Lecture 3. Introduction to International Trade and Factor Mobility

Carlos Llano (P)
& Nuria Gallego (TA)

References:
President Obama’s speech (DNC-2012):

“We can choose a future where we export more products and outsource fewer jobs...

... After a decade that was defined by what we bought and borrowed, we're getting back to basics, and doing what America has always done best: *We're making things again.*”
1. Introduction:
   1. Obstacles and channels for internationalization.

2. International Trade of goods and services:
   1. Classic models.
   2. New Trade Theory:
      1. Internal Economies of scale and international trade.
      2. External economies and international trade.

3. Factor mobility:
   1. Labor mobility.
   2. FDI and Multinationals.

4. Conclusion
1. Introduction
1. Introduction: Obstacles & channels

• What is the best predictor for the time that a person will live?
• And for the wealth of a person?
• And for the income of a country?
• What is the best predictor for the intensity of trade between any pair of countries?
• **The gravity equation** has been widely used to model all kind of interactions in space that can be explained from the interplay of the attraction and repulsion forces.
• There are many applications in the fields of trade, transport and immigration.
1. Introduction: Obstacles & channels

- **Physics:** the force of gravity between two objects depends on the product of the masses of the two objects and the square of the distance between them:

\[ FG_{12} = G \frac{M_1 \times M_2}{Dist_{12}^2} \]

- **In economics** the bilateral trade flow between 2 countries (regions), is proportional to the emission and absorption capacity of the origin (i) and destination (j), and inversely to the cost of interaction between the them:

\[ X_{ij} = K \frac{Y_i^\alpha \times Y_j^\beta}{T_{ij}^\theta} \]

- Emission/absorption = production /demand
- The cost of interaction = distance or traveling time

\[ \ln X_{ij} = \kappa + \alpha \ln Y_i + \beta \ln Y_j + \theta \ln T_{ij} + \varepsilon \]
The Gravity equation: German exports and distance, 2005

b. German exports, income adjusted 2005 (million euro)
1. Introduction: Obstacles & channels
1. Introduction: Obstacles & channels

**Distance:** how easy is reaching markets. Accessibility to density. It determines access to business opportunities. Areas far from economically dense centers in a country are more likely to become peripheral (lagging region).

**Features:**

- **“fractal dimension”, “regularity” (universal):**
  - **City level:** commuting within metropolitan areas.
  - **Country level:** interregional trade of goods and services; interregional migration and FDI flows.
  - **Regional level:** trading blocs and Regional integration policies: EU, NAFTA, Mercosur.
  - **Global level:** WTO, IMF... Actions towards globalization (trade, factor mobility, international infrastructures on connectivity).
1. Introduction: Obstacles & channels

- Distance to density affects spatial movements in goods, services, information, knowledge, and people.
  - Ex: Commuting, migration, telecommunication, information flows, and shipments of goods connect originating and receiving areas.

Tobler’s First Law of Geography:

“Everything is related to everything else, but near things are more related than distant things.”

- Areas closer to economic density have easier access to beneficial interactions and exchanges.
- Spillovers from proximity to density arise for all kind of economic interactions, both developed and developing countries.
1. Introduction: Obstacles & channels

- **Economic distance** is more than just geographical distance.
- It is proximity to economic density, but considering all possible channels for economic interaction:
  - Trade of Goods and Services
  - Factor mobility: Labor, Knowledge and Capital.
1. Introduction: Obstacles & channels

Division

[Image: Black and white photograph of a divided city street, with a sign reading "Bernauer Straße" and people and police officers on both sides of the wall.]
Division: barriers to economic interactions created by differences in currencies, customs, and languages, which restrict market access.

Features:

• Also “fractal dimension”, “regularity” (universal):
  – City level: ghettos. Spatial division.
  – Country level: regional separatism: Toronto-Quebec (Canada); Belgium; Lombardi (Italy); ¿ Catalonia and Basque country (Spain)?
  – International level: political and army conflicts (North Africa-Israel...); commercial embargoes (US-Cuba, Iraq; India-Pakistan...);
  – Global level: WTO, IMF, UN... actions towards democratization + peacemaking.
Imagine there’s no countries...

...Imagine all the people leaving in the world agree.

Do we have more or less frontiers nowadays?

Make a guess?
The width of each country’s borders is proportional to restrictions that each country imposes on the flow of goods, capital, people, and ideas with all other countries.
1. Introduction: Obstacles & channels

**Language and culture:** The heterogeneity of language is very high in Africa and increases with proximity to the Equator.

