DRW Investment Research

The Short Series on Retirement Planning

Edition 3

Evaluating the outcome of different drawdown rules at various initial drawdown rates

By

Daniel R Wessels

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This article is an extension of a previous article I titled "Retirement income drawdown strategies: Evaluating different drawdown rules" that focussed on some drawdown rules that one can apply in managing your annuity income from a living annuity product.

I've listed four possible drawdown rules, namely *fixed percentage*, *inflation-adjusted annuity income*, *target drawdown percentage* and a *combination* of the latter two rules.[1]

In the first article, I evaluated the outcome of each drawdown rule under a specific set of market return conditions that would have applied for a hypothetical post-retirement period of thirty years.[2]

Furthermore, I assumed that at the onset of retirement the initial drawdown rate would have been the equivalent of 5% of retirement capital. I evaluated each rule against two main objectives, namely to yield inflation-adjusted annuity income over long post-retirement periods (real income objective), and the amount of legacy capital available at different points in a post-retirement period of thirty years (legacy capital objective).

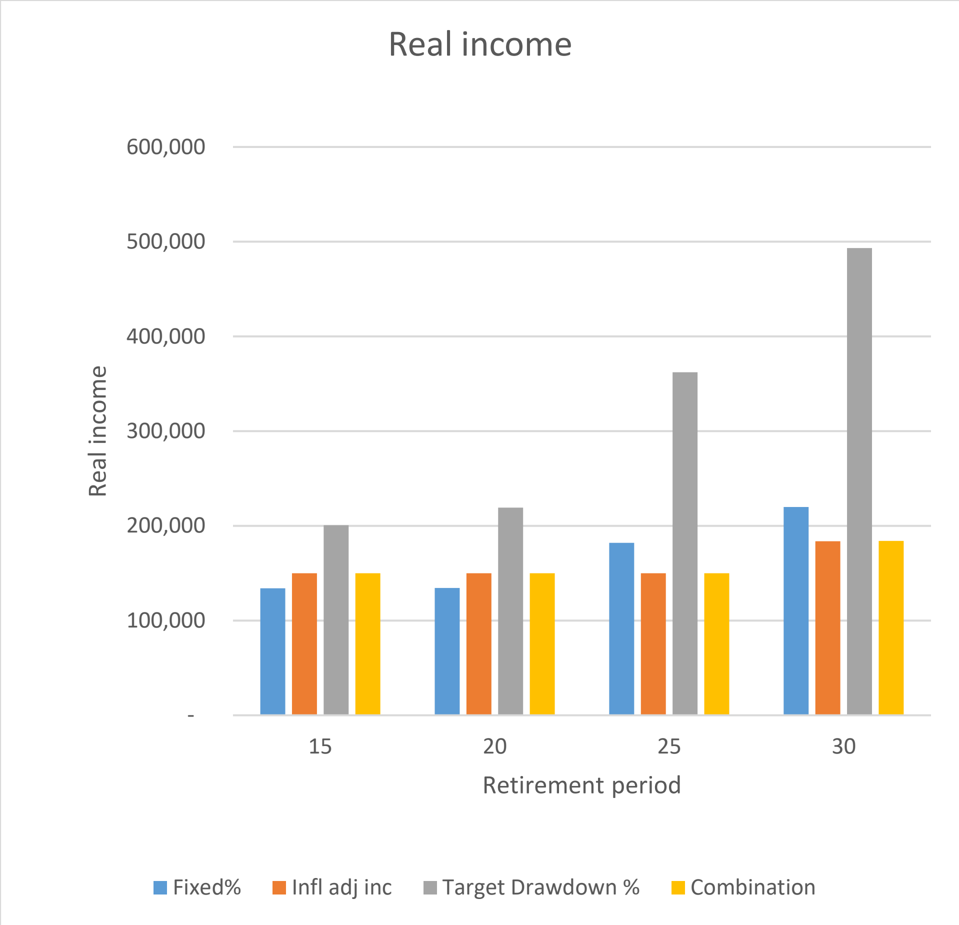
The *inflation-adjusted annuity income* and *combination* rules gave the best results for the real income objective, while the *fixed percentage* and *combination* rules yielded the most legacy capital at various interval points during the post-retirement period.

