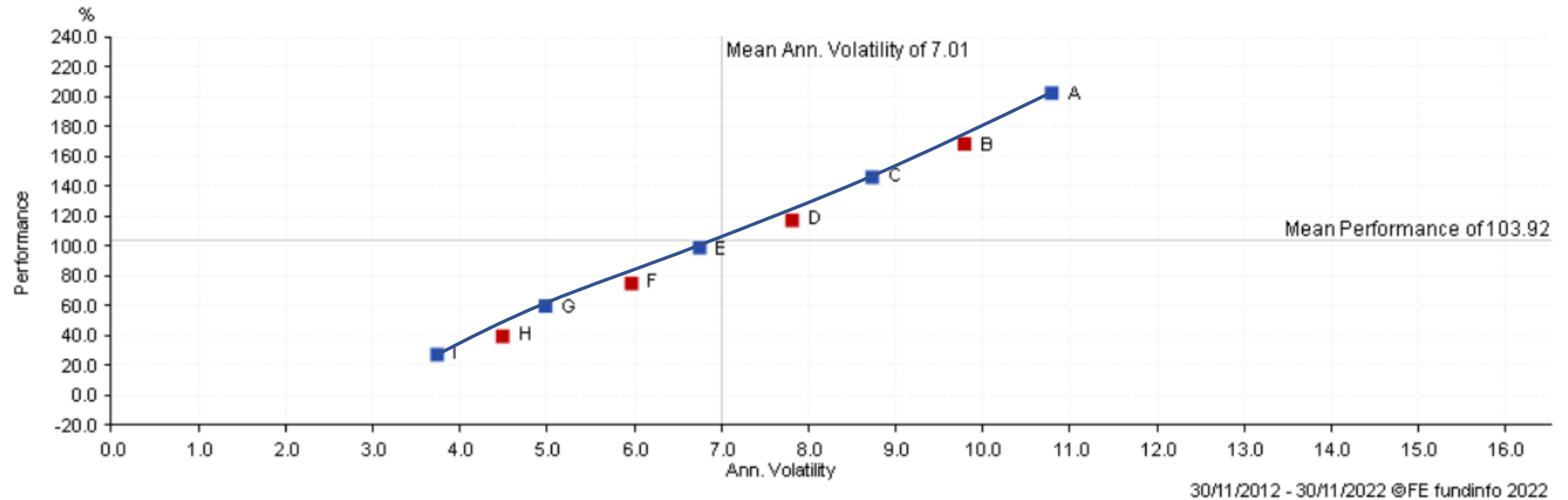
IA Sector Top Funds (as rated 5-Star by Yodelar, 12/2022)

Yodelar publishes ranking tables of funds and managers. I selected their 5-star rated funds (as of December 2022) in three Investment Association multi-asset categories.

- E.1. Sector IA Flexible GBP
- E.2. Sector IA 20-60% Shares GBP (1 of 2)
- E.3. Sector IA 20-60% Shares GBP (2 of 2)
- E.4. Sector IA 40-85% Shares GBP (1 of 2)
- E.5. Sector IA 40-85% Shares GBP (2 of 2)

Chart A.1: PIPS Investible Tracker GBP vs PIPS **GBP** – 10 Years to 30/11/2022

Tracker is $[E\% \text{ iShares MSCI World UCITS ETF GBP} + (1-E\%) \text{ Vanguard Global Bond Index Hedged Acc GBP}]$

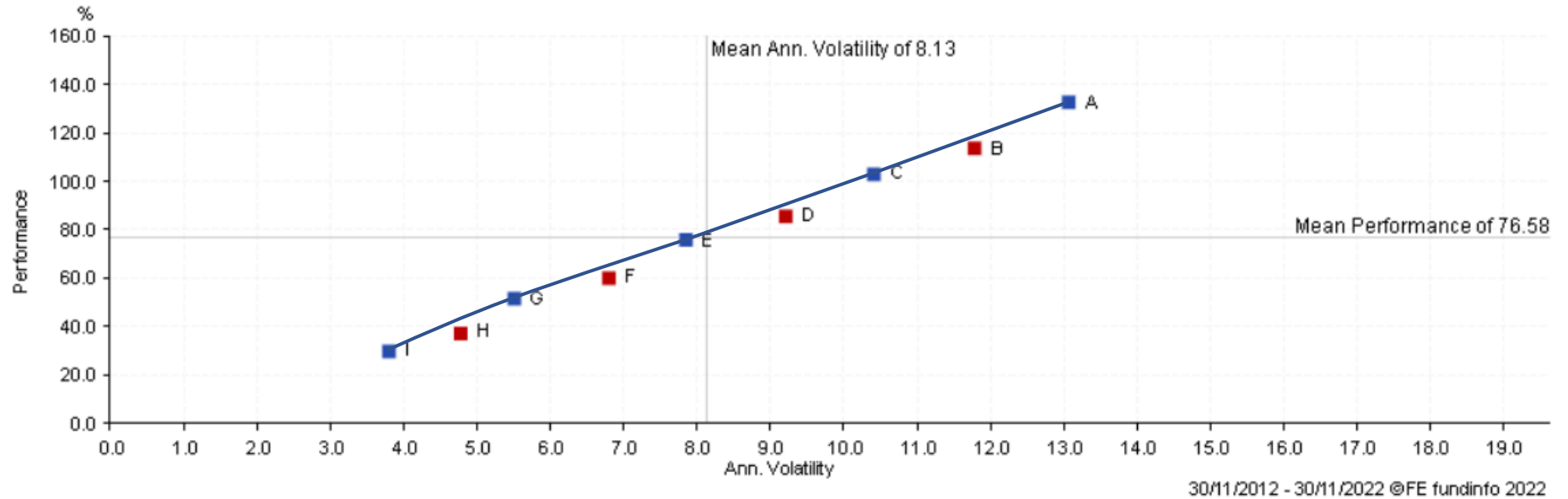


30/11/2012 - 30/11/2022 ©FE fundinfo 2022

Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-90E TR in GB	202.38	10.79
■ B	Walkers - PIPS-GBP-Tracker-80E TR in GB	168.35	9.79
■ C	Walkers - PIPS-GBP-Index-70E TR in GB	146.07	8.73
■ D	Walkers - PIPS-GBP-Tracker-60E TR in GB	117.41	7.81
■ E	Walkers - PIPS-GBP-Index-50E TR in GB	98.99	6.75
■ F	Walkers - PIPS-GBP-Tracker-40E TR in GB	74.98	5.97
■ G	Walkers - PIPS-GBP-Index-30E TR in GB	59.84	4.98
■ H	Walkers - PIPS-GBP-Tracker-20E TR in GB	39.82	4.49
■ I	Walkers - PIPS-GBP-Index-10E TR in GB	27.46	3.74

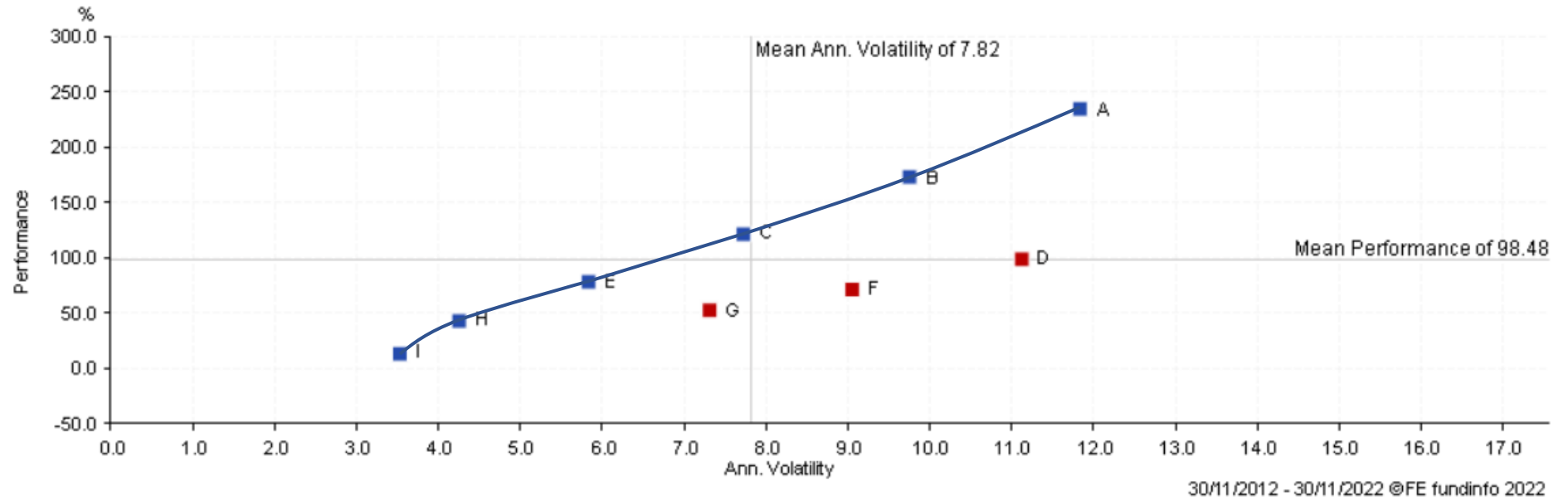
Chart A.2: PIPS Investible Tracker USD vs PIPS USD – 10 Years to 30/11/2022

Tracker is $[E\% \text{ iShares MSCI World UCITS ETF USD} + (1-E\%) \text{ Vanguard Global Bond Index Hedged Acc USD}]$



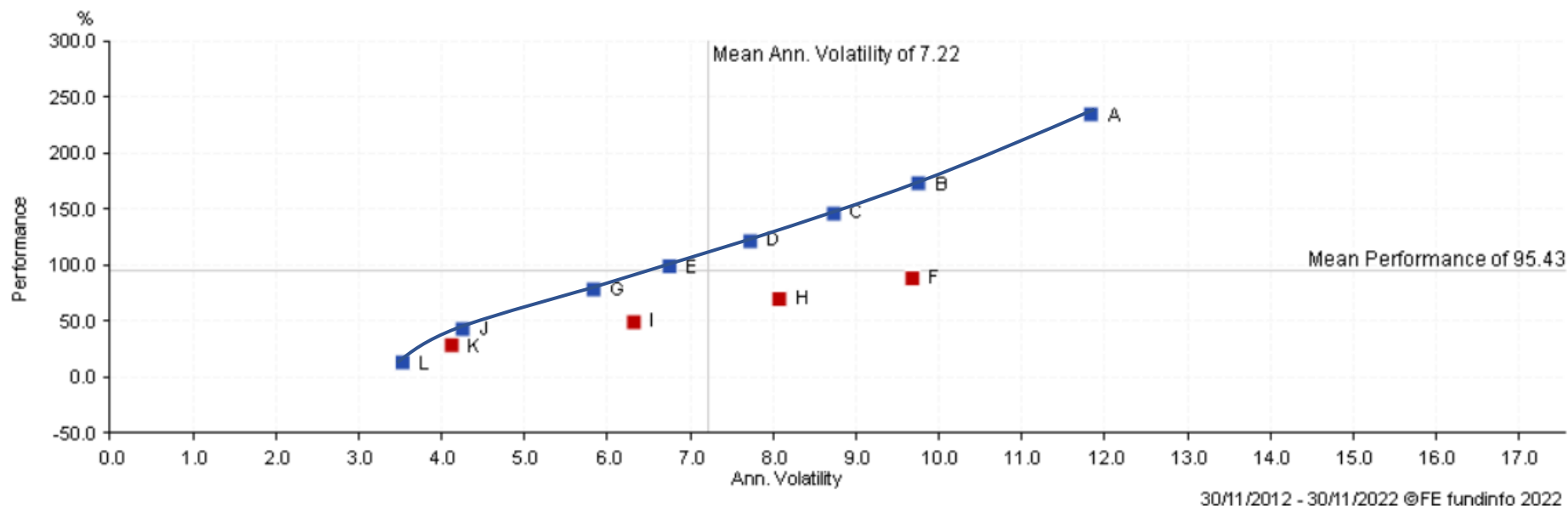
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-USD-Index-90E TR in US	132.57	13.07
■ B	Walkers - PIPS-USD-Tracker-80E TR in US	113.58	11.78
■ C	Walkers - PIPS-USD-Index-70E TR in US	102.84	10.41
■ D	Walkers - PIPS-USD-Tracker-60E TR in US	85.44	9.21
■ E	Walkers - PIPS-USD-Index-50E TR in US	75.90	7.85
■ F	Walkers - PIPS-USD-Tracker-40E TR in US	60.08	6.80
■ G	Walkers - PIPS-USD-Index-30E TR in US	51.61	5.51
■ H	Walkers - PIPS-USD-Tracker-20E TR in US	37.33	4.78
■ I	Walkers - PIPS-USD-Index-10E TR in US	29.84	3.80

Chart B.1: FE Fundinfo Adviser Fund Indices vs PIPS GBP – 10 Years to 30/11/2022



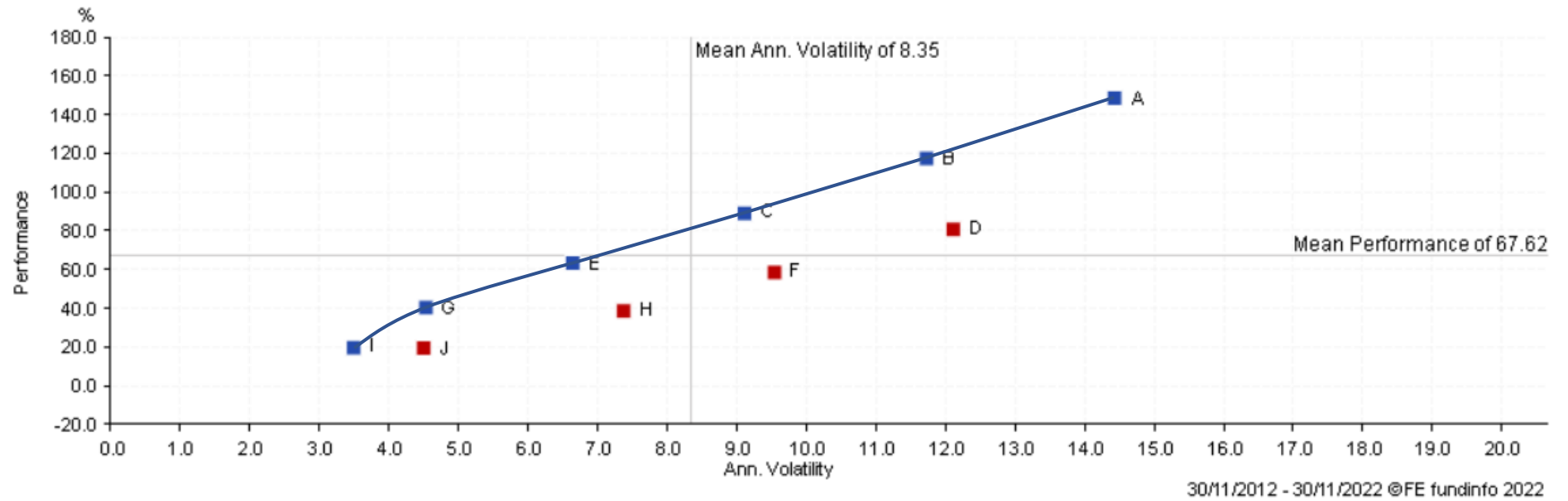
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
■ C	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
■ D	AFI Aggressive TR in GB	98.56	11.12
■ E	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
■ F	AFI Balanced TR in GB	71.38	9.05
■ G	AFI Cautious TR in GB	52.61	7.31
■ H	Walkers - PIPS-GBP-Index-20E TR in GB	42.87	4.25
■ I	Walkers - PIPS-GBP-Index-0E TR in GB	13.49	3.53

Chart B.2: ARC Private Client Indices GBP vs PIPS **GBP** – 10 Years to 30/11/2022



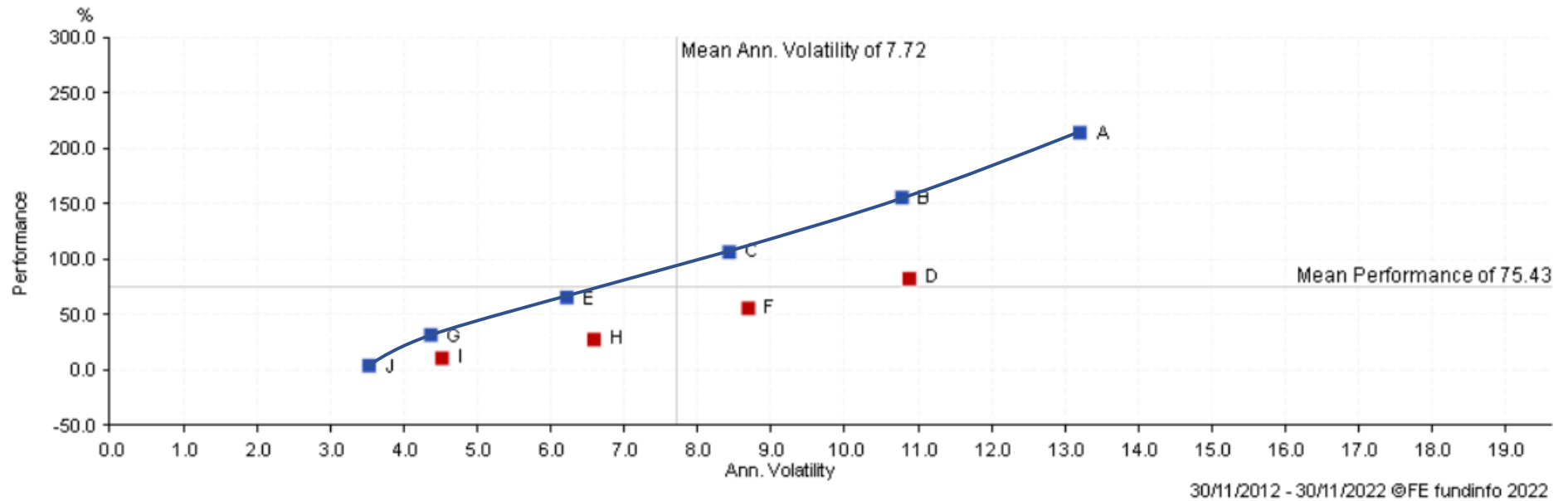
Key	Name	Performance	Annualised Volatility
A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
B	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
C	Walkers - PIPS-GBP-Index-70E TR in GB	146.07	8.73
D	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
E	Walkers - PIPS-GBP-Index-50E TR in GB	98.99	6.75
F	ARC Sterling Equity Risk PCI TR in GB	88.30	9.68
G	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
H	ARC Sterling Steady Growth PCI TR in GB	69.85	8.07
I	ARC Sterling Balanced Asset PCI TR in GB	49.22	6.32
J	Walkers - PIPS-GBP-Index-20E TR in GB	42.87	4.25
K	ARC Sterling Cautious PCI TR in GB	28.98	4.12
L	Walkers - PIPS-GBP-Index-0E TR in GB	13.49	3.53

