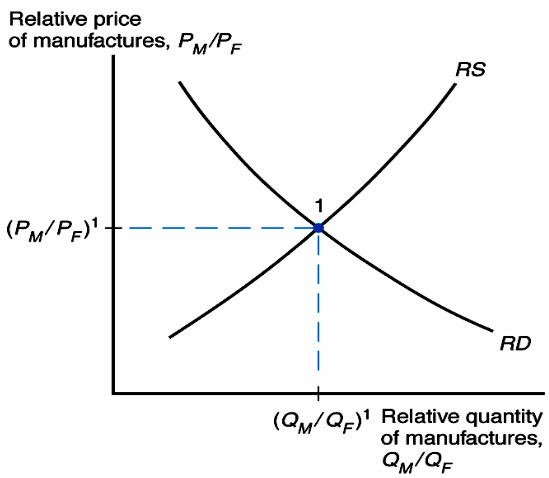
Lecture #5
Specific Factors Model, Part II
Economics 181, International Trade

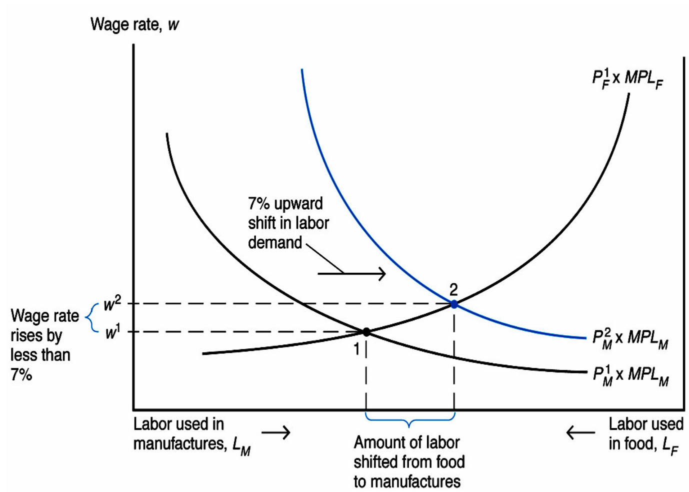
I. Summary from last class:

- Equilibrium in the labor market (Pm x MPLm = Pf x MPLf = w)
- Implying Pm/Pf = PMLf/PMLm
- Equilibrium as indicated by the production possibility frontier

II. Autarky (Pre-trade) equilibrium

Can draw supply and demand before trade: relative prices Pm/Pf on the vertical axis and relative quantities (Qm/Qf) on the horizontal axis. As with Ricardian framework, do not derive relative demand but assume it is downward sloping. How do we know what relative supply looks like?

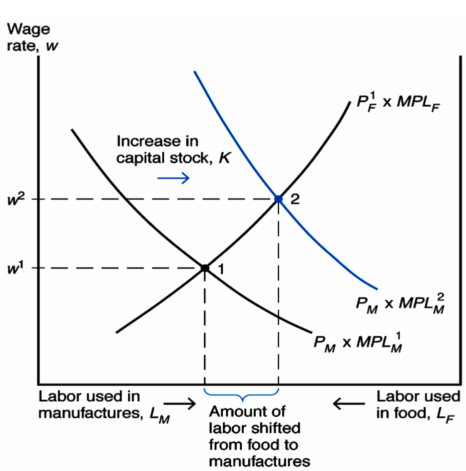


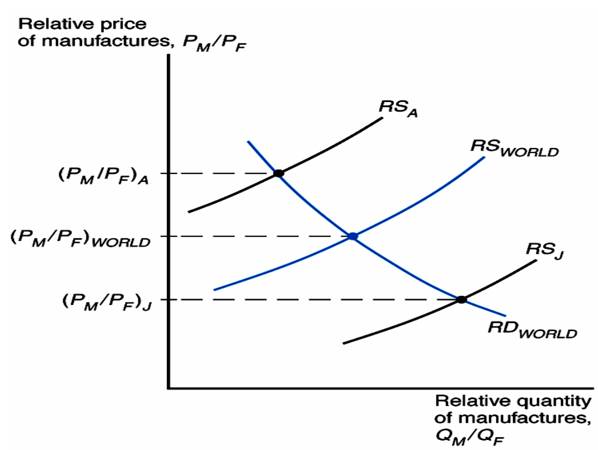


Why RS slopes upward: Suppose Pm rises, and Pf stays constant. As the graph above (and to the right) shows, labor demand shifts up, leading to equilibrium at point 2. At this new point, more labor in manufacturing production so Qm/Qf rises.