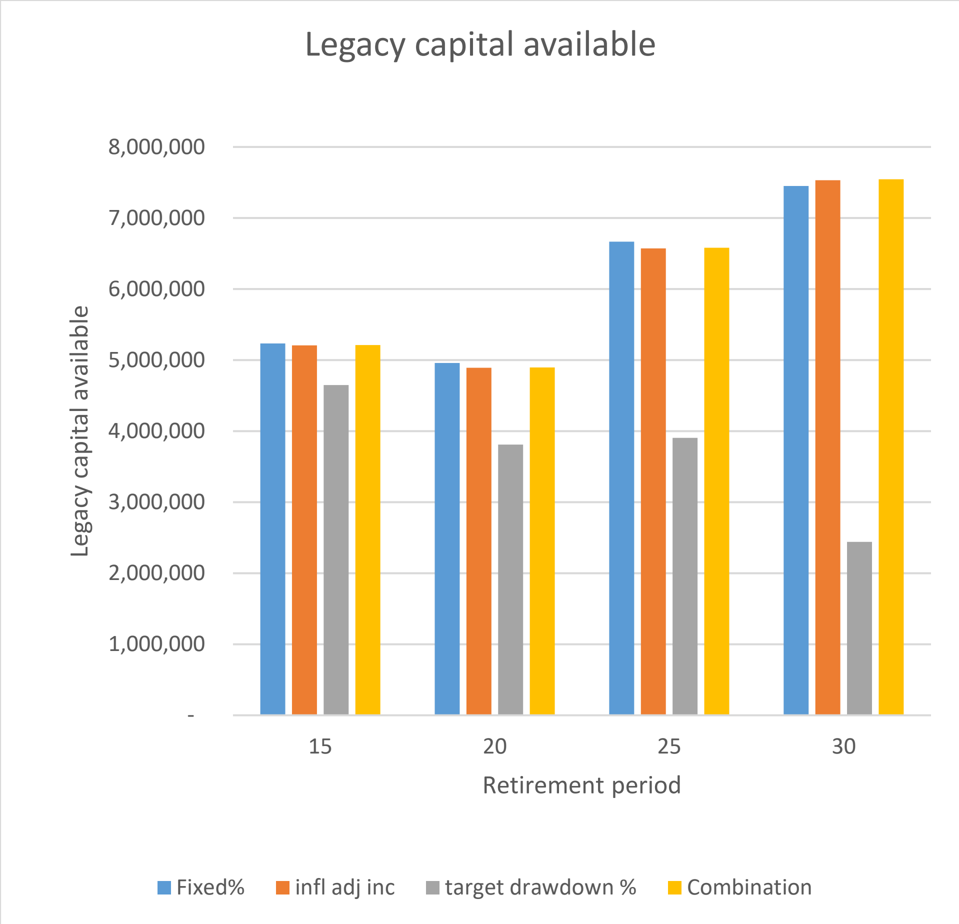
[1] A description of these rules appears in Appendix I
[2] The projected inflation and investment portfolio return assumptions appear in Appendix II

In this analysis, the same evaluations are done and benchmarked against the same objectives (real income and legacy capital), but at different initial drawdown rates, starting from 3% up to 7% of retirement capital.

