

RESEARCH

Picking the Right Model: Risk Tolerance and Long-Term Investment Goals

May 2024

Kaitlin Simpson Hendrix
Asset Allocation Research
Director and Vice President

Matthew Wicker
Researcher and Vice President

Model portfolios streamline the process of determining an appropriate asset allocation for an investor. But which model is the right one? There are some widely accepted principles: Investors with a high risk tolerance or those seeking aggressive wealth growth may prefer stocks; those with a low risk tolerance may prefer to give up the higher expected returns of stocks in exchange for the lower volatility of bonds. Many investors fall somewhere in between.

To identify a model that fits an investor's needs and preferences, it can be helpful to go beyond generalities and quantify such tradeoffs. Investors may want to know, for example, how long it would have taken a 100% equity model to recover from a market downturn vs. a model holding 60% equities and 40% fixed income (60/40) or one with 100% fixed income. To find an asset allocation that an investor can stick with, it is also useful to know how the five-year performance for a 60/40 allocation might compare against 100% fixed income or 100% equity. Finally, it is helpful to evaluate how different allocations hold up to inflation and changes in standards of living.

In this study, we examine the historical performance of different wealth-focused index allocations to provide financial professionals with a better understanding of these tradeoffs.

To do so, we use the Dimensional Core and Core Plus Index Allocations (EU).¹ These index allocations are designed to help investors assess the performance of different asset allocations over time. The Core Index Allocations have a moderate focus on securities with higher expected returns. The Core Plus Index Allocations apply a stronger emphasis on securities with higher expected returns by taking on more deviation from the market in pursuit of reliable equity and fixed income premiums. For the construction of the Core and Core Plus Index Allocations as of 31 December 2023, see the Appendix.²

BALANCING RISK AND RETURN

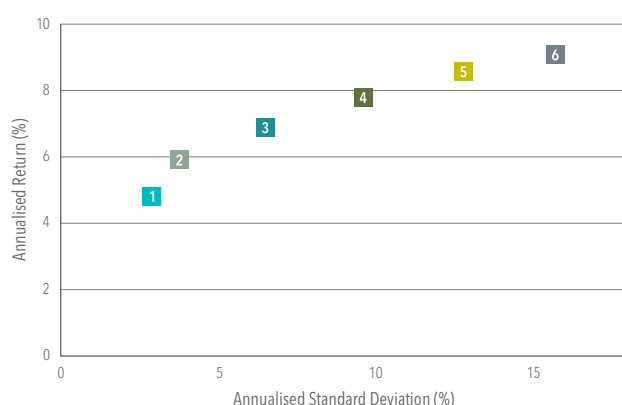
Model portfolios are often offered in a range of equity/fixed income allocations. Investors' wealth goals can range from preservation of capital to aggressive wealth growth, and the split between equities and fixed income in a portfolio is one of the most effective tools for balancing the expected risk and return.

The relative historical performance of the Dimensional Core Index Allocations (EU)—which range from 100% fixed income to 100% equity in increments of 20%—helps to illustrate how the split between equities and fixed income can be used to find the right balance for an investor. **Exhibit 1** shows the annualised return and standard deviation of the index allocations over the period January 1985 to December 2023.

Not surprisingly, both realized return and volatility increase as the equity component increases across the allocations. At 20% equity and 80% fixed income, the Core 20/80 Index Allocation had an annualised return of 5.89% over this period, with an annualised standard deviation of 3.77%. In comparison, the Core 80/20 Index Allocation, composed of 80% equities and 20% fixed income, had an annualised return of 8.53%, with an annualised standard deviation of 12.74%.

Put differently, a hypothetical €1 invested in the 20/80 allocation in 1985 would have grown to €9.31 by the end of 2023, whereas it would have grown to €24.34 had it been invested in the 80/20 allocation.³

EXHIBIT 1: Annualised Return and Standard Deviation, January 1985–December 2023



	Name	Annualised Return (%)	Annualised Standard Deviation* (%)
1	Dimensional Core 0/100 Index Allocation (EU)	4.78	2.92
2	Dimensional Core 20/80 Index Allocation (EU)	5.89	3.77
3	Dimensional Core 40/60 Index Allocation (EU)	6.83	6.52
4	Dimensional Core 60/40 Index Allocation (EU)	7.73	9.59
5	Dimensional Core 80/20 Index Allocation (EU)	8.53	12.74
6	Dimensional Core 100/0 Index Allocation (EU)	9.02	15.68

Past performance, including hypothetical performance, does not predict future returns.

*Annualised number is presented as an approximation by multiplying the monthly number by the square root of the number of periods in a year. Please note that the number computed from annual data may differ materially from this estimate. In EUR. Source: Dimensional. Indices are not available for direct investment. All performance results of the hypothetical index allocations are based on performance of indices with model/backtested asset allocations. The performance was achieved with the benefit of hindsight and does not represent actual investment strategies. The allocations' performance does not reflect advisory fees or other expenses associated with the management of an actual portfolio. There are limitations inherent in hypothetical allocations. In particular, allocation performance may not reflect the impact that economic and market factors may have had on the advisor's decision-making if the advisor were actually managing client money. See Appendix for descriptions of the Dimensional Index Allocations.

- For brevity, the Dimensional Core Index Allocations (EU) are also referred to in this paper as the "Core Index Allocations," "Core Allocations," or simply "Core." Similarly, the Dimensional Core Plus Index Allocations (EU) are also referred to as the "Core Plus Index Allocations," "Core Plus Allocations," or simply "Core Plus."
- For additional information on the Dimensional Core and Core Plus Index Allocations (EU), see Dimensional's *Matrix Book*. For additional information on asset allocation, see Kaitlin Simpson Hendrix, "Dimensional's Approach to Asset Allocation," *Insights* (blog), Dimensional Fund Advisors, December 2021.
- See Appendix for additional methodology information.

