Submission to Alberta Automobile Insurance Rate Board

Review of Profit Level for Automobile Insurance

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Aviva Canada Inc.

Summary and Key messages

- Aviva Canada is a diverse group committed to Alberta insurance market
- Aviva selects a ROE target using a combination of theory and business judgement
- Aviva seeks to achieve its ROE from three sources:
  - Return on surplus
  - Return of cash flow
  - U/W profit
- Fair value accounting should not affect economic ROE targets but will affect Canadian ROE measurement

Summary and Key messages

AVIVA

Aviva Canada needs to target a ROE that attracts capital in a competitive marketplace

Aviva Canada would support a AIRB approach to industry-wide basic premium determination that permits insurer business judgement, allows Aviva to attract future capital support, and provides a level of protection for the consumer

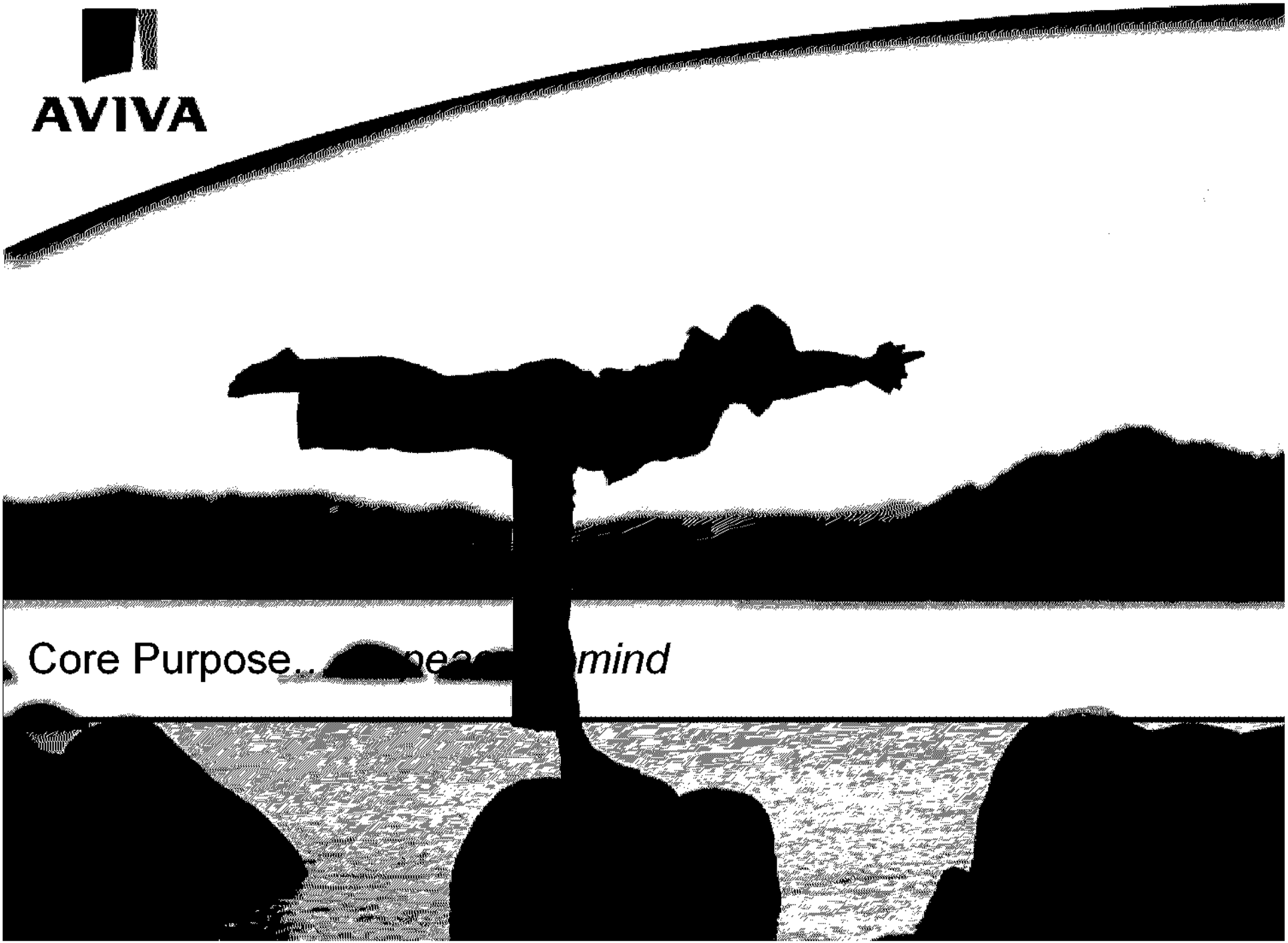
Agenda

- Description of Aviva Canada Inc.
  - Goals, operating companies, shareholder
- Overview of ROE target setting process
  - Parent company context - theory, competition
  - Canadian targets – practical approach
- Relationship between ROE and profit provisions
  - Premium/equity, investment return, payment patterns
  - Illustrative model and calculation
- Impact of Fair Value Accounting Changes

Aviva Canada Inc.

- Our Core Purpose
- Vision and Goals
- Market Position

AVIVA



Core Purpose... ...mind


Our V on
The most trusted and valued home,
automobile and business insurer
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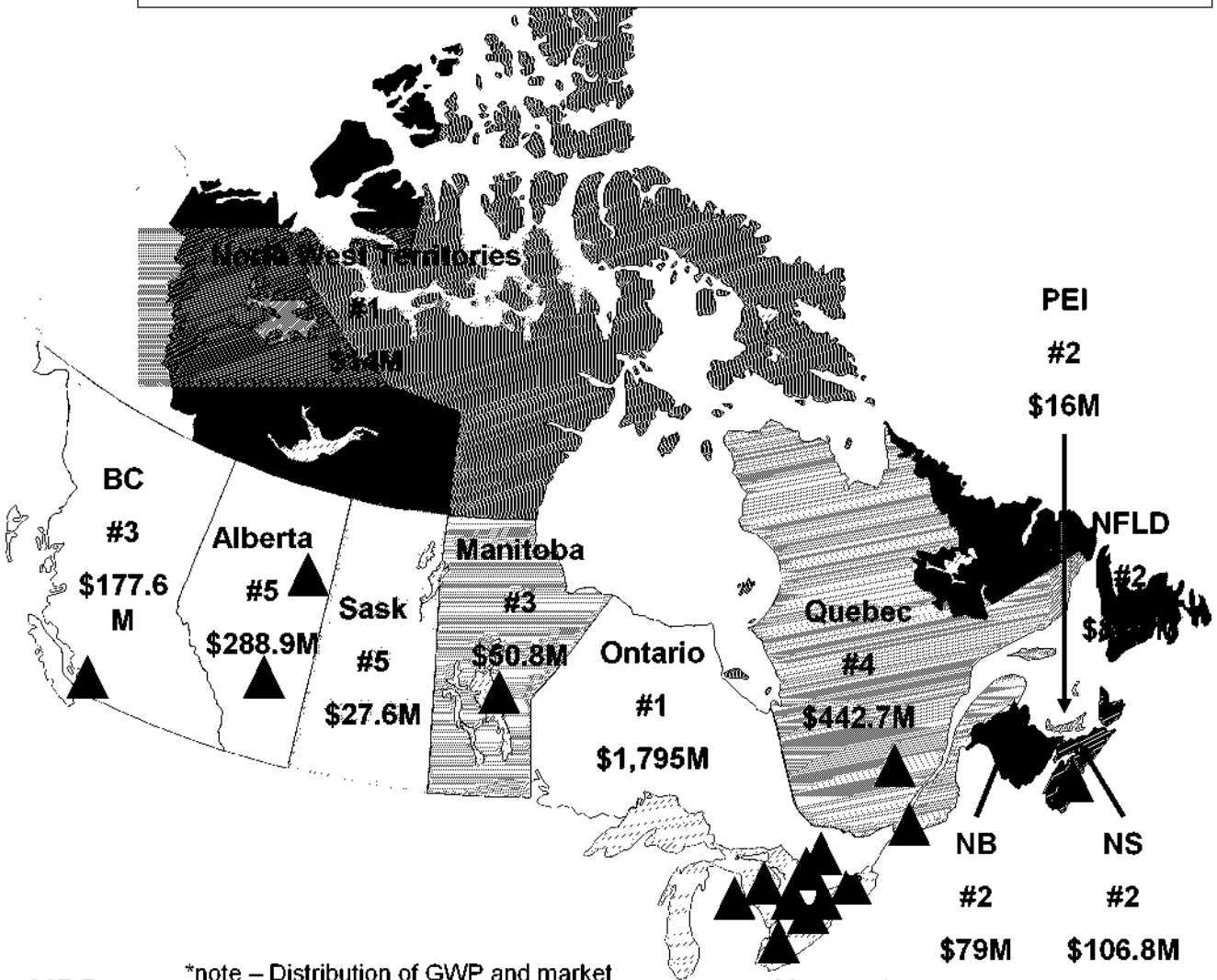
eliverin

Aviva Canada's position

2005 Gross Written Premium – All lines



Alberta

2005 GWP

$288.9M

- 225 Staff in Alberta
- 2 Branch Locations (Calgary, Edmonton)

*note – Distribution of GWP and market position by province based on 2005

Four of Aviva Canada's operating companies are in Alberta

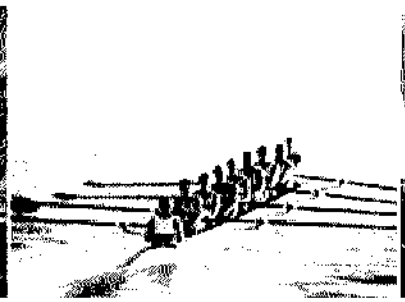
AVIVA

Strength *in diversity*

AVIVA

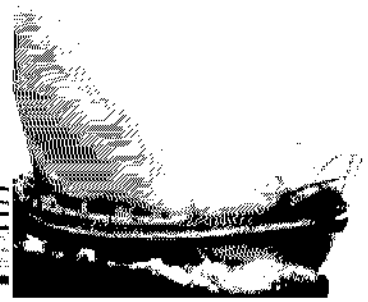
Helping brokers build their business

AVIVA Traders



The value of one the power of many

AVIVA Elite



Leisure and lifestyle

SCOTTISH & YORK

How can I help you?

