FINM3407 - Behavioural Finance

Tutorial 1 Questions – Introduction to Behavioural Finance vs. Traditional Finance

Note: This topic has more questions than can be covered in a 2-hour session. The questions to be covered by your tutor are indicated by an asterisk (*); the rest questions should be viewed as extra practice problems.

In this tutorial, we are going to cover the following two relevant topics: Foundations of Finance I: Expected Utility Theory and Foundations of Finance II: Asset Pricing, Market Efficiency and Agency Relationships.

There are a few references reading for these two relevant topics:

AckertDeaves Chapters 1 & 2

Investments, 12th Edition, By Zvi Bodie and Alex Kane and Alan Marcus Chapter 11

Some Advanced Materials regarding expected utility theory:

Microeconomic Theory (1995) by Mas-Colell, Whinston and Green) Chapter 1 Chapter 3

- **PART ONE: Foundations of Finance I: Expected Utility Theory**

1*. Differentiate the following terms/concepts:

    a. Prospect and probability distribution

    b. Risk and uncertainty

    c. Utility function and expected utility

    d. Risk aversion, risk seeking, and risk neutrality

2*. When eating out, Rory prefers spaghetti over a hamburger. Last night she had a choice of spaghetti and macaroni and cheese and decided on the spaghetti again. The night before, Rory had a choice between spaghetti, pizza, and a hamburger and this time she had pizza. Then, today she chose macaroni and cheese over a hamburger. Does her selection today indicate that Rory's choices are consistent with economic rationality? Why or why not?

3*. Consider a person with the following utility function over wealth: $u(w) = e^w$, where e is the exponential function (approximately equal to 2.7183) and w = wealth in hundreds of thousands of dollars. Suppose that this person has a 40% chance of wealth of $50,000 and a 60% chance of wealth of $1,000,000 as summarized by P(0.40, $50,000, $1,000,000).

    a. What is the expected value of wealth?

    b. Construct a graph of this utility function.

     c. Is this person risk averse, risk neutral, or a risk seeker?

     d. What is this person's certainty equivalent for the prospect?

4. An individual has the following utility function: $u(w) = w^{.5}$ where w = wealth.

a. Using expected utility, order the following prospects in terms of preference, from the most to the least preferred:

$$P1(0.8, 1,000, 600)$$

$$P2(0.7, 1,200, 600)$$

$$P3(0.5, 2,000, 300)$$

Ranking: P2, P3, P1 with expected utilities 31.5972, 31.0209, and 30.1972 for prospects 2, 3, and 1, respectively

b. What is the certainty equivalent for prospect P2?

c. Without doing any calculations, would the certainty equivalent for prospect P1 be larger or smaller? Why?

5*. Consider two prospects:

    Problem 1: Choose between

Prospect A:	$2,500 with probability 0.33,
	$2,400 with probability 0.66,
	Zero with probability 0.01.
And Prospect B:	$2,400 with certainty.

    Problem 2: Choose between

Prospect C:	$2,500 with probability 0.33,
	Zero with probability 0.67.
And	
Prospect D:	$2,400 with probability 0.34,
	Zero with probability 0.66.

It has been shown by Daniel Kahneman and Amos Tversky (1979, "Prospect theory: An analysis of decision under risk," *Econometrica* 47(2), 263-291) that more people choose B when presented with problem 1 and when presented with problem 2, most people choose C. These choices violate expected utility theory. Why?

6*. Additional Question regarding expected utility: Bill loves maple syrup and makes regular monthly purchases. Each bottle costs $50 (it's a very special maple syrup). You've known Bill for a long time, and have observed, first handed, the ups and downs of his economic situation.

(a) When he was a graduate student, you knew he managed to get by with a (disposable) income of $1,250 per month, and he bought 25 bottles of maple syrup per month. Draw Bill's budget set, with maple syrup (in bottles) indicated in the horizontal axis and 'other stuff' (measured in dollars) in the vertical axis. Mark Bill's optimal consumption bundle.

(b) When Bill was appointed a lecturer, his (disposable) income rose to $5,000 per month. The price of maple syrup did not change, and Bill still bought 25 bottles each month. Illustrate his new budget constraint and indicate Bill's optimal bundle on your graph.

(c) Assume that Bill's preferences are quasi-linear with respect to 'other stuff'. Suddenly, Canada has an overabundance of maple syrup and the price drop to $25 per bottle. Can you definitely say that Bill's consumption of maple syrup will go up or down?

- **PART TWO:**

Foundations of Finance II:

Asset Pricing, Market Efficiency and Agency Relationships

1*. Differentiate the following terms/concepts:

a. Systematic and non-systematic risk

b. Beta and standard deviation

c. Direct and indirect agency costs

d. Weak, semi-strong, and strong form market efficiency

2*. Suppose you find that prices of stocks before large dividend increases show on average consistently positive abnormal returns. Is this a violation of the EMH?

3*. A stock has a beta of 1.2 and the standard deviation of its returns is 25%. The market risk premium is 5% and the risk-free rate is 4%.

a. What is the expected return for the stock?

b. What are the expected return and standard deviation for a portfolio that is equally invested in the stock and the risk-free asset?

c. A financial analyst forecasts a return of 12% for the stock. Would you buy it? Why or why not?

4. The monthly rate of return on T-bills is 1%. The market went up this month by 1.5%. In addition, AmbChaser, Inc., which has an equity beta of 2, surprisingly just won a lawsuit that awards it $1 million immediately.

   a. **If the original value of AmbChaser equity were $100 million, what would you guess was the rate of return of this month?**
   b. **What is your answer to (a) if the market had expected AmbChaser to win $2 million?**

5*. What is the joint hypothesis problem? Why is it important?

6*. Warren Buffett has been a very successful investor. In 2008 Luisa Kroll reported that Buffett topped *Forbes Magazine*'s list of the world's richest people with a fortune estimated to be worth $62 billion (March 5, 2008, "The world's billionaires," *Forbes*). Does this invalidate the EMH?

7*. You are considering whether to invest in two stocks, Stock A and Stock B. Stock A has a beta of 1.15 and the standard deviation of its returns has been estimated to be 0.28. For Stock B, the beta is 0.84 and standard deviation is 0.48.

   a. Which stock is riskier?

   b. If the risk-free rate is 4% and the market risk premium is 8%, what is the expected return for a portfolio that is composed of 60% A and 40% B?

   c. If the correlation between the returns of A and B is 0.50, what is the standard deviation for the portfolio that includes 60% A and 40% B?