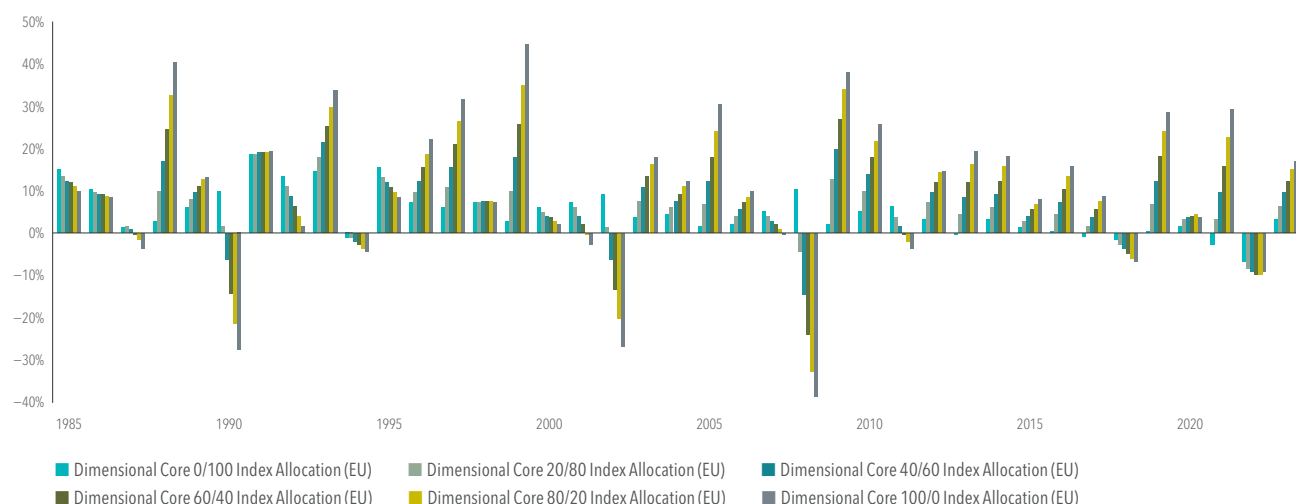
Panel A of Exhibit 2 shows calendar-year returns for the six allocations from 1985 to 2023. While the allocations with larger equity components delivered better performance in many years with strong stock market returns, they also underperformed more when equity returns were negative, leading to more year-over-year volatility in overall performance. For instance, in 2008, a disappointing year for equity markets, the return to the all-equity Core 100/0 Index Allocation was -38.95%. Performance then swung strongly positive in 2009 with a return of 38.03%. By comparison, the all-fixed-income Core 0/100 Index Allocation returned approximately 10.41% in 2008 and 1.88% in 2009.

We see a similar pattern in **Panel B of Exhibit 2**, which presents the average, best, and worst annualised rolling one-year, three-year, and five-year returns to each allocation. Across all time horizons, as the weight in equity increases, the average performance increases. For example, the average annualised rolling five-year return to the 100% equity allocation was 8.77%, exceeding the average of 7.62% for the 60/40 allocation, which in turn exceeded the 4.99% for the all-fixed-income allocation.

On the flip side, the all-equity model experienced the most severe worst return across all time horizons.

EXHIBIT 2: Calendar-Year Returns and Best and Worst Returns, January 1985–December 2023

PANEL A: Calendar-Year Returns



Past performance, including hypothetical performance, does not predict future returns.

PANEL B: Average, Best, and Worst Annualised Rolling Returns

	1-Year			3-Year			5-Year		
	Average Return	Best Return (Start Date)	Worst Return (Start Date)	Average Return	Best Return (Start Date)	Worst Return (Start Date)	Average Return	Best Return (Start Date)	Worst Return (Start Date)
Dimensional Core 0/100 Index Allocation (EU)	4.82%	20.35% Aug-91	-7.86% Oct-21	4.81%	16.62% Sep-90	-3.15% Mar-20	4.99%	12.60% Feb-89	-2.07% Oct-17
Dimensional Core 20/80 Index Allocation (EU)	5.89%	20.92% Sep-92	-8.38% Oct-21	5.89%	16.28% Feb-91	-0.80% Jan-20	5.98%	11.77% Feb-91	0.20% Oct-17
Dimensional Core 40/60 Index Allocation (EU)	6.96%	28.37% Apr-09	-15.06% Mar-08	6.83%	17.21% Feb-91	-4.29% Mar-06	6.82%	13.91% Apr-95	0.79% Mar-04
Dimensional Core 60/40 Index Allocation (EU)	8.13%	40.31% Apr-09	-24.21% Jan-08	7.77%	21.16% Apr-95	-8.77% Mar-06	7.62%	17.89% Apr-95	-0.70% Mar-04
Dimensional Core 80/20 Index Allocation (EU)	9.35%	53.13% Apr-09	-32.79% Jan-08	8.64%	25.92% Apr-95	-13.15% Mar-06	8.34%	21.87% Apr-95	-2.26% Mar-04
Dimensional Core 100/0 Index Allocation (EU)	10.36%	62.20% Apr-09	-38.95% Jan-08	9.24%	30.87% Apr-95	-16.57% Mar-06	8.77%	26.08% Apr-95	-3.37% Mar-04

Past performance, including hypothetical performance, does not predict future returns.

In EUR. Source: Dimensional. Indices are not available for direct investment. All performance results of the hypothetical index allocations are based on performance of indices with model/backtested asset allocations. The performance was achieved with the benefit of hindsight and does not represent actual investment strategies. The allocations' performance does not reflect advisory fees or other expenses associated with the management of an actual portfolio. There are limitations inherent in hypothetical allocations. In particular, allocation performance may not reflect the impact that economic and market factors may have had on the advisor's decision-making if the advisor were actually managing client money. See Appendix for descriptions of the Dimensional Index Allocations.

Other aspects of risk worth considering are potential drawdowns and the length of time it may take to recover lost value. Consider, for instance, an investor's experience during a challenging market environment. **Exhibit 3** shows the drawdown for each of the allocations over the global financial crisis of 2008–2009. We present the duration of the peak-to-trough drop and the length of time it takes to recover the value from each maximum drawdown over the period. As the equity component increases across the allocations, the drawdown was larger and time to recovery lengthened. An investor in the Dimensional Core 100/0 Index Allocation (EU) would have seen a loss of around 49% of the value of their investment over the 21-month period ending February 2009, and it would have taken 36 months to get back to the previous peak. In contrast, an investor in the Dimensional Core 40/60 Index Allocation (EU) would have experienced a loss of around 20% during the model's largest downturn ending February 2009, and it would have taken only 11 months to recover.

Making sure that the asset allocation is consistent with investors' risk tolerance can help them stick to their investment plan during challenging times.

These results suggest that an all-equity or equity-heavy model portfolio may be appropriate for investors with a focus on growth of wealth and a high risk tolerance. For investors whose investment goal is primarily the preservation of capital or those with a low risk tolerance, a model invested predominantly in fixed income securities may be the appropriate allocation. For investors with a moderate risk tolerance or those who seek total returns consisting of both capital appreciation and current income, a blended asset allocation, such as 60% equity and 40% fixed income, may be fitting.

EMPHASIS ON HIGHER EXPECTED RETURNS

The degree of emphasis on securities with higher expected returns is another lever that can be used to balance expected risk and return. For instance, compared to the Core Index Allocations, the Core Plus Index Allocations place greater emphasis on reliable equity and fixed income premiums by 1) overweighting stocks with lower market capitalisations, lower relative prices, and higher profitability, and 2) focusing on longer duration and lower-credit-quality bonds.⁴

While we expect such securities to outperform every day, realized returns are volatile and premiums can vary over time. The relative performance of an investment approach that pursues premiums systematically depends on the degree of emphasis the approach places on the premiums and the realization of those premiums.

For example, over the long term, from January 1985 through December 2023, the Core Plus 60/40 Index Allocation outperformed its Core counterpart by 40 basis points (bps) annualised. For a hypothetical €1 million invested in a 60/40 allocation in 1985, this is a 16% difference in ending wealth as of year-end 2023.⁵

Yet year-by-year performance varied. Over calendar year 2020, the Core Plus 60/40 Index Allocation underperformed the Core 60/40 Index Allocation by 106 bps, driven primarily by a negative value premium. Over the following year in 2021, when the value premium was strongly positive, the Core Plus 60/40 Index Allocation outperformed by 122 bps.

