World Economics

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What is Economics ?

- Old school: functioning of the economy (markets)
- cf. biology, physics, sociology, psychology => subject matter
- Modern: rational decision-making of agents under given constraints
  - (scarcity)
- Many fields of application (family, crime, education, politics, etc.)

“World Economics”

- Economic principles
  - at the margin (MB, MC)
  - Trade-offs => opportunity costs

- application: domestic - international

Content of course

- What is a production/supply (part 1, 3)?
- What types of goods can we trade (2)?
- What is a demand (2)?
- How does a market work (3)?
- How do international markets work (3)?
- How does trade affect local economy (4)?

- Starting simple – getting more abstract

Two approaches

- Partial equilibrium analysis
  - => single market
  - labor, cons. good, input (capital, resources)
  - Market: theoretical construct – supply/demand

- General equilibrium analysis
  - Total economy – all markets
  - simultaneous
  - spill-over

Agents in an Economy I

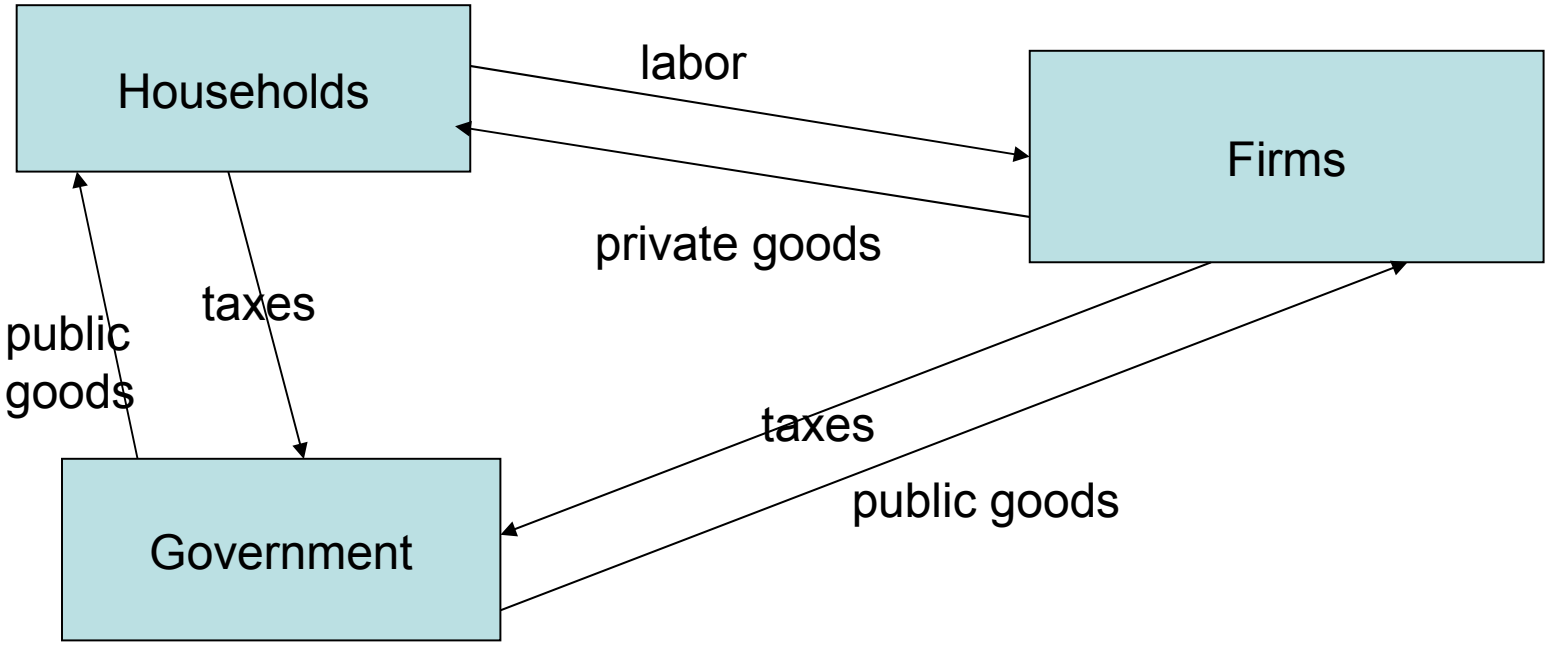
- Consumers
  - Maximize utility
  - Rationally
  - Under constraint of household budget
  - Income: labor
- Producers
  - Maximize profits, rationally
  - Under technological constraint
  - Profit: selling produce (capital ownership)

Agents in an Economy II

- Government
  - Maximizes welfare in society (classic)
  - sets and collects taxes
  - provides public goods

- ‚Markets‘
  - meeting points of demand (<= consumers) and supply (<= producers) of products/‘goods‘

