Adjusted Pension Multiplier

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Acknowledgements

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Motivation

Measurement of retirement outcomes
• What does a retiree actually get

Need for a prospective measure
• Choices need to be made at the start of retirement
• Model of future outcomes required

Important trade-off to improve understanding
• Accuracy v simplicity
Some accurate options

MDUF\textsuperscript{1}:

\[
U_0 = E_0 \left[ \sum_{t=0}^{T} \beta^t \left\{ t p_x \frac{1-\rho}{1-\rho} + t-1|q_x \frac{b_1-\rho}{1-\rho} \left( \frac{\phi}{1-\phi} \right)^\rho \right\} \right]
\]

GOFI\textsuperscript{2}:

\[
GOFI_t = D_t \times \frac{A_t}{B_t}
\]

where:

\[
D_t = 1 - \frac{\sum_{i=1}^{t} \max(TI_i - income_{i,n}, 0)}{\sum_{i=1}^{t} TI_i}
\]

\[
A_t = \frac{1}{t} \times \sum_{i=1}^{t} \left\{ 1 - \left( \frac{\max(TI_i - income_{i,n}, 0)}{TI_i} \right)^2 \right\}
\]

\[
B_t = \frac{1}{t} \times \sum_{i=1}^{t} \left\{ 1 - \left( \frac{\sum_{i=1}^{t} \max(TI_{i,n} - income_{i,n}, 0)}{\frac{1}{t} \times \sum_{i=1}^{t} TI_{i,n}} \right)^2 \right\} = 1 - (1 - D_t)^2
\]

A simple alternative

$$PM_t = \frac{C_t}{A_t^{full}}$$

PM$_t$ is the pension multiplier measure

C$_t$ is the retirement income available for consumption in year t

A$_t^{full}$ is the maximum age pension in year t

Measure retirement income as a proportion of the full age pension.

Easy to do in any year

Can average across retirement

Can model projections but the communication is the same.
Simplicity can be used across a simulation

And can include a bequest term

\[ PM(B_{67}) = \frac{1}{M} \sum_{i=1}^{M} \frac{\sum_{t=67}^{T=104} [C_t^i(B_t^i) \cdot p_{67,t} + B_t^i \cdot q_{67,t}]}{\sum_{t=67}^{T=104} [A_t^{i,full} \cdot p_{67,t}]} \]

\[ M = \text{number of simulations} \]
\[ B_{67} \text{ is the balance at the start of retirement, age 67.} \]
\[ p_{67,t} \text{ is the probability of survival from age 67 to t} \]
\[ q_{67,t} \text{ is the mortality at age } t, \text{ measured as a proportion of the population at age 67.} \]

This provides for a full expected value payments all measured in real terms.
A simple communication tool

The Pension Multiplier will be a number \( \geq 1 \)
It represents the multiple of the age pension that a retiree would receive

People understand relative comparisons. Will my superannuation make me twice as well off as an age pensioner?

Optimally, the PM would just depend on starting balance, but the retirement income drawdown strategy will matter.
Pension Multiplier Example

Assuming only minimum drawdowns taken

Median of Pension Multiplier for each strategy based on balance at the start of retirement (age 67). Single retiree
We consider a range of drawdown strategies to consider the difference

min: spending the minimum drawdown only

4%: spending 4% of the initial balance and increasing drawdown with CPI inflation

RoT: the Rule of Thumb strategy of DeRavin et al (2019),

mod: a fixed level of spending based on the ASFA modest benchmark

cft: a fixed level of spending based on the ASFA comfortable benchmark

lux: a fixed level of spending based at a ‘luxury’ level of $60,000 a year for a single person.

all: Spend all savings at retirement and receive full age pension for life
Pension Multipliers

Various strategies with different starting balances

Median of Pension Multiplier for each strategy based on balance at the start of retirement (age 67). Single retiree
Implications from results

Some variation across drawdown strategies
  • Partly accounted for by the difference in estate values

Fixed budgets are not appropriate across all balances
  • Most relevant at the sweet spot where the spending level is optimal
  • The Retirement Income review made a similar observation

Odd strategies (e.g. spend-it-all) can look good even if not likely to be preferable
  • No negative utility from variability or shortfall in income
Designing a shortfall measure

Capture penalty for variation in income
Calculate an expected shortfall measure (relative to Pension multiplier)

\[
ShortFall_t^i = \max(0, \frac{PM(B_{67}) - PM_t^i}{PM(B_{67})})
\]

Again, this can be calculated for projected simulations:

\[
ShortFall(B_{67}) = \frac{\sum_{t=67}^{104} \sum_{i=1}^{M} ShortFall_t^i \cdot p_{67,t}}{(104 - 67) \times M}
\]

The impact of drawdown strategies is very different
Average shortfall measure
Various strategies with different starting balances

Average shortfall median for each strategy based on balance at the start of retirement (age 67. Single retiree)
The adjusted pension multiplier

Subtract the expected shortfall from the Pension Multiplier
- Effectively places a double weight on downside

Different drawdown strategies work better for different starting balances
- ‘Optimal’ strategy is hard to pin down
- Can find a strategy close to optimal – Rule of Thumb
Adjusted Pension Multipliers
Various strategies with different starting balances

Median of Adjusted Pension Multiplier for each strategy based on balance at the start of retirement (age 67). Single retiree
Finding a perfect measure of success is retirement is difficult
• Unlikely to be a single best option

Seek value in a measure that people will understand

Need to incorporate estate value into the modelling
• Exponential growth problem when average return > growth in age pension
• Adjusted Pension Multiplier downgrades inappropriate strategies
• Consider other ways to ensure income pattern is smooth
Thank you

If you have a question,

I might have an answer.