

1 **Q. Pg. 41 - Please confirm and outline all of your adjustments to the standard CAPM**
2 **formula.**

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4 A. There are no adjustments to the standard CAPM formula. The CAPM simply says that the
5 fair return is equal to the risk free rate plus the market risk premium times the security's
6 beta coefficient, that is,

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8
$$K = R_f + MRP * \beta$$

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10 Dr. Booth has estimated what he regards as the correct risk free rate, market risk premium
11 and beta coefficient for a utility maximising investor trading off risk versus return based on
12 the assumptions underlying the formula.

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14 What Dr. Booth thinks the question is asking is outline the adjustments Dr. Booth is making
15 to the way in which the CAPM is estimated and used in regulatory hearings in Canada?
16 Based on this interpretation Dr. Booth would note the following:

17
18 Risk-Free Rate
19

20 Conceptually this is the risk free return over the term of the investment and held in zero net
21 supply, since debt held by one investor is a liability of another. By convention in most areas
22 of finance we use the 30 day Treasury Bill yield as the risk free rate, whereas in regulatory
23 hearings we use the long Canada bond yield. However, at the current point in time it is the
24 global policy maker, not utility maximising investors, that is determining the long bond yield.
25 This is particularly true in Canada as we are one of the few AAA rated countries left now
26 that the US and France are no longer S&P rated AAA rated credits. RBC estimates that rates
27 are 1.0% below where they should be, Dr. Booth would estimate 0.80% as the direct impact
28 of Operation Twist, but regardless this is simply an estimate of the true risk free rate
29 consistent with the assumptions of the CAPM.

Market Risk Premium (MRP)

This is the ex-ante trade-off between the expected return on the market and the risk free rate. In empirical applications we use several methods of estimating the MRP: a) long run historic values which are about 5.0% for Canada, b) historic values from other markets such as the US which are tops about 6.0% c) survey results which are in a range of 5.0-6.0%. and d) direct estimates of the expected return on the market from DCF and other estimates minus the current long Canada yield. Most of these methods do not take into account current capital market conditions, whereas the use of credit spreads does.

Relative Risk Adjustments

We estimate ex post historic betas only for their value as predictive betas. There is an extensive history of beta adjustment techniques and instrumental variables (IV) methods such as using accounting data or size proxies. They are all ways of simply adapting historic estimates for use as future values.