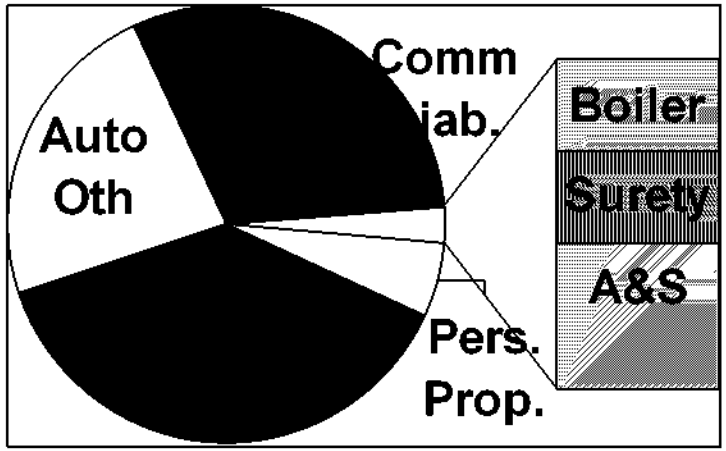
Pilot Insurance Company

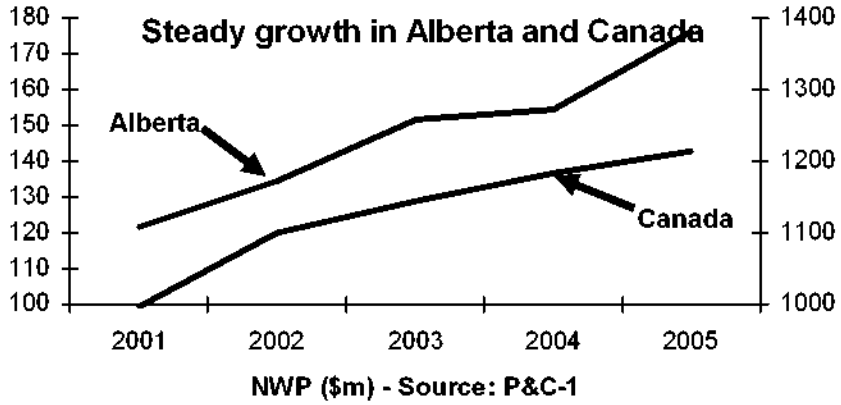
Community focused relationship managed

Aviva Insurance Company of Canada ("Aviva Insurance")

- Insuring Canadians since 1906
- Broad range of products, distributed by a network of independent brokers
- Underwrites a number of specialty niche products

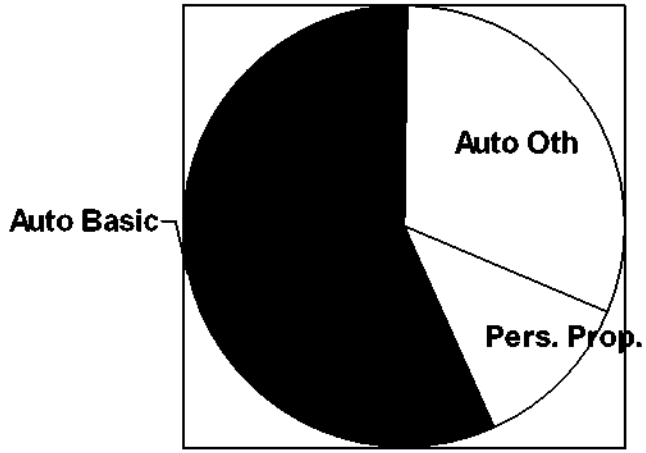
- *Recent innovations in Alberta*
- ✓ New discounts
- ✓ Satellite roadside assistance
- ✓ Identity Theft coverage
- ✓ Dolce Vita (upscale homes)





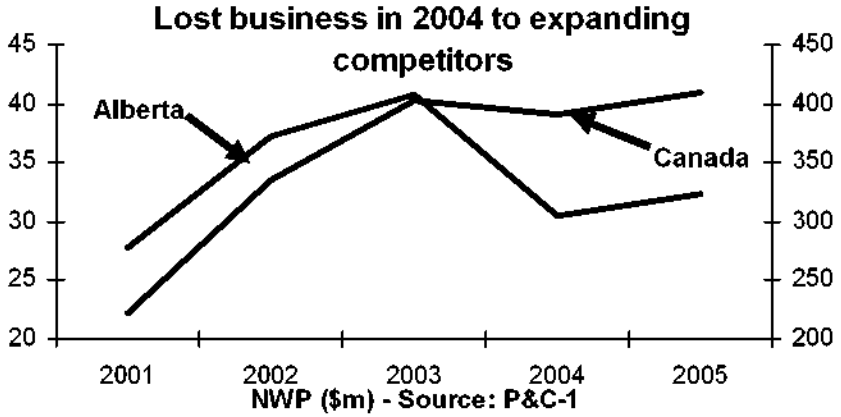
Traders General Insurance Company ("Aviva Traders")

- Focuses on providing home and auto insurance to large and mid-sized groups
- One of Canada's leading group insurers



Recent innovations in Alberta

- ✓ New discounts
- ✓ Satellite roadside assistance
- ✓ Identity Theft coverage
- ✓ Dolce Vita (upscale homes)

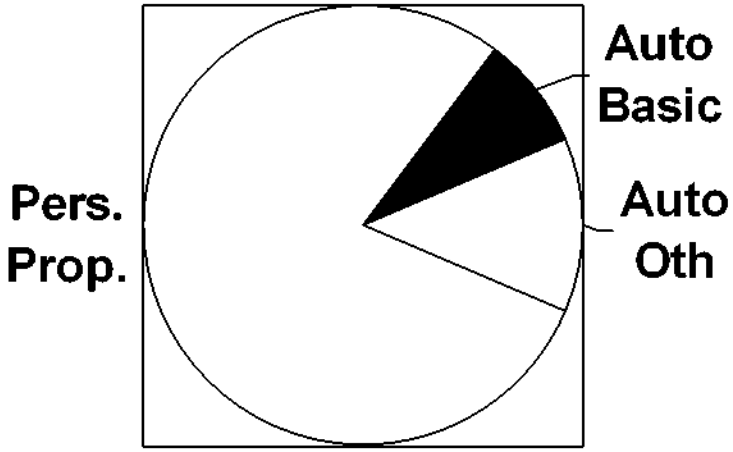


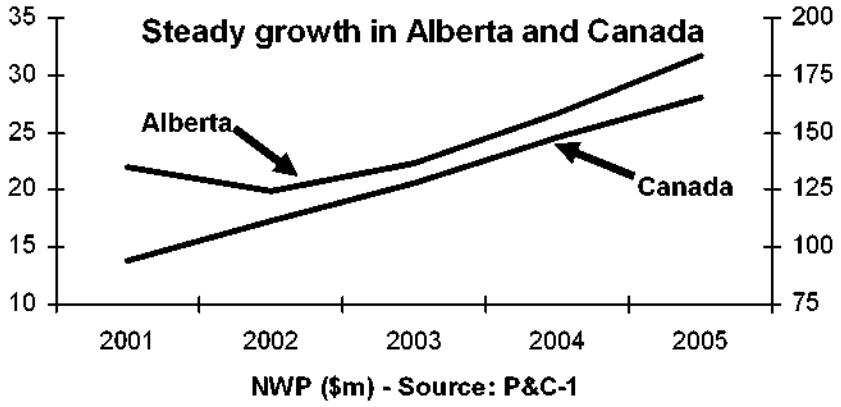
Elite Insurance Company ("Aviva Elite")

- Canada's largest insurer of recreational vehicles and mobile homes
- Specializes in niche personal insurance products including:
  - Holiday trailers
  - Park model trailers
  - Horses
  - hobby farms
  - Sailboats and power boats
  - Antique classic cars
  - Custom cars

Recent innovations in Alberta

✓ Entering motorcycle market



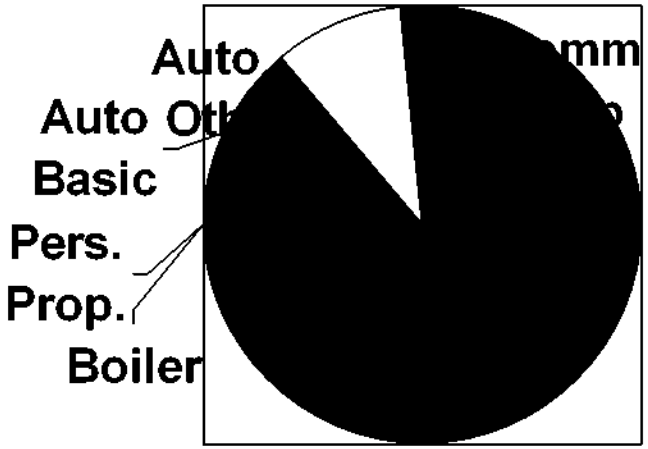


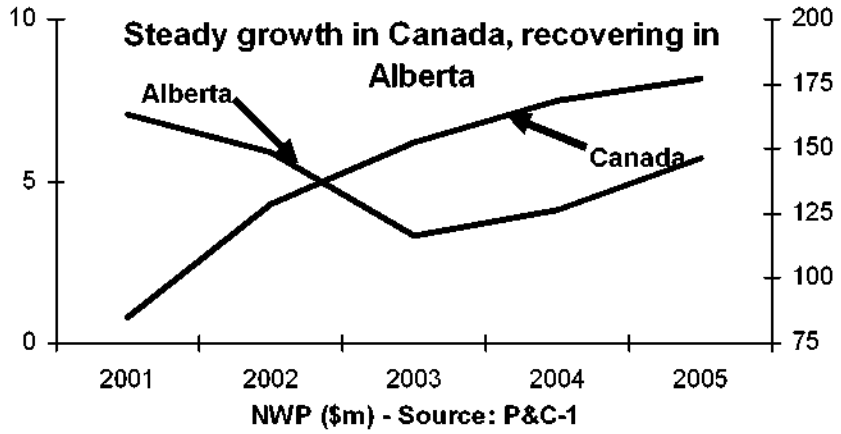
Scottish & York Insurance Co. Ltd. ("Scottish")

- Underwrites national and regional commercial programs with a focus on non traditional and niche products.

Recent innovations in Alberta

✓ Entering traditional home and auto market through corporate partners, focusing on providing competitively priced products, backed by state-of-the-art call centres.





Aviva Canada Inc.