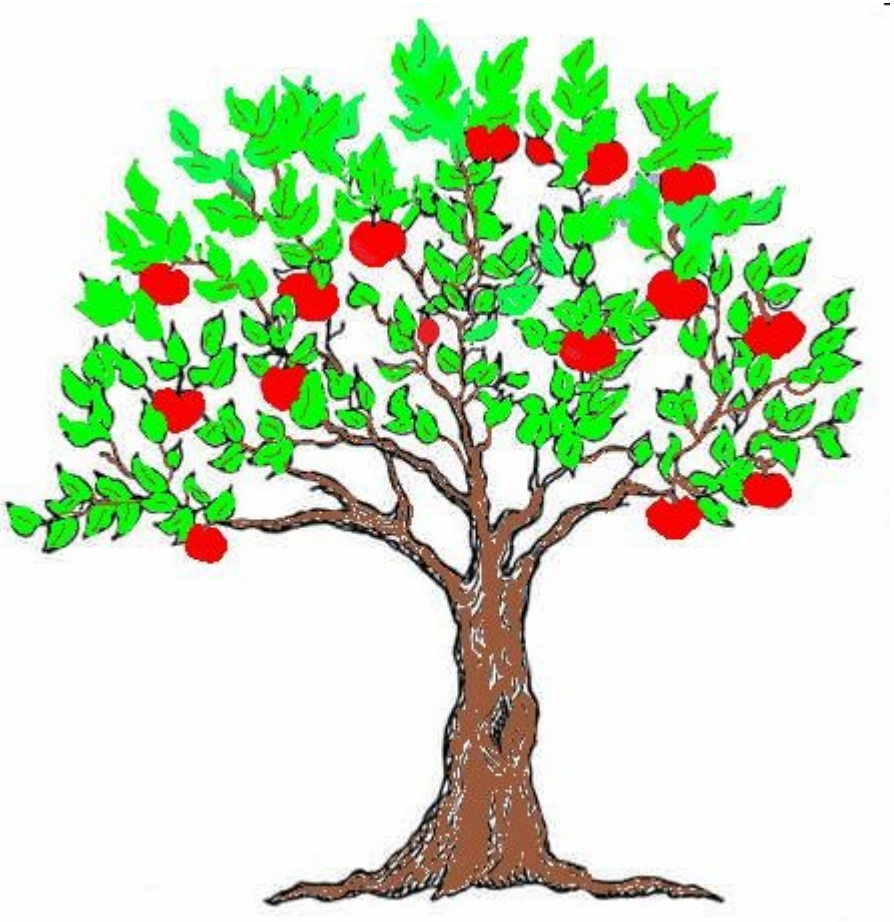
Sectors of an Economy



Part 1: Production

The Producers I

- Maximize profit
  - choose: output level
  - choose: input level
- Example:
  producer of apples



Source: http://psychicjoystar.wordpress.com/2011/09/06/daily-divination-9-6-11-how-are-your-inner-fires-doing-i-ching-kua-30-the-clinging-and-fire-and-the-apple-tree/

The Producers II

- Profit = revenue – costs
- Revenue: selling price x volume
  - E.g. 50 cent/apple x number of apples

Source: http://greentoolsdk.de/apfelkisten.htm

Source: https://www.landwirtschaft-bw.info/servlet/PB/-s/3wy6xv16o4e81ftq7j8bkqs8a1k44q1c/show/1317590/ern_obstangebot_supermarkt_bp.pdf

The Producers III




workers, plot(land), fertilizer, ladders, baskets, seeds, water, advertising, logistics, gardening equipment, transport

Source:http://www.google.de/products/catalog?q=holzleiter; http://www.google.de/products/catalog?q=Wiese; http://www.neckermann.de/Schleich 13458 Arbeiter mit Motorsense; http://de.wikipedia.org/wiki/Lastkraftwagen

The Producers IV

- Costs: workers, land, fertilizer, ladders, baskets, seeds, water, advertising, logistics
  - Fixed costs: plot, seeds
  - Variable costs: labor, ‚capital' (machines/equipment), other non-durable input factors (water, fertilizer), transport
  - Classical I: land, labor, capital
  - Classical II: input factor 1, input factor 2
  - Modern: labor, capital, human capital

