

CHPT 5 Alternative Theories of Trade

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 - **Product Life-Cycle Theory**
- **Theory of Demand Preference Similarity**
- **Economic of Scale and International Trade**

Trade Facts in Searching of Better Theories

The Rise of Intra-Industry Trade

Global Industries Dominated by a Few Large Firms

Industry Leader Transfer from Country to Country

Intra-Industry Trade

Country	1970	1987
United States	45.3	51.0
Canada	44.8	55.7
Japan	23.6	22.2
West Germany	58.9	65.5
France	65.5	72.3
United Kingdom	57.8	68.8

For trade in nonfood manufactured goods (SITC 5 through 8) with other industrialized countries, intra-industry trade has been increasing and is more than half of overall trade for most industrialized countries. The estimates are based on nearly 1,000 different individual industries (the five-digit level of the SITC) and refer to trade among 14 industrialized countries (the 6 shown and 8 other European countries).

Intra-Industry Trade

- Intra-industry Trade: Two-way Trade in which the country both exports and imports the same or very similar products (products in the same industry)
- Including Homogeneous Products and Differentiated Products

Intra-Industry Trade

- Homogeneous Products: Perfect Substitute
- ✓ **Large Amount of Raw Material (high in transportation cost and low in trade distance)**
- ✓ **Entrepot Trade and**
- ✓ **Seasonal Differentiation**

Intra-Industry Trade

Differentiated Products: Not Perfectly Substitute

Vertical Differentiated Products: difference in
quality

Horizontal Differentiated Products:
same quality but different Characteristics or features

Intra-Industry Trade

- Grubel-Lloyd index

$$IIT = 1.0 - |(X_i - M_i)| / (X_i + M_i) \quad (0 \leq IIT \leq 1)$$

$IIT = 1$, completely intra-industry trade

$IIT = 0$ ($X_i = 0$ 或 $M_i = 0$), completely inter-industry trade

Generally: $0 < IIT < 1$

Intra-Industry Trade

- **Limitation in Application:**

Classification of industry will influence the value of Grubel-Lloyd index. Generally, the wider scope of industry, the bigger of IIT. But still an useful analysis instrument when definition of industry is the same.

Indexes of Intraindustry Trade for U.S. Industries, 1993

Inorganic chemicals	0.99
Power-generating machinery	0.97
Electrical machinery	0.96
Organic chemicals	0.91
Medical and pharmaceutical	0.86
Office machinery	0.81
Telecommunications equipment	0.69
Road vehicles	0.65
Iron and steel	0.43
Clothing and apparel	0.27
Footwear	0.00

Large Firms



- Founded 1915 by William Boeing
- Largest commercial airplane manufacturer.
- 9,000 commercial jetliners in service.

