

International Economics
Bachelor international
programme year 2
Lecture 3

Trade in an industrial society

- Ricardian model with a single immobile factor of production may well represent trade between pre-industrial societies very well
- Some theories of development and industrialisation (notably Lewis) require some factors (at least labour) to be mobile between sectors within an economy
- Ricardo can also be criticized because complete specialisation does not fit the “stylized facts”.

2x2x2

- So far we have considered trade with two goods between two countries we now add two factors of production to this (labour and capital)
- These factors of production will be perfectly mobile between sectors within an economy but immobile internationally
- Therefore we exclude international capital flows and international migration of labour

Assumptions

- Is characterised by constant returns to scale (linear homogeneity)
- Doubling inputs doubles output
- Consumers are assumed to be everywhere identical
- Technology will differ between sectors within an economy but not between countries

What drives trade?

- Trade requires differences between countries
- Countries will still differ by factor endowments and sectors will differ by technology
- A consequence of the latter is that sectors will employ factors of production in different proportions
- Marginal changes will then lead to some sectors expanding at the expense of others

Four theorems

- The Heckscher-Ohlin theorem
- The factor price equalization theorem
- The Stolper-Samuelson theorem
- The Rybczynski theorem

The Heckscher-Ohlin Theorem

A country will export the product that intensively uses its abundant factor.

Factor price equalization theorem

- Different versions of this (so be careful)
- *One relates to relative prices of factors equalizing within a country given that factors of production are perfectly mobile between sectors*
- Another relates to factor prices converging after trade barriers are lifted because trade leads to prices converging between countries involved in trade and this in turn leads to factor prices converging (this result relies on the next result-the Stolper-Samuelson theorem)
- Leamer refers to the first of these as factor price equalization (with a twist-my words) and the second as factor price convergence.

Factor price equalization

- Within countries is related to factor price equalization between countries
- Will come back to give a detailed interpretation of what this means and why it is important

Stolper-Samulson theorem

An increase in the price of the labour intensive product causes an increase in the real wage rate and a reduction in the real return to capital

Put another way the ratio of the price of the labour intensive product to the capital intensive product is positively related

Rybczynski theorem

- Given factor and product prices and an economy that is not fully specialized an increase in the endowment of one factor of production will result in the expansion of the sector that use that factor of production intensively more than proportionately and a reduction in the size of the other sector

That's it

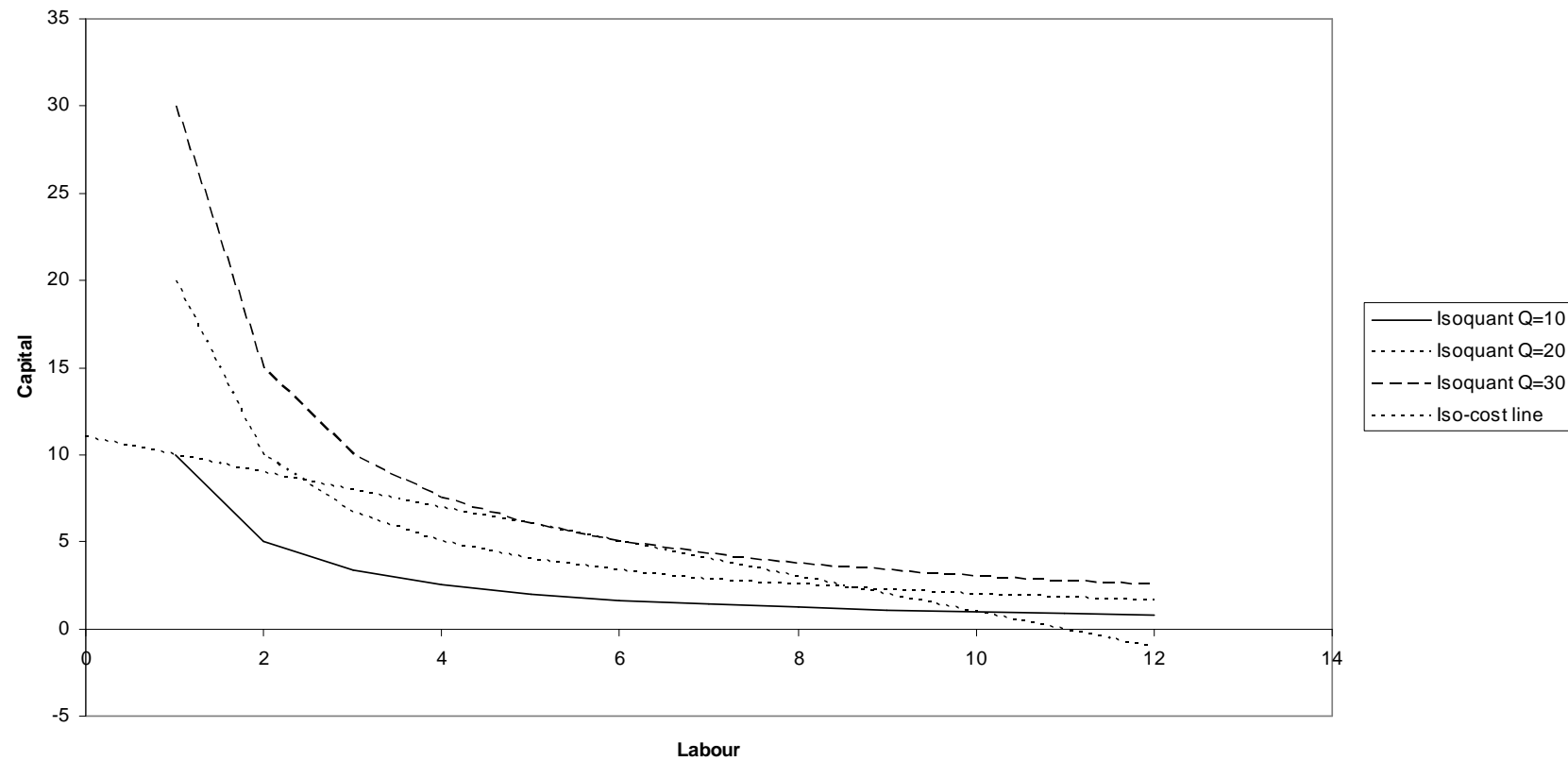
- Basically that is the Heckscher-Ohlin theory
- But there is a difference between knowing the theory and understanding it
- At minimum you need to know the assumptions and the consequences (including interpretation which I will deal with later)
- Understanding requires that you know why the results are true