Characteristics of Costs I

- Production costs increase in variable input

1 worker = 500 Euro

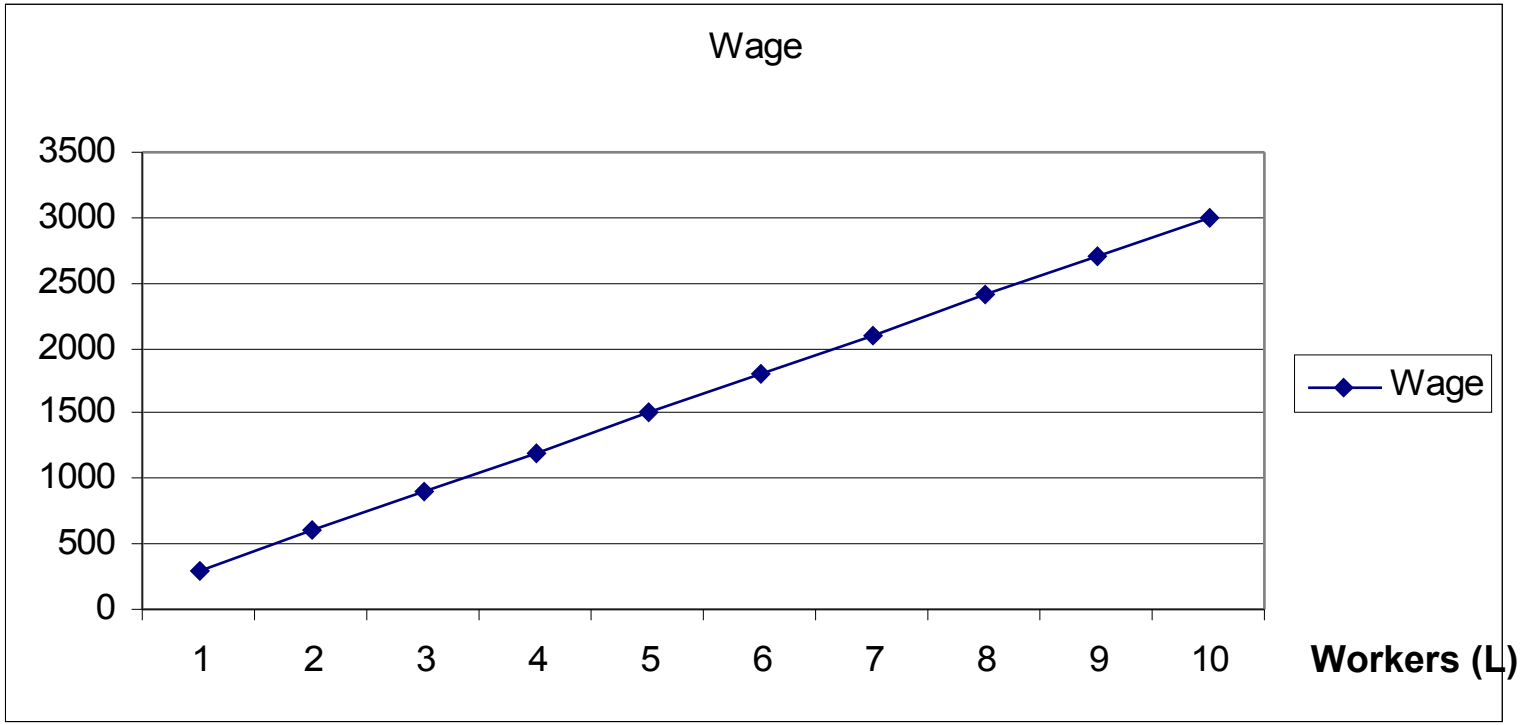
6 workers = 3000 Euro

assumption: ‚constant marginal costs‘

Source: http://www.google.de/products/catalog?hl=de&q=Arbeiter

Characteristics of Costs II

- Labor costs
- constant marginal costs, no fixed costs



Labor Costs

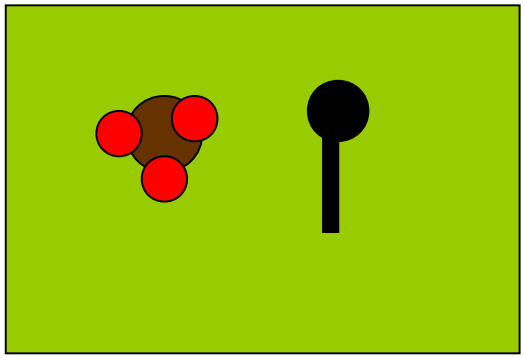
- Mathematical: wL
- L: Number of hours worked
- w: wage/hour worked
- w: price for labor, exogenously given
- (w <= labor market)
- Constant marginal cost: d(wL)/dL = w

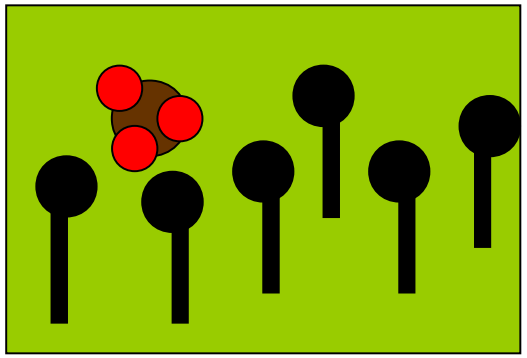
Production function I

- X = y(L)
- assumption: only labor, no land
- assumption: only variable input, no fixed-amount input
- => only variable costs, no fixed costs
- => only one input factor

