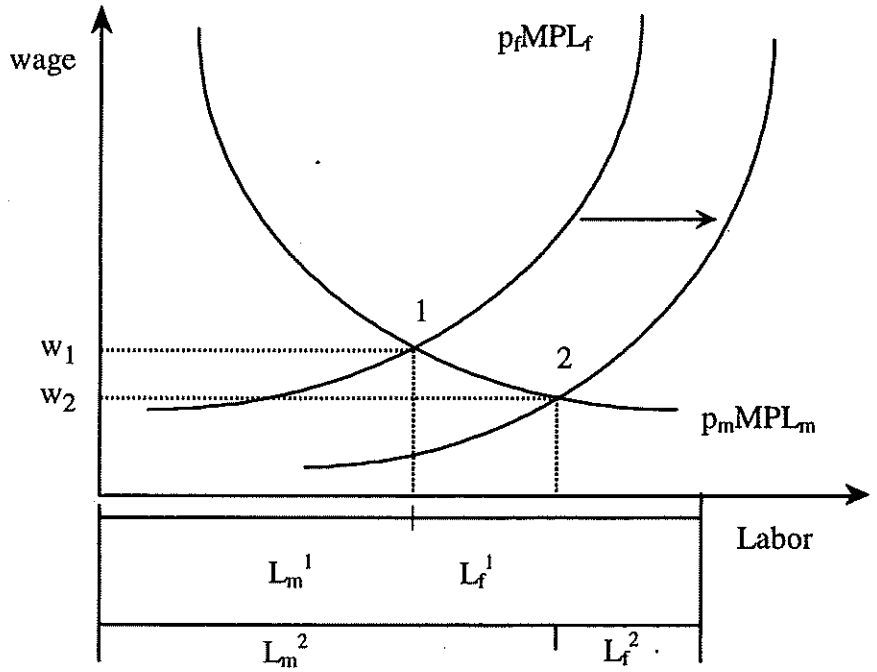
Alternatively stated, Home can import 1 unit of cloth by giving up only 1 unit of butter if trade is allowed, whereas Home would have to give up 2 units of butter if it did not trade.

Answers to Chapter 3 Review Questions

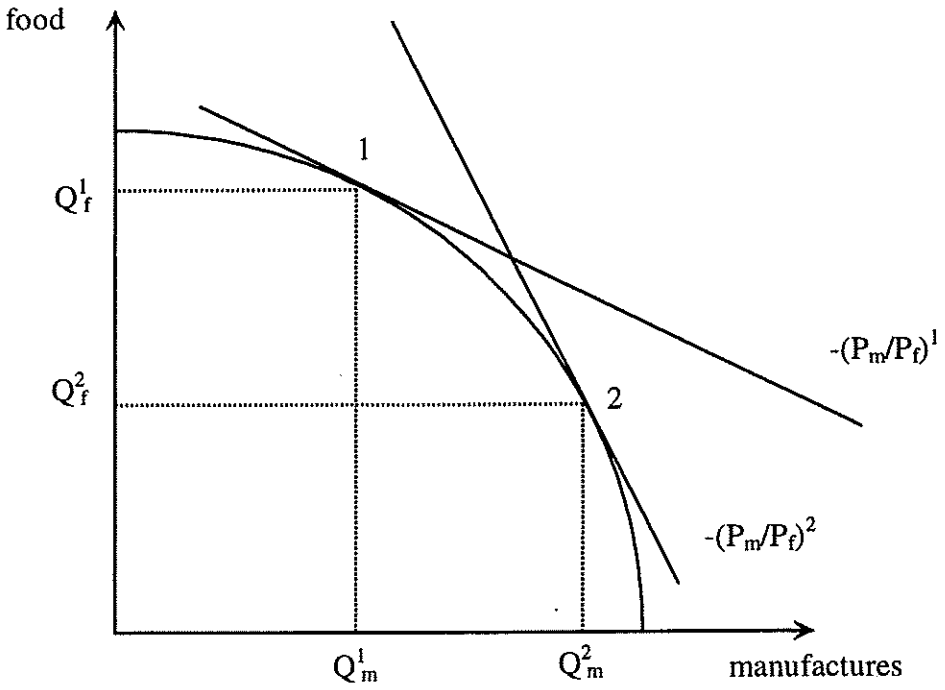
1. a. With an 8 percent decline in p_f, the food labor demand schedule shifts down and equilibrium moves from point 1 to point 2 on the figure below.



b. Wages fall from w_1 to w_2, but their decline is less than the fall in p_f. So, if p_f declines by 8 percent, wages decline by less than 8 percent.

c. As the equilibrium allocation of workers shifts from point 1 to point 2 in the figure, labor shifts out of food production and into manufactures production. Likewise, the output of food declines while the output of the manufacturing sector increases. (This is shown graphically in d.)

d. The decline in p_f implies an increase in p_m/p_f. This shift in the relative price line (now steeper) causes the production point to move from point 1 to point 2 in the figure below. The output of food declines and the output of manufactured goods increases.

