Trade and Politics

or

Specific Factors

Conflict over trade policy

- Now we know a reason why countries want to trade with each other
  - We will learn about other reasons for trade very soon!
- However this model has one very unrealistic feature: all people equally benefit from globalization
  - Because they all are the same – farmers
- However, in real life globalization is a very political issue!

Conflict over trade policy

- Let's start with a case study of the 1828 US tariff bill.
- Along the way, we'll need a new model of trade: *Specific factors model*

A bit of history

- American Civil War 1861-1865
- The points of conflict: the Southern economy was based on slavery, which was banned in the North.
- These tensions springing from the issue of slavery are well-known.

A bit of history

- However, another important source of conflict between North and South is much less familiar
  - tariff policy!
  - Congress several times established high import tariffs, which Northern politicians supported and Southern politicians bitterly opposed.
  - Constitutional crisis

A bit of history

- Early US: Agricultural economy
  - Americans imported virtually all of their manufactured goods from Europe
- Early experiments with manufacturing: Cotton textiles
- 1804: Only four factories in the country!

- Rapid growth in the first half of the 19th century.

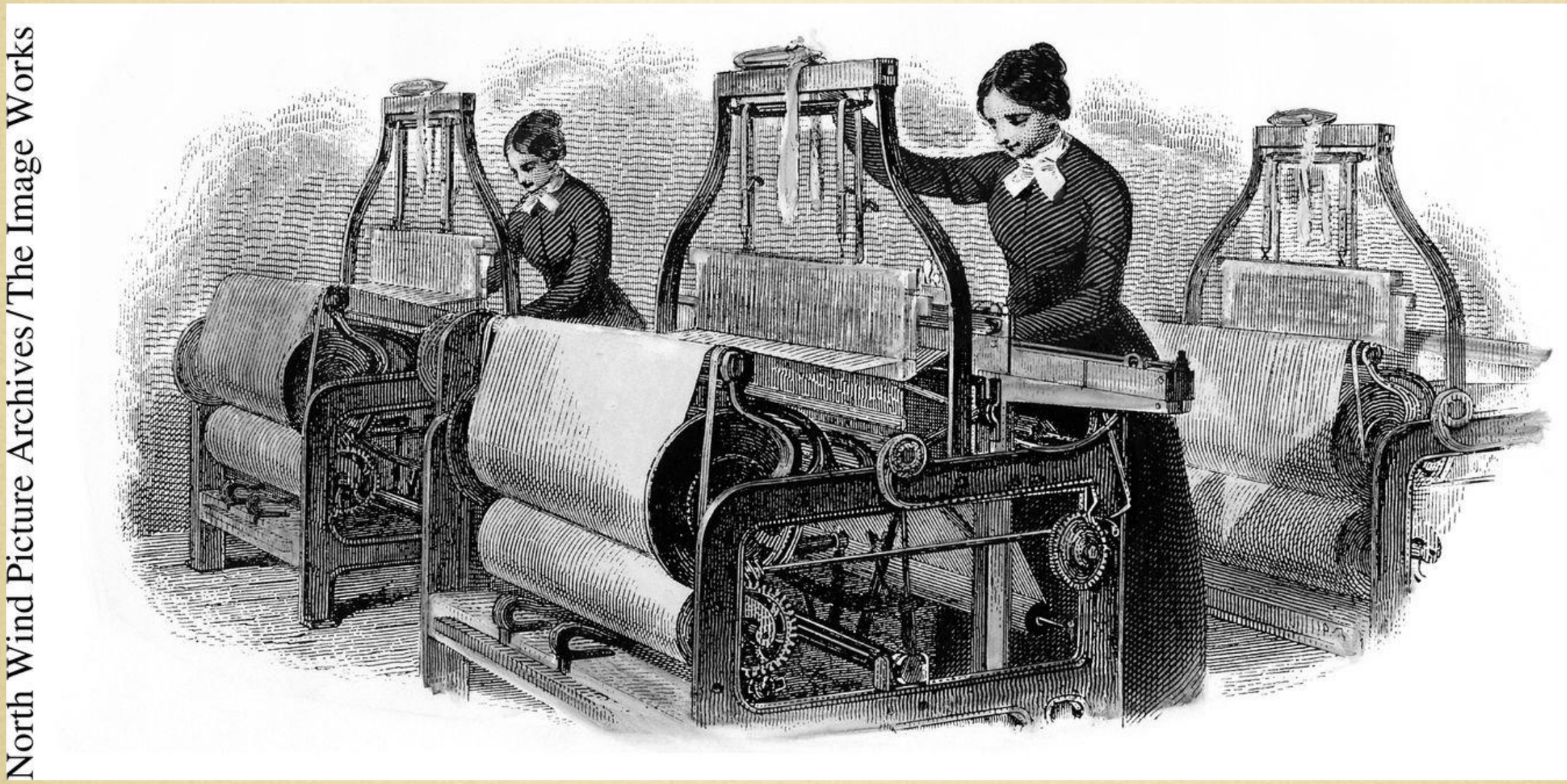
- Growth heavily concentrated in Northern states, and particularly in New England.

- Two big reasons:
  - Tariffs.
  - War-related interruptions in imports (including embargo of 1807-8).

Table 1. New England Cotton Industry Output, 1805–1860[a]

Year	Yards of Cloth (000's)	Value Added[b] ($000's) Cloth	Value Added[b] ($000's) Total	Annual Increase (Per Cent) Cloth	Annual Increase (Per Cent) Total
1805	46	2	16		
1806	62	3	22	[c]	34.6
1807	84	4	29	[c]	35.9
1808	181	10	64	[c]	121.0
1809	255	13	90	[c]	40.6
1810	648	34	228	[c]	153.0
1811	801	42	282	[c]	23.7
1812	1,055	55	372	[c]	31.9
1813	1,459	77	515	[c]	38.4
1814	1,960	103	691	[c]	34.2
1815	2,358	124	831	[c]	20.3
1816	840	44	—	−64.4	—
1817	3,883	204	—	362.0	—
1818	7,216	379	—	85.8	—
1819	9,941	522	—	37.8	—
1820	13,874	728	930	39.6	—
1821	22,292	1,170	1,394	60.7	49.9
1822	30,171	1,584	1,820	35.3	30.6
1823	41,459	2,177	2,424	37.4	33.2
1824	55,771	2,928	3,186	34.5	31.4
1825	69,677	3,658	3,928	24.9	23.3
1826	84,349	4,429	4,710	21.1	19.9

Source: Zevin (1971), "The Growth of Cotton Textile Output after 1815."