Production function II

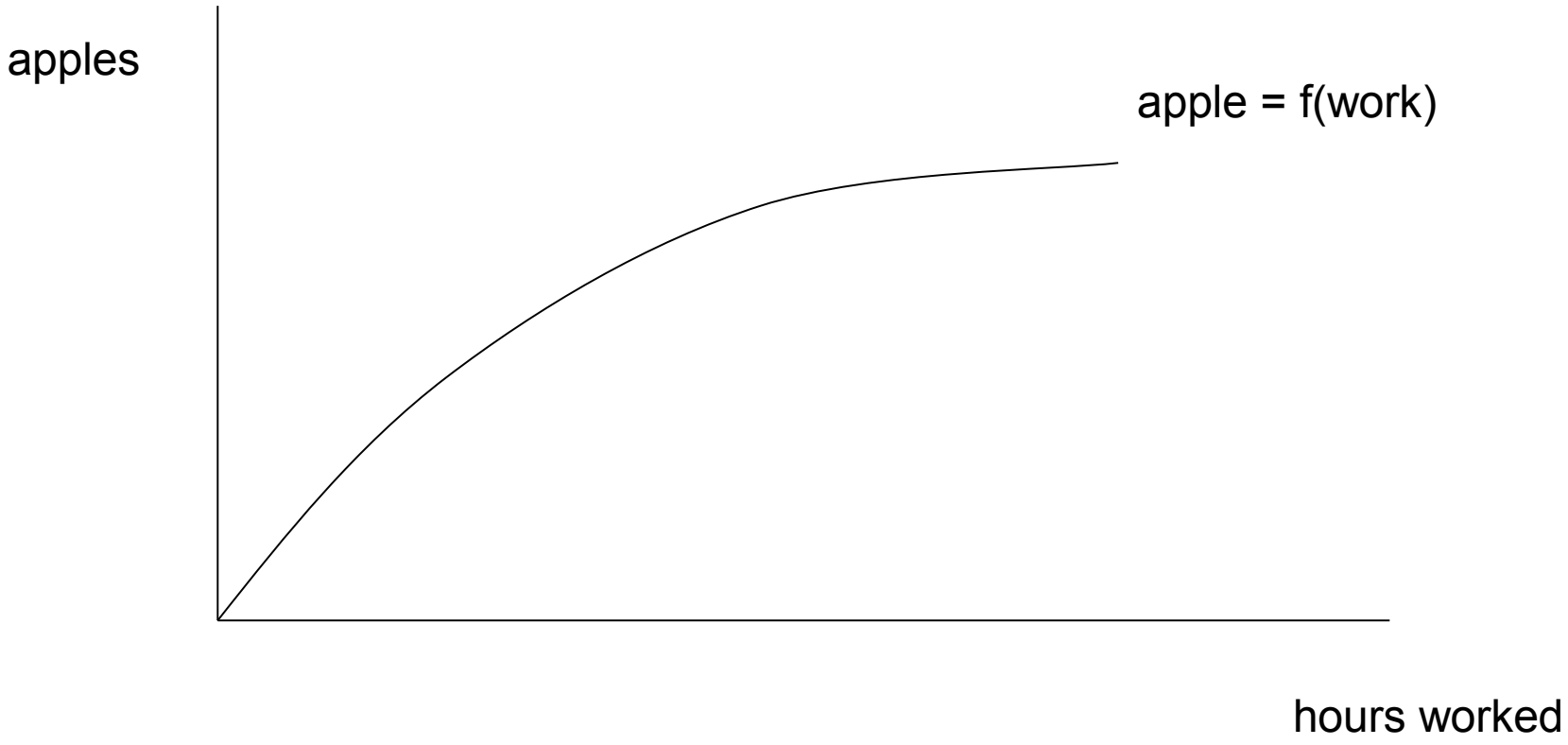
- decreasing marginal product of labor



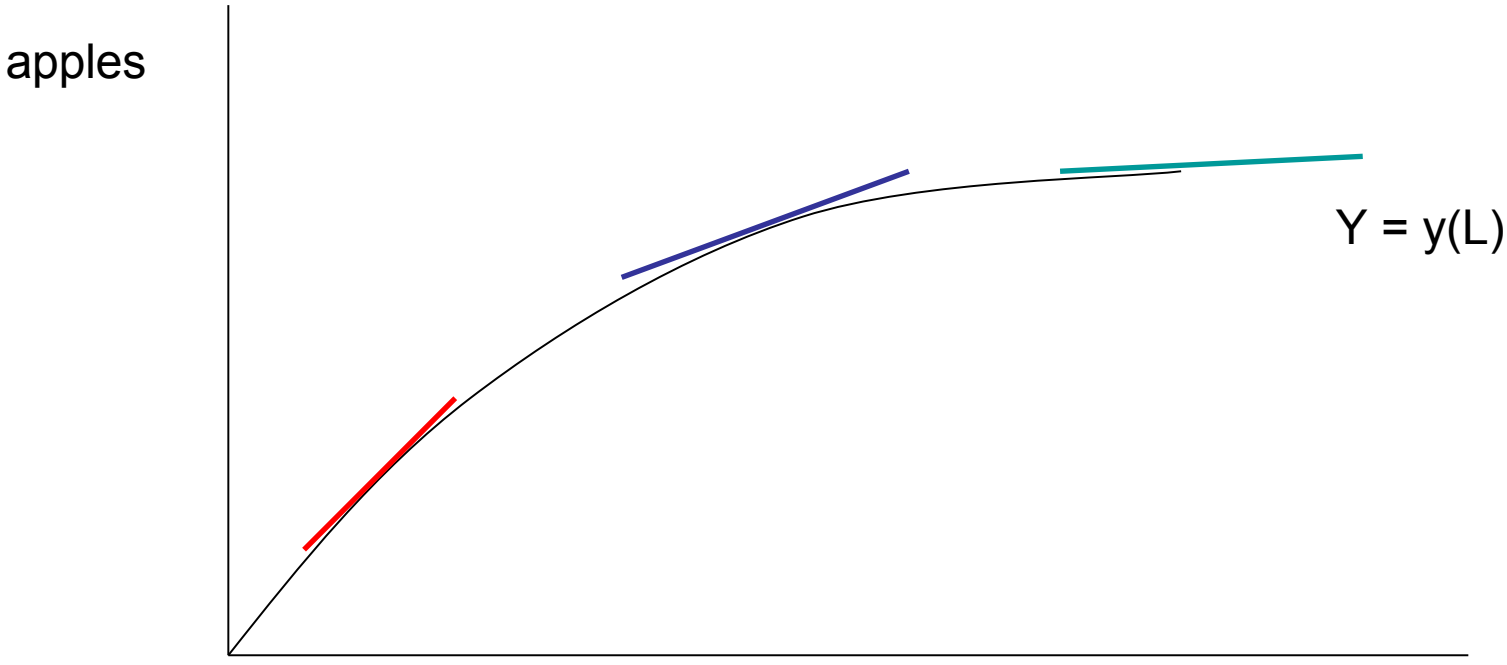


- E.g.
  - congestion of workers and trees on plot,
  - sub-optimal worker-tree relation,
  - workers get tired (L > 40h/worker) (one input factor)

Production function III



Decreasing marginal product of hour worked



$dY/dL > 0$; $d^2Y/dL^2 < 0$

Profit Maximization I

- Producer: decides about hours worked

  (=> number of apples)
  - wage per hour (w): fix
  - Market price for apple (p): fix
  - Contribution of last hour worked to total output (dY/dL): positive, but declines

    => Market value of marginal product of labor is positive, but declines (p * dY/dL)
  - Producer: p*dY/dL >=< w
  - value of additional labor vs. costs of additional labor

Profit Maximization II

- Producer: p*dY/dL >=< w

- Case 1: value > costs
  - => one additional hour (+dL)
  - => apple output increases by dY/dL
  - => costs (wage costs) increase by w
  - Profit gain: value of output increase – costs of this increase
  - = p*dY/dL – w = $d\Pi \geq 0$

Profit maximization III

- Producer: p*dY/dL >=< w

- Case 2: value < costs
  - => one hour worked less (-dL)
  - => apple output decreases (-dY/dL)
  - => costs (wage costs) decrease (-w)
  - Profit gain: savings in labor costs (w) – loss in apple production (-dY/dL) valued at market price p