Let's begin to try to understand where these results come from

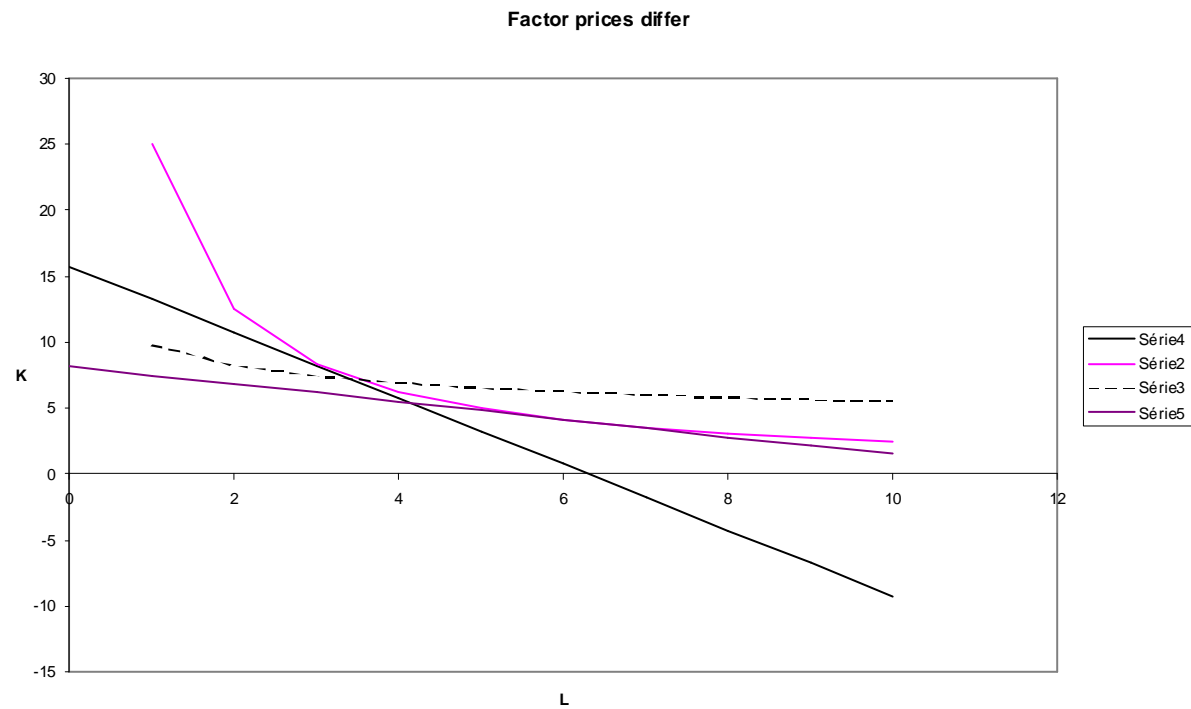
- We will work with graphs
- These will be plotted in different co-ordinate systems (sometimes labour and capital, sometimes output of two goods, sometimes factor prices, sometimes ratios of goods prices and factor prices)
- Pay close attention to the axes!

