

The Labor Market

Labor Market

Output is a function of

- Capital
- Labor
- Technology

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In the short run

- capital is fixed
- technology is fixed
- labor is variable

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In the short run

- changes in the labor market determine changes in national output

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The relationship between labor and output

- As labor increases, output increases.
- But as labor increases, output increases at a decreasing rate.

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The relationship between labor and output

- Labor produces more per unit of output when productivity improves

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Productivity of Labor is influenced by

- Capital (equipment & structures)
- Technology (organization of work)
- Skills/Educational/Experience of worker

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Other factors that greatly influence productivity include:

- Management (the good, bad and the ugly)
- Worker health

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Measures of Labor Productivity

- $MPL = \Delta \text{ output} / \Delta \text{ labor}$
- $APL = \text{output} / \text{labor}$
- Both APL and MPL tend to decline as more labor is hired.

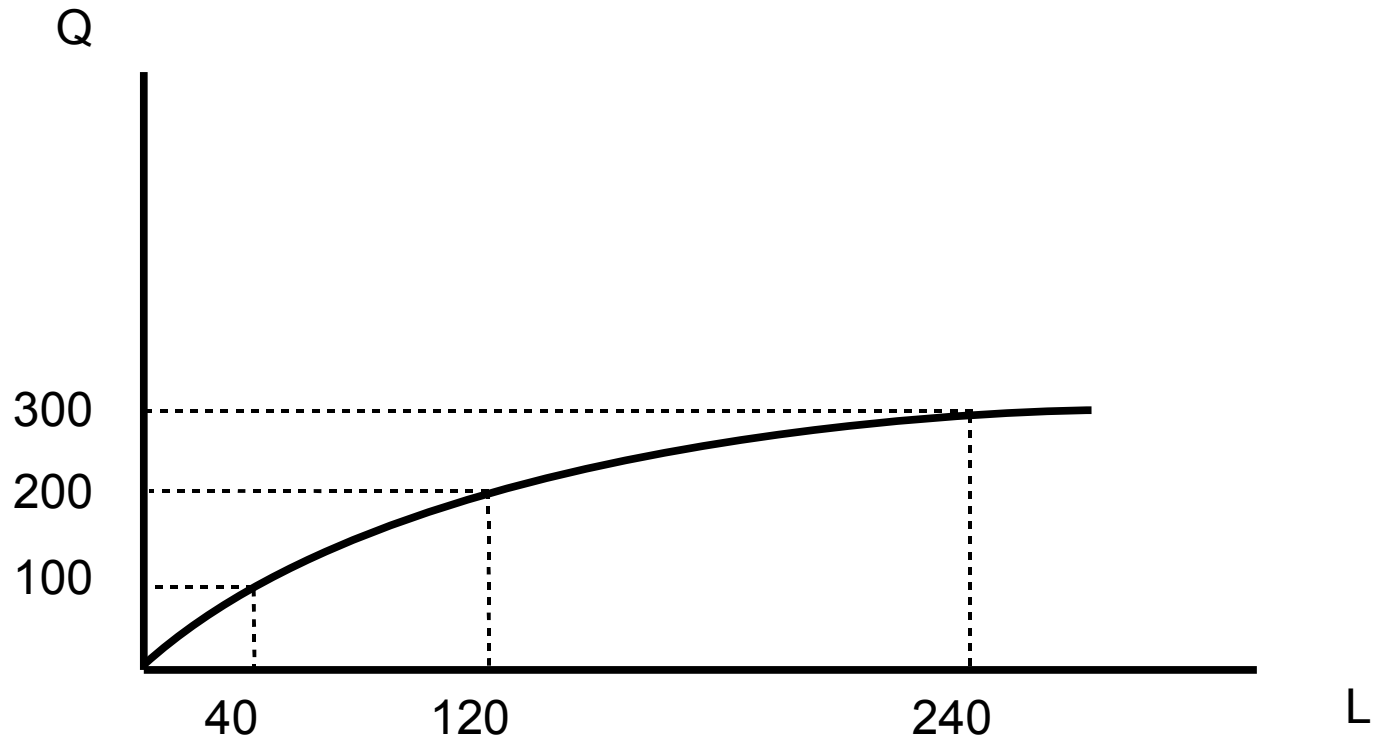
Factor Market

- The following slides illustrate one set of relationships with numeric data and graphs.

