Lecture of Two Parts:
Part 1: Understanding Cooperation
Part TWO: Inclusion and Development
Progeria
by

Raul V Fabella

A Little Game Theory: Towards an Understanding of Coherent Communities

by

Raul V Fabella

A Little Game Theory

- "All Life is a Game"

- John Nash: Nobel Memorial Prize Winner

- "A Beautiful Mind" (Book)

- Nash Equilibrium

A Little Game Theory

- **Every Game involves**
  - **players**
  - **strategies or actions allowed the players**
  - **payoffs they play for**
  - **rules they play by**

- **Strategic Game and Interdependence: payoff of one depends upon ones action and the action of others**
- **Players are strictly rational: they prefer more to less**

A Little Game Theory

The Fishing Game

- **The Fishing Game: Two fishermen, Ambo and Berto (for short A and B) fish in a lake. Their strategies consist of either of two actions: Fish with a Net (N) or Fish with Dynamite (D).**
- **Rule: A and B cannot coordinate their actions.**

A Little Game Theory

The Fishing Game

Table 1. Payoff Matrix: The Fishing Game

		B	
		N	D
A	N	10, 10	2, 12
	D	12, 2	3, 3

A Little Game Theory

- **Ambo A is the row player, Berto B is the column player**

- **Ambo can either play N or D, likewise Berto.**

- **There are four boxes each with two numbers. In each box are two numbers; the first is payoff to A, the second is payoff to B: say (2, 12), 2 is A's payoff, 12 is B's payoff if A plays N and B plays D.**

- **Which strategies will each play?**

A Little Game Theory

The Fishing Game

1. **Nash Equilibrium as Solution: the combination of actions by A and B from which deviation is punished**

2. **(D,D) giving (3,3): no one has no incentive to deviate. If A plays N, he gets 2 < 3. If B plays D, he gets 2 < 3. So (D, D) is a Nash Equilibrium solution!**

3. **(N, N) gives each (10, 10) so each player is better off. But A can get 12 > 10 if he defects, so he defects. B does the same. So (N, N) is not Nash Equilibrium!**

A Little Game Theory

1. **Welfare at (D, D) (Nash Equilibrium) = 6 (3+3)**
2. **Welfare higher at (N, N) = 20 (10 + 10). But not NE.**
3. **Market Failure in Econ: The Fishing Game is a Market Failure. The outcome (10,10) is better for both players than (3,3). But they will not attain it.**
4. **Social Dilemma Game: When each player seeking his highest payoff, will receive less than they could receive if they cooperate. Also called Prisoner's Dilemma Game.**

A Little Game theory

- **Solution: Suppose there is a government/community-based management which wants the better outcome for A and B.**
- **The community-based management passes a rule saying that**

(a) whoever plays D will be penalized p;

(b) but the players must pay c to defray the expense of enforcement.

- **The *intervention* is (p, c).**
- **Suppose that the government is very effective in enforcement. Every violation is punished.**
- **The intervention changes the payoffs of the game.**

A Little Game Theory

With Government Intervention (p,c)

Table 2. Payoff Matrix: The Fishing Game with Intervention (p,c)

		B	
		N	D
A	N	10-c, 10-c	2-c, 12-c-p
	D	12-c-p, 2-c	3-c-p, 3-c-p

The Fishing Game

1. p = penalty imposed for dynamite fishing.

2. c = tax on each player to pay the cost of enforcement;

3. (p, c) is the state intervention pair

4. Consider the intervention pair (5, 2).

A Little Game Theory

The Fishing Game

Table 3. Payoff Matrix: The Fishing Game with Intervention (p,c) = (5,2)

		B	
		N	D
A	N	10-2, 10-2	2-2, 12-2-5
	D	12-2-5,2-2	3-2-5,3-2-5

A Little Game Theory

The Fishing Game

Table 4. Payoff Matrix: The Fishing Game with Intervention (p,c) = (5,2)

		B	
		N	D
A	N	8, 8	0, 5
	D	5,0	-4,-4

The Fishing Game

1. **There is a new Nash Equilibrium: (N,N) giving (8,8).**

2. **Post-intervention welfare (sum) : 16**

3. **Pre-intervention welfare: 6**

4. **Community Management (5,2) a Success: It managed to change behavior to (N, N).**

- **What Dr Alcala's Team did: taught fisherman to think and act differently – think as one family**
- **The harvest of cooperation is bumper.**
- **They formed a resource management system run by fishermen themselves.**
- **Prevented the "Tragedy of the commons"**
- **The entry of politics and greed almost destroyed the project.**

