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Safe Withdrawal Rates for Retirees in the United Kingdom

Where did the 4% rule come from and what is the impact of today's low bond yields?

Morningstar Research
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David Blanchett CFP, CFA
Head of Retirement Research
david.blanchett@morningstar.com

Marc Buffenoir
Business Development Director
marc.buffenoir@morningstar.com

Dan Kemp
Chief Investment Officer, EMEA
dan.kemp@morningstar.com

Sue Watt
Vice President, Global Retirement Strategy
sue.watt@morningstar.com

Against the background of the UK pension freedom legislation, it is important that retirees have a reasonable expectation of the proportion of their assets they can withdraw each year to fund their cost of living, while ensuring sufficient capital remains to deliver a similar level of income into the future. This is commonly known as the 'safe withdrawal rate'.

There is a growing body of literature on safe withdrawal rates for retirees, however most of this research is based on the historical returns of assets used by investors in the United States. While there has been some more recent research using projected returns for the United States (Blanchett, Finke, and Pfau, 2013) its applicability to the UK is questionable. Given the unique market environment for UK-based investors today, it makes more sense to base withdrawal rates off the expectations for UK-based investors than the history or projected returns for another country.

In this paper we explore safe withdrawal rates from the perspective of historical returns, both international and domestic, but more importantly we provide estimated safe withdrawal rates for UK-based investors based on our current return expectations. There are three primary findings from this research. First, that while the historical performance of stock and bond markets in the UK has been relatively similar to the global average, future expected returns in the UK, especially in the near-term, are likely to be considerably lower. Second, given these lower returns, safe withdrawal rates are relatively low, and may decrease further when incorporating future improvements in mortality (i.e., people keep living longer in retirement) and the impact of fees. Finally, a balanced portfolio is likely the best allocation for UK retirees. Overall, while these findings are less optimistic than past research on the topic of safe withdrawal rates, they are nevertheless an important starting place for retirees and financial advisers today.

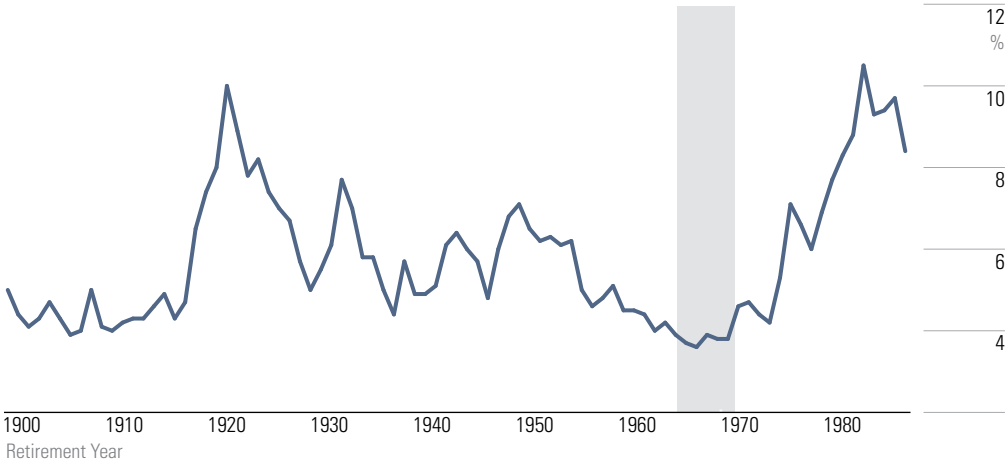
Initial Safe Withdrawal Rates

Research by Bengen (1994), among others, suggests an initial safe withdrawal rate from a portfolio is 4% of the assets, where the initial withdrawal amount would subsequently be increased annually by inflation and assumed to last for 30 years (which is the expected duration of retirement). This finding led to the creation of the "4% Rule," a concept that is often incorrectly applied:

- The "4%" value only applies to the first year of retirement, whereby subsequent withdrawals are assumed to be based on that original amount, increased by inflation.
- Additionally, a retirement period of 30 years may be too short or too long based on the unique attributes of that retiree household.
- The analysis was based entirely on historical U.S. returns, which are not applicable for UK retirees today.

Exhibit 1 provides some insight as to how the "4% Rule" and other withdrawal rate heuristics have largely been determined. Exhibit 1 shows the highest initial rolling safe withdrawal rate for a U.S. retiree from 1900 to 1986, where retirement is assumed to last 30 years and the retirement income need is increased annually by inflation for the duration of retirement.

Exhibit 1 Initial Safe Withdrawal Rate %—Where the 4% Rule Comes From



Source: Morningstar. The returns used in this analysis come from the Dimson, Marsh, and Staunton dataset and reflect a portfolio that is 50% US shares and 50% US bonds.