Minimal cost-combination review

Isoquant map



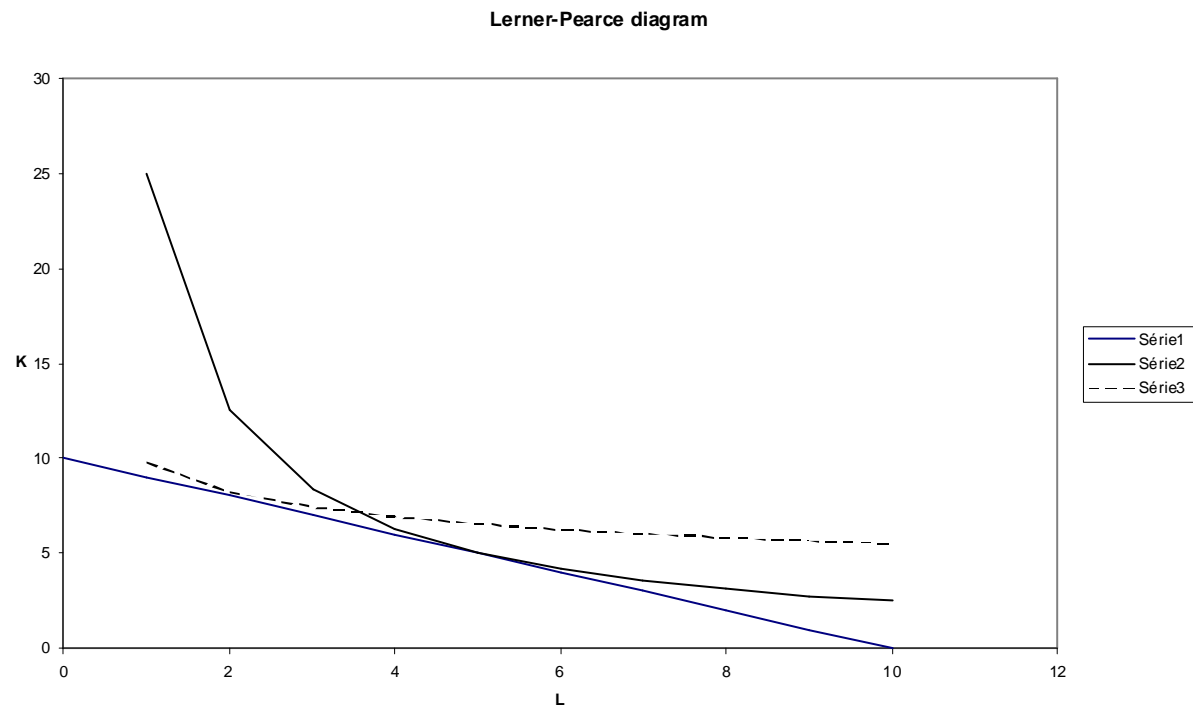
Different factor prices in different sectors



Perfectly mobile factors of production between sectors

- Define factor abundance in terms of prices
- If capital is cheap it is abundant
- If capital is expensive it is scarce
- Steepness of iso-cost line reflects factor abundance
- If capital is expensive in one sector and cheap in the other investment will switch from one sector to the other
- Same goes for labour
- The result is on the next slide

Factor price equalization



intepretation

- As factors switch to the higher paying sector in which they are scarce they become less scarce in that sector
- Because prices reflect scarcity the price falls as the factor becomes more abundant
- Relative prices adjust to equate costs and prices across sectors with different factor intensities

International consequences

- If countries have identical technologies but technology differs by sector
- Then it is obvious that mobility of factors within each country leads to factor prices equating between countries
- This has consequences for income distribution and hence fair trade

Personal versus functional distribution of income

- Personal distribution of income involves differences in income between individuals
- Functional distribution of income involves differences in income between social groups, e.g. owners of labour (workers) and owners of capital (capitalists)
- If the rewards to labour and capital move closer together (factor prices move closer together) this improves the functional distribution of income within a country.
- If they equate between countries the international distribution of income would also improve.
- If technologies are identical between countries this result is trivial but even with technological differences between countries trade may bring about convergence of factor prices between countries (factor price convergence- will come abck to this)

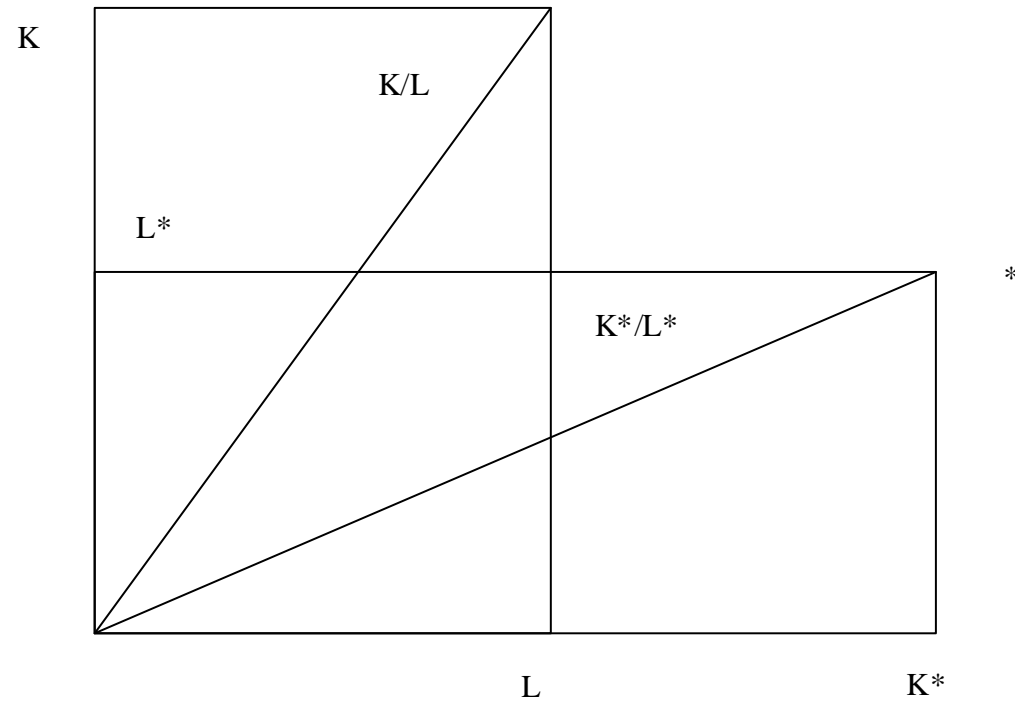
Fair trade and factor prices

- Mobility of factors between sectors therefore improves income distribution within a country and trade brings about an improvement in the international distribution of income
- Factor price equalization and convergence are therefore extremely important politically
- The reality is that empirically evidence for factor price equalization is questionable
- Is it better to be born poor in a rich country or rich in a poor country?

