Politiques Economiques et Pauvreté
Poverty and Economic Policy

Pro-poor growth

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Concepts

Assessing whether distributional changes are ”pro-poor” has become increasingly widespread in academic and policy circles.

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There are two important issues that we must first discuss.

Relative and absolute

The first issue is whether our pro-poor standard should be absolute or relative.

- This is analogous to asking whether we should be interested in the impact of growth on absolute poverty or on relative inequality.
- It is indeed important to distinguish between expectations that growth should change the incomes of the poor by the same absolute or by the same proportional amount
- This is conceptually not the same
- Empirically, the implications also vary significantly.

Order of judgements

- The second issue is whether pro-poor judgements should put relatively more emphasis on the impact of growth upon the poorer of the poor.
- This is equivalent to deciding whether our pro-poor judgements should obey ethical principles such as the Pigou-Dalton principle.
- We can consider two orders of pro-poor judgements:
  - the first will obey the focus, the anonymity and the Pareto principles,
  - and the second will also obey the Pigou-Dalton principle.

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Comparing distributions

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Distributive change

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Growth in average income is given by

$$g = \frac{\mu_N - \mu_X}{\mu_X} \tag{1}$$

Distributive change

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If the income-growth curve is positive everywhere over $p \in [0, 1]$, then the change increases social welfare for all of the first-order social welfare indices.

We then have first-order welfare and (unrestricted) poverty dominance.

Distributive change

The change decreases poverty for all of the poverty indices that obey ”first-order” principles: focus, Pareto and anonymity

The result is valid for any choice of poverty lines.

Pro-poorness

- A test with a greater chance to succeed is to check whether the income-growth curve is positive everywhere over $p \in [0, F_X(z^+)]$, where z^+ is an upper poverty line.

- If so, then the distributive change decreases poverty for all first-order poverty indices for which the poverty line does not exceed z^+.

- In such circumstances, the change can be called ”absolutely pro-poor”, in the sense that the poor benefit in absolute terms from the distributive change.

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First-order absolute pro-poor judgements

The following statements are equivalent:

1. A movement from X to N is first-order absolutely pro-poor for all choices of poverty lines between 0 and z^+;
2. Poverty is higher in X than in N for all of the poverty indices that obey the focus, the population invariance, the anonymity and the Pareto principles and for any choice of poverty line between 0 and z^+;
3. $P_N(z;\alpha=0) - P_X(z;\alpha=0) \geq 0$ for all z between 0 and z^+;
4. $Q_N(p) - Q_X(p) \geq 0$ for all p between 0 and $F_X(z^+)$.
5. $g(p) \geq 0$ for all p between 0 and $F_X(z^+)$.

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Relative income growth

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For that purpose, we only need to compare the income growth curve $g(p)$ at various percentiles to the growth in some socially meaningful standard.

This standard is often taken as mean income.

If the income growth curve at all $p \in [0, F(z^+)]$ is higher than the growth in mean income, then the change can be said to be first-order relatively pro-poor.

Relative income growth

Also: Let normalized quantiles $\overline{Q}(p) = Q(p)/\mu$ be incomes (at percentile p) as a proportion of mean income.

If the normalized quantiles of the poor are increased by the change, then the change is first-order relatively pro-poor.

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1. A movement from X to N is first-order relatively pro-poor for all choices of poverty lines between 0 and z^+;
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3. $\frac{Q_N(p)}{Q_X(p)} - \frac{\mu_N}{\mu_X} \geq 0$ for all p between 0 and $F_X(z^+)$;
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Pro-poor indices

McCulloch and Baulch

- The last relative pro-poor ordering is similar (for one poverty line and one poverty index) to
  - use by McCulloch and Baulch (1999) of the difference between a post-change poverty headcount with that headcount which would have occurred if all had gained equally
  - given by

$$F_N(z) - F_X(\mu_X/\mu_N z) \tag{1}$$

McCulloch and Baulch

Comparing

$F_N(\lambda\mu_N/\mu_X) - F_X(\lambda) \leq 0$ for all λ between 0 and z^+

with

$$F_N(z) - F_X(\mu_X/\mu_N z) \tag{1}$$

- The latter is equivalent to checking the former with $\lambda = \mu_X/\mu_N z$
- For $z = z^+$ and $\mu_X < \mu_N$, then this is a necessary condition for the former
- For $z = z^+$ and $\mu_X > \mu_N$, then this may not be compatible with the former

