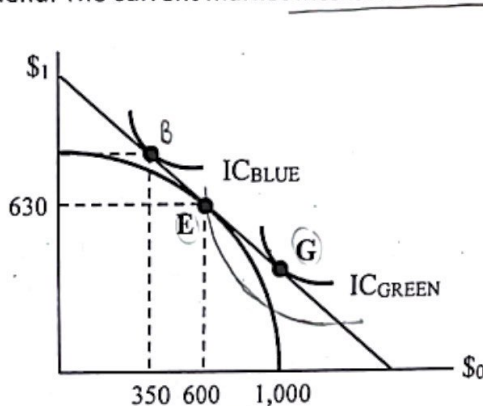


2604639 Finance Theory (Section 1)

QUIZ #1_2023

1. Assumed two time periods, perfect certainty, and perfect capital market. The following graph shows the PPC of a firm, the Capital Market Opportunity Line and IC's of 2 shareholders, Mr. Green and Mr. Blue. The numbers are expressed on a per share basis. The firm starts with \$1,000/share initial endowment. The management must decide how much to invest in real production and how much to pay out as current dividend. The current market interest rate is 20% pa. [3]



- 1 The optimal investment decision is to invest \$ 400 in real production today, pay the current dividend of \$ 600 and pay the future dividend of \$ 630.

How would moving from consumption basket E to basket G affect Mr. Green's total utility? Explain in terms of MRS, $(1+r)$ and MRT, whichever relevant. Basket E is not the optimal consumption for Mr. Green because MRS_E is greater than $1+r$ at basket E. Thus, Mr. Green will increase his current consumption by borrowing money until $MRS_G = 1+r$, which is at basket G, the optimal consumption of Mr. Green. So, moving from consumption basket E to basket G will maximize Mr. Green's total utility.

By how much does the firm pay the current dividend more than Mr. Blue's preferred level of current consumption? Should Mr. Blue ask the firm to invest the excess current dividend in real production or should he invest the excess current dividend in the capital market by himself? Explain Firm paid \$250 more current dividend than Mr. Blue's preferred level of current consumption. Mr. Blue should not ask the firm to invest beyond \$400 per share because the cost of borrowing (r) is higher than MRT of projects beyond point E and it will decrease the value of firm. Thus, Mr. Blue should invest his excess current dividend in capital market by himself to basket B, where his $MRS_B = 1+r$.

2. Mr. Jitti is considering ¹ risky investments with the following payoffs.

– Stock B: payoffs = $(0.6 \times \$60, 0.4 \times \$30)$ $\begin{matrix} 0.6 & \$60 \\ B & \swarrow \\ 0.4 & \$30 \end{matrix}$

where, $(\alpha \times \$X, (1-\alpha) \times \$Y)$ means the probability of receiving $\$X$ is α , and receiving $\$Y$ is $1-\alpha$

2. If all investors in the market behave in accordance with the axiom of choice, what would be the rational price range for stock B? Apply the axiom of choice and show your analysis step-by-step. Be specific whether the price range is a closed or open range. [2]

▶ Assuming that stock X has payoff = $(1 \times \$60, 0 \times \$30) \rightarrow P_X = \$60$

↳ From axioms of ranking and satiation of want, we can conclude that all investors prefer stock X more than stock B.

▶ Assuming that stock Y has payoff = $(0 \times \$60, 1 \times \$30) \rightarrow P_Y = \$30$

↳ From axioms of ranking and satiation of want, we can conclude that all investors prefer stock B more than stock Y

∴ Thus, from axioms of non-satiation of want, ranking, and certainty equivalent, rational price range for stock B is $\$30 < P_B < \60 or $P_B \in (\$30, \$60)$ ✓

=====END=====