Abundance

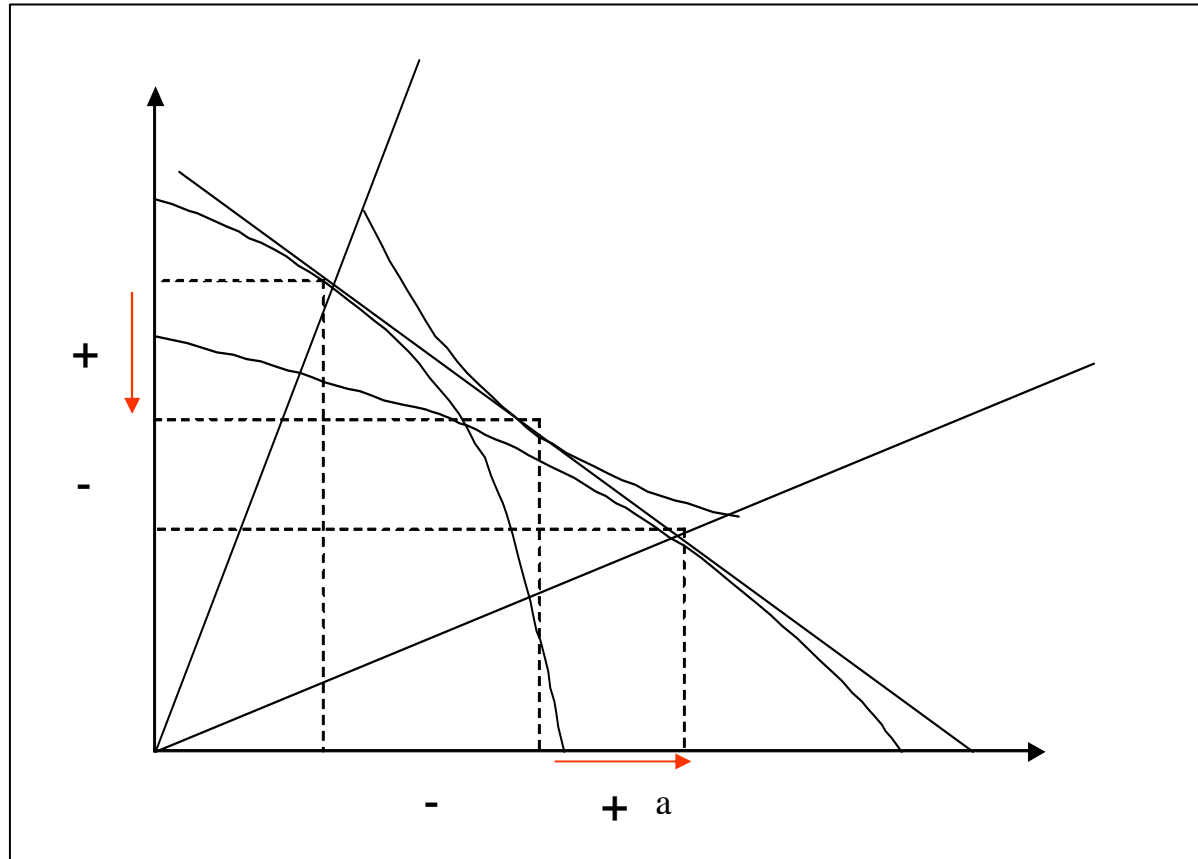
- Abundance can also be interpreted physically rather than in terms of relative prices
- Differences in factor endowments (abundance) will be reflected in different production possibility frontiers

Edgeworth boxes for home and foreign (*)



