

# GOVERNMENT INTERVENTION

## I. STIGLITZ' 5 REASONS FOR GOVT INTERVENTION IN LDC AG

### A. Incomplete markets in insurance and credit

- Limited access to credit due to:
  - Inadequate collateral,
  - Supply of funds constraints
  - High interest rates
- Cannot access **insurance** against big output and price risks
- Examples
  - Gov't may subsidize inputs to lessen the need for credit
  - Price policies may seek to lessen price risk, stabilize prices (but may destabilize incomes)

### B. Public goods and increasing returns

- Examples: Dams for irrigation, roads, marketing facilities
- Once dam is built, marginal cost of water is very low ⇒ **non-rival**
- Monitoring water use is very difficult ⇒ **non-excludable**
- **Natural monopolies** due to economies of scale

### C. Imperfect information

- Examples: **extension, market information**
- Information may be a **public good**, though not always if access is differential
- Even if access to information is differential, positive externalities may justify information dissemination by gov't

### D. Positive externalities

- Adoption of innovations generates information for neighbors
- This **motivates input subsidies** to facilitate adoption

### E. Income distributional goals

- Given an initial distribution (endowment) of assets, the distribution of income generated by markets may not dovetail with society's ethical judgements
- In particular, incomes or food supply may be "too low"

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**THIS MOTIVATES FOOD SUBSIDIES (FOR URBAN POOR),  
PROGRAMS TO ↑ SMALL FARMER INCOMES (RURAL POOR)**  
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## II. GOV'T FAILURE VERSUS MARKET FAILURE (STIGLITZ)

- A-E above represent potential rationales for gov't intervention
- BUT ... there is no guarantee that gov't can and will be successful in correcting market failures A – E.

**IN FACT, GOVERNMENTS CAN AND DO MAKE THINGS WORSE!**

### Examples

1. **Price stabilization** schemes may actually increase income risk  
[if  $\text{cov}(p,q) < 0$ ]
2. **Programs targeted at small farmers** (e.g., subsidized credit) that actually benefit large farmers
3. **Input subsidies in the presence of output taxes**
  - If subsidies are uniform across all inputs, then the same **compensatory** effect could be achieved (at **lower transactions costs**) by simply lowering the effective output tax
  - In reality, **subsidies are never uniform** across all inputs (couldn't be, since inputs like management are under the radar), so subsidies invariably **add to the distortion "load."**

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**THE FACT THAT MARKETS FACE PROBLEMS ONLY IDENTIFIES  
POTENTIAL ROLES FOR GOVERNMENT INTERVENTION.**

**THERE ARE NO GUARANTEES OF SUCCESS**

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### III. PRICE POLICY

#### A. Motivation

Government can (and does) play an important role in fostering **institutional changes** to promote agricultural development via:

- Land tenure reform/property rights establishment
- Development of (rural) credit institutions
- Extension system (more generally, information dissemination)
- Agricultural research
- Marketing infrastructure (roads, grading, inspections, procurement, communication)

