Australian Investment Performance 1959 to 2013 (and Investment Assumptions for Stochastic Models)

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ICA 2014

Abstract

This paper analyses 54 years, or 216 quarters, of Australian investment performance from 30 June 1959 (and earlier for some sectors) to 30 June 2013.

The paper updates three previous papers presented in 2005, 2007 and 2009 to the Institute of Actuaries of Australia and to the ICA 2010. The aim is to assess whether the methodology for determining assumptions in the previous papers is still robust enough to produce reasonable financial assumptions now that a further four years of financial data, covering a tumultuous period in global markets, is being examined.

The analysis covers eleven investment classes and four key financial indicators:

Growth Securities	**Interest Income**	**Financial Indicators**
Australian shares	Australian fixed interest	CPI (price inflation)
Int'l shares (hedged	Int'l fixed interest (hedged)	AWOTE (wage inflation)
Int'l shares (unhedged)	Government semis (0-3yrs)	90-day bill rates
Property trusts	Inflation linked bonds	10-year bond rates
Direct property	Loans/corporate credit	
	Cash	

For each of these 15 "sectors" the annualised average results are tabulated and summarised for:

- risk margins (over 10-year bond rates),
- coefficients of variation,
- skewness,
- kurtosis,
- cross-correlations, and
- auto-correlations.

From these results, assumptions are developed for the mean, standard deviation, skewness, kurtosis, cross-correlations and auto-correlations for each sector. The assumptions are intended for both medium-term (3 to 10-year) and long-term (10 to 40-year) modelling. These assumptions are primarily designed for use, until 2016, in stochastic investment and asset/liability modelling. After about two or three years they should be updated.

The paper also analyses:

- economic cycles using a sine curves technique,
- the impact of the Global Financial Crisis, comparing it with previous market downturns in 1974, 1987 and 2002/03, and
- auto-correlations, concluding that Australian share and bond 26-year auto-correlations ending 1986/87 were similar, after re-scaling the X-axis, to those ending 2012/13.

Keywords: investment assumptions, stochastic, skewness, kurtosis, cross-correlations, auto-correlations, cycles