North Wind Picture Archives/The Image Works

A New England textile mill, c.1819.

- Rising industrial sector in New England led to an interest group seeking protection from imports.

- First tariffs: 1789: 5% *ad valorem* tariff on most imports.

- Basic tariff vocabulary.
- *Tariff*: Tax on imports.
- *Ad valorem* tariff: % of invoice value.
    - E.g., 5% tariff: Import $100 worth of stuff, pay $5.00 in tariff at border.
- *Specific* tariff: $ of tax due per unit of quantity imported.
    - E.g. $5.00 per ton of stuff: Import 2 tons of stuff, pay $10.00 in tariff at border.

- Rising protectionist movement led to several increases in tariff: 1816, 1820, 1824, 1828.

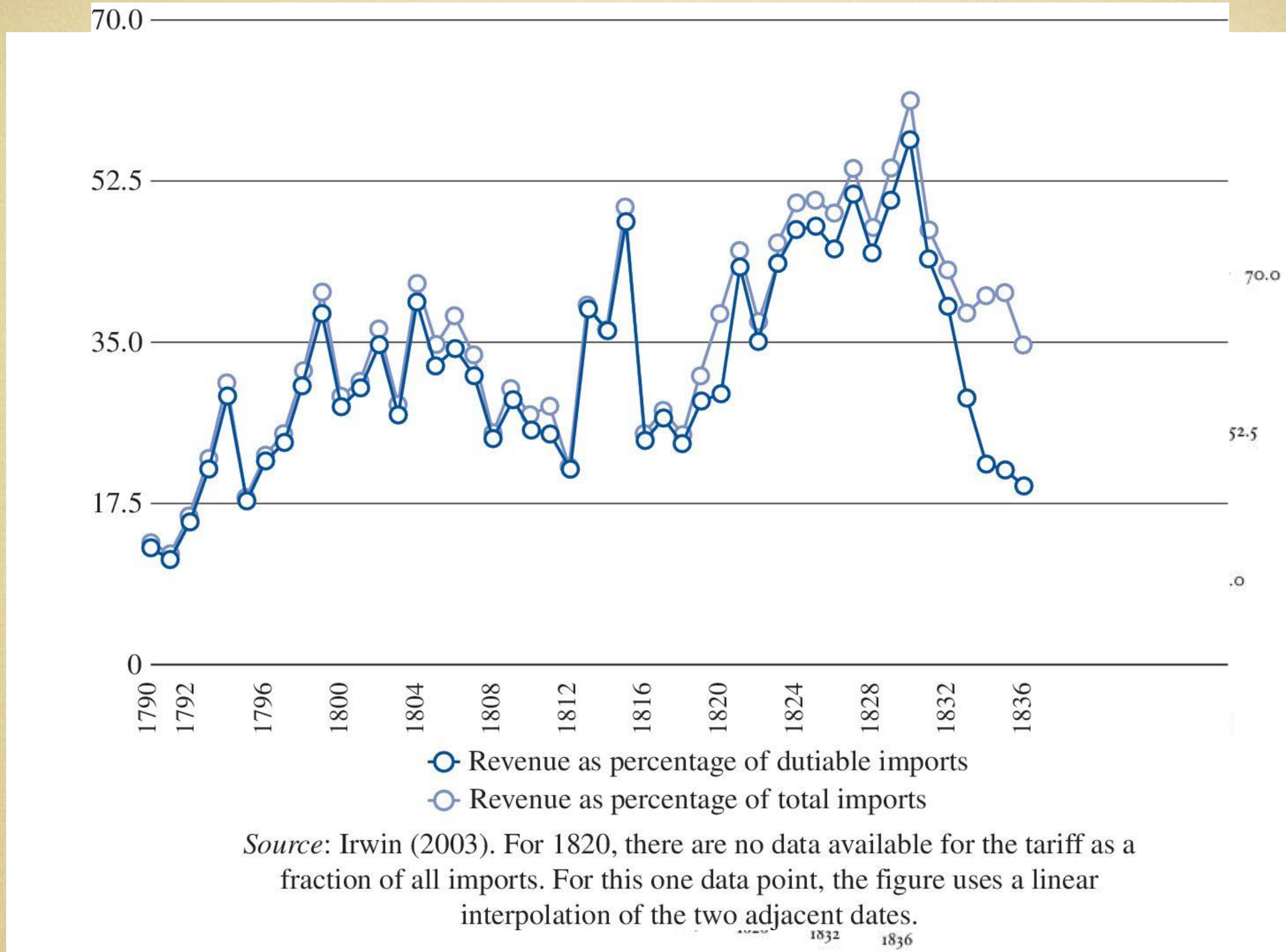
- 1816: 25% *ad valorem* tariff on cotton textiles.

How about the South?

- South generally opposed import tariffs.
- Economy was based on export crops; no manufacturing to speak of.
- Constitutional convention in 1787: Southern delegates wanted a ban on import tariffs and export taxes.
  - Settled for ban on export taxes.
- Southern politicians didn't object too much to tariff bills until the 1820's.

Tariff bill of 1828.

- The most protective bill ever enacted in the United States
- Average above 50%.



Source: Irwin (2003). For 1820, there are no data available for the tariff as a fraction of all imports. For this one data point, the figure uses a linear interpolation of the two adjacent dates.

Source: Irwin (2003).

- The 1828 tariff created a sharp split
- Voting on the bill was strongly correlated with region
  - Northern members of Congress voted overwhelmingly for the bill,
  - while Southern congressmen voted overwhelmingly against it
- Southern politicians denounced the bill as an ‘abomination.’