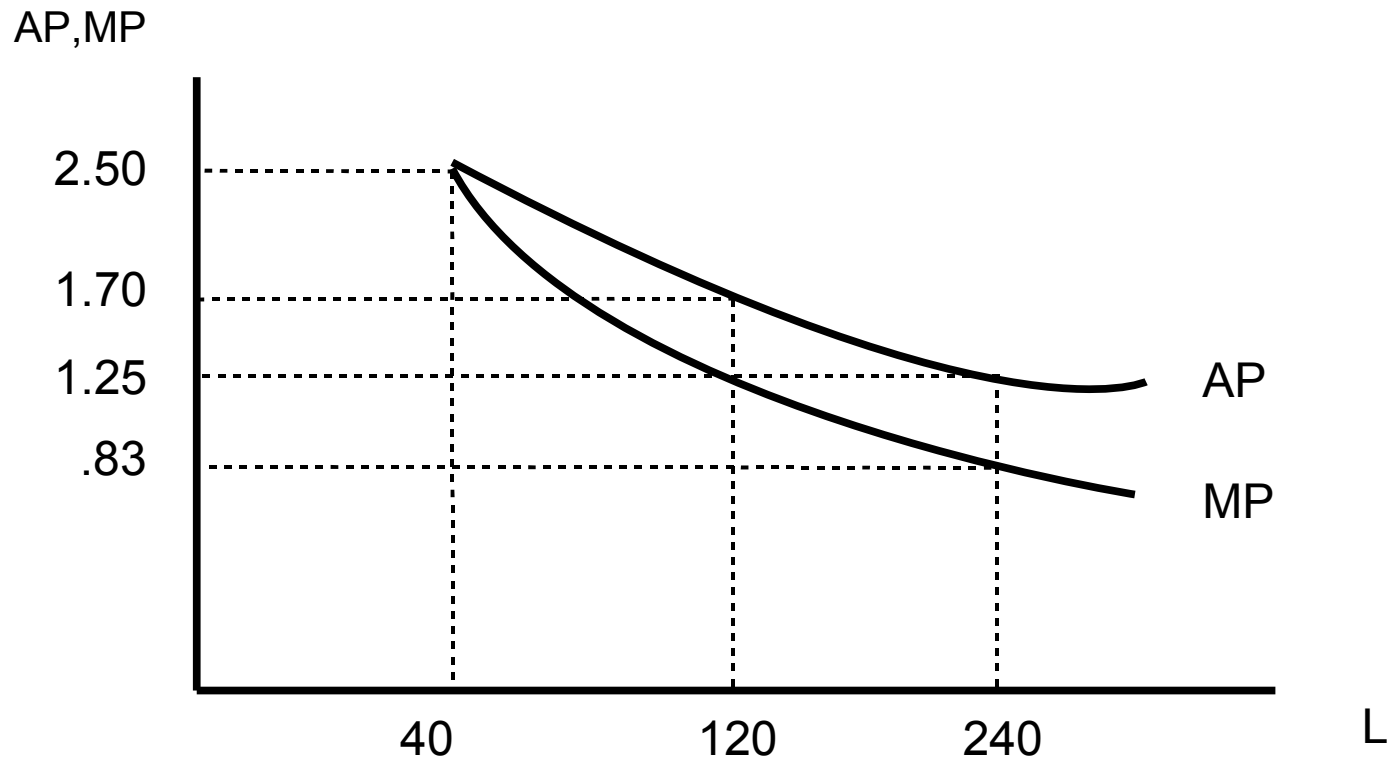
Factor Market

Q	L	APL	MPL
100	40	2.5	2.5
200	120	1.7	1.25
300	240	1.25	.83
400	400	1.00	.63

Factor Market



Factor Market



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Supply and Demand in the Labor Market

- Demand is determined by firms.
- Supply is determined by individuals.

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Demand for Labor

- Is derived from demand for the product that labor is producing.
- For example, demand for auto workers is conditioned on demand for autos.

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Demand for Labor

- Firms hire labor to the point that Marginal Revenue = Marginal Cost.
- Marginal revenue for labor is called Marginal Revenue Product (MRP).
- $MRP = P * MPL$
- It represents the revenue associated with hiring one more unit of labor.