- Our UK parent company – Aviva plc
  - Business mix of parent
  - Strategy
  - Focus

The Aviva portfolio

Sales £35bn (1)

EEV Operating Profits
£3.5bn (2)

International Life

Aviva International

International General Insurance

UK General Insurance

Aviva UK

46%

29%

UK Life

5

(1) FY05 Total long-term savings new business sales and GI and health new business premiums
(2) FY05 EEV Operating Profits Excluding Corporate Costs and Unallocated Interest Charges

Aviva – our strategy

To be a clear leader in helping our customers grow their wealth and protect their assets and their health…

Long term savings and fund management

- by offering a superior range of
  - long-term savings
  - Investment, and
  - protection products
- in markets that offer significant opportunities for growth

General insurance and related services

- by providing a broad range of competitive
  - motor
  - property, and
  - health insurance services
- to individuals and small to medium-sized enterprises in chosen markets

Aviva – our strategy

Aviva focuses on …

- understanding customers
- building profitable market leading positions
- developing efficient and effective distribution channels
- using brands to widen leadership positions
- delivering growth
- using scale to deliver benefits
- attracting, motivating and retaining talented people

Overview of our ROE target setting process

- Parent company context
  - Theory – Capital Asset Pricing Model
  - Theory – Discounted Cash Flows
  - Competitive Context

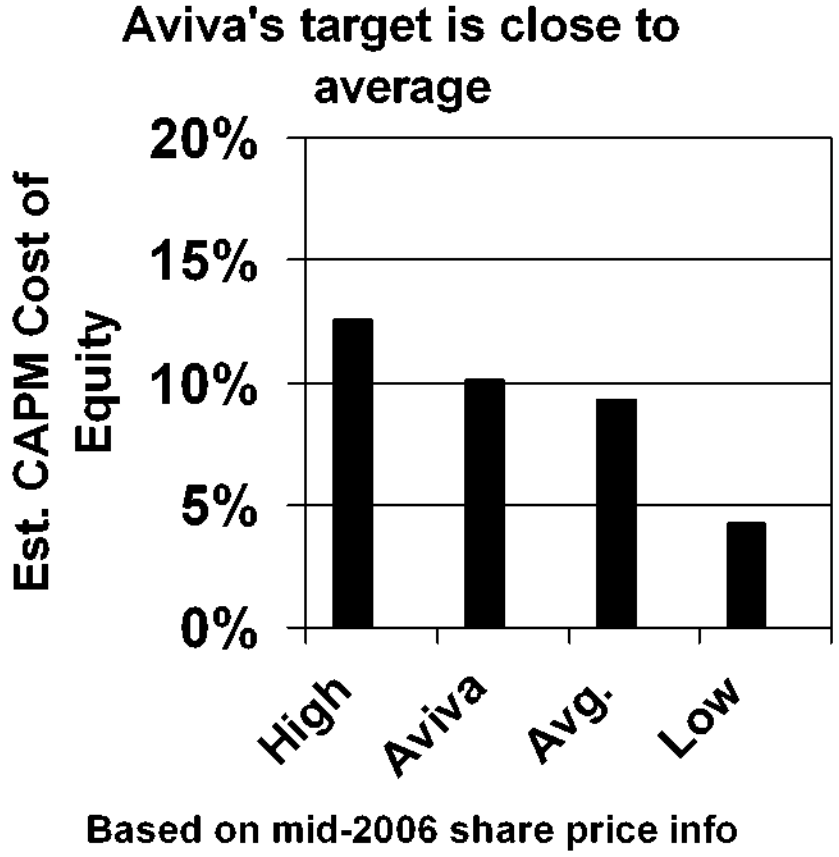
Our parent uses the historical stock price movement to estimate ROE

- The Capital Asset Pricing Model (CAPM) assumes that the investor requires a return on a security equal to: RF + ß(RM – RF),
  - RF = risk- free rate
  - ß = co-variability of the security with the market (M)
  - RM = return on the market.

Example

- RF = 4.34% (Can. Long Bond)
- ß = 1.09 (source: Value Line)
- (RM – RF) = 5.30% (source: Ibbotson)

⇒ CAPM ROE = 10.14%



There are pros and cons to using a CAPM ROE calculation

AVIVA

Pros

- basic to modern financial theory
- Uses actual, historical share price movements
- Estimates are readily available

Adjusted Example

- RF = 4.34% (Can. Long Bond)
- ß (low cap) = 1.09 x 1.22 = 1.33 (source: Value Line,Ibbotson)
- (RM – RF) = 6.75% (source: Appendix A)

⇒ CAPM ROE = 13.32%

Cons

- Long bond yields are not entirely risk free (1)
- TSX may not be a good proxy for market risk (1)
- Historical betas may be biased (1)
- There may be a liquidity risk premium for small or private firms (2,3)

(1) Appendix A, McShane, K. (2) Bodie, Z.; Kane, A.; and Marcus, A.J., Investments (3) Ibbotson

Our parent also looks at the ROE implied by the current stock price

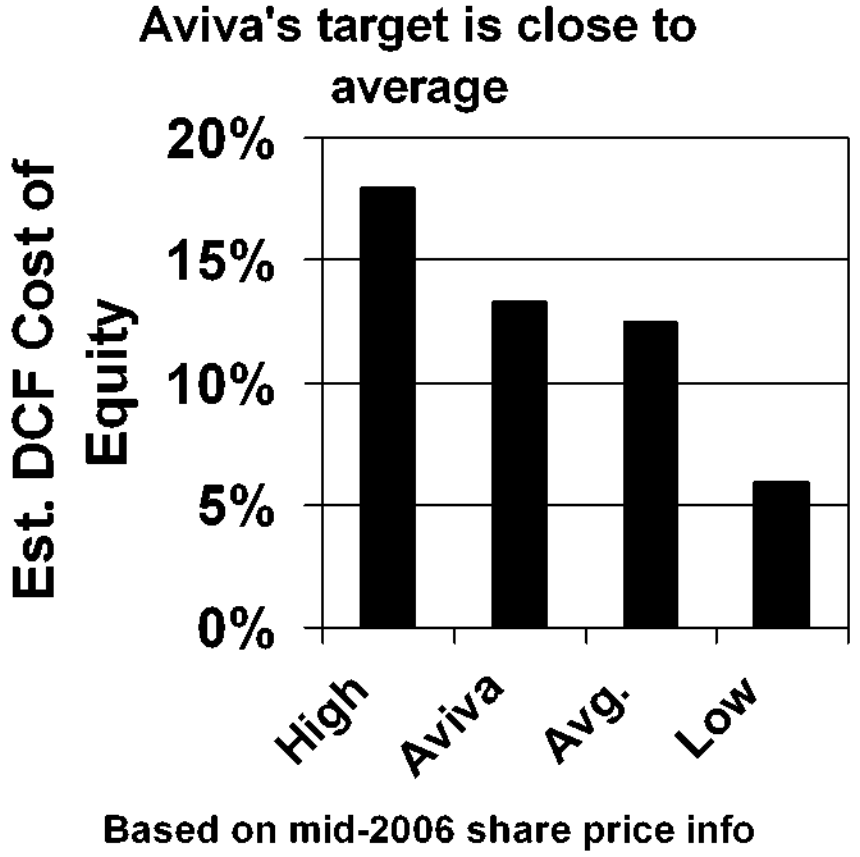
- The simplest discounted cash flow (DCF) model is the the Gordon growth model: P = D/(k-g)
  - P = share price
  - D = dividend per share
  - k = ROE
  - g = sustainable growth rate

Example

- P = 723.5 pence (Jan. 9, 2006)
- D = 28.22 (project 2006*)
- g = 9.4% (sustainable growth rate*)

⇒ k = DCF ROE = 13.3%

* Source: Citigroup Investment Research



There are pros and cons to using a CAPM ROE calculation

Pros

- Fundamental to investment analysis and pricing
- Well grounded in economic theory.
- Consensus or market forecasts of its key variables are readily available
- Uses cash value of the dividends – which are not subject to differences in accounting treatment.

Cons

- Assumption on the firm's long term sustainable growth rate
- Insurer's stock price may not reflect the intrinsic value of the firm
- Can be wide variation between apparently similar firms
- No obvious data source for thinly traded or private firms

Another factor is to consider peer competitors' publicly stated targets

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Competitor	Business	Target (based on info in early 2006)
Aegon (Dutch)	Life (US, Neth.)	11% return on total capital (1)
Allianz (German)	Life, P&C	15% return on risk adjusted capital (1)
AXA (French)	P&C, Life	10% IRR for new life business (1)
Generali (Italian)	Life, P&C	10% - 12% return on capital (1)
ING (Dutch)	Bank, Life, P&C	12% IRR for new business (2) 12% return on risk adjusted capital
Prudential (UK)	Life (UK, US)	14% IRR in the UK by 2007
Zurich (Swiss)	P&C, Life	12% return on equity, Life RoEV 10%-12% (3)

(1) JP Morgan Cazenove (2) Goldman Sachs (3) H1 2005 interim report

Aviva benchmarks its share price performance against this peer group of European insurers

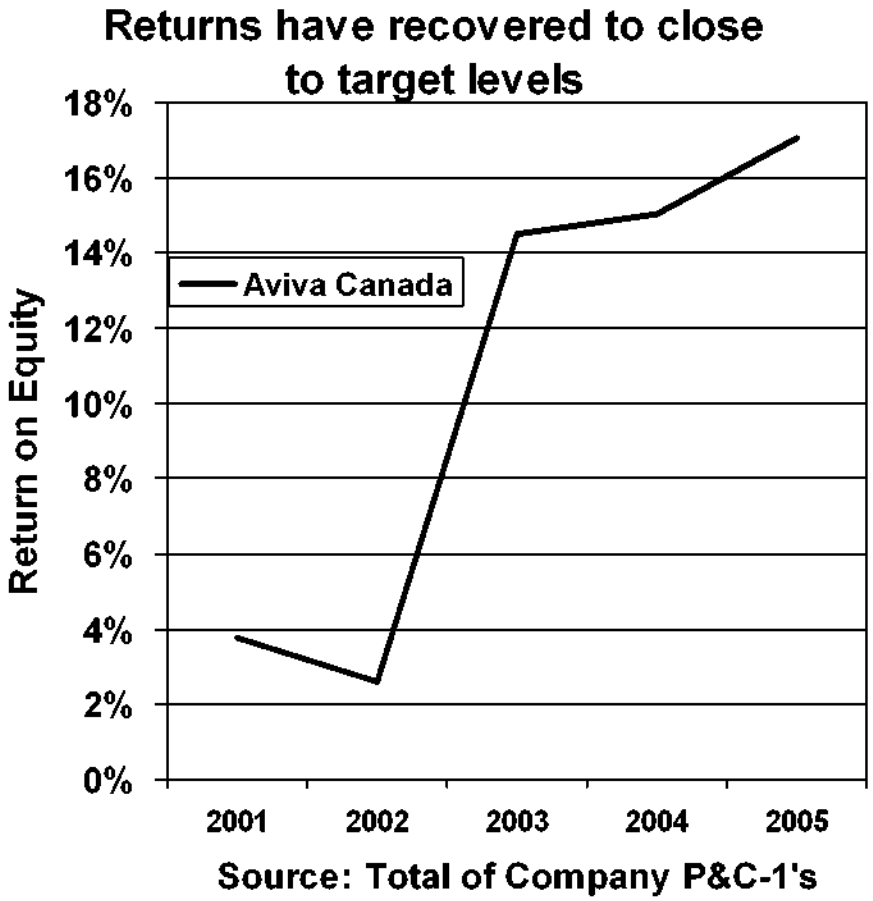
Overview of our ROE target setting process

