On market volatility and retirement funding[1]

Jim Cemil Otar © 2002-2005 www.cotar.org

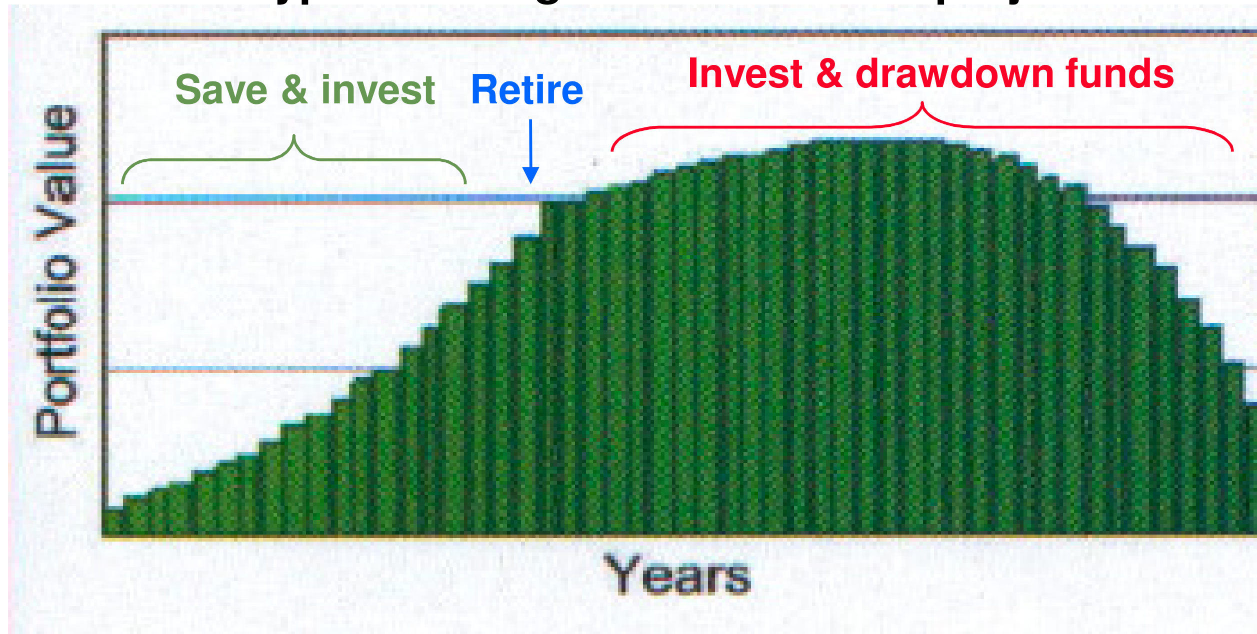
Jim Otar is a Canadian financial planner and ex-engineer who researches the mathematics of retirement. His work provides an important reminder about the role market volatility (and indeed luck) has on retirement funding outcomes.

Here we share illustrations about the longevity of retirement capital under historical US market conditions. He shows how "reverse dollar cost averaging" (ie. the drawing down of capital to fund pension payments) in normally volatile investment markets causes asset longevity to vary significantly. Lucky retirees are those who start retirement at the beginning of a bull market and should see their capital outlive them (perhaps those who retired in recent years in Australia). This work also provides an important caution about how steady-investment-return projections may provide an overly optimistic view.

