

Reflections on the expected market return (aka TMR)

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Warning: disclaimer

Among other things, I am a member of the ONS Stakeholder Advisory Panel for Consumer Prices and am a senior adviser and associate at KPMG. I am, however, presenting today in my personal capacity and the views I express are personal to me and do not necessarily reflect the views of either of these organisations.

Role of the EMR

... and the role of equity

What the UKRN study* said about EMR

- Update to 2003 advice to regulators
- Confirmed: long run history (UK/world) is best evidence for EMR
- Cautioned against predicting returns
- Updated evidence on the long run history of market returns:
 - from **6.5-7.5%** in 2003 advice (arithmetic mean)
 - to **6.5-7.5%**

“does not give us much cause to bring the estimate of the compound average rate down”
- But shaved off 0.5% for long horizon view “e.g. 10-year”

Expected (equity) market return (EMR)

2003 view: **6.5-7.5%** **RPI-deflated**

2018 view: **6.0-7.0%** **CPI-deflated**

Effective reduction: 1.5%

Why has EMR fallen by 1.5%?

Geometric

WWII

Strappy tops

Changes to ONS data collection in 2010

Clothing & footwear inflation (CPI, D7BW)

- 10-year pre-2010 average: **-5.5%** (*vs +2.5% for CPI excl c&f*)
 - 8% difference ... a relative halving in 10 years
- Post-2010 average (*to Jan 2019*): **+1.1%** (*vs +2.0 for CPI excl c&f*)
 - a much smaller 1% difference
- Pre-2010: CPI inflation understated by **~0.4%** (*0.35% with RPI weightings*)
- Formula effect on RPI pre-2010, 10-yr ave: **0.36%** (*CRFU*)

“previously when a clothing product was replaced with new stock, small changes to the composition of the garment were treated as a quality change and the price quote was excluded from the index calculation ... the prices of garments which change in this way are now included in the index calculation.”

(CPAC 2011 Annual Report, Annex B)

Shift in RPI resulting from 2010 changes

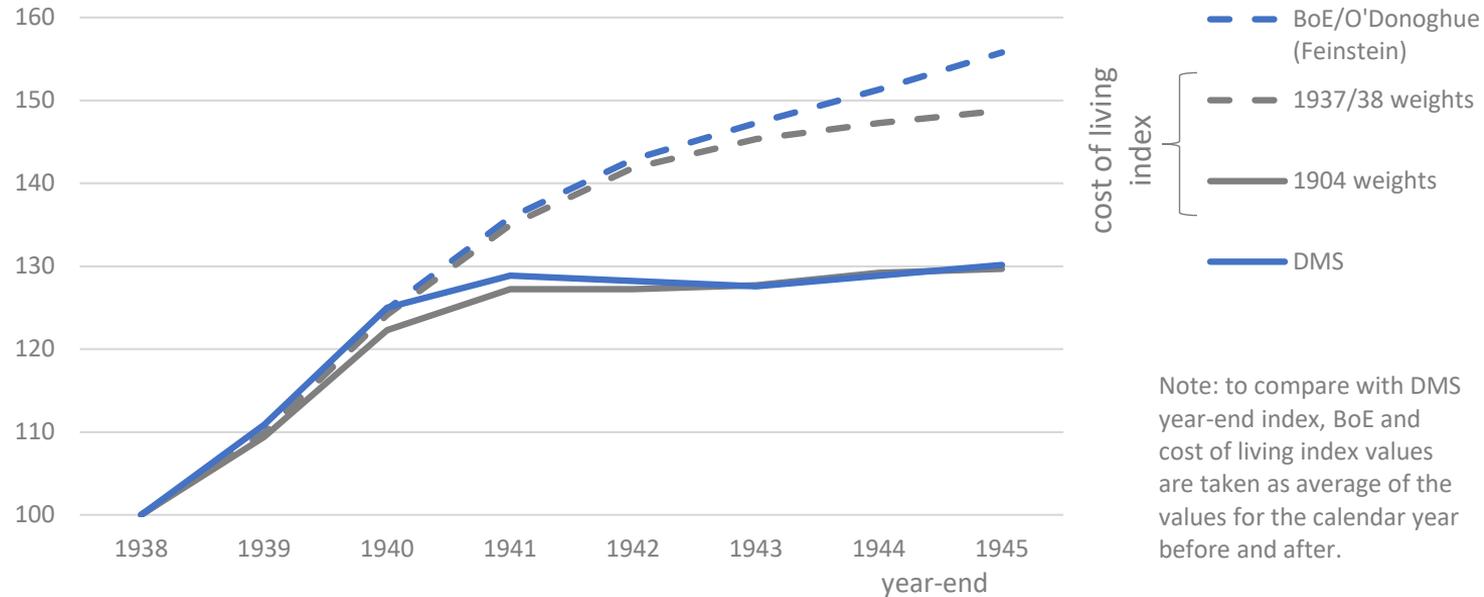
- Correction of understatement **+0.3-0.4%**
- Increase in formula effect: **+0.3%**
- Overall step change: **+0.6-0.7%**