AVIVA

- Historical Returns
- Business Judgement

Canadian CEO & Group Chief Executive - Target 15.6% ROE

- Set in 2003 and required for ongoing growth and shareholder expectations
- Property & Casualty is historically has more risk therefore requires higher ROE compared to Life
- 70% of Aviva plc's income is lower risk life insurance



Relationship between ROE and profit provisions

- Premium/equity
- Investment return
- Payment patterns
- Illustrative model and calculation

There are three sources of return to the insurance company

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$$R(e) = \{ [U(u) + U(i)] [1 - T(u)] P/E \} + \{ R(i)[1 - T(i)] \}$$

Return on Equity – R(e)

1. Underwriting profit – U(u)
2. Investment of insurance cash flows – U(i)
   - Assume risk free matched gov't of Canada bonds (4%)
3. Investment of the capital – R(i)
   - Assume common stocks at a long term investment return

- All returns are post-tax (T(u), T(i))
- Items 1 and 2 are adjusted for the Premium/Equity (P/E) ratio
- Cash flows include RSP costs

Factor	All Covers	Basic Only
R(e)	15.6%	15.6%
U(u)	2.26%	5.77%
U(i)	5.80%	6.50%
R(i)	7.00%	7.00%
T(u)	33.62%	33.62%
T(i)	30.00%	30.00%
P/E	2.00	1.30

Impact of Fair Value Accounting Changes

- No impact on target ROE
  - Internal measures already use UK accounting
  - Accounting change has no impact on economic reality
- Potential impact on presentation of results
  - Claim liabilities will now be discounted at current yields
  - Resulting volatility in O/S claims will flow through
    - Loss ratio
    - U/W result
  - Offsetting changes in fair value of assets will flow through:
    - Investment income (if Fair Value Option used)
    - Other Comprehensive Income (if Available For Sale used)
    - Numerical example to follow

Summary and Key messages

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- Aviva selects a ROE target using a combination of theory and business judgement, and must be at a level that attracts capital in a competitive marketplace
- Aviva seeks to achieve its ROE from three sources:
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Aviva Canada needs to target a ROE that attracts capital in a competitive marketplace

Aviva Canada would support a AIRB approach to industry-wide basic premium determination that permits insurer business judgement, allows Aviva to attract future capital support, and provides a level of protection for the consumer

Taking care of what's **important** to ***you***

CONCEPTUAL UNDERPINNINGS OF THE CAPITAL ASSET PRICING MODEL

The Capital Asset Pricing Model (CAPM) is a theoretical, formal model of the equity risk premium test which posits that the investor requires a return on a security equal to:

$$R_F + ß(R_M - R_F),$$

Where:

R_F	=	risk-free rate
ß	=	covariability of the security with the market (M)
R_M	=	return on the market.

The model is based on restrictive assumptions, including:

1. Perfect, or efficient, markets exist where,

   (a) each investor assumes he has no effect on security prices;
   (b) there are no taxes or transaction costs;
   (c) all assets are publicly traded and perfectly divisible;
   (d) there are no constraints on short-sales; and,
   (e) the same risk-free rate applies to both borrowing and lending.

2. Investors are identical with respect to their holding period, their expectations and the fact that all choices are made on the basis of risk and return.

The CAPM relies on the premise that an investor requires compensation for non-diversifiable risks only. Non-diversifiable risks are those risks that are related to overall

market factors (e.g., interest rate changes, economic growth). Company-specific risks, according to the CAPM, can be diversified away by investing in a portfolio of securities whose expected returns are not perfectly correlated. Therefore the shareholder requires no compensation to bear company-specific risks.

DISADVANTAGES OF CAPM

Risk-Free Rate

1. The theoretical CAPM assumes that the risk-free rate is uncorrelated with the return on the market. In other words, the assumption is that there is no relationship between the risk-free rate and the equity market return (i.e., the risk-free rate has a zero beta). However, the application of the model typically assumes that the return on the market is highly correlated with the risk-free rate, that is, that the equity market return and the risk-free rate move in tandem.

2. The theoretical CAPM calls for using a risk-free rate, whereas the typical application of the model in the regulatory context employs a long-term government bond yield as a proxy for the risk-free rate. Long-term government bond yields may reflect various factors that render them problematic as an estimate of the "true" risk-free rate, including:

   (a) The yield on long-term government bonds reflects the impact of monetary and fiscal policy; e.g., the potential existence of a scarcity premium.

   (b) Yields on long-term government bonds may reflect shifting degrees of investors' risk aversion; e.g., "flight to quality". An increase in the equity risk premium arising from a reduction in bond yields due to a "flight to quality" is not likely to be captured in the typical application of the CAPM.

(c) Long-term government bond yields are not risk-free; they are subject to interest rate risk. The size of the equity market risk premium at a given point in time depends in part on how risky long-term government bond yields are relative to the overall equity market. The ability to capture and measure changes in the risk of the so-called risk-free security introduces a further complication in the application of the CAPM.

Equity Market Risk Premium

1. The equity market risk premium is typically measured largely by reference to historic data. Adjustments are then made to capture (a) changes that have occurred in the underlying markets over time, or (b) perceived differences between what investors actually achieved and what they may have expected on an *ex ante* basis. There are a wide range of views on what constitutes an appropriate period for estimating the historic risk premium, on what constitutes the appropriate averaging technique, and on whether various time-specific or country-specific outcomes diminish the reliability of history as a predictor of the future risk premium. In summary, the link between the historic and the future risk premium is subject to considerable judgement.

2. Factors specific to the Canadian historic risk premium data are problematic.

(a) The Canadian equity market has undergone significant structural change over the periods typically used to measure historic risk premiums. The historic premiums reflect in considerable measure a resource-based economy. At the end of 1980, no less than 46%

of the market value of the TSE 300 was resource-based stocks.[1] By comparison, over the past two years, the resource-based percentage of the S&P/TSX Composite averaged just over 30%.[2] As the resource sectors have declined in importance, the influence of technology-intensive and service-related sectors on the index has risen markedly. Table A-1, which compares the year-end 1980 and 2005 market weightings of the technology/service sectors, highlights the change over the past 25 years. Investor returns expected from an equity market characterized by technology-intensive stocks may be quite different from returns expected from a market dominated by resource-based stocks.

Table A-1

	1980	**2005**
Biotechnology/ Health Care/ Pharmaceuticals	0.0%	1.1%
Information Technology	0.9%	4.2%
Telecommunication Services	4.8%	5.2%
Media & Entertainment	0.6%	2.3%
Financial Services	13.5%	31.6%
	19.8%	44.4%

Source: *TSE Review*, December 1980 and December 2005.

(b) The historic average achieved returns on the TSE 300 Index were significantly affected by the relatively poor performance of commodity-linked securities. Over the 1956-2003 period (the longest period for which consistent data exist for the individual TSE 300 sub-indices), the average

[1] As measured by the oil and gas, gold and precious minerals, metals/minerals, and pulp and paper products sectors. Excludes "the conglomerates sector", which also contained stocks with significant commodity exposure.
[2] Energy and Materials Industry Sectors; the weight of these sectors has recently increased reflecting the run-up in energy prices since mid-2004.

returns of the commodity-based sectors were exceeded by the returns of virtually every other sector of the TSE 300.[3] Because the long-term returns of the various sectors are inconsistent with their relative risk, the achieved risk premiums may not accurately reflect what investors had expected.

(c) The TSE 300 Index has been criticized for its lack of liquidity and for the quality and size of the stocks it has contained. In a speech in early 2002, Joseph Oliver, President and CEO of the Investment Dealers Association of Canada stated,

> "Over the last 25 years, the TSE 300 has steadily declined as a relevant benchmark index. Part of the problem relates to the illiquidity of the smaller component companies and part to the departure of larger companies that were merged or acquired. Over the last two years, 120 Canadian companies have been deleted from the TSE 300.
>
> When a company disappears from a US index due to a merger or acquisition, that doesn't affect the U.S. market's liquidity. An ample supply of large cap, liquid U.S. companies can take its place. In Canada, when a company merges or is acquired by another company, it leaves the index and is replaced by a smaller, less liquid Canadian company. We have seen this over the last two years, -- notably in the energy sector. Over the next few years, we are likely to see it in financial services, where further consolidation is inevitable. Over time, Canada's senior index has become less diversified, with more smaller component companies. As a result, as many as 75 of the TSE 300 will not qualify for inclusion in the new S&P/TSE Composite Index."

[3] The average (compound, or geometric) returns of the commodity-based sectors were as follows:

Metals/Minerals	7.8%
Gold	9.5%
Oil and Gas	9.5%
Paper/Forest	7.1%

By comparison, the corresponding simple average of the remaining sectors' returns over the same period was 10.3%.

When the TSE 300 was overhauled (becoming the S&P/TSX Composite in May 2002), 275 companies were initially included, instead of the previous 300.[4] At December 31, 2005 there were 278 companies in the Composite, including the recently added income trusts.

In 2005, the S&P/TSX Composite underwent a significant change with the inclusion of income trusts. Income trusts, which just five years ago, had a market capitalization of approximately $20 billion, had a market capitalization of approximately $150 billion at the end of 2005, accounting for almost 10% of the total market value of the TSX. Income trusts have significantly outperformed the "conventional" equity markets during the period for which income trust market data are readily available. The annual total return for the S&P/TSX Capped Income Trust Index over the 1998-2005 period averaged 19.1%, compared to 7.5% for the S&P/TSX Composite Index. The exclusion of income trust returns from the S&P/TSX Composite Index to date means that the measured equity returns understate the actual equity market returns achieved by Canadian investors.

(d) The performance of the Canadian equity market as the "market portfolio" has been unduly influenced by a small number of companies. In mid-2000, before the debacle in Nortel Networks' stock value, Nortel shares alone accounted for 34.6% of the total market value of the TSE 300. To put this in perspective, the largest stock in the S&P 500 at that time (General Electric) accounted for only 4% of the S&P 500's total market value. The undue influence of a small number of stocks requires caution in drawing conclusions from the history of the TSE 300 regarding the forward-looking market risk premium.