It is therefore important to consider the tradeoff between targeting higher expected returns and the risk of underperforming when the targeted premiums do not materialize. Investors with lower risk tolerance may prefer a Core-like investment approach with a moderate amount of deviation from the market in the pursuit of higher expected returns. For investors with higher risk tolerance, a Core Plus-like investment approach with greater deviations from the market in the pursuit of higher expected returns may be a better fit.

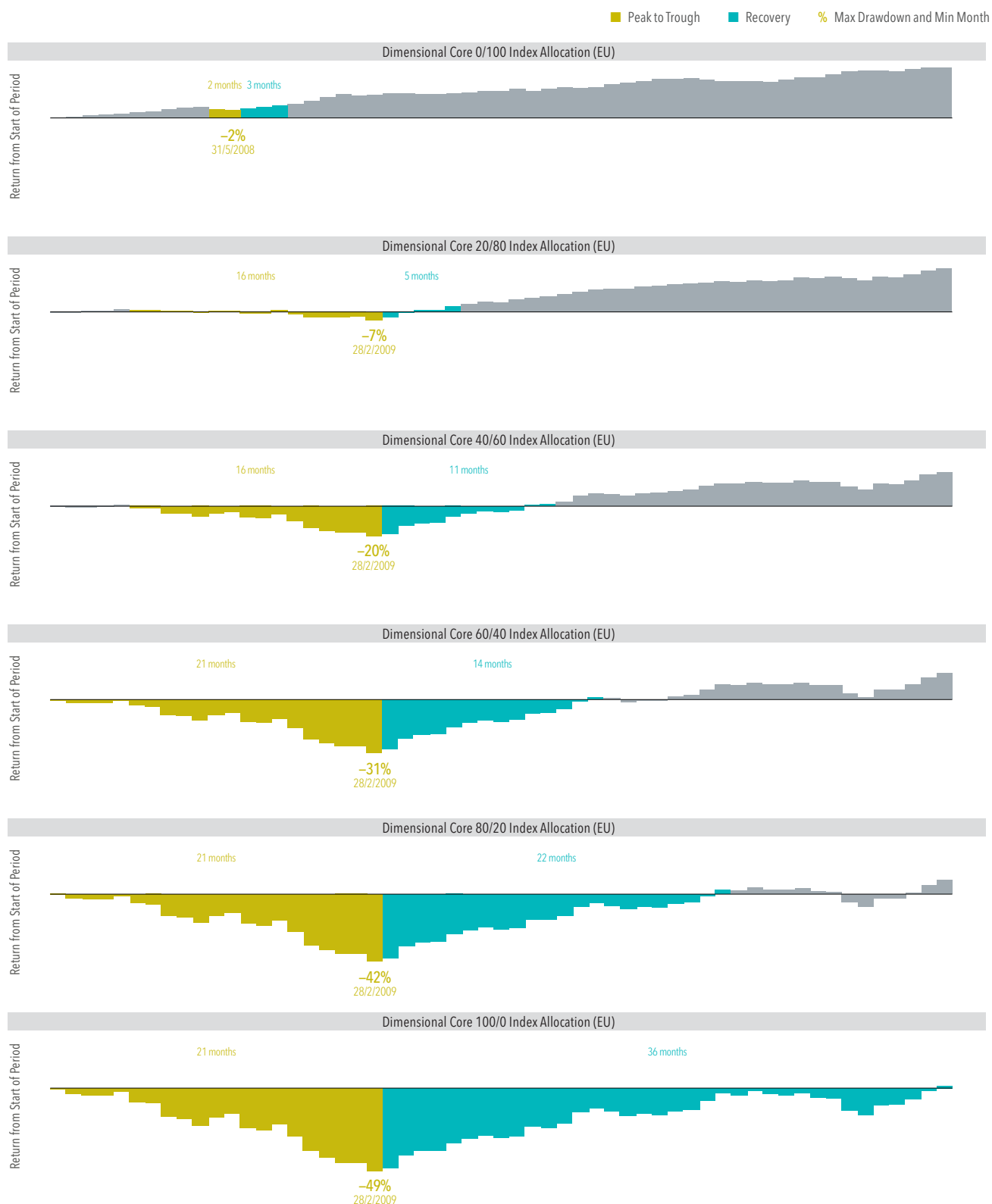
INFLATION RISK AND STANDARD-OF-LIVING RISK

When making asset allocation decisions, investors also face inflation risk and standard-of-living risk. Positive nominal returns over a given period can still result in a reduction in purchasing power if those returns do not outpace inflation. Even realized returns that beat inflation can feel like a loss if they do not keep up with the change in societal standard of living, which has been positive annually on average since the 1990s in Europe, as measured by household final consumption expenditure per capita. Changes in the standard of living reflect changes in consumer preferences for the quantity, quality, and diversity of goods and services consumed over time.

4. Profitability is measured as operating income before depreciation and amortisation minus interest expense scaled by book.

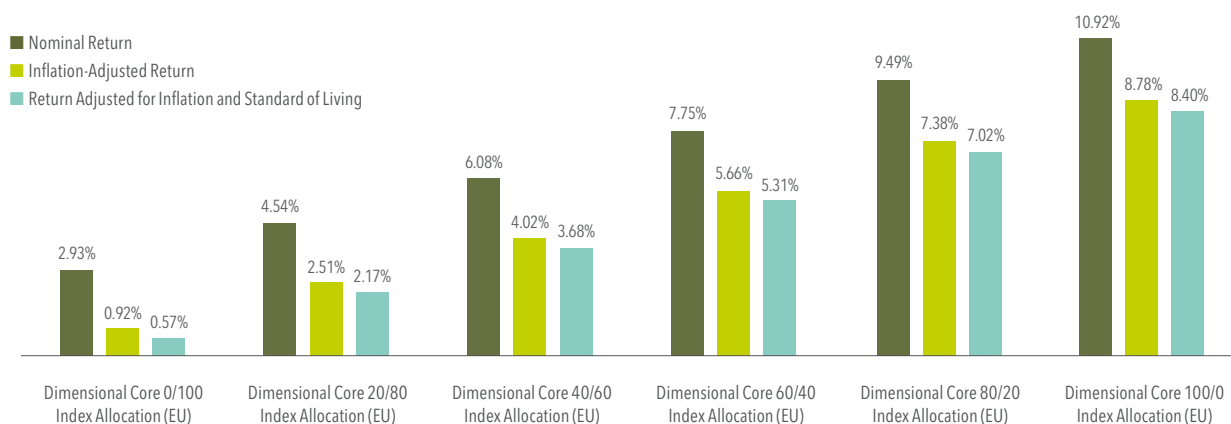
5. €1 invested in the Dimensional Core Plus 60/40 Index Allocation (EU) in 1985 would have grown to €21.11 by the end of 2023, whereas it would have grown to €18.25 had it been invested in the Dimensional Core 60/40 Index Allocation (EU). See Appendix for additional methodology information.

