

Question #1 – 15 Marks

The United States is currently Canada’s largest trading partner, and Canada is the United States’ second largest trading partner. The two economies are highly connected. The common stock index is considered a leading indicator of the business cycles. The S&P/TSX Composite Index and S&P 500 Index are Canada’s and the United States’ major indices.

The most recent five weekly returns in percentage (%) for S&P/TSX Composite Index and S&P500 Index were listed in the table below.

S&P/TSX Composite Index	S&P 500 Index					
-1.3	-2.2					
-0.9	0					
1.3	0.1					
1	1.2					
0.1	1.7					

- a) Compute the location of the 75th percentile of the S&P 500 Index weekly return.
- b) Compute the 75th percentile of the S&P/TSX Composite Index weekly return.
- c) Compute the Mean Absolute Deviation (MAD) of the S&P/TSX Composite Index weekly return.
- d) Compute the sample covariance between S&P/TSX Composite Index weekly return and S&P 500 Index weekly return.
- e) Compute the sample coefficient of correlation between S&P/TSX Composite Index weekly return and S&P 500 Index weekly return.
- f) What is the median of the S&P 500 Index?
- g) What is the mode of the S&P/TSX Composite Index?

Question #2 – 15 Marks

A credit bureau studied its data and determined that 2.08% of credit cards became 90+ days past due. The data showed that 24.70% of credit cards that were 90+ days past due had a subprime rate attached to the card (i.e. A subprime rate means that they may have difficulty maintaining the repayment schedule and therefore the interest rate is typically higher on these cards). 96.44% of credit cards that were not 90+ days past due had a non-subprime rate attached to the card (i.e. A non-subprime rate means they most likely will not have difficulty maintaining the repayment schedule and the interest is typically lower on these cards).

- a) What is the probability of a card being a non-subprime card?
- b) What is the probability of a card being 90+ days past due and subprime?
- c) What is the probability of a card not being 90+ days past due or non-subprime?
- d) What is the probability that a subprime card will go to 90+ days past due?
- e) What is the probability that a non-subprime card will not go to 90+ days past due?
- f) A credit card was pulled at random, and the account was 90+ days past due. Does this increase or decrease the probability that the card is subprime and by how much?