[4] The overhaul of the composite index, which included more stringent criteria for inclusion, did not require that a specific number of companies be included in the index.

(e) Despite the structural shift in the TSE Composite away from its historic resource-base, the Canadian market remains significantly less diversified than the U.S. market. There are various sectors of a diversified economy that are relatively underrepresented in the Canadian equity market, e.g., pharmaceuticals, retailing and health care. Thus, the TSE Composite has, to some extent, had characteristics of a market sector rather than a diversified market portfolio.

(f) The achieved equity market risk premiums in Canada have been squeezed by the performance of the government bond market. The radical change in Canada's fiscal performance over the past decade, leading to the recent low levels of interest rates, indicates that the historic returns on long-term Government of Canada bonds overstate likely future bond returns, and therefore understates the future equity risk premium.

Beta

Impediments to reliance on beta as the sole relative risk measure, as the CAPM indicates, include:

1. The assumption that all risk for which investors require compensation can be captured and expressed in a single risk variable;

2. The only risk for which investors expect compensation is non-diversifiable equity market risk; no other risk is considered (and priced) by investors; and,

3. The assumption that the observed calculated betas (which are simply a calculation of how closely a stock's or portfolio's price changes have mirrored those of the overall equity market)[5] are a good measure of the relative return requirement.

4. Use of beta as the relative risk adjustment allows for the conclusion that the cost of equity capital for a firm can be lower than the risk-free rate, since stocks that have moved counter to the rest of the equity market could be expected to have betas that are negative. Gold stocks, for example, which are regarded as a quintessential counter-cyclical investment, could reasonably be expected to exhibit negative betas. In that case, the CAPM would posit that the cost of equity capital for a gold mining firm would be less than the risk-free rate, despite the fact that, on a total risk basis, the company's stock could be very volatile.

The body of evidence on CAPM leads to the conclusion that, while betas do measure relative volatility, the proportionate relationship between risk (beta) and return posited by the CAPM has not been established. A summary of various studies, published in a guide for practitioners, concluded,

> "Empirical tests of the CAPM have, in retrospect, produced results that are often at odds with the theory itself. Much of the failure to find empirical support for the CAPM is due to our lack of ex ante, expectational data. This, combined with our inability to observe or properly measure the return on the true, complete, market portfolio, has contributed to the body of conflicting evidence about the validity of the CAPM. It is also possible that the CAPM does not describe investors' behavior in the marketplace.

[5] The beta is equal to:

$$\frac{\text{Covariance } (R_E, R_M)}{\text{Variance } (R_M)}$$

Betas are typically calculated by reference to historical relative volatility using simple regression analysis of the change in the market portfolio return and the corresponding change in an individual stock or portfolio of stock returns.

> Theoretically and empirically, one of the most troubling problems for academics and money managers has been that the CAPM's single source of risk is the market. They believe that the market is not the only factor that is important in determining the return an asset is expected to earn." (Diana R. Harrington, *Modern Portfolio Theory, The Capital Asset Pricing Model & Arbitrage Pricing Theory: A User's Guide*, Second Edition, Prentice-Hall, Inc., 1987, page 188.)

Fama and French in "The CAPM: Theory and Evidence", *Journal of Economic Perspectives*, Volume 18, Number 3 (Summer 2004), pp. 25-26:

> "The attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor – poor enough to invalidate the way it is used in applications. The CAPM's empirical problems may reflect theoretical failings, the result of many simplifying assumptions. But they may also be caused by difficulties in implementing valid tests of the model. For example, the CAPM says that the risk of a stock should be measured relative to a comprehensive 'market portfolio' that in principle can include not just traded financial assets, but also consumer durables, real estate and human capital. Even if we take a narrow view of the model and limit its purview to traded financial assets, is it legitimate to limit further the market portfolio to U.S. common stocks (a typical choice), or should the market be expanded to include bonds, and other financial assets, perhaps around the world? In the end, we argue that whether the model's problems reflect weaknesses in the theory or in its empirical implementation, the failure of the CAPM in empirical tests implies that most applications of the model are invalid."

Fama and French have developed an alternative model which incorporates two additional explanatory factors in an attempt to overcome the problems inherent in the single variable CAPM.[6]

To quote Burton Malkiel in *A Random Walk Down Wall Street*, New York: W. W. Norton & Co., 2003:

[6] The additional factors are size and book to market.

> "Beta, the risk measure from the capital-asset pricing model, looks nice on the surface. It is a simple, easy-to-understand measure of market sensitivity. Alas, beta also has its warts. The actual relationship between beta and rate of return has not corresponded to the relationship predicted in theory during long periods of the twentieth century. Moreover, betas for individual stocks are not stable from period to period, and they are very sensitive to the particular market proxy against which they are measured.
>
> I have argued here that no single measure is likely to capture adequately the variety of systematic risk influences on individual stocks and portfolios. Returns are probably sensitive to general market swings, to changes in interest and inflation rates, to changes in national income, and, undoubtedly, to other economic factors such as exchange rates. And if the best single risk estimate were to be chosen, the traditional beta measure is unlikely to be everyone's first choice. The mystical perfect risk measure is still beyond our grasp." (page 240)

One of the key developers of the Arbitrage Pricing Model, Dr. Stephen Ross, has stated,

> "Beta is not very useful for determining the expected return on a stock, and it actually has nothing to say about the CAPM. For many years, we have been under the illusion that the CAPM is the same as finding that beta and expected returns are related to each other. That is true as a theoretical and philosophical tautology, but pragmatically, they are miles apart."[7]

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RELATIONSHIP BETWEEN BETA AND RETURN IN THE CANADIAN EQUITY MARKET

To test the actual relationship between beta and return in a Canadian context, the betas (using monthly total return data) were calculated for various periods for each of the 15 major sub-indices of the "old" TSE 300 as were the corresponding actual geometric average total returns. Simple regressions of the betas on the achieved market returns were then conducted to determine if there was indeed the expected positive relationship. The regressions covered (a) 1956-2003, the longest period for which data for the TSE 300 and its sub-index components are available; (b) 1956-1997, which eliminates the major effects of the "technology bubble", and (c) all potential non-overlapping 10-year periods from 2003 backwards.

The analysis showed the following:

Table A-2

Returns Measured Over:	Coefficient on Beta	R^2
1956-2003	-.088	47%
1956-1997	-.082	44%
1964-1973	-.020	1%
1974-1983	-.008	1%
1984-1993	-.056	11%
1994-2003	-.053	9%

Source: Schedule 9, page 1 of 2.

The analysis suggests that, over the longer term, the relationship between beta and return has been negative, rather than the positive relationship posited by the CAPM. For

example, as indicated in Table A-2 above, for the period 1956-2003, the R^2 of 47% means that the betas explained 47% of the variation in returns among the key sectors of the TSE 300 index. However, since the coefficient on the beta was negative, this means that the higher beta companies actually earned lower returns than the low beta companies.

A series of regressions was also performed on the 10 major sectors of the S&P/TSX Composite. These regressions covered (a) 1988-2005, the longest period for which data for the new Composite and its sector components are available; (b) 1988-1997,[8] and (c) the most recent 10-year period ending 2005.

That analysis showed the following:

Table A-3

Returns Measured Over:	Coefficient on Beta	R^2
1988-2005	-.053	27%
1988-1997	-.017	1%
1996-2005	-.111	45%

Source: Schedule 9, page 2 of 2.

These analyses indicate that, historically, the relationship between beta and return in the Canadian equity market has been the reverse (higher beta = lower return) than the posited relationship.

[8] The use of this sub-period was intended to ensure elimination of the impacts of any anomalous market behavior during the technology "bubble and bust", which occurred mainly from 1999 through mid-2002.

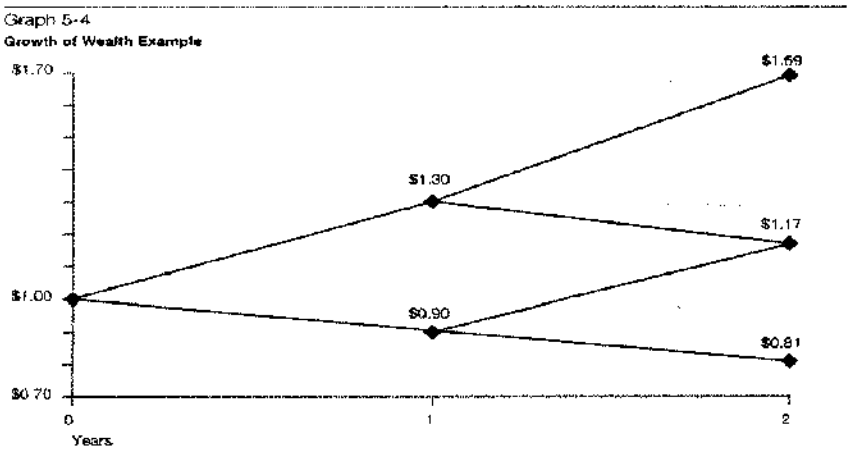
USE OF ARITHMETIC AVERAGES TO ESTIMATE THE EQUITY MARKET RISK PREMIUM

Illustration of Why Arithmetic Average Should be Used

In Ibbotson Associates, *Stocks, Bonds, Bills and Inflation: Valuation Edition, 2005,* the following discussion was included:

> "To illustrate how the arithmetic mean is more appropriate than the geometric mean in discounting cash flows, suppose the expected return on a stock is 10 percent per year with a standard deviation of 20 percent. Also assume that only two outcomes are possible each year ? +30 percent and -10 percent (i.e., the mean plus or minus one standard deviation). The probability of occurrence for each outcome is equal. The growth of wealth over a two-year period is illustrated in Graph 5-4.