EXHIBIT 3: Drawdown and Recovery during the Global Financial Crisis, June 2007–February 2012



In EUR. Source: Dimensional. Indices are not available for direct investment. All performance results of the hypothetical index allocations are based on performance of indices with model/backtested asset allocations. The performance was achieved with the benefit of hindsight and does not represent actual investment strategies. The allocations' performance does not reflect advisory fees or other expenses associated with the management of an actual portfolio. There are limitations inherent in hypothetical allocations. In particular, allocation performance may not reflect the impact that economic and market factors may have had on the advisor's decision-making if the advisor were actually managing client money. See Appendix for descriptions of the Dimensional Index Allocations. Indices are not available for direct investment.

EXHIBIT 4: Average Annual Returns Adjusted for European Inflation and Standard of Living, 1997–2023



Past performance, including hypothetical performance, does not predict future returns.

In EUR. Source: Dimensional, Eurostat. Inflation proxied by the Harmonized Consumer Price Index Euro Area – All Items. Change in European standard of living computed using the annual change in household final consumption expenditure per capita at current prices. All performance results of the hypothetical allocations are based on performance of indices with model/backtested asset allocations. The performance was achieved with the benefit of hindsight and does not represent actual investment strategies. The allocations' performance does not reflect advisory fees or other expenses associated with the management of an actual portfolio. There are limitations inherent in hypothetical allocations. In particular, allocation performance may not reflect the impact that economic and market factors may have had on the advisor's decision-making if the advisor were actually managing client money.

See Appendix for descriptions of the Dimensional Index Allocations. All rights reserved. Indices are not available for direct investment.

Exhibit 4 shows nominal returns, inflation-adjusted returns, and returns adjusted for both inflation and changes in the standard of living in Europe for the Dimensional Core Index Allocations (EU) over the 27-year period from 1997 through 2023. Inflation is proxied by the Harmonized Consumer Price Index Euro Area – All Items, and standard-of-living adjustments are computed using the annual change in household final consumption expenditure per capita.

Both inflation and standard-of-living adjustments meaningfully chip away at an investor's return.

The reduction in purchasing power due to inflation is greater for the equity-heavy allocations than for the fixed-income-heavy allocations, although the difference in magnitudes is small. Over the 27-year period ending 31 December 2023, the average annual return of the all-fixed-income allocation falls from 2.93% to 0.92% after adjusting for inflation, a reduction of 2.01 percentage points. By comparison, the all-equity allocation falls by 2.14 percentage points, from 10.92% to 8.78%, when adjusted for inflation over the same period.

The impact of the standard-of-living adjustment also eats away at an investor's return. For the all-fixed-income allocation, the average annual nominal return adjusted for

inflation and standard of living falls to 0.57%. The average annual nominal return of the all-equity allocation falls to an adjusted return of 8.40%.

As shown by Dai and Medhat (2021), equities have outpaced inflation over the long term.⁶ This study further contributes to the literature by showing that equities have also outpaced the growth in standard of living over time. It is important for investors to evaluate asset allocation decisions with inflation and standard-of-living risk in mind and to set expectations for long-term financial goals.

PUTTING IT ALL TOGETHER







Picking a model portfolio with the appropriate equity/fixed income split and degree of emphasis on securities with higher expected returns may help investors stay the course during periods of high market volatility and better position them to achieve their long-term investment goals. This study helps quantify the risk-return tradeoffs across different asset allocations, examining multiple types of risk: volatility of returns, inflation risk, and standard-of-living risk. A better understanding of the risk-return tradeoffs of different model portfolios can empower a financial advisor to better align clients' portfolios with their risk tolerance and long-term investment goals and, as a result, provide a better investment experience.

6. For more on this, see: Wei Dai and Mamdouh Medhat, "US Inflation and Global Asset Returns." (research paper, Dimensional Fund Advisors, July 13, 2021). Available at SSRN: 3882899.

APPENDIX







Dimensional Index Allocations as of 31 December 2023

Dimensional Core Index Allocations (EU)

						
EQUITY	0%	20%	40%	60%	80%	100%
Dimensional Global Core Equity Index (EUR)	0.0	17.6	35.2	52.8	70.4	88.0
Dimensional Emerging Markets Large Cap Core Equity Index (EUR)	0.0	2.4	4.8	7.2	9.6	12.0
FIXED INCOME	100%	80%	60%	40%	20%	0%
Dimensional Global Ultra-Short Fixed Income Index (Hedged to EUR)	25.0	5.0	0.0	0.0	0.0	0.0
Dimensional Global Short Term Government Variable Maturity Index (Hedged to EUR)	75.0	60.0	40.0	20.0	0.0	0.0
Dimensional Targeted Credit Index (Hedged to EUR)	0.0	15.0	15.00	10.0	10.0	0.0
Dimensional Global Core Plus Index (Hedged to EUR)	0.0	0.0	5.00	10.0	10.0	0.0

See "Index Descriptions" for descriptions of Dimensional index data. Indices are not available for direct investment.

Dimensional Core Plus Index Allocations (EU)

						
EQUITY	0%	20%	40%	60%	80%	100%
Dimensional Global Core Equity Index (EUR)	0.0	11.7	23.5	35.2	46.9	58.7
Dimensional Global Targeted Value Index (EUR)	0.0	5.9	11.7	17.6	23.5	29.3
Dimensional Emerging Markets Large Cap Core Equity Index (EUR)	0.0	1.6	3.2	4.8	6.4	8.0
Dimensional Emerging Markets Targeted Value Index (EUR)	0.0	0.8	1.6	2.4	3.2	4.0
FIXED INCOME	100%	80%	60%	40%	20%	0%
Dimensional Global Ultra-Short Fixed Income Index (Hedged to EUR)	5.0	0.0	0.0	0.0	0.0	0.0
Dimensional Global Short Term Government Variable Maturity Index (Hedged to EUR)	80.0	50.0	30.0	10.0	0.0	0.0
Dimensional Targeted Credit Index (Hedged to EUR)	15.0	25.0	20.0	15.0	5.0	0.0
Dimensional Global Core Plus Index (Hedged to EUR)	0.0	5.0	10.0	15.0	15.0	0.0

See "Index Descriptions" for descriptions of Dimensional index data. Indices are not available for direct investment.

GROWTH-OF-WEALTH METHODOLOGY

Past performance, including hypothetical performance, is no guarantee of future results. In EUR. Growth of wealth shows the growth of a hypothetical investment of €1 in the securities in each of the Dimensional indices. Performance includes reinvestment of dividends and capital gains.

Indices are not available for direct investment; therefore, their performance does not reflect the expenses associated with the management of an actual portfolio. Index returns are not representative of actual portfolios and do not reflect costs and fees associated with an actual investment.