III. What determines comparative advantage, the pattern of trade, and the free trade equilibrium?

Consider trade between the USA and Japan. Suppose both countries alike in tastes, labor endowments, and technology, but USA has more land and Japan has more capital stock. If Japan has more capital stock, then MPLm curve shifts to right for Japan and at each relative price Pm/Pf, Japan willing to supply more Qm/Qf. So Japan's relative supply curve lies below and to the right of the US relative supply curve.





So for Japan in autarky—before trade—it is true that (Pm/Pf) < (Pm/Pf) for USA in autarky. Consequently, Japan has a comparative advantage in manufactured goods. With trade, it produces relatively more manufactured goods and exports them to the USA. USA has a comparative advantage in food and exports food to Japan.

KEY: The pattern of trade and comparative advantage in the specific factor model is determined by the differences in the relative factor endowments of the specific factors across countries. Technology differences are not the basis for trade, as in the Ricardian framework.

What will happen when the two countries trade? The relative free trade price will lie between the two autarky relative prices:

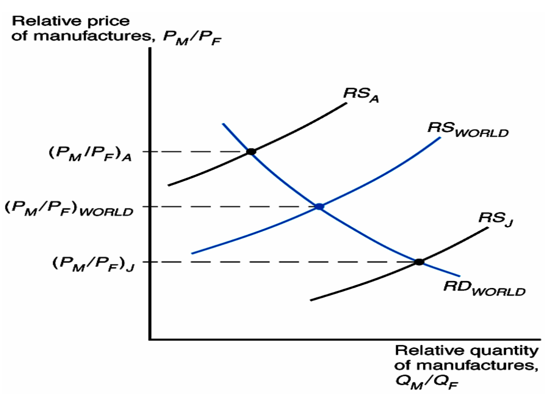
Pm/Pf (Japan in autarky) < Pm/Pf (free trade) < Pm/Pf (USA in autarky)

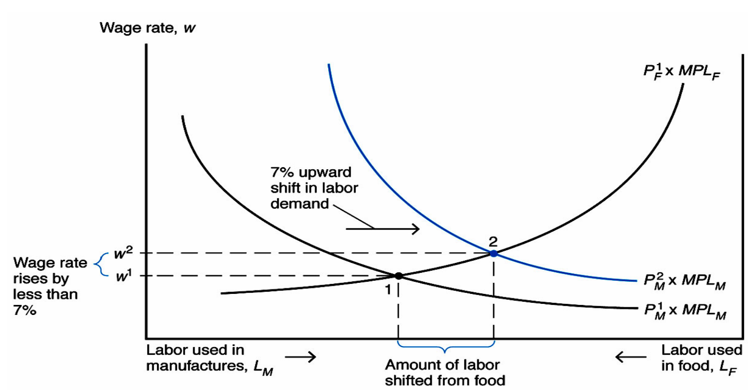
IV. Some additional issues

1. We can show with algebra that increasing K leads to an increase in MPLm.
   We assume a specific kind of production function—a Cobb-Douglass production function.
   $Qm = L_m^{1/2}K_m^{1/2}$. This is constant returns to scale (CRTS) since ½ + ½ = 1
   $MPLm = \partial Qm/\partial L = ½(Km/Lm)^{1/2} = MPLm(Lm,Km)$.
   Increase in Lm leads to a fall in MPLm
   Increase in Km leads to a rise in MPLm
   We can do the same for capital:
   $MPKm = \partial Qm/\partial Km = ½(Lm/Km)^{1/2} = MPKm(Lm,Km)$.
   Increase in Lm leads to a rise in MPKm. Increase in Km leads to a fall in MPKm
2. We can also show what happens with trade using the production possibility frontier.

V. Who gains and who loses from trade?

We can now analyze who gains and who loses from trade. We'll examine the distributional effects of opening up to trade from the Japanese perspective. Recall that if Japan has more capital and less land relative to the USA, opening up to trade will lead to an increase in Pm/Pf relative to the autarky price. This is because Japan has a comparative advantage in manufactures relative to food. We can think of this price increase as Pm rising but no change in Pf. With trade, the relative price of manufactures rises relative to Japan's autarky relative price (left hand side diagram). So what happens to wages if Pm rises (and assume there is no change in Pf). We see that the Value of MPL curve (=Pm X PMLm) for manufactures shifts up and to the right as Pm rises, resulting in a higher w and more labor allocated to manufactures.





Although nominal w rises, impact of trade on the mobile factor is **ambiguous** because its real income increases in terms of the imported good (food), and decreases in terms of the exported good (manufactures).W rises (from w1 to w2)/Pf (no change) = real w rises in terms of food.
But w/Pm falls because Pm rise higher than w rise (we see this on the graph at upper right).
Overall gain to labor depends on how much of the exported and imported goods the workers consume.