Figure A-1



The most common outcome of $1.17 is given by the geometric mean of 8.2 percent. Compounding the possible outcomes as follows derives the geometric mean:

$$[(1+0.30)x(1-0.10)]^{1/2} - 1 = 0.082$$

However, the expected value is predicted by compounding the arithmetic, not the geometric, mean. To illustrate this, we need to look at the probability-weighted average of all possible outcomes:

	(0.25 x $1.69)	= $0.4225
+	(0.50 x $1.17)	= $0.5850
+	(0.25 x $0.81)	= $0.2025
	Total	$1.2100

Therefore, $1.21 is the probability-weighted expected value. The rate that must be compounded to achieve the terminal value of $1.21 after 2 years is 10 percent, the arithmetic mean.

$$\$1 \times (1+0.10)^2 = \$1.21$$

The geometric mean, when compounded, results in the median of the distribution:

$$\$1 \times (1+0.0.082)^2 = \$1.17$$

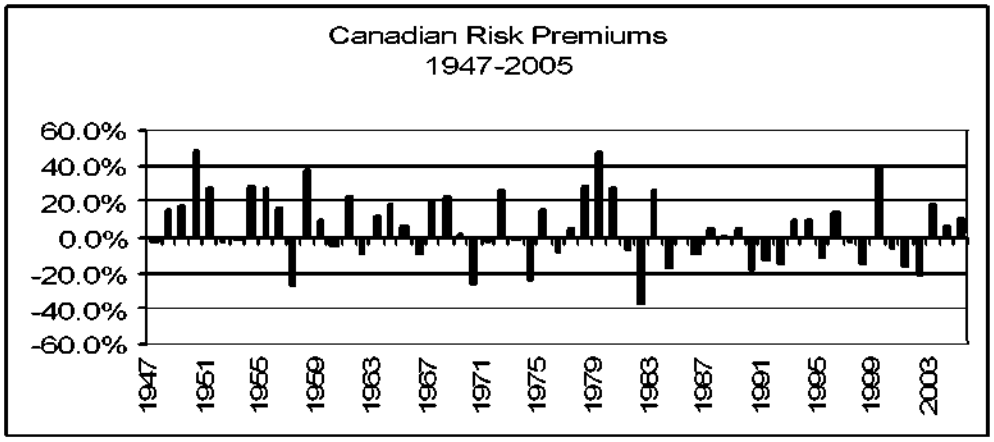
The arithmetic mean equates the expected future value with the present value; it is therefore the appropriate discount rate.

Randomness of Annual Equity Market Risk Premiums

The use of arithmetic averages is premised on the unpredictability of future risk premiums. The following graphs illustrate the uncertainty in the future risk premiums by reference to the historic annual risk premiums. The graphs for both Canada and the U.S. suggest that each year's actual risk premium has been random, that is, not serially correlated with the preceding year's risk premium.[9]

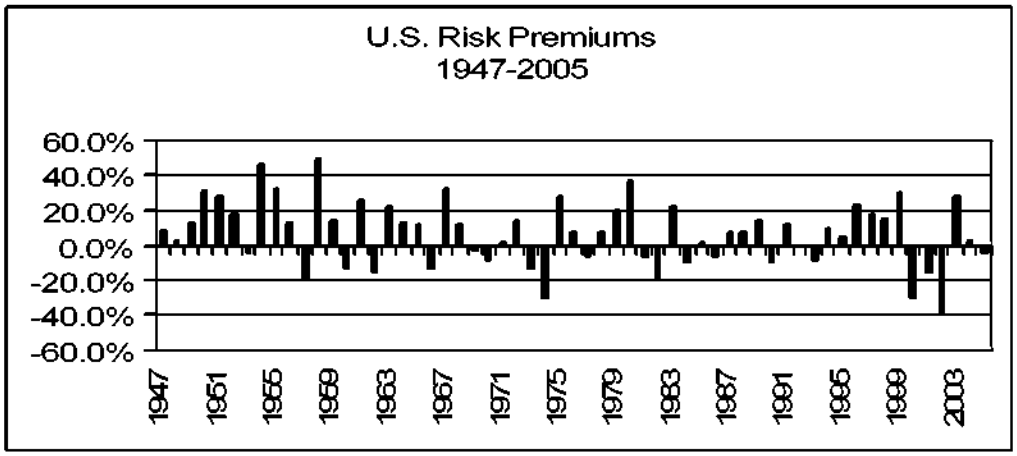
[9] A test for serial correlation between the year-to-year equity risk premiums shows that the serial correlation between the current year's risk premium and that of the prior year for the period 1947-2005 is .06 for Canada and -.05 for the U.S. If the current year's risk premium were predictable based on the prior year's risk premium the serial correlation would be close to positive or negative 1.0.

Figure A-2



Source: Canadian Institute of Actuaries, *Report on Canadian Economic Statistics, 1924-2004, TSX Review* (December 2005).

Figure A-3



Source: Ibbotson Associates, *Stocks, Bonds, Bills & Inflation, 2005 Yearbook,* Standardandpoors.com.

ANALYSIS OF TRENDS IN CANADIAN AND U.S. STOCK AND BOND RETURNS

Table A-3 below compares the historic Canadian and U.S. stock returns, bond returns, and equity risk premiums, by decade.

Table A-3

Time Period	Stock Returns		Bond Returns		Risk Premiums	
	Canada	U.S.	Canada	U.S.	Canada	U.S.
1940s	10.0%	10.3%	3.9%	3.3%	6.0%	7.0%
1950s	17.0%	20.8%	0.4%	0.0%	16.5%	20.8%
1960s	10.8%	8.7%	2.9%	1.6%	7.9%	7.1%
1970s	12.1%	7.5%	6.1%	5.7%	6.0%	1.8%
1980s	13.1%	18.2%	13.7%	13.5%	-0.6%	4.7%
1990s	11.6%	19.0%	11.8%	9.5%	-0.2%	9.5%
1996-2005	12.1%	10.7%	9.7%	8.1%	2.5%	2.6%

Source: Canadian Institute of Actuaries, *Report on Canadian Economic Statistics, 1924-2004*, and Ibbotson Associates, *Stocks, Bonds, Bills & Inflation, 2005 Yearbook:* preliminary 2005 data from *TSX Review* and Standardandpoors.com.

The decade-by-decade averages suggest that there has been no upward or downward trend in the stock returns. By comparison, the bond returns generally exhibit an increase over time. The pattern in the bond returns results from:

(1) low bond returns in the 1950s-1970s, as rising interest rates produced capital losses on bonds;

(2) high bond returns in the 1980s, corresponding to the high rates of inflation, which pushed up bond yields; and,

(3) high bond returns in the 1990s and first half of the 2000s, reflecting the decline in interest rates and resulting capital appreciation of bonds, leading to total returns well in excess of the yields.[10]

A similar conclusion regarding trends in the risk premium can be drawn from an analysis of rolling and cumulative averages of Canadian and U.S. stock and bond returns. The following averages were calculated for this analysis:

(1) Twenty-five year rolling arithmetic averages of Canadian and U.S. equity and long-term government bond returns (1947-2005).

(2) A series of cumulative average equity and bond returns for Canada and the U.S. The first average starts in 1947, covering 25 years (1947-1971). The second average incorporates 26 years, etc. The final average encompasses the full 1947-2005 period.

(3) A second series of cumulative average returns, where the first average includes the most recent 25 year period (1981-2005); each subsequent average includes an additional prior year.

[10] The bond yield is, in fact, an estimate of the expected return.

The following table summarizes the resulting averages for the equity market returns.[11] The summary of the various averages indicates that the historic equity market returns have not exhibited a secular upward or downward trend, but are within the following ranges:

Table A-4

	Canada	U.S.
25-Year Rolling Averages:		
Range	9.6-14.5%	9.4-18.0%
Average of Averages	11.8%	12.4%
± 1 standard deviation	10.7-12.8%	10.3-14.6%
Increasing Averages (1947+):		
Range	11.4-13.6%	11.5-14.6%
Average of Averages	12.6%	13.1%
± 1 standard deviation	12.0-13.1%	12.4-13.8%
Increasing Averages (2005+):		
Range	10.7-12.8%	11.7-14.9%
Average of Averages	11.5%	12.9%
± 1 standard deviation	10.9-12.2 %	11.9-13.8%

Source: Schedule 8.

The analysis also shows achieved total bond returns have experienced an upward trend, similar to that identified in the decade-by-decade returns described earlier. That trend is unlikely to continue, as recent low levels of interest rates limit future capital gains; it is more likely, in an environment of rising interest rates that bonds would experience capital losses, and the achieved risk premiums will rise.

Given the absence of any upward or downward trend in the historic equity market returns, a reasonable expected value of the future equity market return is a range of 11.5-12.5%, based on both the Canadian and U.S. equity market returns. Based on the near-term forecast for long Canadas of 4.75%, and an expected equity market return of 11.5-12.5%, the indicated market risk premium would be in the range of 6.75-7.25%, or

[11] All of the averages appear on Schedule 8.

approximately 7.25%. Based on the longer-term forecast for long Canadas of 5.25%,[12] the indicated market risk premium is 6.25-7.25%.

[12] Consensus Economics, *Consensus Forecasts*, April __, 2006 anticipates the 10-year Canada bond yield to average __% from 200__ to 20___. Assuming the historic spread between 10- and 30-year Canada bond yields of 35 basis points prevail, on average, during that period, the forecast 30-year Canada bond yield is approximately 5.25%.

CONCEPTUAL UNDERPINNINGS OF THE CAPITAL ASSET PRICING MODEL

The Capital Asset Pricing Model (CAPM) is a theoretical, formal model of the equity risk premium test which posits that the investor requires a return on a security equal to:

$$R_F + ß(R_M - R_F),$$

Where:

R_F	=	risk-free rate
ß	=	covariability of the security with the market (M)
R_M	=	return on the market.

The model is based on restrictive assumptions, including:

1. Perfect, or efficient, markets exist where,

   (a) each investor assumes he has no effect on security prices;
   (b) there are no taxes or transaction costs;
   (c) all assets are publicly traded and perfectly divisible;
   (d) there are no constraints on short-sales; and,
   (e) the same risk-free rate applies to both borrowing and lending.

2. Investors are identical with respect to their holding period, their expectations and the fact that all choices are made on the basis of risk and return.

The CAPM relies on the premise that an investor requires compensation for non-diversifiable risks only. Non-diversifiable risks are those risks that are related to overall

market factors (e.g., interest rate changes, economic growth). Company-specific risks, according to the CAPM, can be diversified away by investing in a portfolio of securities whose expected returns are not perfectly correlated. Therefore the shareholder requires no compensation to bear company-specific risks.

DISADVANTAGES OF CAPM

Risk-Free Rate

1. The theoretical CAPM assumes that the risk-free rate is uncorrelated with the return on the market. In other words, the assumption is that there is no relationship between the risk-free rate and the equity market return (i.e., the risk-free rate has a zero beta). However, the application of the model typically assumes that the return on the market is highly correlated with the risk-free rate, that is, that the equity market return and the risk-free rate move in tandem.

2. The theoretical CAPM calls for using a risk-free rate, whereas the typical application of the model in the regulatory context employs a long-term government bond yield as a proxy for the risk-free rate. Long-term government bond yields may reflect various factors that render them problematic as an estimate of the "true" risk-free rate, including:

   (a) The yield on long-term government bonds reflects the impact of monetary and fiscal policy; e.g., the potential existence of a scarcity premium.

   (b) Yields on long-term government bonds may reflect shifting degrees of investors' risk aversion; e.g., "flight to quality". An increase in the equity risk premium arising from a reduction in bond yields due to a "flight to quality" is not likely to be captured in the typical application of the CAPM.