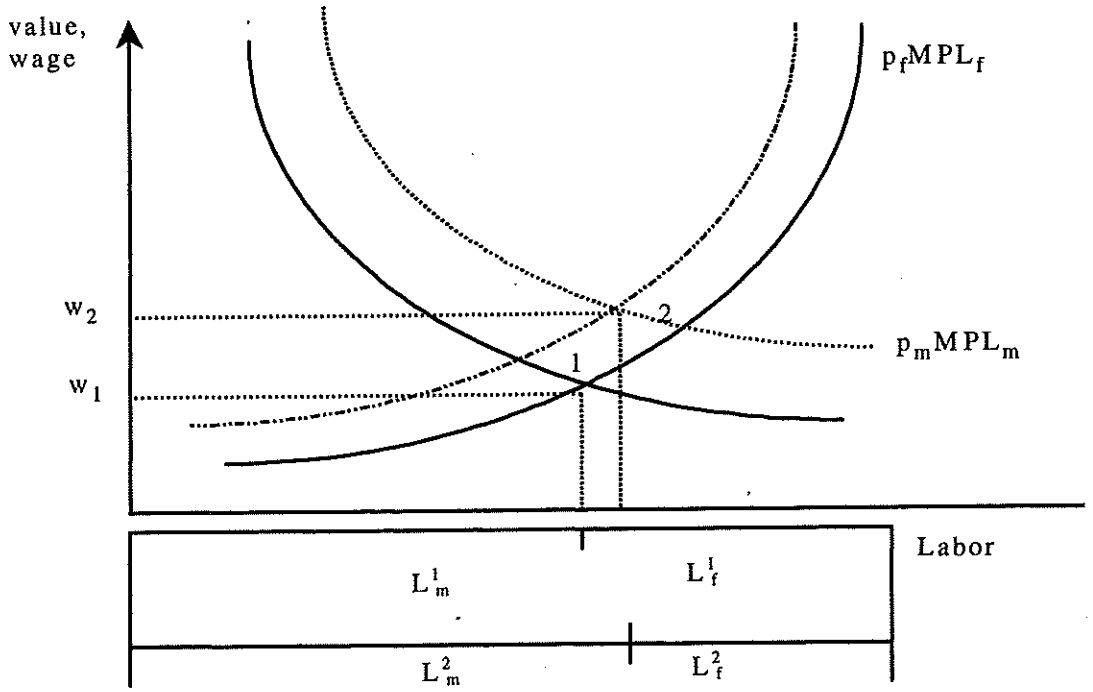


e. The owners of capital "gain" because the real wage paid to their workers (w/p_m) falls in terms of the manufactured good. Landowners are made worse off because they must pay a higher real wage to workers and therefore receive lower profits.

f. Workers observe a decline in their nominal wage but this decline is less than the decline in the price of food. Their real wage in terms of manufactured goods falls while the real wage in terms of food rises. To determine whether the welfare of the workers has increased or decreased, one must examine the worker's consumption demands for the two products. If food is a dominant good in consumption, it is likely that workers' real wage has increased.