Index Descriptions

DIMENSIONAL CORE 0/100 INDEX ALLOCATION (EU): Dimensional Index Allocation data compiled by Dimensional. The Dimensional Core 0/100 Index Allocation (EU) combines the following indices: Dimensional Global Ultra-Short Fixed Income Index (hedged to EUR) (25%) and Dimensional Global Short-Term Government Variable Maturity Index (hedged to EUR) (75%). The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE 20/80 INDEX ALLOCATION (EU): Dimensional Index Allocation data compiled by Dimensional. 20% of the weight is allocated to the Dimensional Core 100/0 Index Allocation (EU), and 80% of the weight is allocated to the following indices: Dimensional Global Ultra-Short Fixed Income Index (hedged to EUR) (5%), Dimensional Global Short-Term Government Variable Maturity Index (hedged to EUR) (60%) and Dimensional Targeted Credit Index (hedged to EUR) (15%). The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE 40/60 INDEX ALLOCATION (EU): Dimensional Index Allocation data compiled by Dimensional. 40% of the weight is allocated to the Dimensional Core 100/0 Index Allocation (EU), and 60% of the weight is allocated to the following indices: Dimensional Global Short-Term Government Variable Maturity Index (hedged to EUR) (40%), Dimensional Targeted Credit Index (hedged to EUR) (15%) and Dimensional Global Core Plus Index (hedged to EUR) (5%). The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE 60/40 INDEX ALLOCATION (EU): Dimensional Index Allocation data compiled by Dimensional. 60% of the weight is allocated to the Dimensional Core 100/0 Index Allocation (EU), and 40% of the weight is allocated to the following indices: Dimensional Global Short-Term Government Variable Maturity Index (hedged to EUR) (20%), Dimensional Targeted Credit Index (hedged to EUR) (10%)

and Dimensional Global Core Plus Index (hedged to EUR) (10%). The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE 80/20 INDEX ALLOCATION (EU): Dimensional Index Allocation data compiled by Dimensional. 80% of the weight is allocated to the Dimensional Core 100/0 Index Allocation (EU), and 20% of the weight is allocated to the following indices: Dimensional Targeted Credit Index (hedged to EUR) (10%) and Dimensional Global Core Plus Index (hedged to EUR) (10%). The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE 100/0 INDEX ALLOCATION (EU): Dimensional Index Allocation data compiled by Dimensional. The Dimensional Core 100/0 Index Allocation (EU) combines the following indices: Dimensional Global Core Equity Index (EUR) and Dimensional Emerging Markets Large Cap Core Equity Index (EUR). Regional weights are determined at each quarter-end and held constant for the next three months. The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE PLUS 0/100 INDEX ALLOCATION (EU): Dimensional Index Allocation data compiled by Dimensional. 100% of the weight is allocated to the following indices: Dimensional Global Ultra-Short Fixed Income Index (hedged to EUR) (5%), Dimensional Global Short-Term Government Variable Maturity Index (hedged to EUR) (80%), and Dimensional Targeted Credit Index (hedged to EUR) (15%). The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE PLUS 20/80 INDEX ALLOCATION (EU): Dimensional Index Allocation data compiled by Dimensional. 20% of the weight is allocated to the Dimensional Core Plus 100/0 Index Allocation (EU), and 80% of the weight is allocated to the following indices: Dimensional Global

Short-Term Government Variable Maturity Index (hedged to EUR) (50%), Dimensional Targeted Credit Index (hedged to EUR) (25%) and Dimensional Global Core Plus Index (hedged to EUR) (5%). The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE PLUS 40/60 INDEX ALLOCATION (EU):

Dimensional Index Allocation data compiled by Dimensional. 40% of the weight is allocated to the Dimensional Core Plus 100/0 Index Allocation (EU), and 60% of the weight is allocated to the following indices: Dimensional Global Short-Term Government Variable Maturity Index (hedged to EUR) (30%), Dimensional Targeted Credit Index (hedged to EUR) (20%) and Dimensional Global Core Plus Index (hedged to EUR) (10%). The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE PLUS 60/40 INDEX ALLOCATION (EU):

Dimensional Index Allocation data compiled by Dimensional. 60% of the weight is allocated to the Dimensional Core Plus 100/0 Index Allocation (EU), and 40% of the weight is allocated to the following indices: Dimensional Global Short-Term Government Variable Maturity Index (hedged to EUR) (10%), Dimensional Targeted Credit Index (hedged to EUR) (15%) and Dimensional Global Core Plus Index (hedged to EUR) (15%). The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE PLUS 80/20 INDEX ALLOCATION (EU):

Dimensional Index Allocation data compiled by Dimensional. 80% of the weight is allocated to the Dimensional Core Plus 100/0 Index Allocation (EU), and 20% of the weight is allocated to the following indices: Dimensional Targeted Credit Index (hedged to EUR) (5%) and Dimensional Global Core Plus Index (hedged to EUR) (15%). The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL CORE PLUS 100/0 INDEX ALLOCATION (EU):

Dimensional Index Allocation data compiled by Dimensional. The Dimensional Core Plus 100/0 Index Allocation (EU) combines the following indices: Dimensional Global Core Equity Index (EUR), Dimensional Global Targeted Value Index (EUR), Dimensional Emerging Markets Large Cap Core Equity Index (EUR) and Dimensional Emerging Markets Targeted Value Index (EUR). Within the global equity allocation, each month the weight to the Dimensional Global Core Equity Index (EUR) and Dimensional Global Targeted Value Index (EUR) are 66.7% and 33.3%, respectively. Within the emerging markets equity allocation, each month the weight to the Dimensional Emerging Markets Large Cap Core Equity Index (EUR) and Dimensional Emerging Markets Targeted Value Index (EUR) are 66.7% and 33.3%, respectively. Regional weights are determined at each quarter-end and held constant for the next three months. The Index Allocation returns are calculated monthly as a weighted average of the returns of the underlying indices. The Index Allocation has been retrospectively calculated by Dimensional and did not exist prior to March 2020.

DIMENSIONAL GLOBAL CORE EQUITY INDEX:

Compiled by Dimensional from Bloomberg securities data. Targets all the securities in the eligible markets with an emphasis on companies with smaller capitalisation, lower relative price and higher profitability, excluding those with the lowest profitability and highest relative price within their country's small cap universe. The index also excludes those companies with the highest asset growth within their country's small cap universe. Profitability is defined as operating income before depreciation and amortisation minus interest expense divided by book equity. Asset growth is defined as change in total assets from the prior fiscal year to current fiscal year. The index monthly returns are computed as the simple average of the monthly returns of four subindices, each one reconstituted once a year at the end of each quarter of the year. Maximum index weight of any one company is capped at 5%. Countries currently included are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the UK and the US. Exclusion: investment companies. The index has been retrospectively calculated by Dimensional and did not exist prior to April 2008. Accordingly, the results shown during the periods prior to April 2008 do not represent actual returns of the index. The calculation methodology for the index was amended in

January 2014 to include profitability as a factor in selecting securities for inclusion in the index. The calculation methodology for the index was amended in November 2019 to include asset growth as a factor in selecting securities for inclusion in the index.