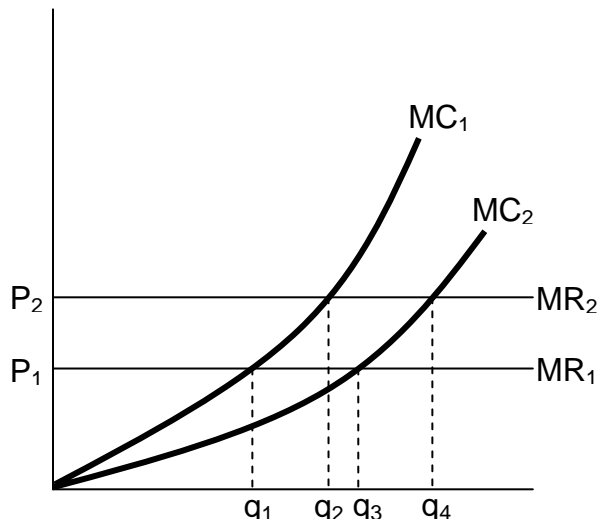
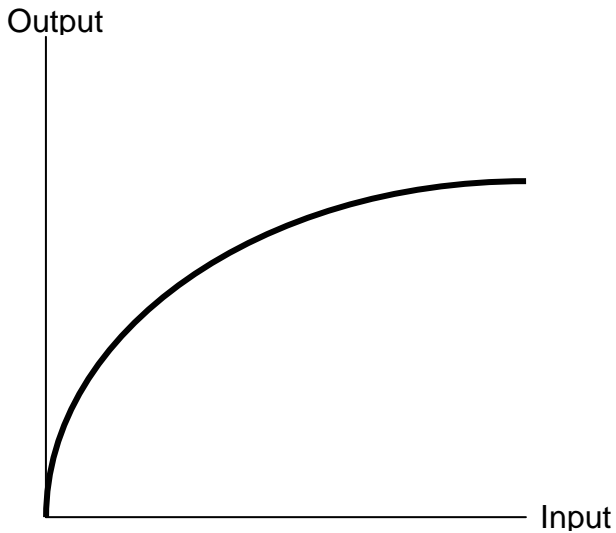
**\*THESE ACTIVITIES TAKE A LONG TIME TO COME TO FRUITION\***

- Price policy/setting of rural producer and (urban) consumer prices is one area that government can have an **immediate impact**.
- While taxes may be distortionary, governments have limited instruments available to them

#### B. Role of agricultural prices

1.  $Q = f(\mathbf{P}_F, \dots)$                       Output/market surplus
2.  $Y = \mathbf{P}Q + wL \dots$                       Farm incomes
3.  $P^* = f(\mathbf{P}_F, \dots)$                       Urban cost of living ( $\omega_{\text{food}} = .5$  common)
4.  $G = \sum \tau_i \mathbf{P}_i$                       Gov't revenue: implicit taxation of producers via marketing boards

## OBSERVATIONAL EQUIVALENCE OF PRICE POLICY AND TECHNOLOGICAL CHANGE



- Quantity changes can be effected either by reducing marginal costs via technical change (i.e., shift from  $q_1$  to  $q_3$ ) or by increasing the output price from  $P_1$  to  $P_2$  (i.e., shift from  $q_1$  to  $q_2$ ) or both (shift from  $q_1$  to  $q_4$ )
- Input subsidies can have same qualitative effect.

- **A Common Difference between LDC's and DC's (not always!)**

LDC: urban consumers more effective lobby  $\Rightarrow P_{\text{food}} \downarrow, P_{\text{Producer}} \downarrow$

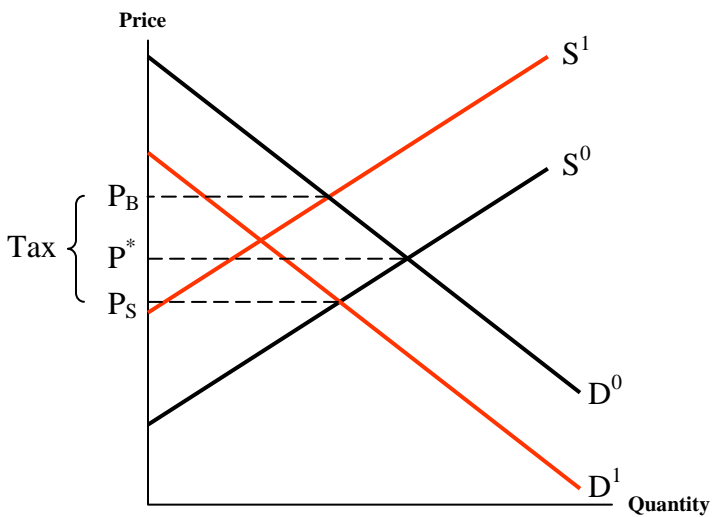
DC: Farm lobby more effective  $\Rightarrow P_{\text{FARM}} \uparrow$