Economic analysis

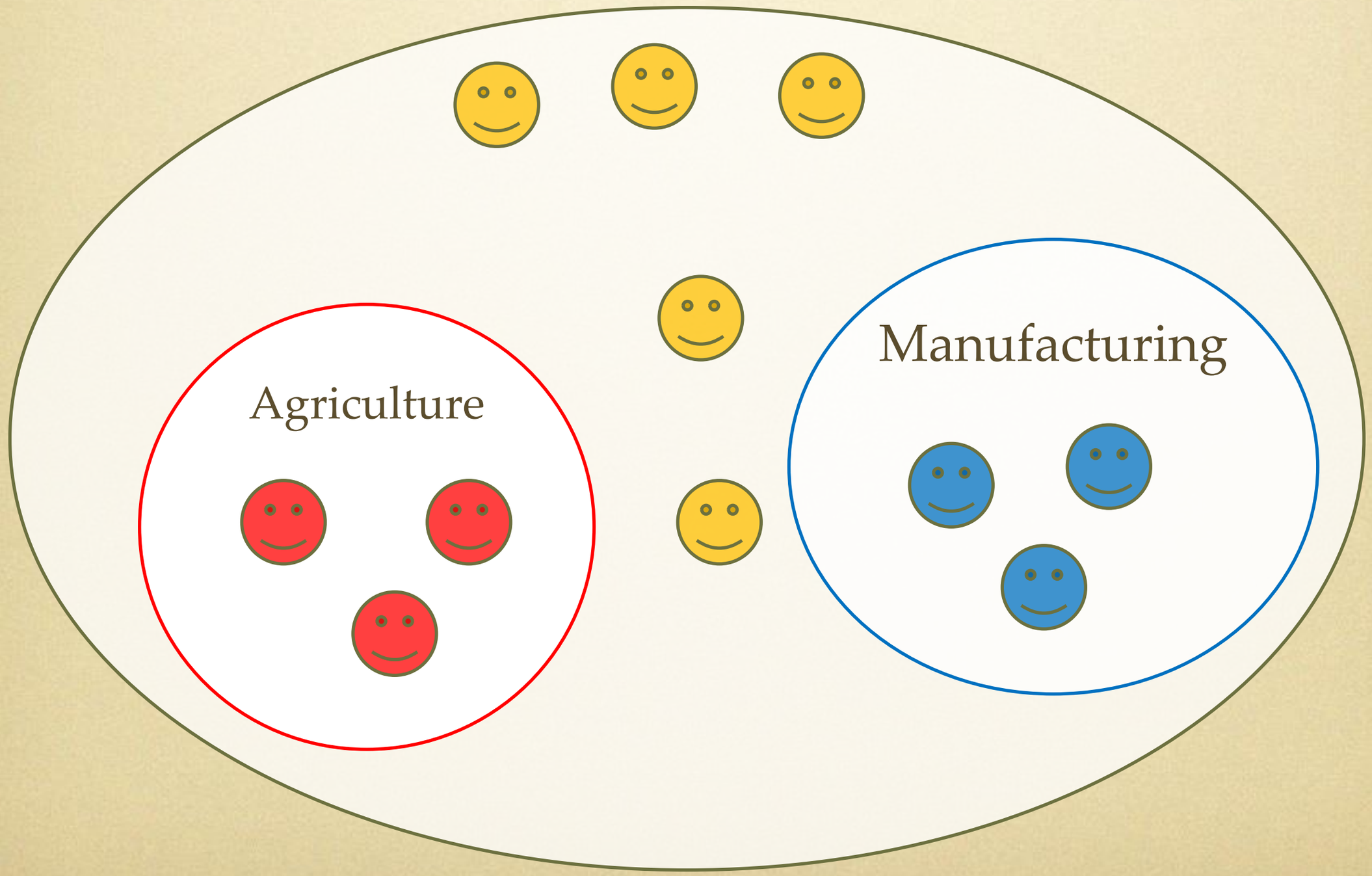
- Clearly a comparative-advantage economy.
- Exports of cotton and tobacco (agriculture).
- Imports of textiles and apparel (manufactures)
- But in a Ricardian-type economy there'd be no conflict over trade policy.
    - All people in Ricardian model have the same economic interests

- In order to understand this type of political conflict over trade policy, we will add specific factors to the model
- A specific factor is a factor of production that can be used in only one industry
  - machine that is designed to produce one product and cannot be used to produce anything else be used in only one industry
  - human capital; a highly-skilled worker's training is often specialized to one industry

Specific-Factors Model

- There are two sectors:
  - manufacturing: uses labor and capital
  - agriculture: uses labor and land
- Three factors of production: labor, capital, land
  - Capital and land are *fixed* or *stuck*
  - Labor is *mobile* b/w industries