DIMENSIONAL EMERGING MARKETS LARGE CAP CORE EQUITY INDEX: Compiled by Dimensional from Bloomberg securities data. Targets large cap securities in the eligible markets with an emphasis on companies with smaller capitalisation, lower relative price and higher profitability. Profitability is defined as operating income before depreciation and amortisation minus interest expense divided by book equity. The index monthly returns are computed as the simple average of the monthly returns of four subindices, each one reconstituted once a year at the end of each quarter of the year. Maximum index weight of any one company is capped at 5%. Countries currently included are Brazil, Chile, China, Colombia, the Czech Republic, Greece, Hungary, India, Indonesia, Korea, Kuwait, Malaysia, Mexico, Peru, the Philippines, Poland, Qatar, Saudi Arabia, South Africa, Taiwan, Thailand, Turkey and the United Arab Emirates. Exclusion: investment companies. The index has been retrospectively calculated by Dimensional and did not exist prior to December 2023. Accordingly, the results shown during the periods prior to December 2023 do not represent actual returns of the index.

DIMENSIONAL GLOBAL ULTRA-SHORT FIXED INCOME INDEX (HEDGED TO EUR): February 1999–present: Compiled by Dimensional from Bloomberg securities data. Applies 50% weight to ICE BofA Euro 1-Month Deposit Offered Rate Constant Maturity Index and 50% weight to Dimensional Global 1–2 Year Government/Corporate AAA–BBB Market. Based on securities in the universe of the Bloomberg Global Aggregate 1–2 Year Index. Includes government and corporate AAA–BBB bonds. Rebalanced monthly. The index has been retrospectively calculated by Dimensional and did not exist prior to January 2022. Accordingly, results shown during the periods prior to January 2022 do not represent actual returns of the index.

January 1995–January 1999: ICE BofA Euro 1-Month Deposit Offered Rate Constant Maturity Index.

Prior to January 1995: 6-Month German Treasury Bill

DIMENSIONAL GLOBAL SHORT-TERM GOVERNMENT VARIABLE MATURITY INDEX (HEDGED TO EUR): Compiled by Dimensional using data by FTSE. Includes securities in the FTSE World Government Bond 1–3 Years and 3–5 Years indices. Countries included are Australia, Austria, Belgium, Canada, France, Germany, Japan, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the UK and the US as data becomes available. Countries with the steepest yield curves are overweight with respect to their market cap weight. Rebalanced monthly. The index has been retrospectively calculated by Dimensional and did not exist prior to January 2019. Accordingly, results shown during the periods prior to January 2019 do not represent actual returns of the index. Other periods selected may have different results, including losses.

DIMENSIONAL TARGETED CREDIT INDEX (HEDGED TO EUR) : Compiled by Dimensional from Bloomberg securities data. Based on securities in the universe of the Bloomberg Global Aggregate Bond Index and Global High Yield Index. Includes global investment grade corporate bonds and global BB corporates only. Eligible currencies: AUD, CAD, CHF, EUR, JPY and USD. Within the universe, the index identifies the yield curves that offer higher expected returns, and the duration ranges on those yield curves offering higher expected returns, and assesses the increased expected returns associated with allocation to bonds with different credit qualities. It then overweights (with respect to their market cap weight) bonds of yield curves, duration ranges and credit qualities that offer higher expected returns. It also employs credit quality, currency and duration requirements relative to the eligible market. Rebalanced monthly. The index has been retrospectively calculated by Dimensional and did not exist prior to January 2020. Accordingly, results shown during the periods prior to January 2020 do not represent actual returns of the index. Other periods selected may have different results, including losses.

DIMENSIONAL GLOBAL CORE PLUS INDEX (HEDGED TO EUR): Compiled by Dimensional from Bloomberg securities data. Based on securities in the universe of the Bloomberg Global Aggregate Bond Index and Global High Yield Index. Includes global government bonds, global investment grade corporate bonds and global BB corporates. Eligible currencies: AUD, CAD, CHF, EUR, GBP, JPY and USD. Within the universe, the index identifies the yield curves that offer higher expected returns, and the duration ranges on those

yield curves offering higher expected returns, and assesses the increased expected returns associated with allocation to bonds with different credit qualities. It then overweights (with respect to their market cap weight) bonds of yield curves, duration ranges and credit qualities that offer higher expected returns. It also employs credit quality, currency and duration requirements relative to the eligible market. Rebalanced monthly. The index has been retrospectively calculated by Dimensional and did not exist prior to January 2019. Accordingly, results shown during the periods prior to January 2019 do not represent actual returns of the index. Other periods selected may have different results, including losses.

DIMENSIONAL GLOBAL TARGETED VALUE INDEX: January 1990–present: Compiled by Dimensional from Bloomberg securities data. Consists of small and mid cap companies whose relative price is in the bottom 50% of their country's small and mid cap universe, after the exclusion of utilities and companies with either negative or missing relative price data. The index excludes securities with the lowest profitability within their country's small cap universe. The index also excludes those companies with the highest asset growth within their country's small cap universe. Profitability is defined as operating income before depreciation and amortisation minus interest expense divided by book equity. Asset growth is defined as change in total assets from the prior fiscal year to current fiscal year. The index monthly returns are computed as the simple average of the monthly returns of four subindices, each one reconstituted once a year at the end of each quarter of the year. Maximum index weight of any one company is capped at 5%. Countries currently included are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the UK and the US. Exclusions: REITs and investment companies. The index has been retrospectively calculated by Dimensional and did not exist prior to April 2008. Accordingly, the results shown during the periods prior to April 2008 do not represent actual returns of the index. The calculation methodology for the index was amended in

January 2014 to include profitability as a factor in selecting securities for inclusion in the index. The calculation methodology for the index was amended in November 2019 to include asset growth as a factor in selecting securities for inclusion in the index.

Prior to January 1990: Constructed by market cap weighting Dimensional US Targeted Value Index and an international targeted value index.

DIMENSIONAL EMERGING MARKETS TARGETED VALUE INDEX:

Compiled by Dimensional from Bloomberg securities data. Consists of small and mid cap companies in eligible markets whose relative price is in the bottom 50% of their country's respective constituents, after the exclusion of utilities and companies with either negative or missing relative price data. The index excludes securities with the lowest profitability within their country's small cap universe. The index also excludes those companies with the highest asset growth within their country's small cap universe. Profitability is defined as operating income before depreciation and amortisation minus interest expense divided by book equity. Asset growth is defined as change in total assets from the prior fiscal year to current fiscal year. The index monthly returns are computed as the simple average of the monthly returns of four subindices, each one reconstituted once a year at the end of each quarter of the year. Maximum index weight of any one company is capped at 5%. Countries currently included are Brazil, Chile, China, Colombia, the Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, South Africa, Taiwan, Thailand and Turkey. Exclusions: REITs and investment companies. The index has been retrospectively calculated by Dimensional and did not exist prior to April 2008. Accordingly, the results shown during the periods prior to April 2008 do not represent actual returns of the index. The calculation methodology for the index was amended in January 2014 to include profitability as a factor in selecting securities for inclusion in the index. The calculation methodology for the index was amended in November 2019 to include asset growth as a factor in selecting securities for inclusion in the index.

FOR PROFESSIONAL USE ONLY. NOT FOR USE WITH RETAIL INVESTORS.

