

Handout #1

Concepts of Development: criteria and indicators

Development is a controversial and multidimensional concept.

I. The UN Millennium Development Goals

Set by the UN in 2000 for 2015. Indicators + goals = yardsticks to measure development progress.

Goal 1: Eradicate extreme poverty and hunger. Halve between 1990 and 2015 the proportion of people whose income is less than 1\$/day.

Goal 2: Achieve universal primary education.

Goal 3: Promote gender equality and empowerment. Eliminate gender disparity in primary and secondary education.

Goal 4: Reduce child mortality. Reduce by 2/3 the under-five mortality rate in 1990-2015.

Goal 5: Improve maternal health. Reduce by 3/4 the maternal mortality ratio in 1990-2015.

Goal 6: Combat HIV/AIDS, malaria, and other diseases. Have halted by 2015 and begun to reverse the spread of HIV/AIDS.

Goal 7: Ensure environmental sustainability. Integrate the principles of sustainable development into policies and programs; halve the proportion of people without sustainable access to safe drinking water; achieve by 2020 a significant improvement in the lives of at least 100 million slum dwellers.

Goal 8 (mean): Develop a global partnership for development. Open trading and financial system; increase foreign aid; reduce debt.

Progress toward the MDG by region: UNDP, *Human Development Report 2003*.

II. The dimensions of development

While there is no single definition, development can be characterized by the following seven categories of indicators.

1. Income and income growth

GDP = Sum of value added by all firms

GNP = GDP + Net factor income from abroad. Better to measure income than GDP.

GNI = GNP – depreciation – indirect business taxes. Best to measure income earned.

1.1. Comparisons over time: need adjust for inflation

Real GDP in prices of base year = (Nominal GDP)/(Price index = 1 in base year)

Real GDP growth = Nominal GDP growth – Rate of inflation

1.2. Change over time: compounded growth rate formulas

If an initial value X_0 is compounded at the annual growth rate g for T years, the terminal value is: $X_T = X_0(1+g)^T$. Alternatively, the growth rate that has transformed X_0 into X_T over T years of compounded growth is: $g = (X_T/X_0)^{1/T} - 1$. Taking logarithms, a useful approximation to the growth formula is: $\ln X_T = \ln X_0 + T \ln(1+g) \sim \ln X_0 + T g$. This allows to solve for T , the time needed to go from X_0 to X_T at a growth rate of g .

Example 1: Time to get out of poverty, for a given initial level of income y_0 , a given poverty line z , and a

given growth rate in income: $T = \frac{\ln z - \ln y_0}{g}$.

Example 2: Time to double X : $T = \frac{\ln 2X - \ln X}{g} = \frac{\ln 2}{g}$. $g = 10\%$, $T = 7$ years.

1.3. Comparisons across countries: need bring to single currency (e.g., US\$)

1.3.1. At official exchange rate: $GDP^{\$} = \frac{1}{e} GDP^{Pesos}$, $e = Pesos / \$$ exchange rate

Hence, devaluation lowers $GDP^{\$}$ for a given GDP^{Pesos} . Overvaluation exaggerates $GDP^{\$}$.

1.3.2. At Purchasing Power Parity adjusted exchange rate (PPPe):

$$PPP\text{GDP}^{\$} = \frac{1}{PPPe} \text{GDP}^{\text{Pesos}},$$

where PPPe is the number of Pesos required to buy the same amount of goods and services (quality adjusted) as 1 US\$ in the U.S.

In low income countries, $PPP\text{GDP}^{\$} > \text{GDP}^{\$}$ (e.g., India, 1999: \$2149 vs. 450)

In the US, $PPP\text{GDP}^{\$} = \text{GDP}^{\$}$, by construction (\$30,600)

In high income countries (Japan, Germany), $PPP\text{GDP}^{\$} < \text{GDP}^{\$}$ (Japan: \$24,041 vs. \$32,230)

1.4. **Genuine Progress Indicator (GPI): Green and social national accounting**

GPI = GDP + Value of unpaid work – Costs of crime and social breakdown – Cost of ecological damage.

U.S.: GPI < GDP.

2. Poverty

Measured as percentage of people with income below a poverty line (headcount ratio) = R_0 (we will see other indicators later in the course).