Some countries try to do both ( $P_{\text{food}} \downarrow, P_{\text{Producer}} \uparrow$ ) – e.g., Japan, S. Korea, Mexico, but at high fiscal cost (and opportunity cost)

### C. Three General Principles of Taxation

#### 1. Irrelevance of who pays

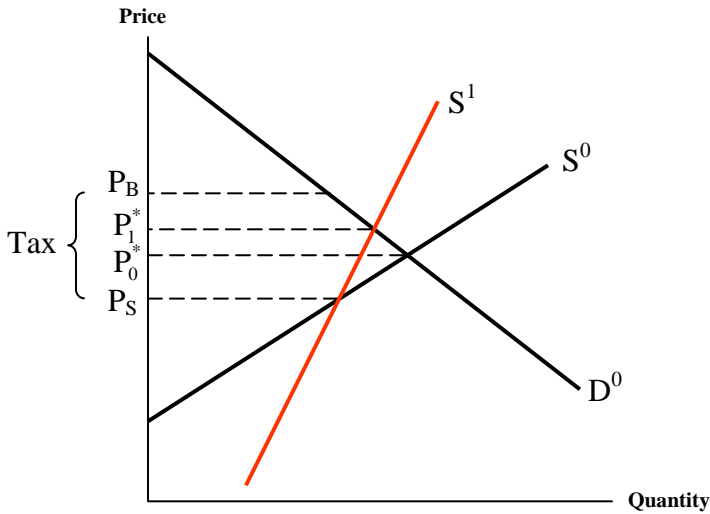
- $P_{\text{BUYER}} = P_{\text{SELLER}} + \text{tax}$
- Tax is a **wedge** between the supply and demand curves (“T” in graph)



- Tax can be graphed as a shift in the supply curve ( $S_0 \rightarrow S_1$ ) or a demand shift ( $D_0 \rightarrow D_1$ )

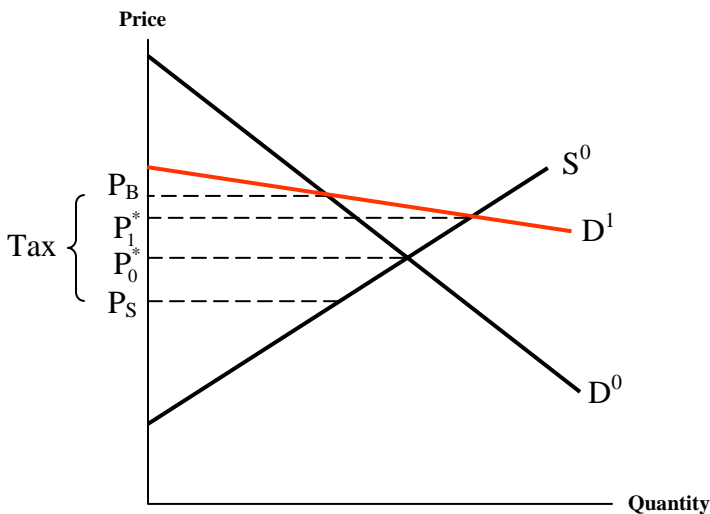
## 2. Incidence

- Buyers' price is raised more the more inelastic is his demand.
- Sellers' price is raised more the more inelastic is his supply.