The information in this material is intended for the recipient's background information and use only. It is provided in good faith and without any warranty or representation as to accuracy or completeness. Information and opinions presented in this material have been obtained or derived from sources believed by Dimensional to be reliable, and Dimensional has reasonable grounds to believe that all factual information herein is true as at the date of this material. It does not constitute investment advice, a recommendation, or an offer of any services or products for sale and is not intended to provide a sufficient basis on which to make an investment decision. Before acting on any information in this material, you should consider whether it is appropriate for your particular circumstances and, if appropriate, seek professional advice. It is the responsibility of any persons wishing to make a purchase to inform themselves of and observe all applicable laws and regulations. Unauthorized reproduction or transmission of this material is strictly prohibited. Dimensional accepts no responsibility for loss arising from the use of the information contained herein.

This material is not directed at any person in any jurisdiction where the availability of this material is prohibited or would subject Dimensional or its products or services to any registration, licensing, or other such legal requirements within the jurisdiction.

"Dimensional" refers to the Dimensional separate but affiliated entities generally, rather than to one particular entity. These entities are Dimensional Fund Advisors LP, Dimensional Fund Advisors Ltd., Dimensional Ireland Limited, DFA Australia Limited, Dimensional Fund Advisors Canada ULC, Dimensional Fund Advisors Pte. Ltd., Dimensional Japan Ltd., and Dimensional Hong Kong Limited. Dimensional Hong Kong Limited is licensed by the Securities and Futures Commission to conduct Type 1 (dealing in securities) regulated activities only and does not provide asset management services.

RISKS

Investments involve risks. The investment return and principal value of an investment may fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original value. Past performance is not a guarantee of future results. There is no guarantee strategies will be successful.

Performance data shown represents past performance and is not a guarantee of future results. Current performance may be higher or lower than the performance shown. Performance may increase or decrease as a result of currency fluctuations.

The principal risks of investing in the Dimensional funds may include one or more of the following: market risk, small companies risk, risk of concentrating in the real estate industry, foreign securities and currencies risk, liquidity risk, political risk, tax risk, settlement risk, risk associated with availability of market information, emerging markets risk, banking concentration risk, interest rate risk, risk of investing for inflation protection, fixed income risk and/or fund-of-funds risk. To more fully understand the risks related to an investment in the funds, investors should carefully read each fund's prospectus, KID and KIID.

WHERE ISSUED BY DIMENSIONAL IRELAND LIMITED

Issued by Dimensional Ireland Limited (Dimensional Ireland), with registered office 25 North Wall Quay, Dublin 1, D01 H104, Ireland. Dimensional Ireland is regulated by the Central Bank of Ireland (Registration No. C185067).

Directed only at professional clients within the meaning of Markets in Financial Instruments Directive (MiFID) (2014/65/EU).

WHERE ISSUED BY DIMENSIONAL FUND ADVISORS LTD.

Issued by Dimensional Fund Advisors Ltd. (Dimensional UK), 20 Triton Street, Regent's Place, London, NW1 3BF. Dimensional UK is authorised and regulated by the Financial Conduct Authority (FCA) - Firm Reference No. 150100.

Directed only at professional clients as defined by the rules of the FCA.

Dimensional UK and Dimensional Ireland issue information and materials in English and may also issue information and materials in certain other languages. The recipient's continued acceptance of information and materials from Dimensional UK

and Dimensional Ireland will constitute the recipient's consent to be provided with such information and materials, where relevant, in more than one language.

Performance information is provided by Dimensional UK, as at the date of the material unless otherwise specified. To obtain performance data current to the most recent month-end, visit dimensional.com. Average annual total returns include reinvestment of dividends and capital gains.

This is a marketing communication. Please refer to the prospectus of the UCITS, KID and KIID before making any final investment decisions.

DIMENSIONAL FUNDS PLC:

The Emerging Markets Large Cap Core Equity Fund, Emerging Markets Value Fund, Euro Inflation Linked Intermediate Duration Fixed Income Fund, European Small Companies Fund, European Value Fund, Global Core Equity Fund, Global Core Fixed Income Fund, Global Short Fixed Income Fund, Global Short-Term Investment Grade Fixed Income Fund, Global Small Companies Fund, Emerging Markets Core Equity Lower Carbon ESG Screened Fund, Global Core Equity Lower Carbon ESG Screened Fund, Global Core Fixed Income Lower Carbon ESG Screened Fund, Global Short Fixed Income Lower Carbon ESG Screened Fund, Global High Profitability Lower Carbon ESG Screened Fund, Global Targeted Value Lower Carbon ESG Screened Fund, World Equity Lower Carbon ESG Screened Fund (the implementation and management of the Emerging Markets Core Equity Lower Carbon ESG Screened Fund, Global Core Equity Lower Carbon ESG Screened Fund, Global Core Fixed Income Lower Carbon ESG Screened Fund, Global Short Fixed Income Lower Carbon ESG Screened Fund, Global High Profitability Lower Carbon ESG Screened Fund, Global Targeted Value Lower Carbon ESG Screened Fund, and World Equity Lower Carbon ESG Screened Fund is protected by U.S. Patent Nos. 7,596,525 B1, 7,599,874 B1 and 8,438,092 B2), Global Targeted Value Fund, Global Ultra Short Fixed Income Fund, Global Value Fund, Pacific Basin Small Companies Fund, Sterling Inflation Linked Intermediate Duration Fixed Income Fund, U.S. Core Equity Fund, U.S. Small Companies Fund, World Allocation 20/80 Fund, World Allocation 40/60 Fund, World Allocation 60/40 Fund, World Allocation 80/20 Fund and World Equity Fund are sub-funds of Dimensional Funds plc which is structured as an umbrella fund with segregated liability between sub-funds, established as an open-ended investment company with variable capital under the laws of Ireland with registration number 352043. Dimensional Funds plc is authorised by the Central Bank of Ireland as an undertaking for collective investment in transferable securities (UCITS).

DIMENSIONAL FUNDS II PLC:

The Emerging Markets Targeted Value Fund is a sub-fund of Dimensional Funds II plc (the "Dimensional funds") which is structured as an umbrella fund with segregated liability between sub-funds, established as an open-ended investment company with variable capital under the laws of Ireland with registration number 431052. Dimensional Funds II plc is authorised by the Central Bank of Ireland as an undertaking for collective investment in transferable securities (UCITS).

DIMENSIONAL FUNDS ICVC:

The United Kingdom Core Equity Fund, United Kingdom Value Fund, United Kingdom Small Companies Fund, International Core Equity Fund, International Value Fund, Emerging Markets Core Equity Fund, Sterling Short Duration Real Return Fund and the Global Short Dated Bond Fund are all sub-funds of Dimensional Funds ICVC (the "Dimensional funds"), an investment company with variable capital incorporated with limited liability and registered in England and Wales with registration number IC000258 and authorised by the FCA as a UK UCITS. Dimensional UK is the Authorised Corporate Director of Dimensional Funds ICVC. The sub-funds are operated separately and the assets of each sub-fund are managed in accordance with the investment objective and policy applicable to that sub-fund.