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Demand for Labor

- Becomes a function of productivity, price, and wages.
- MRP is downward sloping because MP decreases as input increases.

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Demand for Labor

- As price and productivity improve, demand for labor increases as labor now becomes more profitable to hire.
- This assumes there is adequate demand for hiring additional labor.

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Demand for Labor

- Marginal Cost for labor is called Marginal Factor Cost (MFC).
- For each unit of labor hired the cost is the wage paid, which is constant in a competitive market.
- $MFC = W$

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Decision Rule for hiring Labor

- THE generic rule: Hire until $MRP = MFC$.
- MRP = Marginal Revenue Product
- MFC = Marginal Factor Cost

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Supply of Labor

- Is a function of population, wages, and the work-leisure decision.
- As population grows, labor supply increases.

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Supply of Labor

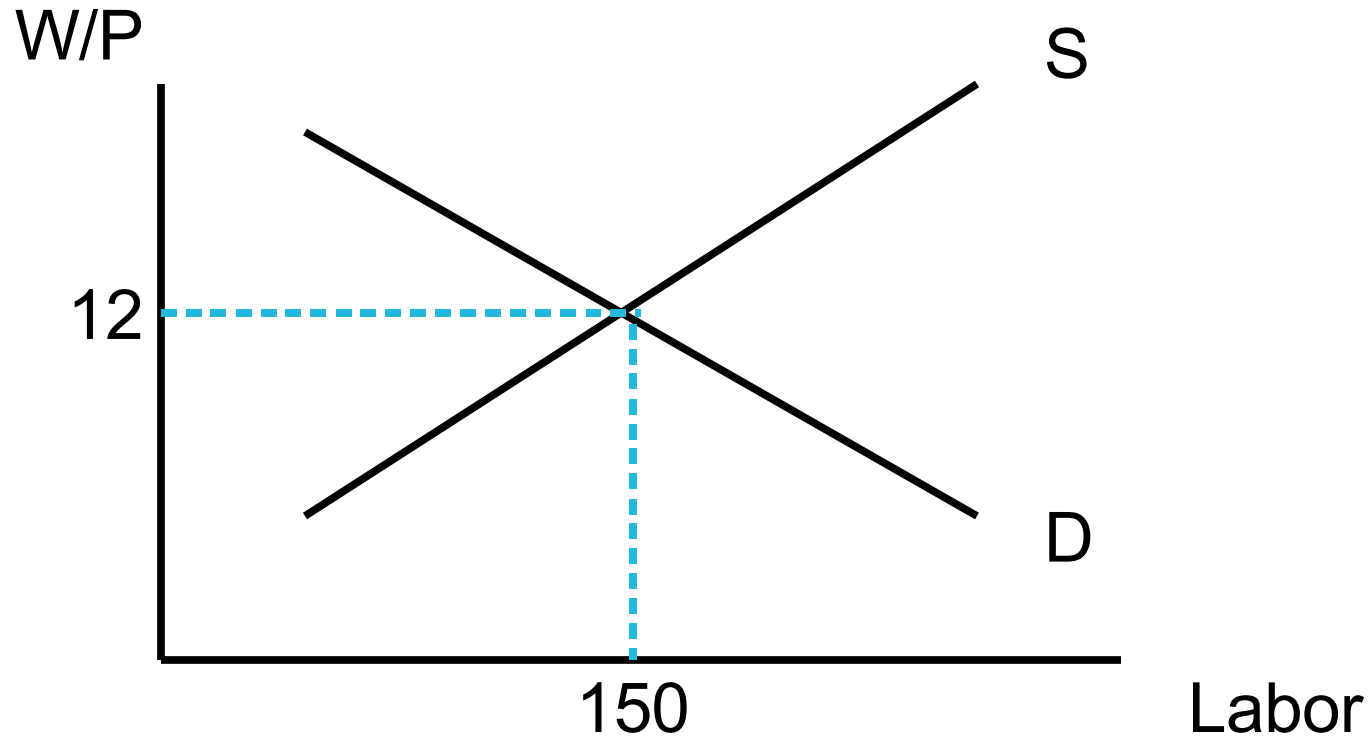
- Wages increase the quantity supplied by encouraging higher workforce participation rates and working longer hours.
- However, as income grows workers seek more leisure time so there is a trade-off.