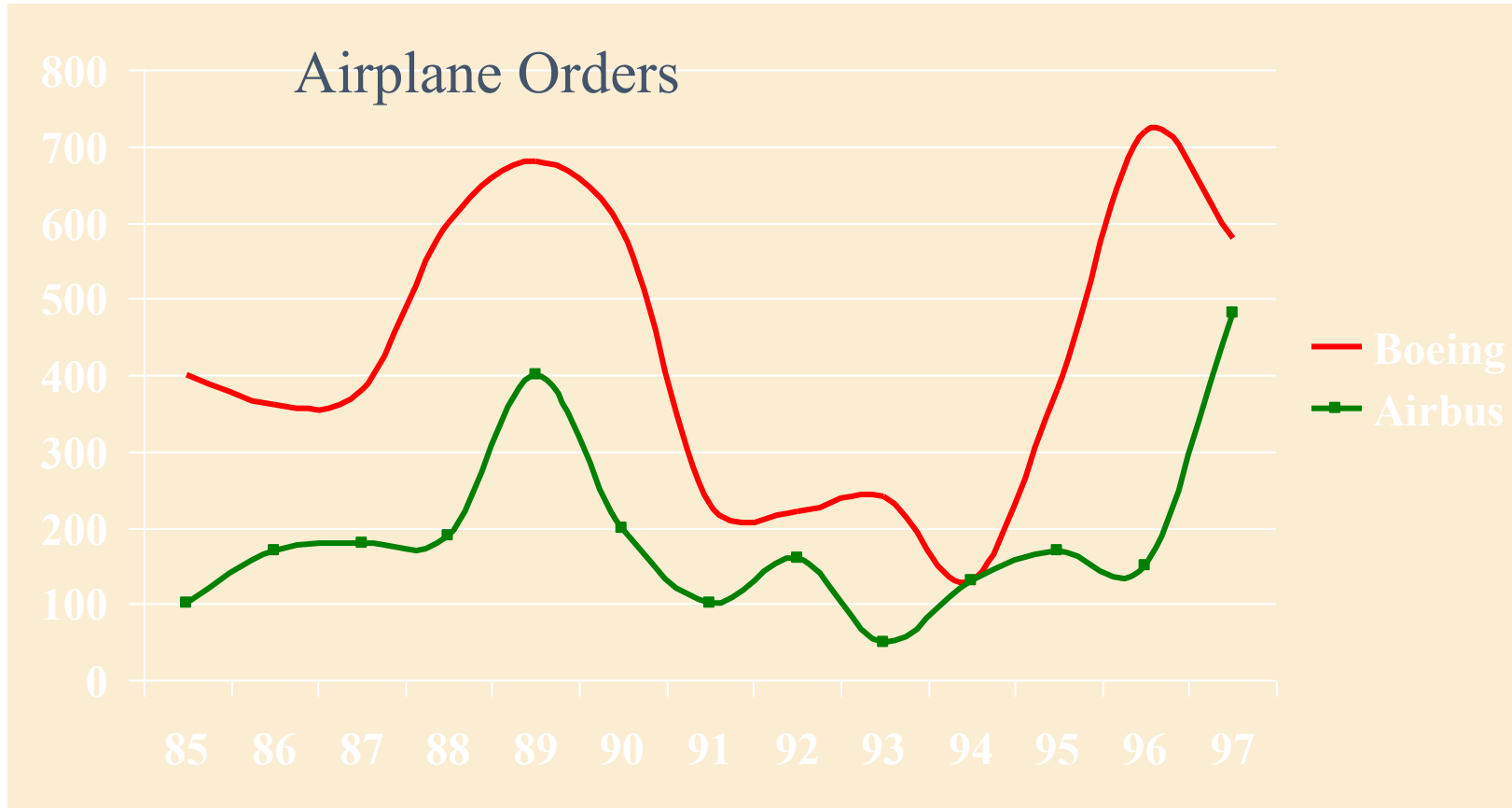


Large Firms

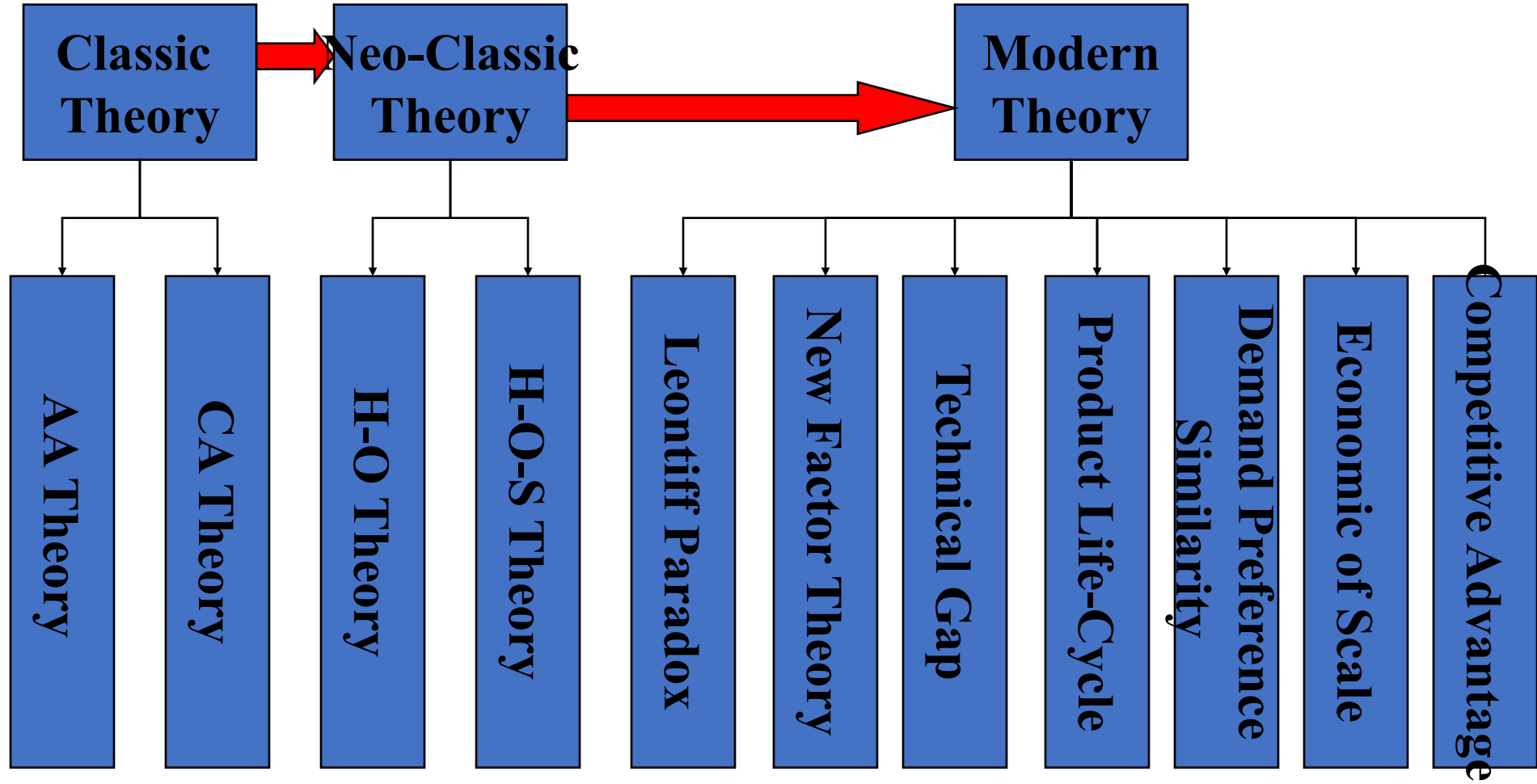
- Established 1967
- Western Europe buying 25% of aircraft ,but selling only 10%.
- France, Germany, Great Britain
- To date: 3,203 orders - 1,890 deliveries.



Large Firms



Graphic Explain

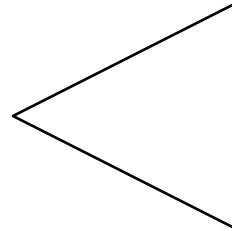


Product Life-Cycle Theory

- **Raymond Vernon, 1966**
- Article in the *Quarterly Journal of Economics*.
- As products mature, both location of sales and optimal production changes.
- Affects the direction and flow of imports and exports.
- Globalization and integration of the economy makes this theory less valid.

Product Life-Cycle Theory

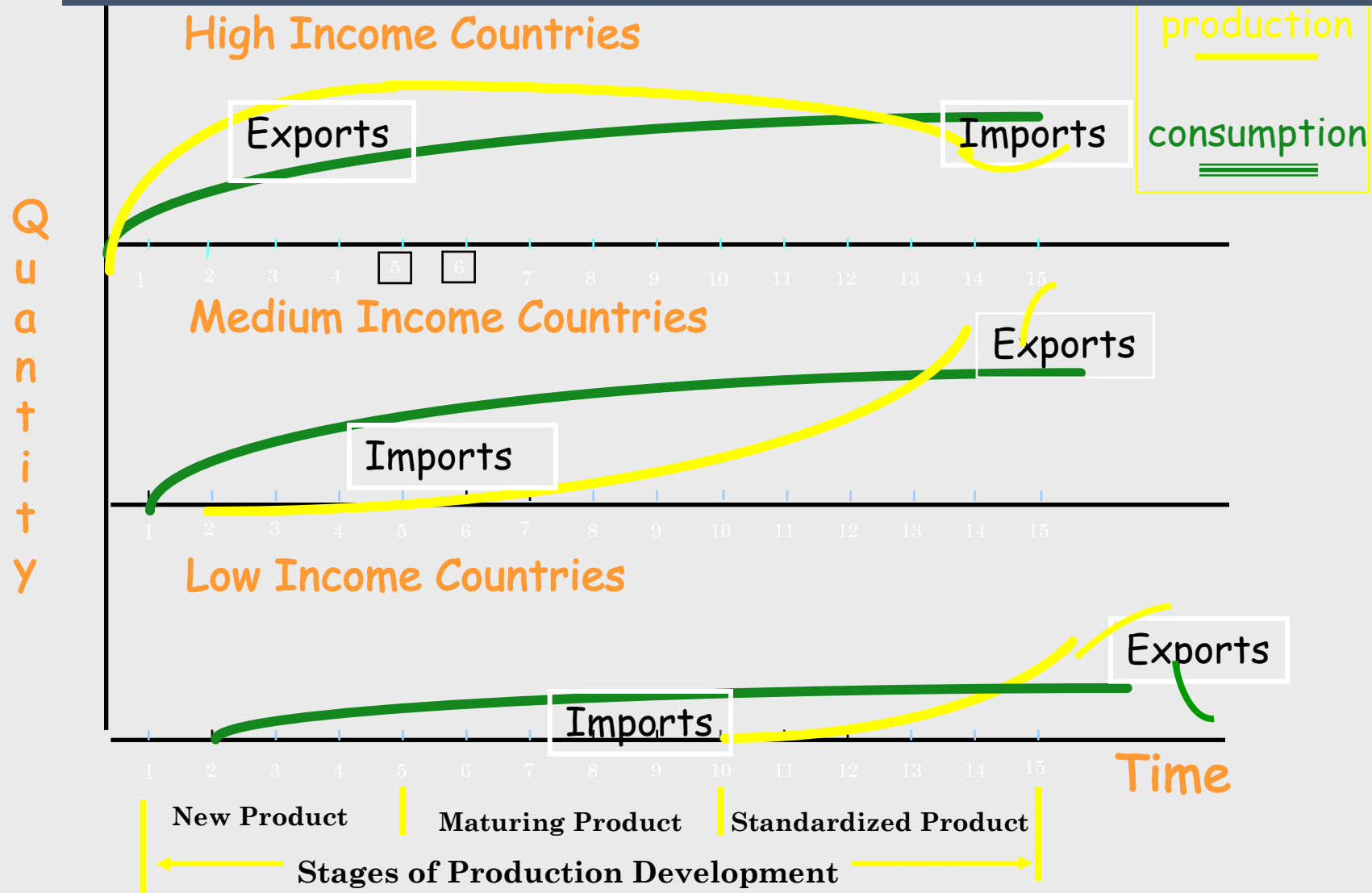
- Introduction
- Growth
- Maturity
- Decline