Workers Land Owners Capital Owners

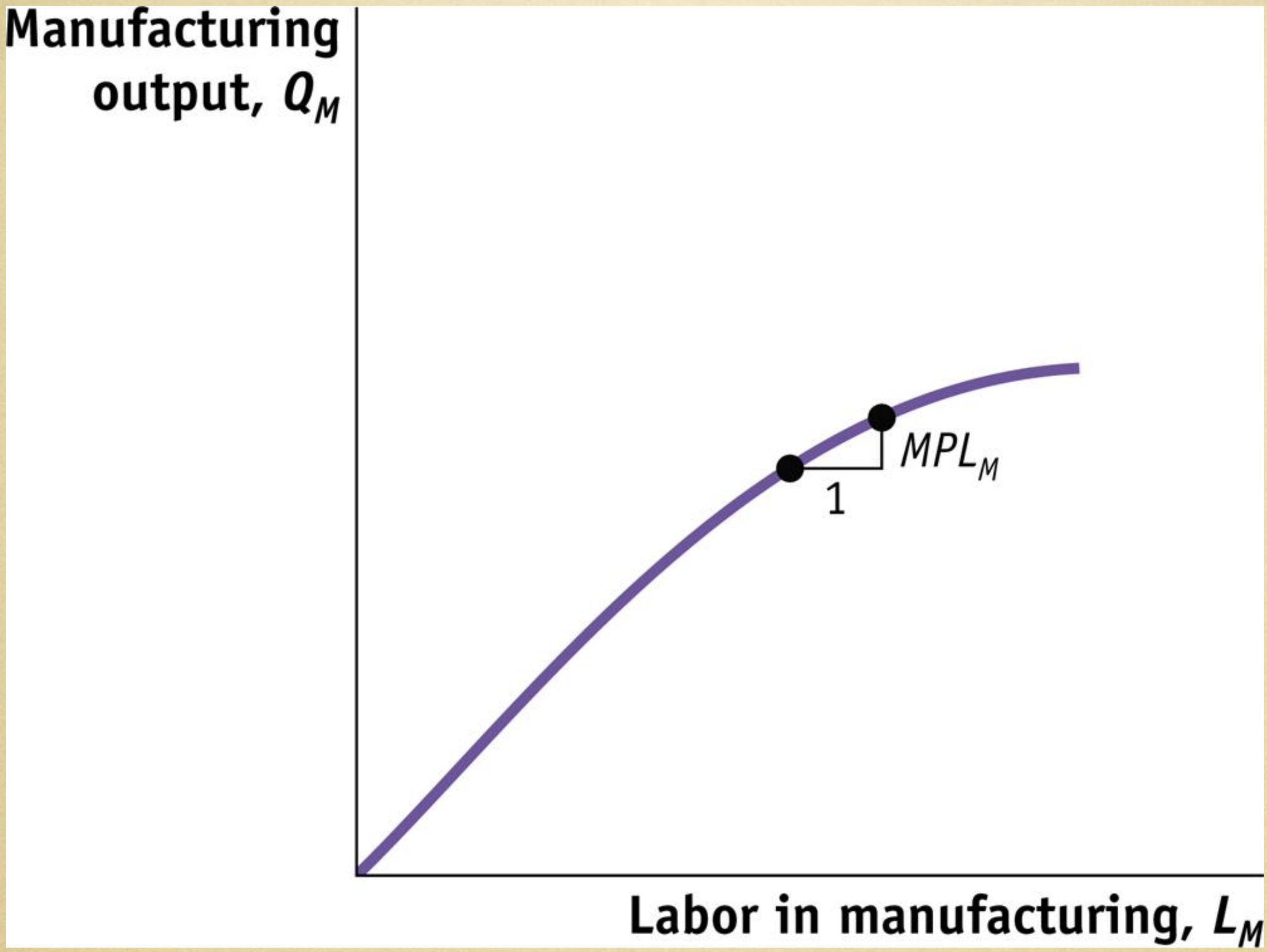


How does our economy function?

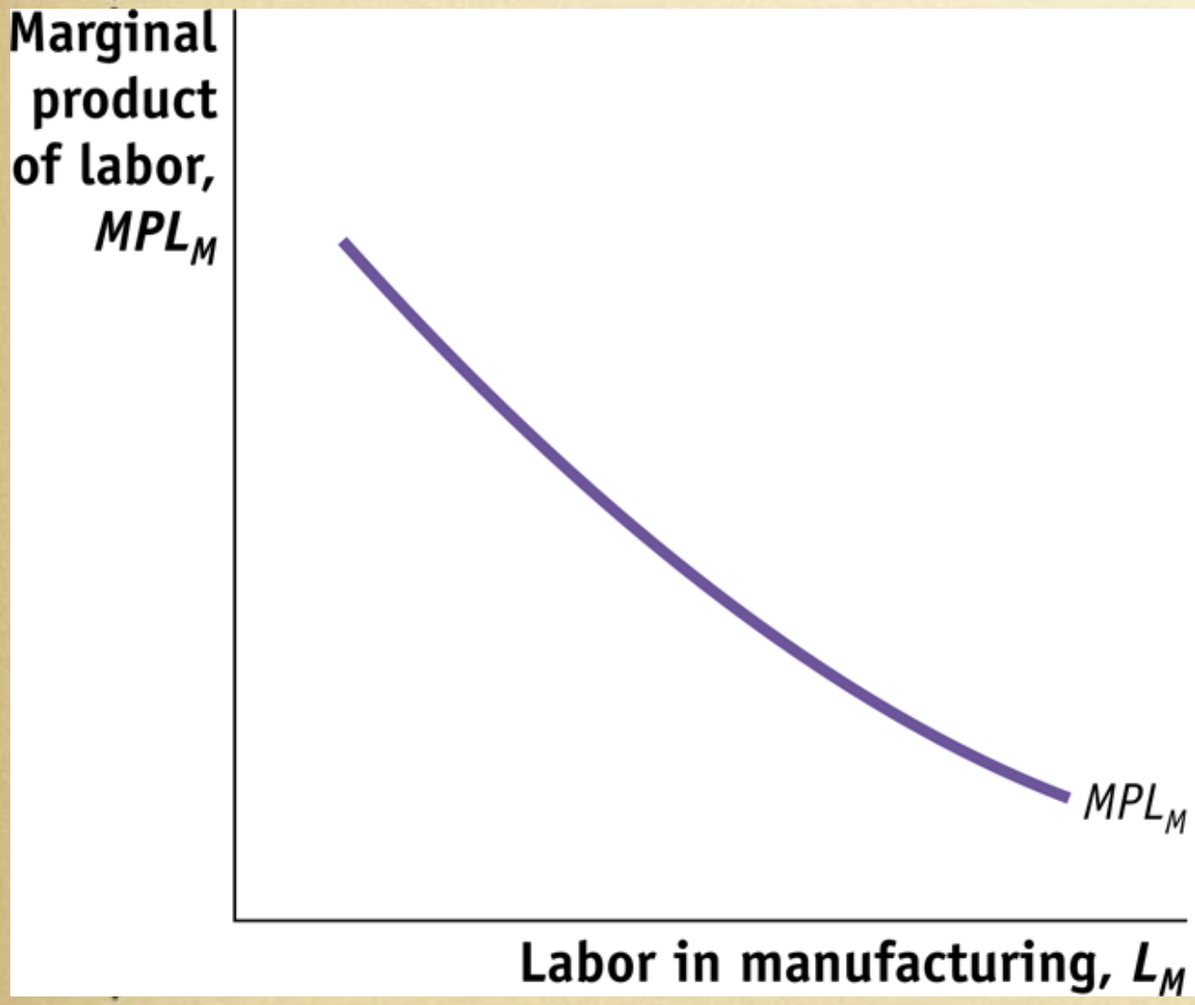
- Both sectors offer wages
- Workers choose where to work
- Given employment, production takes place
- Everybody gets their income and consumes
- Workers get labor income – wage
- Land owners get rental on land
- Capital owners get rental on capital