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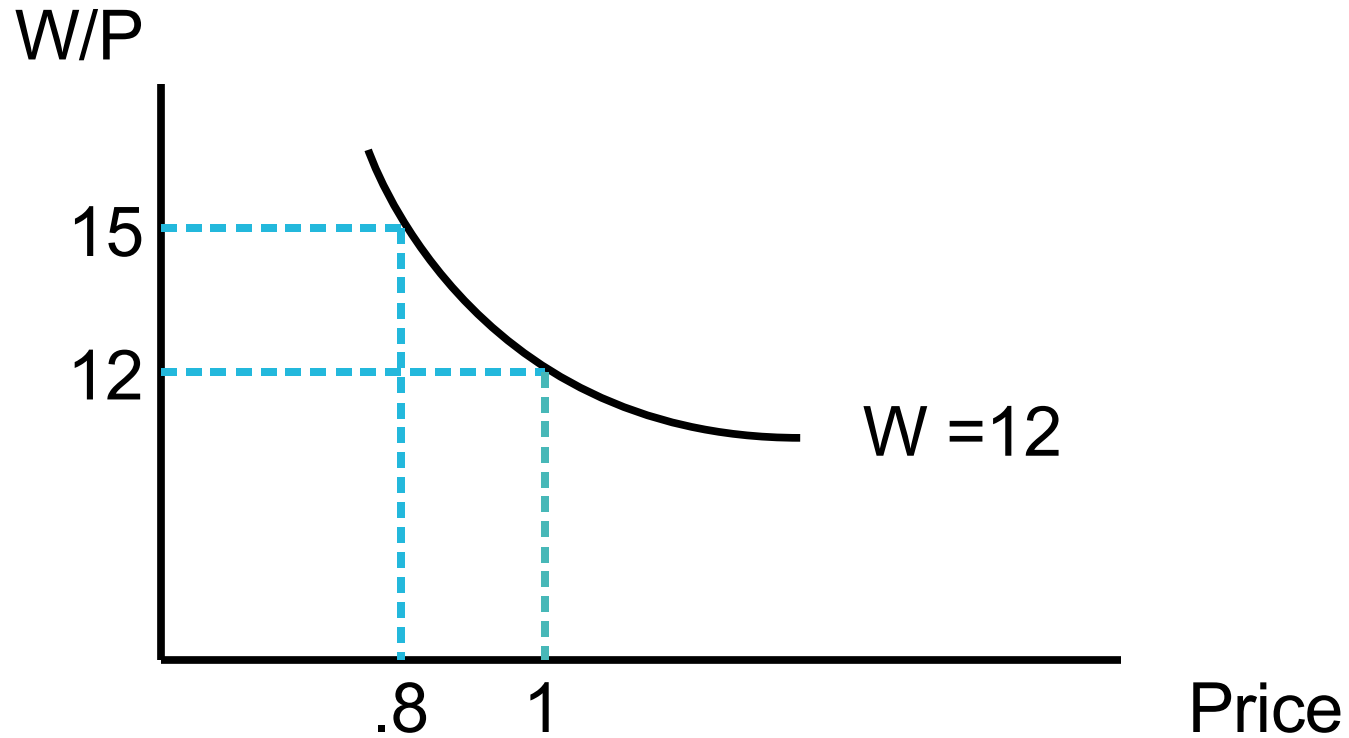
Key assumptions of labor are mobility and flexibility.

- Mobility in a geographical sense as well as moving into differing jobs.
- Flexibility as in the ability to perform different tasks.

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Isoquant Explanation

- At each point on the curve, the nominal wage is 12. Nominal means the current wage that is paid.
- W/P is the real purchasing power of that wage.

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Isoquant Explanation

- Price is a price index. To understand how it works consider it the average price of Big Mac.
- For example, if the wage = 12 and prices are .8 then the purchasing power is 15 Big Macs.
- While at $P = 1$, then $12/1 = 12$ Big Macs.

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Isoquant Explanation

- As prices go down, holding nominal wages constant, purchasing power increases.

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How do wages react to changes in the price level?

- Nominal wages adjust causing purchasing power remains constant.
- Nominal wages remain constant causing the purchasing power to be variable.

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Nominal wages adjust causing purchasing power remains constant.

- If prices double, then nominal wages will double.
- Example: if $W/P = 12/1 = 12$, and P increases to 2 then W will double to 24 so that $24/2 = 12$.