Chart B.3: ARC Private Client Indices USD vs PIPS USD – 10 Years to 30/11/2022



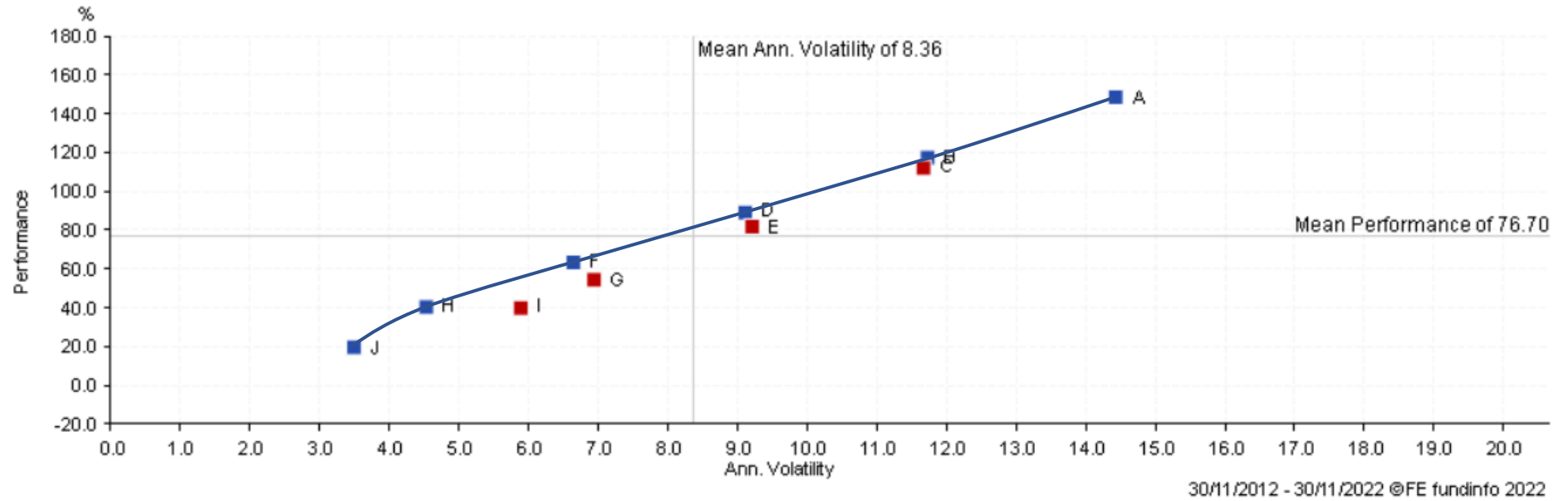
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-USD-Index-100E TR in US	148.52	14.43
■ B	Walkers - PIPS-USD-Index-80E TR in US	117.35	11.73
■ C	Walkers - PIPS-USD-Index-60E TR in US	89.03	9.11
■ D	ARC USD Equity Risk PCI TR in US	80.75	12.11
■ E	Walkers - PIPS-USD-Index-40E TR in US	63.43	6.64
■ F	ARC USD Steady Growth PCI TR in US	58.66	9.54
■ G	Walkers - PIPS-USD-Index-20E TR in US	40.42	4.53
■ H	ARC USD Balanced Asset PCI TR in US	38.59	7.37
■ I	Walkers - PIPS-USD-Index-0E TR in US	19.86	3.49
■ J	ARC USD Cautious PCI TR in US	19.55	4.50

Chart B.4: ARC Private Client Indices EUR vs PIPS EUR – 10 Years to 30/11/2022



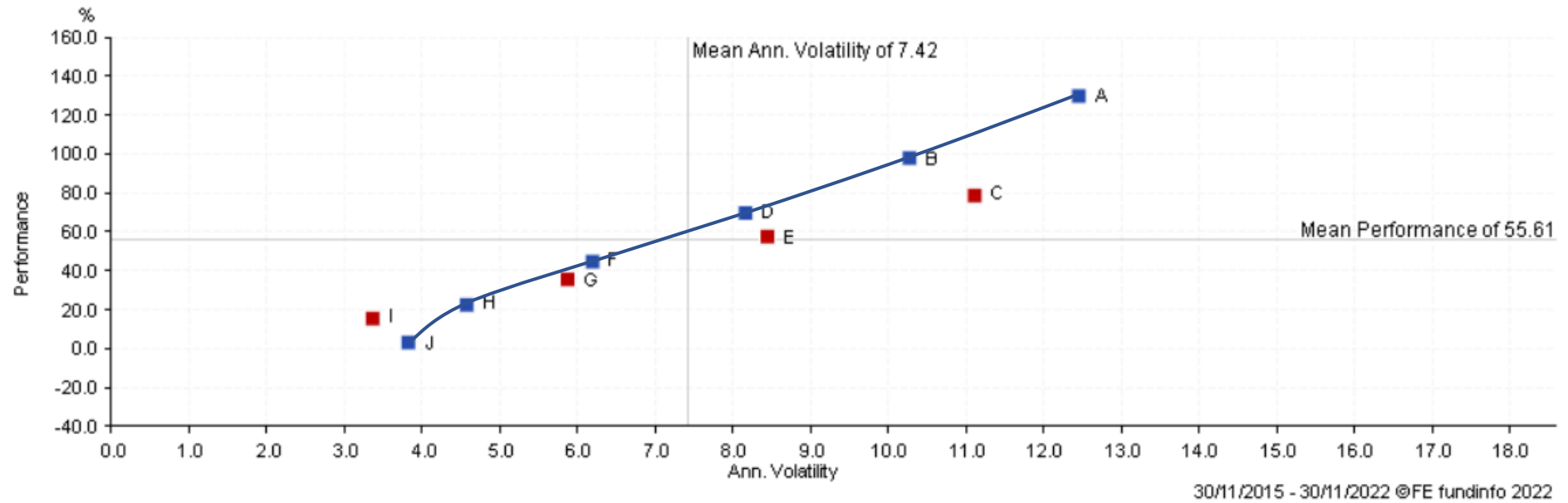
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-EUR-Index-100E TR in EU	213.92	13.20
■ B	Walkers - PIPS-EUR-Index-80E TR in EU	155.38	10.78
■ C	Walkers - PIPS-EUR-Index-60E TR in EU	106.41	8.43
■ D	ARC EUR Equity Risk PCI TR in EU	82.47	10.88
■ E	Walkers - PIPS-EUR-Index-40E TR in EU	65.67	6.22
■ F	ARC EUR Steady Growth PCI TR in EU	55.63	8.69
■ G	Walkers - PIPS-EUR-Index-20E TR in EU	31.97	4.37
■ H	ARC EUR Balanced Asset PCI TR in EU	27.64	6.59
■ I	ARC EUR Cautious PCI TR in EU	10.91	4.52
■ J	Walkers - PIPS-EUR-Index-0E TR in EU	4.28	3.53

Chart C.1: iShares Core Allocation USD vs PIPS USD – 10 Years to 30/11/2022



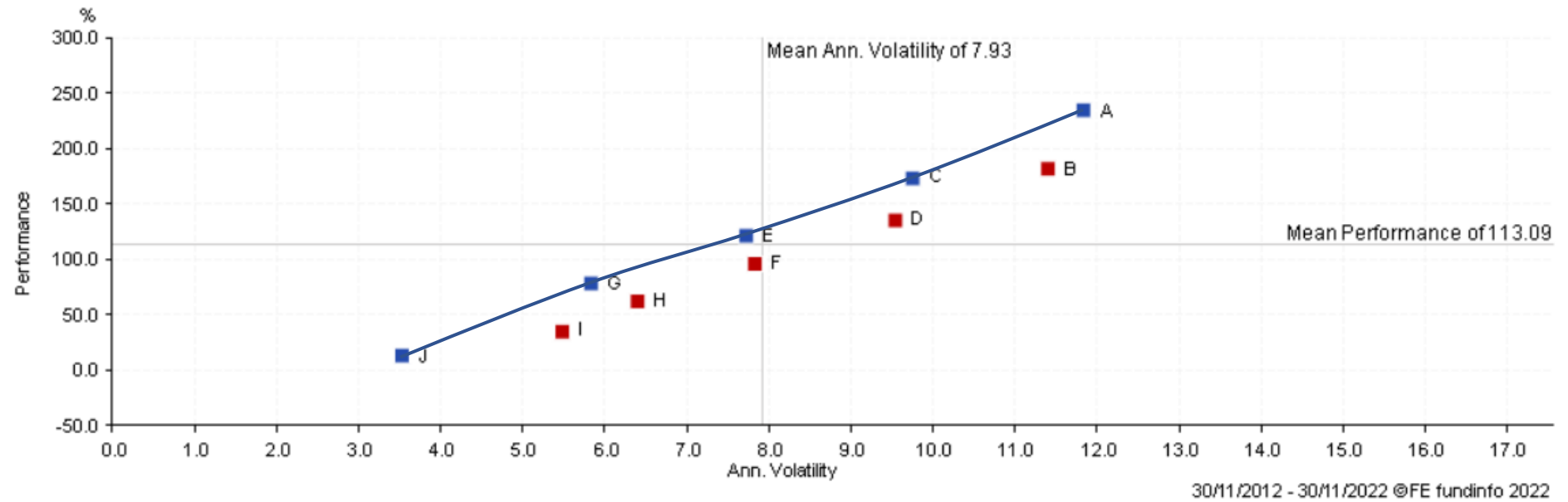
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-USD-Index-100E TR in US	148.52	14.43
■ B	Walkers - PIPS-USD-Index-80E TR in US	117.35	11.73
■ C	iShares - Core Aggressive Allocation ETF TR in US	112.09	11.67
■ D	Walkers - PIPS-USD-Index-60E TR in US	89.03	9.11
■ E	iShares - Core Growth Allocation ETF TR in US	81.95	9.21
■ F	Walkers - PIPS-USD-Index-40E TR in US	63.43	6.64
■ G	iShares - Core Moderate Allocation ETF TR in US	54.38	6.94
■ H	Walkers - PIPS-USD-Index-20E TR in US	40.42	4.53
■ I	iShares - Core Conservative Allocation ETF TR in US	39.99	5.89
■ J	Walkers - PIPS-USD-Index-0E TR in US	19.86	3.49

Chart C.2: Dimensional World Allocation GBP vs PIPS **GBP** – 7 Years to 30/11/2022



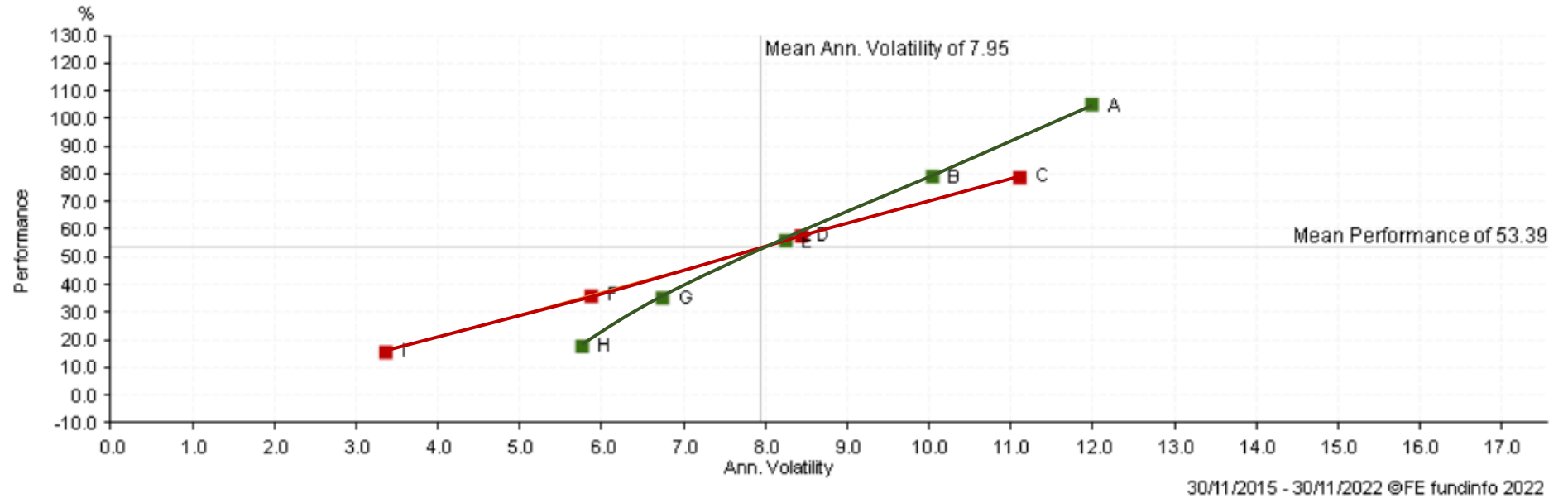
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	129.88	12.45
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	98.06	10.27
■ C	Dimensional - World Allocation 80/20 Acc GBP in GB	78.66	11.11
■ D	Walkers - PIPS-GBP-Index-60E TR in GB	69.78	8.16
■ E	Dimensional - World Allocation 60/40 Acc GBP in GB	57.62	8.44
■ F	Walkers - PIPS-GBP-Index-40E TR in GB	44.74	6.19
■ G	Dimensional - World Allocation 40/60 Acc GBP in GB	35.86	5.87
■ H	Walkers - PIPS-GBP-Index-20E TR in GB	22.65	4.57
■ I	Dimensional - World Allocation 20/80 Acc GBP in GB	15.62	3.36
■ J	Walkers - PIPS-GBP-Index-0E TR in GB	3.26	3.82

Chart C.4: Vanguard LifeStrategy GBP vs PIPS **GBP** – 10 Years to 30/11/2022



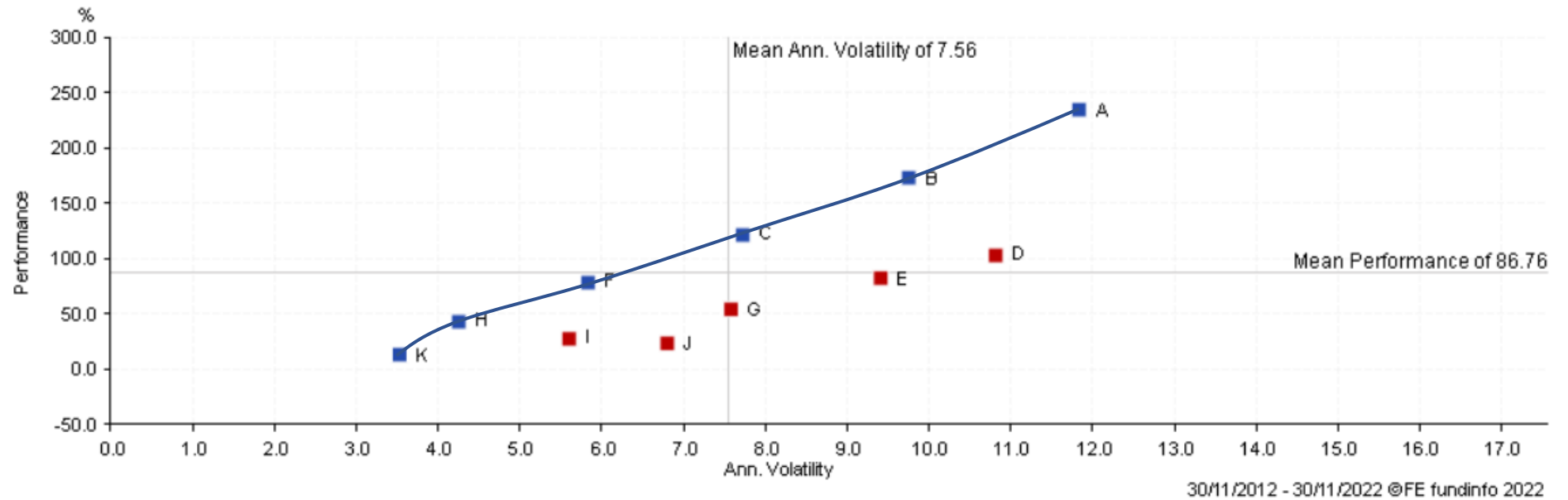
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
■ B	Vanguard - LifeStrategy 100% Equity AAcc in GB	181.69	11.40
■ C	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
■ D	Vanguard - LifeStrategy 80% Equity A in GB	135.27	9.54
■ E	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
■ F	Vanguard - LifeStrategy 60% Equity AAcc in GB	95.85	7.83
■ G	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
■ H	Vanguard - LifeStrategy 40% Equity AAcc in GB	62.27	6.40
■ I	Vanguard - LifeStrategy 20% Equity A Gross Acc GBP in GB	34.95	5.48
■ J	Walkers - PIPS-GBP-Index-0E TR in GB	13.49	3.53