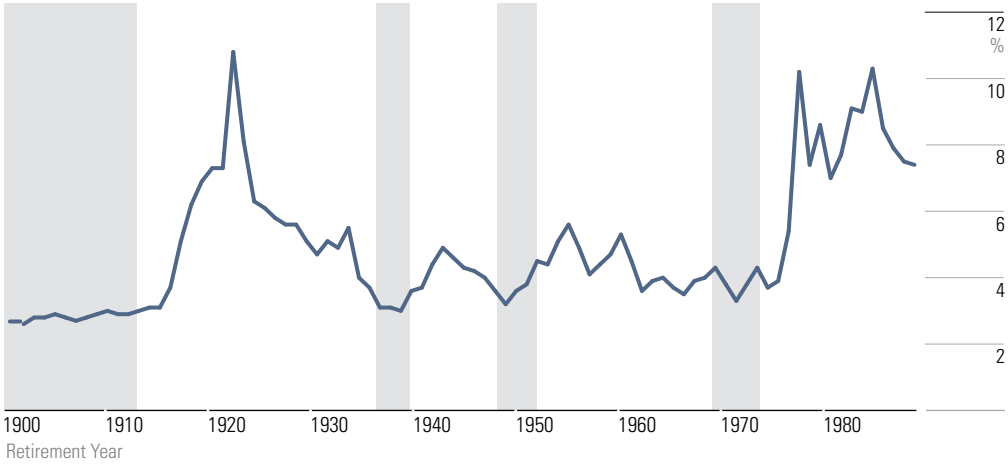
The shaded area shows the worst period for initial safe withdrawal rates over the historical test period and is effectively where the 4% rule originates as 4% represents the highest initial safe withdrawal rate for US retirees.

There are a number of problems extrapolating these results to UK retirees today. First, Bengen did not include fees in his original analysis. There is a definite cost to investing that needs to be considered when estimating withdrawal rates. Second, the analysis assumes retirement lasts 30 years, while in reality the expected duration of retirement, thus respective modelling period, should vary by retiree. Third, this problem ignores the experience of retirees in other countries. Just because a 4% initial withdrawal has been safe in the US, does not mean it would have been safe in Italy, for example (Exhibit 3 demonstrates that it wouldn't). Finally, it assumes that past returns are a reasonable basis for retirees today. While the past provides some window into the future, the markets today are in a different place than historical long-term averages, and this needs to be taken into account when advising a retiree on a safe initial withdrawal rate.

Historical Returns… An International Perspective

Return assumptions are a significant driver when estimating a safe initial withdrawal rate, likely second behind the length of retirement in overall relative importance. While historical US returns provide some context as to how safe a variety of withdrawal rates would have been for US-based investors, it does not create the appropriate historical context for investors in the UK. In Exhibit 2 we recreate the analysis in Exhibit 1, but instead of using historical US returns we use historical returns for a UK investor. We also include a portfolio fee of 1.00%.

Exhibit 2 Initial Safe Withdrawal Rate %—The "4% Rule"… A (Historical) UK Perspective