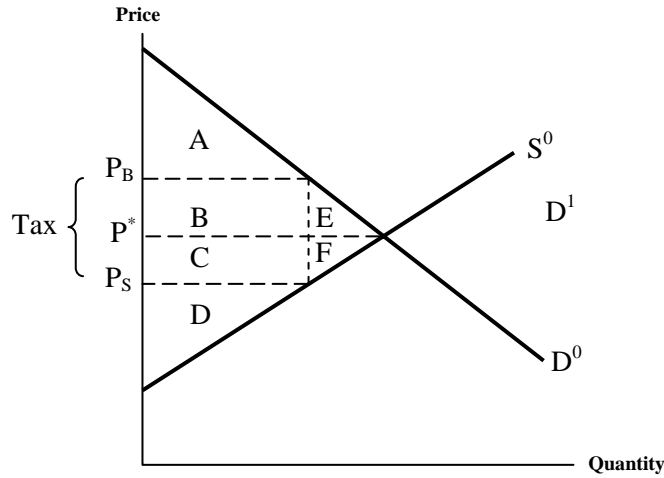


Note: Tax (T) is the same, only the slope of the supply curve differs

- Here  $P_S - P_1^* > P_S - P_0^* \Rightarrow$  adverse effect on producers is greater when supply is more inelastic.
- **Heuristic explanation: Inelastic supply or demand means few alternatives.** The less alternatives, the more likely the agent will suffer (bear greater burden)



### 3. Welfare (Deadweight) Loss



	CS	PS	Gov't
Old	A+B+E	C+D+F	0
New	A	D	B+C
Net Chg.	-B-E	-C-F	B+C

$$\Delta CS = -B - E$$

$$\Delta PS = -C - F$$

$$\Delta G = +B + C$$

$$DWL = -E - F$$

**Welfare cost (DWL) =  $\frac{1}{2} \times T \times \Delta q$**

- For a given tax (wedge), DWL depends on  $\Delta q$
- The more inelastic is supply (or demand), the smaller is DWL [**Show by increasing slope of S or D**]

**KEY TRADEOFF: Smaller DWL (less social inefficiency) when goods w/ inelastic demand or supply are taxed. But taxing inelastic suppliers/demanders has the most significant distributional consequences (they bear bulk of tax burden).**



## INCENTIVE EFFECTS OF TAXES AND SUBSIDIES

Taxes and subsidies affect **(a) allocation of resources** and **(b) effort**

### A. Agricultural Taxation Mechanisms

1. Direct output taxes (e.g. export taxes)
2. State marketing boards that **set producer prices** (among other things)
  - Administered prices imply **per unit output taxes** that affect marginal decisions
3. Land taxes (preferred in theory)
  - They don't alter marginal conditions, maintain identical (first-best) incentives to producers.
  - Practically impossible to administer due to land quality differences.
  - In practice they'd be administered based on output which gets you back to the same distortionary marginal effects (a la sharecropping)

### B. Multiple Crops

*Tax all crops at the same rate? If not, which should be taxed more heavily?*

- From efficiency perspective, taxing the most **inelastically supplied** commodities minimizes DWL
- From an incentives perspective, this imposes larger relative burden on producers

## C. Subsidies

1. Some countries attempt to mitigate disincentive effects of output taxes by subsidizing inputs (“**compensatory subsidization**”)
  - This is inevitably distortionary (i.e., undesirable) unless **all** inputs are subsidized equally (equivalent to a lower tax rate).

### Intuition

- Subsidizing and taxing simultaneously is transactionally inefficient
  - Subsidy distorts input choices and raises revenue requirements (and hence taxes).
2. **Differential subsidies** (on only some inputs) inevitably leads to inefficiency in choice of technique  $\Rightarrow$  **production inefficiency**

## D. Exchange Rates

- **Exchange rate:** (units of local currency)/(unit of foreign currency)
- Exchange rates often set by LDC governments rather than by forces of supply and demand in currency market.
- Where XR’s are fixed, they alter the **structure of incentives** facing consumers and producers.