2. International trade goods and services.
2.1. The Classic Models of International Trade

What explains the “pattern of trade” in the classic models:

- **Absolute advantage**: when a country has the best technology for producing a good. It is able to produce it in the most efficient way (less expensive ➤ more profitable). *Ej: Germany has advantage producing clothes as well as cars and high speed trains.*

- **Relative advantage**: a country has a comparative advantage producing 1 good if it produces it better (UK: clothes) compared with how well it produces other goods. *Ej: Germany is relatively better producing cars and high speed trains than cloths, although it could produce them better than Greece.*

**Ricardian Model:**

- Key: **Relative advantage coming from** differences in productivity (availability of technology)

**Heckscher-Ohlin Model (H-O Model):**

- Key: **Relative advantage coming from** differences in factor endowments.
- **Factor Endowment**: the proportion of the production factor available in each country (USA: more capital than labor; México: more labor than capital)
2.1. The Classic Models of International Trade

Classic models assume:

- **“Constant returns to scale”:**
  - $Y = f(N)$; $\text{Si } \uparrow 2N \rightarrow \uparrow 2Y$

- **Perfect competition:**
  - Small firms with similar cost structures;
  - Non-differentiated products;
  - “Price taker” and
  - Economic profits $= 0$. 
In the H-O model, with *constant returns*, trade would be:

- Therefore H would export manufactures and import food,
- In this model the manufactures have a perfect competition structure and the *product is homogeneous*.
2. International trade

In the classic models:

- Trade is based on **comparative advantage**.
- Countries gain from trade if they are different (specialization).

**Ricardian Model:**

- **Key**: Differences in productivity
- **Home (H)**: exports **good 1**, which is produced with higher relative productivity; imports **good 2**,  
- **Foreign (F)** produces **good 2** more efficiently.

**H-O Model:**

- **Key**: Differences in factor endowments.
- **H** exports **good 1**, whose production is intensive in the relatively abundant factor (K or L), and imports **good 2**,  
- **F** is specialized in producing the good that is more intensive in the factor that is relatively more abundant in F.

**“Latent” source of differences:**

- Technology?
- Geography?

**“Latent” source of differences:**

- Diff. factor endowments due to heterogeneous space.
- Location economies.
2. International trade

New Trade Theory (NTT)
- General equilibrium framework
- Imperfect competition
- Transport costs.

New Economic Geography (NEG)
- Factor mobility (migration + firms)
- Dynamics between economics and geography:
  - 1st nature ➤ 2nd nature ➤ circular causation

New-New Trade Theory (NNTT)
- Heterogeneous firms.
- Alternative ways for firm’s internationalization:
  - Export vs FDI.
• Uncomfortable facts about the classical models of trade:
  – It only predicts trade between different countries. However, about 70-80% of trade (Grubel-Lloyd) is between similar countries.
  – It is difficult to predict bilateral trade (gravity model) and justify the two-way-trade.
  – Difficulty to explain the role of companies (intra-firm trade; multi-national trade).

• These models are complementary (not substitutive) of the classic ones.
2.2. The New Trade Theory: Internal ES

• Now, we assume “Increasing returns to scale”:  
  – $Y = f(N)$;  If $↑2N \rightarrow ↑3Y$  
  – Production is more efficient the more it is produced:  
    • The average costs decrease as productivity increases.  
  – Each country is specialized in a reduced number of products and imports the rest.

• Now, we are interested in the trade that arises when there are economies of scale and the possibility of product differentiation

• Thus, we will focus on the international trade arising between similar countries.
An intuitive view:

- Although both countries have equal productivity and factor endowments, international trade can exist.

- Why? *Because there are Economies of scale*
  - We assume that consumers demand “variety”.
  - Each country is specialized in producing a *variety of a good*: by producing the entire quantity of that variety, costs are lower than if each country produced a portion of each variety.

- **Conclusion:**
  - Each country produces the whole amount of a single variety, and imports the rest in which it is not specialized: therefore international trade in different products (varieties) arises.
  - The same number of varieties is produced but with lower cost (or more varieties with the same cost). *Gains from trade arise in both countries.*
2.2. The New Trade Theory: Internal ES

- **The key is in the fixed costs:** to produce each variety there are fixed costs. By increasing the scale of production of a single variety, one can reduce the average cost per unit of output.
- However, to increase the production scale, new factors of production are needed (which, in autarky, they would be used in other industries).
- **A big country** can scale up production without giving up varieties. **But a small one has to choose** between giving up some varieties or to produce them with lower costs (decreasing the scale).
- **International trade (integration)** makes it possible for a small country to take advantage of producing on scale without giving up variety.
  - Each country specializes in producing a lot (all of it) of few varieties.
  - It will exports the whole excess of production not consumed domestically.
  - The rest of varieties will be imported.
Constant returns

Decreasing returns

Increasing returns
2.2. The New Trade Theory: Internal ES

**Types of Economies of scale**

- **External ES**: They appear when unit costs decrease with the size of the industry (not necessarily with the size of each company).
  - **Ex: clusters**: The production cost of a pub in Huertas is less than in any other area where there is no agglomeration of pubs. Lower costs of: supplies, publicity, customers, workers... Idem: souvenirs shops around Times Square.
  - Firms tend to be small, they offer the same product at a similar price.
  - The market tends to work under “perfect competition”.