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Nominal wages remain constant causing the purchasing power to be variable.

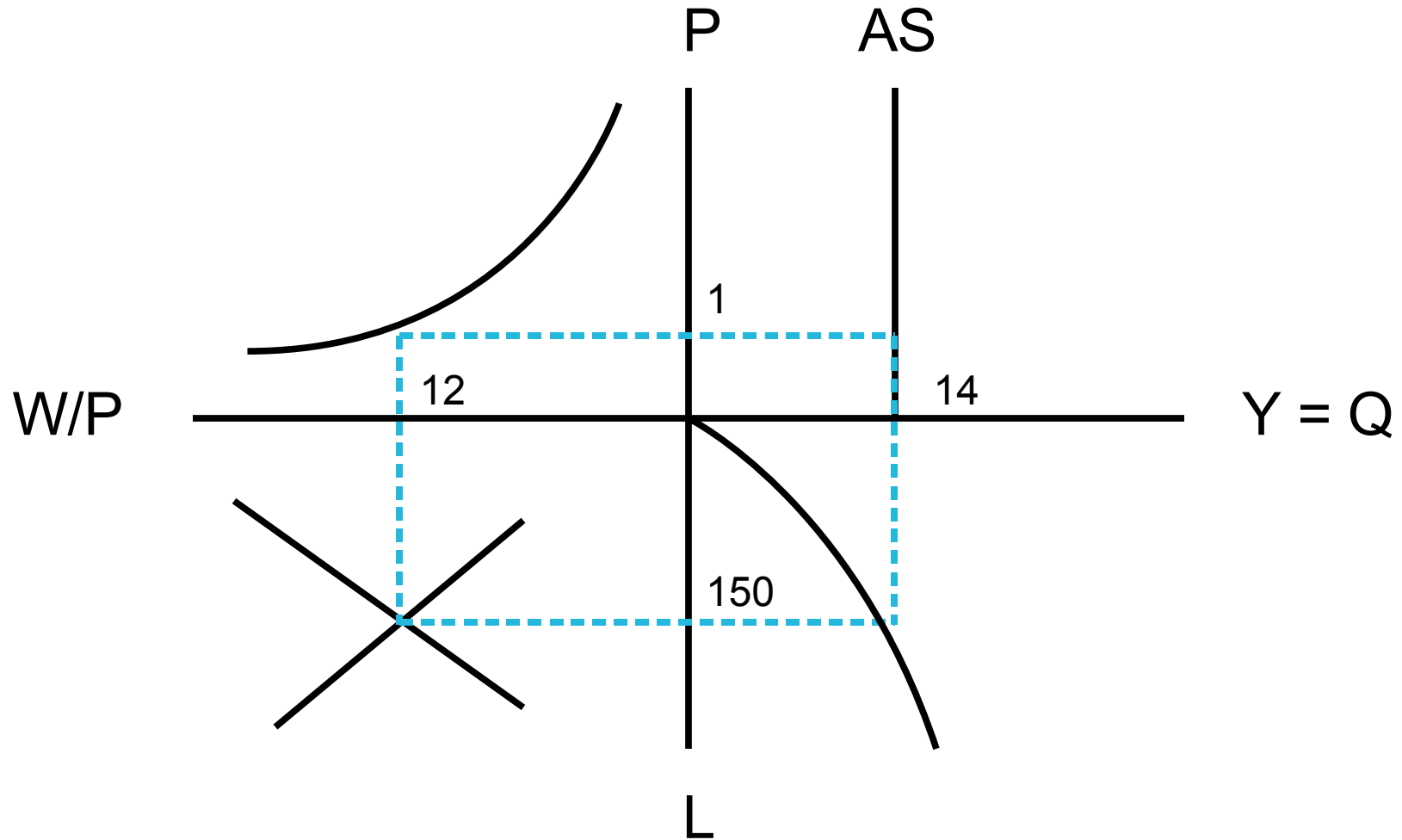
- If prices double, then the purchasing power will be halved.
- Example: if $W/P = 12/1 = 12$ but P increases to 2 then $W/P = 12/2 = 6$.

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Determination of Aggregate Supply

- Now we have the pieces from the labor market to determine aggregate supply.
- It starts from the labor market which determines real wage and employment.
- Employment determines output.
- Given a price level, real wages determine nominal wages.

