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# LONG-TERM RETURNS REVISITED

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In a previous article<sup>1</sup>, I have suggested a different approach to measuring investment returns, over time, for long-term institutions, which I called the Calculated Value Return (or "CVR"). I have now acquired further data for a particular Fund, and I thought that the contrast with other relevant indices might be of interest. Armed with the figures, I also suggest that there is a practical use for the CVR.

These indices comprise the index of retail prices, the estimated movement in national average earnings, the yield on a model closed fund, and the yields obtained upon cash, gilts and equities. As before, in dealing with equities or property, I have initially assumed that half of the CVR (where calculated) will always be accounted for by anticipated growth, for which there is some evidence.

In the first place, if one compares *expected* gilt yields with equity yields over a long period, then one will observe that the ratio of the former to the latter has hovered around one half. Secondly, I have considered the actual effect of reinvestment of gross dividends upon the Financial Times Actuaries' All-Share Index over the 20 years ending on 31 December 1983. I have concluded that, in MVR terms *and* in CVR terms, the total return may reasonably be regarded as split approximately equally between capital appreciation and income.

Some figures were previously published, but I intend only to show the summarised results, which are annexed. Those who would like to see the way in which the CVR figures are fully built up may have them on application. Incidentally, a few of the original figures have been amended, because the gilt yields last used were incorrect, but the differences are not material.

To recap, the concept of the CVR is that one has a basis, which is assumed to apply over a long future period, and which is also consistently followed over relatively short internal periods. Therefore, the basis should hold at the beginning of, at the end of, and during, any given period. In statistical terms, one is using *short-term* observa-

tions, so far as one can, to estimate the true underlying *long-term* mean position.

If such a basis can be derived, then I initially thought that it must be unique, but I have not attempted to prove it. Interested readers are referred to a review of the work in this field<sup>2</sup>. Figures are also presented upon assumed future growth of 35% (the "A" figures) and 65% (the "B" figures) of the CVR. Thus, for a CVR of say 12% pa, the assumed growth would be 4.2% pa ("A"), 6% pa (as before) or 7.8% pa ("B"), with net divisors of 7.8% pa, 6% pa and 4.2% pa, respectively.

It will be seen that this has no effect upon the CVR for equities alone, as can be easily verified algebraically. Equally, dividend growth has no effect upon the valuation of fixed interest securities. However, a varying balance between the two sectors would, and does, affect the aggregate result.

If we compare the Actual Fund with the Model Fund, then we see that the former did better, on both counts, over the five years as a whole. I would, though, mention that the Actual Fund had new money coming in, which applied to neither the Model Fund, nor to the Reinvested Gilt and Reinvested Equity Indices.

For a contrast between the two types of return, the MVR was greater than the CVR for both gilts and equities (using *reinvested* indices). This feature also appears in both the Actual Fund and the Model Fund, which I think was only to be expected. However, the pattern might easily be reversed, and neither direction should be regarded as intrinsically natural. On either measure, both Funds have outperformed both prices and earnings over the five years, although not in every year.

Over the 20 years ending on 31 December 1983, the average MVR on equities (reinvested) was 13.2% pa, which may be compared with an average increase in earnings of 11.8% pa. The corresponding CVR was 14.7% pa. Some fund managers may have bettered this, while others did not. But are we asking the right question?