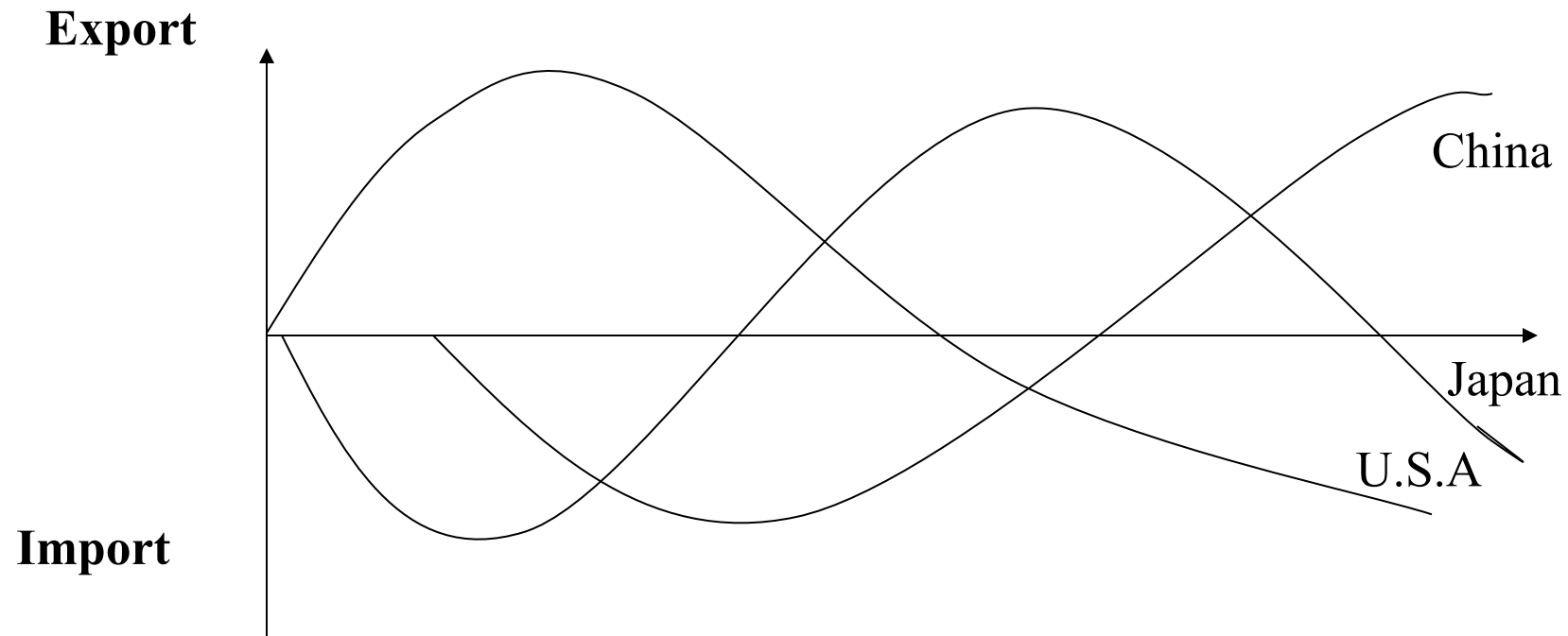
Production Location
Market Location
Competitive Factors
Production Technology

Product Life Cycle

Product Life-Cycle Theory



Product Life Cycle Theory



Product Life-Cycle Theory

- Describes international manufacturing and trade patterns along several dimensions:
 - location
 - market
 - competition
 - production technology

Table 5.2**International Changes During a Product's Life Cycle**

Overall, production and sales in LDCs grow in relative importance during a product's life cycle.

	Life cycle stage			
	Introduction	Growth	Maturity	Decline
Production location	<ul style="list-style-type: none"> • In innovating (usually industrial) country 	<ul style="list-style-type: none"> • In innovating and other industrial countries 	<ul style="list-style-type: none"> • Multiple countries 	<ul style="list-style-type: none"> • Mainly in LDCs
Market location	<ul style="list-style-type: none"> • Mainly in innovating country, with some exports 	<ul style="list-style-type: none"> • Mainly in industrial countries • Shift in export markets as foreign production replaces exports in some markets 	<ul style="list-style-type: none"> • Growth in LDCs • Some decrease in industrial countries 	<ul style="list-style-type: none"> • Mainly in LDCs • Some LDC exports
Competitive factors	<ul style="list-style-type: none"> • Near-monopoly position • Sales based on uniqueness rather than price • Evolving product characteristics 	<ul style="list-style-type: none"> • Fast-growing demand • Number of competitors increases • Some competitors begin price-cutting • Product becoming more standardized 	<ul style="list-style-type: none"> • Overall stabilized demand • Number of competitors decreases • Price is very important, especially in LDCs 	<ul style="list-style-type: none"> • Overall declining demand • Price is key weapon • Number of producers continues to decrease
Production technology	<ul style="list-style-type: none"> • Short production runs • Evolving methods to coincide with product evolution • High labor and labor skills relative to capital input 	<ul style="list-style-type: none"> • Capital input increases • Methods more standardized 	<ul style="list-style-type: none"> • Long production runs using high capital inputs • Highly standardized • Less labor skill needed 	<ul style="list-style-type: none"> • Unskilled labor on mechanized long production runs

Theory of Demand Preference Similarity

Criticism on traditional theory

Neglecting Demand

Potential Export: Potential export of a country,
decided by the representative domestic demand

Potential Imports: Potential import of a country,
decided by the non-representative domestic
demand

- ✓ Export based on domestic demand
- ✓ Income is the most essential factor influencing demand
- ✓ The more similar of the demand structure in two countries, the more of the trade volume between them.

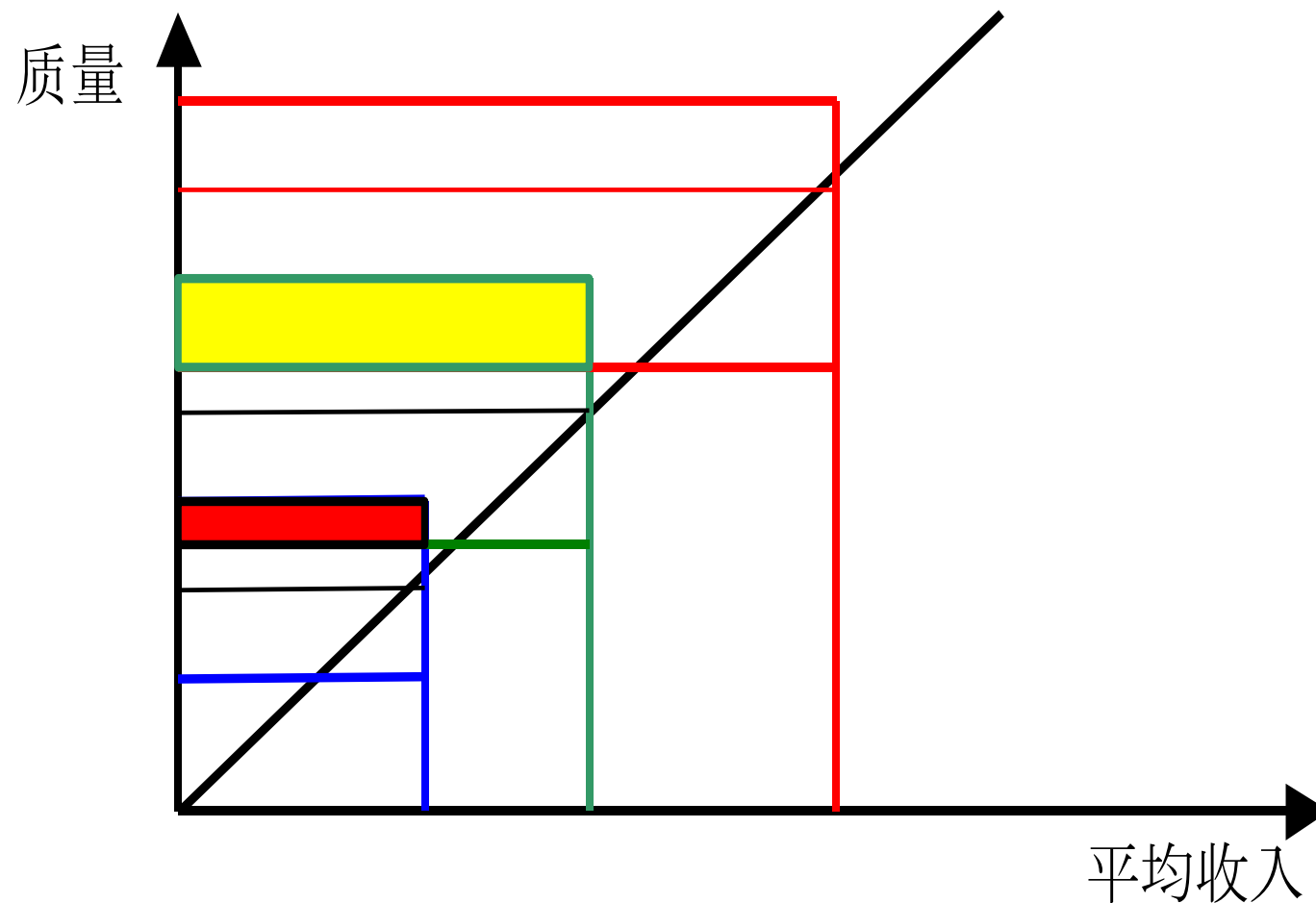
Overlapping demands

Nations with high per capita incomes will demand high quality manufactured goods (luxuries), while nations with lower per capita incomes will demand lower quality goods (necessities).