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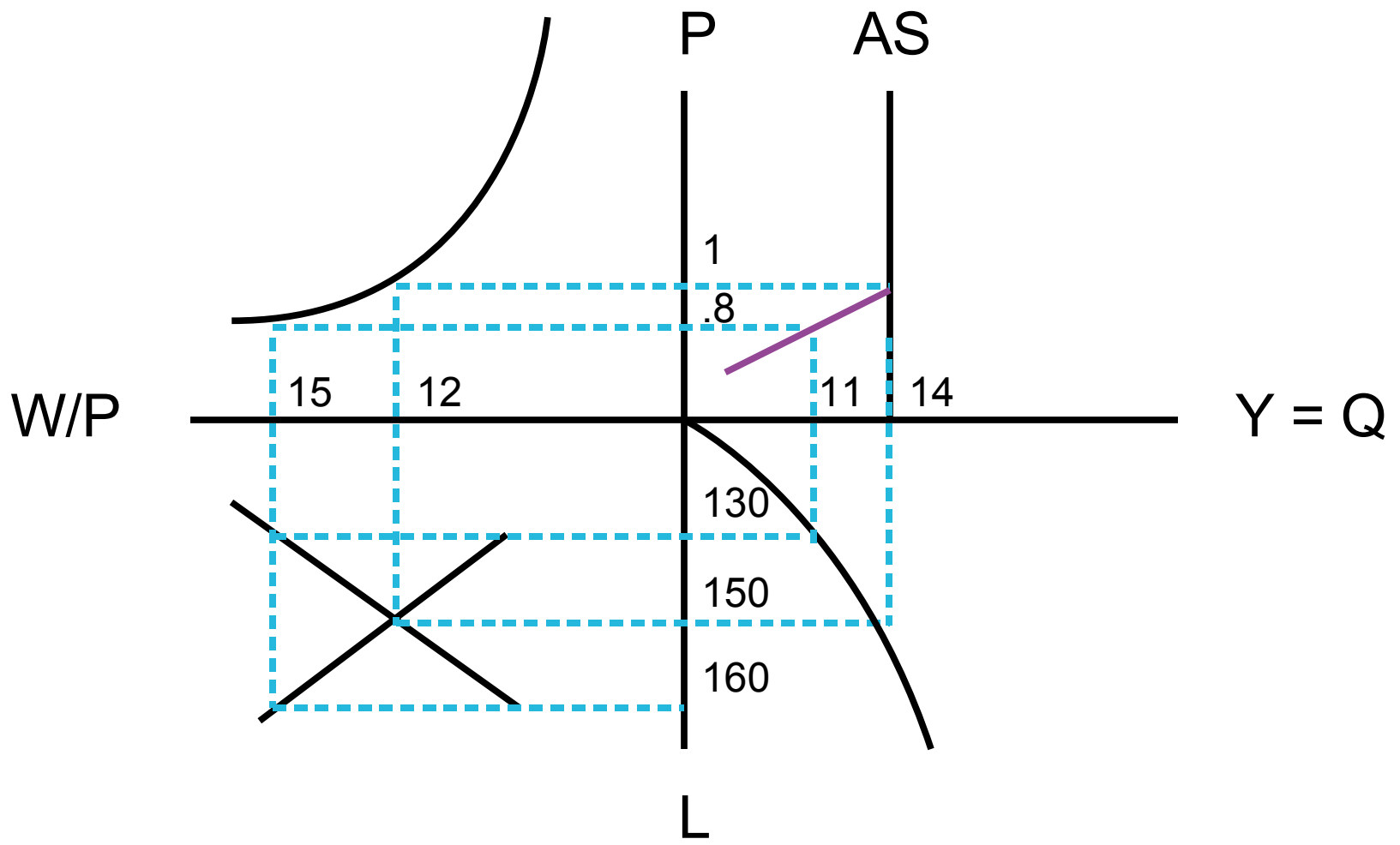


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Graph Explanation

- In the labor market at equilibrium at a real wage of 12 employment is 150 million.
- Output with 150 million workers is \$14 trillion.
- At a price level of 1.0, nominal wages are \$12 per hour.

