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# The EDHEC-Princeton Retirement

# Goal-Based Investing Index Series

# July 2018

## About the EDHEC-Princeton Goal-Based Investing Index Series

The EDHEC-Princeton Goal-Based Investing Index Series is a joint initiative of EDHEC-Risk Institute and the Operations Research and Financial Engineering (ORFE) Department of Princeton University which aims to promote the use of state-of-the-art goal-based investing principles in retirement investing. At the start of this initiative is the recognition that none of the existing “retirement products” provides a completely satisfying answer to the threefold need for security, flexibility and upside potential. Annuities offer security, but at the cost of fees and surrender charges. Target date funds have more moderate costs and they have growth potential, but they offer no guarantee in terms of wealth at the horizon or in terms of replacement income. This is a concern because the evolution of accounting and prudential regulations have led to a massive shift from defined-benefit pension to defined-contribution pension schemes across the world, implying a transfer of retirement risks from corporations to individuals.

To foster interest in the investment industry for the launch of new forms of retirement investment *solutions*, EDHEC-Risk Institute has partnered with Princeton University’s ORFE department to launch the EDHEC-Princeton Retirement Goal-Based Investing Index series. The first family of indices, called the Retirement Goal Price Index series, represents the price of $1 of retirement wealth or $1 of replacement income per year. This number, which is available for a range of retirement dates, can be used to evaluate the purchasing power of savings in terms of retirement wealth or retirement income and answer the question: are my savings sufficient to secure my wealth or income objective? The second family, the actual Retirement Goal-Based Investing Index series, represents the performance of improved forms of target date funds invested in a goal-hedging portfolio (GHP) and a performance-seeking portfolio (PSP). The role of the GHP is to replicate changes in the price of retirement wealth or replacement income, i.e. to replicate the performance of a Goal Price Index. The PSP is introduced to have a chance to increase the purchasing power of savings, which will happen in effect if the PSP outperforms the GHP. If it underperforms, the allocation policy implemented in the improved target date fund ensures that short-term losses in purchasing power are limited in size: in the Index series, the cap is set to 20% per year. In a nutshell, the investment rule is to increase the percentage allocation to the PSP as long as it performs well with respect to the GHP and to reduce it when the situation reverses.

To design the EDHEC-Princeton Goal-Based Investing Index series, EDHEC-Risk Institute has built on its expertise in the fields of asset-liability management and goal-based investing. This expertise has been developed since the Institute’s foundation in 2001 through a number of partnerships with prestigious industry players, including notably the leading provider of comprehensive wealth management and investment services Merrill Lynch, who supported a research chair on goals-based wealth management. The values of the indices are published on EDHEC-Risk Institute website at

<https://risk.edhec.edu/indices-investment-solutions>

Also available on the website are research papers on goal-based investing and its application to the retirement problem, the detailed construction rules of the indices and a number of articles published in the general or the financial press.

## A Few Keys to Understand Index Values

### Goal Price Index Series

* These indices represent the price of $1 of retirement wealth or $1 of replacement income per year. The objective (wealth or income) and the retirement year are in the index name;
* Over long periods, inflation is a concern, so indices are also calculated with a cost-of-living-adjustment (COLA) of 2% per year. By construction, an index with COLA is greater than an index with the same objective and retirement year but with no COLA;
* As a general rule, the index value tends to increase as retirement date approaches (horizon effect), but it co-moves negatively with long-term interest rates, which are driven by the market prices of US Treasury securities (interest rate effect): higher rates imply lower index values and lower rates imply higher index values (like for regular bonds), and index changes are the sum of these possibly conflicting effects;
* Under most circumstances, a term structure is observed: the index value is decreasing with respect to the retirement year. In other words, it costs more to secure $1 of wealth or $1 of income when the retirement year is close (e.g., 2023) than when it is far ahead (e.g., 2053).

### Goal-Based Investing Index Series

* These indices represent the value of a dynamic portfolio strategy invested in a performance-seeking portfolio (PSP) and a goal-hedging portfolio (GHP). The GHP replicates the performance of a Goal Price Index;
* Each Goal-Based Investing Index has the same characteristics (wealth or income objective and retirement year) as the Goal Price Index that its GHP replicates;
* By construction, and because the annual cost-of-living-adjustment (COLA) is constant (2% per year), an index with COLA has exactly the same performance as the index with the same characteristics (objective and retirement year) but with no COLA;
* The PSP is taken to be the a broad equity index, namely the US cap-weighted index calculated by ERI Scientific Beta;
* Together with index values, the website reports the index composition (past and current) and the estimated probabilities for the index to reach “aspirational goals”, defined as levels of retirement wealth or replacement income that an individual was unable to secure with his/her resources in January 2018 but that he/she expects to reach by retirement if markets perform sufficiently well;
* Probabilities are also reported for a deterministic target date fund invested in equities and a standard bond portfolio.

## July 2018 Highlights

### Goal Price Index Series

* The 2038 Goal Price Index for an income goal with no cost-of-living-adjustment is 8.57: this means that as of July 2, 2018, it costs $8.57 to secure $1 of replacement income every year starting in January 2038 for a period of 20 years;
* Since January 2018, index values have remained rather stable. US interest rates have slightly increased: the yield on 10-year Treasury securities was at 2.46% on January 2 and is now at 2.84% after a peak at 3.11% in May. Higher rates imply in principle lower index values (just like they imply lower bond prices), but the horizon effect, which implies higher index values as time goes by, has offset this effect.

### Goal-Based Investing Index Series

* Since January 2018, the PSP (the equity portfolio) has outperformed all GHPs (replicating the Goal Price Indices). As a result, and in line with the rule-based allocation policy, all indices have a substantial allocation to the PSP, but the effect is more pronounced for long horizons, because equity allocation tends to increase with the horizon, like in standard target date funds: the 2023 indices for an income goal have 53.2% in PSP, the 2038 ones have 86.0% and the 2058 ones are 100% invested in PSP. These numbers will not decrease significantly until market conditions change and feature rising bond prices rising and falling equity prices;
* In June, however, the PSP posted a slightly negative return of – 0.15%, while GHPs had small positive returns (e.g., 0.93% for the 2038 index for an income goal). As a result, indices had either small positive or negative returns (e.g., – 0.15% for the 2058 index for an income goal, and 0.21% for the 2023 index). Negative returns were posted by those with the heaviest PSP allocation, i.e. by those with the longest horizons;
* Probabilities of reaching aspirational goals are very close for the index and for the deterministic target date fund, meaning that these strategies are close in terms of upside potential. But the indices have much greater probabilities of respecting the annual loss objective, especially over long horizons: the 2058 target date fund has only 19% chances of respecting this goal when the goal is expressed in terms of replacement income.