Ravallion and Chen; Klasen

- Ravallion and Chen (2003) and Klasen (2003): advocate comparison of the growth rate in average income to a ”population weighted” average growth rate of the initially poor percentiles of the population

- This compares growth rate in average income to average of growth rates of a lower-income group

- By treating income growth rates (rather than absolute increments) of everyone the same, it gives more implicit weight to the absolute income growth of the poor than the growth in average income, which depends typically much more on growth rates of the highest quantiles

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Using the Watts index

- The Watts (1968) index is defined as:

$$W(z) = \int_0^{F(z)} \ln(z/Q(p))dp \tag{2}$$

- Let $g^t(p)$ be the growth rate per unit of time t of incomes at percentile p and let W^t be the Watts index at time t.
- In the case of a small (or "marginal") change in distribution, the change in the Watts index is approximately given by

$$dW^t(z)/dt = -\int_0^{F(z)} g^t(p)dp \tag{3}$$

- This is the area underneath the income-growth curve up to the headcount ratio.

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Rate of pro-poor growth

- For such marginal changes, Ravallion and Chen (2003)'s measure of the rate of pro-poor growth is given by

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One is the growth rate in average income times the ratio of the actual change in the Watts index to the change in the Watts index that would have been observed with the same growth rate but no change in inequality:

$$g\left(\frac{W_X(z) - W_N(z)}{W_X(z) - W_X(z\mu_X/\mu_N)}\right) \tag{5}$$

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Defining the poor by the proportion of those living initially below the poverty line, another definition of Ravallion and Chen's rate of pro-poor growth is the annualized change in the Watts index divided by the initial headcount index:

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Yet another definition is the mean growth rate of those who were initially poor:

$$\frac{\int_0^{F_X(z)} g(p)dp}{F_X(z)}, \tag{5}$$

which can be compared to the growth rate in average income

Second-order pro-poorness

Distributive sensitivity

- Testing for first-order pro-poor judgements can be demanding.
- It requires all quantiles of the poor to undergo a rate of growth that is either positive (for absolute judgements) or at least as large as the growth rate in average income (for relative judgements).
- We may want to relax this on the basis that a large rate of growth for the poorer among the poor may sometimes be deemed ethically sufficient to offset a low rate of growth for some percentiles of the not-so-poor.
- This says that pro-poor judgements could give greater weight to the growth experience of the poorer among the poor.
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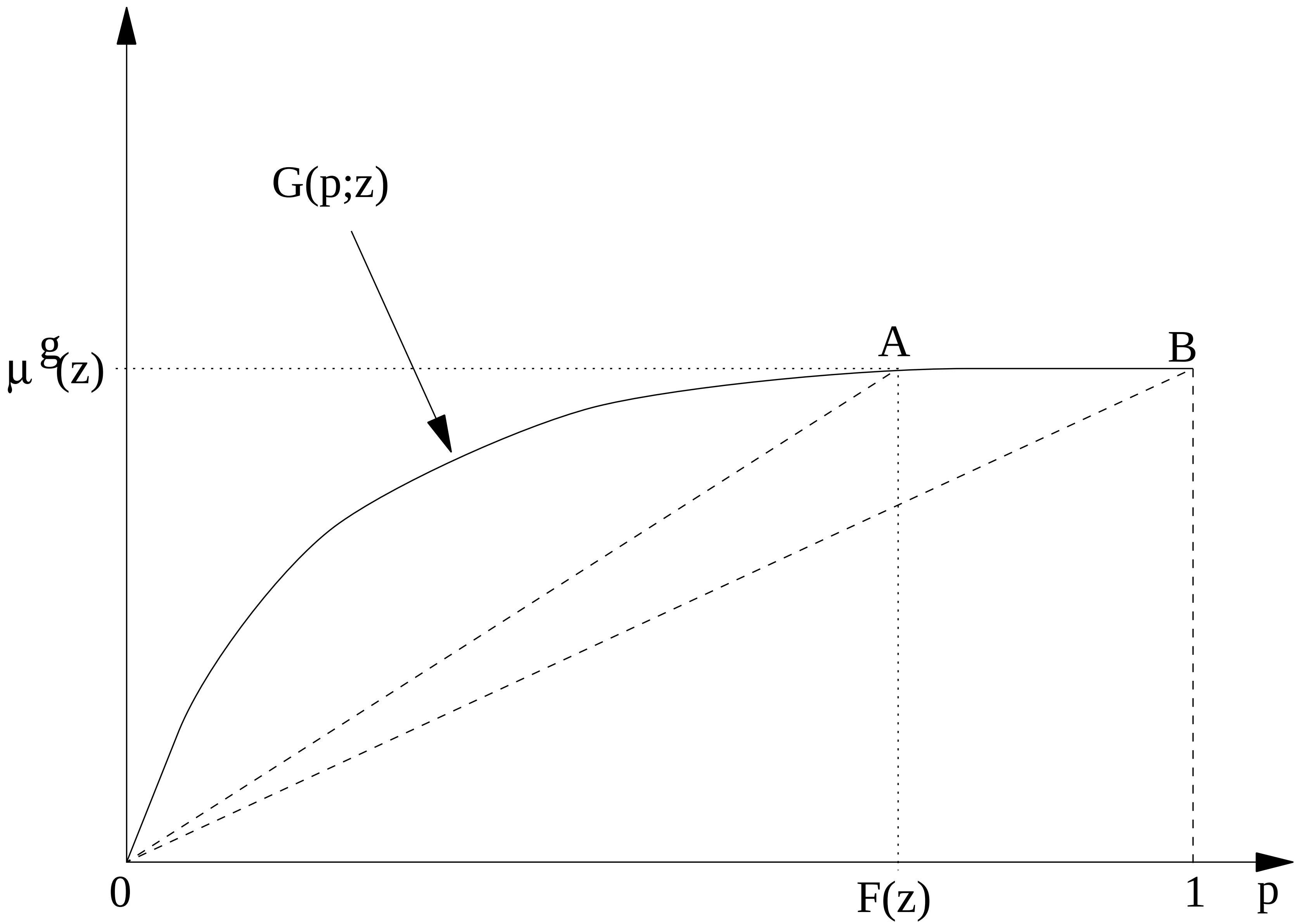
Cumulating gaps