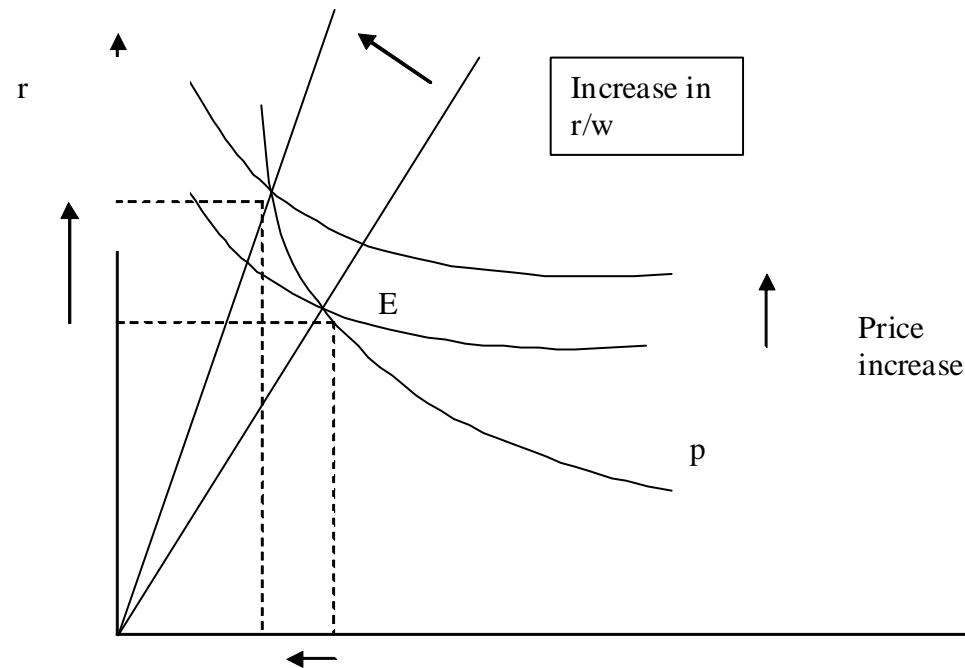
Notice length of contract curve is different in the two countries