- **Internal ES**: They appear when the unit cost decreases with the size of the company (not necessarily with the size of the industry).
  - **Ex**: Production cost of transport services is lower for a big airport than for several small ones.
  - The emergence of internal economies is related with the high fixed costs.
  - Firms tend to be big, they offer a differentiated product on a different price.
  - The market tends to behave with imperfect competition (oligopoly, monopolistic competition).
$\uparrow L \rightarrow \uparrow\uparrow Q \rightarrow \downarrow AC$
2.2. The New Trade Theory: Internal ES

- **Internal ES:**
  - Problem: it forces us to move to a imperfect competition model:
- In imperfect competition, firms can affect the price.
  - Industries with few producers
  - Industries with product differentiation for consumers
  - In order to sell more, the price must be decreased (strategic behaviors)
- Possible cases:
  - Monopoly; Oligopoly; Monopolistic competition
Monopolistic competition: assumptions

• In reality, monopolies do not easily survive:
  • The profits of the monopoly attract competitors.
• Therefore, usually arise: Oligopoly and monopolistic competition.
• **Oligopoly:** several firms + different prices but interdependent.
• **Monopolistic competition:**
  • Few firms with *different products* (varieties):
    • Product differences ensure a monopoly in its variety even thought there are some slight price differences with other substitutive goods.
  • Different and independent prices.
    • Each company accepts other firms’ prices as given.
Monopolistic competition: example

- **Ex: Automobile market.**

- **Few producers** specialized in different models, that compete with each other (they are substitutes, thought not perfectly) but they have some scope on **setting prices** given a certain **monopoly capacity** due to the differences introduced by each maker.

- Each company is a monopoly (just one produces each variety), although the demand of the good depends on the number of available similar products and on the prices of other firms in the industry.
MONOPOLISTIC COMPETITION: the basic model

Demand faced by the firm under M. Competition:

\[ Q = S \left( \frac{1}{n} - b(p - P') \right) \]

- Q = Firm’s sales
- S = Total sales in the industry
- n = number of firms
- p = price in the company
- P’ = average price of competitors (whole industry)

- Each company sells more the higher the total demand in the industry, and the higher the prices of the competitors.
- If \( p = P' \) all the firms will sell \( S / n \) (= share for each one).
- The larger the difference of \( p \) over \( P' \) the smaller the company market share.
- The total sales \( S \) don’t depend on the price (pieces of a given “cake”)
2.2. The New Trade Theory: Internal ES

3. The equilibrium number of firms:

- **PP Curve**: ▲ # of firms in the industry, ▲ competition and ▼ price.
- **CC Curve**: ▲ # of firms in the industry, ▲ average cost in each company.
- **E**: long run equilibrium in the industry (n₂ firms producing on AC₂)

\[
\begin{align*}
CC &= \text{average cost in the company} \\
&= n \text{ FC/} S + c \\
PP &= \text{price of the industry} \\
&= c + 1 / nb \\
N₂ &= n \text{ firms in equilibrium (with profit=0)}
\end{align*}
\]
MONOPOLISTIC COMPETITION AND TRADE

• In monopolistic competition without trade, the small countries are restricted by their size: they have to choose between + varieties or higher production costs.

• Trade increases market size, and the increase of the market produces the rise of Q and decreases of AC:

\[ AC = n \times FC / S + c \quad \text{if } n = \text{constant} \quad \text{and} \quad \uparrow S \rightarrow \downarrow AC \]

• If two markets are compared \( S_1 < S_2 \), the \( S_1 \) costs will be > \( S_2 \) costs. Its CC curve changes.

• The PP Curve does not vary because \( p = c + 1/ bn \)
2.2. The New Trade Theory: Internal ES

CLOSED COUNTRY
\[ C (S_1) = \frac{n \cdot FC}{S_1} + c \]

LARGE MARKET WITH TRADE
\[ C (S_2) = \frac{n \cdot FC}{S_2} + c \]

\[ P = \frac{c + 1}{bn} \]
2.2. The New Trade Theory: Internal ES

ECONOMIES OF SCALE AND COMPARATIVE ADVANTAGE

In the monopolistic competition model:

• We assume that the cost of production is the same in all companies, even if they produce different varieties.

• We also assume that the cost of trade is =0 (no transport costs).

• We know the size of the global production, but not who will be the producing countries.
  
  − We know how many company will be in the long run, but not how many or which ones will be in (H) or in (RM).