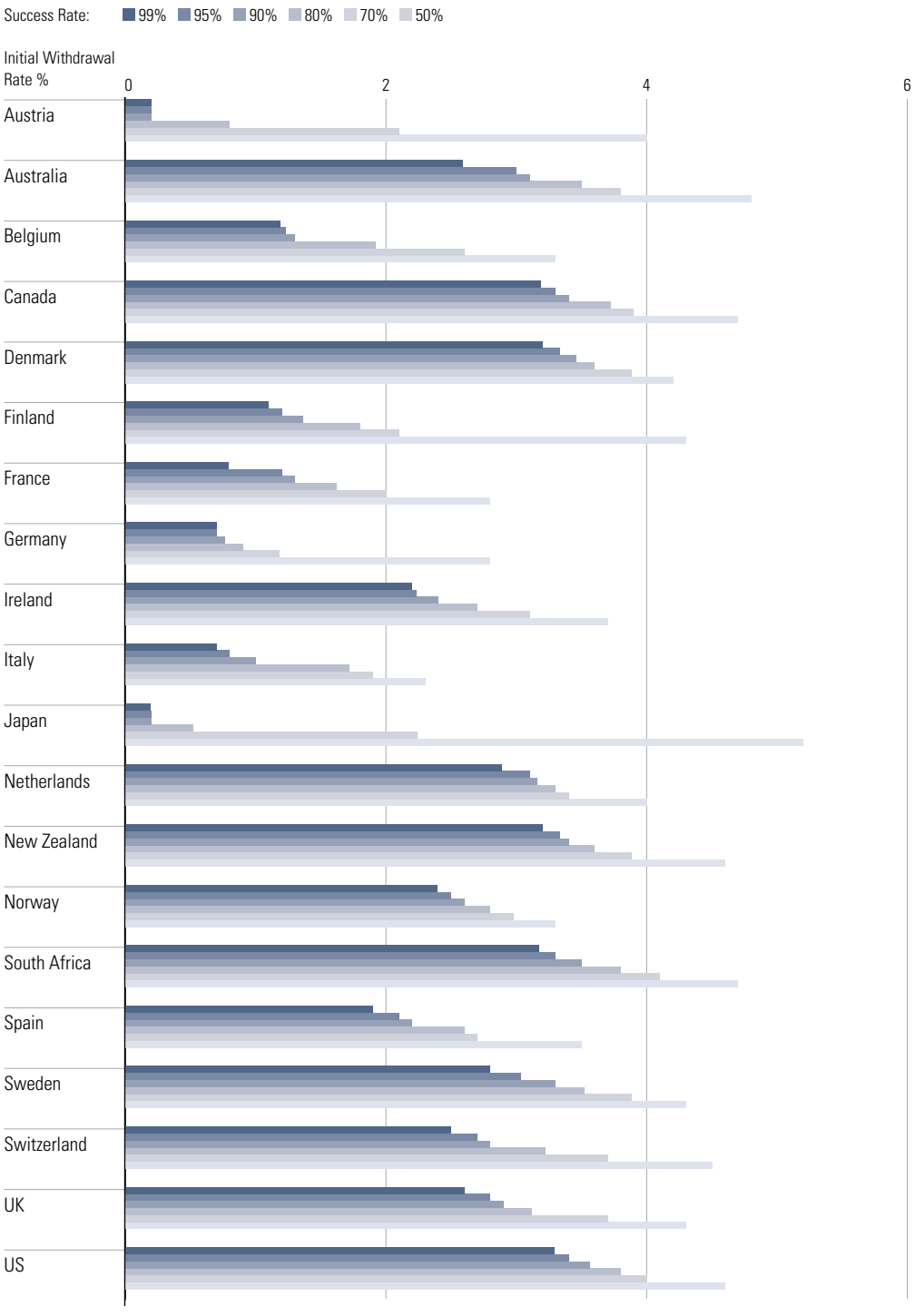


Source: Morningstar.

Had early withdrawal rate research been based on the analysis in Exhibit 2 (i.e., historical returns for the UK), it would not have suggested that a 4% initial withdrawal rate was safe, rather it would have shown approximately 2.5%, since the lowest initial safe withdrawal rate in the UK was 2.5% (versus 4.0% for the US). A 2.5% initial withdrawal rate implies a retiree needs 40 times the desired retirement income goal (1/2.5%=40). This is significantly more wealth than is inferred from the 4% rule, which is only 25 times the desired retirement income goal (1/4%=25). Clearly, the assumed returns have a significant impact on the analysis.

To provide an even greater perspective, this analysis is done for each of the 20 countries in the Dimson, Marsh, and Staunton dataset, with the results included in Exhibit 3. The results in Exhibit 3 include the initial withdrawal for varying target probabilities of success and assume a retirement period of 30 years, that the portfolio is invested domestically in 50% shares and 50% bonds, and an annual portfolio fee of 1.0% of assets.

Exhibit 3 Initial Safe Withdrawal Rates at Various Target Success Rates by Country



Source: Morningstar.

The true safe withdrawal rate varies significantly by country and target success rate. For example, using the historical returns in Japan, a 95% target success rate would yield an initial safe withdrawal rate of .2%, while for the UK a 95% target success rate would yield an initial safe withdrawal rate of 2.8%.

US returns have yielded the highest initial safe withdrawal rates across the 20 countries historically. This suggests initial safe withdrawal rates based on historical US returns may be overly optimistic on a global basis. For example, based on the results in Exhibit 3, using the US returns and targeting a 90% success rate yields an initial safe withdrawal rate of 3.6% (just edging out Denmark at 3.5%). This is the highest initial safe withdrawal rate among the 20 countries and is considerably higher than the 20 country average, which is 2.30%.

The variability of international returns obviously plays an important role when determining initial safe withdrawal rates using historic data. This can be seen in Exhibit 4 which shows the historical inflation-adjusted (real) returns and risk for shares and bonds by country over the entire test period (from 1900 to 2015) as well as the returns for a 50/50 portfolio. It should also be noted that while investors are likely to exhibit a home bias when building their portfolios, the impact of the variance in historic returns across countries is likely to be reduced by the use of international assets.

Exhibit 4 Historical Inflation-Adjusted Returns and Risk by Country: 1900-2015

	Real Stock		Real Bond		50/50 Portfolio	
Country	Return	Std Dev	Return	Std Dev	Return	Std Dev
Austria	0.66	29.85	-3.80	50.96	1.24	30.51
Australia	7.29	17.88	1.67	13.15	4.96	12.26
Belgium	2.79	23.56	0.42	14.98	2.13	16.90
Canada	5.63	16.93	2.26	10.31	4.35	10.54
Denmark	5.54	20.78	3.21	11.83	4.79	13.94
Finland	5.43	29.84	0.20	13.63	3.64	18.14
France	3.25	23.05	0.20	12.98	2.29	15.11
Germany	3.29	31.57	-1.39	15.58	1.76	20.24
Ireland	4.42	22.90	1.55	15.02	3.52	16.51
Italy	2.04	28.43	-1.14	14.42	1.22	18.28
Japan	4.20	29.43	-0.88	19.59	2.56	20.50
Netherlands	5.00	21.31	1.69	9.75	3.94	11.95
New Zealand	6.16	19.34	2.11	8.97	4.55	11.91
Norway	4.21	26.77	1.85	11.98	3.72	15.56
South Africa	7.30	22.05	1.78	10.47	4.97	14.04
Spain	3.61	21.86	1.70	12.14	3.16	14.20
Sweden	5.89	21.09	2.69	12.68	4.88	13.26
Switzerland	4.48	19.42	2.35	9.39	3.80	12.28
UK	5.23	19.55	1.54	13.60	3.72	14.41
US	6.43	19.91	2.00	10.39	4.76	11.96
Average	**4.64**	**23.28**	**1.00**	**14.59**	**3.50**	**15.63**