Heckscher-Ohlin theorem

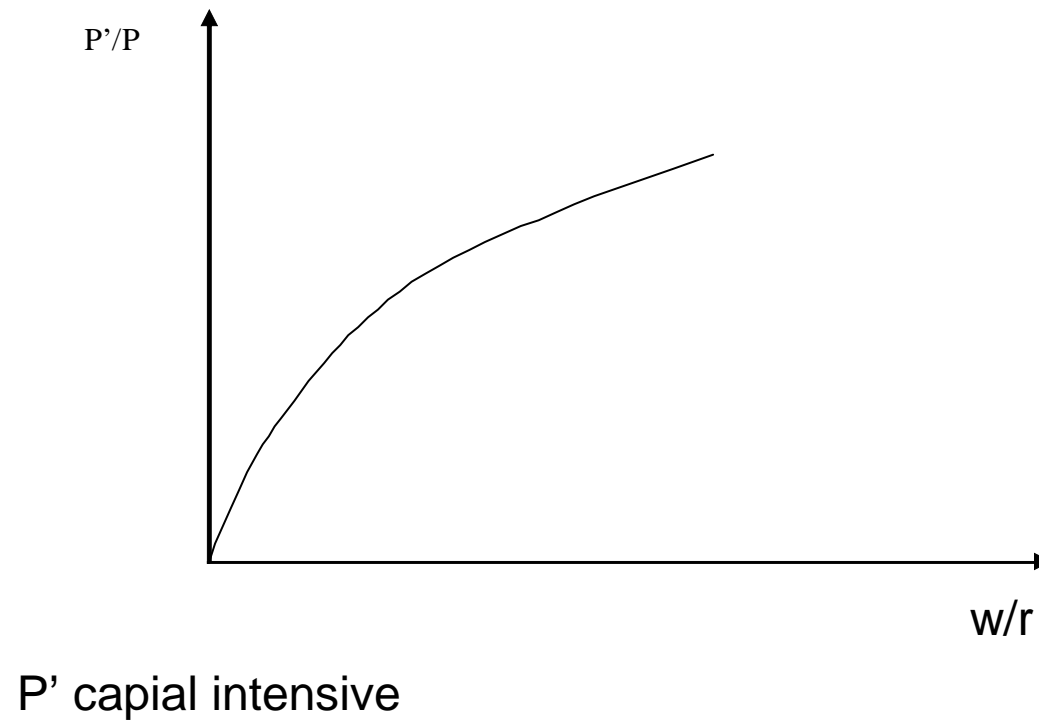


Exports indicated with + imports with –

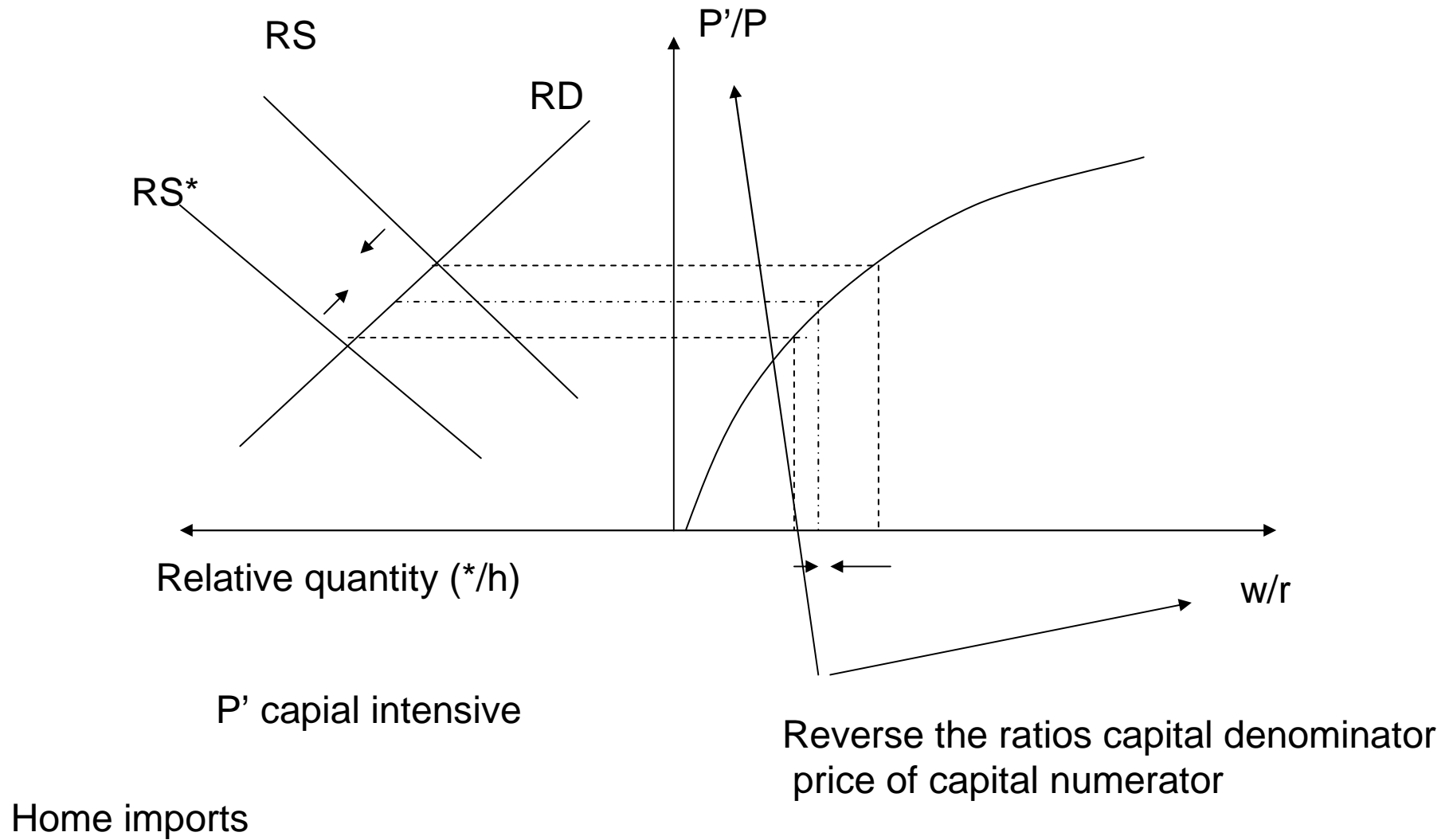
Stolper-Samuelson theorem



Stolper-Samuelson result



Factor price convergence



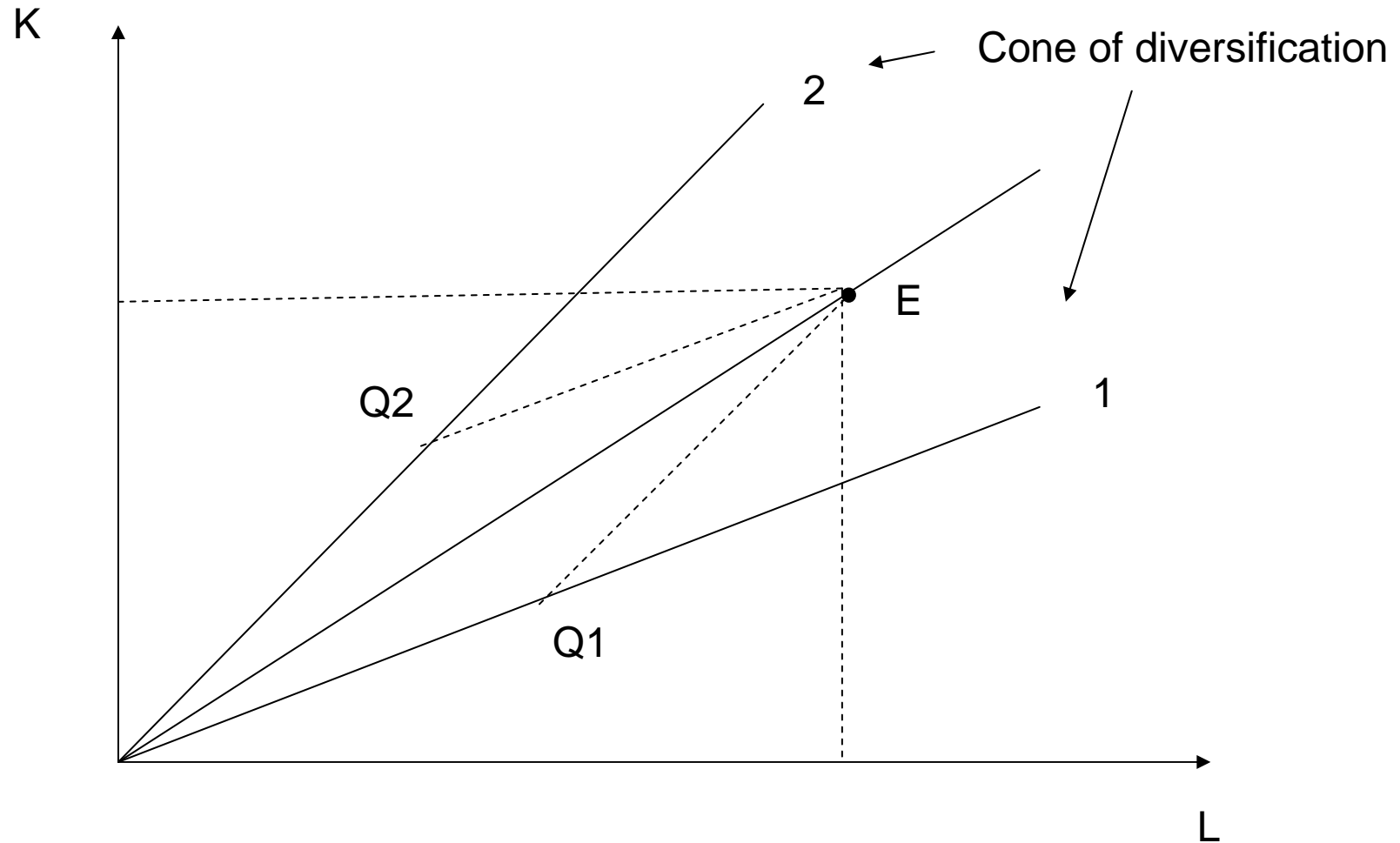
consequences

- Home the importer
- Foreign the exporter
- Competition leads to domestic price falling
- And foreign price increasing