Analysis

Initial Drawdown Rate = 3% of retirement capital



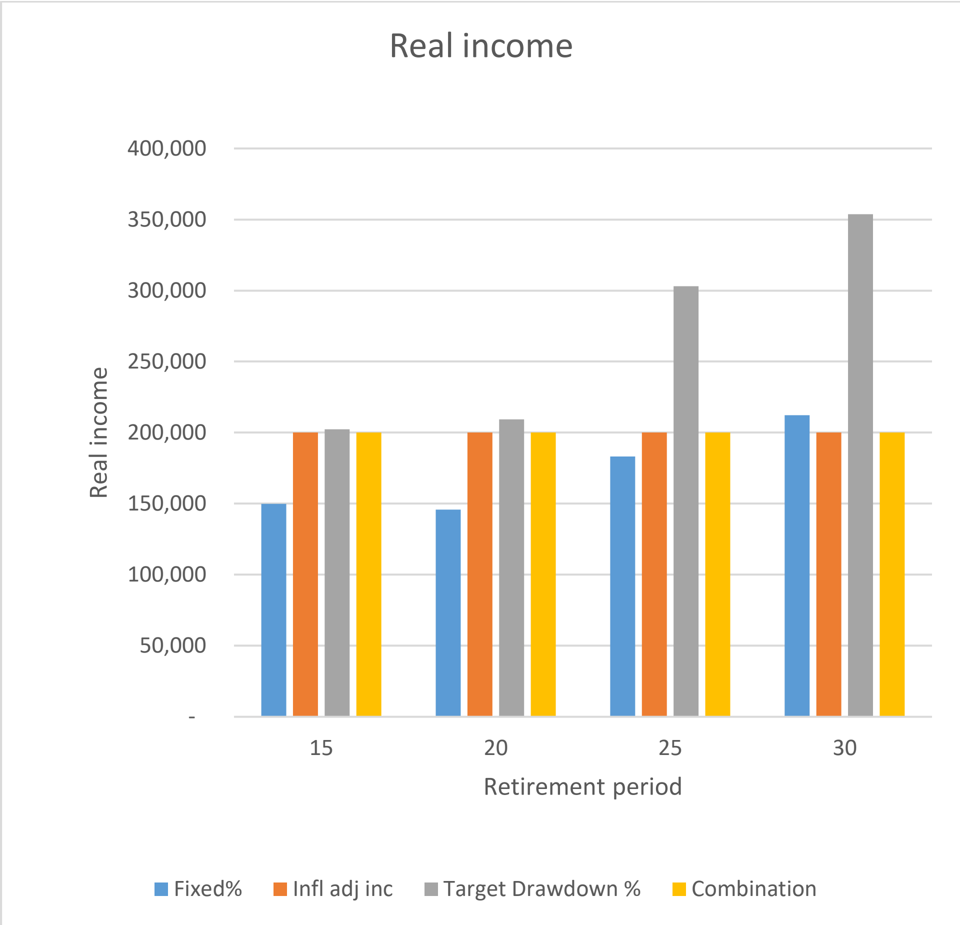


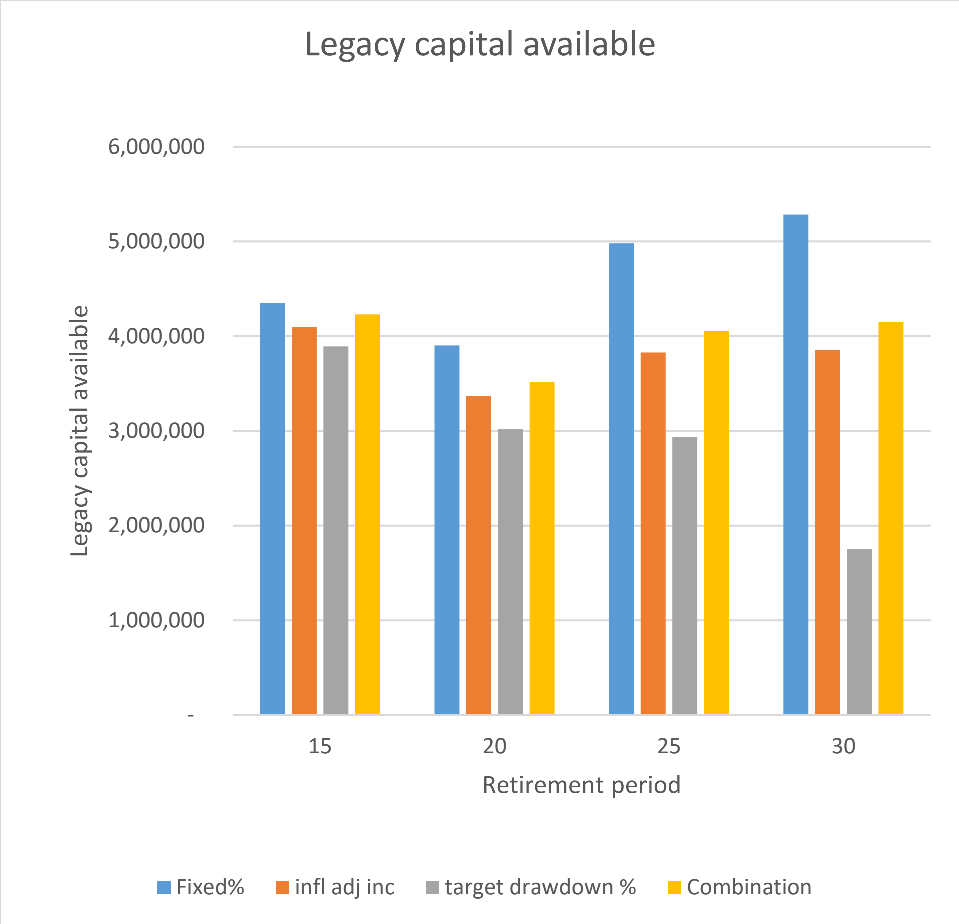
Best rules for this scenario and 3% initial drawdown rate:

Real income objective: *Target drawdown percentage*

Legacy capital objective: *Fixed percentage*, *inflation-adjusted annuity income*, *combination*