Source: Morningstar.

UK-based investors have experienced returns that are broadly in-line with other countries historically. The real equity return of 5.23% ranks the UK 9th of 20, the real bond return of 1.54% ranks 13th, and the 50/50 portfolio real return of 3.72% ranks 11th best. These relatively average returns result in

historical safe initial withdrawal rates that are slightly higher (approximately .5% higher, on average) than the international averages across different target probabilities of success but lower than the historical US initial withdrawal rates (approximately .5% lower, on average).

Investing and Retiring in the United Kingdom Today

In common with other countries with funded company pension systems, the UK is experiencing a gradual erosion of the traditional defined benefit (DB) provision in favour of defined contribution (DC) schemes. Recent attempts to re-inject some collective ethos through Collective Defined Contribution ideas have not been met with political success as yet. Equally, private provision in DC form has not filled the gap.

With the onus firmly on individuals to plan and save for retirement, the UK government has responded on multiple fronts to remould the pension provision framework.

1. Increasing participant numbers in employer-sponsored defined contribution plans. The auto-enrolment legislation of 2012 seeks to increase employee participation in workplace defined contribution. Whereas DB schemes were primarily the preserve of large employers, auto-enrolment aims to provide a retirement savings vehicle to millions of people working for smaller employers. According to the UK Pensions Regulator, over 6.1 million employees have been auto-enrolled, while at the same time, according to the UK Office for National Statistics, active membership in private sector DB schemes hovers around 1.6 million.

   This reform will hopefully change not just the trends in pension savings, but more broadly the mindset of both employers and employees and foster engagement generally. To support the legislative initiative, the UK government has funded a publicly-owned trust, known as the National Employee Savings Trust (NEST), providing target-date funds primarily as the investment option.

2. Bringing professional management through technology. One of the traditional criticisms of the DC approach is that it lacks the professional money management capability that is central to DB schemes and leaves savers to their own devices. Spurred by the advances in robo-advice, the government and regulator have actively engaged with innovators that have the potential to offer professional management at lower cost and for investors with smaller asset bases. Project Innovate and the Regulatory Sandbox are some of the initiatives designed to give these approaches a chance.

3. Revisiting the regulation of advice. The build-up of increasingly strict advice rules over time has yielded an 'advice gap' in which millions of people are deemed uneconomic by financial advisers. The UK authorities are currently re-evaluating the balance between advice and guidance, to encourage simpler solutions at lower costs.

4. Lastly, the gradual reform of retirement income away from annuities, although driven in part by the necessity created by low Gilt yields, was the last element of 'freedom' that savers had come to expect.

The reforms implemented in 2015 have ushered an era of unfettered freedom for UK retirees in personal pensions. While the old rules had already been relaxed in 2014, there were still income caps for retirees unable to secure a sufficient income under a drawdown approach. Consequently annuitisation remained the main source of retirement income for most. Following the announcement of the new rules, annuity sales fell dramatically and subsequently drawdown has become the preferred option for retirees. However, by the end of 2015 a more balanced picture started to emerg, reflecting the difficult decisions that retirees need to make in the absence of affordable and trusted sources of guidance amid choppy asset markets.

United Kingdom Equity Market Characteristics

The stock market in the UK represents only approximately five percent of global markets. It follows that investment opportunities in the UK are somewhat restricted when compared to global markets. Exhibit 5 includes information about how the weights to several industries vary for the UK stock market (as proxied by the Morningstar UK index) versus the world (as proxied by the MSCI ACWI).

The sector weightings for the Morningstar UK index are very similar to other common UK stock market indexes, such as the FTSE 100 or the MSCI UK indexes. The UK is relatively underweight information technology and overweight consumer staples compared to the global average.

Exhibit 5 Sector Weights: The United Kingdom versus the World

GICS Sector	Morningstar UK GR GBP %	MSCI ACWI All Cap NR USD %
Energy	11.377	6.116
Materials	5.799	5.194
Industrials	9.137	11.564
Consumer Discretionary	12.495	13.288
Consumer Staples	18.391	9.949
Healthcare	9.192	11.398
Financials	20.565	20.674
Information Technology	2.893	14.809
Telecom Services	5.73	3.558
Utilities	4.42	3.448

Source: Morningstar. Portfolio date 03/31/16.