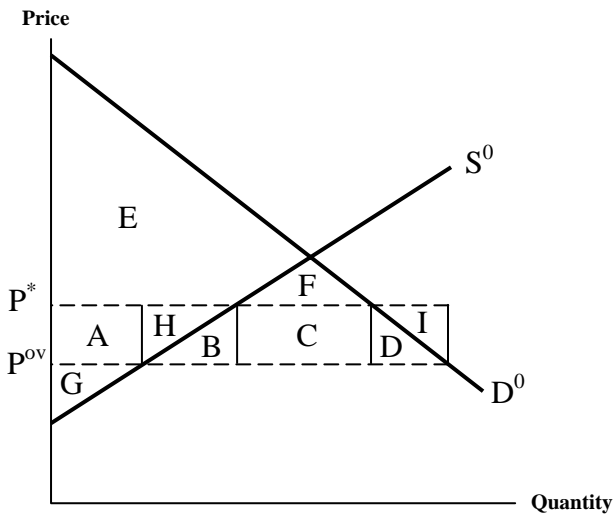
## Effect of overvalued exchange rate

1. Exporters receive **less** than they “should”
2. Importers pay **less** than they “should”

⇒ Overvalued XR promotes trade deficits, **taxes** producers of tradables (especially exporters)

⇒ Overvalued XR makes **foreign products more competitive**

⇒ Overvalued XR subsidizes consumption of imported goods.



	<b>CS</b>	<b>PS</b>	<b>Social cost</b>
Old	E+F	A,H,G	
New	A,B,C,D,E,F,H	G	B,C,D,H,I

Overvalued exchange rate lowers market price from  $P^*$  to  $P^O$

⇒ more imports.

**Loss to society = H + I.**

## EMPIRICAL EVIDENCE

### *Political Economy of Ag. Price Policies (Krueger, et al.)*

A. Coverage: 18 countries, 1960 – 1985

#### B. Findings

1. Average **indirect tax on ag** = 22%; average **direct tax** = 8%
2. Industry protection dominates exchange rate overvaluation
3. Taxation had (predictable) dampening effect on ag output
4. Domestic prices less volatile than world prices
5. Public investment in ag sector didn't make up for price policy effects

#### Conclusions of Krueger et al.

- Ag was generally been discriminated against
- Discrimination has been more pronounced where:
  - Countries are more committed to modernization via import substitution.
  - Traditional export crops are more important
  - Agricultural interests are not part of the governing coalition

## POLITICAL ECONOMY OF AG POLICY IN AFRICA (BATES)

Bates rejects the hypothesis that states/govt's act to maximize social welfare

### Evidence

1. **Rejection of price incentives** as strategy for increasing food supplies (opposite actually)
2. Rather, African governments **prefer project-based policies** (e.g., big irrigation projects, cashew factories)  $\Rightarrow$  too many projects  $\Rightarrow$  most fail
3. **Quotas & rationing** chosen over letting prices rise.
4. **Persistence** of distortionary, sub-optimal policies  $\Rightarrow$  alternative explanation  $\Rightarrow$  **actions are intentional, not accidental.**
5. Considerable evidence of mean-spiritedness & corruption  $\Rightarrow$  **government is not benign.**

### Bates' Alternative Explanation – Pluralist Theory

- Views public policy as outcome of process in which different **interest groups** compete in exerting political pressure (to meet their own objectives).
- Views **urban consumers** as exercising the dominant pressure in food/ag price policy ("**urban bias**")
- Projects are then a way of "buying off" most dangerous (politically disruptive) groups in rural areas  $\Rightarrow$  **projects are targeted whereas prices are general**
- Subsidies are also a means of targeting key actors (e.g., large landowners)  $\Rightarrow$  **preference for subsidies over price supports**

# POVERTY

## DEFINITIONS

*Poverty:* Focuses on benchmark minimum standard of living

*Inequality:* Focuses on diversity among people

## POVERTY MEASUREMENT

**SEN:** Use a **monetary measure** to allow for individual freedom of choice over how (and whether) to satisfy basic needs.