Chart C.5: Vanguard LifeStrategy GBP vs Dimensional World Allocation GBP – 7 Years to 30/11/2022



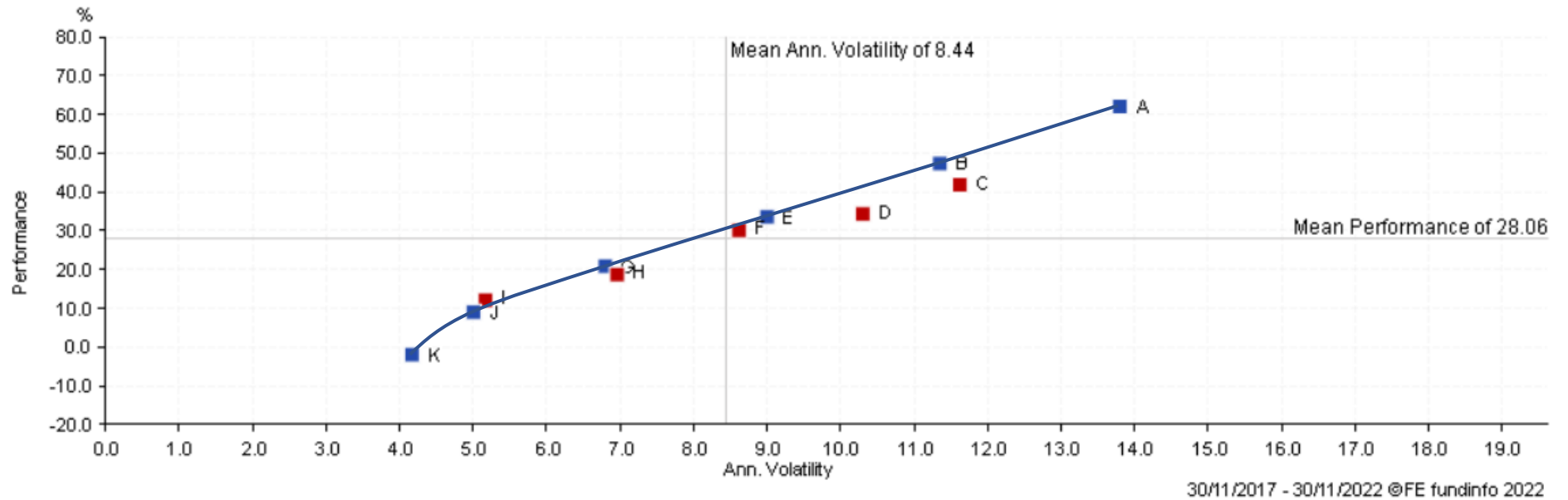
Key	Name	Performance	Annualised Volatility
■ A	Vanguard - LifeStrategy 100% Equity AAcc in GB	105.04	11.99
■ B	Vanguard - LifeStrategy 80% Equity A in GB	78.97	10.04
■ C	Dimensional - World Allocation 80/20 Acc GBP in GB	78.66	11.11
■ D	Dimensional - World Allocation 60/40 Acc GBP in GB	57.62	8.44
■ E	Vanguard - LifeStrategy 60% Equity AAcc in GB	55.88	8.25
■ F	Dimensional - World Allocation 40/60 Acc GBP in GB	35.86	5.87
■ G	Vanguard - LifeStrategy 40% Equity AAcc in GB	35.16	6.74
■ H	Vanguard - LifeStrategy 20% Equity A Gross Acc GBP in GB	17.70	5.76
■ I	Dimensional - World Allocation 20/80 Acc GBP in GB	15.62	3.36

Chart D.1: 7IM AAP GBP vs PIPS **GBP** – 10 Years to 30/11/2022



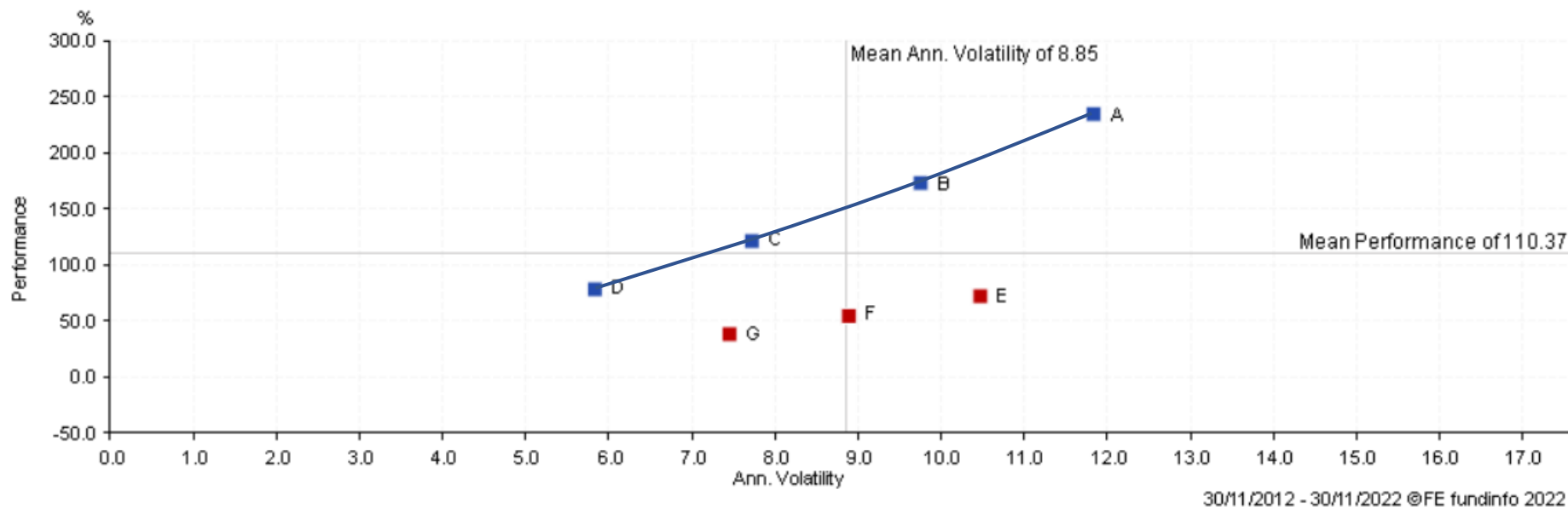
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
■ C	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
■ D	7IM - AAP Adventurous C Acc in GB	102.80	10.81
■ E	7IM - AAP Moderately Adventurous C Acc in GB	82.46	9.41
■ F	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
■ G	7IM - AAP Balanced C Acc in GB	54.36	7.58
■ H	Walkers - PIPS-GBP-Index-20E TR in GB	42.87	4.25
■ I	7IM - AAP Moderately Cautious C Acc in GB	27.62	5.60
■ J	7IM - AAP Income C Acc in GB	23.33	6.80
■ K	Walkers - PIPS-GBP-Index-0E TR in GB	13.49	3.53

Chart D.2: AJ Bell Multi-Asset GBP vs PIPS **GBP** – 5 Years to 30/11/2022



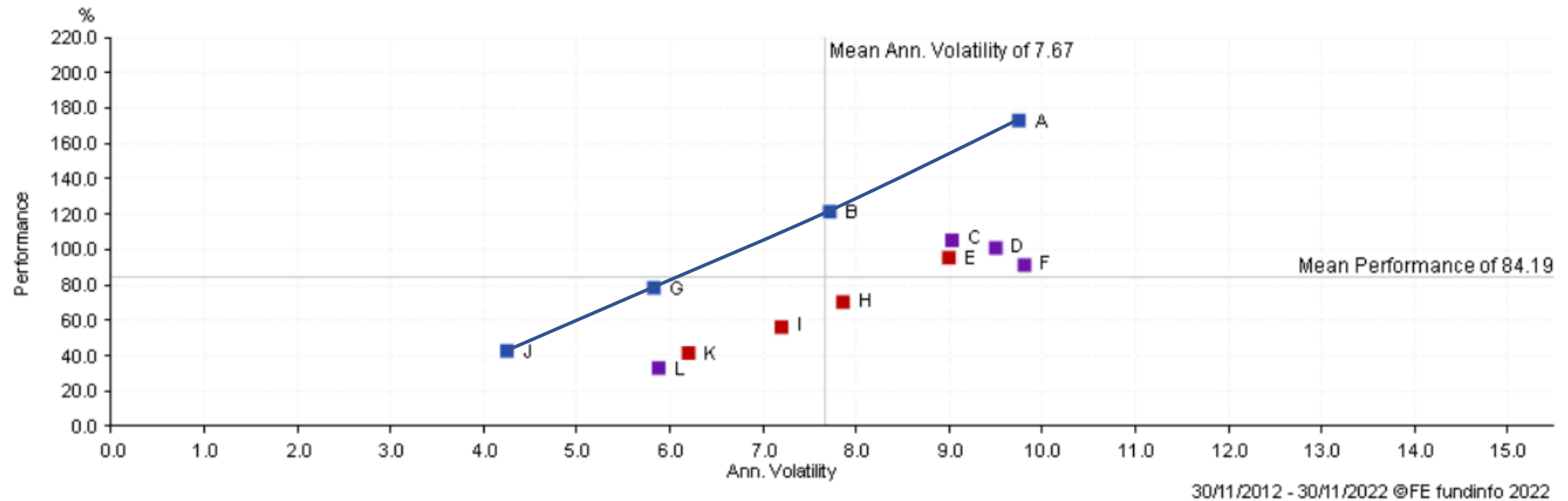
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	62.06	13.80
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	47.41	11.35
■ C	VT - AJ Bell Adventurous I Acc in GB	41.86	11.62
■ D	VT - AJ Bell Moderately Adventurous Acc in GB	34.34	10.30
■ E	Walkers - PIPS-GBP-Index-60E TR in GB	33.72	9.00
■ F	VT - AJ Bell Balanced I Acc in GB	30.17	8.62
■ G	Walkers - PIPS-GBP-Index-40E TR in GB	20.97	6.80
■ H	VT - AJ Bell Moderately Cautious Acc in GB	18.81	6.96
■ I	VT - AJ Bell Cautious Acc in GB	12.13	5.17
■ J	Walkers - PIPS-GBP-Index-20E TR in GB	9.11	5.01
■ K	Walkers - PIPS-GBP-Index-0E TR in GB	-1.90	4.17

Chart D.3: Allianz RiskMaster GBP vs PIPS **GBP** – 10 Years to 30/11/2022



Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
■ C	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
■ D	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
■ E	Allianz - RiskMaster Growth Multi Asset C in GB	72.12	10.47
■ F	Allianz - RiskMaster Moderate Multi Asset C in GB	54.69	8.89
■ G	Allianz - RiskMaster Conservative Multi Asset C in GB	38.40	7.45

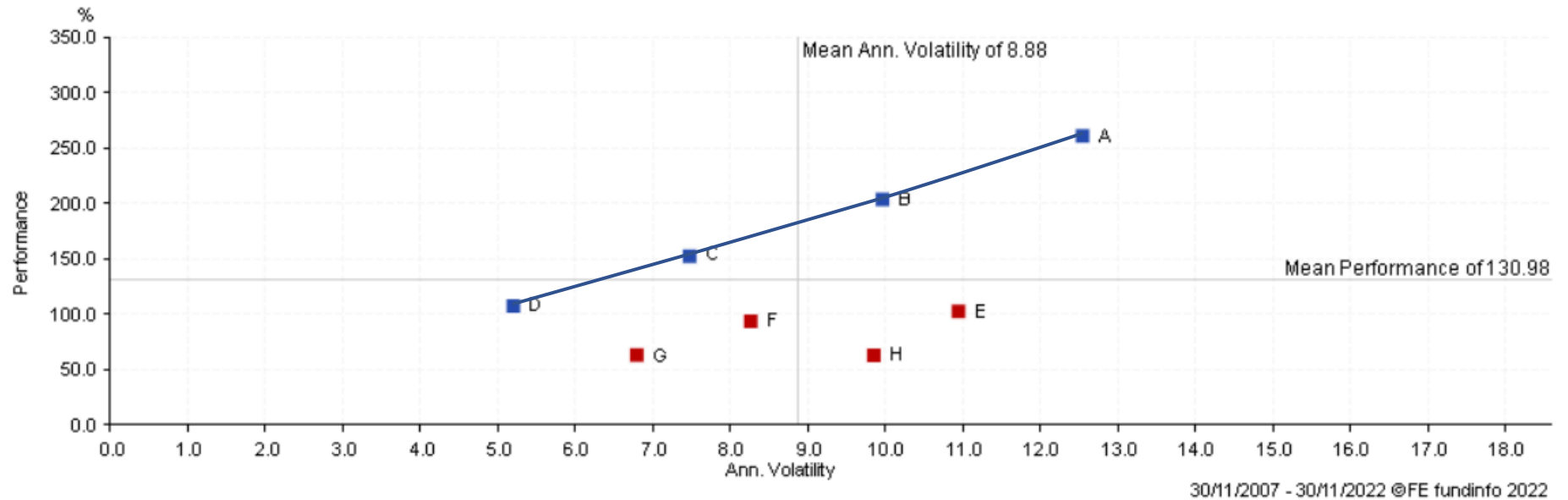
Chart D.4: BlackRock Consensus & Misc GBP vs PIPS **GBP** – 10 Years to 30/11/2022



Key	Name	Performance	Annualised Volatility
A	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
B	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
C	BlackRock - Armed Forces Charities Growth & Income AAcc GBP in GB	105.40	9.03
D	BlackRock - Balanced Growth Portfolio D Acc in GB	100.93	9.50
E	BlackRock - Consensus 85 D in GB**	95.44	9.00
F	BlackRock - BCIF Balanced Managed A Inst Acc GBP in GB	91.29	9.81
G	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
H	BlackRock - Consensus 70 D in GB	70.38	7.86
I	BlackRock - Consensus 60 D in GB	56.40	7.20
J	Walkers - PIPS-GBP-Index-20E TR in GB	42.87	4.25
K	BlackRock - Consensus 35 D in GB	41.51	6.20
L	BlackRock - Dynamic Diversified Growth D Acc in GB	33.11	5.88

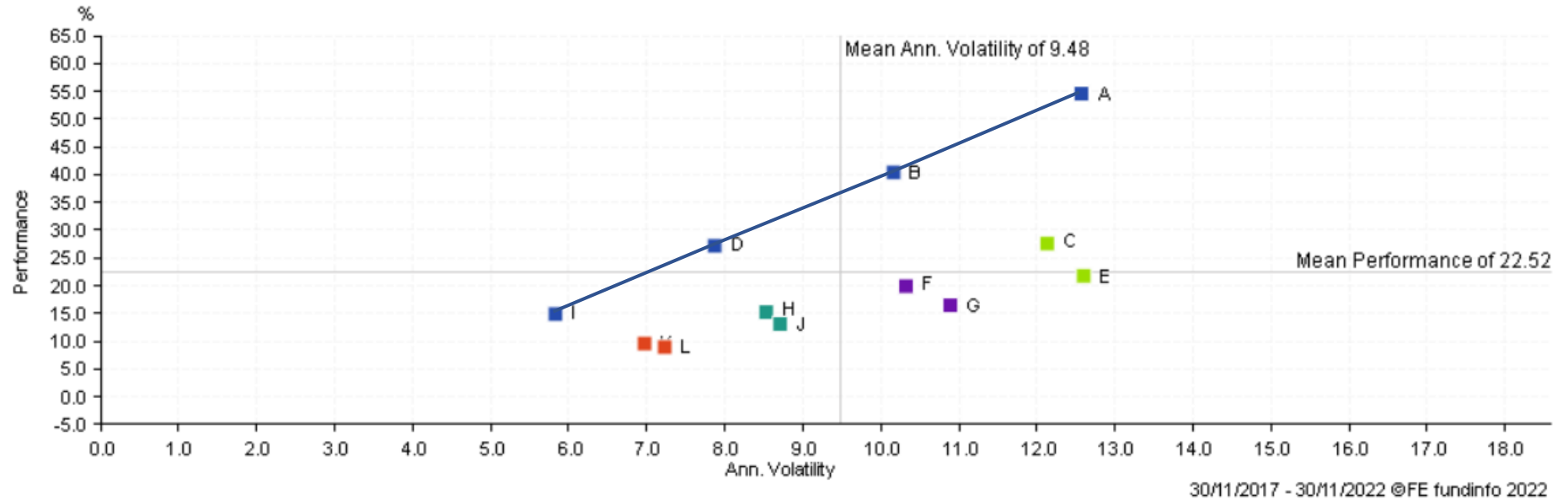
** The history of this unit/share class has been extended, at FE fundinfo's discretion, to give a sense of a longer track record of the fund as a whole.

