A Discussion on Discount Rates in Alberta

In personal injury cases, a **lump sum award** often is provided to a plaintiff as compensation for the loss of a future stream of employment earnings, or to compensate for anticipated future costs of care. After investment of the lump sum award, the periodic withdrawals from the fund should exhaust the fund at the point where future losses (or costs) have been replaced in full.

A **discount rate** is used to calculate the value of the appropriate lump sum. Selection of an appropriate discount rate is open to argument in Alberta. A short discussion of the discount rate follows.

The inter-relationship between future interest income, that arises from (necessarily conservative) investment of the lump sum award for future costs of care, and future impacts of price inflation, needs to be considered in the selection of the discount rate. The selection of an appropriate discount rate for valuation of future losses of employment incomes also should take into consideration the effects of possible increases arising from improvements in the productivity of labour.

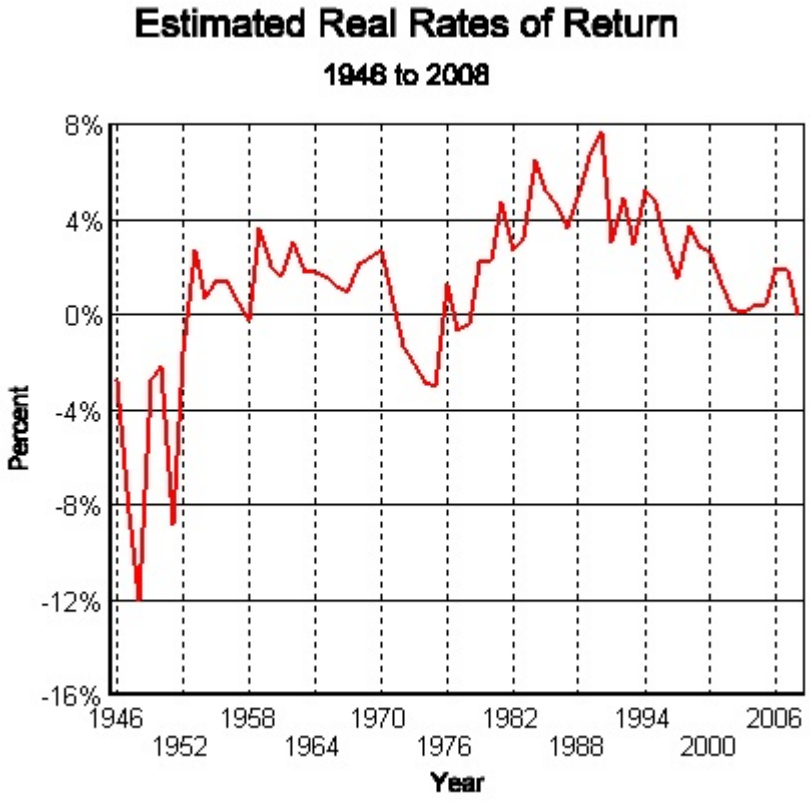
Given the impacts of inflation expectations upon the determination of nominal interest rates, these two factors often are combined in the real (or inflation-adjusted) rate of interest. The **real rate of interest** is comprised of two components:

(1) the nominal rate of interest,

and

(2) the rate of inflation.

Over the years, both of these components have been subject to some major fluctuations, and as a result, the real interest rate has varied significantly. To provide an illustration of the variability of one potential measure of the real rate of interest, estimated annual real returns on **3-month, treasury bills** from 1946 to 2008 are presented on the graph that follows.



Between 1946 and 2008, the real rate of interest averaged approximately 1.3%. From 1946 to 1952, real rates of interest were significantly and uncharacteristically negative, presumably as a result of post-war interest rate controls. If real rates of return from the post-WWII period to 1952 are excluded, the historical average real rate of interest increases to about 2.1%.

In 1972, the year prior to the start of the OPEC oil price crisis, real rates of interest turned negative, and remained at negative or very low rates until 1979. If both the post-war data (to 1952) and the "OPEC" data from 1972 to 1978 are excluded from the series, the real rate of interest on 3-month, T-bills averages approximately **2.6%**. By way of comparison, real rates of interest on **Government of Canada bonds** during the same period averaged about **3.1%** (1 to 3 year), **3.3%** (3 to 5 year) and **3.6%** (5 to 10 year).

Real rates of return on 3-month, T-bills declined precipitously by 2002, and averaged about three tenths of one percent in the four years from 2002 to 2005. These rates increased to about 2% in 2006 and 1.9% in 2007, before again decreasing dramatically to about 0.01% in 2008.

Three possible approaches to the selection of an appropriate real interest rate may be considered. **Econometric modelling** of the myriad factors that are expected to have an impact on (nominal) interest rates and price inflation is one possible approach. However, given the complexity and volatility of the factors that would need to be considered, an appraisal of the assumptions used to generate a model would be difficult.

Time series analysis — like that used in the summary discussion of historic trends in real rates of return set out above, or in much more technical data-fitting analyses — presents a second approach to selection of an estimated real interest rate.

Note that these two approaches are primarily backward-looking, although econometric modelling will look forward, if provided with projections of the likely future values of the explanatory variables.

Use of the **financial market's aggregate view of the future** presents a third approach. Note that the Ontario courts' discount rates (for 15 years from valuation) now are based on **real return bond** yields, rounded to the nearest one quarter of a percentage point, and reduced by 1%. The current (2009) discount rate is 0.75%, based on the real return bonds' average yield of rate of 1.8% in the twelve months ending in August 2008.

Average annual yields on real return bonds - which were first issued by the Government of Canada in November 1991 - ranged from about 4% to 4.7% throughout the 1990s, but declined steadily from 1999 to 2006, when the yield was 1.7%. In 2007, the average annual yield increased to about 2% before falling slightly to 1.9% in 2008. Historically, the average yield on real return bonds is about **3.4%**.

The selection of an appropriate discount rate is highly speculative, given the uncertainties about future economic events — and given the less than stellar success of such estimates by various experts in the past. Based on the information presented above, it may be argued that an assumed **discount rate of 3% per year** will provide a reasonable basis for valuation of longer term future rates of return on conservative investments (such as Government of Canada bonds), net of effects of price inflation.

Valuation of future **losses of employment incomes** also requires consideration of the possible future effects of the **productivity of labour** upon the discount rate. Unfortunately, the time series currently available for the assessment of the productivity of labour is relatively short, given major definitional changes in Statistics Canada's estimates of average weekly earnings that occurred in 1983. Since trends in the data can only be analysed for a relatively short time period using current definitions, potentially important information regarding movements in average weekly earnings prior to 1983 may not be evaluated.

Note, however, that real changes (i.e., net of inflation) in average weekly earnings in Alberta have averaged only about 0.1% per year over the period from 1983 to 2008 — and that the real changes of 2.9% in 2005 and 2.8% in 2006 are the largest gains recorded in the 26 year period. Consideration of effects of emerging and widely anticipated future shortages of labour suggests that demand pressures likely will push up real wages in the short term, and that investment in (more productive) labour saving technologies likely will increase real wages in the long term.

An assumed productivity factor of about 1% per year may be a reasonable assumption to adopt for the projection period required in most cases. Combining this assumption with the assumed real rate of return of 3% per year yields a discount rate (for valuation of employment incomes or losses) of about 2% per year.[1]

[1] A more precise result would be ((1.03 / 1.01) - 1) = 1.98% — which clearly would be a case of spurious precision.