9. (2.75 points)

An insurance market with a fixed number of insureds consists of two insurers – Company A and Company B. Company A has identified a new potential rating variable to segment its risks, consisting of High Risk and Low Risk.

		Insured Risks	
Variable	True Expected Cost	Company A	Company B
High Risk	$200	10,000	90,000
Low Risk	$100	10,000	90,000

- All policies are annual.
- True expected cost is known only to Company A
- The probability each risk will switch insurers at renewal if they are offered a lower price by the new insurer is given by the following equation: Probability = 0.9 x (Difference in Offered Rates) / True Expected Cost
- The probability each risk will switch insurers at renewal if they are offered a higher or equal price by the new insurer is 0.

Company A intends to charge the true cost for High Risk insureds, and is evaluating two different prices for Low Risk insureds: $130 or $140. Company B charges $150 for all risks.

a. (1.75 points)

Determine which of the two rates Company A should charge the Low Risk insureds to maximize profits, assuming Company B does not adjust its price.

b. (0.5 point)

Describe the ultimate impact on the distribution of risks and each company's profitability if Company B does not adjust its strategy.

c. (0.5 point)

Briefly describe two possible strategies Company B could utilize in response to Company A's new rate plan.

CONTINUED ON NEXT PAGE

EXAM 5 FALL 2014 SAMPLE ANSWERS AND EXAMINER'S REPORT

QUESTION 9	
TOTAL POINT VALUE: 2.75	**LEARNING OBJECTIVE: A8**

SAMPLE ANSWERS

Part a: 1.75 points

$130: Probability switching = 0.9 (150-130)/100 = 0.18

$140: Probability switching = 0.9 (150-140)/100 = 0.09

No impact to profit from high risk, since charged true cost

$130: Profits = 10,000 (130-100) + 0.18 (90,000) (130-100) = $786,000

$140: Profits = 10,000 (140-100) + 0.09 (90,000) (140-100) = $724,000

Company A should charge $130 to low risk insureds

Part b: 0.5 point

Company B will experience adverse selection as more low risks move to company A from B and more high risks move from B to A, following lower rates offered. As the adverse selection continues, Company B will go through a cycle of increasing rates which leads to more adverse selection until it goes either insolvent, implements the rating variable A uses, or focuses on high risks only.

Part c: 0.5 point

Acceptable Answers:

- Company B can implement the same rating variable as company A.
- Charge lower than 130 but higher than 100 for the low risks.
- Focus only on high risk insureds and charge the true costs.
- It could exit the market. Since company A can better differentiate risks, it will be very hard to be profitable in this market.
- B can find other rating characteristics to segment the market in a more refined manner that A has not discovered.
- Change marketing strategy or provide better customer service to attract more low risk insureds.

EXAMINER'S REPORT

Part a

Most candidates understood that they should take a short term view (as the long term view is covered in part b) and that the decision ought to be based on profitability. They were given the probability of risks shifting which lead most of them to calculate those probabilities even if they didn't properly recognize what to do with that information after that.

Common errors included:

- Using only the number of risks shifting between companies for the calculation of profit. They did not also factor in the 10K low risks that company A was already starting with. This is pertinent since changing the volume between companies would lead to a different answer.
- Using the correct probabilities of shifting against the incorrect number of risks.

Part b

There had to be a relatively clear recognition of the ultimate ramifications of the problem in order to get full credit.

The most common error was a lack of recognition of the ultimate impact of the adverse selection. Either the candidates didn't recognize the implications over a long period of time or they didn't recognize the seriousness of what could happen to a company that doesn't react. Neither of those types of answers would qualify as a full description of adverse selection.

Part c

Candidates should be able to cite at least one strategy.

The most common error was suggesting a change in underwriting guidelines to bring in fewer high risks. This addresses how to keep the unprofitable high risks from moving away from company A and into company B but fails to recognize that this won't solve the problem. Company B will still be unprofitable -- just an unprofitable company with fewer policies.