• We have to mix this model with the one for comparative advantage in order to determine the pattern of trade.
Assumptions:

• 2 countries (H, F), 2 factors: labor L and capital K,
• 2 products: manufactures (Qm) and food (Qa).
• H is relatively abundant in capital, and the manufactures are comparatively intensive in capital.
• \( \frac{(K/L)}{} > \frac{(K/L)^*}{(K/L)^*} \) and \( \frac{(a_{km}/a_{lm})}{a_{km}/a_{lm}} > \frac{(a_{ka}/a_{la})}{a_{ka}/a_{la}} \)

• How trade would be according to H-O... and according to the imperfect competition model?
If the manufactures sector is Monopolistic Competition with increasing returns and product differentiation.
2.2. The New Trade Theory: Internal ES

• **Conclusion:** in a monopolistic competition model, trade is constituted by two parts:
  
  • **Inter-industry:** Qa Food vs Qm manufactures.
    • It is based on comparative advantage.
    • The volume and the direction of trade is predictable.
  
  • **Intra-industry:** Exchanges of different varieties of manufactures.
    • It is not based on comparative advantages.
    • The volume of trade is predictable, but the direction it is not.
2.2. The New Trade Theory: Internal ES

Characteristics & differences between intra/inter trade

- **Inter-industry trade** reflects the comparative advantage.
- **Intra-industry trade** has its origin in the economies of scale.

1. **Intra-industry trade has an unpredictable pattern**: we don’t know which country produces which goods, while inter-industry trade has a determined pattern by the differences between countries (K/L).

2. **The % between intra-industry / inter-industry trade** in a given bilateral trade depends on the similarities between countries. Ex: (OCDE) H y F are = in technology and factors, then the intra % will be higher.
2.2. The New Trade Theory: Internal ES

Index for measuring intra-industry trade (IIT)

\[
b_j = 1 - \frac{|X_j - M_j|}{(X + M)}
\]

\(X_j - M_j = \) intra-industry trade (product \(j\))

\(X - M = \) total trade

\(0 \leq b_j \leq 1\)

If \((X_j = M_j) \rightarrow X_j - M_j = 0 \rightarrow b_j = 1\)

All trade is intra-industry

If \(X_j = 0 \) and \(M_j > 0\)

\(X_j - M_j = M_j\)

\((X_j + M_j) = M_j\)

\(b_j = 0\)

or

If \(M_j = 0 \) and \(X_j > 0\)

\(X_j - M_j = X_j\)

\((X_j + M_j) = X_j\)

\(b_j = 0\)

“inter-industry trade”
## 2.2. The New Trade Theory: Internal ES

<table>
<thead>
<tr>
<th>Table. Indexes of Intraindustry trade for US industries 1993</th>
<th>IIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic chemicals</td>
<td>0.97</td>
</tr>
<tr>
<td>Power-generating machinery</td>
<td>0.86</td>
</tr>
<tr>
<td>Scientific Equipment</td>
<td>0.84</td>
</tr>
<tr>
<td>Organic chemicals</td>
<td>0.79</td>
</tr>
<tr>
<td>Medical and pharmaceuticals</td>
<td>0.85</td>
</tr>
<tr>
<td>Office machinery</td>
<td>0.58</td>
</tr>
<tr>
<td>Telecommunications equipment</td>
<td>0.46</td>
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<tr>
<td>Road vehicles</td>
<td>0.70</td>
</tr>
<tr>
<td>Iron and steel</td>
<td>0.76</td>
</tr>
<tr>
<td>Clothing and accessories</td>
<td>0.11</td>
</tr>
<tr>
<td>Footwear</td>
<td>0.10</td>
</tr>
</tbody>
</table>
2.2. The New Trade Theory: Internal ES

Why is intra-industry trade important?

1. Although there is no comparative advantage countries can gain from (intra-industry) trade: ( + variety – price).
   - Gains grows twice: - costs, + access to variety.
2. Intra-industry trade between similar countries (ES and product differentiation)
3. Trade between countries that converge in income and technology can keep on increasing.
4. It doesn’t have to harm the income distribution between sectors or factors.
5. It produces a less problematic industry restructuration in the trading partners (H and F).
2.2. The New Trade Theory: External ES

A cluster can be more efficient collectively than a single firm.
- It does not favor the appearance of large firms
- It is compatible with perfectly competitive markets.
- It does not require the product differentiation.
2.2. The New Trade Theory: External ES

Why does External ES arise?

1. SPECIALIZED SUPPLIERS

2. SPECIALIZED LABOR MARKET
   - R+D+i ...

3. DIFFUSSION OF KNOWLEDGE.
   - Knowledge Spillovers.

4. JOINT USE OF INFRAESTRUCTURES
   - Ports, logistic corridors, ...

5. HIGHER INSTITUTIONAL SUPPORT:
   - Ex: Headquarters-capital (Proximity to regulators, lobbying...)
2.2. The New Trade Theory: External ES

“When an industry has thus chosen a locality for itself, it is likely to stay there long: so great are the advantages which people following the same skilled trade get from near neighborhood to one another. The mysteries of the trade become no mysteries; but are as it were in the air,... Good work is rightly appreciated, inventions and improvements in machinery, in processes and the general organization of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus it becomes the source of further new ideas.