<=> w - p*dY/dL = $d\Pi \geq 0$

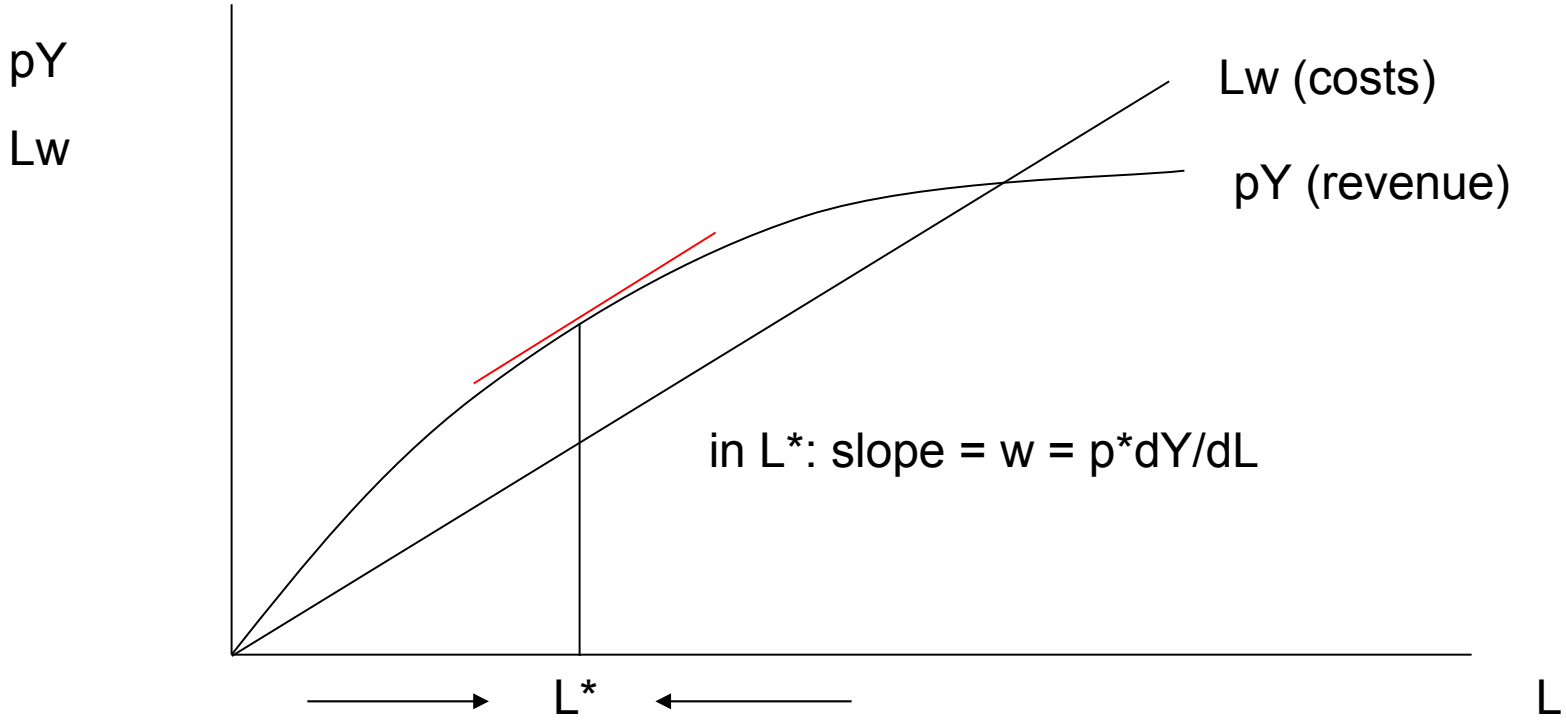
- (reverse: increase in L in case 2 => $d\Pi < 0$)

Profit maximization IV

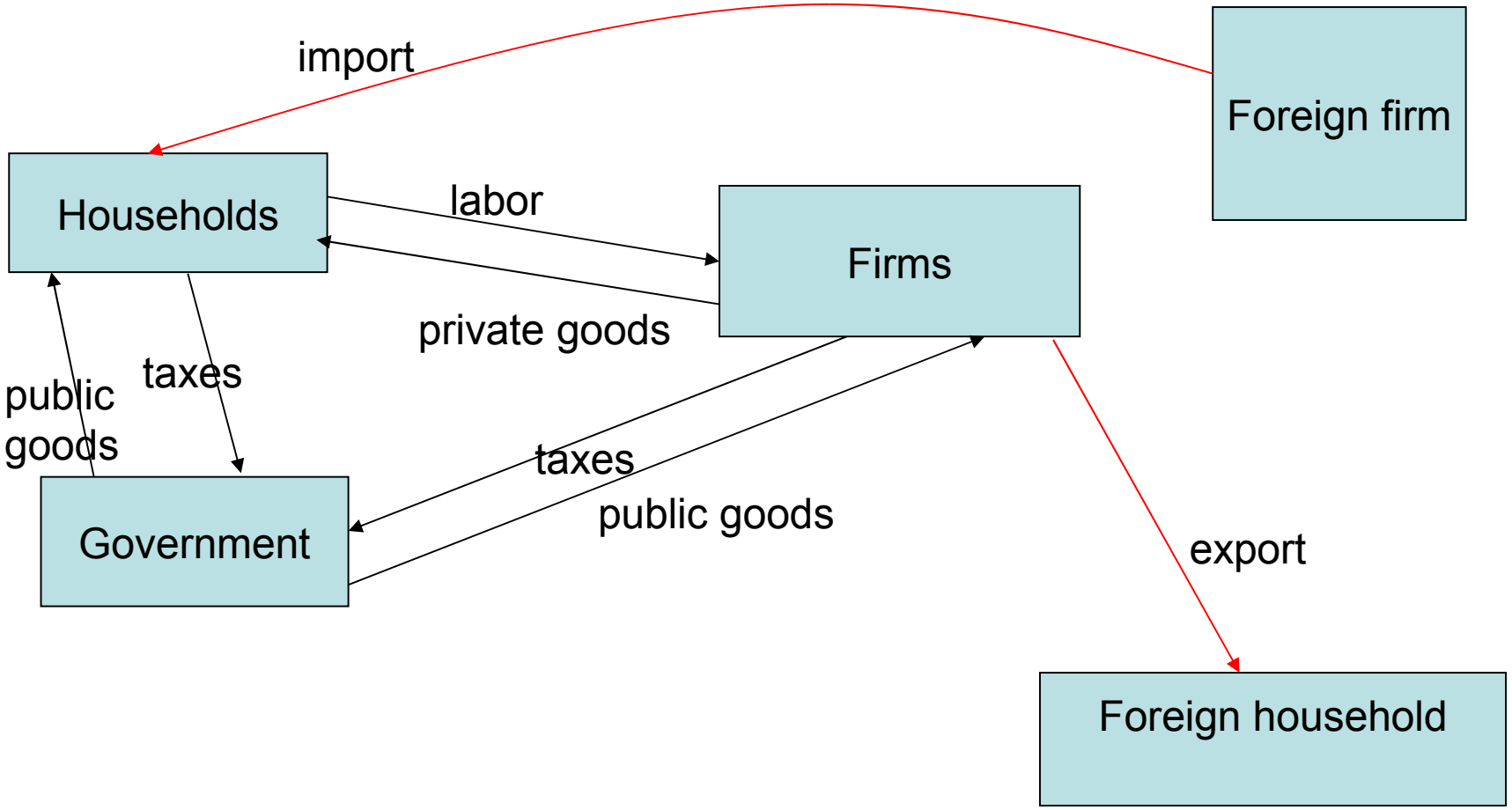
- Point of optimal L* wich maximizes profit:
- $d\Pi = 0$
- Marginal profit = 0
- Further increase in L cannot increase Π
  (see case 1)
- Further decrease in L cannot increase Π
  (see case 2)