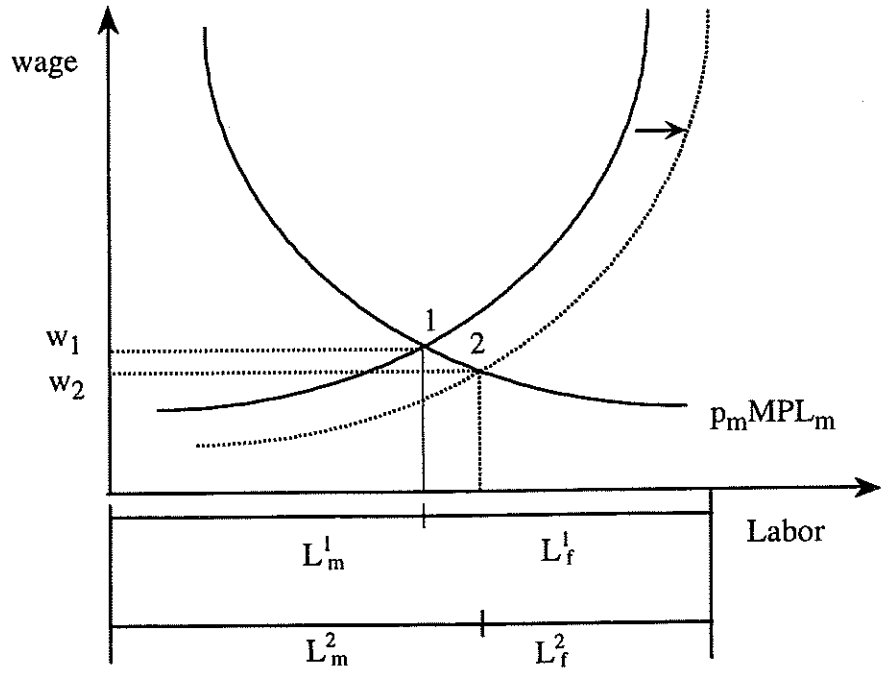
2. a. When both prices increase, each labor demand schedule shifts up. In this example, the upward shift in the manufactures labor demand curve is proportionately twice as great as the upward shift in the food sector. The new equilibrium is at a higher wage, with more labor in manufacturing and less in food production.

b. Wages increase by more than the rise in p_f but by less than the increase in p_m. This means that the real wage in terms of manufactures (w/p_m) declines while the real wage in term of food rises. The effect on workers is therefore ambiguous. Capital owners are better off and land owners are worse off.



c. The new equilibrium allocation of labor is characterized by an increase in workers in manufacturing exactly equal to the decrease in workers in food production. You can demonstrate the output effects by examining the effect of a change in relative prices on the production possibilities frontier. The new tangency of the price line with the PPF yields lower output in food and higher manufacturing output.

3. a. A decrease in land causes the MPL_f to decline (assuming that land is specific to the food sector). This shifts down the demand curve for labor, so that at every wage less workers are demanded in the food sector. Alternatively stated, each worker has a lower marginal product in food because he has less productive land at his disposal.



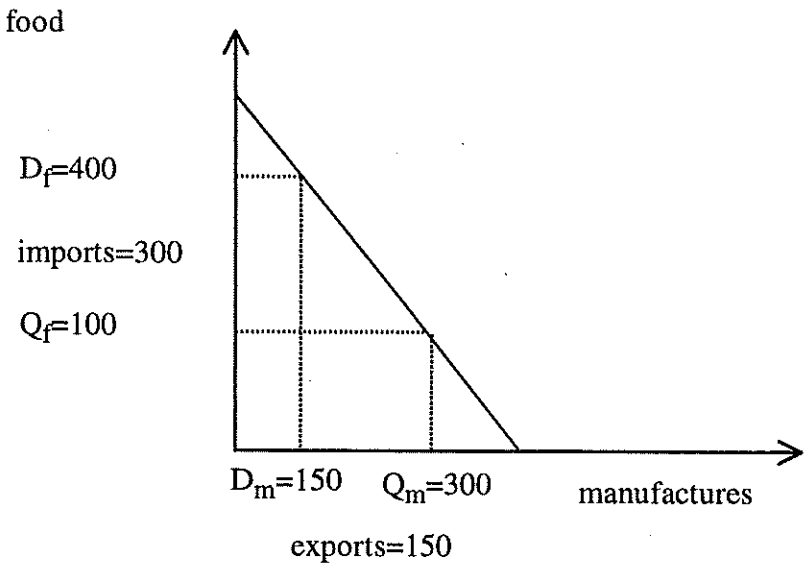
b. The graphical solution shows an intersection between $p_f MPL_f$ and $p_m MPL_m$ at a lower wage level, with labor drawn away from food into manufactures, which provided a higher wage to the marginal workers after the decline in arable land.

c. There are two reasons that food production declines. First, less workers are now in the food sector. Second, the remaining workers have less land with which to work .