RPI self-corrected its errors before 2010
CPI's pre-2010 errors are now broadly corrected
Material issue with RPI is a post-2010 thing

Understated WWII inflation using the COLI

Inflation series over WWII

1938 = 100



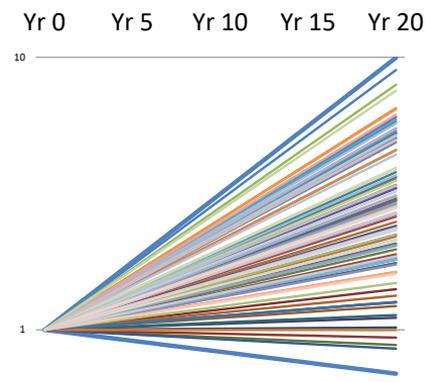
Note: to compare with DMS year-end index, BoE and cost of living index values are taken as average of the values for the calendar year before and after.

Sources: 'Inflation: History and Measurement', O'Neill, Ralph and Smith, 2017, p127, <https://www.bankofengland.co.uk/-/media/boe/files/statistics/research-datasets/a-millennium-of-macroeconomic-data-for-the-uk.xlsx>, tab A47, column D (column E is also relevant) DMS Dataset

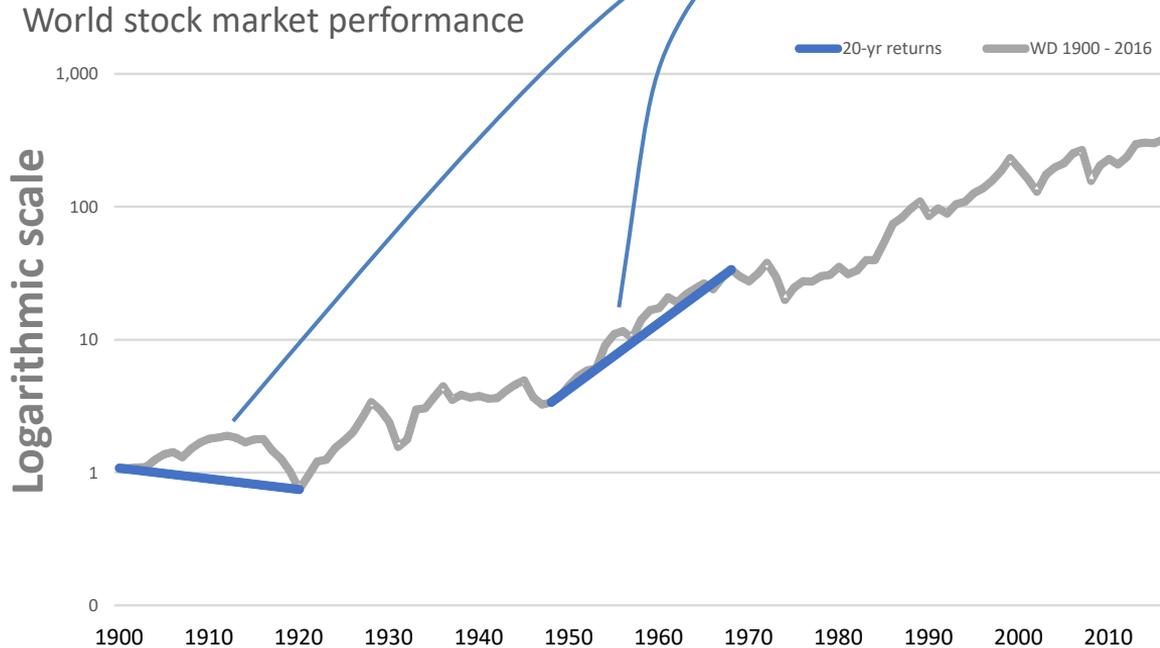