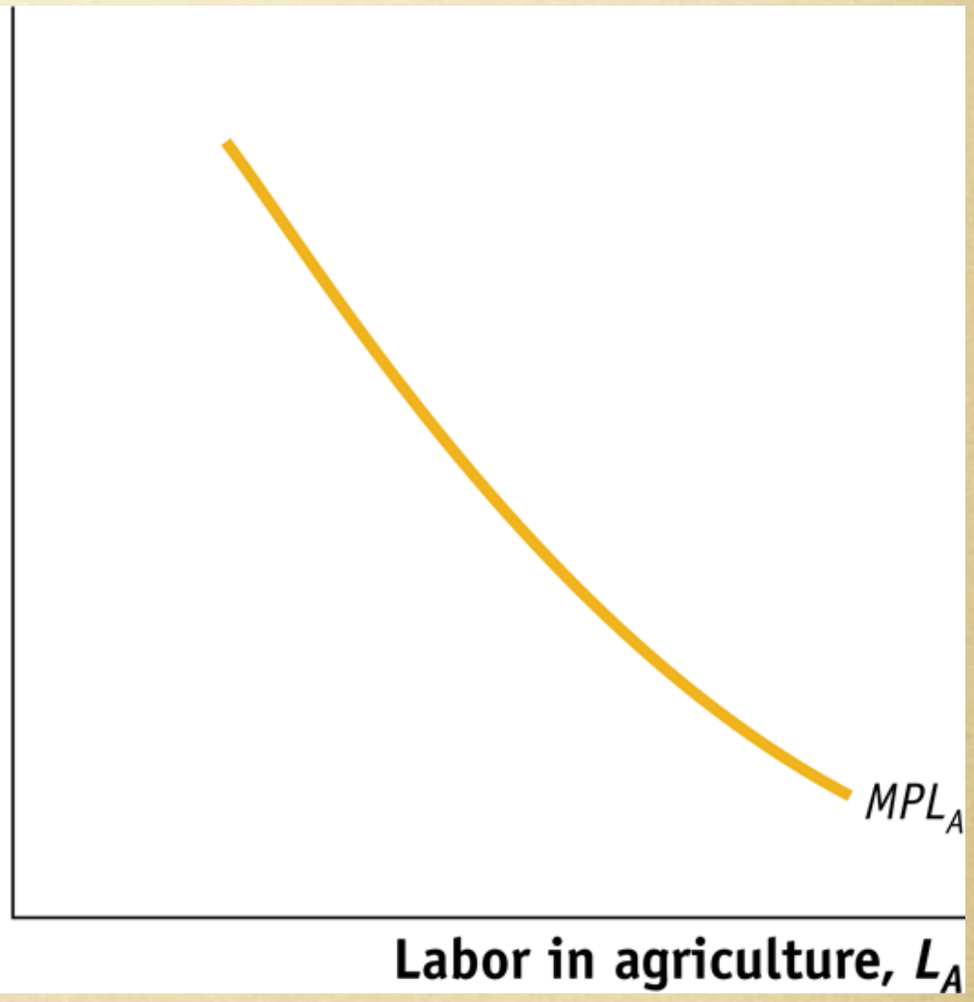
Marginal returns to labor

- Assume that in each sector there are *diminishing* marginal returns to labor
  - marginal product of labor declines as the amount of labor used increases
- Marginal Product of Labor (MPL) curves are *downward-sloping*