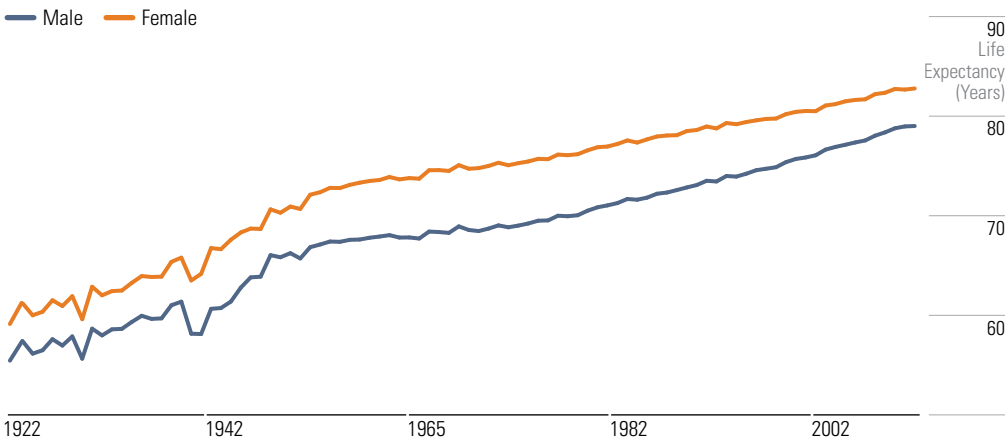
It is also worth noting that in addition to sector concentration, the UK stock market also exhibits issuer or security specific concentration. The top fifteen stocks make up approximately 51.35% percent of the MSCI United Kingdom Index as of 31 March, 2016.

Importantly, the UK pension industry has long recognised the importance of international diversification and today allocations to non-UK equities exceed allocations to UK equities by a significant margin. A home country bias in equity exposure is something seen in many markets around the world and there are arguments for this to exist to some extent (e.g., the matching of assets and liabilities), but while the UK market is reasonably diversified at the time of writing, it has periodically experienced episodes of great sector concentration that have reinforced the attractiveness of international diversification.

Longevity Risk

The other important risk when considering safe withdrawal rates is longevity risk. Exhibit 6 includes information about how life expectancy for a newborn has changed in the UK from 1922 to 2013. Life expectancies have increased by 23.83 years for males and 23.92 years for females. For children born in 2013, life expectancy was 79.01 years and 82.78 years for a boy and girl, respectively.

Exhibit 6 Life Expectancy for a Newborn (Years): 1922–2013



Source: The Human Mortality Database.

The Human Mortality Database tables are based on the period life expectancy methodology, which is the average number of years a person will live if the age-specific mortality rates at that point in time were to be applied for the rest of the person's life. The reality is that mortality rates are more than likely to improve in the future due to advances in technology and medicine, so the period tables are likely to underestimate the number of years someone could expect to live. The cohort life expectancy method takes into account assumptions of improvements in mortality rates over a person's lifetime. In other words, instead of being based on the mortality rates for all ages in a given year, the cohort life expectancy approach takes the age specific mortality rate year by year for the particular year in which the person would be that age. Cohort life expectancy is always higher than period life expectancy because cohort life expectancy makes allowance for future mortality improvements. Projections based on both the period and cohort life expectancy methods are highlighted in Exhibit 7 below.

Exhibit 7 Projected Life Expectancy in the United Kingdom (Years)

	2014		2039		2064	
	Period	Cohort	Period	Cohort	Period	Cohort
Life expectancy at birth						
Male	79.3	90.4	84.1	93.9	87.2	97.4
Female	83	93.2	86.9	96.5	89.8	99.8
Life expectancy at Age 65						
Male	18.6	21.2	22.3	24	—	—
Female	21.1	23.5	24.2	26.1	—	—

Source: UK Office for National Statistics.

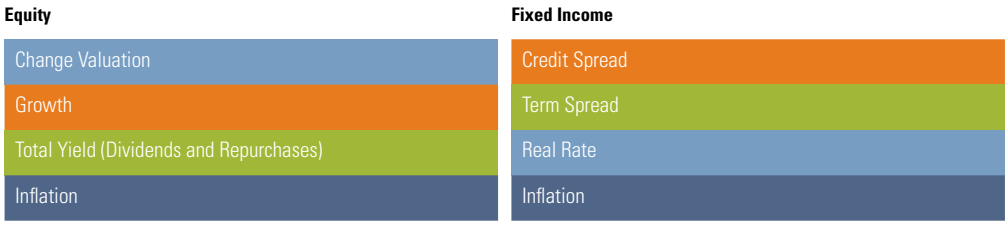
The information in Exhibit 7 suggests that retirement is going to last longer and longer. This is a risk that is not likely fully understood by UK investors today.