- Stolper-samuelson means wage rates rise in exporting country and fall in importing country relative to price of capital

Be careful

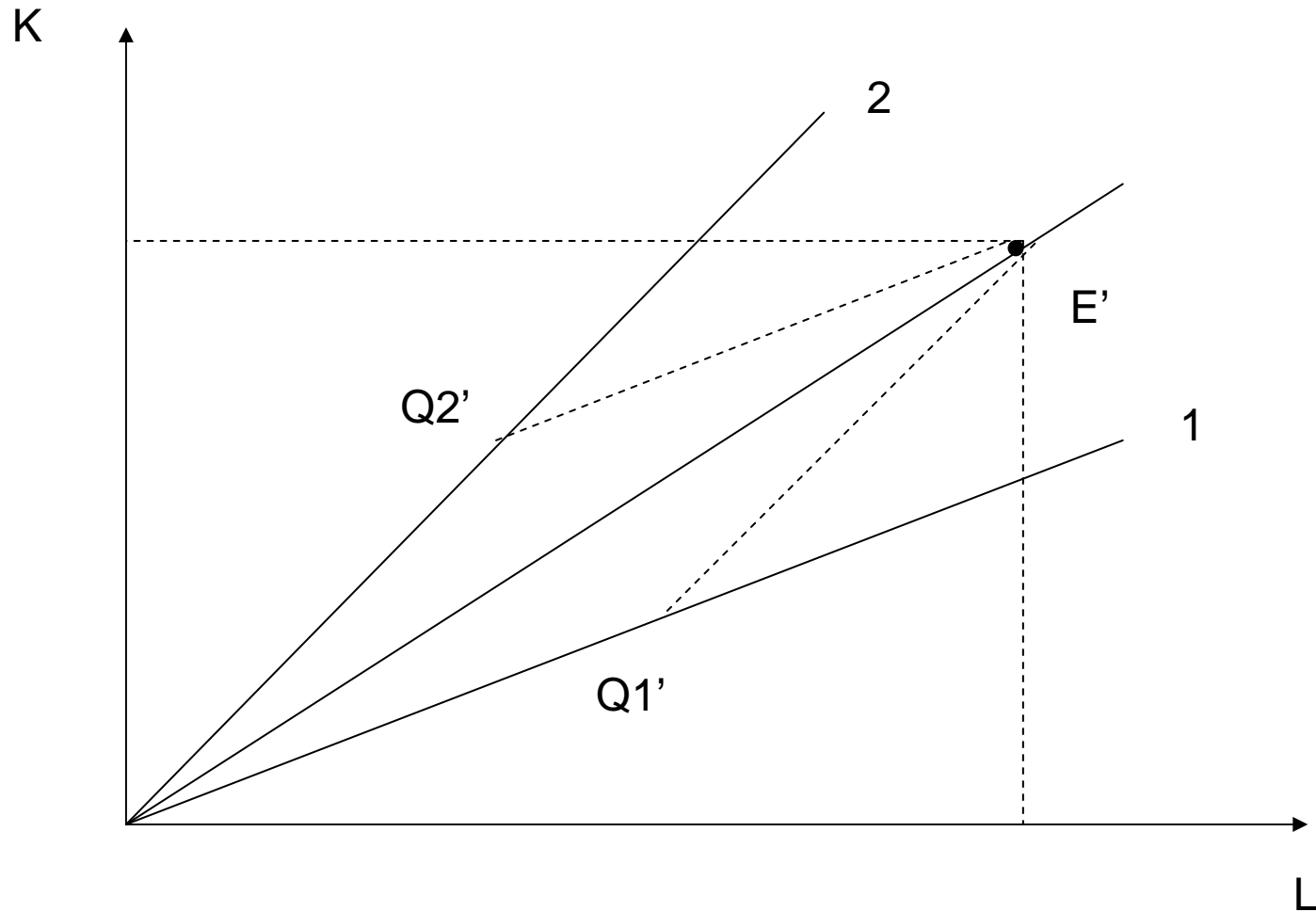
- This result is really driven by factor intensities
- The shape of the goods price factor price curve comes from the factor intensities
- It is not really driven by the trade although trade is driven by factor intensities as well (HO)
- Everything in Heckscher Ohlin theory is driven by factor intensities and relative factor abundance

