HOMEWORK # 1 ANSWERS

1. (a) All we can say for sure is that Jeb is not risk neutral, because a risk-neutral person would be indifferent between $L$ and $M$.

(b) Hilary prefers $M$ to $312$ for sure and, presumably, she prefers $312$ to $300$. Thus, by transitivity, she must prefer $M$ to $300$, that is, $M$ to $\mathbb{E}[M]$ for sure. Hence she is risk loving.

(c) Bruno prefers $295$ for sure to $L$ and, presumably, he prefers $300$ to $295$. Thus, by transitivity, he must prefer $300$ to $L$, that is, $\mathbb{E}[L]$ for sure to $L$. Hence he is risk averse.

2. If Tom keeps his house he faces the lottery $L = \begin{pmatrix} 100,000 & 1,300,000 \end{pmatrix}$. Since $\mathbb{E}[L] = 940,000$ and he is risk averse, he strictly prefers $940,000$ for sure to the lottery. Thus he would be better off if he sold the house for $940,000$. As for Hugo, let $W$ be his initial wealth. If he buys the house for $940,000$ then he faces the following lottery:

$$M = \begin{pmatrix} W - 940,000 + 100,000 & W - 940,000 + 1,300,000 \end{pmatrix}.$$ 

Note that $\mathbb{E}[M] = W$. Since Hugo is risk loving, he prefers lottery $M$ to $W$ for sure ($W$ for sure is what he faces if he does not buy the house); thus if he buys the house for $940,000$ he will be better off.

3. (a) The initial wealth is $W = 360,000$ and the potential loss is $x = 360,000 - 240,000 = 120,000$.

(b) $h_A = 2,000$, $D_A = 30,000$.

(c) $h_B = 3,500$, $D_B = 19,000$.

(d) $h_C = 14,000$, $D_C = 0$.

(e) $2,000 - \frac{1}{10} 90,000 = -7,000$.

(f) $3,500 - \frac{1}{10} 101,000 = -6,600$.

(g) $14,000 - \frac{1}{10} 120,000 = 2,000$.

(h) Contact $C$ gives him a lower expected wealth (namely $346,000$) than no insurance. Thus any risk neutral and any risk-loving person would prefer not to insure. Only a risk-averse person might consider buying contract $C$.

(i) $D$ is contract with zero deductible and a premium of $12,000$. 

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