Quality of Life: Comparing India and China

Sudip Ranjan Basu
UNCTAD, Geneva

Lawrence R. Klein
University of Pennsylvania, Philadelphia

A.L. Nagar
NIPFP, New Delhi

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Introduction

- Measurement of quality of life is a problem of great interest in its own right if one is attempting to determine economic, social, or political satisfaction.

- In the case of the China and India comparison, which presently occupies the thinking of development economists the world over, especially because of the two economies are so different, yet so successful individually in economic performance that we must allow for different measurement characteristics.
Introduction

• In particular, quality change is extremely important in measuring estimates of inflation, output growth, and related variables.

What is quality of life?

• The quality of life is, in fact, a latent variable which cannot be measured directly in a straightforward manner. However, we assume that it is linearly determined by many exogenous variables say, $x_1, \ldots, x_K$.
• The variation in these variables is supposed to explain the variation in quality of life.
What is quality of life?

- If the latent variable (say, $y$) could be measured, we would obtain an optimal linear combination of $x_1, \ldots, x_K$ to obtain an optimal estimator of $\hat{E}(y|x_1,\ldots,x_K)$. However, in the absence of the measurement of $y$, what is that linear combination of $x_1, \ldots, x_K$ which can account for the explained part of the total variation in $y$ due to $x_1, \ldots, x_K$?

Measuring quality of life

Normalization:

$$x_{kt} = \frac{X_{kt} - \min X_{kt}}{\max X_{kt} - \min X_{kt}}$$

$$x_{kt} = \frac{X_{kt} - \bar{X}_k}{S_{xk}}$$
Measuring quality of life

• The principal components are

\[ P_{lt} = \alpha_1(1)x_{1t} + \ldots + \alpha_K(1)x_{Kt} \]

\[ \ldots \]

\[ P_{Kt} = \alpha_1(K)x_{1t} + \ldots + \alpha_K(K)x_{Kt} \]

• These linear functions of \( x_{1t}, \ldots, x_{kt} \) constitute a canonical form

Measuring quality of life

• The quality of life index is obtained as the weighted average of principal components

\[ QLI = \frac{\lambda_1 P_1 + \cdots + \lambda_K P_K}{\lambda_1 + \cdots + \lambda_K} \]

where the largest weight (\( \lambda_1 = \text{var} P_1 \)) is assigned to \( P_1 \), and so on.
Data: 1980-2003

Determinants of Quality of Life

<table>
<thead>
<tr>
<th>Education and Health</th>
<th>Infrastructure</th>
<th>Social participation</th>
<th>Institutional quality</th>
<th>Living standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult literacy</td>
<td>Electricity consumption</td>
<td>Public expenditure on cultural activities</td>
<td>Political rights</td>
<td>Real GDP per capita, PPP</td>
</tr>
<tr>
<td>Gross enrolment</td>
<td>Road length</td>
<td>Female employment</td>
<td>Civil liberties</td>
<td></td>
</tr>
<tr>
<td>Life expectancy</td>
<td>Telephone and mobile phones</td>
<td>Women in parliament</td>
<td>Law and order</td>
<td></td>
</tr>
<tr>
<td>Infant mortality</td>
<td>Television sets</td>
<td>Political rights</td>
<td>Corruption</td>
<td></td>
</tr>
<tr>
<td>Physicians</td>
<td>Civil liberties</td>
<td>Bureaucratic quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital bed</td>
<td></td>
<td>Democratic accountability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to safe drinking water</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>CO2 emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results

Education and Health Index

(About literacy, Gross enrolment, Life expectancy, Infant mortality, Physicians, Hospital bed, Access to drinking water, and CO2 emissions)
Results

Infrastructure Index
(Electricity consumption, Road length, Telephone and mobile lines, and Television sets)

Results

Social participation Index
(Expenditure on cultural activities, Female employment, Women in parliament, Political rights, and Civil rights)
Results

Institutional quality index
(Political rights, Civil rights, Law and order, Corruption, Bureaucratic quality and Democratic accountability)

Results

Quality of Life Index
(combining 22 indicators of five dimensions of quality of life)
### Quality of Life
Comparing improvements

<table>
<thead>
<tr>
<th>Average annual relative growth rate (%)</th>
<th>Number of Indicators</th>
<th>India</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education and Health Index</td>
<td>8</td>
<td>0.622</td>
<td>0.692</td>
</tr>
<tr>
<td>Infrastructure Index</td>
<td>4</td>
<td>0.426</td>
<td>0.324</td>
</tr>
<tr>
<td>Social participation Index</td>
<td>5</td>
<td>0.078</td>
<td>0.162</td>
</tr>
<tr>
<td>Institutional quality Index</td>
<td>6</td>
<td>0.071</td>
<td>0.222</td>
</tr>
<tr>
<td>Quality of Life Index</td>
<td>22</td>
<td>1.000</td>
<td>1.036</td>
</tr>
</tbody>
</table>

### Concluding remarks

- It is possible, but not yet definitive, to account for a much reliable span of indicators in studying development economics.
Thank you