Dimensional Funds ICVC (the "UK Funds"), Dimensional Funds plc and Dimensional Funds II plc (the "Irish Funds") (together the "Dimensional funds") are offered solely under the terms and conditions of the respective fund's current prospectus and applicable UCITS Key Investor Information Document (KIID) and applicable Packaged Retail and Insurance-based Investment Products (PRIIPs) – Key Information Document (KID). Consider the investment objectives, risks, and charges and expenses of the Dimensional funds carefully before investing. For this and other information about

the Dimensional funds, please read the prospectus, KID and KIID carefully before investing. The latest version of the prospectus, applicable UCITS KIID (available in English) and applicable PRIIPs KID (available in English and the appropriate local language) for the UK Funds may be obtained at dimensional.com or by contacting the fund's administrator, or its investment manager at +44 (0)20 3033 3300. The latest version of the prospectus, applicable UCITS KIID (available in English) and applicable PRIIPs KID (available in English and the appropriate local language) for the Irish Funds may be obtained at www.dimensional.com or by contacting the fund's administrator at +353 1 242 5536, its distributor Dimensional Ireland Limited at +353 1 576 9750 or, if in the United Kingdom, its sub-distributor Dimensional Fund Advisors Ltd. at +44 (0)20 3033 3300.

In addition, a summary of investor rights is available at dimensional.com/ssr. The summary is available in English.

Dimensional Funds plc and Dimensional Funds II plc are currently notified for marketing into a number of EU member states under the UCITS Directive. Dimensional Funds plc and Dimensional Funds II plc can terminate such notifications for any Dimensional funds at any time using the process contained in Article 93a of the UCITS Directive. Dimensional Funds plc and Dimensional Funds II plc are also recognised in the United Kingdom by the Financial Conduct Authority under the UK's Overseas Funds Regime and can be marketed in the UK.

The Emerging Markets Core Equity Lower Carbon ESG Screened Fund, Global Core Equity Lower Carbon ESG Screened Fund, Global Core Fixed Income Lower Carbon ESG Screened Fund, Global Short Fixed Income Lower Carbon ESG Screened Fund, Global High Profitability Lower Carbon ESG Screened Fund, Global Targeted Value Lower Carbon ESG Screened Fund and World Equity Lower Carbon ESG Screened Fund (the "ESG Funds") promote sustainability in accordance with Article 8 of Regulation (EU 2019/2088) on sustainability related disclosures in the financial services sector (SFDR). The ESG Funds do not have sustainability investment as their objective but as part of the ESG Funds' investment policy, the Investment Manager does take into account the sustainability impact associated with securities when making investment decisions for the ESG Funds. While the ESG Funds promote sustainability and the Investment Manager takes into account sustainability impact considerations, the ESG Funds' investments are not evaluated against the EU criteria for environmentally sustainable economic activities and, therefore, the "do no significant harm" principle does not apply to the ESG Funds' investments. Consider the investment objectives of the Dimensional funds carefully before investing. For this and other information about the Dimensional funds, please read the prospectus, KID and KIID carefully before investing. Information on sustainability related disclosures in the financial services sector (SFDR) pursuant to Regulation (EU) 2019/2088 in relation to the promoted fund is available at www.dimensional.com/SFDR.

Any references herein to "sustainable" or "sustainability" do not indicate that the ESG Funds commit to make sustainable investments within the meaning of the Sustainable Finance Disclosure Regulation (SFDR). The ESG Funds may promote environmental and/or social characteristics but do not commit to make sustainable investments.

Dimensional Wealth Models

The Dimensional Wealth Models are provided for informational, illustrative and educational purposes only. The Dimensional Wealth Models are intended only for use by a third party financial adviser, wealth manager, private bank, or other duly regulated financial intermediary (each a "Professional Adviser"). The Dimensional Wealth Models are intended for use only by such Professional Adviser as a resource in the development of advice or other investment services from such Professional Adviser to its own clients. The Dimensional Wealth Models shall not be the sole or primary basis for such Professional Adviser's recommendation and/or decision.

Professional Advisers are responsible for making their own independent judgment as to how to use the Dimensional Wealth Models and/or whether to recommend or otherwise implement any trades or strategies for their clients.

By providing the Dimensional Wealth Models, Dimensional Ireland and Dimensional UK, as applicable (each an "Issuing Entity", as the context requires), do not provide any investment service to recipients of the Dimensional Wealth Models, and the Issuing Entity does not agree to provide recipients with the protections afforded to the clients of the Issuing Entity's investment services. The Dimensional Wealth Models are not, and must not be treated as, investment advice, a personal recommendation, investment research, or an investment recommendation by the Issuing Entity.

Investment opportunities discussed or referenced in the Dimensional Wealth Models may not be suitable for all investors, and potential investors must make an independent assessment of the appropriateness of any transaction in light of their own objectives and circumstances, including the possible risk and benefits of entering into such a transaction. Recipients of the Dimensional Wealth Models must not take (or refrain from taking) any investment decision based on the information set out in the Dimensional Wealth Models.

Before making any investment decision, potential investors should seek independent investment, legal, tax, accounting or other professional advice as appropriate, none of which is offered to recipients of the Dimensional Wealth Models by the Issuing Entity. Any recipient who is in any doubt about the investments to which the Dimensional Wealth Models relates should seek advice from a Professional Adviser who specialises in advising on this kind of investment. The Issuing Entity is not responsible for determining the appropriateness or suitability of the Dimensional Wealth Models or any of the investments underlying the Dimensional Wealth Models for any client of a Professional Adviser.

Although the information in the Dimensional Wealth Models is believed to be materially correct, no representation or warranty is given as to the accuracy of any of the information provided. Certain information included in the Dimensional Wealth Models is based on information obtained from sources considered to be reliable. However, any projections or analysis provided to assist the recipient of the Dimensional Wealth Models in evaluating the matters described in the Dimensional Wealth Models may be based on subjective assessments and assumptions and may use one among alternative methodologies that produce different results. Accordingly, any projections or analysis should not be viewed as factual and should not be relied upon as an accurate prediction of future results. The Issuing Entity makes no representation or warranty, express or implied (except as required by law or regulation) regarding the accuracy, completeness or adequacy of the information.

The Issuing Entity has a potential conflict of interest when it establishes the target asset classes, asset allocation objectives or ongoing allocations for the Dimensional Wealth Models, because it will allocate only to asset classes where Dimensional funds are available. The Issuing Entity acts as investment manager, sub-investment manager or investment adviser to the Dimensional funds comprising the Dimensional Wealth Models and is entitled to receive a fee from (or in respect of) each Dimensional funds, as reflected in the prospectus for the Dimensional funds.

The Issuing Entity does not accept any responsibility or liability whatsoever caused by any action taken in reliance upon the Dimensional Wealth Models. Furthermore, to the extent permitted by law, neither the Issuing Entity nor its employees, directors, officers, shareholders or service providers assumes any liability or responsibility nor owes any duty of care for any consequences of any person acting or refraining to act in reliance on the information contained in the Dimensional Wealth Models or for any decision based on it.

dimensional.com