Department of Economics, University of California, Davis

Ecn 103 – Uncertainty and Information – Professor Giacomo Bonanno

HOMEWORK # 2 (for due date see the web page)

1. Consider the following money lotteries:

$$A=\begin{pmatrix}\$16 & \$20 & \$36 & \$40\\ p & q & \frac{1}{12} & \frac{1}{4}\end{pmatrix},\quad B=\begin{pmatrix}\$16 & \$20 & \$36 & \$40\\ r & \frac{1}{24} & s & \frac{1}{4}\end{pmatrix},$$

$$C=\begin{pmatrix}\$16 & \$18 & \$20 & \$34 & \$36 & \$40\\ \frac{1}{3} & v & \frac{1}{36} & w & \frac{9}{24} & \frac{1}{4}\end{pmatrix},\quad D=\begin{pmatrix}\$16 & \$18 & \$34 & \$36 & \$40\\ \frac{17}{48} & x & z & \frac{17}{48} & \frac{1}{4}\end{pmatrix}$$

(a) Suppose that $p = \frac{1}{6}$ and $r = \frac{1}{6}$. What can you say about how A and B relate to each other in terms of first-order stochastic dominance?

(b) Ignore the values in Part (a) and suppose now that $s = \frac{1}{3}$. Write inequalities need to be satisfied in order for A to dominate B in the sense of first-order stochastic dominance. Can these inequalities be satisfied?

(c) Ignore the values in Parts (a)-(b) and suppose now that $r = \frac{1}{3}$.

(c.1) What is the expected value of lottery B?

(c.2) Write two equations that need to be satisfied in order for C to be a mean-preserving spread of B. No need to solve the equations.

(d) Ignore the values in Parts (a)-(c) and suppose now that $r = s$.

(d.1) What is the expected value of lottery B?

(d.2) Write two equations that need to be satisfied in order for D to be a mean-preserving spread of B. No need to solve the equations.