

Final Exam
(25 points)

Farms commonly borrow money to pay cropping expenses at the beginning of the season. In a normal year a region's 10 farms each produce food (F) applying the same technology that uses borrowed bank funds (B) and labor (L) according to

$$F_i = 10B_i^{1/3}L_i^{1/3} \quad \text{for } i=1,2,\dots,10.$$

These farms behave competitively in the 3 markets. Food demand is given by $F_D = 888p^{-0.357}$ and is only supplied by the 10 farms (no imported or exported food). r , the price of B is competitively determined by the national market, and this market is normally cleared by $r=1.1$. The price of labor is w , and the supply of labor is elastic at $w=10$.

This is not a normal year. Here are the initial conditions for this year: The technology is unchanged. A global macro problem is constraining regional B availability. Furthermore, the national government is prohibiting any rise in r as would normally occur to equilibrate this financial market. Only 150 B are available, and an emergency national policy is restricting r to be no greater than 1.1. So each farm is entitled to buy 15 B at a controlled price of 1.1.

- (4 pts) a. Given this year's abnormal conditions, what will be the equilibrium results of the food and labor markets?

Another market intervention is being considered, and you are to perform a welfare analysis of its effects only. The government is considering making an additional 21 B available to each farm at the controlled price of $r=1.1$. The government's cost of obtaining this capital is unspecified.

- (21 pts) b. What are the welfare effects of this latter policy on each potentially relevant agent group in this abnormal year? Provide the appropriate graphs, calculations, and explanations. Accuracy, completeness, and presentation matters to your audience.