Rybczynski theorem



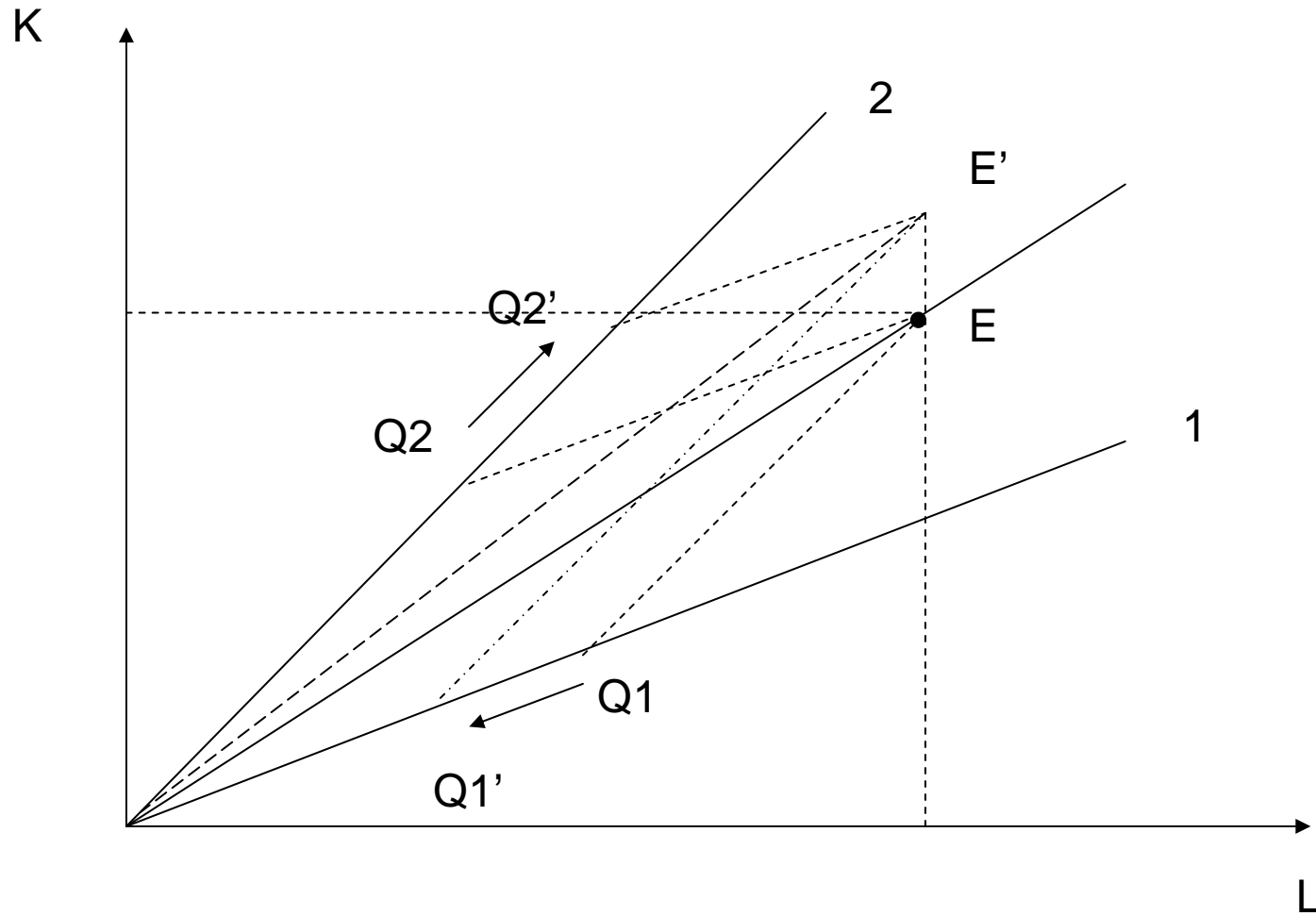
Initial endowment E

Rybczynski theorem



Proportional increase of both factors output expands proportionately

Rybczynski theorem



interpretation

- International movements of capital and labour can theoretically lead to sectors expanding that use these factors intensively
- The other sectors decline
- Same effect can come from growth and investment and population growth although we begin to stretch the applicability of the result a little

Think about

- Population growth in developing countries
- Rybczynski predicts an expansion of labour intensive industries and a decline of capital intensive industries
- Is this what we see?
- Capital growth in developed countries predicts an expansion of capital intensive industries and a decline of labour intensive industries
is this what we see?

Post-war boom

- Use Stolper-Samuelson to try and explain the need for workers in the post second world-war economies of Europe and Japan
- Perhaps this overstates the applicability of Stolper-Samuelson

summary

- We could have arrived at some of these results by other means but these are the easiest ways to obtain the results
- The key assumptions of HGT are simple and the conclusions wide ranging
- The Lerner-Pearce diagram has many other applications (see article by Leamer)
- Next we will extend this model to capture more specialised post-industrial production characterised by specific factors