Wealthy nations will likely to trade with other wealthier nations, and poor nations will likely to trade with other poorer nations.

Overlapping demands

偏好相似区间图



Economies of Scale and International Trade

Non-Perfect Competition / Economies of Scale and International Trade

- **Monopolistic Competition and International trade**
- **External Economics and Internal Trade**

Non-Perfect Competition and International Trade

- Non-Perfect Competition in International Trade
- Non-Perfect Competition/ Price Discrimination and International Trade
 - ✓ Non-Perfect Competition
 - ✓ Segmented Markets
 - ✓ Elasticity of demand is different

Economies of Scale and International Trade

- Also called increasing returns of scales, exist if increasing expenditures on all input increases the output quantity by a large percentage.
- **Internal:** the expansion of the size of the firm itself
- **External:** the expansion of the size of the entire industry within a specific geographic area.

外部规模经济	单位产品成本取决于行业规模而非单个厂商的规模	厂商小，数目多	完全竞争
内部规模经济	单位产品成本取决于单个厂商的规模而不是其所在的行业规模	厂商大，数目少	不完全竞争

- 阿尔弗雷德·马歇尔 (Alfred Marshall)

- 专业化供应商 (specialized supplier)

★ “工程师离开原先的半导体公司——成立新的公司生产一些产品，如扩散炉、分步重复照相机、实验设备，以及其他的原料和零部件——变得非常容易。这些独立的设备和服务供应部门通过分散开发成本，把单个厂商从自己开发资本产品需要巨额花费的困境中解放出来，从而促进了半导体工业的持续形成与发展；同时强化了行业地区集中的趋势。在美国其他地区无法获得上述专业化配套服务就是最好的例证。”

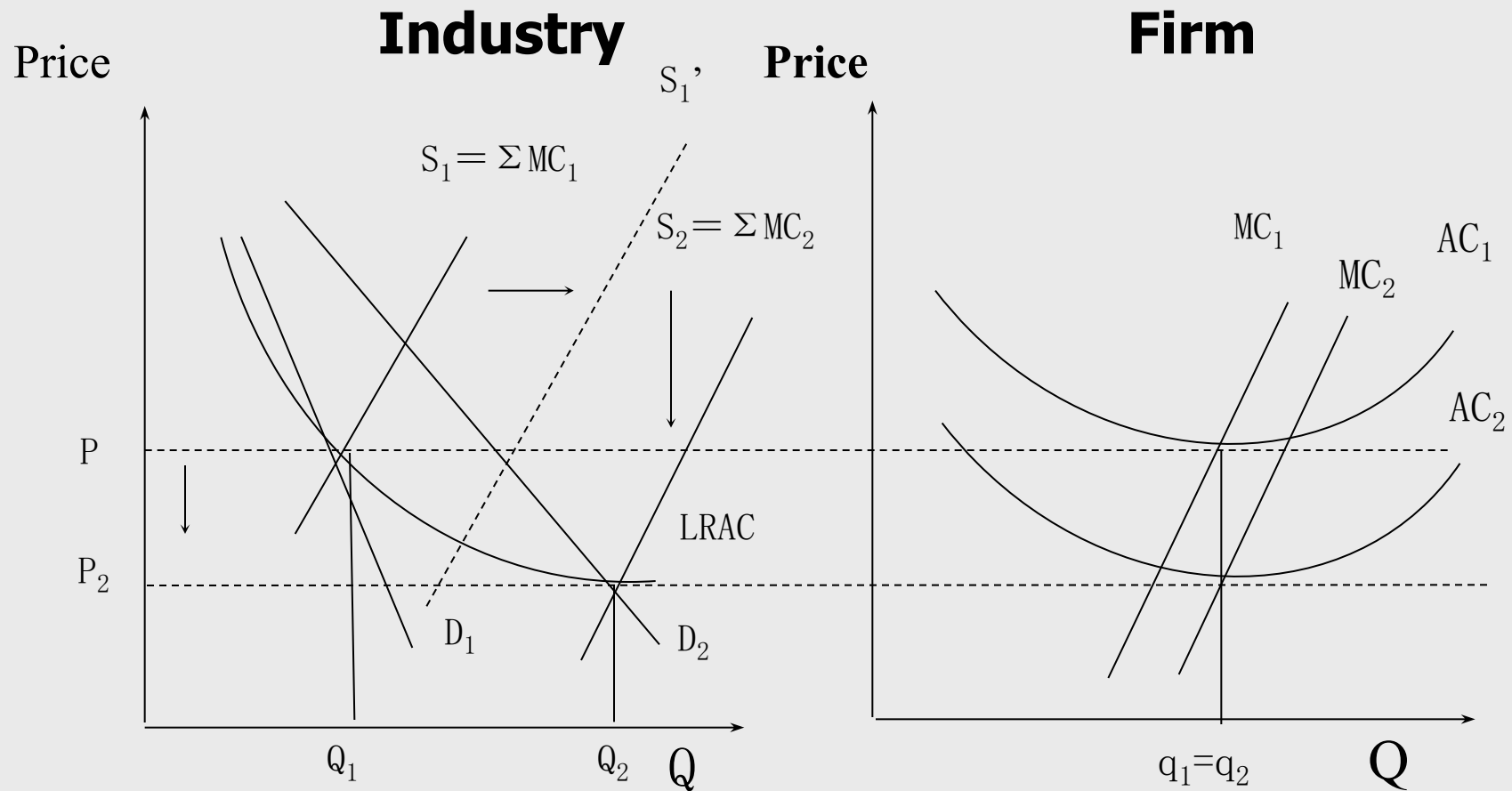
- **劳动力市场共享(labor market pooling)**

- ★ 厂商较少面临劳动力短缺，劳动力也较少面临失业，“行业在一个地区的集中分布为员工跳槽提供了便利”。
- ★ 两家电影制片厂，需要电脑动画专家。如市场需求大，雇佣150人；需求小，雇佣50人。假定技术工人200人。（1）两家公司和200工人都在同一城市；（2）公司和工人平均分布在两个城市。

- **知识外溢(knowledge spillover)**

- ★ 知识的非正式扩散
- ★ “业务中的秘密将不再是秘密，会在人群中流传.....出色的工作能够得到应有的评价；机器、生产流程，以及业务组织上的发明和改进也能够得以迅速论证——如果某人提出一种新的构思，它将被其他人迅速采纳并糅入特任的想法。这就是新构思的源泉”

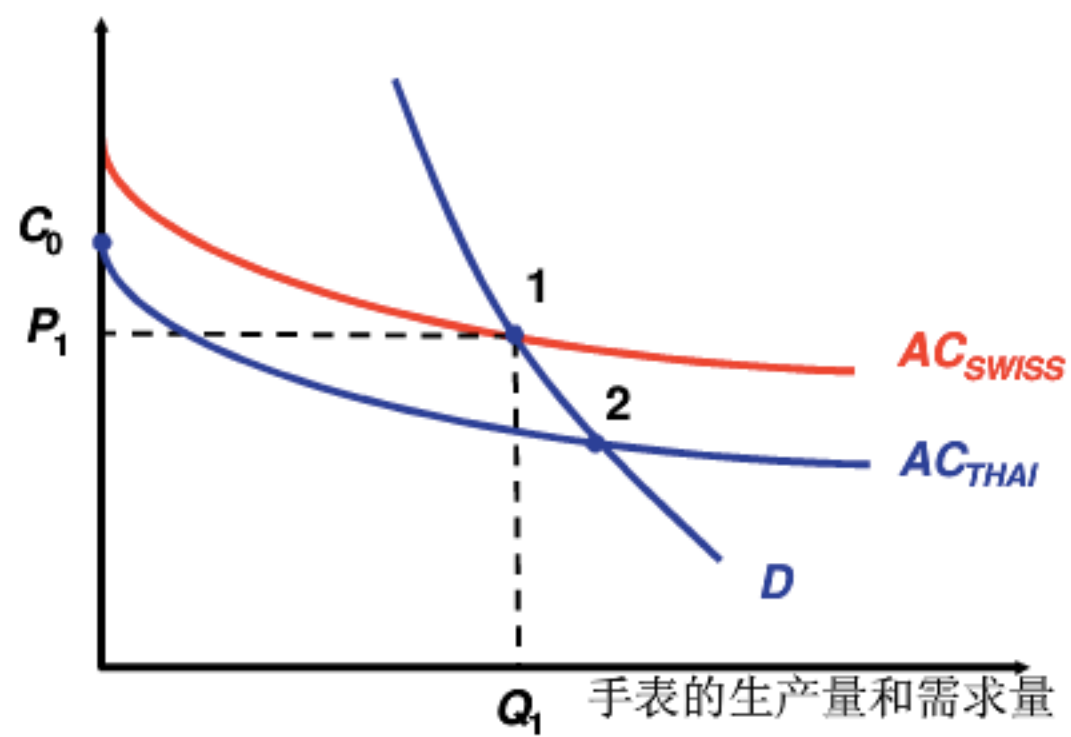
External Economies



External Economies

- **Historical luck** or a **push from government policy** may be important if the first countries to capture export markets become the low-cost producer.
- The production locations and pattern of trade **tend to persist** even if other location are potentially low-cost.