Return Expectations

It is impossible to predict the future; it is, however, possible to create a series of long-term valuation-implied returns based on the current price of assets. While using historical returns is sometimes viewed as a simpler path than attempting to forecast returns, we believe using forward-looking returns is the best approach since it incorporates today's market conditions.

Morningstar creates valuation models for a large number of assets including cash, domestic and international fixed interest, domestic and international property, and domestic and international shares. Rather than use historical asset class projections, we use a supply-side building-block approach to create valuation implied returns. First introduced by Diermeier, Ibbotson, and Siegel (1984), and later adapted to stocks by Ibbotson and Chen (2003), the supply-side model is based on the idea that equity returns can be decomposed into underlying economic and corporate fundamentals. Fixed interest returns are derived using a similar approach based on expectations for cash rates, inflation and credit spreads. These long-term expectations are then modified to reflect the current deviation of the asset class from Morningstar's estimate of fair value. These concepts are displayed visually in Exhibit 8.

Exhibit 8 Building Blocks for Equity and Fixed Income Returns



Source: Morningstar.

Long-term returns for most capital markets are generally estimated to be lower than observed in the last century. This is particularly the case within equities where above-average valuations in many markets have diminished future return expectations. Interest-generating assets are also being affected by lower prevailing market yields. Morningstar uses several valuation models to estimate the fair value as our research suggests that a combination of multiple valuation measures has a significantly better predictive power than any single model. Specifically, our valuation models rely on several forward-looking measures of normalised earnings such as profit margins, return on book-equity and inflation-adjusted average earnings over the business cycle. Other equity building blocks incorporate earnings growth, total yield (dividends and buybacks) and inflation. Having estimated the fair value of the equity asset classes, we assume that prices revert to fair value over a 10-year period.

Exhibit 9 includes information about our projected returns for a variety of asset classes, inflation is assumed to be 2.05%.

Exhibit 9 Arithmetic Return and Risk Assumptions for Various Investments in the United Kingdom

	Return Period			
Asset Class	Next 10 Years	Years 11–20	Years 21+	Standard Deviation
UK Equities	9.83	9.49	9.49	17.96
International Equities	5.97	8.71	8.73	15.04
UK Direct Property	4.96	6.57	6.57	10.01
Global Bonds	2.36	4.23	5.5	9.39
UK Government Bonds	1.43	3.45	5.2	8.25
UK Corporate Bonds	2.02	3.89	5.58	10.36
Cash	1.38	3.05	3.61	1.34

Source: Morningstar. Arithmetic returns are used in the return projections. The returns shown are before fees, taxes and inflation.

Safe Withdrawal Rates… A Forward-Looking Perspective

In the previous sections we provided a review of some of the risks for UK retirees on making withdrawal rate decisions based on US historical equity and bond returns. In this section, we run additional forecasts to determine safe withdrawal rates for UK retirees using the expected returns from Exhibit 10. The portfolios used in these examples are built on a more diversified combination of asset classes than used in the previous simulations. Some of the potential allocations are included in Exhibit 10.

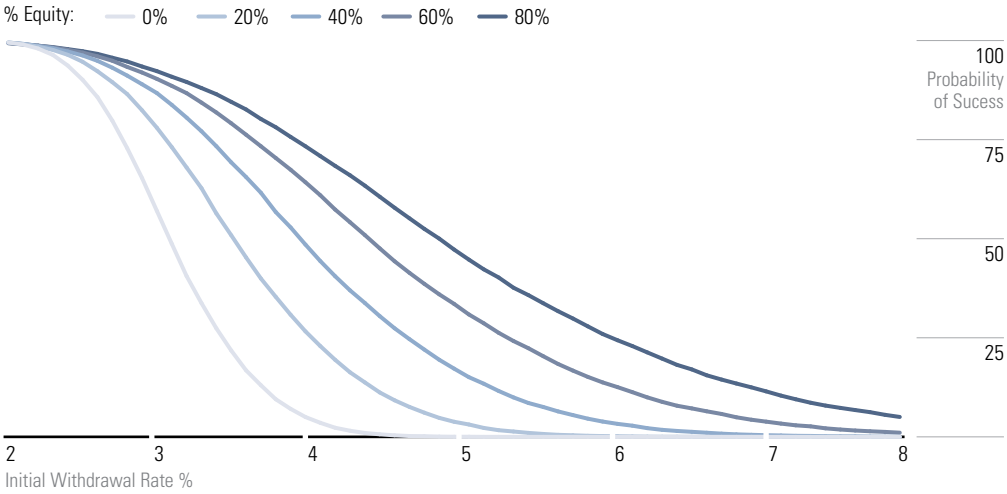
Exhibit 10 Portfolio Breakdown %

Equity Allocation	0	20	40	60	80	100
UK Equities	0	11	18	25	33	41
International Equities	0	7	18	30	41	55
UK Direct Property	0	2	4	5	6	4
Global Bonds	17	14	12	10	5	0
UK Government Bonds	37	29	21	13	7	0
UK Corporate Bonds	26	21	15	10	5	0
Cash	20	16	12	7	3	0
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Morningstar.