A Little Game Theory

The Fishing Game

- **Consider an intervention (p,c) = (5, 1)**

Table 5. Payoff Matrix: The Fishing Game with Intervention (p,c) = (5,2)

		B	
		N	D
A	N	5, 5	-3, 6
	D	6, -3	-4, -4

The Fishing Game with Intervention (2,5)

1. Two Nash Equilibria or Solutions: (D,N) and (N,D) giving (6,-3) and (-3,6): both are bad equilibrium. Why?

2. Post-intervention welfare (sum) = 3

3. Pre-intervention welfare (sum) = 6

Second Part

The Asia Foundation

USAID
FROM THE AMERICAN PEOPLE

Tax Reform and Inclusion (TRAIN): The Role and Meaning of Inclusion

Raul V. Fabella

TRAIN: Meaning of Inclusion

- **Acceleration and INCLUSION**
- **Acceleration: rapid growth in per capita income**
- **Inclusion: reduced income inequality and/or reduced poverty incidence**
- **A policy change like TRAIN can affect inclusion differently**
- **Problem: Suppose it raises income inequality and but reduces poverty incidence.**

Income Inequality vs Poverty Reduction

- **TRAIN intends to raise enough revenue to bankroll BUILDx3 and GCA of 8%.**
- **Fuel tax, sugary beverage tax, vehicle tax, VAT loopholes closures.**
- **Cost of Adjustment: every meaningful reform extracts some pain; no pain no gain**
- **Has tax reduction for the middle class and cash givebacks for the most affected.**

Senate Bill 1592

- **Retains 37 of the 70 loopholes**
- **Reduces the tax take on proposed tax adjustments**
- **Reduces drastically the Tax Revenue gain**
- **Explodes the number of earmarks**
- **Inclusion as reduced Income equality at the expense of acceleration and poverty reduction.**
-

But is Income Inequality the real enemy in LDCs?
Or is it Abject Poverty?

The MDGs and SDGs think
it is Abject Poverty (<$1.25 per day):
Halved and Zeroed

Why was our poverty reduction record very poor?

Move to Slide 33

Development Progeria

Development Progeria

- Development Progeria: When growth of Manufacturing lags behind that of Services in a "low income economy"

- Abnormal for low income economies, though normal for mature high income economies