### Long-term returns revisited: the annexe

Year:	1979	1980	1981	1982	1983	1979-83
	%	%	%	%	%	%
<i>The general indices</i>						
Prices	17.2	15.1	12.1	5.4	5.3	10.9
Earnings	19.6	19.5	10.0	7.7	7.7	12.8
<i>The actual fund monitored</i>						
MVR	13.2	26.9	13.6	28.8	23.9	21.1
CVR	24.0	14.3	13.9	13.3	12.5	15.4
CVR(A)	22.1	14.0	14.0	12.7	11.8	14.7
CVR(B)	26.7	14.8	13.8	13.9	13.5	16.4
<i>The model fund monitored</i>						
MVR	10.4	26.8	12.1	29.1	22.8	20.0
CVR	26.6	14.7	12.0	10.4	9.8	14.6
CVR(A)	26.1	14.5	11.9	10.4	10.3	14.6
CVR(B)	27.1	14.9	12.2	10.5	9.3	14.7
<i>The reinvested market returns (one initial payment)</i>						
Cash	13.8	16.3	13.2	11.9	9.8	13.0
Gilts	5.2	22.2	1.5	54.1	16.0	18.4
Equities	10.4	35.2	13.7	29.1	29.1	23.1
<i>The reinvested gilt index</i>						
MVR	5.2	22.2	1.5	54.1	16.0	18.4
CVR	14.9	15.2	14.6	10.6	8.2	12.4
<i>The reinvested equity index</i>						
MVR	10.4	35.2	13.7	29.1	29.1	23.1
CVR	31.0	20.1	9.8	15.3	13.4	17.7
CVR(A)	31.0	20.1	9.8	15.3	13.4	17.7
CVR(B)	31.0	20.1	9.8	15.3	13.4	17.7

The question we should be considering is the extent to which, in the broadest sense, the assets match the liabilities, which are assumed to be very long-term. This is something which UK actuaries, having always had it in mind, are reconsidering, following the recent presentation of a paper by A. J. Wise<sup>3</sup>. In order to monitor such problems, I contend that the CVR can properly be used to rank different funds over the same time period.

This was considered by J.P. Holbrook, and was discussed in 1976<sup>4</sup>. To take a few of the main points, Holbrook included the following statement. "The approach would appear to laymen to be theoretical and arbitrary, and the calculated returns for different funds would be very sensitive to the assumptions made." In the first place, there is nothing wrong with theory, if it can be useful, and, secondly, the assumptions would be *fund-dependent*, being those which produced equivalence over the review period.

Further on in his paper, Holbrook also said "... it would be necessary to adopt rates of discount and future growth which were agreed by all concerned." As can be seen, the figures are not so sensitive to the relative rate of growth assumed, and it is the *method* which would have to be agreed, whence flow the equivalence assumptions.

I have previously pointed out that CVR's are money-weighted, which is not normally regarded as acceptable. While the incidence of cash-flow may be outside the investment manager's control, its investment (and associated gearing, if any) is within his control, so that the advantage of TWR's over MWR's may be more apparent than real. If it is necessary, then I expect that the problem, if it is such, could be eliminated by linking the calculations over a series of sub-periods.

During the discussion, B. M. Gillman stated that "... market values do have an objective validity as a consensus of opinion of investment worth", but, in my view, this is only true over the short-term.

"Discounted values are subjective ..." was stated by J. G. Day. However, given that equivalence is the "continuum condition", this should not be regarded as a problem.

The makeup of the CVR is quite different to that of the MVR, and it is, therefore, difficult to justify any direct comparisons. However, their ratio might be taken as a crude measure of the extent to which the apparent return has been "locked-in". Because of the inherent volatility of the MVR part of that statistic may be regarded as "froth", liable to sudden disappearance, represented by the excess over the corresponding CVR.

For example, consider the year 1981 for gilts, where the MVR was 1.5%, and the CVR was 14.6%. Had money been invested at the beginning of that year, a high long-term return would have been achieved, if the stock were held to redemption. It seems to me that the CVR shows this, which the MVR obscures. While some investment managers may have lost money for their clients by injudicious sales, that does not make the original decision to buy wrong.

To conclude, I hope that the case for the CVR will be accepted as fully proven, but I would be happy to engage in debate with those who still cavil at the results I have obtained, and their implications. I should, though, like to make it quite clear that the opinions expressed above (and in the previous article) are purely my own, and it should not be supposed that my partners share all, or any, of them.

### References

1. Spain, J. G. "The Long Term Analysis of Investment Performance". *The Investment Analyst*, No. 70, October 1983, 22-29.
2. Russell, A. M. and Rickard, J. A. "Uniqueness of Non-negative Internal Rate of Return". *Journal of Institute of Actuaries*, 109, 435-446.
3. Wise, A. J. "The Matching of Assets to Liabilities" (and discussion). *Journal of Institute of Actuaries*, 111, Part 3 December 1984.
4. Holbrook, J. P. "Investment Performance of Pension Funds" (and discussion). *Journal of Institute of Actuaries*, 104, 15-91.