Manufacturing output, Q_M
MPL_M
1
Labor in manufacturing, L_M

Diminishing Marginal Product of Labor



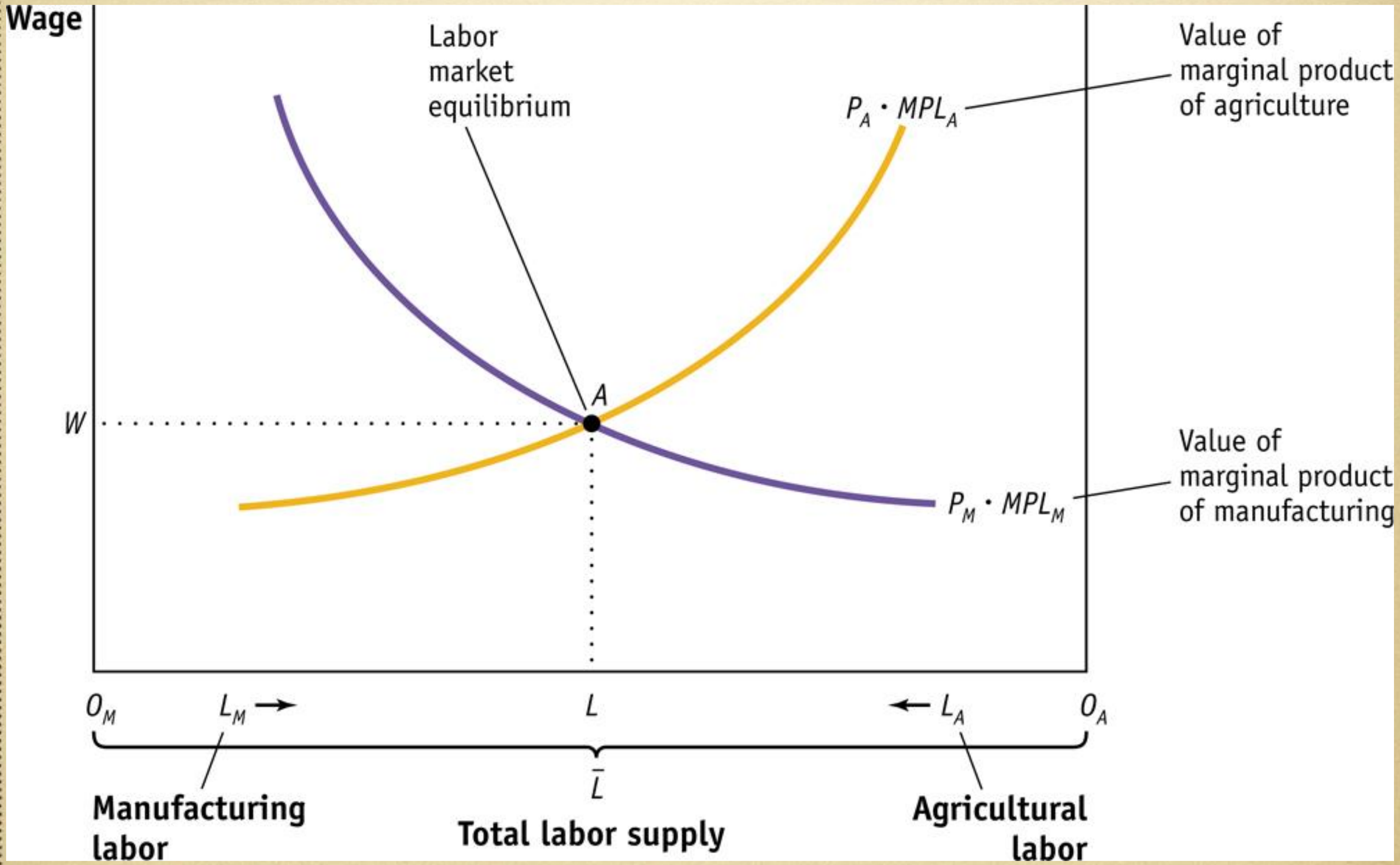


Obvious but very important observation

- What happens if sectors A and M offer different wages?
- Let's say wage in A is higher
- Then nobody works in M!
- The returns to labor in M are huge
- Capital owners have incentives to raise wages
- **Hence, sectors will offer the same wages!**

Labor Market

- Labor supply: total labor in the economy $L=L_M+L_A$
- Labor demand: firms hire up to the point where wages equal the value of the marginal product
- In agriculture: $W=P_A\ MPL_A$
- In manufacturing: $W=P_M\ MPL_M$

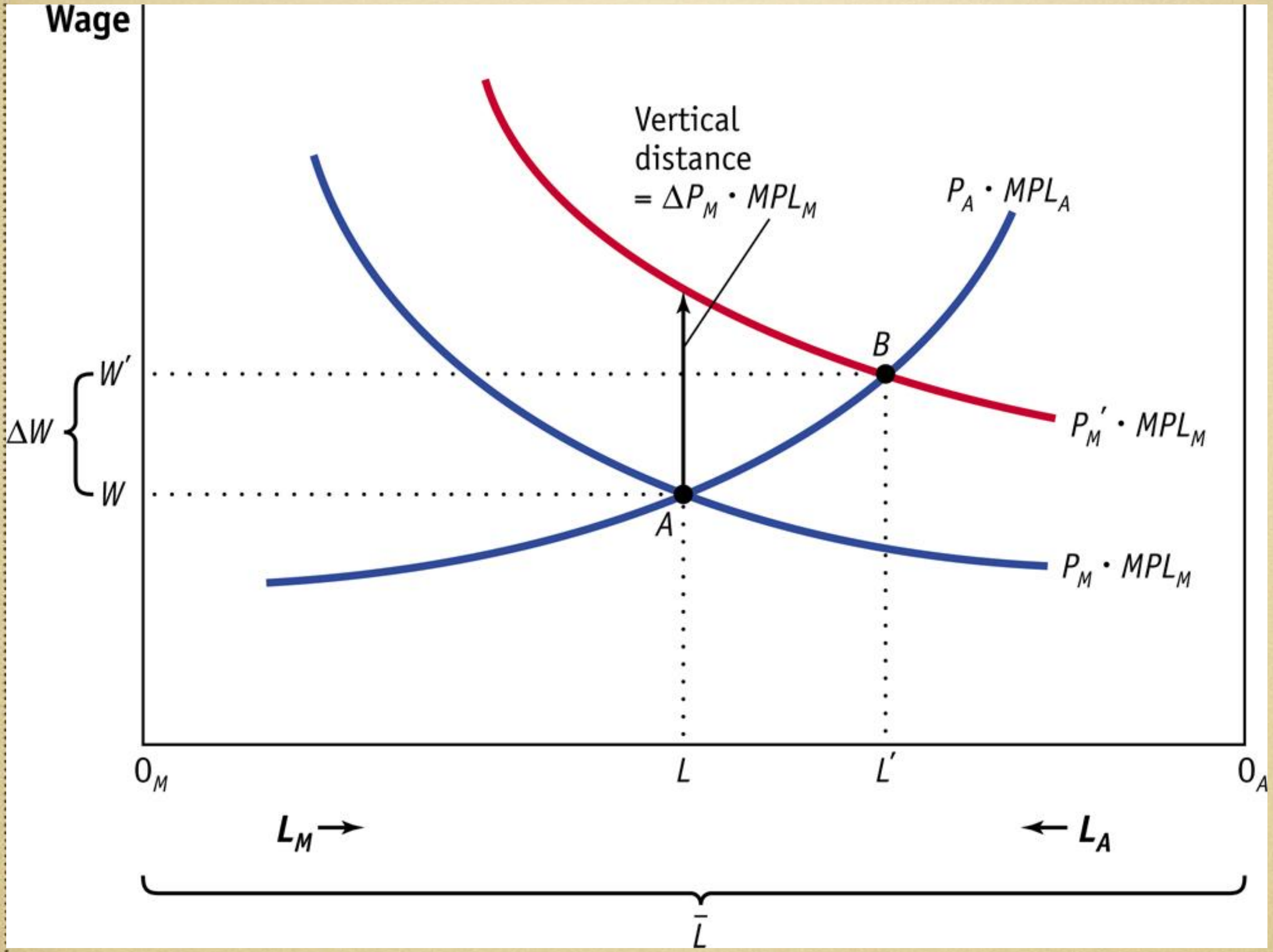

Wage
Labor market equilibrium
$P_A \cdot MPL_A$
Value of marginal product of agriculture
A
W
$P_M \cdot MPL_M$
Value of marginal product of manufacturing
O_M
L_M
L
L_A
O_A
$\bar{L}$
Manufacturing labor
Total labor supply
Agricultural labor

Labor Market

- Labor Market Equilibrium is where the two curves cross
  - $W=P_A\ MPL_A = P_M\ MPL_M$
  - As long as labor is in equilibrium, there is no reason for labor to move between sectors
- However, equilibrium can change as other factors in the market change
  - Labor will move to the industry where it is paid the most

Tariff in Manufacturing

- How is all of this changed by tariff in manufacturing?
- Tariff will increase the price of M by ΔP_M
- Then P_M*MPL_M curve shifts up by ΔP_M*MPL_M


Wage
Vertical
distance
= $\Delta P_M \cdot MPL_M$
$P_A \cdot MPL_A$
B
W'
ΔW
W
A
$P_M' \cdot MPL_M$
$P_M \cdot MPL_M$
0_M
L
L′
0_A
$L_M \rightarrow$
$\leftarrow L_A$
$\bar{L}$