World poverty: 2.8 billion < 2\$/day = 47% of humanity

World destitution: 1.2 billion < 1\$/day = 20% of humanity

$R_0 = f(-\bar{y}, +\sigma_y)$, \bar{y} average income, σ_y inequality in distribution of income.

With zero growth of average income, falling inequality reduces poverty; rising inequality increases poverty.

Growth of average income with constant inequality reduces poverty.

Growth of average income with falling inequality reduces poverty even more.

Growth of average income with rising inequality reduces poverty less than at constant inequality.

Growth of average income with sharply rising inequality may increase poverty (immiserizing growth).

Hence, growth is only useful to reduce poverty if not accompanied by too much increase in inequality.

The less increase in inequality, the higher the elasticity of poverty reduction with respect to average income growth.

Note: special focus on rural poverty as 75% of the world poor are rural.

Note: special focus on employment as labor is the main asset of the poor.

3. Inequality and inequity

Equality (ex-post): e.g., share of income held by bottom X% relative to share of income held by top X% (we will see other indicators later in the course); Gini coefficient (see later). E.g., Share of richest 20%/Share of poorest 40% = India: 1.7; Senegal : 5.3; Brazil: 9.1; U.S.: 2.9; Japan: 2.4%

Equity (ex-ante): equality of opportunities.

Sen: equity = distribution of capabilities (assets) and freedoms (power).

Note: different dimensions of inequality of opportunities: gender, age, ethnic, regional, rural/urban.

Why is equality a potential determinant of growth?

(-,+) Aggregate rate of saving may rise with greater inequality (Keynes). But poor can save if they have access to financial instruments for saving.

(-,+) Incentives may rise with inequality (incentive wages, rewards for taking risks)but also decline with inequality (sense of fairness, sabotage).

(+) Cost of social control may fall with equality.

(+) Cost of welfare programs may fall with equality.

(+) Solidarity and cooperation may rise with equality.

- (+) Participatory development and democracy may rise with equality.
- (+) Greater share of the population with collateralizable assets.

4. Vulnerability

Vulnerability = Probability of falling in poverty.

E.g., food insecurity: Probability(Consumption < Minimum consumption requirement).

If poor have lower average consumption relative to minimum needed, they are more exposed to disaster, and will have a higher level of risk aversion in their behavior, limiting their options.

Sources of risk:

Natural disasters: drought, flooding, pests.

Health: illness, accidents, epidemics.

Social: crime, war.

Economic: international prices, unemployment, inflation, recession.

Political: policy change, discontinuation of social programs (short political time).

Environmental: pollution, climate change

Types of risks: Covariate risks: Economy-wide, region-wide. Cannot be insured locally.

Idiosyncratic risks: easier to insure locally.

Categories of poor:

(Non-poor: on average above poverty line and never in poverty)

Transient poor: on average above poverty line, but sometimes in poverty.

Chronic poor: on average below poverty line, but sometimes out of poverty.

Persistent poor: always in poverty (poverty traps)

Means of reducing vulnerability:

Risk reduction: actions to reduce the probability of a shock (preventive health, investment in irrigation)

Risk management (ex-ante): actions to decrease the impact of a shock on income (portfolio diversification, insurance, invest in liquid assets as opposed to fixed assets)

Risk coping (ex-post): actions to relieve the impact of an income shock on consumption (sell assets, take loans, receive transfers and social assistance).

Risks of irreversibility (fall into poverty traps): children taken out of school (child labor used as a short run risk coping instrument with long term loss in human capital for the child), malnutrition and stunting, fire sales of assets (land), move to refugee camps, homelessness (hard to reenter the labor force).

Note: cost of globalization may be increasing vulnerability due to greater exposure to international prices fluctuations (e.g., coffee prices). But, for staple foods, international market prices are likely more stable than closed economy prices.

5. Basic needs (human development)

Includes: health, education, nutrition, social infrastructure.

Note: have a large public goods component as opposed to income poverty (hence subject to market failure).

Indicators:

Health

Ex-post: Life expectancy at birth: males, females

Infant mortality rate (e.g., under 5)

Maternal mortality rate, reproductive health

Ex-ante: Access to health services. Quality of health services (quacks in India)

Access to safe water and sanitation

Education

Ex-post: Net enrollment ratio, primary

Net enrollment ratio, secondary

School attainment: completed years of education

Literacy rate

Ex-ante: Availability of schools

Quality of education (teacher absenteeism)