AcF305: International Financial and Risk Management

Week 8 tutorial questions

1. In the wake of the North American Free Trade Agreement, the firm All-American Exports, Inc. has begun exporting baseball caps and gloves to Mexico. Suppose that All-American is subject to a tax of 30 percent when it earns profits less than or equal to USD 10 million and 40 percent on the part of profits that exceeds USD 10 million. The table below shows the company's profits in USD under three exchange rate scenarios, when the firm has hedged its income and when it has left its income unhedged. The probability of each level of the exchange rate is also given.

	Hedged Profits	Unhedged profits	Probability
S_{hi}	15m	20m	25%
$S_{unchanged}$	10m	10m	50%
S_{lo}	5m	0	25%

   a. Compute the taxes that All-American must pay under each scenario.
   b. What are All-American's expected taxes when it hedges its income?
   c. What are All-American's expected taxes when it does not hedge its income?

2. SynClear, of Seattle, Washington, produces equipment to clean polluted waters. It has a subsidiary in Canada that imports and markets its parent's products. The value of this subsidiary, in terms of CAD, has recently decreased to CAD 5m due to the depreciation of the CAD relative to the USD (from the historical level of USD/CAD 0.85 to about 0.75). SynClear's analysts argue that the value of the CAD may very well return to its former level if, as seems reasonable, the uncertainty created by Canada's rising government deficit and Quebec's possible secession is resolved. If the CAD recovers, SynClear's products would be less expensive in terms of CAD, and the CAD value of the subsidiary would rise to about 6.5m.

   a. From the parent's (USD) perspective, is the exposure of SynClear Canada to the USD/CAD exchange rate positive or negative? Explain the sign of the exposure.
   b. Determine the exposure, and verify that the corresponding forward hedge eliminates this exposure. Use a forward rate of USD/CAD 0.80 and USD/CAD 0.75 and 0.85 as the possible future spot rates.
   c. SynClear's chairman argues that, as the exposure is positive and the only possible exchange rate change is an appreciation of the cad, the only possible change is an increase in the value of the subsidiary. Therefore, he continues,

the firm should not hedge: why give away the chance of gain? How do you evaluate this argument?

In the remainder of the question, SynClear Canada's cash flows and market values are assumed, more realistically, to depend on other factors than just the exchange rate. The Canadian economy can be in a recession, or booming, or somewhere in between, and the state of the economy is a second determinant of the demand for SynClear's products. The table below summarizes the value of the firm in each state and the joint probability of each state:

State of the economy	Boom	Medium	Recession
$S_T = 0.85$: joint probability	0.075	0.175	0.25
Value_T (USD)	5.25	4.75	4.50
$S_T = 0.75$: joint probability	0.25	0.175	0.075
Value_T (USD)	4.25	3.857	3.50

d. What are the expected cash flows conditional on each value of the exchange rate?
e. Compute the exposure, the optimal forward hedge, and the value of the hedged firm in each state. The forward rate is USD/CAD 0.80.