But this **ignores market failures**, consumption of **unpriced public goods** (e.g. schooling, healthcare)

### *POVERTY LINE – MULTIPLE CRITERIA*

- Basic needs (food, shelter, healthcare, etc.)
- Entitlements (Sen) – command over bundles of goods/services and the availability of and means by which those bundles are acquired
- \$1 per day accepted as the current world norm in some circles
- Conceptual difficulty: Poverty doesn't abruptly "end" at Z

***FOOD POVERTY (e.g., THORBECKE AND GREER):***

Poverty defined by whether household lacks the resources necessary to acquire a **nutritionally adequate** diet.

***FOOD POVERTY LINE:***

**Minimum expenditure** needed for a person with the accepted **typical regional food consumption** pattern to consume a nutritionally adequate diet.

***SUFFICIENCY OF CALORIE METRIC:***

If individual consumes sufficient calories, then they get enough protein, vitamins, minerals

***ADVANTAGES OF FOCUSING ON FOOD POVERTY:***

1. Simpler to define than total consumption (incl. non-food) poverty
2. Data needs are smaller
3. Food expenditure data are relatively accurate vis-à-vis other data
4. Malnutrition is a natural check for data quality

## APPROACHES TO COMPUTING A POVERTY LINE

### I. Linear Programming Approach

- Work from a fixed “average” consumption bundle that assures some minimal level of well-being.
- Bundle determined by “experts”
- Akin to a fixed-weight price index

### II. Cost-Of-Calories Approach

1. *ESTIMATE COST OF CALORIES FUNCTION*:  $\ln X = a + bC + \varepsilon$

where  $X$  = food expenditure,  $C$  = calories

2. *COMPUTE POVERTY LINE (Z)*:

$Z = \exp(\hat{a} + R\hat{b})$ , where  $\hat{a}$  and  $\hat{b}$  are coefficient estimates

### Points

- Cost of calories function is an approximation of the expenditure on calories of the “average” or typical consumer in a region as **determined by the data**
  - ➔ **Preferable to** imposing a “typical” consumption basket and estimating the cost of calories from that (e.g., linear **programming**)
- **Assumes identical prices** and dietary **preferences** for all consumers
  - ➔ Estimate different regressions for different regions, to insure that these assumptions are reasonably accurate
- Log-linear form is arbitrary; levels, log-log could be used depending on **goodness of fit**



## MEASURING POVERTY

### *DESIRABLE PROPERTIES OF A POVERTY MEASURE (SEN):*

1. **Focus axiom:** Poverty measure only depends on incomes of the poor

→ Incomes of the **non-poor are irrelevant**

2. **Monotonicity axiom:** Reduction in income of any poor individual must increase the poverty measure

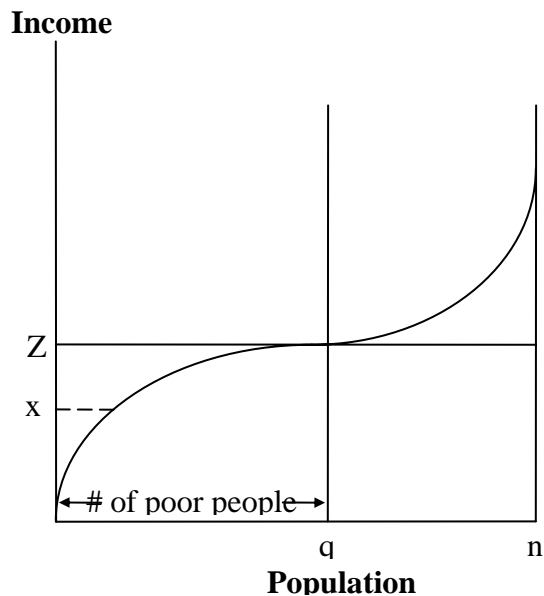
→ Must account for the worsening of aggregate immiseration (**depth of poverty**)

3. **Transfer axiom :** A transfer of income from a poor individual to a richer individual must increase the poverty measure

→ Sensitive to the poverty of the poorest of the poor (**severity of poverty**)

→ Based on the idea that the marginal utility of income declines as wealth increases

→ **Assumes** all agents have identical (or proportional) utility functions, and that inter-personal comparisons of utility are feasible (!)