Initial Drawdown Rate = 4% of retirement capital



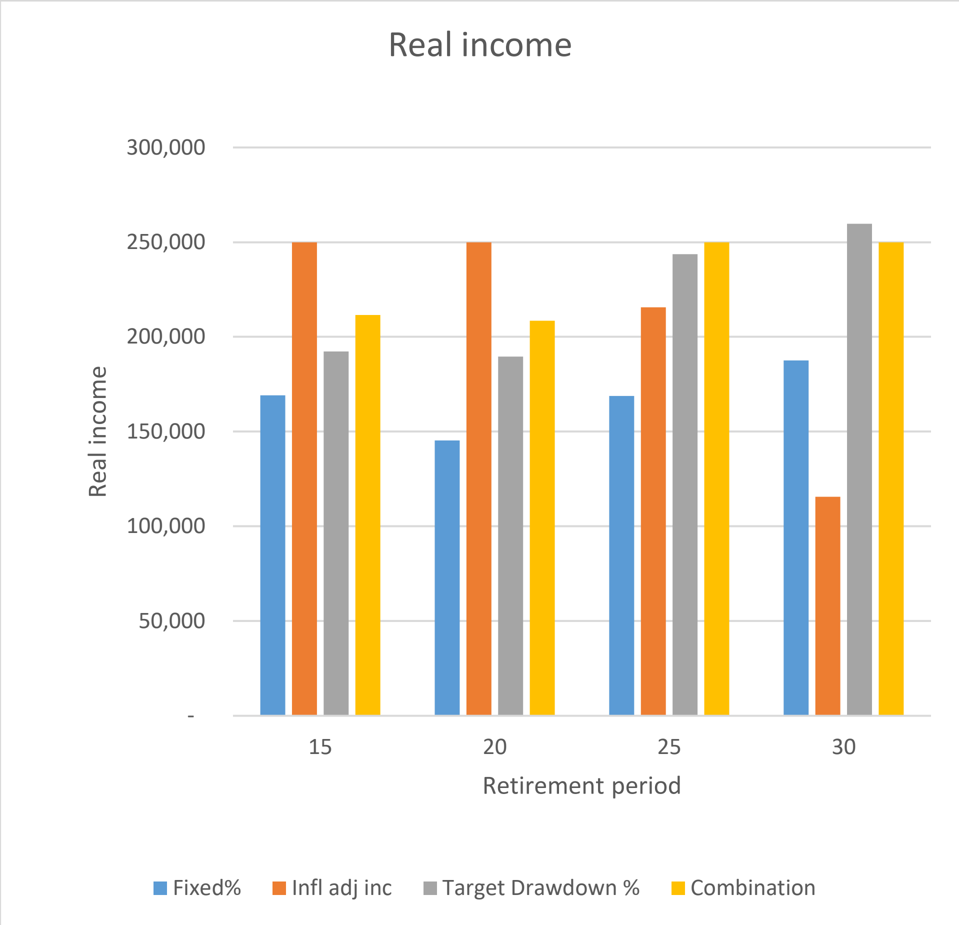


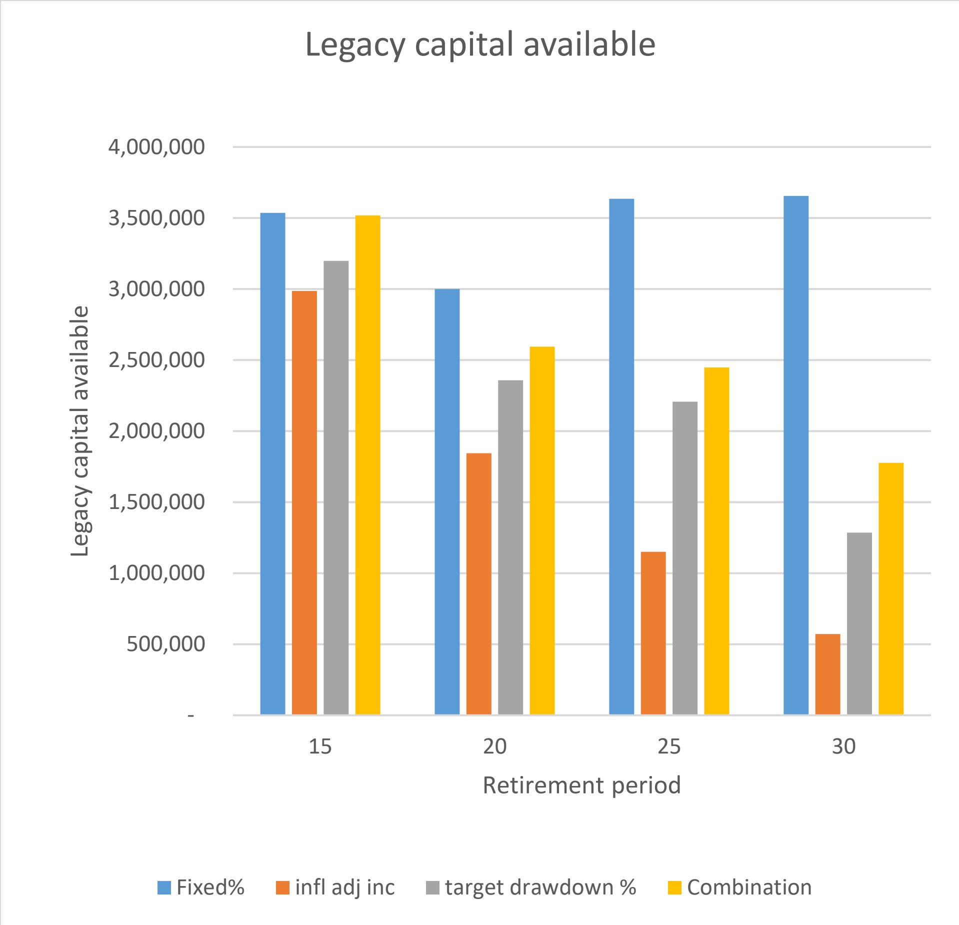
Best rules for this scenario and 4% initial drawdown percentage:

Real income objective: *Target drawdown percentage*

Legacy capital objective: *Fixed percentage*

Initial Drawdown Rate = 5% of retirement capital





Best rules for this scenario and 5% initial drawdown rate:

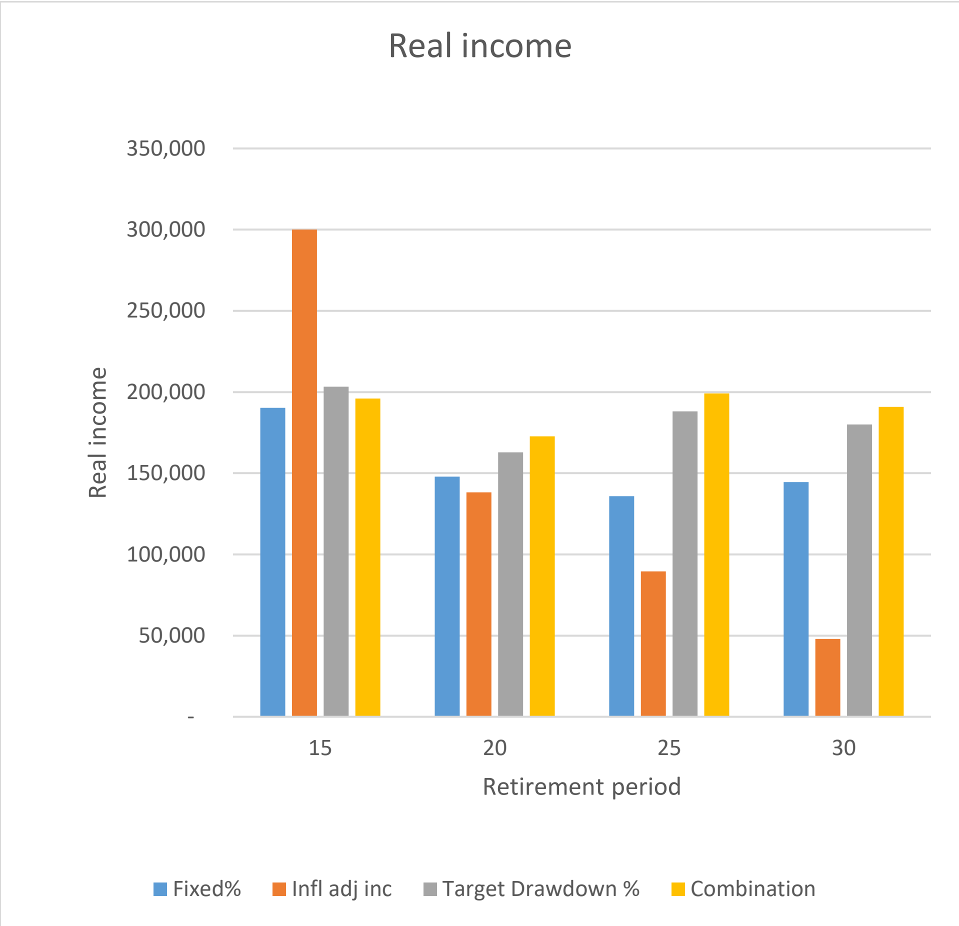
Real income objective:

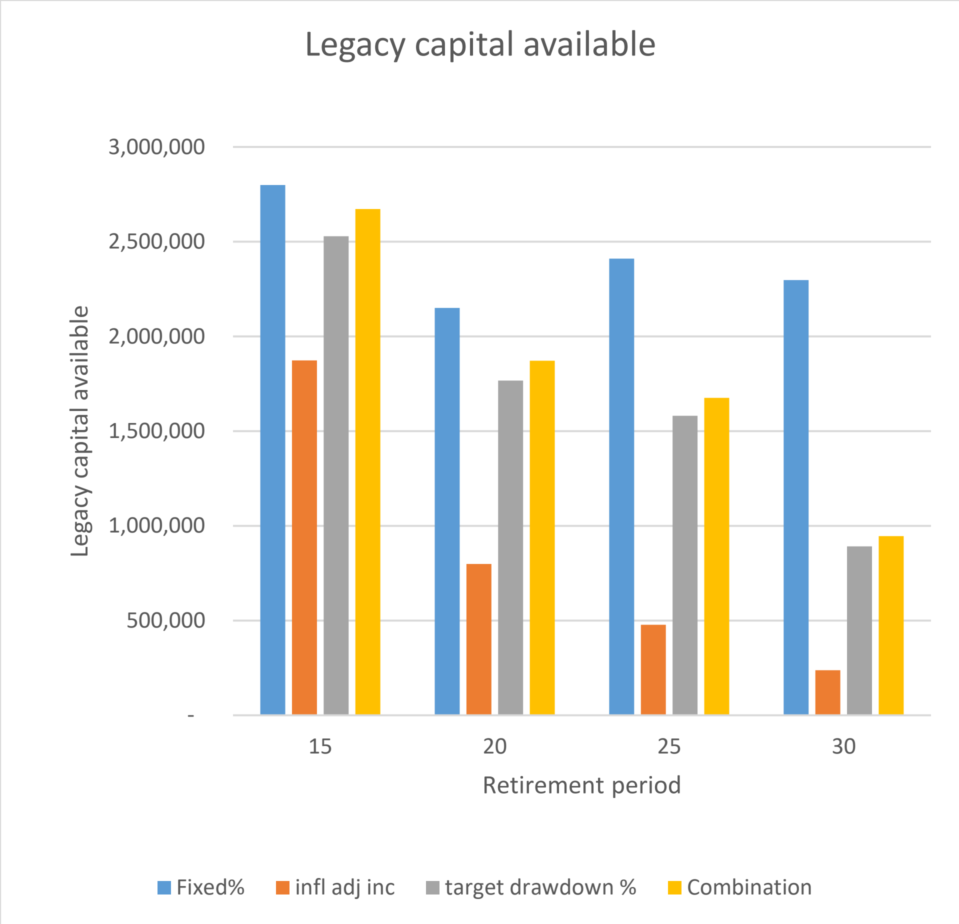
Shorter post-retirement periods - *inflation-adjusted annuity*,

Longer post-retirement periods – *combination and target drawdown percentage*

Legacy capital objective: *Fixed percentage*

Initial Drawdown Rate = 6% of retirement capital





Best rules for this scenario and 6% initial drawdown rate:

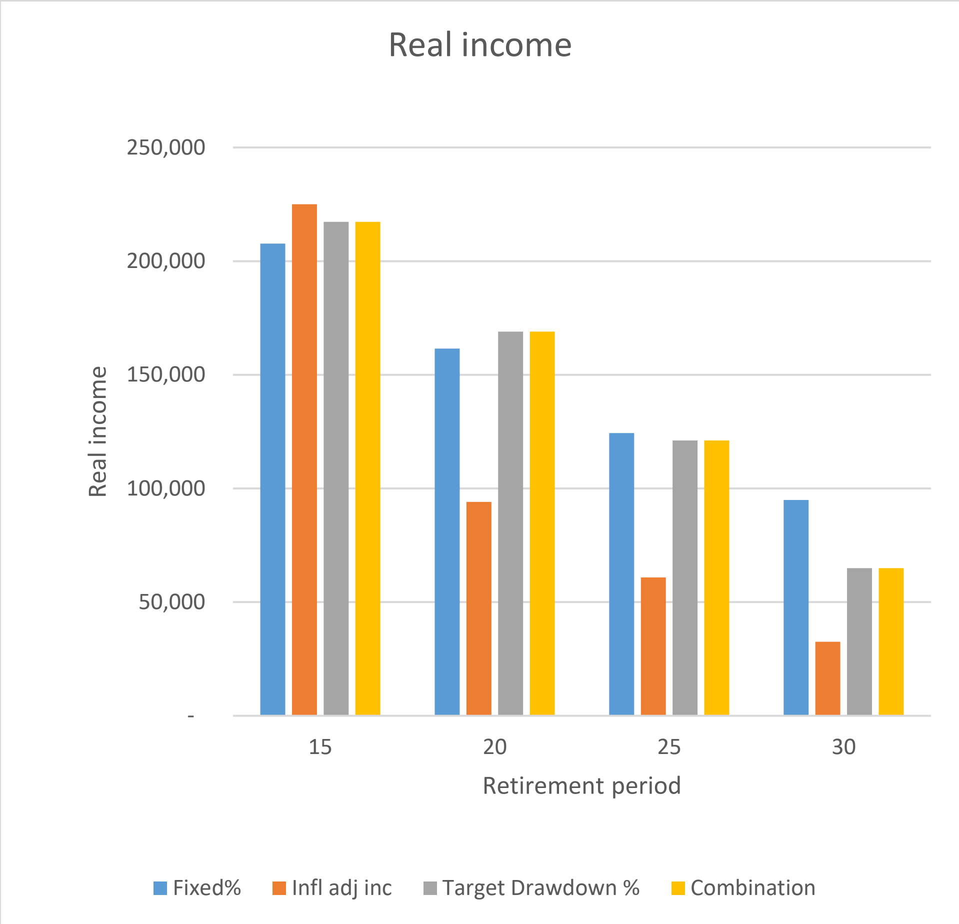
Real income objective:

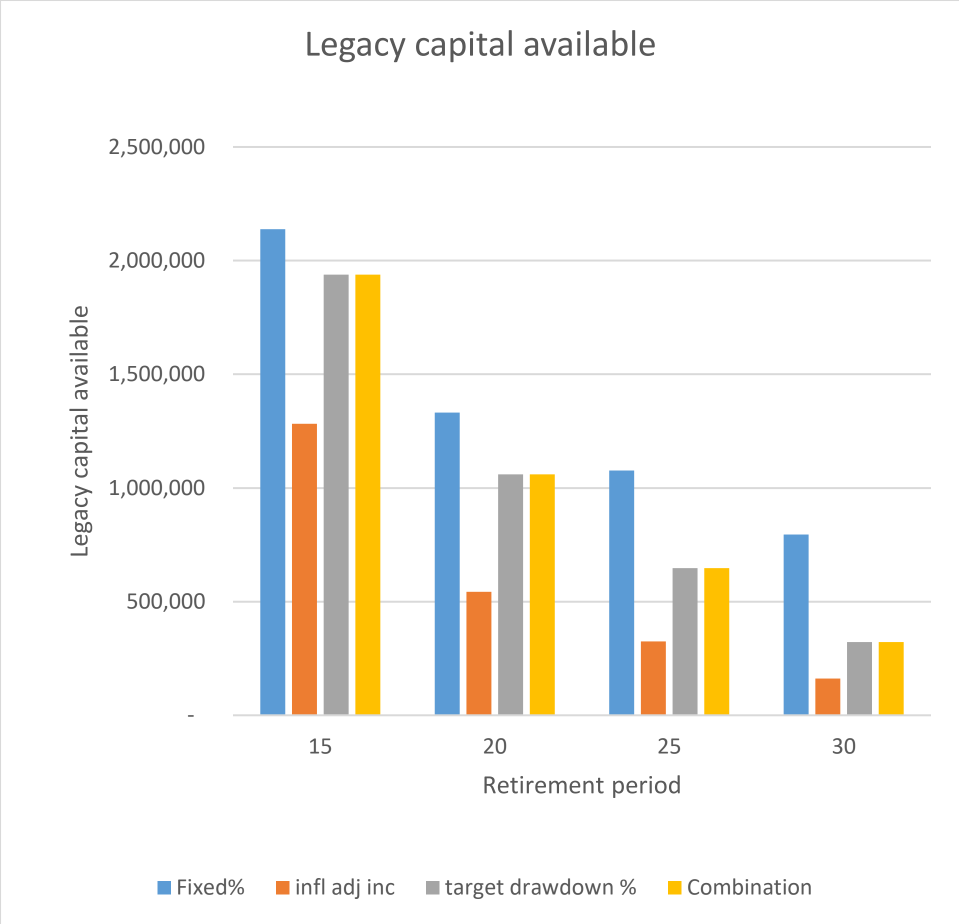
Shorter post-retirement periods - *inflation-adjusted annuity*,

Longer post-retirement periods – *combination* and *target drawdown percentage*

Legacy capital objective: *Fixed percentage*

Initial Drawdown Rate = 7% of retirement capital





Best rules for this scenario and 7% initial drawdown rate:

Real income objective:

Shorter post-retirement periods - *inflation-adjusted annuity*,

Longer post-retirement periods – *combination* and *target drawdown percentage*

Legacy capital objective: *Fixed percentage*

Synopsis

The initial drawdown rate required at the onset of retirement will affect the most suitable drawdown rule for an annuitant.

To be continued…

In a third article in this series I will consider the same drawdown rules under various simulated portfolio return conditions. Thereby one can generate a probability interval of what outcomes are most likely and which drawdown rules are most suitable.

Appendix I

Fixed percentage

Each year the same withdrawal rate is selected, for example, 5% of retirement capital. The underlying performance of your investment portfolio plays a direct role in the income that will be available at review. Some overriding provisions, however, will apply – the income for the forthcoming year may not be less than the preceding year, i.e. it means if the income calculated (withdrawal rate x retirement capital value at start of review period) for the forthcoming year would be less than the previous year, an amount equal to that of the previous year will be elected and therefore this intervention will breach the fixed percentage rule. Furthermore, the income selected at review stage may never be less than 2.5% or exceed 17.5% of retirement capital.

Inflation-adjusted annuity income

Each year the previous year's annuity income and then adjusted by the prevailing inflation rate is selected, irrespective how your underlying investment portfolio performed. The income selected at review stage may never be less than 2.5% or exceed 17.5% of retirement capital, therefore this rule will be breached whenever any of these conditions will apply.