Chart D.5: BM SVS Brooks Macdonald GBP vs PIPS **GBP** – 15 Years to 30/11/2022



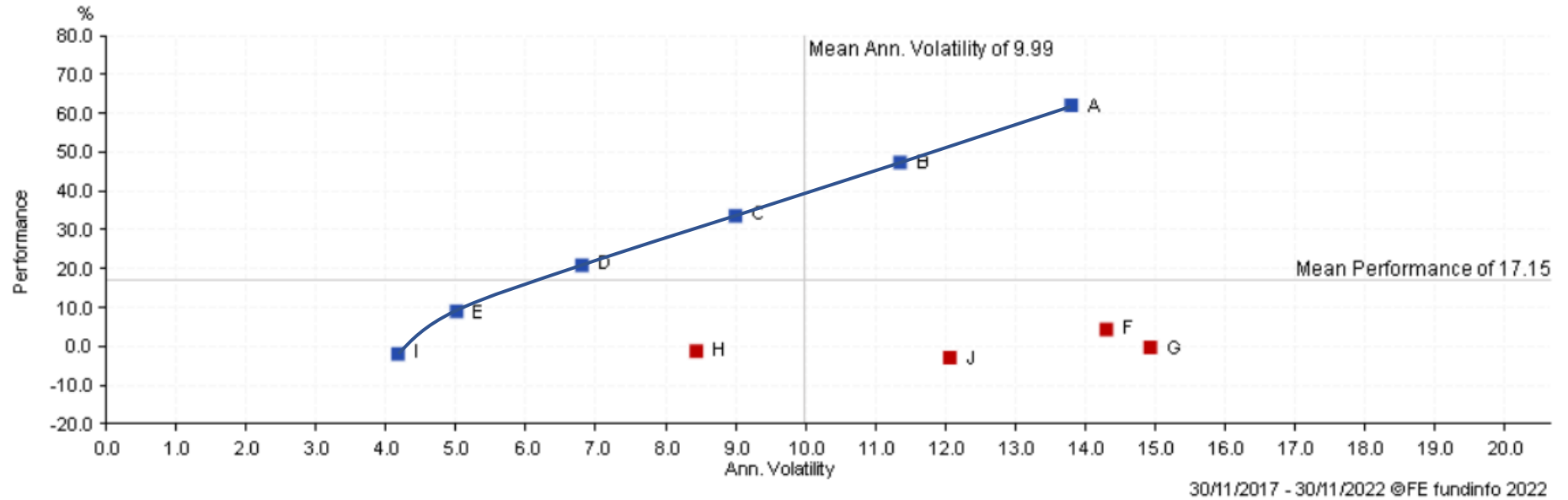
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-90E TR in GB	260.89	12.54
■ B	Walkers - PIPS-GBP-Index-70E TR in GB	203.65	9.96
■ C	Walkers - PIPS-GBP-Index-50E TR in GB	152.58	7.47
■ D	Walkers - PIPS-GBP-Index-30E TR in GB	107.67	5.20
■ E	BM - SVS Brooks Macdonald Blueprint Balanced AAcc in GB	102.70	10.94
■ F	BM - SVS Brooks Macdonald Defensive Capital AAcc in GB	93.84	8.26
■ G	BM - SVS Brooks Macdonald Blueprint Defensive Income A Inc TR in GB	63.43	6.79
■ H	BM - SVS Brooks Macdonald Blueprint Cautious Growth A Inc TR in GB	63.08	9.85

Chart D.6: BM SVS Cornelian & Cornelian ‘Risk Managed Passive’ Families GBP vs PIPS **GBP** – 5 Years to 30/11/2022



Key	Name	Performance	Annualised Volatility
A	Walkers - PIPS-GBP-Index-90E TR in GB	54.61	12.57
B	Walkers - PIPS-GBP-Index-70E TR in GB	40.44	10.16
C	BM - SVS Cornelian Progressive RMP G Acc in GB	27.68	12.13
D	Walkers - PIPS-GBP-Index-50E TR in GB	27.23	7.87
E	BM - SVS Cornelian Progressive D Acc in GB	21.82	12.60
F	BM - SVS Cornelian Growth RMP G Acc in GB	20.01	10.32
G	BM - SVS Cornelian Growth D Acc in GB	16.49	10.89
H	BM - SVS Cornelian Managed Growth RMP G Acc in GB	15.32	8.53
I	Walkers - PIPS-GBP-Index-30E TR in GB	14.93	5.83
J	BM - SVS Cornelian Managed Growth D Acc in GB	13.13	8.71
K	BM - SVS Cornelian Cautious RMP G Acc in GB	9.58	6.97
L	BM - SVS Cornelian Cautious D Acc in GB	8.97	7.23

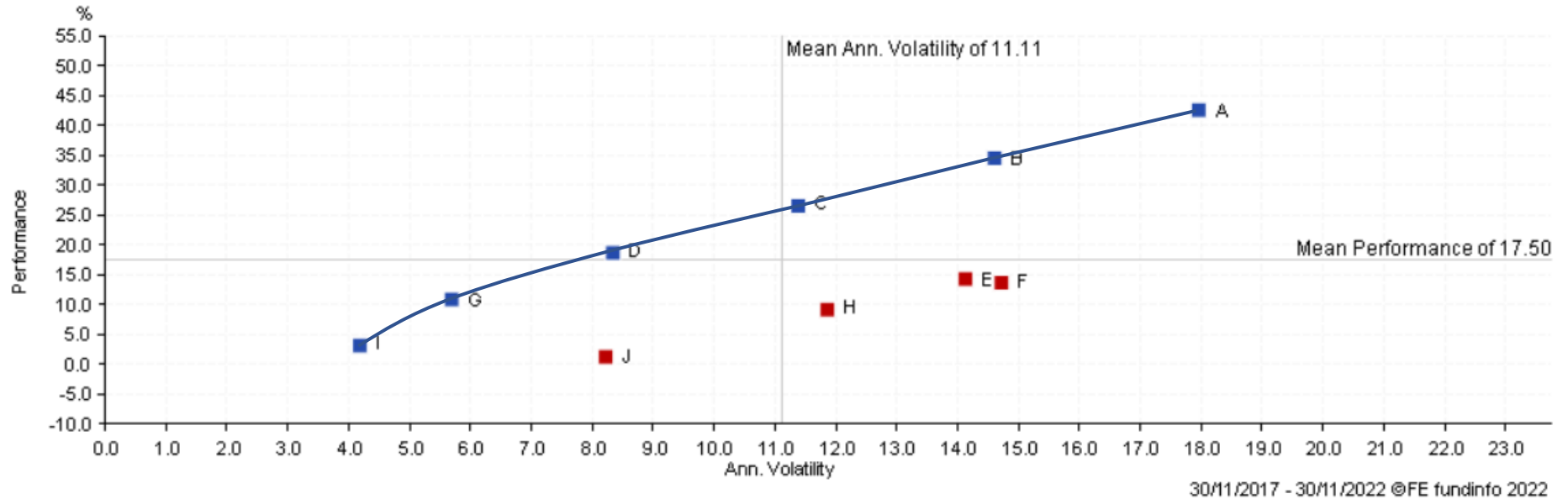
Chart D.7: Canaccord Genuity GBP vs PIPS **GBP** – 5 Years to 30/11/2022



Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	62.06	13.80
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	47.41	11.35
■ C	Walkers - PIPS-GBP-Index-60E TR in GB	33.72	9.00
■ D	Walkers - PIPS-GBP-Index-40E TR in GB	20.97	6.80
■ E	Walkers - PIPS-GBP-Index-20E TR in GB	9.11	5.01
■ F	Canaccord - Genuity Opportunity R Hedged Acc GBP in GB**	4.36	14.30
■ G	Canaccord - Genuity Growth T Hedged GBP in GB	-0.19	14.93
■ H	Canaccord - Genuity Cautious R.Acc GBP TR in GB**	-1.17	8.44
■ I	Walkers - PIPS-GBP-Index-0E TR in GB	-1.90	4.17
■ J	Canaccord - Genuity Balanced T Hedged GBP in GB	-2.87	12.06

** The history of this unit/share class has been extended, at FE fundinfo's discretion, to give a sense of a longer track record of the fund as a whole.

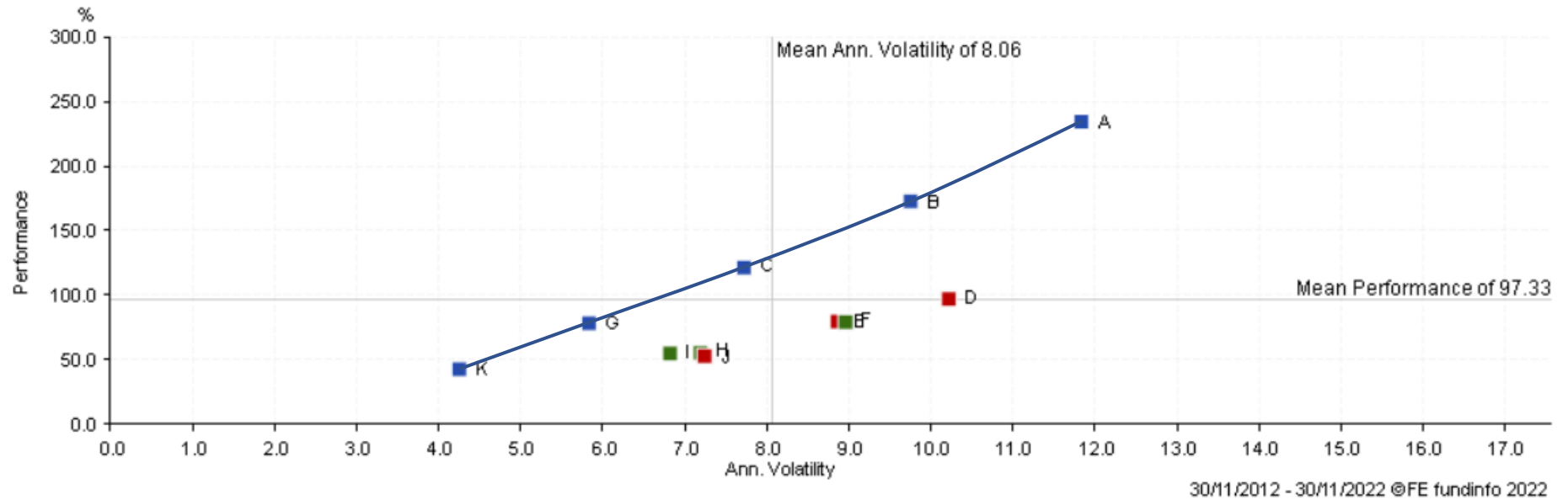
Chart D.8: Canaccord Genuity USD vs PIPS USD – 5 Years to 30/11/2022



Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-USD-Index-100E TR in US	42.58	17.96
■ B	Walkers - PIPS-USD-Index-80E TR in US	34.54	14.61
■ C	Walkers - PIPS-USD-Index-60E TR in US	26.56	11.38
■ D	Walkers - PIPS-USD-Index-40E TR in US	18.67	8.34
■ E	Canaccord - Genuity Opportunity R Acc USD in US**	14.36	14.13
■ F	Canaccord - Genuity Growth R Acc USD in US**	13.66	14.72
■ G	Walkers - PIPS-USD-Index-20E TR in US	10.89	5.69
■ H	Canaccord - Genuity Balanced R Acc USD in US**	9.22	11.86
■ I	Walkers - PIPS-USD-Index-0E TR in US	3.23	4.18
■ J	Canaccord - Genuity Cautious A USD in US	1.31	8.22

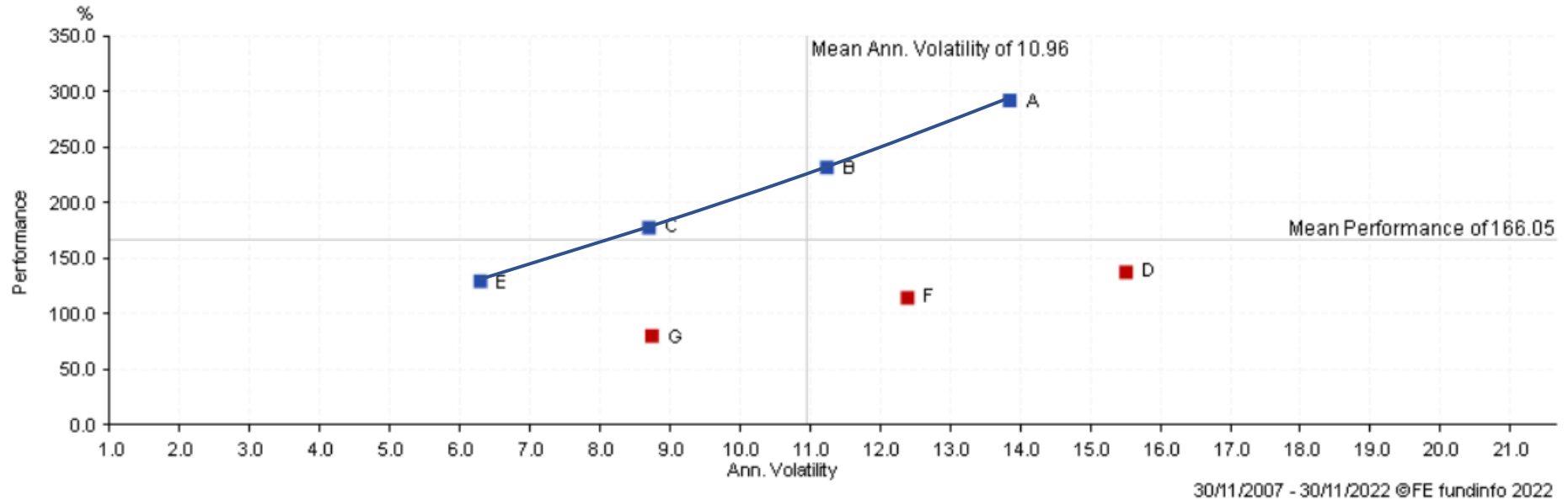
** The history of this unit/share class has been extended, at FE fundinfo's discretion, to give a sense of a longer track record of the fund as a whole.

Chart D.9: Close Managed and Tactical Select Passive Families GBP vs PIPS **GBP** – 10 Years to 30/11/2022



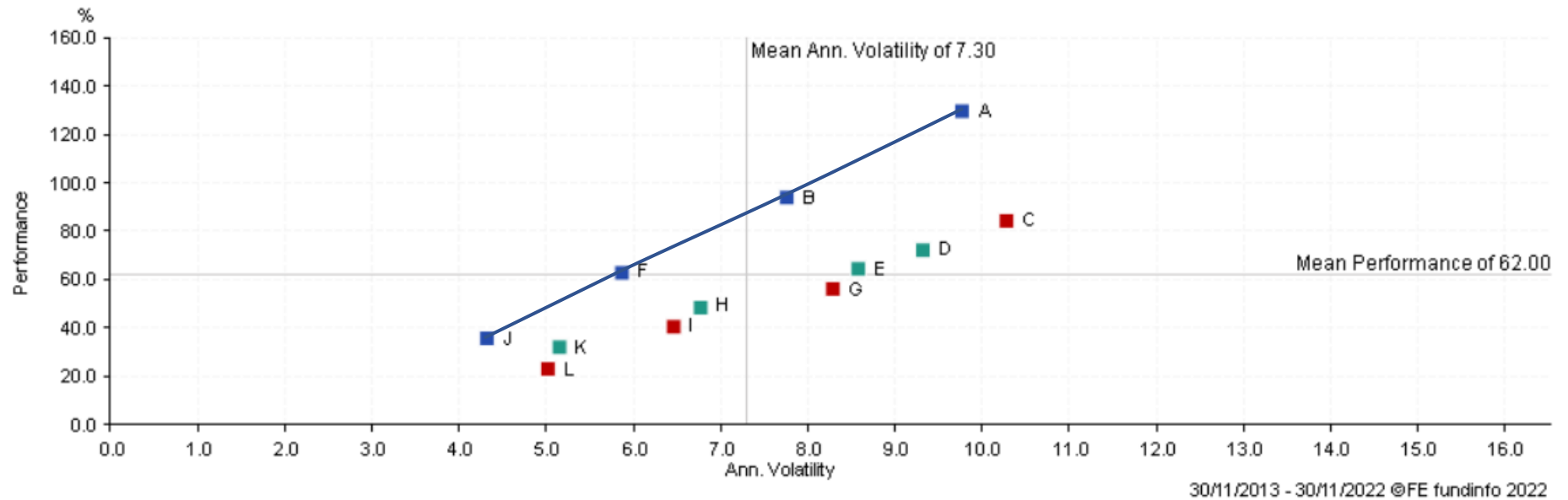
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
■ C	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
■ D	Close - Tactical Select Passive Growth X Acc in GB	97.11	10.22
■ E	Close - Tactical Select Passive Balanced X Acc in GB	79.76	8.86
■ F	Close - Managed Balanced X Acc in GB	79.54	8.96
■ G	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
■ H	Close - Managed Income X Acc in GB	55.77	7.19
■ I	Close - Managed Conservative X Acc in GB	55.01	6.82
■ J	Close - Tactical Select Passive Conservative X Acc in GB	53.20	7.24
■ K	Walkers - PIPS-GBP-Index-20E TR in GB	42.87	4.25

