

Price policies and industrialization strategies Handout #6

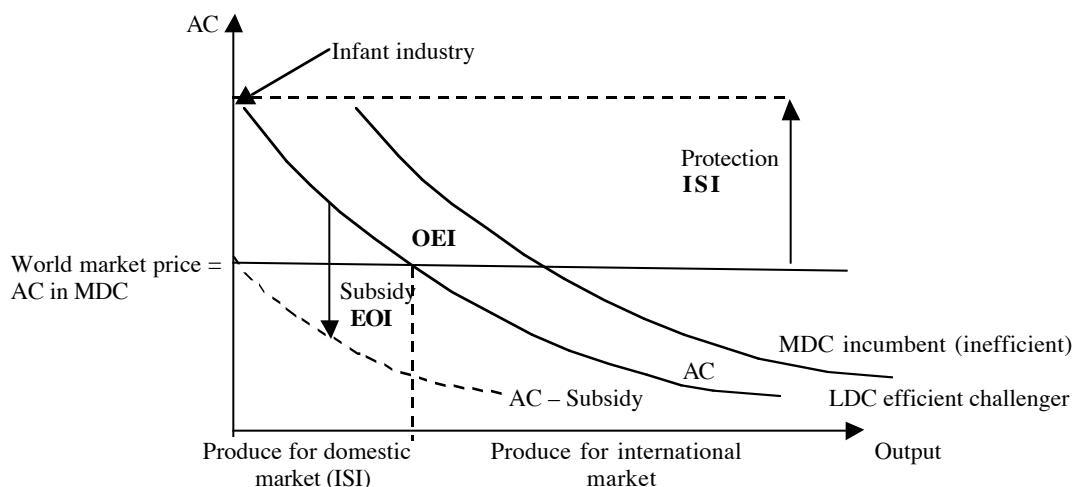
I. Industrialization strategies: ISI (import substitution industrialization) vs. EOI (export oriented industrialization) vs. OEI (open economy industrialization)

ISI: Protect until competitive and then open (ISTE: import substitute then export)

EOI: Open and subsidize until competitive.

OEI: Open, create “investment climate”, and call on FDI.

Economies of scale in production and learning-by-doing: what can an efficient challenger do?



II. Import Substitution Industrialization (ISI)

1st phase of ISI: protect finished products (consumer goods)

2d phase of ISI: protect intermediate and capital goods

1. Why protect? Arguments for protection

1850s-1930s: Liberal period, open economy models. LDC primary export-led growth strategy (ag., mines) against imports of manufactures from MDC.

1930s-1970s: Depression and WWII, collapse of open-economy model, ISI strategy in East Asia and Latin America.

Arguments: Infant industry: economies of scale, learning-by-doing, entry costs.

New entrants, infant industries can be more efficient than MDC incumbent, but cannot enter: need temporary protection to achieve competitiveness.

2. ISI is a strategy that can fail

- Recall definition of tradable (T) vs. non-tradable (NT) goods:

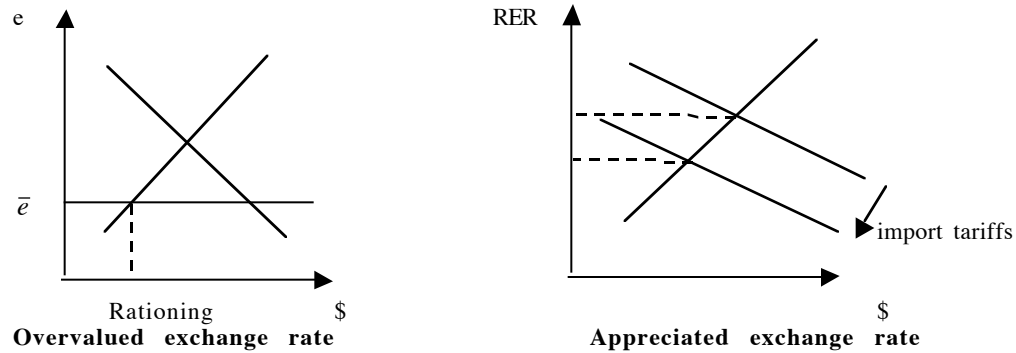
T have their price set by the international market:

$$P_T = eP^S (1 \pm t)$$

Non-tradables have their price set by supply equal demand on the domestic market.

