

Introduction

The “Canadian Risk Premia over Time Report” provides long-horizon equity risk premia for your choice of historical time periods from 1936–2007, which allows you to customize your analysis by choosing your own start and end date. Premia are presented in both Canadian dollars and U.S. dollars (U.S. dollar denominated data available from 1939–2007 given the availability of exchange rate data).

Methodology

The equity risk premium is calculated by subtracting the long-term arithmetic average of the yield on the riskless asset from the long-term arithmetic average stock market total return (measured over the same period as the riskless asset). Then the arithmetic mean (simple average) annual return for the two components is calculated. Once these averages are computed, the average for the riskless asset is subtracted from the average stock market return to form the estimate of the equity risk premium. For example, if Canada had an average stock market return of 12.5 percent and the average yield on its riskless asset was 8.0 percent, the equity risk premium would be 4.5 percent (12.5–8.0).

The equity risk premia presented in U.S. dollars have been converted at the prevailing exchange rate. These figures do not always correspond to the equity risk premium in Canadian dollar terms, since currency fluctuations effect the return on the riskless asset and the market in varying magnitudes. For example, suppose the Canadian dollar depreciates against the U.S. dollar by 2.0 percent in a given year. Using the same example as above, the return on the market in U.S. dollar terms would be 10.25 percent $[(1+0.125) \times (1-0.02) - 1]$, and the return on the riskless asset would be 5.84 percent $[(1+0.08) \times (1-0.02) - 1]$. The resulting equity risk premium would be 4.41 percent (10.25–5.84) compared to 4.50 percent in Canadian dollar terms.

Riskless Asset

From 1936–1957, the yield on the Canadian long-term government bond from the Canadian Institute of Actuaries was used to represent the riskless asset.* Generally, the income return is used to represent the riskless asset since it is the completely riskless portion of a bond’s return (Treasury securities are subject to price risk). Unexpected changes in yields will cause capital losses or gains in the fixed-income securities. Historical income returns are unbiased estimators of the returns that investors expected. During the 1936–1957 period, all the necessary data was unavailable to calculate the income return. Therefore, the year-end yield was used to approximate the riskless return for the following year, as it was the unbiased estimate of expected return at that point in time.

* This data is used with permission of the Canadian Institute of Actuaries from the “Report of Canadian Economic Statistics.”

From 1958 to present, the income return is calculated from yields provided by the International Monetary Fund International Financial Statistics. The Canadian Long-term Government bond income return is used. Long-term series refers to issues with original maturity of 10 years or more. Returns are calculated assuming a single bond is bought at par (i.e., the coupon equals the market yield) at the beginning of each period. The bond is “held” over the period and “sold” at the end of the period at the then-prevailing market yield. The end-of-period price is calculated as a function of the coupon, yield, and maturity remaining at period-end. The return in excess of yield (capital appreciation) is then derived as the change in price over the period, divided by the beginning-of-period price (i.e., divided by par). The yield is converted to an income return by lagging it (dividing it by 12) one period.

Market Returns

The Canadian market is represented by the S&P/TSX Composite Index from 1957 to present. Before 1957, the Canadian Institute of Actuaries provided market returns.* The S&P/TSX Composite Index is a market-float-weighted index of the largest capitalized, Canadian incorporated securities traded on the Toronto Stock Exchange. The market value of the outstanding index of the shares is adjusted in order to subtract significant controlling blocks, resulting in the adjusted market float value. Since 1977, dividends have been reinvested at the index level on a daily basis.

The index will be reviewed quarterly and all stocks that do not meet the requirements of the S&P/TSX Composite Index maintenance policies will be removed. Stocks to be added will be selected using the criteria for index additions:

- 1) **Included:** Only stocks listed on the Toronto Stock Exchange are considered for inclusion in any of the S&P/TSX indices.
- 2) **Excluded:** Securities issued by Limited Partnerships, Royalty Trusts, Real Estate Investment Trusts, and Mutual Fund Corporations, and preferred shares, exchangeable shares, warrants, installment receipts and other securities deemed inappropriate by the Committee from time to time, are not eligible for inclusion in the Index.
- 3) **Canadian Incorporation:** Only the common shares of Canadian incorporated companies are eligible.
- 4) **Size.** Stocks are assessed based on their float market capitalization. A company's float market capitalization is calculated by removing control blocks of 20% or more.
- 5) **Liquidity.** Only stocks that are actively and regularly traded are considered for inclusion in any S&P/TSX index. A stock's liquidity is measured relative to liquidity thresholds.

For a more detailed explanation on the S&P/TSX Composite Index, including recent changes to the index and construction methodology, please visit www.standardandpoors.com.

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Exchange Rates

The Canadian exchange rate data comes from the three sources listed below:

1936–1959: Canadian Economic Statistics, 1924–1997 (Canadian Institute of Actuaries)*

1960–1987: OECD Main Economic Indicators Historical Statistics (Organization for Economic Cooperation & Development)

1988–present: The Wall Street Journal

Raw data are expressed as a ratio of foreign currency to U.S. dollars. Ibbotson Associates calculates exchange returns as the monthly percentage change in exchange rates, representing the return to a foreign investor holding non-interest-bearing U.S. currency.

How to Use

The report is arranged with start dates across the columns and end dates down the rows. If, for example, you want to determine the equity risk premium for Canada in Canadian dollars using the historical window of 1950–1993, find the 1950 start-date column and the 1993 end-date row. The intersection provides a statistic of 5.2 percent.

The equity risk premium presented in this report may be used in conjunction with the capital asset pricing model (CAPM) or the build-up method of estimating the cost of capital.

Revisions

Minor revisions (max = 0.03%) were made to the IMF Canada Long-Term Government Income Return series in 2007, which are included in the calculations of the Canadian Risk Premia Report.

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