**Poverty measures:**

$$H = q/n$$

I = area between the poverty line (Z) and the income distribution curve

***THREE CANDIDATE POVERTY MEASURES:***

1. **Headcount ratio:**  $H = q/n$  ( $q = \#$  of poor people,  $n =$  total pop.)

- Standard measure
- Satisfies focus axiom
- Violates monotonicity axiom always
- Violates transfer axiom in some cases
- Useful as an indicator, but not as a measure, of poverty

2. **Income Shortfall (Poverty Gap):**  $I = \frac{1}{n} \sum_{j=1}^q (Z - X_j) = q(Z - \mu)$

where  $\mu =$  average income of the poor

- Satisfies focus, monotonicity axioms but not transfer axiom, since if income is transferred from one poor household to another richer poor household the measure stays the same
- Can be thought of as the amount of **resources needed to lift all poor people out of poverty**
- Useful as an indicator, but not a measure, of the **severity** of poverty

3. **Greer-Thorbecke Measure (Severity):** 
$$P = \frac{1}{n} \sum_{j=1}^q \left( \frac{Z - X_j}{Z} \right)^2$$

- Satisfies both monotonicity axiom and transfer axiom
- Is additively decomposable
- Factors in the severity of poverty by **weighting the poverty of the poorest people more than those closer to the poverty line**

4. **Foster-Greer-Thorbecke Generalization:** 
$$P = \frac{1}{n} \sum_{j=1}^q \left( \frac{Z - X_j}{Z} \right)^a$$

- $a = 0 \rightarrow$  Headcount measure
- $a = 1 \rightarrow$  Income gap measure
- $a = 2 \rightarrow$  Severity measure

5. **Sen Index:** 
$$S = H[I + (1 - I)G_p]$$

where  $G_p$  is the Gini coefficient of all individuals in poverty,

$$I = \frac{1}{q} \sum_{j=1}^q (z - x_j)$$

- Satisfies all three axioms, but kind of ad hoc
- More responsive to improvements in the headcount than to reducing the depth or severity of poverty ( $dS/dH > dS$ ).

# POVERTY AND ECONOMIC GROWTH

## I. THE EMPIRICAL EVIDENCE

Even where growth has been associated with rising inequality, **poverty has typically fallen.**

A. **Ravallion and Datt's study of India.** They regressed poverty measures on various measures of income and found:

1. **Rural income growth strongly contributes to lowering poverty nationally, within rural areas, and within urban areas.**
2. Neither urban income growth or movements of population from rural to urban areas had a significant effect on national poverty.
3. **Urban growth lowered poverty AND raised inequality in urban areas.**
4. **Sectoral growth matters:** Growth in both primary (ag) and tertiary (service) sectors was poverty reducing. Growth in the secondary sector (const. and manufacturing) had no significant effect.

**B. Naylor and Falcon** examined distribution of poverty in rural and urban locations. Key findings include:

1. Urban population growth greatly exceeds rural population growth. But providing urban poor with **cheap food via subsidization** could aggravate urban poverty by **accelerating rural-urban migration (& attendant high unemployment)**.
2. Changes in urban diets among all urban dwellers (including the poor)  $\Rightarrow$  greater req't for boosting rural production
3. Positive relationship between poverty and income equality (esp. from Latin America)

## **II. LIPTON AND THE CONSENSUS ON POVERTY**

### **A. Labor intensive growth as a key to poverty reduction**

- Strong negative correlation between growth and poverty (e.g. Ravallion & Datt )
- Attributed to Hecksher-Ohlin specialization in labor-intensive production

**BUT WHAT REPLACES LABOR-INTENSIVE, RURAL-LED POVERTY REDUCTION WHEN INDUSTRIALIZATION (INEVITABLY) BEGINS?**