The Cumulative Poverty Gap (CPG) curve (also sometimes referred to as the inverse Generalized Lorenz curve, the "TIP" curve, or the poverty profile curve)

- cumulates the poverty gaps of the bottom p proportion of the population
- and is defined as:

$$G(p;z) = \int_0^p g(q;z)dq. \tag{6}$$

CPG curves



An equivalent condition for **second-order absolute pro-poor judgements** is:

$G_N(p; z^+) - G_X(p; z^+) \leq 0$ for all $p \in [0, 1]$.

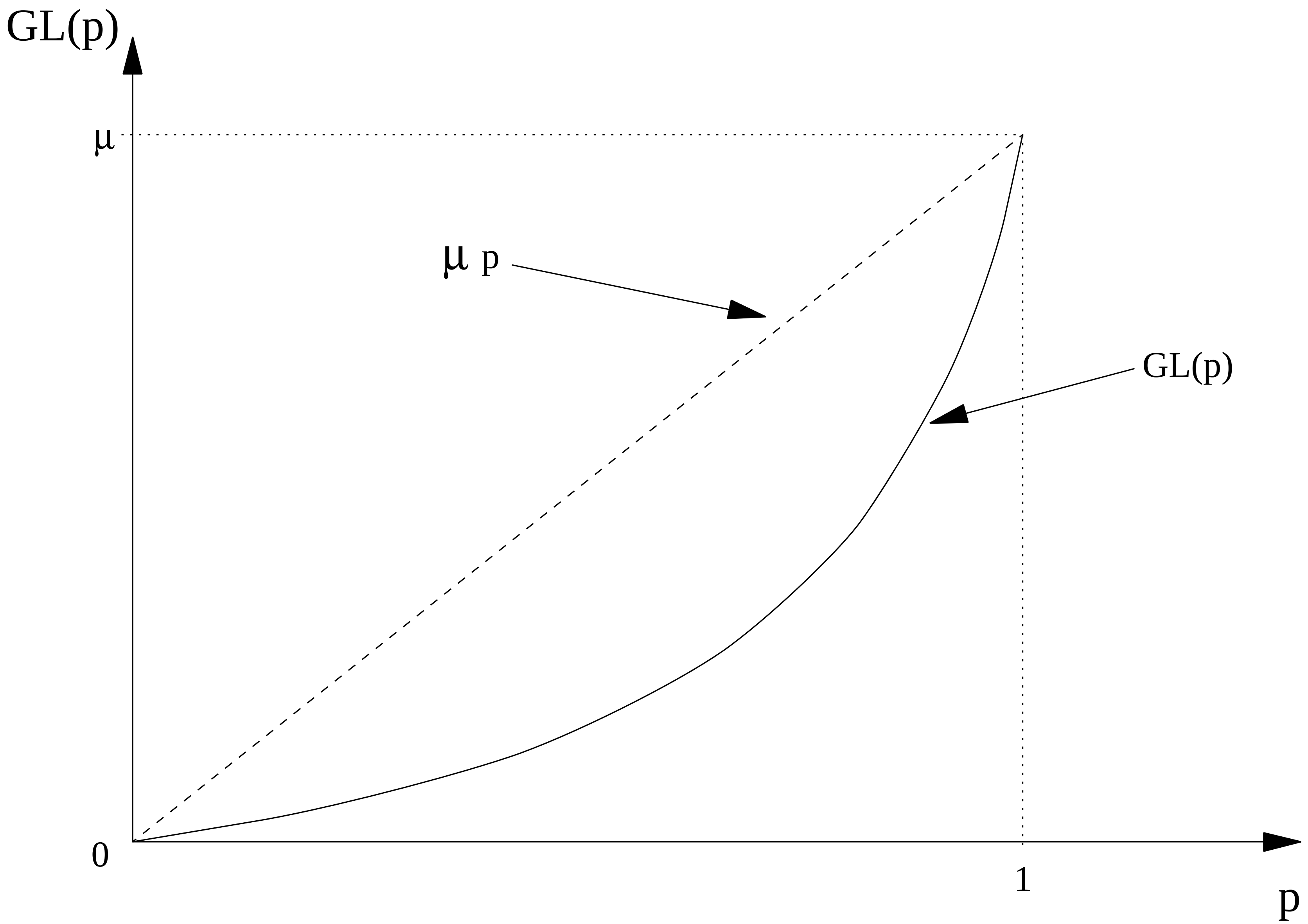
Cumulating incomes

The cumulative income up to rank p is given by the Generalized Lorenz curve, $GL(p)$:

$$GL(p) = \mu \cdot L(p) = \int_0^p Q(q)dq, \tag{7}$$

and is illustrated below

Generalized Lorenz curves



Generalized Lorenz change

- Denote the proportional change in cumulative incomes as

$$G(p) = \frac{GL_N(p) - GL_X(p)}{GL_X(p)}. \tag{8}$$

- A sufficient condition for a second-order absolute pro-poor change is then that the growth in cumulative incomes be positive:

$$G(p) \geq 0 \text{ for all } p \in [0, F_X(z^+)]. \tag{9}$$

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- As for first-order pro-poor judgements, we may wish second-order judgements to require that the incomes of the poor at least keep up with those of the rest of the population.

- This yields:

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- If the above conditions hold for $z^+ = \infty$, then the change also reduces all ”standard” inequality indices
- This is equivalent to checking whether the Lorenz curve is pushed up by the distributive change.
- This is also what is proposed by Son (2004) for all values of p
- This is also analogous to Essama-Nssah (2004), who uses an ethically-flexible weighted average of individual growth rates that does not make use of poverty lines and that resembles computing a change in an inequality index