2.2. The New Trade Theory: External ES

EXTERNAL E.S. CLASSIFICATION:

(MARSHALL - ARROW – ROMMER-PORTER – JACOBS)

1. In the same sector
   - Technology-Silicon Valley;
   - Pubs in Huertas (Madrid); Bleecker street (New York);
   - Banking: Wall-Street; “The City” in London

2. Between different sectors: crossed E.S. – Jacobs
   - Refining-chemical; steel-mining.
External Economies and international trade

1. In the presence of External ES, *companies located nearby* in a market where the industry is large, produce with *lower AC*.

2. Countries that, for different reasons have been *major producers* of something (*historical accident*), produce with *lower costs* given the external ES (agglomeration, suppliers, knowledge).

3. Even if another country could produce with lower unit costs (Ex: because of lower ULC), the lack of external ES prevents it from competing for that product.

   • Ex: watches (Switzerland- Thailand); Ships (Europe- Korea)
2.2. The New Trade Theory: External ES

Trade, welfare and external economies

1. There might be gains from the concentration.

2. Nothing ensures that the concentration of an industry in a country is the most efficient choice.

3. The specialization caused by a “historical accident” can harm a country.
   - Ex: Watches (Switzerland-Thailand);
     - Thailand could produce cheaper.
     - However, the accumulation of the industry in Switzerland forces Thailand to import with higher prices.

4. Argument for protectionism: potential industry.
External economies and Specialization: swiss/thailand watches

Demand of watches (World)

AC Switzerland

AC (potential)

Thailand

AC_sw
External economies and Specialization: swiss / thailand watches

Demand of watches (World)

Demand for watches (Thailand)

AC\textsubscript{Sw}

AC\textsubscript{Th}

AC Switzerland

AC Thailand

q1

q2
2.2. The New Trade Theory: External ES

Dynamic economies of scale

1. Those derived from the knowledge and the accumulation of experience (Know-how):
   1. The country that started an industry has an advantage towards the others (the cumulative process generates economies of scale).
   2. Its costs are lower and that gives him an advantage over possible competitors.

2. Other countries could have potentially lower unit costs but they will need time to “learn”
   - Argument for protection: argument of the “infant industry”.
Dynamic external economies and specialization

Unit cost

\( C_0 \)  
\( C_1 \)

Demand for watches

Accumulated production

\( Q_L \)

\( L = \text{Swiss experience} \)

\( L^* = \text{Thai experience} \)
3. Factor Mobility: labor mobility

- **International Trade**: movement of goods and services.
  - The easiest way of economic integration.

- Other ways of integration: **mobility of factors of production**:
  - Immigration (labor mobility).
  - Capital transferences through international lending.
  - International Investments with the aim of permanence: FDI and multinational firms.

*Rivane Neuenschwander | Contingent - YouTube*

In Contingent (2008), a time-lapse film follows a single meal, as a world map – daubed in honey on blotting paper – is consumed by ants, the land masses becoming first emaciated then completely disconnected. Pitching a rational (and of course stubbornly Eurocentric) chart against an unpredictable system, Neuenschwander’s dynamic territories refer back to when terra incognita spaces – visual representations of what is not known2– had yet to disappear from maps, when the distinction between pictorial and cartographic representation was less certain.

[www.youtube.com/watch?v=gurlpLOyubA](http://www.youtube.com/watch?v=gurlpLOyubA)
3. Factor Mobility: labor mobility

One-Good Model Without Factor Mobility

• Hypothesis of the model:
  – 2 countries (Home, Foreign).
  – 2 factors of production: Land ($T$) and Labor ($L$).
  – Both countries produce only one good.
  – Both countries have the same technology but different overall land-labor endowments ($T/L$ ratios).
  – Home is abundant in $L$, Foreign is abundant in $T$.
  – Perfect competition in all markets.

• Migration: workers are able to move between the two countries.

• Nationals will want to move to Foreign until the MPL (wage) equals the one at Home.
  – This movement will reduce the Home’s Labor Force, and thus raises the real wage in Home.
  – This movement rises the labor force and reduces the real wage in Foreign.
3. Factor Mobility: labor mobility

Causes and effects of International Labor Mobility

Marginal Product of Labor

Migration of labor from Home to Foreign

Total world labor force

Home Employment  \( L^2 \)

Foreign Employment  \( L^1 \)
3. Factor Mobility: labor mobility

• Effects of the re-distribution of the world labor force:
  – It leads to a convergence of real wage rates.
  – It increases the world’s output as a whole ...