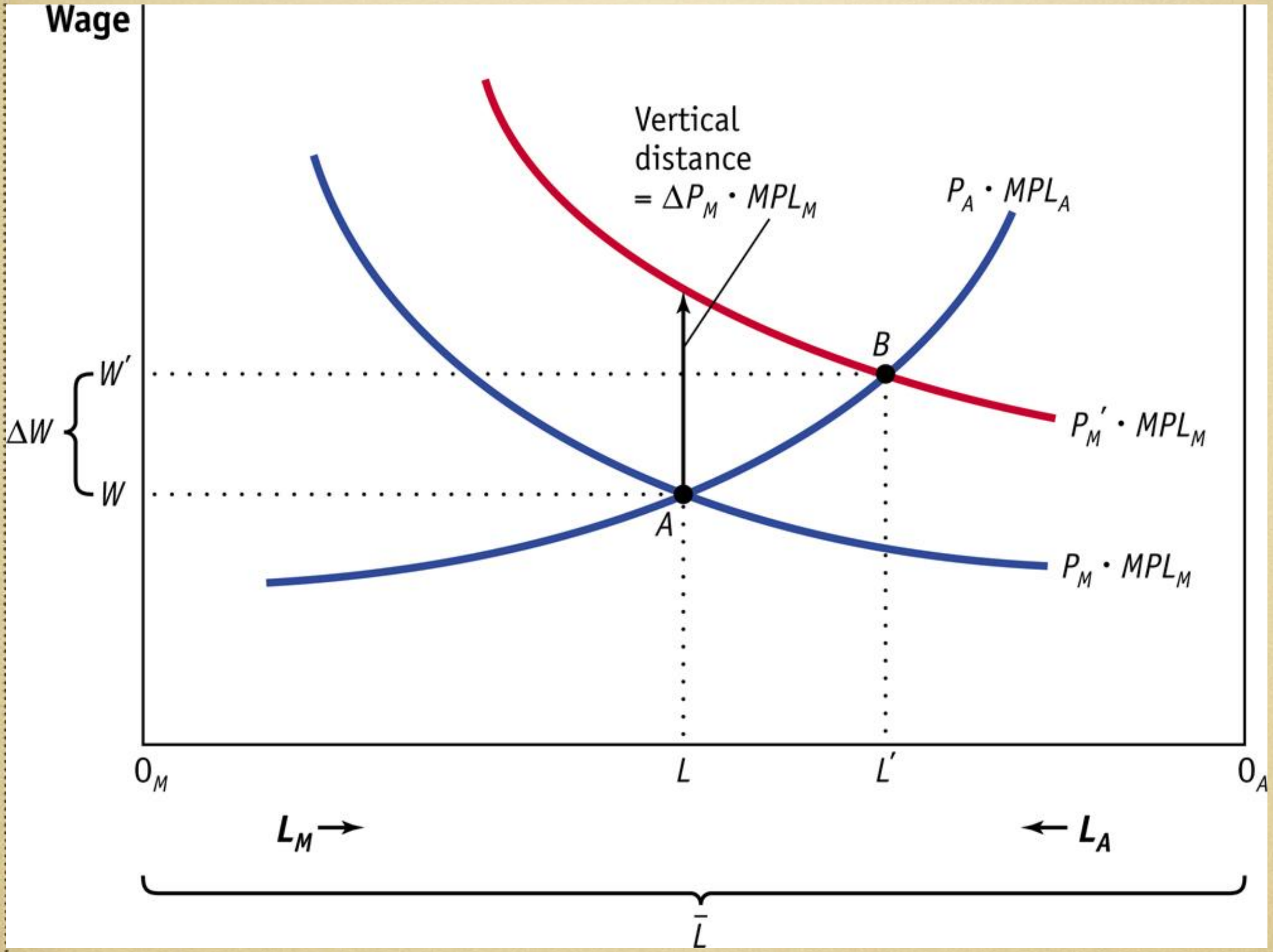
New equilibrium:

- higher wage
- L_M has increased and L_A has decreased

- How do we know whether workers, owners of capital and land-owners are better off or worse off?
  - Tariff changes wages and rentals as well as prices – looks complicated!
- A very useful measure of well-being is ***real wage*** (or real rental)
  - Amount of each good a worker (land-owner or capital owner) can afford to buy

Effect on Real Wages

- Real Wages – the amounts of M and A that a worker can afford to buy
- Question: do higher wages translate into higher real wages?
- Depends on changes in prices
- Recall that P_A did not change so W/P_A has increased
  - workers can buy more food
- Recall that P_M increased which leaves the effects on W/P_M currently ambiguous


Wage
Vertical
distance
= $\Delta P_M \cdot MPL_M$
$P_A \cdot MPL_A$
B
W'
ΔW
W
A
$P_M' \cdot MPL_M$
$P_M \cdot MPL_M$
0_M
L
L′
0_A
$L_M \rightarrow$
$\leftarrow L_A$
$\bar{L}$

Effect on Real Wages

- From the graph:
- $\Delta W / W < \Delta P_M / P_M$
- $\Delta W/W$ is the percentage change in wages
- $\Delta P_M / P_M$ is the percentage change in price
- The real wage in terms of manufactured goods, W/P_M has decreased!

Overall Impact on workers

- Our result: the real wage in terms of A has increased and the real wage in terms of M has decreased
- Is labor better off or worse off after the price increase?
  - A person who spends much of their income on agricultural goods is probably better off and vice versa

Overall Impact on workers

- The overall effect on the well-being of workers has an *ambiguous effect*
- This conclusion may seem wishy-washy to you but it is still important
  - the result is different than what was found in the Ricardian model
- We have learned that one cannot make unqualified statements about the effect of trade on workers
  - The effect of trade on real wages is complex even in a very simple model!

Earnings of Capital and Land Owners

- Now we know that labor does not necessarily gain from tariff in manufacturing
- Next question: what about capital and land owners?