Relevance of geometric means

Volatility, fundamentals and mean reversion

20-year variance ratios



Variance = 0.653 x what we would expect if returns were a random walk

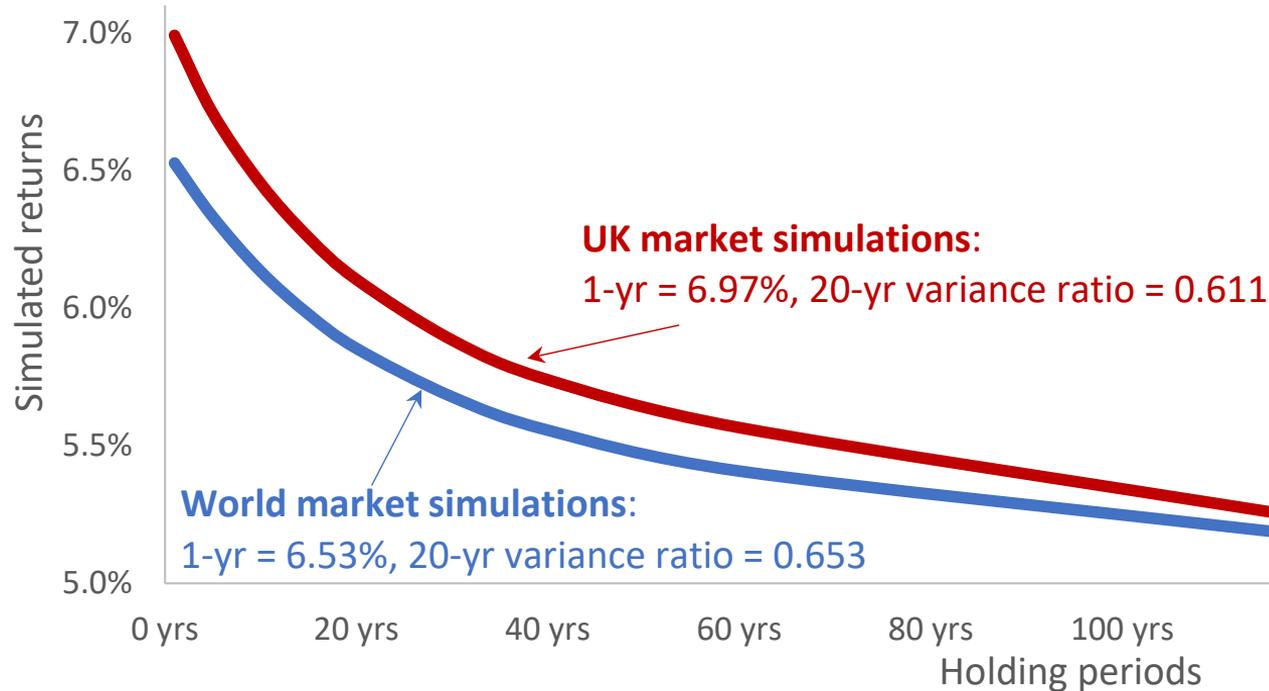


technical note:

- 20 separate non-overlapping 20-year series
- of which 3 > 1, 17 < 1
- range 0.16 to 1.4
- overall ratio = 0.653

Illustrative holding period returns

Simulated holding period returns



In short, an analysis of why EMR fell by 1.5%?

- RPI changed by up to 0.7%
- Annualised inflation from 1900 was previously understated by $\sim 0.3\%$
- UKRN study advises $\sim 0.5\%$ adjustment for longer holding periods

This analysis helps explain the change, without necessarily justifying the answer.