价格, 成本
(每只手表)

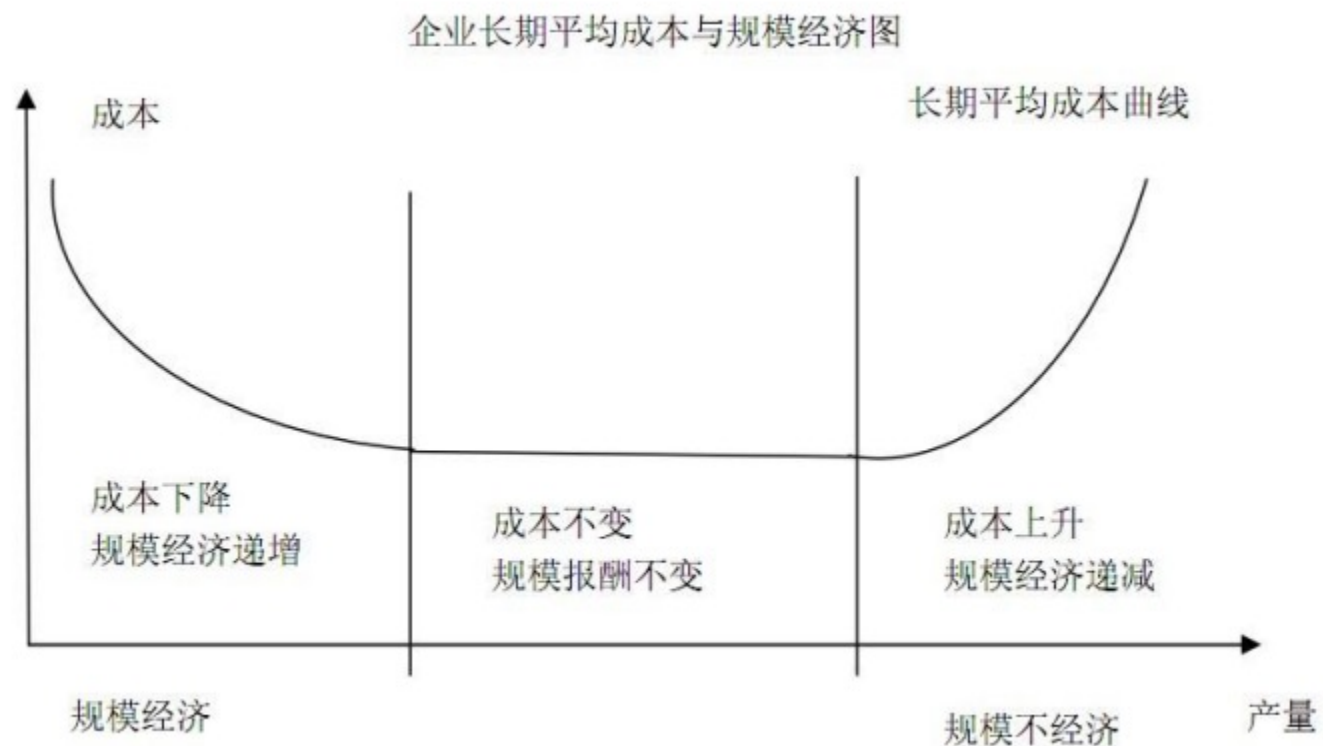


Internal Economics of Scale and International Trade

- **Monopolistic Competition:**

- ✓ Independent
- ✓ Free Entry
- ✓ Differentiated Products

Internal Economics of Scale and International Trade



CASE : 1964年北美汽车贸易协定

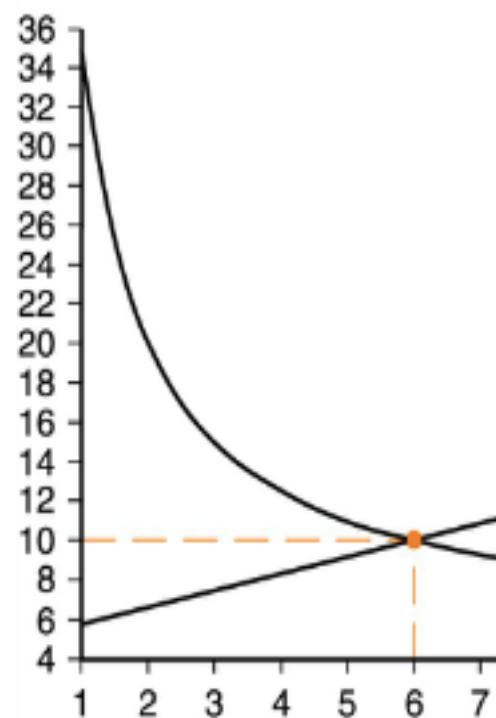
- 1965年以前，加拿大的汽车工业被美国汽车工业的几个大厂商所控制，建立分散的生产体系比支付关税要划算。因此，加拿大的汽车工业实质上是美国汽车工业的缩版，大约为其规模的1/10。
- 小规模带来的种种不利。加拿大的分厂规模小；无法“专一”——集中精力生产单一型号的汽车或配件。不得不生产各种各样不同的产品，以至于工厂不得不经常停产以实现从一个产品项目向另一个的转换，不得不保持较多的库存，不得不采用专业化的机器设备等等。这样加拿大汽车工业的劳动生产率比美国的要低大约30%。

- 这些厂商开始在加拿大各子公司大力削减其产品种类。但加拿大的**总体生产及就业水平并没改变**。加拿大一方面从美国进口自己不再生产的汽车型号，另一方面向美国出口加拿大仍生产的型号。在自由贸易前的1962年，加拿大出口了价值1600万美元的汽车产品然而却进口了5.19亿美元的汽车产品，但是到1968年，这两个数字已分别成为24亿美元和29亿美元。
- 贸易所得是惊人的。到20世纪70年代初，加拿大汽车工业的生产效率已可与美国的同行相媲美。

- 国际贸易可以创造出更大的市场。
- 各国利用规模经济生产有限类别的产品
专业化、规模化带来成本的降低
- 通过国际贸易增加可供消费的商品种类

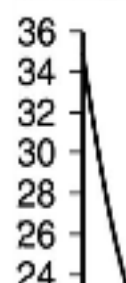
	Home Market, before Trade	Foreign Market, before Trade	Integrated Market, after Trade
Total sales of autos	900,000	1,600,000	2,500,000
Number of firms	6	8	10
Sales per firm	150,000	200,000	250,000
Average cost	10,000	8,750	8,000
Price	10,000	8,750	8,000