Chart D.10: Courtiers GBP vs PIPS **GBP** – 15 Years to 30/11/2022



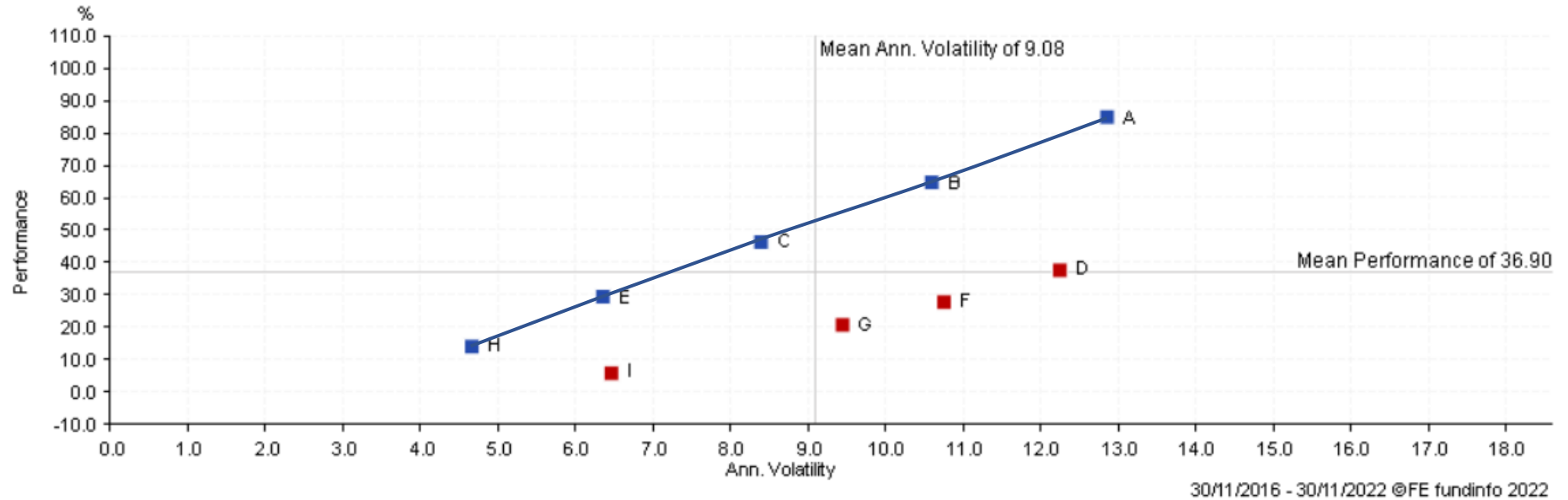
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	291.77	13.85
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	231.50	11.24
■ C	Walkers - PIPS-GBP-Index-60E TR in GB	177.34	8.70
■ D	Courtiers - Total Return Growth A in GB	137.42	15.51
■ E	Walkers - PIPS-GBP-Index-40E TR in GB	129.37	6.29
■ F	Courtiers - Total Return Balanced Risk A in GB	114.60	12.39
■ G	Courtiers - Total Return Cautious Risk A in GB	80.36	8.74

Chart D.11: Fidelity Multi-Asset Allocator and Open Families GBP vs PIPS **GBP** – 9 Years to 30/11/2022



Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-80E TR in GB	129.59	9.77
■ B	Walkers - PIPS-GBP-Index-60E TR in GB	93.89	7.76
■ C	Fidelity - Multi Asset Allocator Adventurous W Acc in GB	84.28	10.28
■ D	Fidelity - Multi Asset Open Adventurous W Acc in GB	72.26	9.32
■ E	Fidelity - Multi Asset Open Growth W Acc in GB	64.46	8.58
■ F	Walkers - PIPS-GBP-Index-40E TR in GB	62.83	5.87
■ G	Fidelity - Multi Asset Allocator Growth W Acc in GB	56.22	8.29
■ H	Fidelity - Multi Asset Open Strategic W Acc TR in GB	48.56	6.77
■ I	Fidelity - Multi Asset Allocator Strategic W Acc in GB	40.61	6.46
■ J	Walkers - PIPS-GBP-Index-20E TR in GB	35.93	4.32
■ K	Fidelity - Multi Asset Open Defensive W Acc in GB	32.22	5.15
■ L	Fidelity - Multi Asset Allocator Defensive W Acc in GB	23.19	5.02

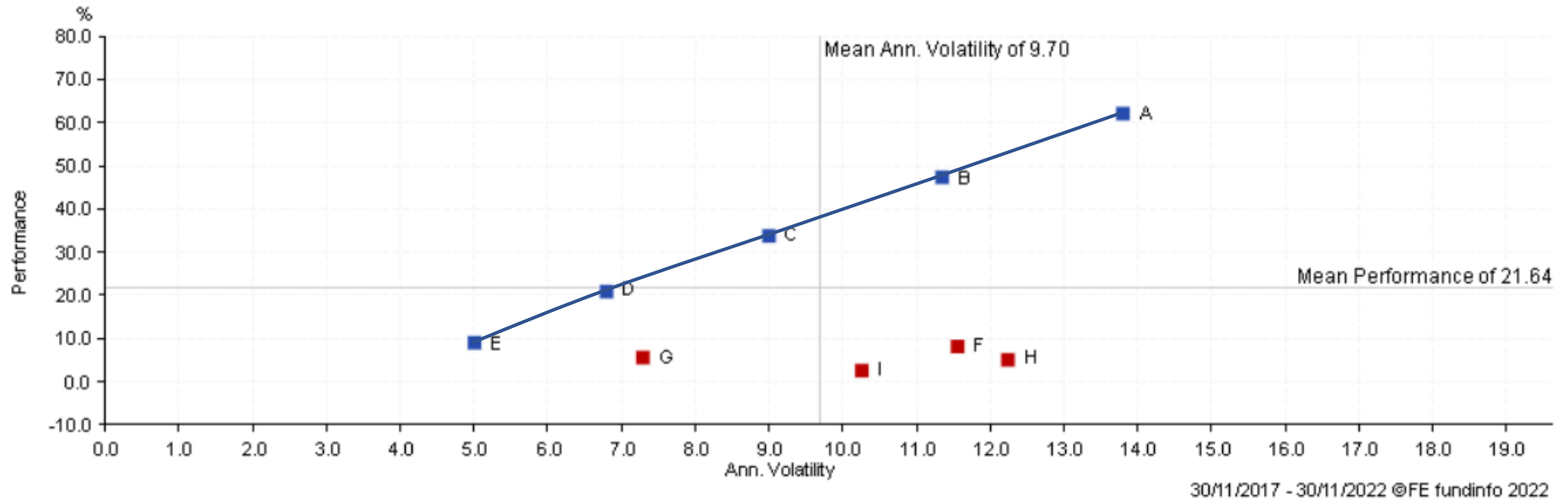
Chart D.12: GAM Star GBP vs PIPS **GBP** – 6 Years to 30/11/2022



Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	84.97	12.85
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	64.82	10.59
■ C	Walkers - PIPS-GBP-Index-60E TR in GB	46.36	8.39
■ D	GAM - Star Global Dynamic Growth Inst Acc GBP in GB	37.74	12.24
■ E	Walkers - PIPS-GBP-Index-40E TR in GB	29.48	6.35
■ F	GAM - Star Global Growth T Acc GBP in GB	27.78	10.75
■ G	GAM - Star Global Balanced T Acc GBP in GB**	20.91	9.44
■ H	Walkers - PIPS-GBP-Index-20E TR in GB	14.08	4.66
■ I	GAM - Star Global Defensive T Acc GBP in GB**	6.00	6.46

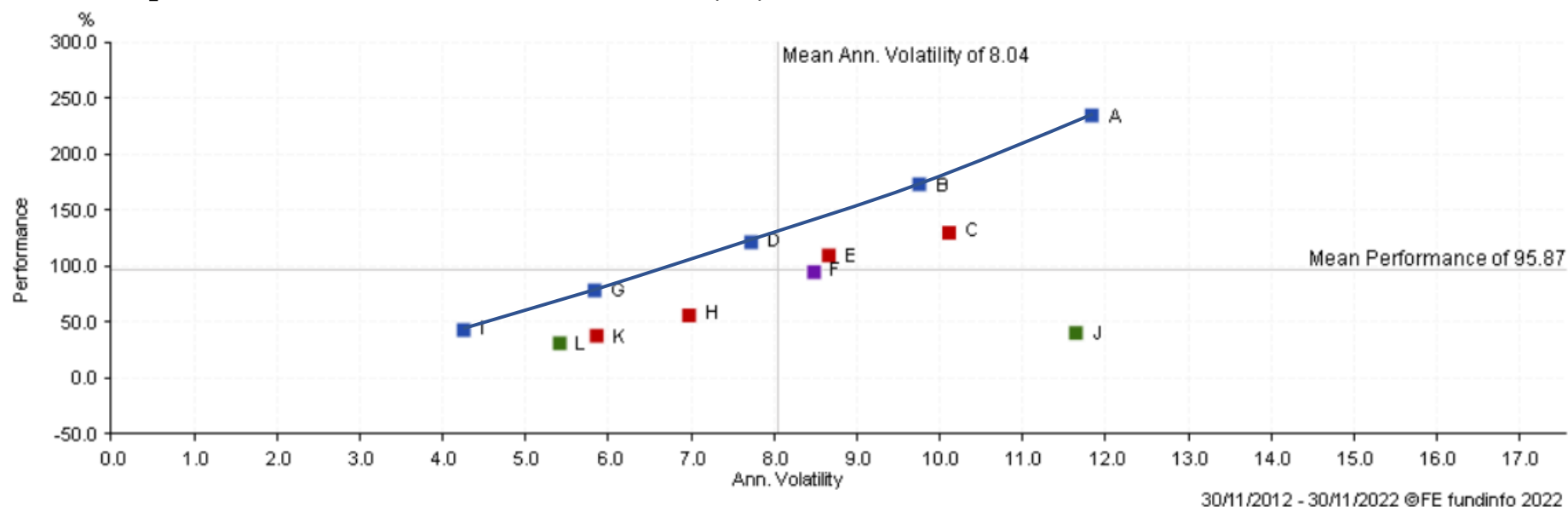
** The history of this unit/share class has been extended, at FE fundinfo's discretion, to give a sense of a longer track record of the fund as a whole.

Chart D.13: Hargreaves Lansdown Multi-Manager GBP vs PIPS **GBP** – 5 Years to 30/11/2022



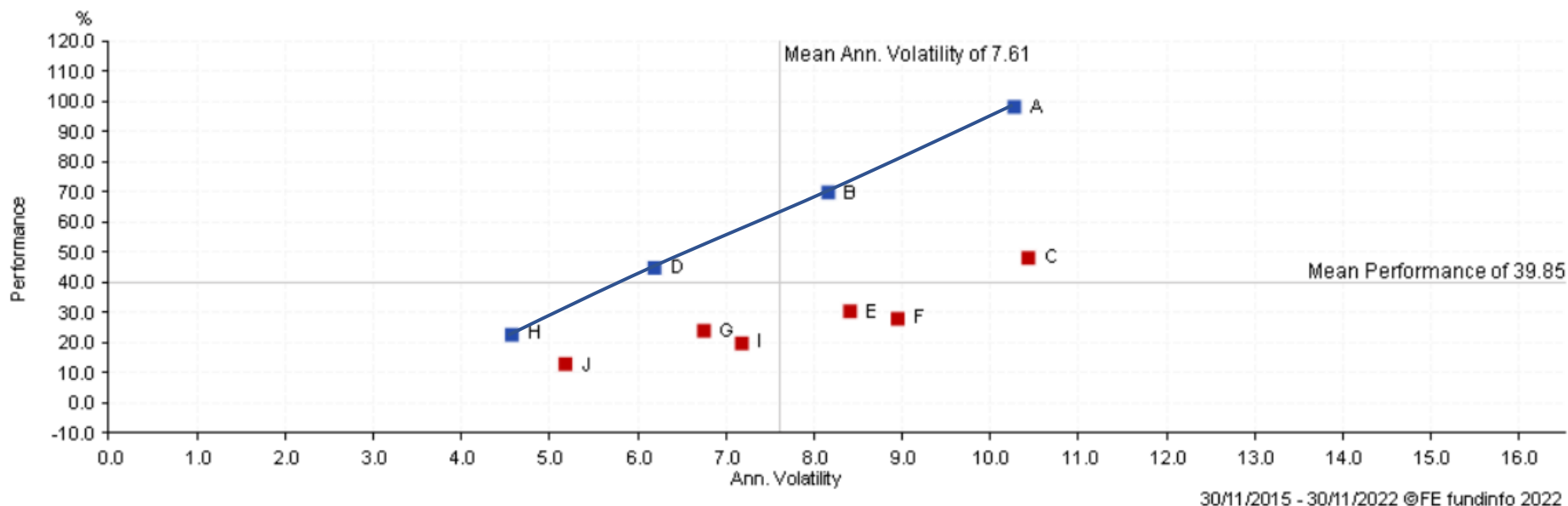
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	62.06	13.80
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	47.41	11.35
■ C	Walkers - PIPS-GBP-Index-60E TR in GB	33.72	9.00
■ D	Walkers - PIPS-GBP-Index-40E TR in GB	20.97	6.80
■ E	Walkers - PIPS-GBP-Index-20E TR in GB	9.11	5.01
■ F	HL - Multi Manager Balanced Managed AAcc in GB	8.19	11.56
■ G	HL - Multi-Manager Strategic Assets A Acc in GB	5.61	7.29
■ H	HL - Multi-Manager High Income A Acc in GB	5.10	12.24
■ I	HL - Multi Manager Equity & Bond AAcc in GB	2.62	10.26

Chart D.14: Jupiter GBP vs PIPS **GBP** – 10 Years to 30/11/2022



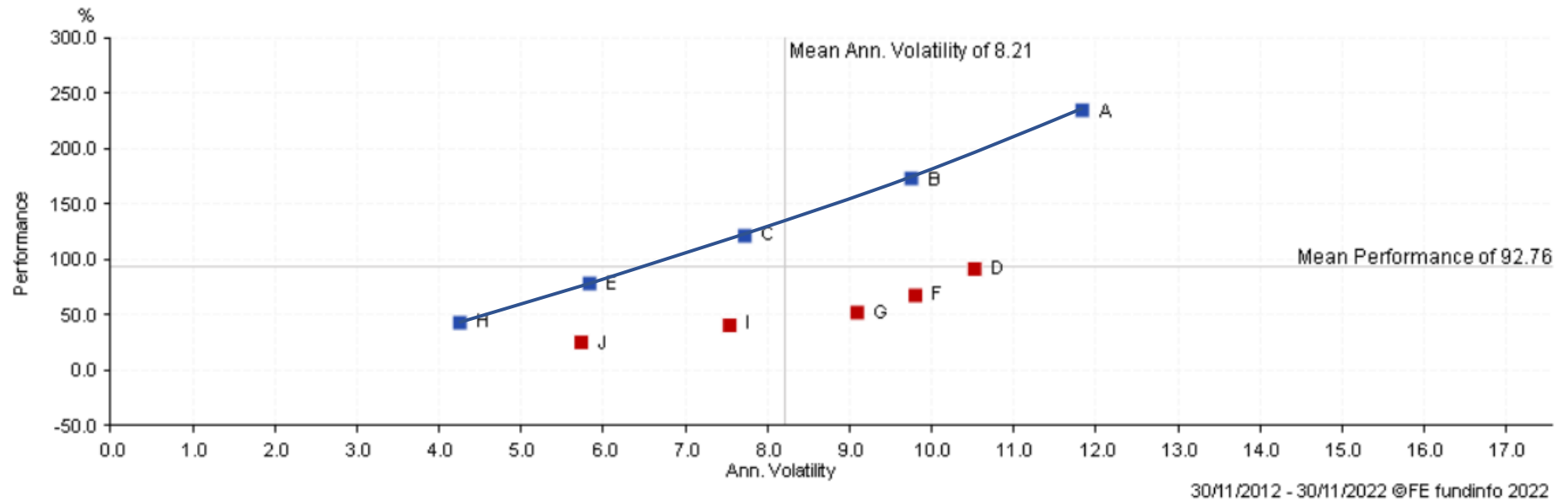
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
■ C	Jupiter - Merlin Growth Portfolio I Acc in GB	129.88	10.11
■ D	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
■ E	Jupiter - Merlin Balanced Portfolio I Acc in GB	109.57	8.66
■ F	Jupiter - Monthly Alternative Income I Acc in GB	94.90	8.48
■ G	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
■ H	Jupiter - Merlin Income Portfolio I Acc in GB	56.28	6.97
■ I	Walkers - PIPS-GBP-Index-20E TR in GB	42.87	4.25
■ J	Jupiter - Multi-Asset Income and Growth I Inc TR in GB	40.27	11.64
■ K	Jupiter - Merlin Conservative Portfolio I Acc in GB	38.08	5.86
■ L	Jupiter - Multi-Asset Income I Acc in GB	31.21	5.41