4. a. $D_f - Q_f = (p_m/p_f)(Q_m - D_m)$ is the open economy budget constraint, where $(D_f - Q_f)$ equals food import volumes and $(Q_m - D_m)$ equals manufacturing export volumes. Substituting into this budget constraint yields $D_f = 400$. Since domestic residents demand 400 units of food, but only produce 100 domestically, they import 300 units of food from abroad.

b. See figure below.

c. If p_m/p_f rises to 4, the exporter of manufactured goods experiences gains and is able to import greater quantities. While the units of exports will remain the same (150 units) their value increases. Since the price of food imports is unchanged, the volume of food imports rises to 600. This is computed in two steps: first calculate D_f; second, subtract off Q_f to get import volumes.



d. If the price ratio falls to $p_m/p_f = 1$, the manufacturer is hurt. At this price D_f= 250, so that food imports equal 150 units. Manufacturing exports are also 150 units.

Answers to Chapter 4 Review Questions

1. a. Wine production is labor intensive. Cheese production is land intensive.

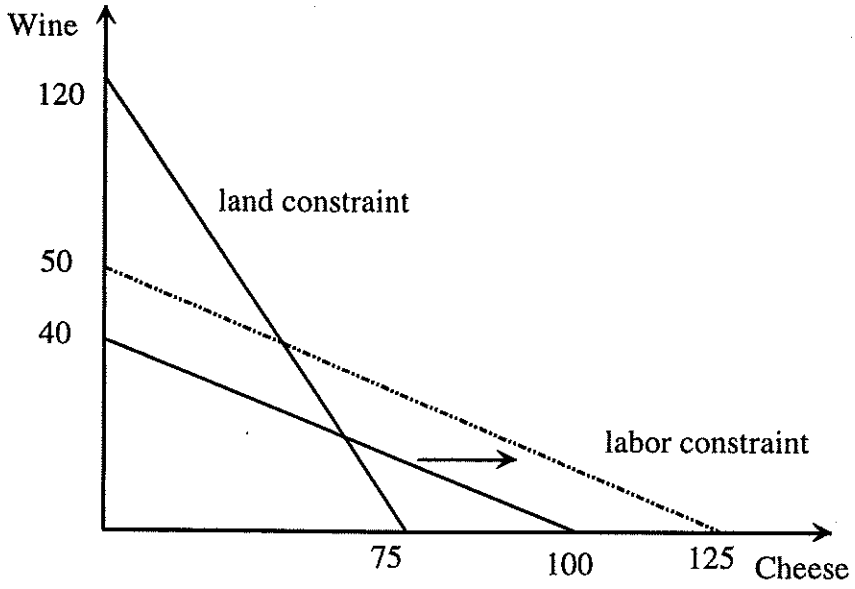
   b. The following two constraints must be satisfied:

   $$a_{Lc}C + a_{Lw}W = L$$
   $$a_{tc}C + a_{tw}W = T$$

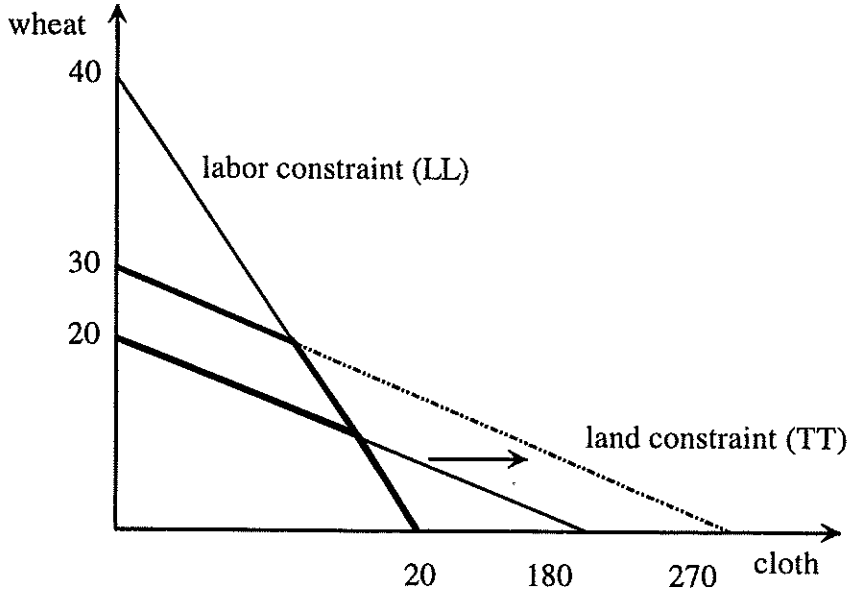
   The information provided is that a_{Lc}=4, a_{tc}=8, a_{Lw}=10, and a_{tw}=5. Also, L=400 and T=600. If C=50 and w=90, then the labor and land constraints are not satisfied. Since neither of these constraints are satisfied the equilibrium does not reflect a feasible production point.

   c. (see figure below)

   d. If L increases by 100, the LL constraint shifts upward, expanding the feasible production set.