Price per auto,
in thousands of dollars

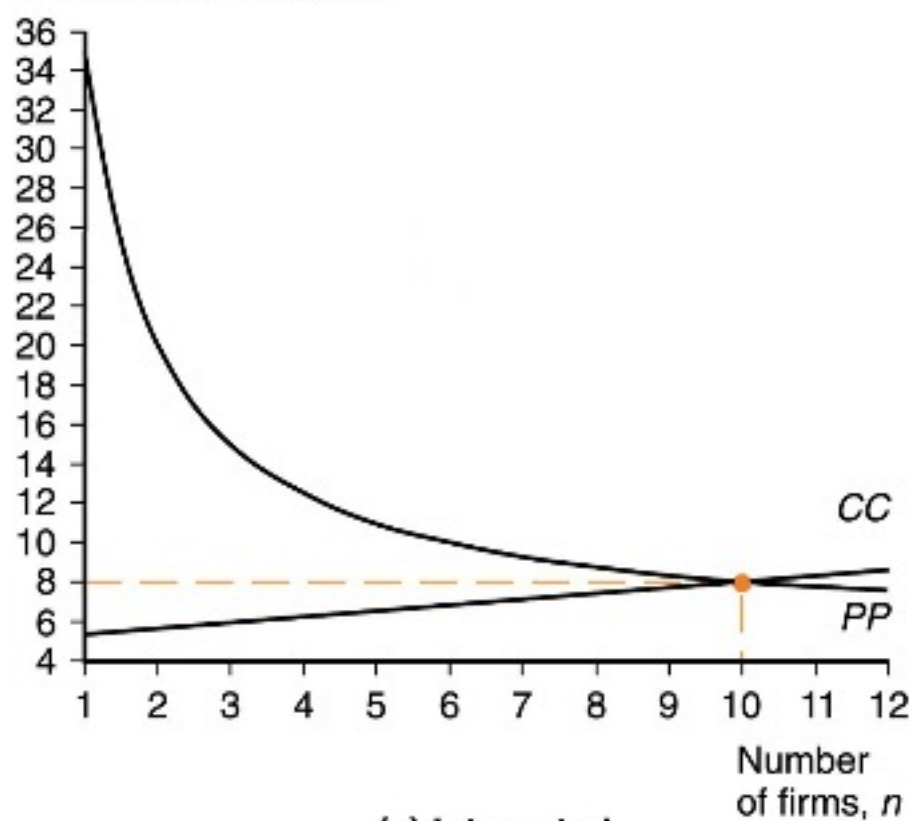


(a) Hom

Price per auto,
in thousands of dollars



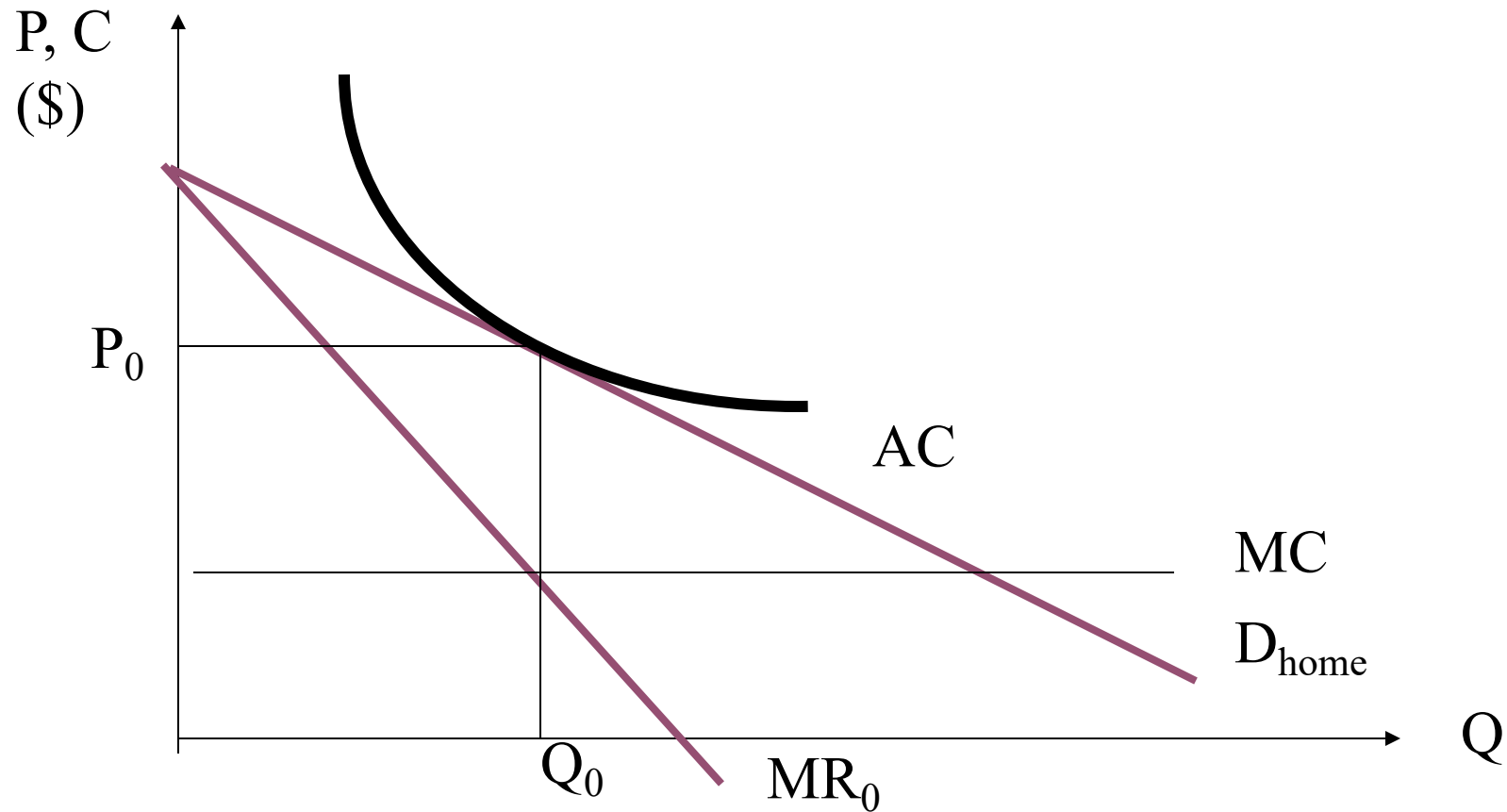
Price per auto,
in thousands of dollars



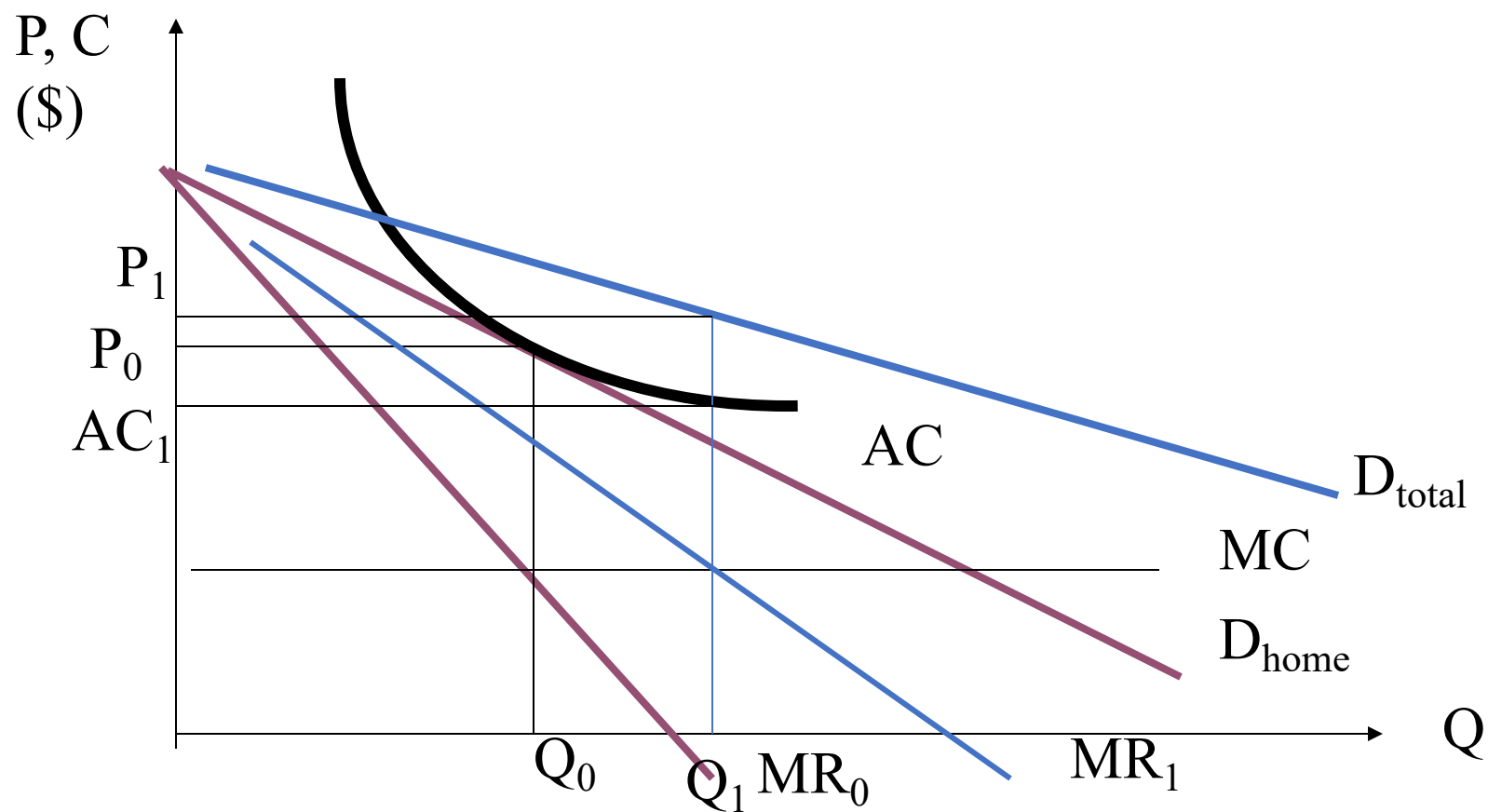
(c) Integrated

Internal Economics of Scale and International Trade

Equilibrium of a Monopolistic Competition Firm with an Internal Economics of Scale