Profit maximization V

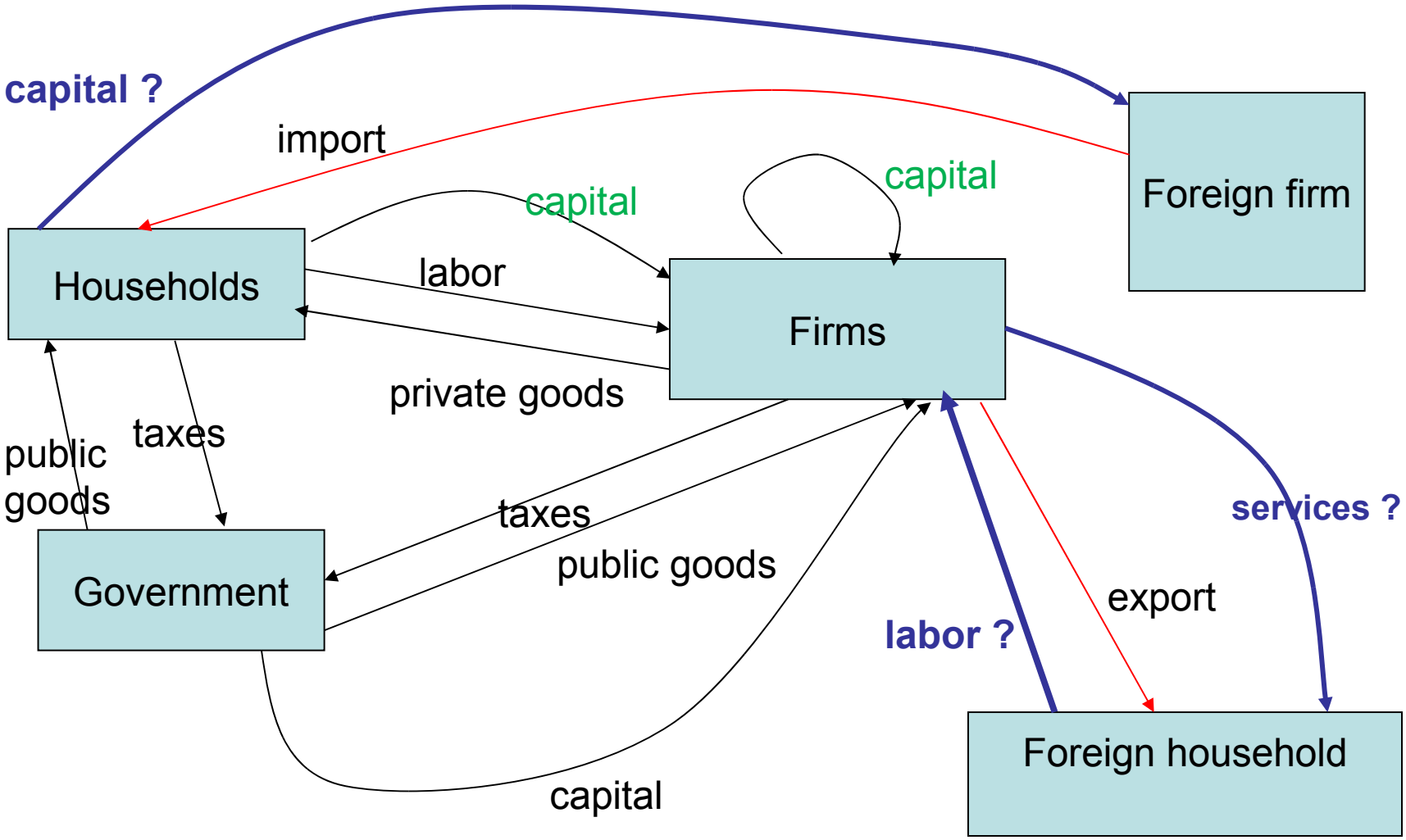
- Profit function: Π = y(L)p - Lw



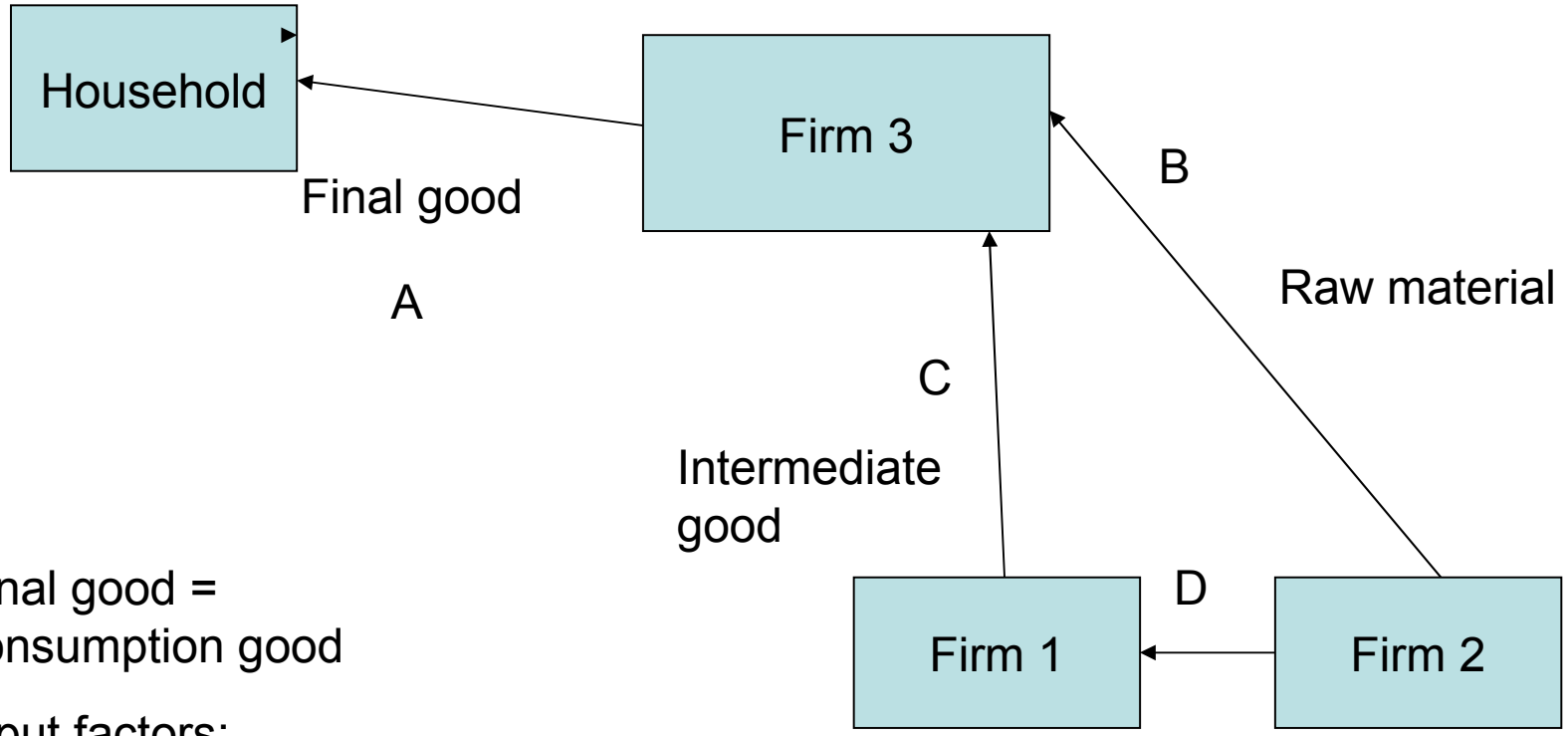
Foreign countries I



Foreign countries II