Chart D.15: L&G Mixed Investment GBP vs PIPS **GBP** – 7 Years to 30/11/2022



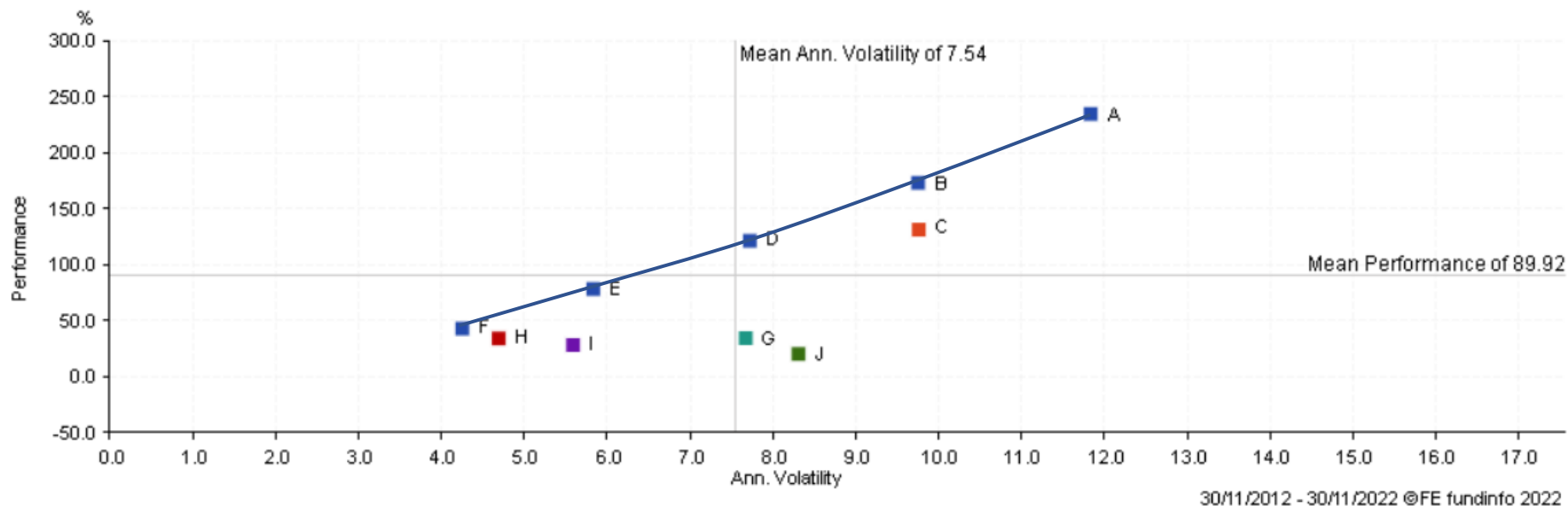
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-80E TR in GB	98.06	10.27
■ B	Walkers - PIPS-GBP-Index-60E TR in GB	69.78	8.16
■ C	L&G - Mixed Investment 40-85% I Acc in GB	48.08	10.43
■ D	Walkers - PIPS-GBP-Index-40E TR in GB	44.74	6.19
■ E	L&G - Mixed Investment 20-60% I Acc in GB	30.38	8.41
■ F	L&G - Mixed Investment Income 20-60% I Acc in GB	27.95	8.95
■ G	L&G - Mixed Investment 0-35% I Acc in GB	23.95	6.75
■ H	Walkers - PIPS-GBP-Index-20E TR in GB	22.65	4.57
■ I	L&G - Mixed Investment Income 0-35% I Acc in GB	19.87	7.18
■ J	L&G - Mixed Investment 0-20% L Inc TR in GB	13.06	5.18

Chart D.16: Momentum Diversified GBP vs PIPS **GBP** – 10 Years to 30/11/2022



Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
■ C	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
■ D	VT - Momentum Diversified Growth B Acc in GB	91.33	10.52
■ E	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
■ F	VT - Momentum Diversified Income B Inc TR in GB	67.56	9.80
■ G	VT Momentum - Diversified Moderate AAcc in GB	52.30	9.09
■ H	Walkers - PIPS-GBP-Index-20E TR in GB	42.87	4.25
■ I	VT Momentum - Diversified Balanced AAcc in GB	40.84	7.54
■ J	VT Momentum - Diversified Cautious AAcc in GB	25.27	5.73

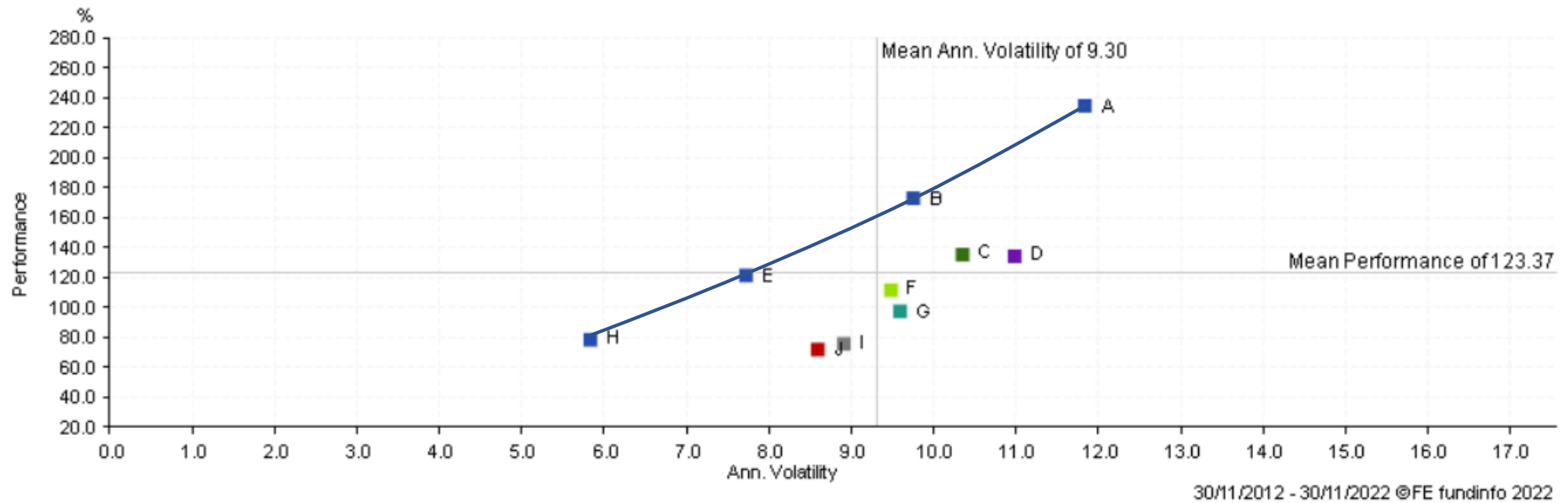
Chart D.17: Ninety-One GBP vs PIPS **GBP** – 10 Years to 30/11/2022



30/11/2012 - 30/11/2022 ©FE fundinfo 2022

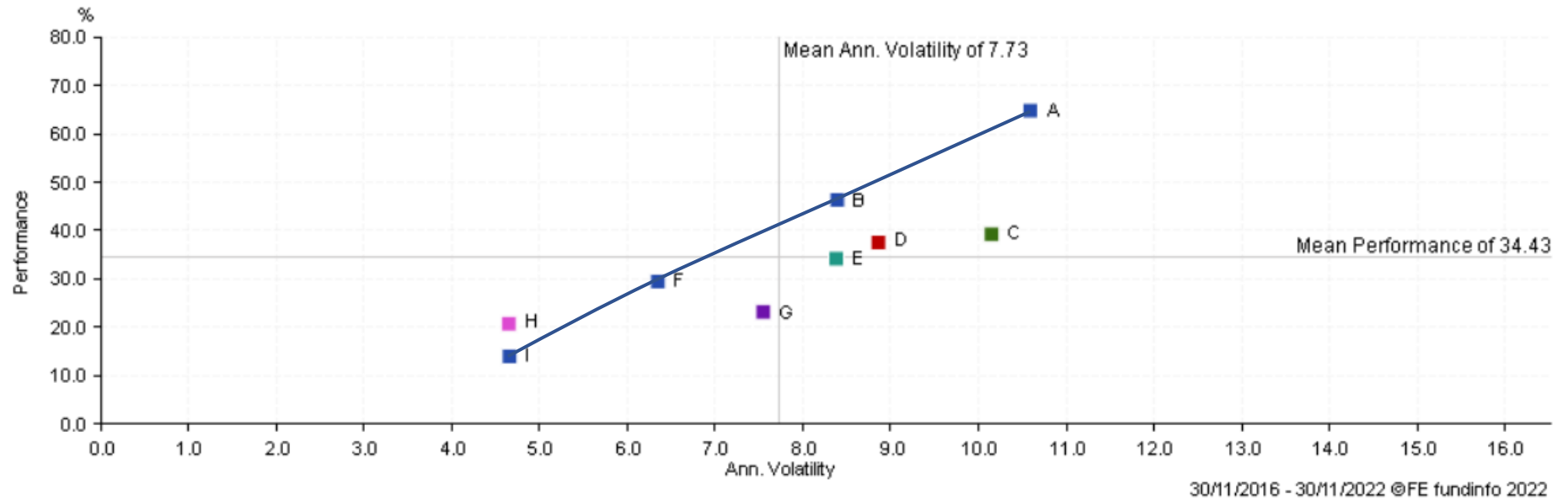
Key	Name	Performance	Annualised Volatility
A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
B	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
C	Ninety One - Global Macro Allocation I Acc GBP in GB	131.44	9.76
D	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
E	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
F	Walkers - PIPS-GBP-Index-20E TR in GB	42.87	4.25
G	Ninety One - Global Multi-Asset Sustainable Growth I Acc GBP TR in GB	34.73	7.67
H	Ninety One - Diversified Income I Acc GBP in GB	34.14	4.69
I	Ninety One - Multi Asset Protector A Acc GBP in GB	28.28	5.59
J	Ninety One - Global Income Opportunities I Acc GBP in GB	20.32	8.31

Chart D.18: Premier Miton GBP vs PIPS **GBP** – 10 Years to 30/11/2022



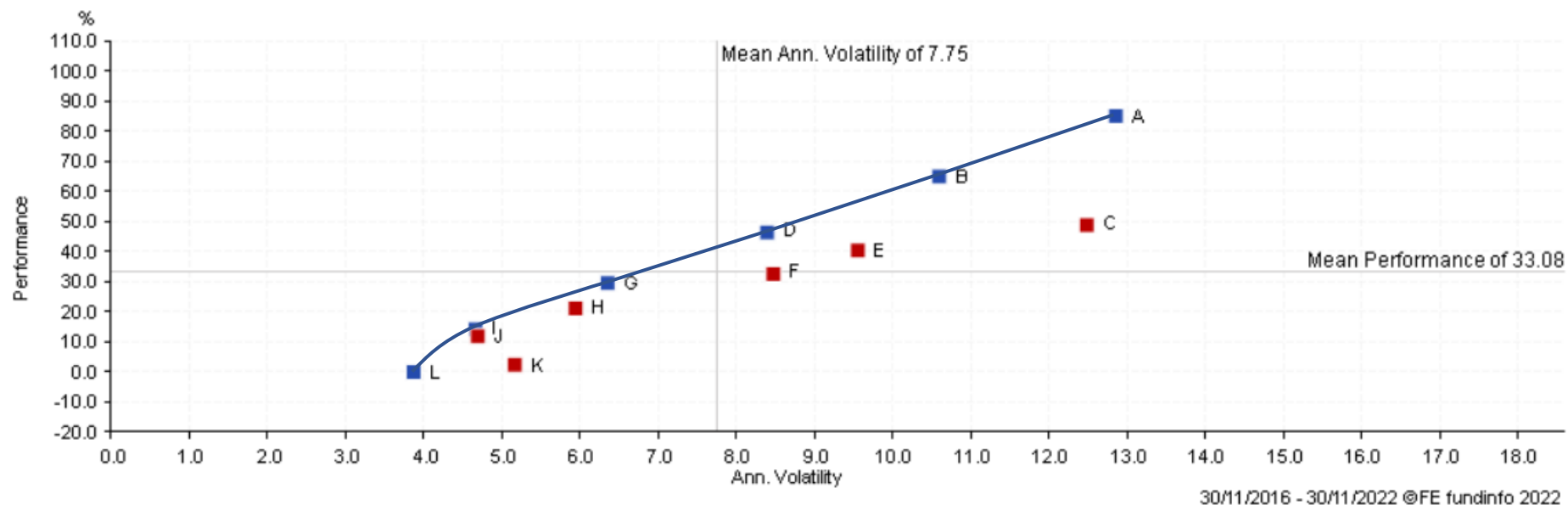
Key	Name	Performance	Annualised Volatility
A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
B	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
C	Premier Miton - Worldwide Opportunities B GBP in GB	135.44	10.35
D	Premier Miton - Multi-Asset Global Growth C Inc GBP TR in GB	134.30	10.98
E	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
F	Premier Miton - Diversified Growth D Inc GBP TR in GB	111.53	9.48
G	Premier Miton - Multi-Asset Growth & Income C Inc GBP TR in GB	97.26	9.59
H	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
I	Premier Miton - Multi-Asset Distribution C Inc GBP TR in GB	75.69	8.91
J	Premier Miton - Multi-Asset Monthly Income C Inc GBP TR in GB	72.04	8.59

Chart D.19: Rathbone GBP vs PIPS **GBP** – 6 Years to 30/11/2022



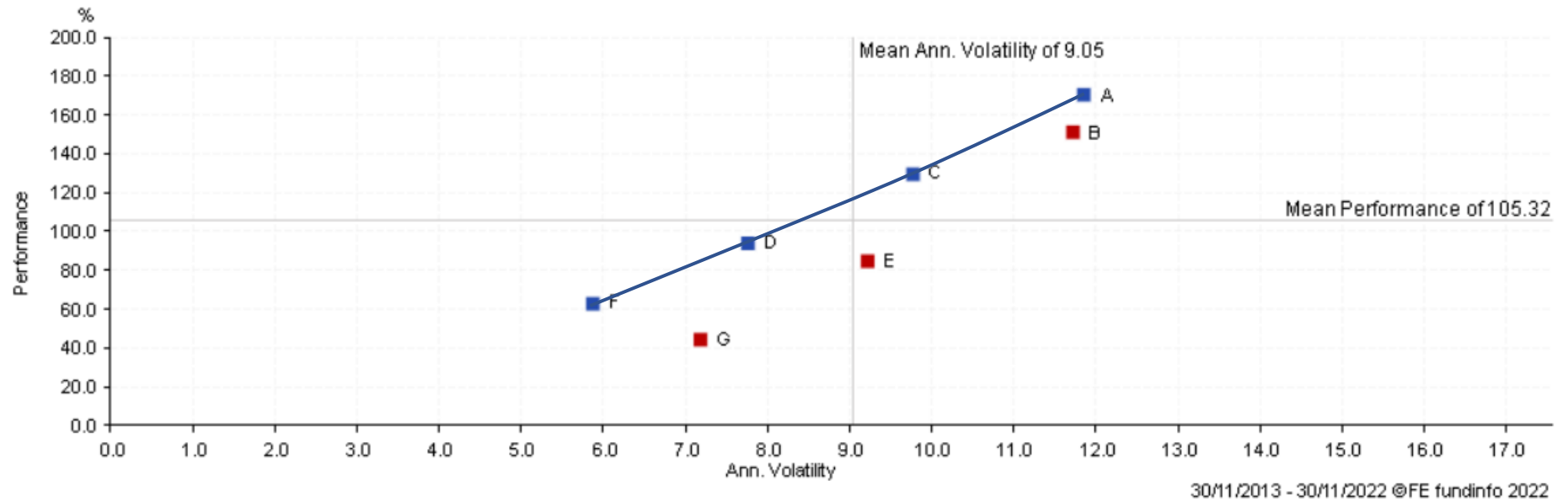
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-80E TR in GB	64.82	10.59
■ B	Walkers - PIPS-GBP-Index-60E TR in GB	46.36	8.39
■ C	Rathbone - Core Investment Fund for Charities Fund Inc GBP TR in GB	39.21	10.15
■ D	Rathbone - Active Income and Growth Fund Inc GBP TR in GB	37.62	8.86
■ E	Rathbone - Strategic Growth Portfolio S Acc GBP TR in GB	34.25	8.38
■ F	Walkers - PIPS-GBP-Index-40E TR in GB	29.48	6.35
■ G	Rathbone - Strategic Income Portfolio Acc GBP in GB	23.26	7.55
■ H	Rathbone - Total Return Portfolio S Acc GBP TR in GB	20.80	4.65
■ I	Walkers - PIPS-GBP-Index-20E TR in GB	14.08	4.66

Chart D.20: Royal London GMAP GBP vs PIPS **GBP** – 6 Years to 30/11/2022



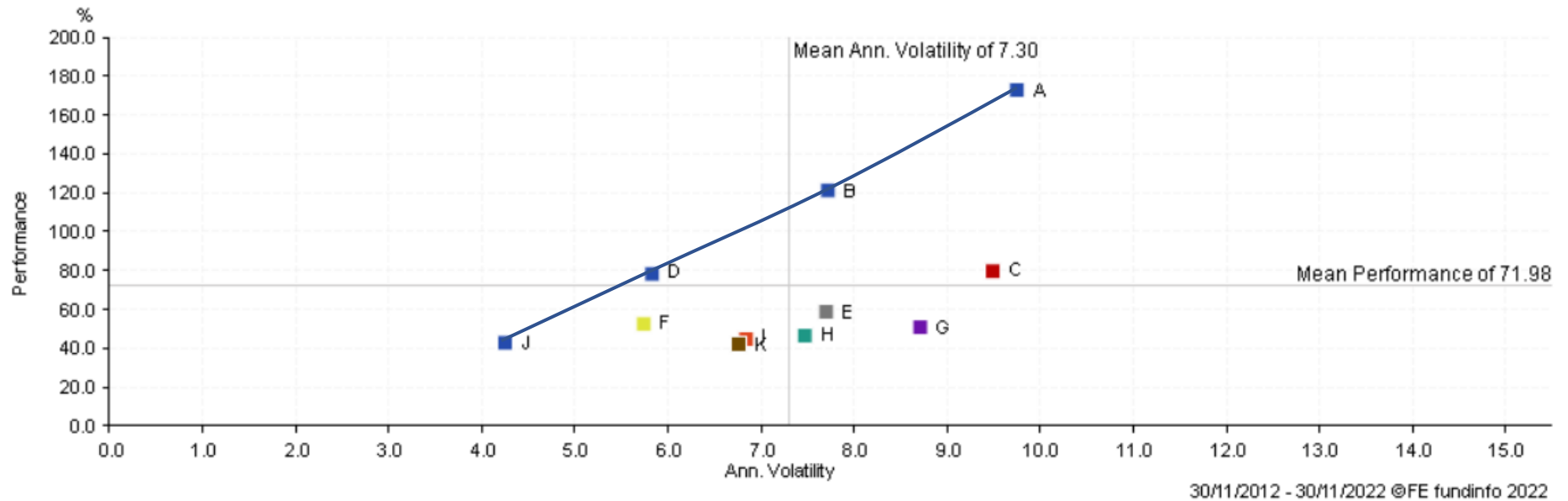
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	84.97	12.85
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	64.82	10.59
■ C	Royal London - GMAP Dynamic M Acc in GB	48.72	12.48
■ D	Walkers - PIPS-GBP-Index-60E TR in GB	46.36	8.39
■ E	Royal London - GMAP Adventurous M Acc in GB	40.35	9.55
■ F	Royal London - GMAP Growth M Acc in GB	32.59	8.47
■ G	Walkers - PIPS-GBP-Index-40E TR in GB	29.48	6.35
■ H	Royal London - GMAP Balanced M Acc in GB	21.13	5.94
■ I	Walkers - PIPS-GBP-Index-20E TR in GB	14.08	4.66
■ J	Royal London - GMAP Defensive M Acc in GB	11.86	4.69
■ K	Royal London - GMAP Conservative M Acc in GB	2.48	5.16
■ L	Walkers - PIPS-GBP-Index-0E TR in GB	0.07	3.87