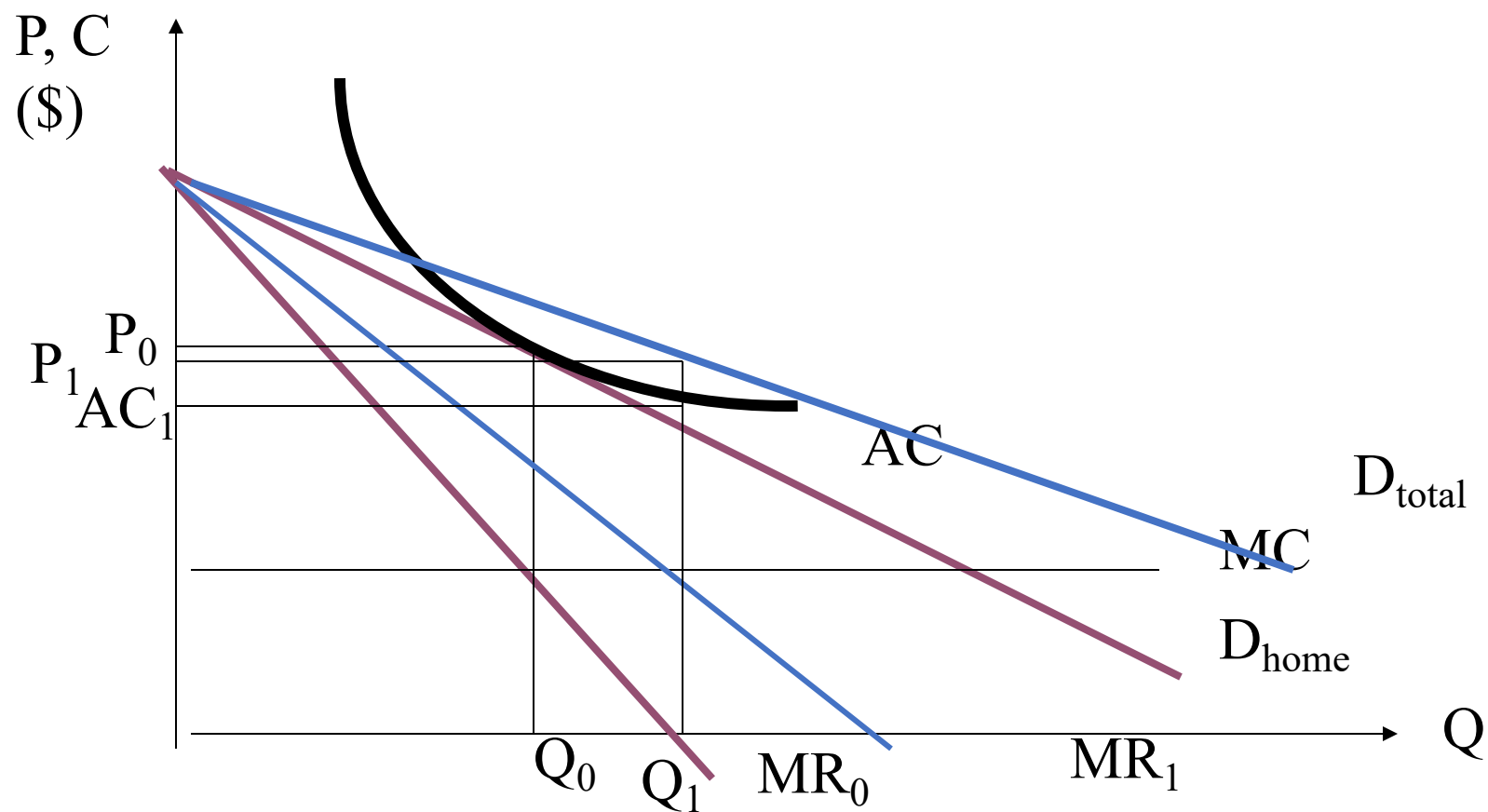


Short-Term Run: $P \uparrow$



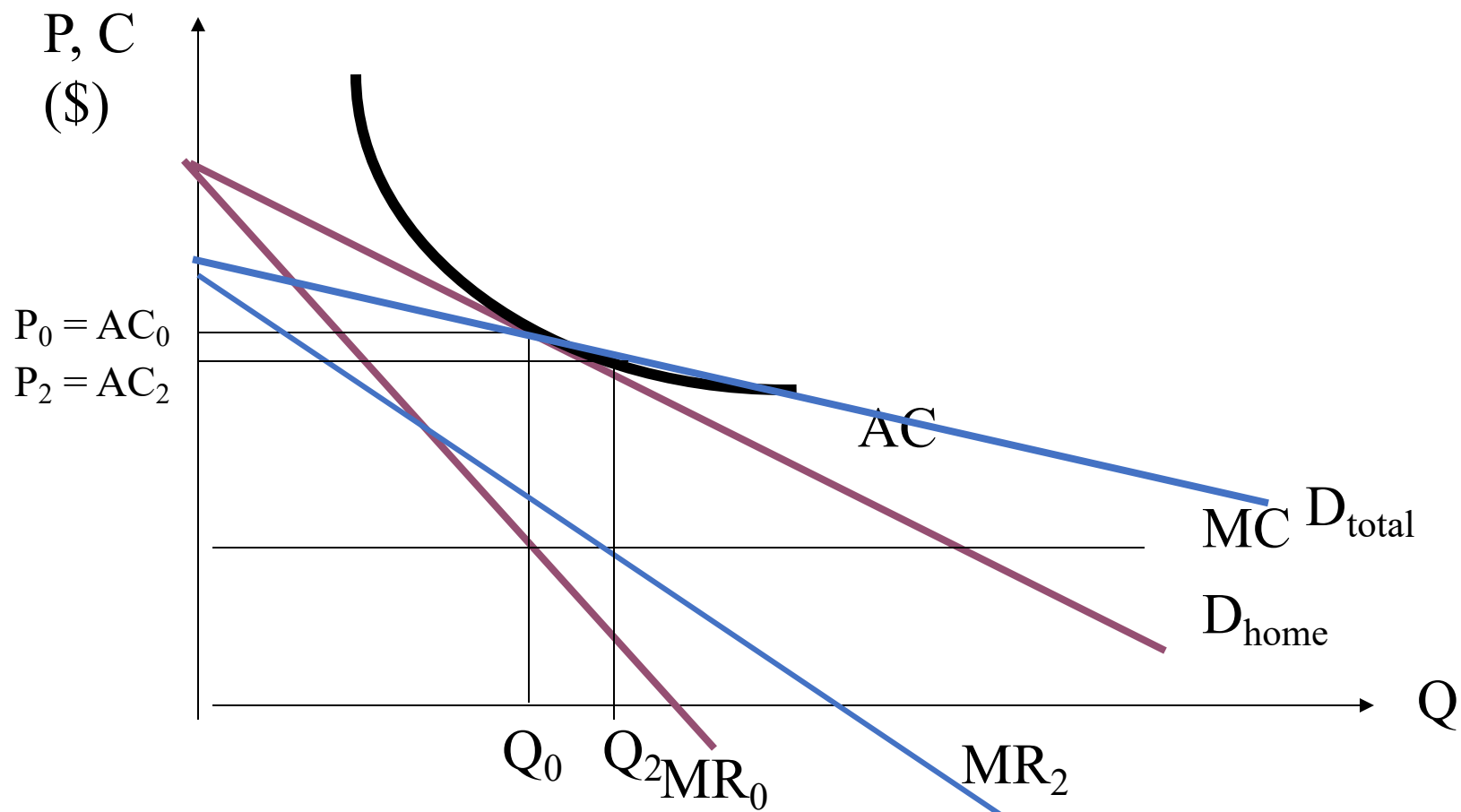
(二) 开放经济中垄断竞争企业的均衡

Short-Term Run: $P \downarrow$



(二) 开放经济中垄断竞争企业的均衡

Long-Term Run



(二) 开放经济中垄断竞争企业的均衡

Monopolistic Competition and Trade

- Basis for Trade:
 - ✓ Scale Economies
 - ✓ Product Differentiation
 - ✓ Comparative Advantage
 - ✓ Differences in International Marketing Capabilities
 - ✓ History of Choice

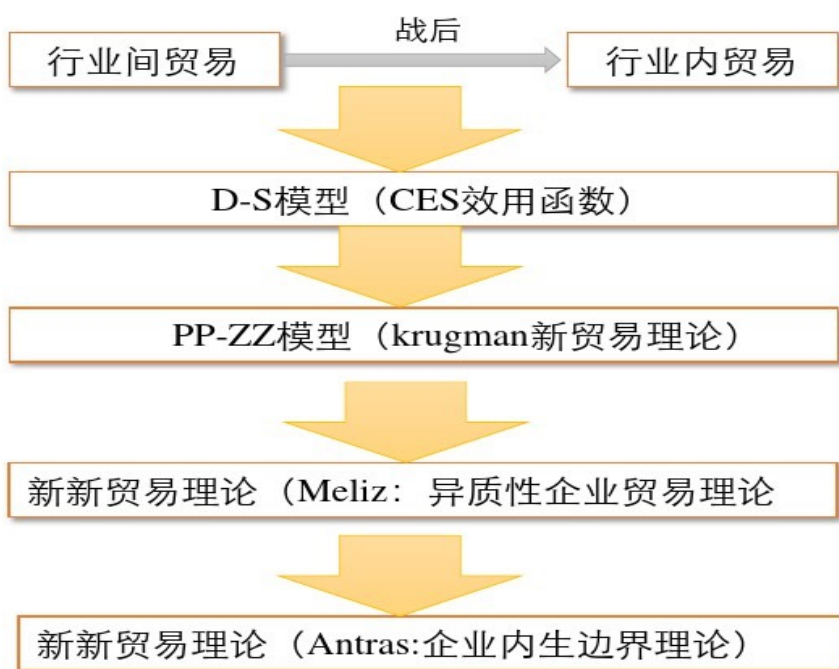
Monopolistic Competition and Trade

- Gains from Trade:
 - ✓ Increase in the number of varieties
 - ✓ Lower the prices of domestic varieties

Monopolistic Competition and Trade

- Insights:
 - ✓ The opening of trade has **little impact on the domestic distribution of factor income** if the trade is intra-industry.
 - ✓ Gains from **greater variety** can offset any losses in factor income resulting from inter-industry shift in production that do occur.

新贸易理论的起源与发展过程



由行业间贸易向行业内贸易发展，给由资源禀赋差异形成的比较优势主导的贸易理论转化为以规模经济来解释国际贸易的新理论提供了研究的背景。

不完全竞争
规模收益
劳动是唯一投入要素
.....

新新贸易理论指出自由贸易可以提高行业生产率水平和社会福利；同时，在不提高单个企业生产率水平的情况下，一国仍然可以通过贸易和开放来提高一个产业甚至全国的生产率水平。

- 研究重点在异质企业上，考虑企业层面异质性来解释更多新的企业层面的贸易现象和投资现象
- 新贸易理论有两个分支，一是Melitz为代表的学者提出的**异质企业贸易模型**，另一个是Antras为代表的学者提出的**企业内生边界模型**
 - 异质企业贸易模型主要解释为什么有的企业会从事出口贸易而有的企业则不从事出口贸易
 - 企业内生边界模型主要解释是什么因素决定了企业会选择公司内贸易、市场交易还是外包形式进行资源配置
 - 二者同时都研究了什么决定了企业会选择以出口方式还是企业直接投资方式进入到海外市场

