

There is a useful relationship between relative prices and output that emerges clearly from this analysis of labor allocation; this relationship applies to more general situations than that described by the specific factors model. Equations (4-4) and (4-5) imply that

$$MPL_C \times P_C = MPL_F \times P_F = w$$

or, rearranging, that

$$-MPL_F/MPL_C = -P_C/P_F. \quad (4-6)$$

The left side of equation (4-6) is the slope of the production possibility frontier at the actual production point; the right side is minus the relative price of cloth. This result tells us that *at the production point, the production possibility frontier must be tangent to a line whose slope is minus the price of cloth divided by that of food*. As we will see in the following chapters, this is a very general result that characterizes production responses to changes in relative prices along a production possibility frontier. It is illustrated in Figure 4-5: If the relative price of cloth is $(P_C/P_F)^1$, the economy produces at point 1.

What happens to the allocation of labor and the distribution of income when the prices of food and cloth change? Notice that any price change can be broken into two parts: an equal-proportional change in both P_C and P_F , and a change in only one price. For example, suppose that the price of cloth rises 17 percent and the price of food rises 10 percent. We can analyze the effects of this by first asking what happens if cloth and food prices both rise by 10 percent, and then by finding out what happens if only cloth prices rise by 7 percent. This allows us to separate the effect of changes in the overall price level from the effect of changes in relative prices.

An Equal-Proportional Change in Prices Figure 4-6 shows the effect of an equal-proportional increase in P_C and P_F . P_C rises from P_C^1 to P_C^2 ; P_F rises from P_F^1 to P_F^2 . If the prices of both goods increase by 10 percent, the labor demand curves will both shift up by 10 percent as well. As you can see from the diagram, these shifts lead to a 10 percent increase in the wage rate from w^1 (point 1) to w^2 (point 2). However, the allocation of labor between the sectors and the outputs of the two goods does not change.

Figure 4-5

Production in the Specific Factors Model

The economy produces at the point on its production possibility frontier (PP) where the slope of that frontier equals minus the relative price of cloth.