Target drawdown percentage

Income at review stage is selected based upon a pre-determined targeted withdrawal or drawdown rate (described below) and dependant on the remainder of the expected lifespan of the retirement plan. Investment portfolio performance will have a direct influence on the income amount available at review stage. Again, some overriding provisions to this rule will apply. The income of the forthcoming period may not be less than the preceding period. Furthermore, the income selected at review period may never be less than 2.5% or exceed 17.5% of retirement capital.

The pre-determined target drawdown rate is based on the maximum ("ceiling") percentage that can be withdrawn each year without jeopardising the long-term sustainability of the plan. Each year's target drawdown rate considers the remainder of the expected lifespan of the plan, i.e. life expectancy. More specifically, each year's escalation in the target rate will be such that the maximum withdrawal rate of 17.5% is only likely to be reached by the 30th year of the post-retirement plan.

For example, using a conservative portfolio return assumption of 8.5% p.a. over time, I calculated the following target drawdown percentages for each year of the post-retirement period, starting off with different initial drawdown rates at the inception of the plan.

Post-retirement period	Initial Drawdown Rate				
	3%	4%	5%	6%	7%
1	3.0%	4.0%	5.0%	6.0%	7.0%
2	3.1%	4.1%	5.1%	6.1%	7.1%
3	3.2%	4.2%	5.2%	6.1%	7.1%
4	3.3%	4.3%	5.2%	6.2%	7.2%
5	3.4%	4.4%	5.3%	6.3%	7.2%
6	3.5%	4.5%	5.4%	6.4%	7.3%
7	3.6%	4.6%	5.5%	6.5%	7.4%
8	3.7%	4.7%	5.6%	6.6%	7.5%
9	3.9%	4.8%	5.8%	6.7%	7.6%
10	4.0%	5.0%	5.9%	6.8%	7.7%
11	4.2%	5.1%	6.0%	7.0%	7.8%
12	4.3%	5.3%	6.2%	7.1%	7.9%
13	4.5%	5.5%	6.4%	7.3%	8.0%
14	4.7%	5.7%	6.6%	7.4%	8.2%
15	5.0%	5.9%	6.8%	7.6%	8.4%
16	5.2%	6.2%	7.0%	7.9%	8.5%
17	5.5%	6.4%	7.3%	8.1%	8.8%
18	5.8%	6.7%	7.5%	8.4%	9.0%
19	6.1%	7.1%	7.9%	8.7%	9.2%
20	6.5%	7.4%	8.2%	9.0%	9.5%

Post-retirement period	Initial Drawdown Rate				
	3%	4%	5%	6%	7%
21	6.9%	7.9%	8.7%	9.4%	9.9%
22	7.4%	8.4%	9.1%	9.9%	10.3%
23	8.0%	9.0%	9.7%	10.5%	10.7%
24	8.7%	9.6%	10.3%	11.1%	11.3%
25	9.5%	10.5%	11.1%	11.9%	11.9%
26	10.5%	11.4%	12.1%	12.8%	12.6%
27	11.7%	12.7%	13.2%	13.9%	13.6%
28	13.2%	14.2%	14.7%	15.4%	14.7%
29	15.2%	16.2%	16.6%	17.3%	16.1%
30	17.5%	17.5%	17.5%	17.5%	17.5%

A combination of inflation-adjusted annuity income and target drawdown percentage

The same as the above (*target drawdown percentage*), but with an additional rule that the annual adjustment in income will not exceed the inflation-adjusted annuity income target. The latter target is like the *inflation-adjusted annuity income* rule. Thus, an escalation in income may not exceed that income as determined by the inflation-adjusted annuity income rule. Furthermore, the same overriding provisions as above will apply.

Appendix II

Post-retirement Period	Inflation rate	Nominal portfolio return
1	6.3%	4.2%
2	6.7%	16.9%
3	7.0%	4.0%
4	5.0%	12.3%
5	6.6%	26.8%
6	6.8%	18.5%
7	4.4%	2.3%
8	7.0%	-14.3%
9	5.0%	2.6%
10	8.0%	-5.6%
11	7.3%	22.1%
12	7.0%	4.1%
13	4.5%	18.5%
14	5.2%	20.1%
15	6.1%	20.8%
16	5.5%	7.2%
17	4.8%	9.3%
18	6.0%	-1.4%
19	3.4%	0.8%
20	5.9%	22.4%
21	6.1%	4.5%
22	4.6%	19.3%
23	4.0%	19.5%
24	6.0%	20.5%
25	5.1%	13.3%
26	4.4%	30.1%
27	6.1%	6.5%
28	6.0%	13.8%
29	6.0%	2.9%
30	5.6%	5.1%