Exhibit 11 includes information on the probability of success for various initial withdrawal rates based on different equity allocations (0% to 80% in 20% increments), under the assumption that retirement lasts 30 years.

Exhibit 11 Success Rates for Various Initial Withdrawal Rates and Portfolios (30-year retirement period)

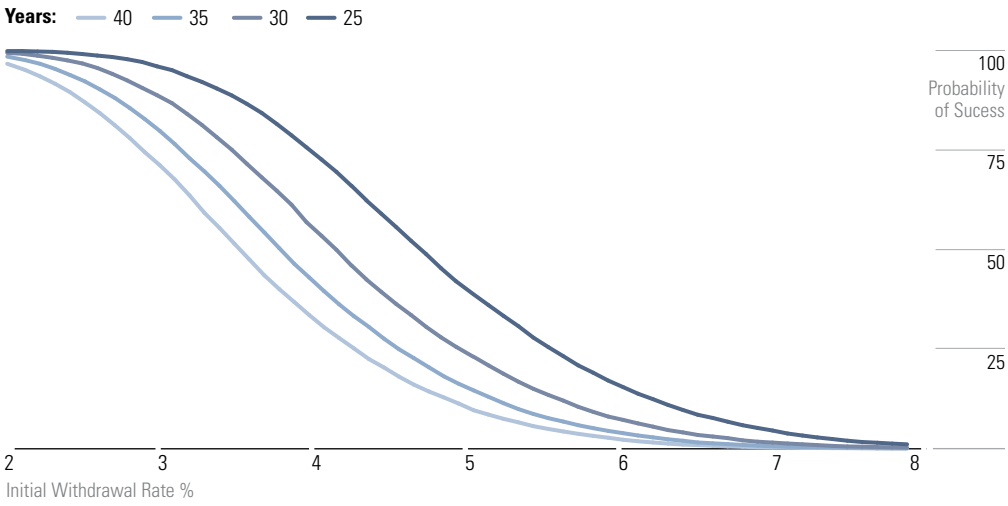


Source: Morningstar.

As shown in Exhibit 11, portfolios with higher allocations to equities have higher initial withdrawal rates but also tend to have more risk. Therefore, it's important to balance the potential for a lower initial required savings amount (i.e., higher initial withdrawal rate) with the additional risk incurred during retirement. Most retirees are not comfortable taking excessive risk in their portfolios, therefore, it's important to strike a good balance between the two.

Exhibit 12 includes information on the probability of success for various initial withdrawal rates based on different retirement periods, under the assumption that the portfolio is invested in 50% shares and 50% bonds. The chart illustrates the large impact the retirement period can have on the initial withdrawal rate, in particular the jump from 20 to 30 years. At the 70% probability level, increasing the retirement period from 20 to 30 years reduces the initial withdrawal rate by approximately 26% (5.7% to 4.2%). Similarly, the probability of success for a 4% initial withdrawal rate is 99% for a 20-year period, 78% for a 30-year period, and 46% for a 40-year period.

Exhibit 12 Success Rates for Various Initial Withdrawal Rates and Retirement Periods (50% shares & 50% bonds)



Source: Morningstar.

Exhibit 13 has been provided to include additional information about specific appropriate withdrawal rates for different portfolio allocations, retirement periods, and target success levels.

Exhibit 13 Withdrawal Rates by Portfolios… Time Period +Target Success Rate

Portfolio % / Probability of Success %	**Retirement Period** (Years) 20	25	30	35	40
0% Equities					
99	3.2	2.5	2.0	1.7	1.5
95	3.6	2.8	2.3	2.0	1.7
90	3.8	3.0	2.5	2.1	1.9
80	4.0	3.2	2.6	2.3	2.0
70	4.2	3.3	2.8	2.4	2.2
50	4.5	3.6	3.0	2.7	2.4
20% Equities					
99	3.2	2.5	2.1	1.8	1.6
95	3.7	2.9	2.4	2.1	1.9
90	3.9	3.1	2.6	2.3	2.1
80	4.3	3.4	2.9	2.6	2.3
70	4.5	3.6	3.1	2.7	2.5
50	4.9	4.0	3.5	3.1	2.8
40% Equities					
99	3.2	2.5	2.1	1.8	1.6
95	3.7	3.0	2.5	2.2	2.0
90	4.1	3.3	2.8	2.5	2.2
80	4.5	3.7	3.2	2.8	2.6
70	4.8	4.0	3.4	3.1	2.8
50	5.4	4.5	3.9	3.5	3.3

Portfolio % / Probability of Success %	**Retirement Period** (Years) 20	25	30	35	40
60% Equities					
99	3.1	2.5	2.1	1.8	1.6
95	3.8	3.1	2.6	2.3	2.1
90	4.2	3.5	3.0	2.6	2.4
80	4.7	3.9	3.4	3.1	2.8
70	5.1	4.3	3.8	3.4	3.1
50	5.8	4.9	4.4	4.0	3.7
80% Equities					
99	3.1	2.4	2.1	1.8	1.6
95	3.9	3.2	2.7	2.4	2.2
90	4.3	3.6	3.1	2.8	2.6
80	5.0	4.2	3.7	3.3	3.1
70	5.4	4.6	4.1	3.7	3.5
50	6.3	5.4	4.9	4.5	4.2
100% Equities					
99	3.0	2.4	2.0	1.8	1.6
95	3.9	3.2	2.8	2.5	2.3
90	4.4	3.7	3.3	2.9	2.7
80	5.2	4.4	3.9	3.6	3.3
70	5.7	4.9	4.4	4.1	3.8

Source: Morningstar.