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Graph Explanation

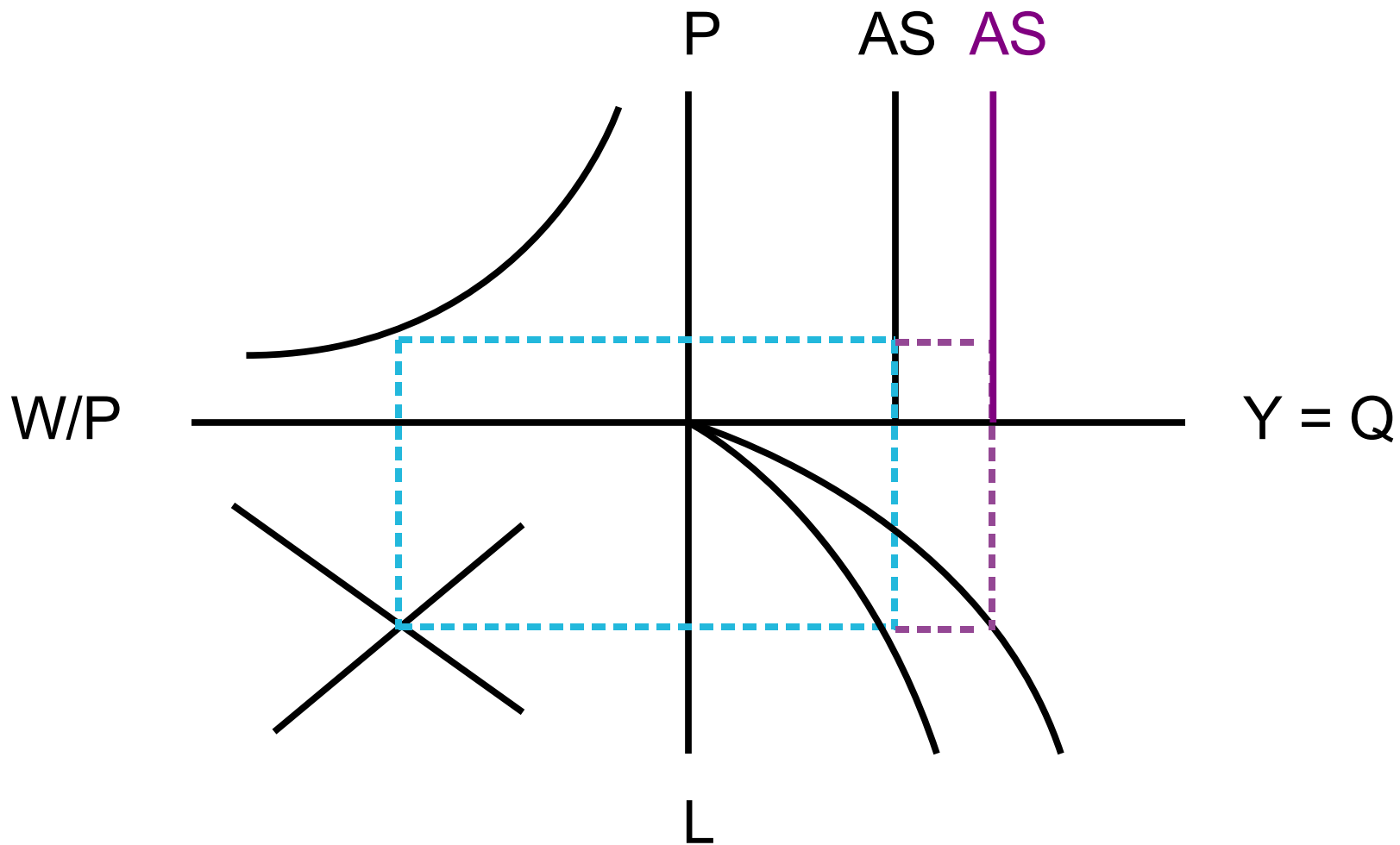
- Let's say wages are inflexible downward, if price levels drop from 1 to .8, then at a nominal wage of 12 real wages rise from 12 to 15.
- However, firms now find labor expensive, therefore hiring less of it.

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Graph Explanation

- As firms hire less labor from 150 to 130, output drops from 14 to 11.
- Consequently, AS now has a downward slope at $P = .8$
- Unemployment now exists as 130 find work but 160 are looking for it.

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Graph Explanation

- Worker productivity improves causing output to increase at each level of input.
- AS shifts to the right.

The End