(Note: A commodity traded with an import or an export quota is a non-tradable since the price is set by equilibrium between supply and demand.)

- Recall definition of overvalued nominal exchange rate and appreciated real exchange rate:



- **Instruments for ISI:** import tariffs, import quotas, overvalued exchange rate (fixed exchange rate \bar{e} below equilibrium) and foreign exchange rationing (appreciated real exchange rate).

- **Short run impact:** raises prices of tradables, creates inefficiencies through protection, redistributes income from consumers to producers, produce for domestic market to substitute for imports.

Bias against agriculture: industry protected but not agriculture: high industrial input costs; overvalued exchange rate: low prices for tradables (ag goods).

Bias against employment: imported capital goods cheap through overvalued exchange rate.

Protected industries: $p_T = \bar{e}p^{\$}(1 + t_M)$ increases if tariff large enough to compensate for low \bar{e} .

Unprotected industries: $p_T = \bar{e}p^{\$}$ falls due to low \bar{e} (anti-agriculture, anti-employment).

- **Long run impact:** AC falls, can decrease protection, ISTE.
- **ISI can fail:**
- (i) If AC does not fall: no competitive pressures (as no foreign competition, domestic monopolies), domestic market too small (insufficient opportunities for economies of scale).
- (ii) If protection is not removed: successful lobbying and rent seeking by entrepreneurs and workers in protected industries not to remove protection. Political pressures for protection are high if: industry is concentrated; small entrepreneurial class; limited democratic checks by farmers and consumers; strong organized labor in formal sector. Conditions for success: needs good/strong/credible governance.
- (iii) Needs large domestic market: large countries, income redistribution (e.g., land reform)

III. Price policy

1. Definitions

$p^{\$}$ = international market price in foreign currency (\$)

p^b = border price in local currency units (LCU)

p^d = domestic price

e = nominal exchange rate in LCU/\$.

Let $p^d = p^b(1 + t)$, $p^b = ep^{\$}$
 $t = t_M$ = import tariff rate
 $t = -t_E$ = export tax rate
 $t = s$ = domestic subsidy (+) or tax (-) rate

<u>Domestic price</u>	<u>Trade policy</u>	<u>Border price</u>	<u>Exchange rate policy</u>	<u>World market price</u>
$p^d = p^b(1 + t_M)$	t_M	$p^b = ep^{\$}$	Border Nominal e	$p^{\$}$

Example India:

$$400 * 1.3 = 520$$

$$t_M = 0.3$$

$$4 * 100 = 400$$

$$e = 4 \text{ RS}/\$$$

$$100\$/\text{MT}$$

How important are tariffs? (1999)

NPC	Agriculture	Industry
United States	5.5	3.8
European Union	10.5	4.1
Japan	11.7	3.6
Australia	3.3	10.6
Korea	62.2	11.4
Argentina	32.8	30.6
Indonesia	47.2	38.6
Bangladesh	83.8	83.5

2. Indicators of protection

(1) Nominal protection coefficient = NPC

$$NPC = \frac{p^d}{p^b} = \frac{p^b(1+t)}{p^b} = 1+t.$$

If $NPC > 1$, producers are protected, consumers (users) are disprotected.

If $NPC < 1$, producers are disprotected, consumers (users) are protected.

(2) Nominal rate of protection = NRP

$$NRP = \frac{p^d}{p^b} - 1 = t, \text{ tariff rate.}$$

If $NRP > 0$, producers are protected, consumers (users) are disprotected.

If $NRP < 0$, producers are disprotected, consumers (users) are protected.

(3) Effective protection coefficient = EPC

Define:

p = price = unit value of output.

c = cost of intermediate goods used in production per unit of output.

VA = value added = cost of primary factors such as labor, land, and financial capital per unit of output

$p = c + VA$. Hence: $VA = p - c$.

$$EPC = \frac{VA^d}{VA^b} = \frac{p^d - c^d}{p^b - c^b}.$$

If $EPC > 1$, producers are protected, consumers (users) are disprotected.