Where are the goods‘ markets?



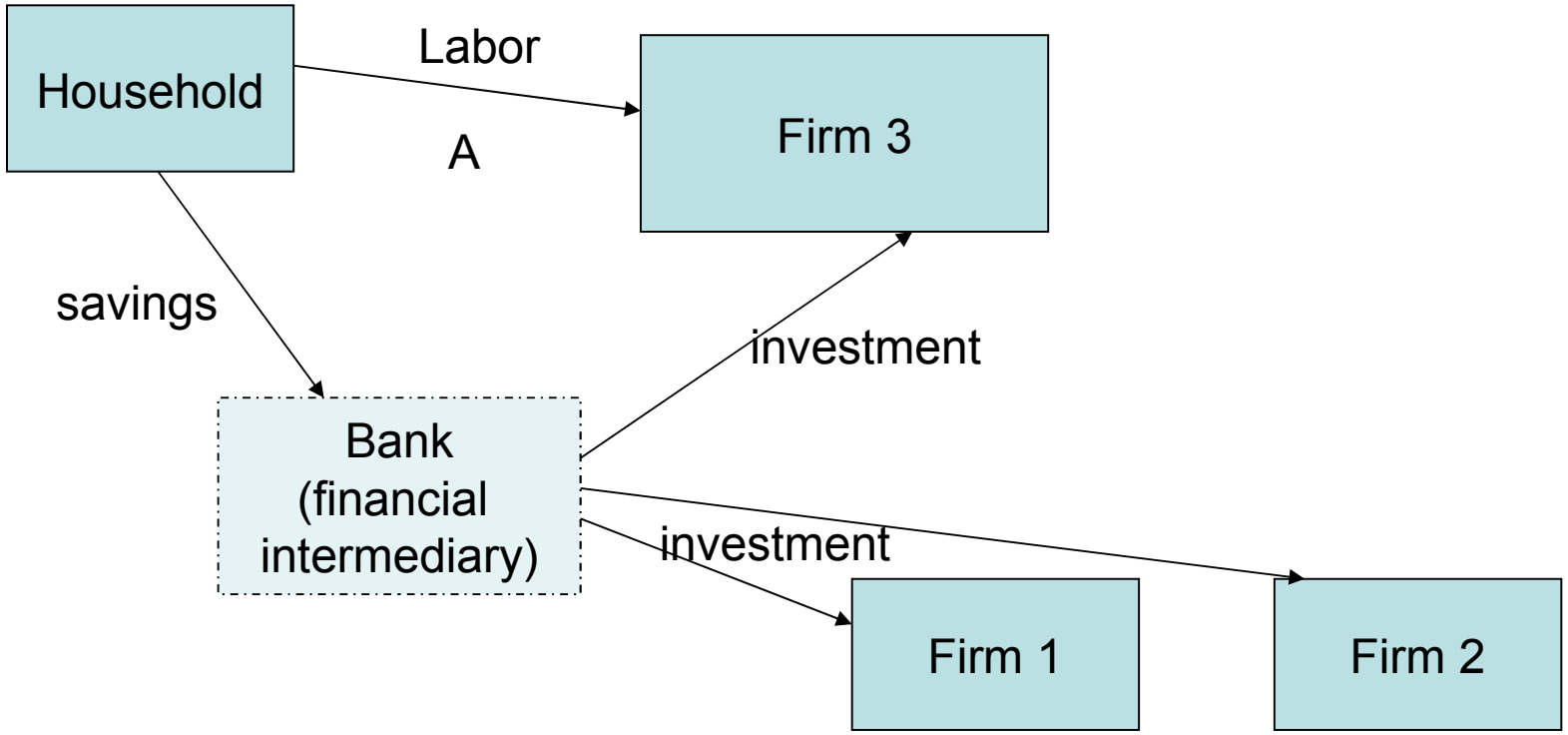
Final good = consumption good

Input factors: intermediate good, raw material

Where are the goods‘ markets?

