Consumers Council of Canada and the Vulnerable Energy Consumers Coalition (CCC) and (VECC) INTERROGATORY #15 List 1

Interrogatory

Ref: B1/T3/S1 p. 40

Issue 4.0
Issue: Cost of Capital/Capital Structure

Topic: Market liquidity

Request:

Ms. McShane justifies her use of US data in aprt witht eh claim that the US market is more diversified and liquid.

a) Does Ms. McShane assert that a more liquid and diversified market is less risky and as such should have a lower variability in the annual rate of return?

b) Please provide the standard deviation of annual returns for the US and Canadian market for ten year period using over lapping data form the start of her data period.

c) From the evidence in b) above is it Ms. McShane's judgement that the Canadian or US market has been more risky historically?

d) In Ms. McShane's judgment how many randomly selected securities does it require to generate a diversified portfolio?

Response

a) All other things equal, it should be expected that a more liquid and diversified market is less risky and would be expected to have less variability.

b) The requested calculations are attached as Attachment A.

c) The volatility evidence alone suggests that the U.S. market has been slightly more risky. Putting this in perspective, the standard deviation of the equity returns in Canada was 16.4% from 1947-2005; the corresponding standard deviation of returns in the U.S. was 16.9%. The relative impact on the equity return requirement of the difference in the standard deviations can be gauged as follows: Assume that the achieved equity compound return in the two countries over the

period was identical, at 11.0% (equal to the compound return in Canada over the 1947-2005), with the corresponding standard deviations of returns as provided. The compound average in conjunction with the standard deviation permits the estimation of the associated arithmetic average return. The arithmetic average is equal to the compound average plus one half the variance in returns, where the variance is equal to the standard deviation squared. The resulting arithmetic average for the U.S. market would be 12.4%, compared to 12.3% for Canada. The difference in the arithmetic average can be interpreted as the difference in return required for the difference in volatility between the two markets, which in this case would be 10 basis points.

d) The most recent research indicates a range of 30-50 stocks.

		US Stock Returns	Canadian Stock Returns
1946		-8.1%	-1.5%
1947		5.7%	0.3%
1948		5.5%	12.1%
1949		18.8%	22.6%
1950		31.7%	48.4%
1951		24.0%	24.0%
1952		18.4%	-0.4%
1953		-1.0%	2.2%
1954		52.6%	39.1%
1955		31.6%	27.8%
1956		6.6%	13.2%
1957		-10.8%	-20.6%
1958		43.4%	31.3%
1959		12.0%	4.6%
1960		0.5%	1.8%
1961		26.9%	32.8%
1962		-8.7%	-7.1%
1963		22.8%	15.6%
1964		16.5%	25.4%
1965		12.5%	6.7%
1966		-10.1%	-7.1%
1967		24.0%	18.1%
1968		11.1%	22.5%
1969		-8.5%	-0.8%
1970		4.0%	-3.6%
1971		14.3%	8.0%
1972		19.0%	27.4%
1973		-14.7%	0.3%
1974		-26.5%	-25.9%
1975		37.2%	18.5%
1976		23.8%	11.0%
1977		-7.2%	10.7%
1978		6.6%	29.7%
1979		18.4%	44.8%
1980		32.4%	30.1%
1981		-4.9%	-10.3%
1982		21.4%	5.5%
1983		22.5%	35.5%
1984		6.3%	-2.4%
1985		32.2%	25.1%
1986		18.5%	9.0%
1987		5.2%	5.9%
1988		16.8%	11.1%
1989		31.5%	21.4%
1990		-3.2%	-14.8%
1991		30.5%	12.0%
1992		7.7%	-1.4%

		US Stock Returns	Canadian Stock Returns
1993		10.0%	32.6%
1994		1.3%	-0.2%
1995		37.4%	14.5%
1996		23.1%	28.4%
1997		33.4%	15.0%
1998		28.58%	-1.6%
1999		21.04%	31.7%
2000		-9.11%	7.4%
2001		-11.89%	-12.6%
2002		-22.10%	-12.4%
2003		28.70%	26.7%
2004		10.87%	14.5%
2005		4.91%	24.1%
2006		15.79%	17.4%
Standard Deviations			
Start Year	End Year		
1947	1956	16.3%	16.6%
1948	1957	18.5%	20.1%
1949	1958	19.6%	20.5%
1950	1959	19.8%	20.9%
1951	1960	20.3%	18.2%
1952	1961	20.5%	19.0%
1953	1962	22.1%	19.6%
1954	1963	21.5%	19.3%
1955	1964	17.6%	17.7%
1956	1965	16.5%	16.9%
1957	1966	17.9%	17.8%
1958	1967	16.7%	14.7%
1959	1968	13.1%	13.7%
1960	1969	14.4%	14.1%
1961	1970	14.2%	14.5%
1962	1971	12.9%	12.2%
1963	1972	12.0%	12.4%
1964	1973	13.5%	12.7%
1965	1974	16.5%	15.7%
1966	1975	19.7%	16.3%
1967	1976	19.8%	15.7%
1968	1977	19.5%	15.3%
1969	1978	19.4%	16.3%
1970	1979	19.2%	19.7%
1971	1980	20.7%	19.6%
1972	1981	21.2%	21.2%
1973	1982	21.3%	20.7%
1974	1983	20.0%	21.6%
1975	1984	15.0%	17.6%
1976	1985	14.2%	17.7%
1977	1986	14.0%	17.8%

		US Stock Returns	Canadian Stock Returns
1978	1987	12.3%	18.1%
1979	1988	11.8%	17.6%
1980	1989	12.7%	14.6%
1981	1990	13.2%	15.6%
1982	1991	12.1%	14.2%
1983	1992	12.5%	14.6%
1984	1993	12.5%	14.1%
1985	1994	13.0%	13.9%
1986	1995	13.8%	13.0%
1987	1996	14.0%	14.4%
1988	1997	14.4%	14.3%
1989	1998	14.7%	14.9%
1990	1999	14.2%	16.1%
1991	2000	15.3%	13.3%
1992	2001	17.3%	15.7%
1993	2002	20.7%	17.1%
1994	2003	21.5%	16.3%
1995	2004	21.1%	16.0%
1996	2005	19.5%	16.5%
1997	2006	19.1%	15.6%