(c) Long-term government bond yields are not risk-free; they are subject to interest rate risk. The size of the equity market risk premium at a given point in time depends in part on how risky long-term government bond yields are relative to the overall equity market. The ability to capture and measure changes in the risk of the so-called risk-free security introduces a further complication in the application of the CAPM.

Equity Market Risk Premium

1. The equity market risk premium is typically measured largely by reference to historic data. Adjustments are then made to capture (a) changes that have occurred in the underlying markets over time, or (b) perceived differences between what investors actually achieved and what they may have expected on an *ex ante* basis. There are a wide range of views on what constitutes an appropriate period for estimating the historic risk premium, on what constitutes the appropriate averaging technique, and on whether various time-specific or country-specific outcomes diminish the reliability of history as a predictor of the future risk premium. In summary, the link between the historic and the future risk premium is subject to considerable judgement.

2. Factors specific to the Canadian historic risk premium data are problematic.

   (a) The Canadian equity market has undergone significant structural change over the periods typically used to measure historic risk premiums. The historic premiums reflect in considerable measure a resource-based economy. At the end of 1980, no less than 46%

of the market value of the TSE 300 was resource-based stocks.[1] By comparison, over the past two years, the resource-based percentage of the S&P/TSX Composite averaged just over 30%.[2] As the resource sectors have declined in importance, the influence of technology-intensive and service-related sectors on the index has risen markedly. Table A-1, which compares the year-end 1980 and 2005 market weightings of the technology/service sectors, highlights the change over the past 25 years. Investor returns expected from an equity market characterized by technology-intensive stocks may be quite different from returns expected from a market dominated by resource-based stocks.

Table A-1

	1980	**2005**
Biotechnology/ Health Care/ Pharmaceuticals	0.0%	1.1%
Information Technology	0.9%	4.2%
Telecommunication Services	4.8%	5.2%
Media & Entertainment	0.6%	2.3%
Financial Services	13.5%	31.6%
	19.8%	44.4%

Source: *TSE Review*, December 1980 and December 2005.

(b) The historic average achieved returns on the TSE 300 Index were significantly affected by the relatively poor performance of commodity-linked securities. Over the 1956-2003 period (the longest period for which consistent data exist for the individual TSE 300 sub-indices), the average

[1] As measured by the oil and gas, gold and precious minerals, metals/minerals, and pulp and paper products sectors. Excludes "the conglomerates sector", which also contained stocks with significant commodity exposure.

[2] Energy and Materials Industry Sectors; the weight of these sectors has recently increased reflecting the run-up in energy prices since mid-2004.

returns of the commodity-based sectors were exceeded by the returns of virtually every other sector of the TSE 300.[3] Because the long-term returns of the various sectors are inconsistent with their relative risk, the achieved risk premiums may not accurately reflect what investors had expected.

(c) The TSE 300 Index has been criticized for its lack of liquidity and for the quality and size of the stocks it has contained. In a speech in early 2002, Joseph Oliver, President and CEO of the Investment Dealers Association of Canada stated,

> "Over the last 25 years, the TSE 300 has steadily declined as a relevant benchmark index. Part of the problem relates to the illiquidity of the smaller component companies and part to the departure of larger companies that were merged or acquired. Over the last two years, 120 Canadian companies have been deleted from the TSE 300.
>
> When a company disappears from a US index due to a merger or acquisition, that doesn't affect the U.S. market's liquidity. An ample supply of large cap, liquid U.S. companies can take its place. In Canada, when a company merges or is acquired by another company, it leaves the index and is replaced by a smaller, less liquid Canadian company. We have seen this over the last two years, -- notably in the energy sector. Over the next few years, we are likely to see it in financial services, where further consolidation is inevitable. Over time, Canada's senior index has become less diversified, with more smaller component companies. As a result, as many as 75 of the TSE 300 will not qualify for inclusion in the new S&P/TSE Composite Index."

[3] The average (compound, or geometric) returns of the commodity-based sectors were as follows:

Metals/Minerals	7.8%
Gold	9.5%
Oil and Gas	9.5%
Paper/Forest	7.1%

By comparison, the corresponding simple average of the remaining sectors' returns over the same period was 10.3%.

When the TSE 300 was overhauled (becoming the S&P/TSX Composite in May 2002), 275 companies were initially included, instead of the previous 300.[4] At December 31, 2005 there were 278 companies in the Composite, including the recently added income trusts.

In 2005, the S&P/TSX Composite underwent a significant change with the inclusion of income trusts. Income trusts, which just five years ago, had a market capitalization of approximately $20 billion, had a market capitalization of approximately $150 billion at the end of 2005, accounting for almost 10% of the total market value of the TSX. Income trusts have significantly outperformed the "conventional" equity markets during the period for which income trust market data are readily available. The annual total return for the S&P/TSX Capped Income Trust Index over the 1998-2005 period averaged 19.1%, compared to 7.5% for the S&P/TSX Composite Index. The exclusion of income trust returns from the S&P/TSX Composite Index to date means that the measured equity returns understate the actual equity market returns achieved by Canadian investors.

(d) The performance of the Canadian equity market as the "market portfolio" has been unduly influenced by a small number of companies. In mid-2000, before the debacle in Nortel Networks' stock value, Nortel shares alone accounted for 34.6% of the total market value of the TSE 300. To put this in perspective, the largest stock in the S&P 500 at that time (General Electric) accounted for only 4% of the S&P 500's total market value. The undue influence of a small number of stocks requires caution in drawing conclusions from the history of the TSE 300 regarding the forward-looking market risk premium.

[4] The overhaul of the composite index, which included more stringent criteria for inclusion, did not require that a specific number of companies be included in the index.

(e) Despite the structural shift in the TSE Composite away from its historic resource-base, the Canadian market remains significantly less diversified than the U.S. market. There are various sectors of a diversified economy that are relatively underrepresented in the Canadian equity market, e.g., pharmaceuticals, retailing and health care. Thus, the TSE Composite has, to some extent, had characteristics of a market sector rather than a diversified market portfolio.

(f) The achieved equity market risk premiums in Canada have been squeezed by the performance of the government bond market. The radical change in Canada's fiscal performance over the past decade, leading to the recent low levels of interest rates, indicates that the historic returns on long-term Government of Canada bonds overstate likely future bond returns, and therefore understates the future equity risk premium.

Beta

Impediments to reliance on beta as the sole relative risk measure, as the CAPM indicates, include:

1. The assumption that all risk for which investors require compensation can be captured and expressed in a single risk variable;

2. The only risk for which investors expect compensation is non-diversifiable equity market risk; no other risk is considered (and priced) by investors; and,

3. The assumption that the observed calculated betas (which are simply a calculation of how closely a stock's or portfolio's price changes have mirrored those of the overall equity market)[5] are a good measure of the relative return requirement.

4. Use of beta as the relative risk adjustment allows for the conclusion that the cost of equity capital for a firm can be lower than the risk-free rate, since stocks that have moved counter to the rest of the equity market could be expected to have betas that are negative. Gold stocks, for example, which are regarded as a quintessential counter-cyclical investment, could reasonably be expected to exhibit negative betas. In that case, the CAPM would posit that the cost of equity capital for a gold mining firm would be less than the risk-free rate, despite the fact that, on a total risk basis, the company's stock could be very volatile.

The body of evidence on CAPM leads to the conclusion that, while betas do measure relative volatility, the proportionate relationship between risk (beta) and return posited by the CAPM has not been established. A summary of various studies, published in a guide for practitioners, concluded,

> "Empirical tests of the CAPM have, in retrospect, produced results that are often at odds with the theory itself. Much of the failure to find empirical support for the CAPM is due to our lack of ex ante, expectational data. This, combined with our inability to observe or properly measure the return on the true, complete, market portfolio, has contributed to the body of conflicting evidence about the validity of the CAPM. It is also possible that the CAPM does not describe investors' behavior in the marketplace.

[5] The beta is equal to:

$$\frac{\text{Covariance } (R_E, R_M)}{\text{Variance } (R_M)}$$

Betas are typically calculated by reference to historical relative volatility using simple regression analysis of the change in the market portfolio return and the corresponding change in an individual stock or portfolio of stock returns.

> Theoretically and empirically, one of the most troubling problems for academics and money managers has been that the CAPM's single source of risk is the market. They believe that the market is not the only factor that is important in determining the return an asset is expected to earn." (Diana R. Harrington, *Modern Portfolio Theory, The Capital Asset Pricing Model & Arbitrage Pricing Theory: A User's Guide*, Second Edition, Prentice-Hall, Inc., 1987, page 188.)

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The analysis suggests that, over the longer term, the relationship between beta and return has been negative, rather than the positive relationship posited by the CAPM. For

example, as indicated in Table A-2 above, for the period 1956-2003, the R^2 of 47% means that the betas explained 47% of the variation in returns among the key sectors of the TSE 300 index. However, since the coefficient on the beta was negative, this means that the higher beta companies actually earned lower returns than the low beta companies.

A series of regressions was also performed on the 10 major sectors of the S&P/TSX Composite. These regressions covered (a) 1988-2005, the longest period for which data for the new Composite and its sector components are available; (b) 1988-1997,[8] and (c) the most recent 10-year period ending 2005.

That analysis showed the following:

Table A-3

Returns Measured Over:	Coefficient on Beta	R^2
1988-2005	-.053	27%
1988-1997	-.017	1%
1996-2005	-.111	45%

Source: Schedule 9, page 2 of 2.

These analyses indicate that, historically, the relationship between beta and return in the Canadian equity market has been the reverse (higher beta = lower return) than the posited relationship.

[8] The use of this sub-period was intended to ensure elimination of the impacts of any anomalous market behavior during the technology "bubble and bust", which occurred mainly from 1999 through mid-2002.