Melitz模型

- Melitz将厂商异质性引入克鲁格曼的产业内贸易模型中，来解释国际贸易中企业的差异和出口决策行为。
- 模型假定：
 - 1.存在两个对称的国家，各国均有一个生产部门，一种生产要素——劳动L
 - 2.垄断竞争和冰山贸易成本 $t \geq 1$ (任何运输的产品在运输途中都会有部分被损耗掉)
 - 3.存在不变的边际成本和三种固定成本，也就是开发新产品需要支出的成本(支出之后要转化为沉没成本)和两种进入市场的固定成本。

Melitz模型

- 模型根据边际成本或者生产率的差异，将厂商分为出口型厂商(**Export firm**)、国内型厂商(**Domestic Firms**)和非生产型厂商 (**Non-producers**) 三种类型。
- 出口型厂商边际成本最低(生产力最高)，同时在国内外销售；国内型厂商边际成本次之只能在国内市场上销售；非生产型边际成本最高，最后会被驱逐出市场。

Melitz模型

- 贸易自由化通过**选择效应**和**再分配效应**会使整个产业的总生产力水平提高
- **选择效应**：
 - **国内市场选择效应**是指边际成本最高的企业通过竞争被驱逐出市场
 - **出口选择效应**是指边际成本最低的企业进入出口市场
- **再分配效应**：异质企业条件下的贸易自由化带来的市场份额和利润在不同厂商之间的分配

Melitz模型

- Melitz 的模型将异质性企业和行业生产率联系起来，通过微观经济结构解释宏观层面上出口活动在经济增长过程中的作用。
- **存在自然选择的效应**：出口活动增加了预期利润，吸引更多厂商进入，提高了现有厂商生产率的临界值，将生产率最低的厂商驱逐出行业，提高行业平均生产率水平。
- **存在资源配置效应**：高行业平均生产率水平。出口活动促使生产率较高的厂商扩大规模，促使生产率较低的厂商收缩规模，资源从低生产率厂商流向高生产率厂商，这个效应同样提高了行业平均生产率。

深度边际与广度边际

- 贸易摩擦对贸易流量的影响可以分解为深度边际(intensive margins)和广度边际(extensive margins)
- 深度边际是指每个出口商的贸易额
- 广度边际是指所有出口商的数量。
- 在 Melitz 模型中，贸易可变成本的上升对深度边际有相反的两方面的效果。
 - 高的贸易可变成本降低出口商的出口额，这使得总厂商出口量缩减
 - 可变成本的增加意味着一些以前接近出口生产力门槛的厂商在不能生产充分的利润支付固定的出口成本从而不得不退出出口市场

外商直接投资

- Helpman, Melitz和Yeaple(2004)

- 拓展了Melitz模型，考虑了建立海外分公司的决策，即企业以**出口还是FDI**的形式进行国际化。
- Helpman, Melitz和Yeaple(2004)的研究表明企业究竟是选择出口还是FDI是由**企业根据其生产率预先决定的**。
- FDI的固定成本大于出口的成本，虽然FDI没有运输成本，但是固定成本要高得多。企业生产率差异使得企业可以进行自我选择。
- 只有**生产率最高的企业才会成为跨国公司**，**生产率处于中等水平的企业出口**，而**生产率较低的企业只在国内市场销售**。