2 a.



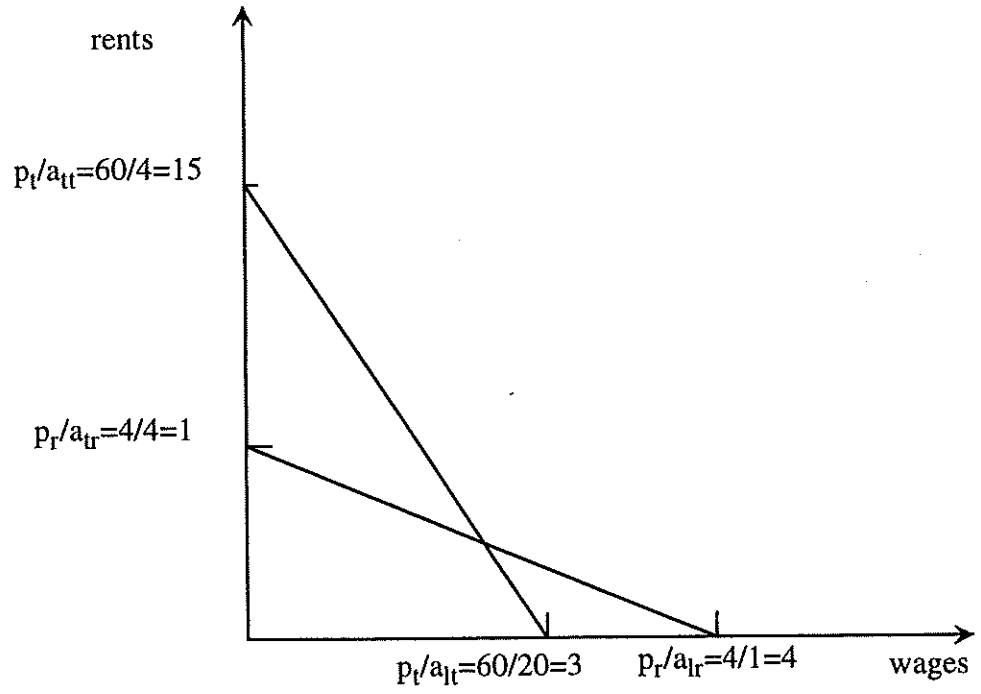
where $L/a_{Lw}=120/3$, $L/a_{Lc}=120/6$, $T/a_{tw}=180/9$, $T/a_{tc}=180/1$.

b. The TT line shifts up to yield a new production possibilities frontier where $T/a_{tw}=270/9$ and $T/a_{tc}= 270/1$. When the supply of land increases the TT constraint is relaxed and the production possibilities expand with a bias in favor of the land intensive good, wheat. This explains why an economy tends to be very effective at producing goods that are intensive in the factors which are relatively abundant at home.

3. a. The factor proportions theory predicts that countries tend to export goods whose production is intensive in the relatively abundant factors of the economy. In this example, Foreign would be considered to be labor-abundant even though it has less labor than home. (Remember that abundance is defined in a relative sense.) Home is land abundant. Consequently, we can expect Home to export rice which Foreign exports televisions, the labor intensive good.

b. A variety of real world complications can overturn the predictions of the factor proportions theory. The "Leontief Paradox" demonstrates some of these complications. Leontief showed that United States exports were less capital intensive than United States imports, despite the observation that the United States is relatively capital intensive. Part of the explanation of this paradox is based on the definition of and measurement of the factors of production. There are differences within the category of labor (skilled versus unskilled workers) that suggest that aggregation into a single category of labor is misleading. There are other problems in the definition of capital, since it doesn't reflect the technology intensiveness of exports compared with imports.

c.



4. a. In a competitive economy, the price of any good is exactly equal to the cost of producing it. This means that the following constraints must hold:

$p_C = a_{Lc}w + a_{tc}r$

$p_W = a_{Lw}w + a_{tw}r$