... but it produces loses in some groups:

• Those who would originally have worked in Home receive higher real wages (because of less competition and a higher MPL). Inversely in Foreign.
• The “land-owners” in Home are hurt since they have to pay higher wages, while the land-owners in Foreign will benefit from the larger labor supply (+ competition, - W).

Extension:

• We assume that the 2 countries produce 2 goods, 1 is labor intensive (L) and the other is Land intensive (T).
• In this case, “trade” offers an alternative to factor mobility:
  – Home and Foreign could specialize according to its factor endowment (H-O)
  – Home could export Labor (L) and import land (T), just by exporting the good “intensive in L” and “importing the good intensive in T.”
3. Factor Mobility: labor mobility

• **Doubt: Then, is factor mobility an obstacle for trade?**
  - In theory it is, but in practice there is space for both of them.
  - Trade is not a perfect substitutive of factor mobility.
  - **Why?** The HOV Model does not work perfectly:
    • The equalization of factor prices is not produced in the real world: countries are very different and they tend to specialize.
    • There are barriers to trade: natural and artificial.
    • There are many differences in technology as long as in natural resources.
    • Many “services” can’t move and/or be commercialized.
    • Trade produced by “economies of scale” implies factor mobility “between regions” or “between industries”.
Foreign Direct Investment (FDI):

- It refers to international capital flows in which a firm in one country expands or creates a subsidiary in another.
- It involves not only a transfer of resources but also the acquisition of control.
- The subsidiary does not simply have a financial obligation to the “related” company (Ex: interests) but a “political” relationship of being part of the same organizational structure.
Multinational Firms:
- They are a vehicle for international borrowing and lending.

Differences between FDI and multinationals
- MNE borrow in local markets.
- FDI does not always involves taking the control.

Why choosing FDI vs. other ways of internationalization? Two theories:
- Location theory
- Internalization theory
3.2. Capital mobility: FDI and Multinationals

Location theory

• A good can be produced in more than a country because of different factors:
  – Natural resources; transportation cost (metallurgy; refinery); trade barriers (pharmaceuticals).

Internalization theory

• The same good is produced in different locations by the same firm instead of different firms, making use of intra-firm technology transfer, management and finance (and taxes).
  – Technology transfer;
  – Vertical Integration.
3.2. Capital mobility: FDI and Multinationals

International production is expanding, with foreign sales, employment and assets of transnational corporations (TNCs) all increasing.

TNCs’ production generated value-added = $16 trillion in 2010, (1/4 of global GDP.

Foreign affiliates of TNCs:
> 10% of global GDP.
1/3 world exports.

Figure I.22. TNCs account for one-quarter of world GDP, 2010
(Per cent and trillions of dollars)
Global FDI flows fell by 18% in 2012 ($1.35 trillion), in contrast to other variables (GDP, trade and employment), which all remained in positive.

15% below their pre-crisis average. In contrast, global industrial output and trade, are back to pre-crisis levels. (FDI is more volatile than trade)

UNCTAD failed when forecasting in 2010 a global FDI recovery in 2011, and a new peak in 2013 (like the 2007's record).
• In 2010, developing and transition economies together attracted more than half of global FDI flows.

• Outward FDI from those economies also reached record highs, with most of their investment directed towards other countries in the South (South-South FDI).

• FDI inflows to developed countries continued to decline.

• The poorest regions continued to see declines in FDI flows: Flows to Africa, least developed countries, landlocked developing countries and small island developing States fell, as did flows to South Asia.

• Major emerging regions, such as East and South-East Asia and Latin America experienced strong growth in FDI inflows.
UNCTAD’S WORLD INVESTMENT REPORT 2013

**Figure 2. Top 20 host economies, 2012**
(Billions of dollars)

- United States (1): 168
- China (2): 121
- Hong Kong, China (4): 75
- Brazil (5): 65
- British Virgin Islands (7): 65
- United Kingdom (10): 62
- Australia (6): 57
- Singapore (8): 57
- Russian Federation (9): 51
- Canada (12): 45
- Chile (17): 30
- Ireland (32): 29
- Luxembourg (18): 28
- Spain (16): 28
- India (14): 28
- France (13): 25
- Indonesia (21): 20
- Colombia (28): 16
- Kazakhstan (27): 14
- Sweden (39): 14

**Developing economies**

**Developed economies**

**Transition economies**

---

**Figure 3. Top 20 investor economies, 2012**
(Billions of dollars)

- United States (1): 329
- Japan (2): 123
- China (6): 84
- Hong Kong, China (4): 84
- United Kingdom (3): 71
- Germany (11): 67
- Canada (12): 54
- Russian Federation (7): 51
- Switzerland (13): 44
- British Virgin Islands (10): 42
- France (8): 37
- Sweden (17): 33
- Republic of Korea (16): 33
- Italy (9): 30
- Mexico (28): 26
- Singapore (18): 23
- Chile (21): 21
- Norway (19): 21
- Ireland (167): 19
- Luxembourg (30): 17

