

HW7

- (1) Compute the state prices for the Film Venture example discussed in the class.
- (2) At the horse races one Saturday afternoon Eddy studies the racing form and concludes that the horse “Wind” has a 25% chance to win and is posted at 4 to 1 odds. (For every dollar Eddy bets, he receives \$5 if the horse wins and nothing if it loses.) He can either bet on this horse or keep his money in his pocket. Eddy decides that he has a log utility for his money.
 - (a) What fraction of his money should Eddy bet on Wind?
 - (b) What are the state prices for the bet?
- (3) Consider the log-optimal pricing formula:

$$P = \mathbf{E}\left(\frac{d}{1 + r_*}\right) = \sum_{i=1}^s \frac{p_i d^{(i)}}{1 + r_*^{(i)}}$$

where $r_*^{(i)}$ is the log-optimal return rate r_* in the case of state i and the risk-neutral pricing formula

$$P = \tilde{\mathbf{E}}\left(\frac{d}{1 + r_f}\right) = \sum_{i=1}^s \frac{\tilde{p}_i d^{(i)}}{1 + r_f}$$

Express $r_* = (r_*^{(1)}, \dots, r_*^{(s)})$ in terms of the risk-neutral probabilities \tilde{p}_i .