Goal Price Index Series - Highlights

July 2019 Highlights

- After a small increase in April, US long-term rates resumed their decline in May and June, and on 1 July, the 10-year Treasury constant maturity rate was at 2.03%, an unprecedented level since November 2016. As usual, declining interest rates push up the values of Goal Price Indices, because future replacement income cash flows are discounted at lower rates. In other words, it costs more to acquire every annual dollar of replacement income for a given time to retirement when rates are lower. In addition, index values tend to increase as time goes by because the remaining time to cash flows gets shorter;
- As a consequence of these two effects, index values were higher in July than in April. Taking the example of an individual who plans to retire in 2038, the price to pay to acquire $1 per year of non-indexed replacement income in April was $8.84, and the price of $1 per year of cost-of-living-adjusted income was by definition higher, at $15.23. In July, these prices had grown to $9.68 and $16.62 respectively;
- These figures can also be expressed by giving the purchasing power in terms of income of a fixed amount of savings, say $100,000. In April, the $100,000 could finance $11,312 per year of non-adjusted income, or $6,566 of adjusted income, expressed in dollars of April 2019. In July, the same $100,000 could finance only $10,331 or $6,017 per year;
- For this particular individual, the returns on the non-adjusted index and its adjusted counterpart from April to July were respectively 9.50% and 9.13%. It is interesting to note that over the same period, an investment in a 3-month Treasury bill would have produced a return of approximately 0.6%, given an annual 3-month Treasury bill rate of about 2.4%. So, these bills would have severely underperformed the indices. These numbers highlight that short-term bills are not suitable to reliably hedge against the impact of declining interest rates on Goal Price Indices, and that a dedicated *goal-hedging portfolio* is needed for that purpose.

April 2019 Highlights

- After a decrease during the last quarter of 2018, US long-term rates were roughly stable in January and February 2019, and they started to decrease again in March. The 10-year Treasury rate, which reached a peak above 3.2% in October 2018, fell down to 2.5% at the beginning of April 2019. A rise in interest rates is, in principle, good news for investors who are preparing for retirement because it implies that, for a given time to retirement, it costs less to acquire $1 of replacement income. But reasoning with a fixed retirement date in mind, the shortening of the horizon can absorb the effects of higher interest rates. Indeed, the price of $1 of replacement income – in other words, the Goal Price Index – increases when the horizon shortens, other things being equal. All in all, the Goal Price Indices were almost at the same levels at the beginning of April 2019 as at their inception date, in January 2018;
- Taking the example of an individual who plans to retire in 2038 and targets fixed replacement income for 20 years starting in 2038, it cost $8.85 in January 2018 to purchase $1 per year of income, and $8.84 – an almost identical price – for the same stream of income in April 2019. Put differently, this person could have purchased $11,299 per year of income with $100,000 at the index inception, and $11,312 per year in April;

- That is not to say that during their first year of existence, the Goal Price Indices remained stable. In November 2018, they were at lower levels than in January. For the above investor, the price of $1 of income was $7.70 at that time, versus $7.98 in January of the same year. This was due to the increase in long-term rates that took place during the first 10 months of 2018;
- Indices with a COLA have experienced a slight decrease when compared to their inception levels. Taking again the example of an individual retiring in 2038 but now targeting replacement income growing by 2% per year in order to hedge against the effects of rising consumer prices, the price to pay per dollar of replacement income was $15.64 in January 2018, and only $15.23 in April 2019.

January 2019 Highlights

- As usual, monthly changes in Goal Price Indices are mainly driven by changes in US long-term interest rates. The first 10 months of 2018 featured an increase in long-term rates, with the 10-year rate growing from about 2.4% right after New Year’s Eve to more than 3% in October. In contrast, the last quarter saw a decrease that took the 10-year rate back to 2.7% at the turn of the year. As a result, all Goal Price Indices start the year at higher levels than where they were in early December;
- Taking the example of an individual who plans to retire in 2038 and targets fixed replacement income for twenty years starting in 2038, it cost $7.98 in December 2018 to acquire $1 per year of income. As of January 2019, the price of the same stream of replacement income has risen to $8.46. Put differently, this person could have purchased $12,531 per year with $100,000 in December 2018, but the same amount of retirement savings in January 2019 can only finance $11,820 per year.

October 2018 Highlights

- Yields on US government debt are still increasing, borne by good economic statistics in the US and resurging fear for inflation. The rate on 10-year Treasury bonds had risen above 3.20% on October 10, at unprecedented levels since July 2011. Rising interest rates imply lower bond prices, and the Goal Price Indices are no exception since they are similar to the prices of fixed income products;
- All Goal Price Indices are now at lower levels than in January 2018. For instance, in January, it cost $8.85 to purchase one dollar of replacement income for 20 years beginning in 2038. In October, it cost only $8.03: this may seem a small decrease, but for an investor endowed with $100,000 of retirement savings and planning to retire in 2038, this amounts to a significant increase of $1,154 per year in replacement income;
- In view of resurfacing expectations of high inflation, investors may consider acquiring cost-of-living-adjusted replacement income to make sure that they will be able to to sustain a standard of living, not just a nominal amount of consumption, in retirement. This month, it costs $13.98 to have $1 of October 2018 every year beginning in 2038. This is much more than (exactly, 1.74 times as high as) the $8.03 required for one dollar of income, but one must keep in mind that with a cost of living adjustment of 2% per year, $1 at the beginning of retirement in 2038 is worth $1.46 of October 2018, and $1 of 2058 is worth $2.17 of today. From 2038 to 2058, nominal replacement income is on average 1.78 times as high as without inflation adjustment, a ratio close to 1.74.

EDHEC-RISK Institute

July 2018 Highlights

- 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.

A Few Keys to Understand Index Values

- 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 the 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 effect 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).

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 that aims to promote the use of state-of-the-art goal-based investing principles in retirement investing. At the root 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, notably including 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 financial press.