Chart D.21: Royal London Sustainable GBP vs PIPS **GBP** – 9 Years to 30/11/2022



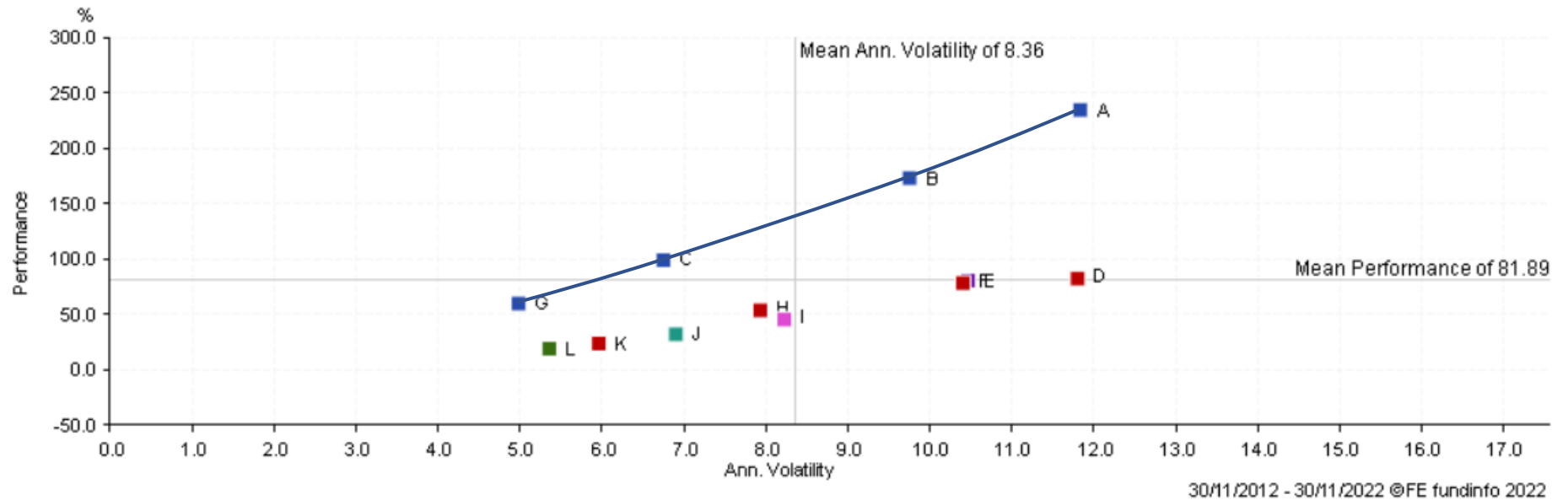
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	170.47	11.85
■ B	Royal London - Sustainable World Trust C Acc TR in GB	151.28	11.72
■ C	Walkers - PIPS-GBP-Index-80E TR in GB	129.59	9.77
■ D	Walkers - PIPS-GBP-Index-60E TR in GB	93.89	7.76
■ E	Royal London - Sustainable Diversified Trust C Inc TR in GB	84.77	9.22
■ F	Walkers - PIPS-GBP-Index-40E TR in GB	62.83	5.87
■ G	Royal London - Sustainable Managed Growth Trust C Acc in GB	44.38	7.18

Chart D.22: Schroder Misc GBP vs PIPS **GBP** – 10 Years to 30/11/2022



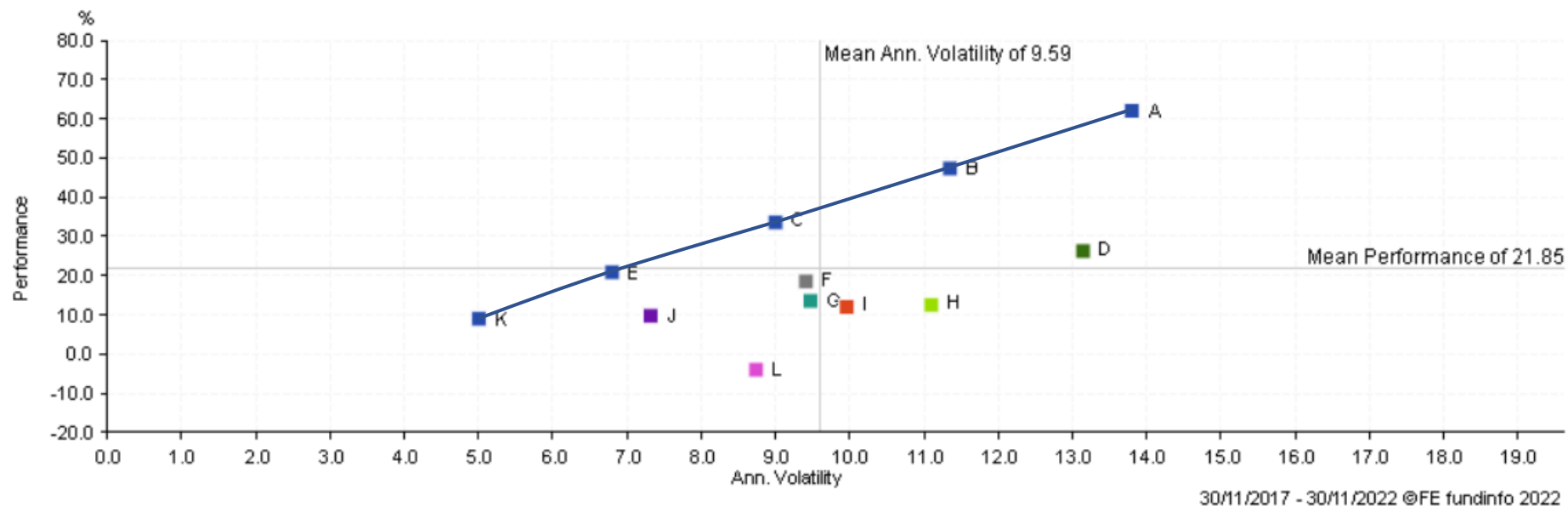
Key	Name	Performance	Annualised Volatility
A	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
B	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
C	Schroder - Managed Balanced Z Acc in GB	79.77	9.49
D	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
E	Schroder - Managed Wealth Portfolio Z Acc in GB	58.79	7.70
F	Schroder - MM Diversity Z Acc in GB	52.61	5.74
G	Schroder - Monthly Income Z Acc in GB	51.04	8.71
H	Schroder - Income Portfolio Z Acc in GB	46.59	7.47
I	Schroder - Diversified Growth Inst Acc in GB	44.88	6.84
J	Walkers - PIPS-GBP-Index-20E TR in GB	42.87	4.25
K	Schroder - Sustainable Future Multi-Asset Z Acc in GB	42.26	6.76

Chart D.23: Scottish Widows GBP vs PIPS **GBP** – 10 Years to 30/11/2022



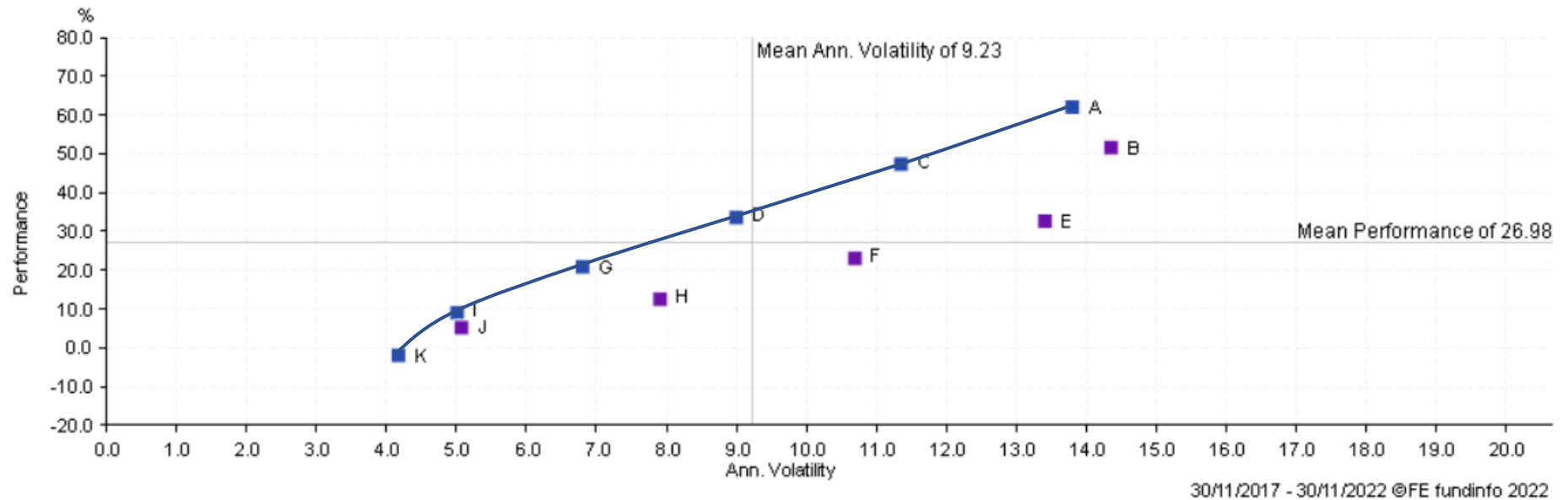
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	234.45	11.83
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
■ C	Walkers - PIPS-GBP-Index-50E TR in GB	98.99	6.75
■ D	Scottish Widows - Adventurous Growth D Acc in GB	82.39	11.80
■ E	Scottish Widows - Progressive Growth Portfolio 1 AAcc in GB	80.70	10.46
■ F	Scottish Widows - Progressive Growth D Acc in GB	78.49	10.40
■ G	Walkers - PIPS-GBP-Index-30E TR in GB	59.84	4.98
■ H	Scottish Widows - Balanced Growth D Acc in GB	53.62	7.93
■ I	Scottish Widows - Balanced Growth Portfolio AAcc in GB	45.72	8.22
■ J	Scottish Widows - Balanced Income Portfolio AAcc in GB	32.35	6.90
■ K	Scottish Widows - Cautious Growth D Acc in GB	23.84	5.96
■ L	Scottish Widows - Cautious Income Portfolio 1 AAcc in GB	19.32	5.36

Chart D.24: St. James Place GBP vs PIPS **GBP** – 5 Years to 30/11/2022



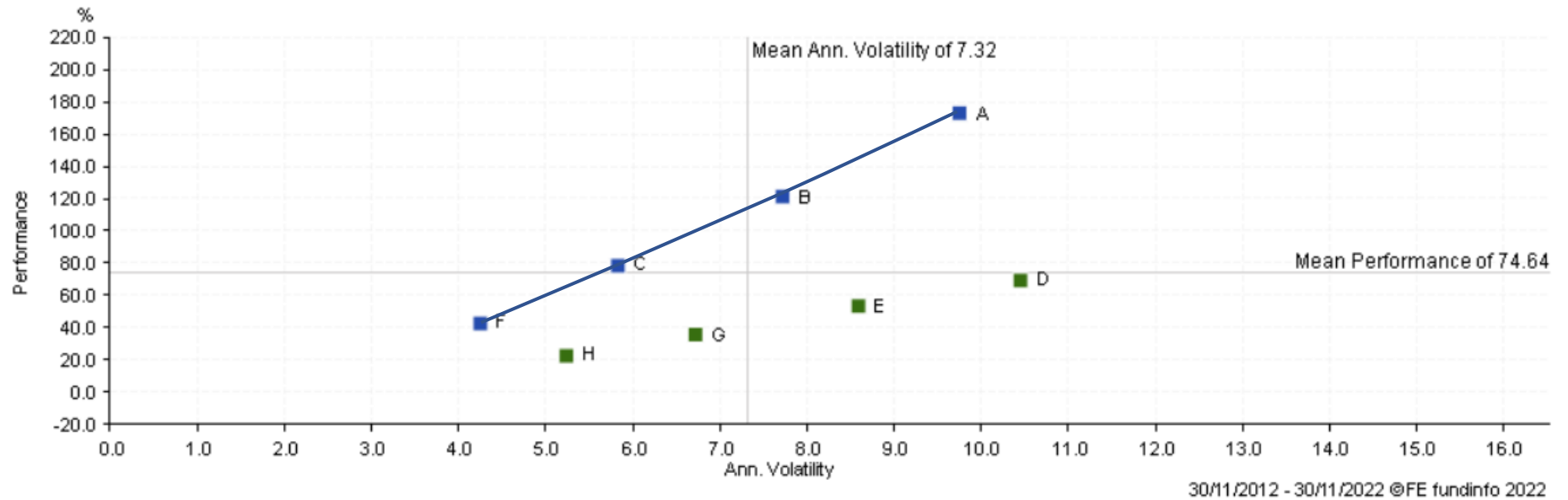
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	62.06	13.80
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	47.41	11.35
■ C	Walkers - PIPS-GBP-Index-60E TR in GB	33.72	9.00
■ D	SJP - Adventurous Growth Y Acc in GB	26.30	13.14
■ E	Walkers - PIPS-GBP-Index-40E TR in GB	20.97	6.80
■ F	SJP - Balanced Growth Y Acc in GB	18.49	9.41
■ G	SJP - Managed Growth L Acc in GB	13.57	9.47
■ H	SJP - Strategic Managed L Acc in GB	12.66	11.10
■ I	SJP - Balanced Managed L Acc in GB	12.10	9.96
■ J	SJP - Conservative Growth Y Acc in GB	9.72	7.32
■ K	Walkers - PIPS-GBP-Index-20E TR in GB	9.11	5.01
■ L	SJP - Strategic Income L Acc in GB	-3.96	8.74

Chart D.25: Quilter Cirilium Passive GBP vs PIPS **GBP** – 5 Years to 30/11/2022



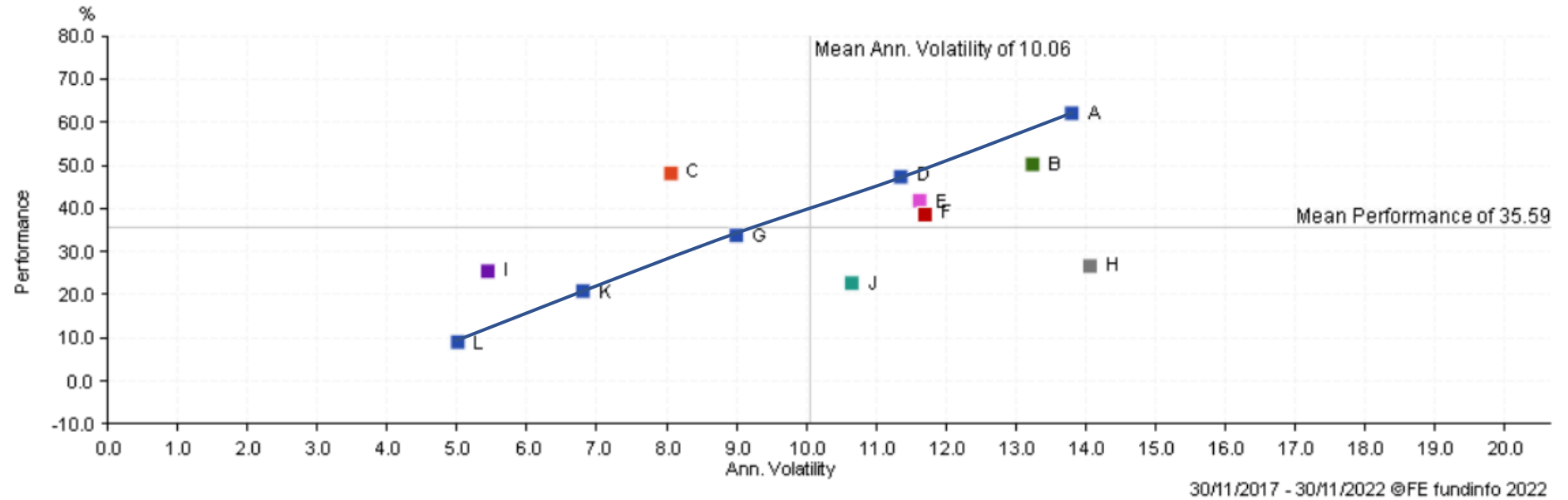
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	62.06	13.80
■ B	Quilter Investors - Cirilium Adventurous Passive Portfolio R Acc GBP in GB	51.67	14.35
■ C	Walkers - PIPS-GBP-Index-80E TR in GB	47.41	11.35
■ D	Walkers - PIPS-GBP-Index-60E TR in GB	33.72	9.00
■ E	Quilter Investors - Cirilium Dynamic Passive Portfolio R Acc GBP in GB	32.69	13.41
■ F	Quilter Investors - Cirilium Moderate Passive Portfolio R Acc GBP in GB	23.13	10.69
■ G	Walkers - PIPS-GBP-Index-40E TR in GB	20.97	6.80
■ H	Quilter Investors - Cirilium Balanced Passive Portfolio R Acc GBP in GB	12.64	7.91
■ I	Walkers - PIPS-GBP-Index-20E TR in GB	9.11	5.01
■ J	Quilter Investors - Cirilium Conservative Passive Portfolio R Acc GBP in GB	5.25	5.07
■ K	Walkers - PIPS-GBP-Index-0E TR in GB	-1.90	4.17