- In fast growing catch-up economies: Manufacturing grows faster than Services

- Services now about 58% of PHL GDP

Progeria
Old
AT AGE 3

the story of Zachary Moore

Development Progeria

Progeria is a genetic malfunction where children 3 years of age display the physical features of a person of 60.
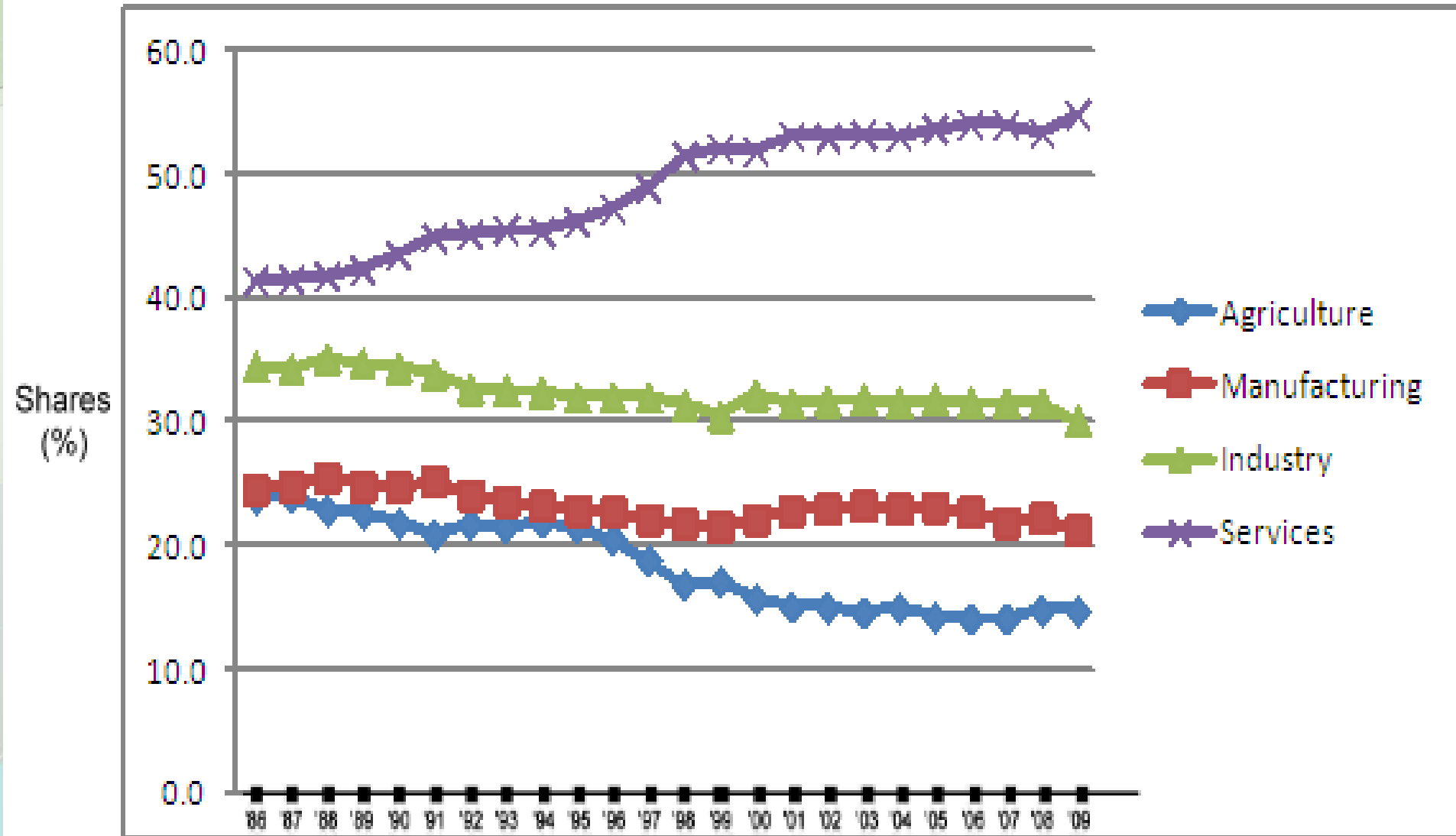
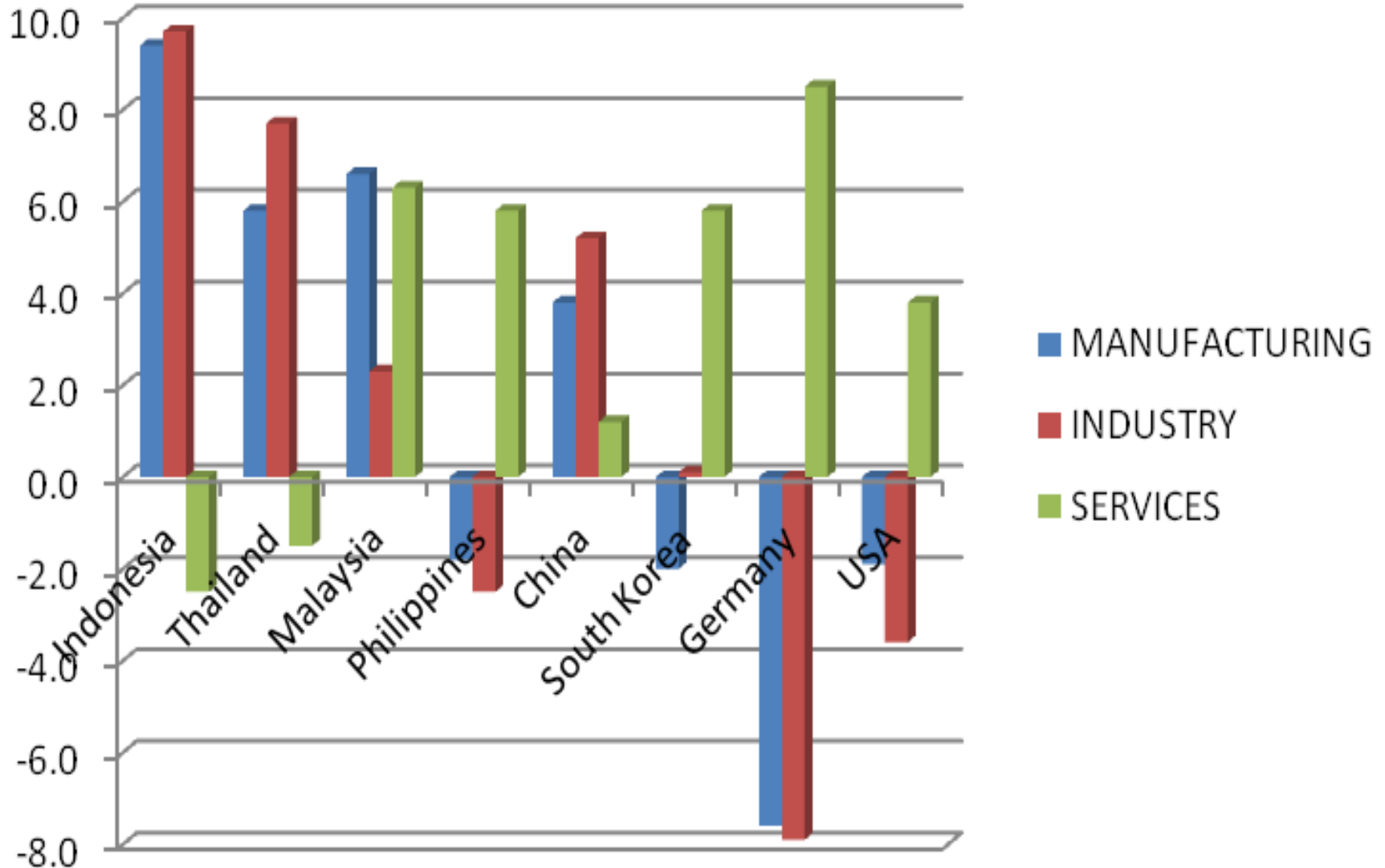**Figure 1. Trajectory of Philippine Value-Added by Industry as % Shares of GDP, 1986-2009**