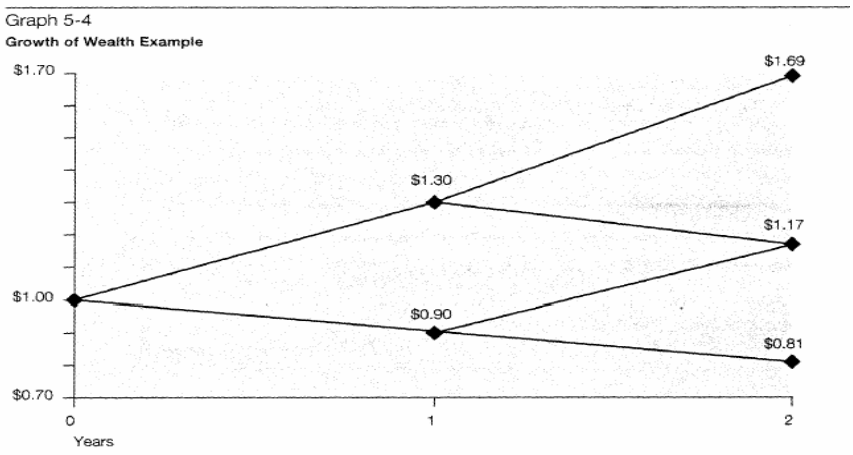
USE OF ARITHMETIC AVERAGES TO ESTIMATE THE EQUITY MARKET RISK PREMIUM

Illustration of Why Arithmetic Average Should be Used

In Ibbotson Associates, *Stocks, Bonds, Bills and Inflation: Valuation Edition, 2005,* the following discussion was included:

> "To illustrate how the arithmetic mean is more appropriate than the geometric mean in discounting cash flows, suppose the expected return on a stock is 10 percent per year with a standard deviation of 20 percent. Also assume that only two outcomes are possible each year ? +30 percent and -10 percent (i.e., the mean plus or minus one standard deviation). The probability of occurrence for each outcome is equal. The growth of wealth over a two-year period is illustrated in Graph 5-4.

Figure A-1



The most common outcome of $1.17 is given by the geometric mean of 8.2 percent. Compounding the possible outcomes as follows derives the geometric mean:

$$[(1+0.30)x(1-0.10)]^{½} - 1 = 0.082$$

However, the expected value is predicted by compounding the arithmetic, not the geometric, mean. To illustrate this, we need to look at the probability-weighted average of all possible outcomes:

	(0.25 x $1.69)	=	$0.4225
+	(0.50 x $1.17)	=	$0.5850
+	(0.25 x $0.81)	=	$0.2025
	Total		$1.2100

Therefore, $1.21 is the probability-weighted expected value. The rate that must be compounded to achieve the terminal value of $1.21 after 2 years is 10 percent, the arithmetic mean.

$1 x $(1+0.10)^2$ = $1.21

The geometric mean, when compounded, results in the median of the distribution:

$1 x $(1+0.0.082)^2$ = $1.17

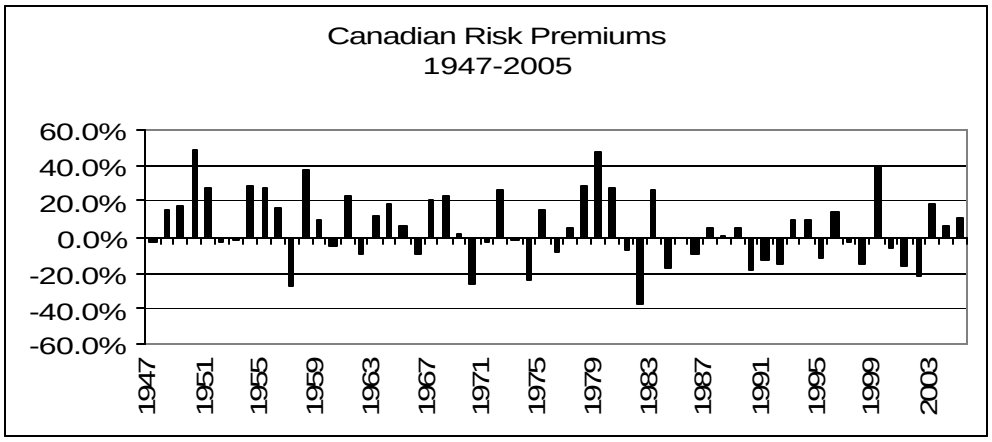
The arithmetic mean equates the expected future value with the present value; it is therefore the appropriate discount rate.

Randomness of Annual Equity Market Risk Premiums

The use of arithmetic averages is premised on the unpredictability of future risk premiums. The following graphs illustrate the uncertainty in the future risk premiums by reference to the historic annual risk premiums. The graphs for both Canada and the U.S. suggest that each year's actual risk premium has been random, that is, not serially correlated with the preceding year's risk premium.[9]

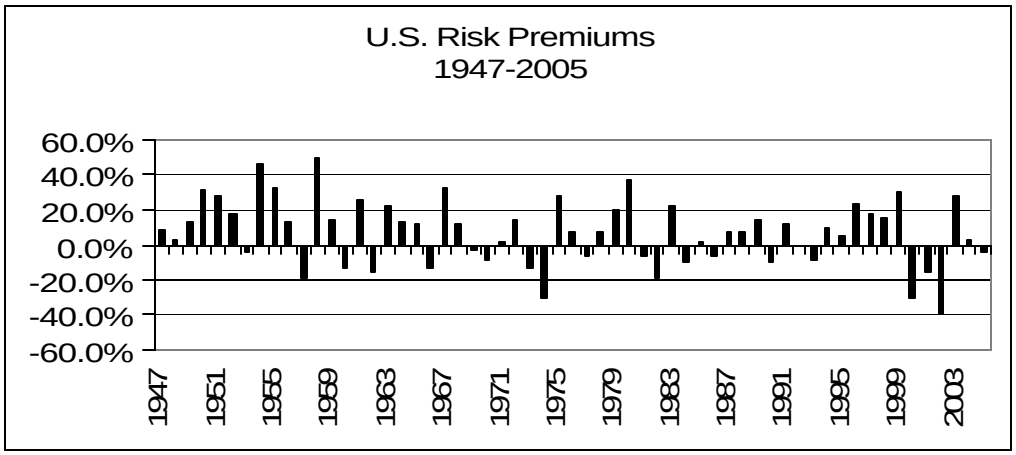
[9] A test for serial correlation between the year-to-year equity risk premiums shows that the serial correlation between the current year's risk premium and that of the prior year for the period 1947-2005 is .06 for Canada and -.05 for the U.S. If the current year's risk premium were predictable based on the prior year's risk premium the serial correlation would be close to positive or negative 1.0.

Figure A-2



Source: Canadian Institute of Actuaries, *Report on Canadian Economic Statistics, 1924-2004, TSX Review* (December 2005).

Figure A-3



Source: Ibbotson Associates, *Stocks, Bonds, Bills & Inflation, 2005 Yearbook,* Standardandpoors.com.

ANALYSIS OF TRENDS IN CANADIAN AND U.S. STOCK AND BOND RETURNS

Table A-3 below compares the historic Canadian and U.S. stock returns, bond returns, and equity risk premiums, by decade.

Table A-3

Time Period	Stock Returns		Bond Returns		Risk Premiums	
	Canada	U.S.	Canada	U.S.	Canada	U.S.
1940s	10.0%	10.3%	3.9%	3.3%	6.0%	7.0%
1950s	17.0%	20.8%	0.4%	0.0%	16.5%	20.8%
1960s	10.8%	8.7%	2.9%	1.6%	7.9%	7.1%
1970s	12.1%	7.5%	6.1%	5.7%	6.0%	1.8%
1980s	13.1%	18.2%	13.7%	13.5%	-0.6%	4.7%
1990s	11.6%	19.0%	11.8%	9.5%	-0.2%	9.5%
1996-2005	12.1%	10.7%	9.7%	8.1%	2.5%	2.6%

Source: Canadian Institute of Actuaries, *Report on Canadian Economic Statistics, 1924-2004*, and Ibbotson Associates, *Stocks, Bonds, Bills & Inflation, 2005 Yearbook;* preliminary 2005 data from *TSX Review* and Standardandpoors.com.

The decade-by-decade averages suggest that there has been no upward or downward trend in the stock returns. By comparison, the bond returns generally exhibit an increase over time. The pattern in the bond returns results from:

(1) low bond returns in the 1950s-1970s, as rising interest rates produced capital losses on bonds;

(2) high bond returns in the 1980s, corresponding to the high rates of inflation, which pushed up bond yields; and,

(3) high bond returns in the 1990s and first half of the 2000s, reflecting the decline in interest rates and resulting capital appreciation of bonds, leading to total returns well in excess of the yields.[10]

A similar conclusion regarding trends in the risk premium can be drawn from an analysis of rolling and cumulative averages of Canadian and U.S. stock and bond returns. The following averages were calculated for this analysis:

(1) Twenty-five year rolling arithmetic averages of Canadian and U.S. equity and long-term government bond returns (1947-2005).

(2) A series of cumulative average equity and bond returns for Canada and the U.S. The first average starts in 1947, covering 25 years (1947-1971). The second average incorporates 26 years, etc. The final average encompasses the full 1947-2005 period.

(3) A second series of cumulative average returns, where the first average includes the most recent 25 year period (1981-2005); each subsequent average includes an additional prior year.

[10] The bond yield is, in fact, an estimate of the expected return.

The following table summarizes the resulting averages for the equity market returns.[11] The summary of the various averages indicates that the historic equity market returns have not exhibited a secular upward or downward trend, but are within the following ranges:

Table A-4

	Canada	U.S.
25-Year Rolling Averages:		
Range	9.6-14.5%	9.4-18.0%
Average of Averages	11.8%	12.4%
± 1 standard deviation	10.7-12.8%	10.3-14.6%
Increasing Averages (1947+):		
Range	11.4-13.6%	11.5-14.6%
Average of Averages	12.6%	13.1%
± 1 standard deviation	12.0-13.1%	12.4-13.8%
Increasing Averages (2005+):		
Range	10.7-12.8%	11.7-14.9%
Average of Averages	11.5%	12.9%
± 1 standard deviation	10.9-12.2 %	11.9-13.8%

Source: Schedule 8.

The analysis also shows achieved total bond returns have experienced an upward trend, similar to that identified in the decade-by-decade returns described earlier. That trend is unlikely to continue, as recent low levels of interest rates limit future capital gains; it is more likely, in an environment of rising interest rates that bonds would experience capital losses, and the achieved risk premiums will rise.

Given the absence of any upward or downward trend in the historic equity market returns, a reasonable expected value of the future equity market return is a range of 11.5-12.5%, based on both the Canadian and U.S. equity market returns. Based on the near-term forecast for long Canadas of 4.75%, and an expected equity market return of 11.5-12.5%, the indicated market risk premium would be in the range of 6.75-7.25%, or

[11] All of the averages appear on Schedule 8.

approximately 7.25%. Based on the longer-term forecast for long Canadas of 5.25%,[12] the indicated market risk premium is 6.25-7.25%.

[12] Consensus Economics, *Consensus Forecasts*, April __, 2006 anticipates the 10-year Canada bond yield to average __% from 200__ to 20___. Assuming the historic spread between 10- and 30-year Canada bond yields of 35 basis points prevail, on average, during that period, the forecast 30-year Canada bond yield is approximately 5.25%.