If $EPC < 1$, producers are disprotected, consumers (users) are protected.

(4) Effective rate of protection = ERP

$$ERP = \frac{VA^d}{VA^b} - 1$$

If $ERP > 0$, producers are protected, consumers (users) are disprotected.

If $ERP < 0$, producers are disprotected, consumers (users) are protected.

Note: Effective protection a better measure than nominal protection since product may be protected but inputs also protected, in which case effective protection is less than nominal protection. But calculation of value added needs characterization of technology, and is hence more difficult to do.

Example:

		Free trade	Product protection	Product and factor protection
Trade policy	t_M product	0	10%	10%
	t_M intermediate inputs	0	0	20%
Costs and prices	Intermediate costs	300	300	360 (+20%)
	Value added	200	250	190
	Product price p^d	500	550 (+10%)	550 (+10%)
Protection	NPC	1	1.1 (10%)	1.1 (10%)
	EPC	1	1.25 (25%)	0.95 (-5%)

(5) Real protection: combine trade and exchange rate protection

Calculating the border price at the equilibrium exchange rate e^* , the NPC and NRP become the real protection coefficient (RPC) and the real rate of protection (RRP).

Let: SCF (standard conversion factor) = e/e^* , the ratio of the official to the equilibrium exchange rate.

Then:

$$RPC = \frac{p^d}{p^{b*}} = \frac{p^d}{e^* p^s} = \frac{p^d}{\frac{e}{e^*} e p^s} = \left(\frac{e}{e^*} \right) \left(\frac{p^d}{p^b} \right) = SCF * NPC.$$

If the exchange rate is overvalued, $e < e^*$, $p^b < p^{b*}$, $SCF < 1$, $NPC > RPC$, and NPC overestimates RPC .

Calculate similarly the real EPC .

Example: Ivory Coast, late 1980s

Export crops taxed: export tax on cocoa 44%, coffee 61%

Import substitute food crops protected: import tariff on rice 12%

Import tariff on tractors and fuel

Import subsidy to fertilizers

Overvalued exchange rate (CFA): $e/e^* < 1$ (= 0.6)

	NPC	EPC	REPC
Cocoa	0.56	0.48	0.29
Coffee	0.39	0.34	0.25
Cotton			
Manual	.99	.70	.51
Tractor	.99	.58	.39
Rice (irrigated)			
Manual	1.12	1.56	1.37
Mechanized	1.12	1.50	1.50
Maize			
Manual	.61	.54	.35
Mechanized	.61	.20	.01

(6) Producer and consumer subsidy equivalents (PSE and CSE): used by WTO

These indicators correct the NRP for input subsidies received (s) and for indirect taxes paid (t) by a particular producer or consumer group (h). They offer simpler measures of incentives to produce and consume than ERP by avoiding the difficulty of measuring value added:

$$PSE_h = \frac{p_h^d + s_h - p^b - t_h}{p^b}, \quad CSE_h = \frac{p^b + s_h - p_h^d - t_h}{p^b}$$

(7) Direct, indirect, and total nominal protection rates for agricultural commodities (Krueger, Schiff, and Valdés)

Instead of using product prices (p_i), use the terms of trade p_i/p_{NA} , where p_{NA} is a price index of non-agricultural goods. Rewrite the real rate of protection $RRP = \frac{p^d}{p^{b*}} - 1$ in terms of relative prices to obtain the real rate of relative protection, $RRRP$:

$$RRRP = \frac{p^d/p_{NA}^d}{p^{b*}/p_{NA}^{b*}} - 1.$$

In this equation, p^d/p_{NA}^d is the relative producer price with distortions, p^{b*}/p_{NA}^{b*} is the relative border price measured at the equilibrium exchange rate e^* and without any trade distortion.