**Developing economies**

**Developed economies**

**Transition economies**
Fragmentation the production chain: an example

**Box IV.7. Value capture can be limited: iPhone production in China**

The relative value added captured by contract manufacturers in developing countries, compared to the total value created in the overall global value chain and expressed in currency units of the final destination market (or as a percentage of the final product sales price), can appear very limited. This is illustrated by the well-known case of the Apple iPhone, for which it is estimated that only $6.50 of the $179 production cost (retail price, $500 in the US market) is captured by Foxconn (Taiwan Province of China), the company’s NEM partner in China (box figure IV.7.1). The share captured by domestic Chinese companies is even less, limited to packaging and local services. This is, in part, because iPhone are assembled from components made mostly in other countries, such as the United States, Japan, Germany and the Republic of Korea.

**Box figure IV.7.1. Breakdown of the production costs of the iPhone, 2010**

(Dollars per unit)

<table>
<thead>
<tr>
<th>Components</th>
<th>Other materials</th>
<th>Assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>124.46</td>
<td>48.00</td>
<td>6.50</td>
</tr>
</tbody>
</table>

Source: UNCTAD, based on Xing and Detert, 2010.

Note: The remaining $321 of the $500 retail price is accounted for by Apple and other companies’ returns to R&D, design, distribution and retailing etc.
• Fragmentation the production chain: an example
• Fragmentation the production chain: an example

Figure IV.2. Value added in global trade, 2010

$ Trillions

Global gross exports: ~19

“Double counting” (foreign value added in exports): ~5 (28%)

Value added in trade: ~14

Source: UNCTAD-Eora GVC Database, UNCTAD estimates.
• Fragmentation the production chain: an example

**Figure IV.6. Domestic value added trade shares of the top 25 exporting economies, 2010**

<table>
<thead>
<tr>
<th>Top 25 global exporters</th>
<th>Breakdown of gross exports in domestic and foreign value added (Billions of dollars)</th>
<th>Domestic value added trade share</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td></td>
<td>89%</td>
</tr>
<tr>
<td>China</td>
<td></td>
<td>70%</td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td>63%</td>
</tr>
<tr>
<td>Japan</td>
<td></td>
<td>82%</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td>69%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td></td>
<td>58%</td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td>47%</td>
</tr>
<tr>
<td>Korea, Republic of</td>
<td></td>
<td>56%</td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td>73%</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td></td>
<td>46%</td>
</tr>
<tr>
<td>Singapore</td>
<td></td>
<td>36%</td>
</tr>
<tr>
<td>Canada</td>
<td></td>
<td>70%</td>
</tr>
<tr>
<td>Russian Federation</td>
<td></td>
<td>91%</td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td>72%</td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
<td>42%</td>
</tr>
<tr>
<td>India</td>
<td></td>
<td>90%</td>
</tr>
<tr>
<td>Switzerland</td>
<td></td>
<td>71%</td>
</tr>
<tr>
<td>Taiwan Province of China</td>
<td></td>
<td>71%</td>
</tr>
</tbody>
</table>

- Domestic value added component
- Foreign value added component
• Fragmentation the production chain: an example

Figure IV.14. Global gross trade (exports of goods and services), by type of TNC involvement, 2010

$ Trillions

- Global trade in goods and services: ~19
- Non-TNC trade: ~4
- All TNC-related trade: ~15
- Intra-firm trade: ~6.3
- NEM-generated trade, selected industries*: ~2.4
- TNC arm’s length trade: ~6.3

Total trade involving TNCs: ~80%
Critical decisions for companies:

- What is the optimal way for them to organize?
- Do they opt for geographical concentration or choose to disperse production across their respective markets?

3 ways of answering this question

1st. Evaluating the cost of Dispersion:

What are the costs of the split?

- Some of the firm’s assets have a “public good” character.
- These firm-level assets are therefore a source of firm-level increasing returns to scale, and to duplicate them would be wasteful.
- Firm-level activities include headquarters staff, finance operations, R&D expenditures and brand development. Many of these assets are intangible. They include “knowledge capital” (scientific know-how, patents, management skills) as well as reputation and brand name.

- You may not want to duplicate these costs!
2nd. Duplicating just a subset of its activities (just for some portion of the production process).