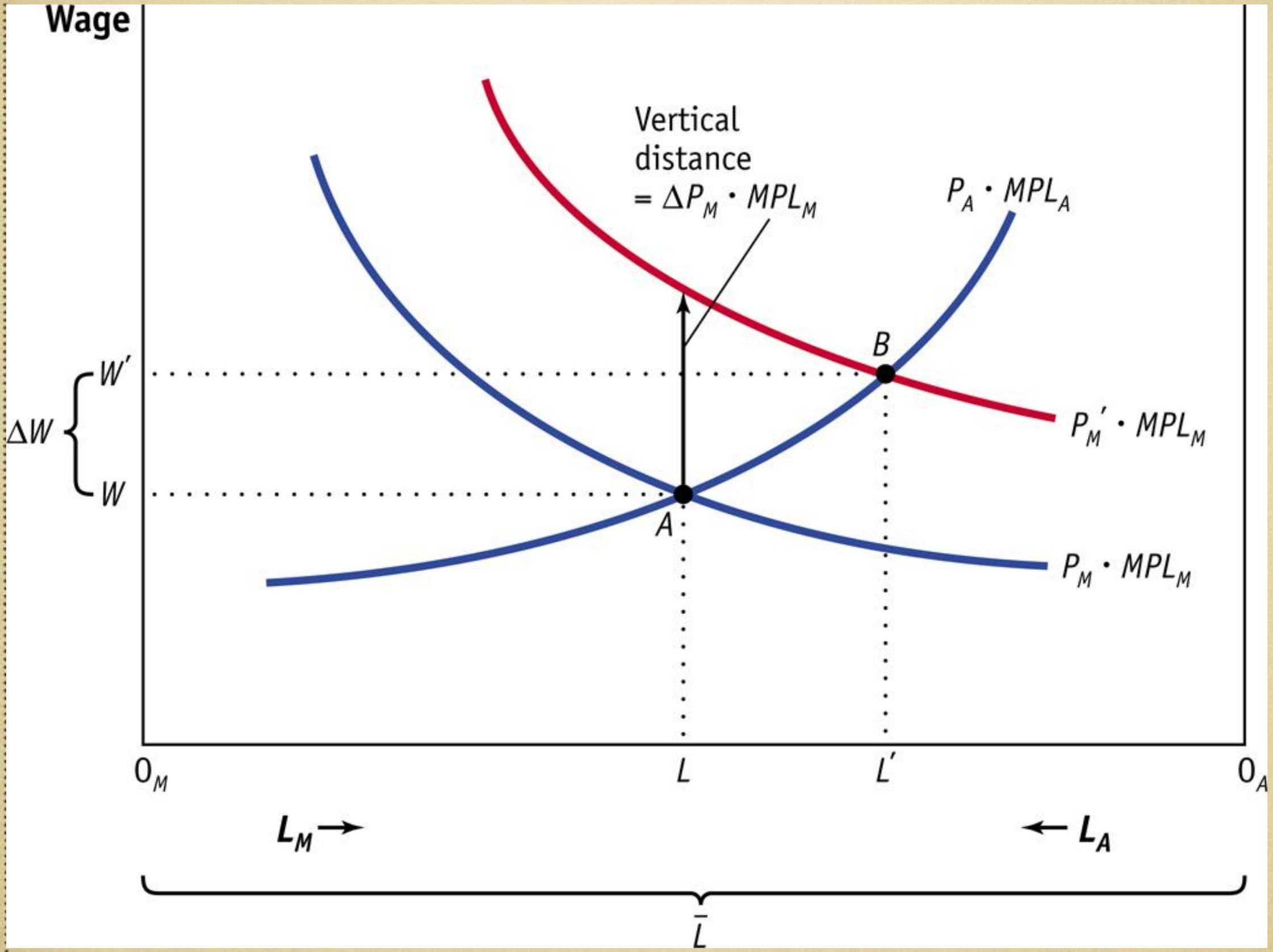
Earnings of Capital and Land

- Rental rates reflect what these factors earn during a given period when used in these industries

$$R_K = P_M \, MPK_M$$

$$R_T = P_A \, MPT_A$$

- We saw before that some workers move from agriculture to manufacturing


Wage
Vertical
distance
= $\Delta P_M \cdot MPL_M$
$P_A \cdot MPL_A$
B
W'
ΔW
W
A
$P_M' \cdot MPL_M$
$P_M \cdot MPL_M$
0_M
L
L′
0_A
$L_M \rightarrow$
$\leftarrow L_A$
$\bar{L}$

Earnings of Capital and Land

- As more labor is used in manufacturing, the marginal product of capital will *rise*
- As more labor leaves agriculture, the marginal product of land will *fall*

Note:

this does not contradict the law of diminishing returns

- Now we taking about how a change in labor affects the marginal return of *another* factor

Real rental on capital

- Remember $R_K = MPK_M P_M$
  - P_M is rising and we know MPK_M is rising
  - R_K must be increasing – nominal rental on capital *increases*
  - Moreover $R_K P/_M$ also increases
    - *Real rental* on capital in terms of M has increased

Real rental on capital

- What about R_K/P_A – real rental on capital in terms of agricultural good?
  - R_K increased, P_A fixed,
  - R_K/P_A also *increased*

Real rental on capital

- Since capital owners can afford more of both goods, they are better off with tariff

- Unlike workers, owners of capital clearly gain from the tariff

Real rental on land

- Recall $R_T = MPK_A \, P_A$
  - Labor leaves agriculture causing MPK_A to fall
  - P_A does not change
- Then R_T must fall – nominal rental on land *decreases*!

Change in the Real Rental on Land

- How about real rental on land?
- $R_T/P_A = MPK_A$ falls
  - The *real rental on land* in terms of food has decreased—land owners cannot buy as much food
- With increase in P_M land owners cannot buy as much of the manufactured good either - R_T/P_M falls
- Land owners are clearly *worse off*

Upshot:

- Factors specific to the export sector are unambiguously hurt by the tariff.
- Factors specific to the import-competing sector unambiguously benefit from the tariff.
- Mobile factors – effects could go either way

In class exercise

- Assume that instead of a tariff in manufacturing, the government imposes a tax on exports of cotton.
- How do the outcomes compare with the case of the tariff?

The Lerner Symmetry Theorem

- For any import tariff, there is an export tax that has exactly the same effects!
- This theorem holds in any comparative-advantage model

Back to North-South trade policy war

- 1787, negotiations over drafting of the US Constitution:
- Southern representatives insisted that exports taxes are banned
  - Exports taxes to this day are unconstitutional
- But agreed on import tariffs!
- Clearly they did not understand the Symmetry Theorem!