This can be rewritten as:

$$RRP = \left(\frac{p^d/p_{NA}^d - p^b/p_{NA}^d}{p^{b*}/p_{NA}^{b*}} \right) + \left(\frac{p^b/p_{NA}^d}{p^{b*}/p_{NA}^{b*}} - 1 \right)$$

In this decomposition, the first term is only function of trade policies on the product, and thus measures the direct price interventions. The second term can be written as:

$$\frac{p^b}{p^{b*}} \frac{p_{NA}^{b*}}{p_{NA}^d} = \frac{e}{e^*} \frac{p_{NA}^{b*}}{p_{NA}^d}$$

which shows that it is function of the exchange rate disequilibrium (SFC) and of industrial protectionism, i.e., of indirect price interventions. Exchange rate overvaluation ($e/e^* < 1$) and industrial protectionism ($p_{NA}^{b*}/p_{NA}^d < 1$) both contribute to making this last term negative.

Example: Krueger, Schiff, and Valdes, 1988

Exported agricultural commodities:	
Average direct protection:	- 11% (export tax)
Average indirect protection:	- 29%
Average total protection:	- 40%
Imported food products	
Average direct protection:	+ 21% (import tariff)
Average indirect protection:	- 27%
Average total protection:	- 6%

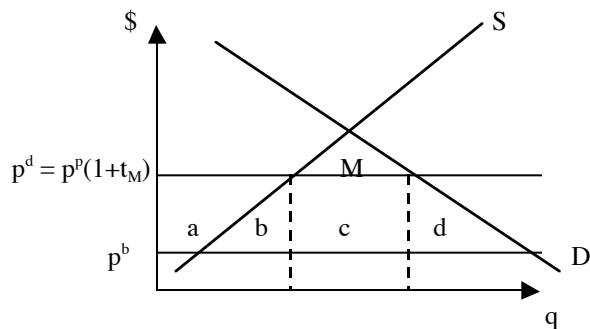
Recent period Latin America: continued disprotection through indirect effects

- Trade liberalization
- Appreciation of the RER due to large capital inflows

3. Who gains and who loses from protection? Partial equilibrium of price distortions

Recall definitions of consumer surplus (CS) and producer surplus (PS)

i) Import tariffs



Δ = change in

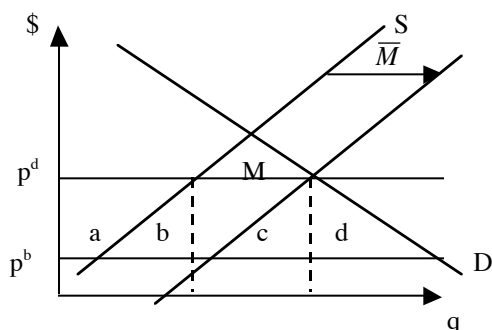
$$\Delta CS = -a - b - c - d$$

$$\Delta PS = a$$

$$\Delta B \text{ (Gvt budget)} = c$$

$$\text{NSG (net social gain)} = -b - d$$

ii) Quantity restrictions (QR): import quotas



$$\Delta CS = -a - b - c - d$$

$$\Delta PS = a$$

$$\Delta \text{ importers' rent} = c$$

$$\text{NSG} = -b - d$$

If auction of \bar{M} : $DB = c$

Example: U.S. sugar quotas

Production = 6.3 million tons

Import quotas = 2.1 million tons (25% of domestic supply)

$p^d = 466$ \$/ton

$p^b = 280$ \$/ton

Implicit tariff = NPC equivalent = 1.66 (66% nominal protection)

DPS = \$1066 million for 12,000 workers = \$90,000 per job

DCS = -\$1647 million for 275 million consumers = \$6 per consumer

Rent to foreigners (Voluntary Export Restraint (VER)) = \$396 million

Efficiency loss = \$185 million

Conclusion: large distributive gains for producers (workers), small cost per capita for consumers, small efficiency loss relative to distributional effects.

iii) Advantages of tariffs over quantity restrictions: tariffication (WTO, NAFTA)

Rent goes to government (c)

Easier to administer

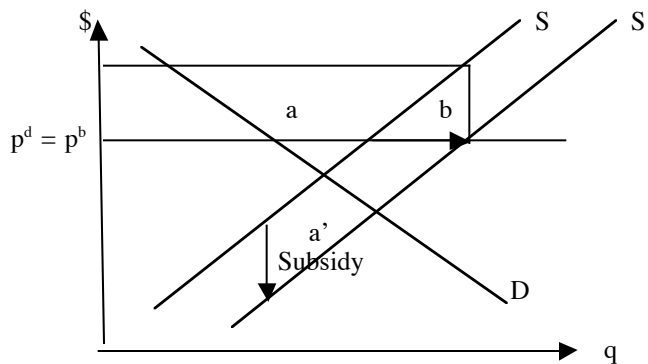
Use uniform tariffs on protected sectors: easy signal (more transparent), easier to resist rent seeking.

iv) Example: cost of protection per job in the U.S.