The initial savings required to fund retirement can be estimated by taking 1 divided by the target initial withdrawal rate. For example, if 4% is the assumed safe withdrawal rate, the initial savings required to fund the retirement income goal would be 25 times that income need (1/4%=25x). The initial withdrawal rates in Exhibit 13 differ significantly whereby longer retirement periods, higher probabilities of success, and more conservative portfolios tend to yield lower initial withdrawal rates. The impact of the probability of success is definitely notable. For example, assuming a 40% equity portfolio and a 30-year retirement period, a 99% probability of success yields an initial withdrawal rate of 2.1% (1/2.1%=48x multiple) versus an initial withdrawal rate of 3.9% (1/3.9%=26x multiple) for a 50% probability of success, which are significantly different levels of required savings. Overall, the results in Exhibit 13 suggest the actual amount of required savings to fund retirement is a very personalised and complex decision where a financial adviser has the potential to add significant value.

Implications

How should retirees and financial advisers use this research? First, the assumed retirement period should vary by client. Recognise that a 30-year time horizon is ideal for a hypothetical 65-year old retiree who dies at age 95. But based on the life tables, remaining life expectancy at age 65 is less than 30 years (approximately 22 years), so many will die with money unspent. Our simulations with retirement lasting over 30 years resulted in some relatively low safe initial withdrawal rates; however, it may be possible to hedge this longevity risk through annuitisation (the pooling of longevity risk).

Most retirees will also not need to spend the same amount every year. For couples, the longer-lived member won't spend as much as a single-person household. Retirees generally decrease spending as they experience physical and mental limitations throughout retirement, although spending may rise later in life due to medical costs. In addition, most retirees are willing to cut spending a little when markets don't do as well as they'd hoped. Incorporating variability into spending can increase the safe initial withdrawal rate significantly.

The probability of success is only one way to measure outcomes for a retiree. It fails to show the magnitude of the failures early in retirement, and it doesn't consider the security of retirees who live well beyond the 30-year timeframe. By neglecting to consider the magnitude of failure, portfolio risk is increased, leaving retirees vulnerable to adverse market events, particularly those early in retirement.

The results of this analysis suggest that a safe initial withdrawal rate for a married couple, both age 65, who invest in a balanced portfolio (with 40% equities) with a reasonably high target probability of success (80%), is approximately 3.2% (assuming retirement lasts 30 years). A 3.2% initial withdrawal rate means retirees need approximately 31 times the portfolio income goal. (1/3.2%=31.25). For example, if a retiree wanted £10,000 of income per year during retirement, increased annually by inflation, the required balance initial balance would be approximately £312,500. While this seems like an incredibly high level of required savings, it is roughly equivalent to the monies required to purchase an annuity. For example, according to annuity rates available from the Financial Times , accessed on 26 April 2016 for a joint couple, both age 65, who wanted

joint income increased annually for life with a 3% escalation (i.e., approximately inflation) and 50% survivor benefit, would cost £300,000 to generate £10,000 a year for life. This translates into a payout yield (which is the income divided by the purchase price) of 3.345% which is roughly in-line with the safe initial withdrawal rate. However, an important difference between an annuity and generating income from a portfolio, is that an annuity guarantees income for life, while the portfolio does not.

Conclusions

This paper provides a relatively comprehensive overview of safe withdrawal rates for retirees based on both historical returns and forward-looking returns. Overall these findings suggest that financial advisers and retirees in the United Kingdom should use lower initial safe withdrawal rates than noted in prior research—the lower end of the range now starts towards 2.5% or 3.0% and not the previous 4.0%. The generous capital market returns of the prior century that bolstered a comfortable and long-lasting retirement portfolio may give 21st-century retirees a false sense of security.

The paper also highlights the way probability of success can be used to understand potential outcomes. While expected returns are a mid-point operating at the 50% probability of success, our definition of "initial safe withdrawal" has been calculated in the range of 70% to 99% success. Helping retirees understand the certainty of retirement incomes in this context is an important step to better meeting expectations.

While this analysis provides a useful framework to consider the question of retirement spending, it also highlights the importance of understanding the specific needs and preferences of a retiree in framing investment objectives.

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1 Oliver's Yard
55-71 City Road
London
EC1Y 1HQ