Jim Otar

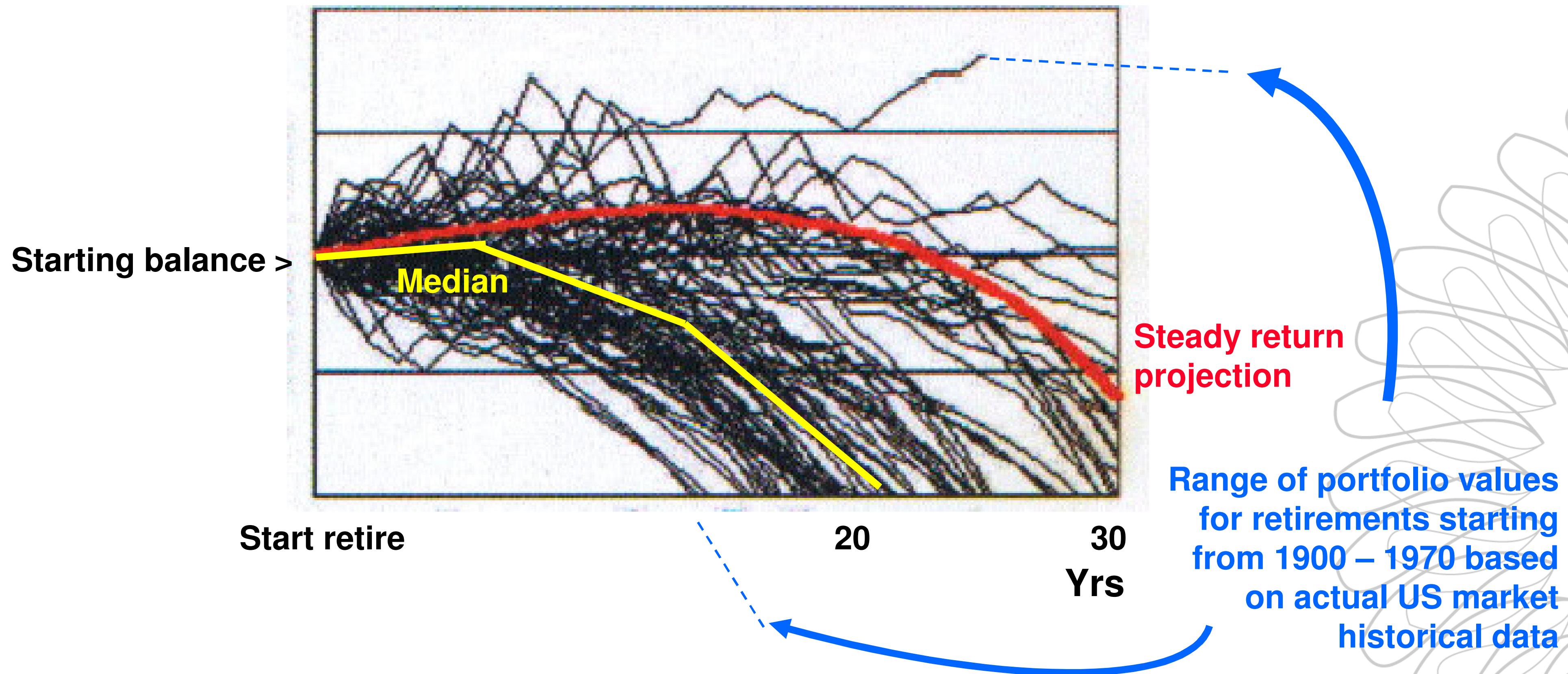
[1]Information from a series of articles, including …
Modeling the Sustainable Withdrawal Rate, Benefits and Pensions Monitor, Oct 2002
A Matter of Luck, Financial Planning Magazine USA, Feb 2005