Sector	Tariff (%)	Consumer cost per job (\$)	Consumer cost per capita (\$)
Ceramic tiles	19	401,000	0.5
Frozen concentrate OJ	30	57,000	1.02
Women shoes	10	102,000	1.37

IV. Export Oriented Industrialization (EOI)

- Selective incentives to firms, not laissez-faire: active role of the state.
- Government support to private investment, “**pick the winners**” among competing firms with potential to become exporters: Credit subsidies, tax incentives, duty free imports of inputs and capital goods, training, infrastructure, production targets for selected industries, monthly checks on decline in costs, trade missions to promote exports.
- International prices at equilibrium exchange rate: no price distortions.



$$\begin{aligned} \Delta CS &= 0 \\ \Delta PS &= a' (=a) \\ \underline{\Delta B} &= -a - b \text{ (cost of subsidy)} \\ NSG &= -b \end{aligned}$$

EOI: export subsidy

Advantages of subsidy:

- NSL = b < NSL with tariff or quota (no impact on domestic price)
- Better targeting than tariff: subsidy per firm conditional on performance

But need:

- Budget for subsidies and credit** (vs. ISI that creates government revenues): costly, but less incentives to excessive subsidies; less possibilities to surrender to rent seeking for continued protection.
- Good, non-venal bureaucracy** needed for information and monitoring of firms; for credibility of rules (but dangers of cronyism).
- Need be able to **enter the world market** under subsidies from the beginning, especially if small domestic markets (trade missions, quality standards, etc.).

V. Open Economy Industrialization (OEI)

Open economy and equilibrium exchange rate: no price distortions, no subsidies. Hence, correspond to WTO/IMF recommendations.

Key role of financial sector liberalization to attract FDI, FPI

FDI will bring modern, low AC technology directly competitive on the world market (Mauritius, China).

Need:

Good “investment climate”: stability, law and order, property rights, commitment to open trade regime (role of WTO membership as commitment device).

Stable e and free movement of capital.

Public investments complementary to FDI: infrastructure, education.

Skilled reliable labor force, flexible labor market.

But: (Dani Rodrik critique, <http://ksghome.harvard.edu/~drodrik.academic.ksg/papers.html>)

- **Trade liberalization** less important than **domestic institutional development** for growth and development
Hence, **domestic development strategy** is more important than a **global integration strategy**.
- Observe that there is no clear empirical relation between trade liberalization and subsequent economic growth!
Suggests reverse causality: growth raises GDPpc and leads to trade liberalization!
- **Global integration strategy:** WTO rules, IMF conditions, Washington Consensus principles:
 - Open economy: market access, foreign competition.
 - Financial market liberalization: attract FDI, FPI
 - Privatizations
 - TRIPS to protect intellectual property rights
 - Conformity to external rules: WTO
- **Domestic development strategy: key elements**
 - Financial regulation.
 - Legal and administrative reforms: rule of law, enforcement of contracts.
 - Labor market flexibility.
 - Social safety nets.
 - Education and health.
 - Industrial policy, promotion of domestic investors, linkages with FDI firms.
 - Country specific institutional innovations. Examples of idiosyncratic institutional innovations that worked:
 - Public enterprises in Meiji Japan.
 - Township and community enterprises in China.
 - Export processing zones in Mauritius, maquilas in Taiwan.
 - Tax incentives and industrial parks in South Korea.
 - Infant industry protection in Brazil 1960s and 1970s (ISI worked!).
- **Reality of OEI different from dogma:**
China, Mauritius use combination of state regulation and limited, slow pace, gradual market liberalization.
Hence key is:
 - Local institutional innovations, not external recipes and dogmas.
 - Domestic growth and development strategy.
 - Sequence: ISI → OEI Latin America
 - ISI → EOI → OEI Asia