Chart D.26: Quilter Creation GBP vs PIPS **GBP** – 10 Years to 30/11/2022



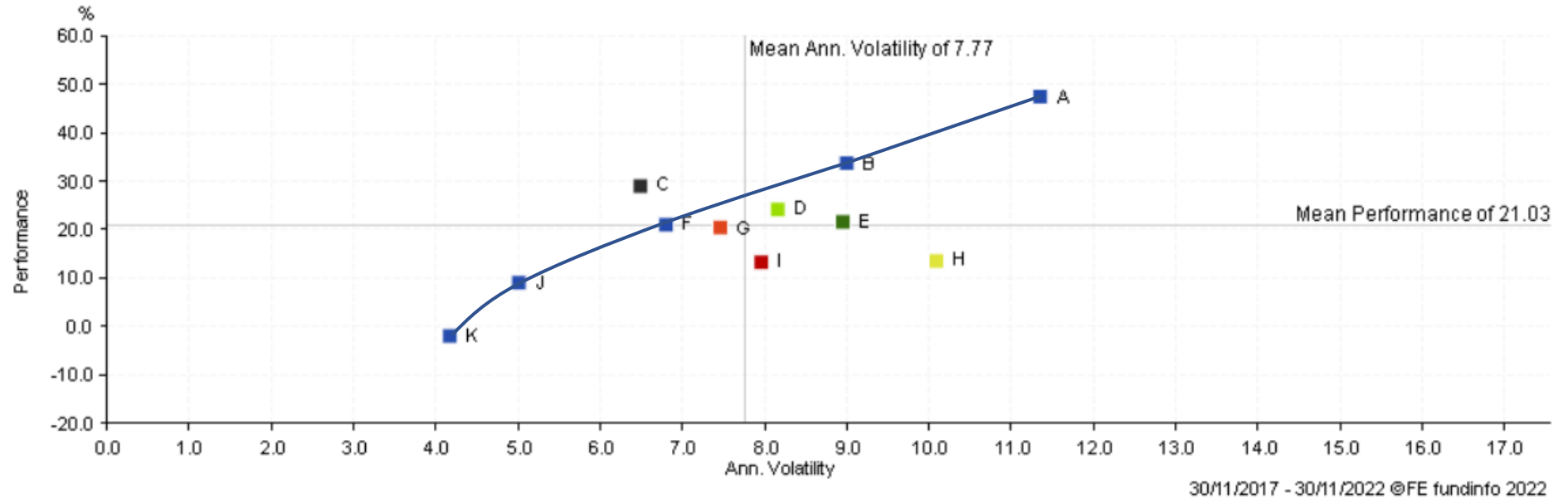
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-80E TR in GB	172.98	9.75
■ B	Walkers - PIPS-GBP-Index-60E TR in GB	121.46	7.72
■ C	Walkers - PIPS-GBP-Index-40E TR in GB	78.50	5.83
■ D	Quilter Investors - Creation Dynamic Portfolio R.Acc GBP in GB	69.36	10.45
■ E	Quilter Investors - Creation Moderate Portfolio R.Acc GBP in GB	53.48	8.59
■ F	Walkers - PIPS-GBP-Index-20E TR in GB	42.87	4.25
■ G	Quilter Investors - Creation Balanced Portfolio R.Acc GBP in GB	35.86	6.72
■ H	Quilter Investors - Creation Conservative Portfolio R.Acc GBP in GB	22.63	5.24

Chart E.1: Sector IA Flexible, Funds Rated 5-Star By Yodelar vs PIPS **GBP** – 5 Years to 30/11/2022



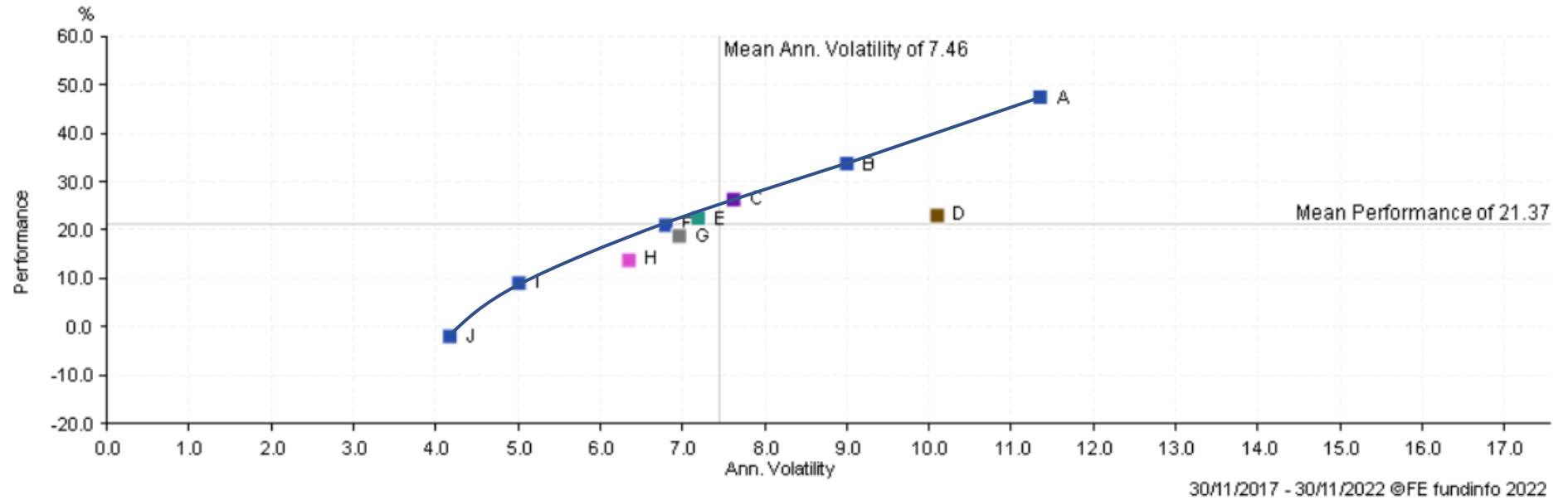
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	62.06	13.80
■ B	BNY Mellon - Multi-Asset Growth Inst W Acc TR in GB	50.23	13.24
■ C	Deuterium - Global Dynamic I GBP in GB	48.16	8.06
■ D	Walkers - PIPS-GBP-Index-80E TR in GB	47.41	11.35
■ E	VT - AJ Bell Adventurous I Acc in GB	41.86	11.62
■ F	Barclays Wealth - Wealth Global Markets 5 R Acc GBP in GB	38.63	11.70
■ G	Walkers - PIPS-GBP-Index-60E TR in GB	33.72	9.00
■ H	VT - Tatton Blended Aggressive Retail Acc in GB	26.62	14.06
■ I	Troy Asset Management Ltd - Trojan O Acc TR in GB**	25.50	5.44
■ J	TB Enigma - Dynamic Growth B Acc in GB	22.75	10.65
■ K	Walkers - PIPS-GBP-Index-40E TR in GB	20.97	6.80
■ L	Walkers - PIPS-GBP-Index-20E TR in GB	9.11	5.01

Chart E.2: Sector IA 20-60% Shares, Funds Rated 5-Star By Yodelar vs PIPS **GBP** – 5 Years to 30/11/2022 - #1 of 2



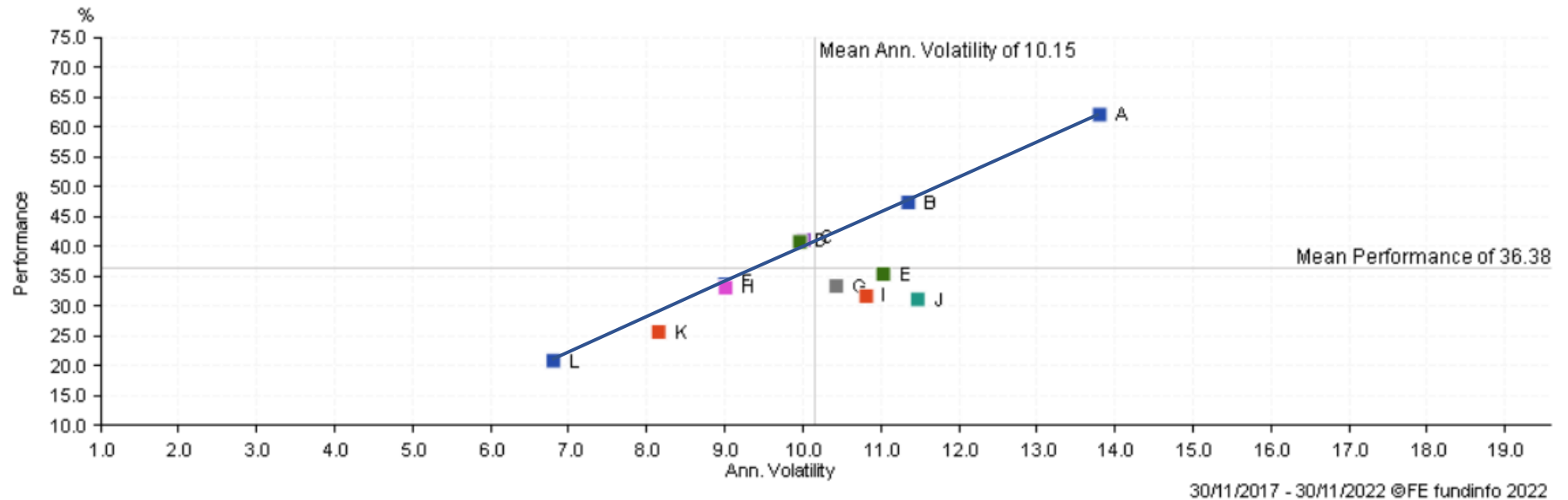
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-80E TR in GB	47.41	11.35
■ B	Walkers - PIPS-GBP-Index-60E TR in GB	33.72	9.00
■ C	LF Ruffer - Total Return C Acc in GB	29.01	6.49
■ D	Courtiers - Total Return Cautious Risk A in GB	24.17	8.16
■ E	Barclays - Wealth Global Markets 3 R Acc GBP in GB	21.65	8.95
■ F	Walkers - PIPS-GBP-Index-40E TR in GB	20.97	6.80
■ G	CT - Global Multi Asset Income ZNI GBP TR in GB	20.45	7.46
■ H	Premier Miton - Cautious Monthly Income B Acc GBP in GB	13.51	10.09
■ I	MI Hawksmoor - Vanbrugh C Acc TR in GB	13.27	7.96
■ J	Walkers - PIPS-GBP-Index-20E TR in GB	9.11	5.01
■ K	Walkers - PIPS-GBP-Index-0E TR in GB	-1.90	4.17

Chart E.3: Sector IA 20-60% Shares, Funds Rated 5-Star By Yodelar vs PIPS **GBP** – 5 Years to 30/11/2022 - #2 of 2



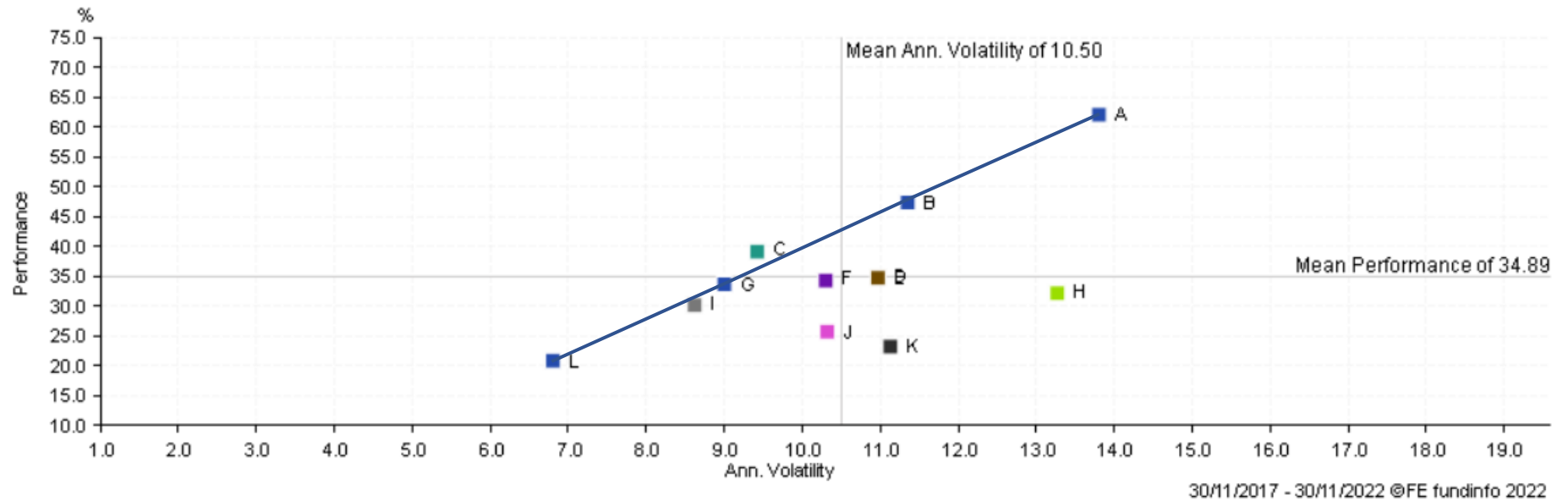
Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-80E TR in GB	47.41	11.35
■ B	Walkers - PIPS-GBP-Index-60E TR in GB	33.72	9.00
■ C	Waverton - Multi-Asset Income P GBP TR in GB	26.25	7.62
■ D	Premier Miton - Diversified Income D Inc GBP TR in GB	23.00	10.10
■ E	Schroder - MM Diversity Z Acc in GB	22.51	7.19
■ F	Walkers - PIPS-GBP-Index-40E TR in GB	20.97	6.80
■ G	VT - AJ Bell Moderately Cautious Acc in GB	18.81	6.96
■ H	Royal London - GMAP Balanced M Acc in GB	13.85	6.35
■ I	Walkers - PIPS-GBP-Index-20E TR in GB	9.11	5.01
■ J	Walkers - PIPS-GBP-Index-0E TR in GB	-1.90	4.17

Chart E.4: Sector IA 40-85% Shares, Funds Rated 5-Star By Yodelar vs PIPS **GBP** – 5 Years to 30/11/2022 - #1 of 2



Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	62.06	13.80
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	47.41	11.35
■ C	BNY Mellon - Multi-Asset Global Balanced Newton Institutional 3 Acc in GB	41.12	10.01
■ D	BNY Mellon - Multi-Asset Balanced Inst W Acc TR in GB	40.77	9.96
■ E	Orbis - Global Balanced Standard TR in GB	35.41	11.03
■ F	Walkers - PIPS-GBP-Index-60E TR in GB	33.72	9.00
■ G	LF - Waverton Portfolio B TR in GB	33.42	10.43
■ H	McInroy & Wood - Balanced Personal TR in GB	33.13	9.01
■ I	Barclays Wealth - Wealth Global Markets 4 R.Acc GBP in GB	31.67	10.81
■ J	BNY Mellon - Multi-Asset Income Inst W Acc in GB	31.18	11.47
■ K	McInroy & Wood - Income Personal TR in GB	25.70	8.15
■ L	Walkers - PIPS-GBP-Index-40E TR in GB	20.97	6.80

Chart E.5: Sector IA 40-85% Shares, Funds Rated 5-Star By Yodelar vs PIPS **GBP** – 5 Years to 30/11/2022 - #2 of 2



Key	Name	Performance	Annualised Volatility
■ A	Walkers - PIPS-GBP-Index-100E TR in GB	62.06	13.80
■ B	Walkers - PIPS-GBP-Index-80E TR in GB	47.41	11.35
■ C	Vanguard - SustainableLife 60-70% Equity Acc in GB	39.16	9.42
■ D	Vanguard - Target Retirement 2050 AAcc GBP in GB	34.82	10.97
■ E	Vanguard - Target Retirement 2055 AAcc GBP in GB	34.79	10.97
■ F	VT - AJ Bell Moderately Adventurous Acc in GB	34.34	10.30
■ G	Walkers - PIPS-GBP-Index-60E TR in GB	33.72	9.00
■ H	True Potential Investments - True Potential Aggressive 1 A Inc TR in GB	32.17	13.27
■ I	VT - AJ Bell Balanced I Acc in GB	30.17	8.62
■ J	Royal London - GMAP Adventurous M Acc in GB	25.77	10.32
■ K	True Potential Investments - True Potential Aggressive 7 A Inc TR in GB	23.29	11.13
■ L	Walkers - PIPS-GBP-Index-40E TR in GB	20.97	6.80