Figure 2. Change in % Industry Shares 1986 to 1996

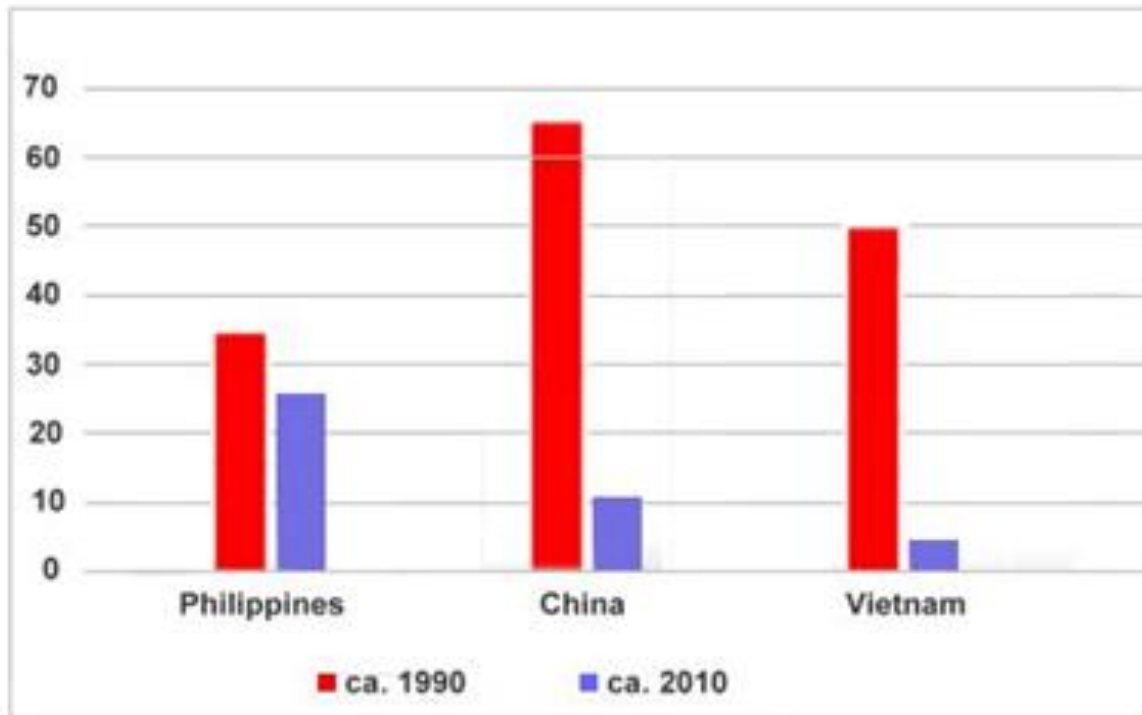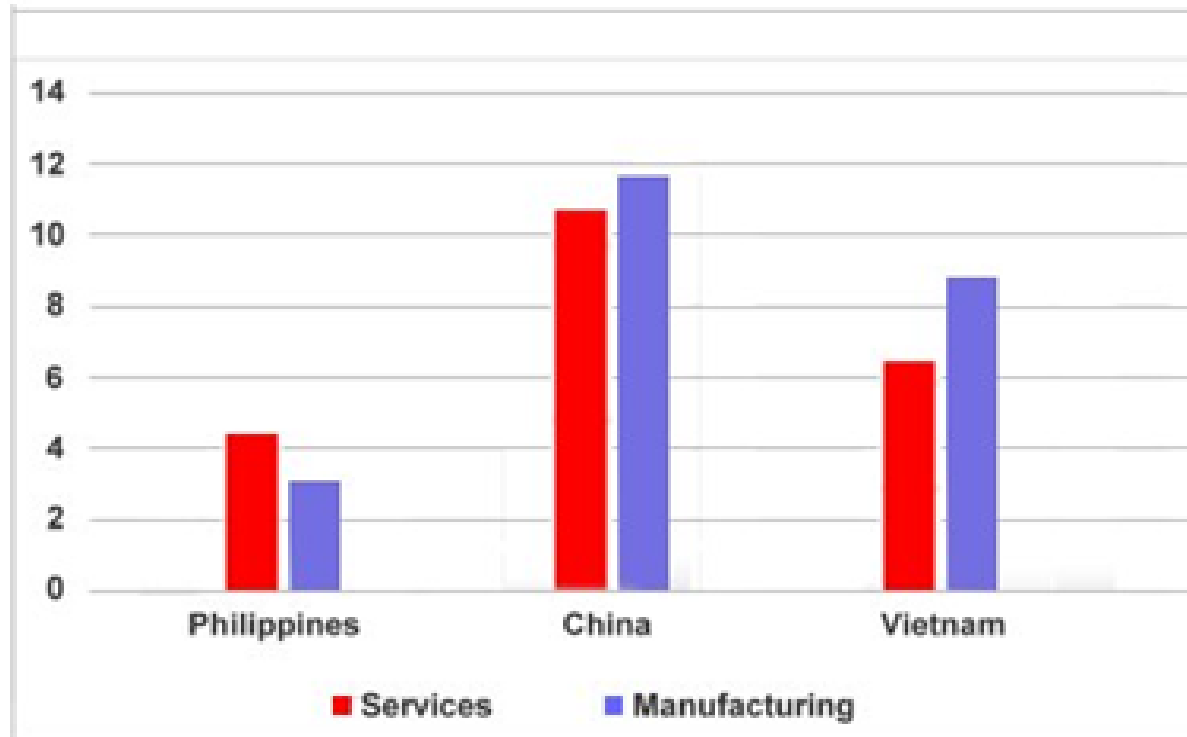# Poverty Reduction: PHL, PRC, Vietnam

Figure 2. Poverty Reduction: 1990 - 2010

Manufacturing vs Services: Ave Growth

Figure 1. Manufacturing and Services
Average Growth: 1990 - 2010

Exiting Development Progeria

- *Progeria* is an incurable genetic disease; it kills the body slowly but surely

- *Development Progeria* is an epigenetic disease; ravages the spirit but is curable.

- Epigenotypes exhibit plasticity: they change with the policy environment.

- Institutional and policy changes can defang Development Progeria (The British Disease and Thatcher)

Exiting Development Progeria

- Decompress and redirect Investment:

    (a) Sustainability: Embrace rather than fear a weak peso to sustain investment-led growth

    (b) Scale up quantity and quality of PHL infrastructure: BUILDx3

    (c) Lower the cost of power, viz.,

    (1) Shift Fit in and other charges from Manufacturing to Services

    (2) Build the Viz-Mindanao connection to complete the One PHL Power Grid

Exiting Development Progeria

- Pass PSA Amendments Bill and lift the constitutional limits to foreign ownership.

- Continue the strategic retreat of government to its core competence: e.g., privatize MRT, privatize NAIA 1 and 3, RCOAize the ECs; .

- Learning from Foxconn: "Slipstream Industrialization": facilitate local firms' entry into the slipstream of global manufacturing behemoths.