A typical savings and retirement projection



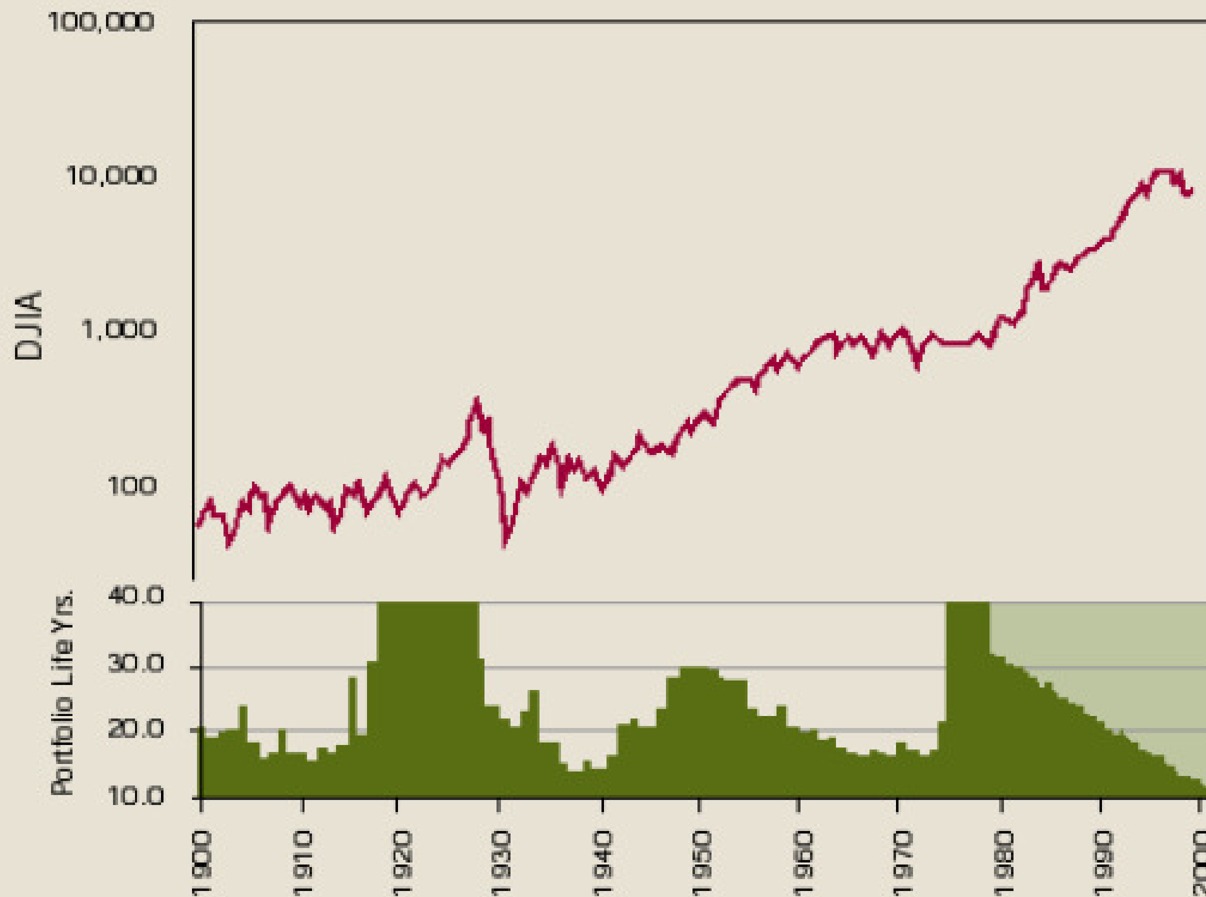
Most computerised, savings and retirement-funding simulations are based on you earning a steady investment return (eg. # % pa each and every year). This assumption along with your savings and withdrawal rate creates a smooth projection of how your assets grow and eventually deplete (the latter hopefully after you do). However, in the real world investment returns are not steady …

All diagrams © Jim Otar



... as there are good years and bad years for investing. For instance, retiring into an initial series of bad years can significantly deplete the longevity of your assets as you "eat" into investment capital rather than live off income or gain. Subsequent good years may not be sufficient to rebuild your capital. Designing portfolios to minimise volatility and limit the withdrawal % are two strategies to reduce this risk.

40:60 equity:bond, 6% withdrawal, DJIA +1.5% USA, underlying diagram © Jim Otar



Assumes initially withdraw 6% of portfolio value (eg. $60k from $1m savings) amount thereafter indexed to inflation

Diagram © Jim Otar

Chance of running out of money before age 90 was …
- **66%**
- **72% if invested 100% in equities**
- **35% if investment return beat benchmark 4% pa, or 77% if return underperformed by 2% pa**

“when we combine all these factors, ‘luck factor’ contributes 58% to success of portfolio”

If the initial withdrawal was 4% (near what Otar refers to as the ‘sustainable withdrawal rate’) then luck factor reduces to 25%. The lesson here is that planning to take more money out of your retirement savings can increase the chance of bad luck interfering with your retirement funding plans.

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© Professional Wealth Pty Ltd AFSL 369453, 13/350 Collins Street, Melbourne Australia
ph 03 9605 0600, info@professionalwealth.com.au, www.professionalwealth.com.au