- Some activities are therefore duplicated and some plant-level scale economies are foregone.
  - The distinction between firm- and plant-level scale economies is important:
    - Firm-level scale economies: firms will be large, and tend to have sales in many countries.
    - Plant-level scale economies: firms will not want to split production into many separate units.
  - MNE are more likely to appear when there are high firm-level scale economies combined with low plant-scale economies (i.e: Coca-Cola; Burger-King).
### 3.2. Capital mobility: FDI and Multinationals

Average firm- and plant-level size of US manufacturing firm, 1987

<table>
<thead>
<tr>
<th>Industry</th>
<th>Plant size (A)</th>
<th>Firm size (B)</th>
<th>Ratio B/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals</td>
<td>132</td>
<td>1120</td>
<td>8.5</td>
</tr>
<tr>
<td>Transport equipment</td>
<td>663</td>
<td>4190</td>
<td>6.3</td>
</tr>
<tr>
<td>Food, beverages and tobacco</td>
<td>157</td>
<td>832</td>
<td>5.3</td>
</tr>
<tr>
<td>Paper, printing and publishing</td>
<td>125</td>
<td>610</td>
<td>4.9</td>
</tr>
<tr>
<td>Rubber and plastic</td>
<td>130</td>
<td>507</td>
<td>3.9</td>
</tr>
<tr>
<td>Electrical equipment</td>
<td>293</td>
<td>1123</td>
<td>3.8</td>
</tr>
<tr>
<td>Textiles</td>
<td>279</td>
<td>1056</td>
<td>3.8</td>
</tr>
<tr>
<td>Furniture</td>
<td>182</td>
<td>659</td>
<td>3.6</td>
</tr>
<tr>
<td>Machinery</td>
<td>172</td>
<td>615</td>
<td>3.6</td>
</tr>
<tr>
<td>Apparel</td>
<td>175</td>
<td>526</td>
<td>3.0</td>
</tr>
<tr>
<td>Miscelaneou manufactures</td>
<td>120</td>
<td>264</td>
<td>2.2</td>
</tr>
<tr>
<td>Leather</td>
<td>178</td>
<td>340</td>
<td>1.9</td>
</tr>
<tr>
<td>All industries</td>
<td>177</td>
<td>852</td>
<td>4.8</td>
</tr>
</tbody>
</table>
3.2. Capital mobility: FDI and Multinationals

3td. Splitting activities by functions.

- Each particular component part will be provided in a separate foreign plant. (*Fragmentation -vertical division* -as the value-added chain is broken)
  - This may lead to a cost in terms of integration (packaging and transport costs of goods, whereas they did not exist before).
3.2. Capital mobility: FDI and Multinationals

Boing 787

**Kansas, Oklahoma**
- Co: Spirit Aerosystems
- Part: Leading edges

**Japan**
- Co: Kawasaki Heavy Industries
- Part: Fuselage, wheel well

**Japan**
- Co: Mitsubishi Heavy Industries
- Part: Wing box

**Japan**
- Co: Fuji Heavy Industries
- Part: Center wing box

**Japan**
- Co: Kawasaki Heavy Industries
- Part: Passenger doors

**France**
- Co: Latécoère
- Part: Landing gear

**Sweden**
- Co: Saab Aerostructures
- Part: Cargo doors, access doors

**Kansas, Oklahoma**
- Co: Spirit Aerosystems
- Part: Engine pylons

**Canada, Australia**
- Co: Boeing Fredrickson
- Part: Vertical tail assembly

**Washington, Canada, Australia**
- Co: Boeing Winnipeg
- Part: Wing-to-body fairing

**North Carolina**
- Co: Goodrich
- Part: Nacelles

**Ohio**
- Co: General Electric
- Part: Engines

**U.K.**
- Co: Rolls-Royce
- Part: Engines

**Italy, Texas**
- Co: Alenia/Aouthe
- Part: Horizontal stabilizer, center fuselage, aft fuselage

**Korea**
- Co: Korean Airlines-Aerospace Division
- Part: Winglets

*Source: Boeing Co.*
Geographical concentration or dispersion?

Outsourcing, offshoring or intramural production?

Airbus Sourcing Principles: Enhanced responsibilities

- **Past**
  - Platform Assembly
  - Large-scale Integration
  - Value-added Parts and Assemblies
  - Make-to-print Parts and Assemblies
  - Raw Materials

- **Today**
  - Airbus
  - System Integrators
  - TIER 1
  - RSP

- **The “New Airbus”**
  - Enhanced responsibilities for outsourcing, offshoring, or intramural production.
3.2. Capital mobility: FDI and Multinationals

Types of MNEs

- **Horizontal multinationals** are firms producing roughly the same product in multiple countries even though foreign plants are supplied with headquarters services; *Ej: Burger King...*

- **Vertical multinationals** are firms producing output that is not the same as that of the home-land (*Headquarters*). Headquarters could ship designs and/or intermediate products to a foreign assembly plant, and export the final output back to the home-land. *Ej: Airbus; Apple,...*