- Market A: demand: household, supply: firm 3, good: consumption good
- Market B: demand: firm 3, supply: firm 2, good: raw material
- Market C: demand: firm 3, supply: firm 1, good: intermediate good
- Market D: demand: firm 1, supply: firm 2. good: raw material

Capital and Labor Markets ?

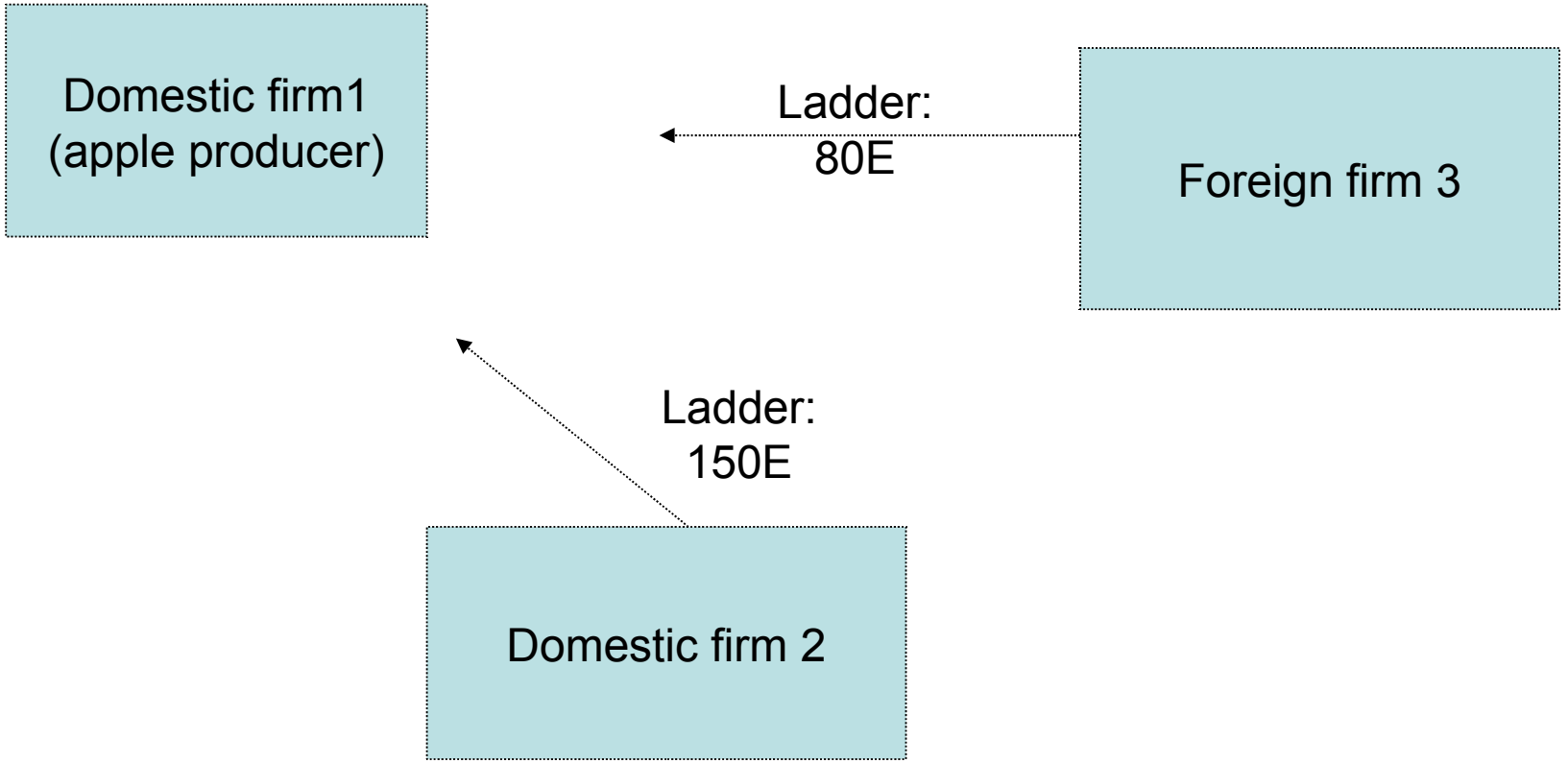


Where are the capital and labor markets?

- Market A: demand: firm 3, supply: household, good: labor
- Market B: demand: firm 1, firm 2, firm 3, supply: household, good: capital

Why do we trade?

- Absolute cost advantage



Firm 1‘s profit calculation

- Assumptions:
  - apple price: 50 cent/piece
  - production function: apples = 1000*log(ladders)
  - Domestic ladder: 150 Euro
  - Foreign ladder: 80 Euro

- Calculus
  - Profit function: Π = 0.5*1000*log(ladders) – x*ladders
  - x: price for ladder
  - At ladder*: dΠ/dladder = 0.5*1000/ladders - x = 0
  - 500/ladders = x
  - => 500/x = optimal number of ladders

  - X = 80E => 6.25 ladders (profit: 416.29 Euro)
  - X= 150E => 3.33 ladders (profit: 101.98 Euro)

Conclusions I

- Foreign cheaper imports (cheaper in absolute terms) (absolute advantage)
  - more of the good (ladder) is used in domestic production (firms)
  - output of final good is increased (apples)
    - => economic growth !
  - (assumption: p fixed => consumer)
  - profits of domestic firms rise
  - Does welfare in society increase ?

Conclusions II

- Domestic ladder industry:
  - ‚International competition‘: pressure to reduce production costs from 150E down to 80E
  - increase in domestic unemployment: lay-off of workers in ladder-industry
  - welfare increase for all agents only if profit from apple-producers is partly redistributed to domestic ladder-producers/ladder-workers
  - (winners => loosers)