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Cumulative incomes

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Dollar and Kraay (2002) proposes a comparison of the growth rate in average income to the growth rate of the incomes in the lowest quintile

This is equivalent to checking whether $G(0.2) \geq g$

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Kakwani and Pernia (2000): suggest using the ratio of the actual change in poverty over the change that would have been observed under distributional neutrality

This is given by

$$\frac{P_X(z;\alpha) - P_N(z;\alpha)}{P_X(z;\alpha) - P_X(\frac{\mu_X}{\mu_N} z;\alpha)} \tag{11}$$

Poverty equivalent growth rate

- Kakwani, Khandker and Son (2003): define a ”poverty equivalent growth rate” as the growth rate that would have resulted in the same level of poverty reduction as the present growth rate if inequality had not changed.
- This is given by:

$$g\left(\frac{P_X(z;\alpha)-P_N(z;\alpha)}{P_X(z;\alpha)-P_X(\frac{\mu_X}{\mu_N}z;\alpha)}\right) \tag{12}$$

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Other relative comparisons

- Income growth curves and cumulative income growth curves may also be used to assess the impact of a distributive change on ***relative poverty***.
- The procedure is similar to that of checking whether the change is pro-poor
- We compare income growth for the poor to the growth of some central tendency of the income distribution.
- One difference with the measurement of pro-poor growth is that the central tendency of interest may be some quantile (such as median income) if the relative poverty line is set as a proportion of that quantile.

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