Indian Economic Development and Policy

Assignment : Construct a measure to quantify development

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Objective:

- Conceive a new measure of development that is more comprehensive than GDP or HDI.
- Identify the key factors that should be included in a measure of development.
- Develop a methodology for aggregating the factors into a single measure.

Development of a nation ?

- Development of a nation is a complex and multifaceted concept that encompasses a wide range of factors, including economic growth, human well-being, social justice, and environmental sustainability.
- It is a process that is driven by a number of forces, including government policies, private sector investment, and civil society engagement.
- This includes both material and non-material aspects of well-being, such as income, health, education, security, freedom, and opportunity.

Development index : Development indices are used to track progress in various areas of development over time and to compare countries to each other. Ex : GDP , HDI (Human Development Index) .

Evaluating GDP and HDI as development measures :

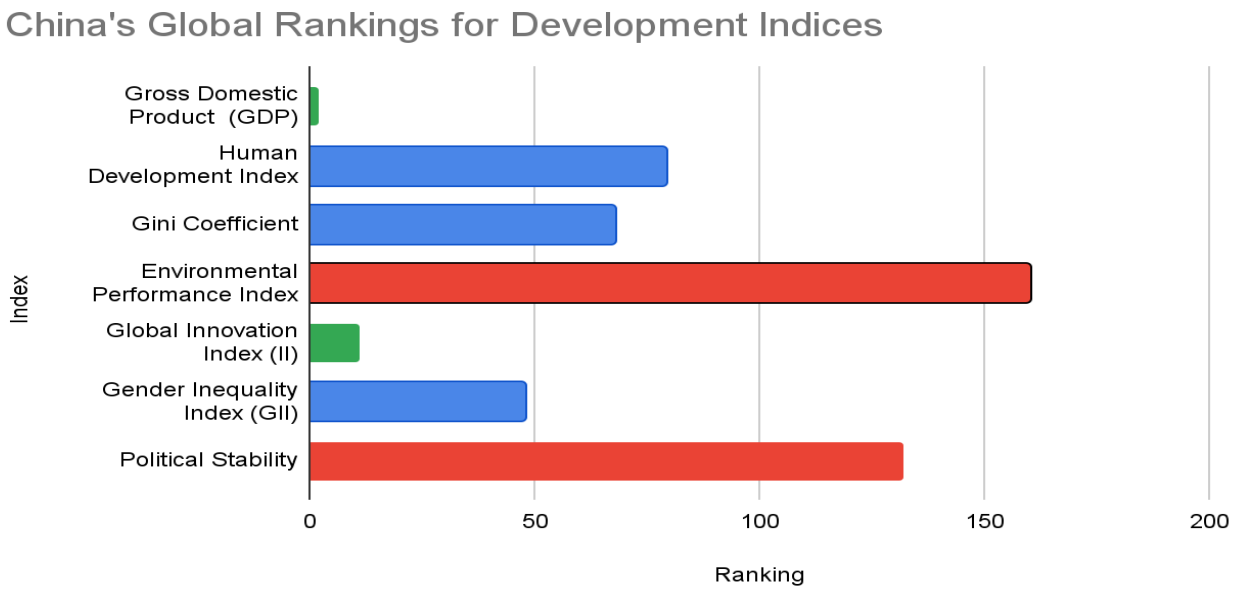
- **How do GDP and HDI measure development?**
    - GDP measures economic activity by tracking the total value of goods and services produced.
    - HDI measures human development by combining life expectancy, education, and per capita income.

- Both GDP and HDI are measured on a scale of 0 to 1, with 1 indicating the highest level of development.

- **The limitations of GDP and HDI as measures of development :**
  - GDP does not account for income inequality, quality of life, or environmental impact.
  - HDI does not account for all aspects of human well-being, such as gender equality, political freedom, and social justice.
  - Both GDP and HDI can be misleading for countries with large populations and high levels of income inequality.

For example :

Based on recent global rankings of various development indices according to IMF world bank data, China can be classified as a developed country based on its GDP. However, when considering other factors such as environmental performance, political stability, and gender equality, China's performance is not as strong .



Hence , GDP and HDI are incomplete measures of development that do not account for all the factors that contribute to a good life.

Factors to measure development

The following factors could be used to measure development:

- Economic well-being:
    - This could be measured by GDP per capita, income inequality, poverty rates, and access to basic necessities such as food, water, and shelter.
- Social well-being:
    - This could be measured by life expectancy, infant mortality rates, literacy rates, educational attainment, and access to healthcare.
- Environmental well-being:
    - This could be measured by air and water quality, greenhouse gas emissions, and biodiversity loss.
- Political and social freedom:
    - This could be measured by civil liberties, political rights, and corruption levels.
- Gender equality:
    - This could be measured by female labor force participation rates, educational attainment, and political representation.

Other factors such as *Access to information and communication technologies (ICTs) , peace and security , Cultural diversity , Sustainable livelihoods .*

Aggregating the factors :

Adapted methodology for aggregating the development factors into a single measure:

Step1 : Select the development factors: Identify the factors that you believe are most important to development. (taken factors as described above in plot)

Step2 : Normalize the factors: Scale all of the factors to a common range so that they can be compared directly. Used min-max scaling for this.

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Normalized factor = (Factor value ) / (Maximum factor value)
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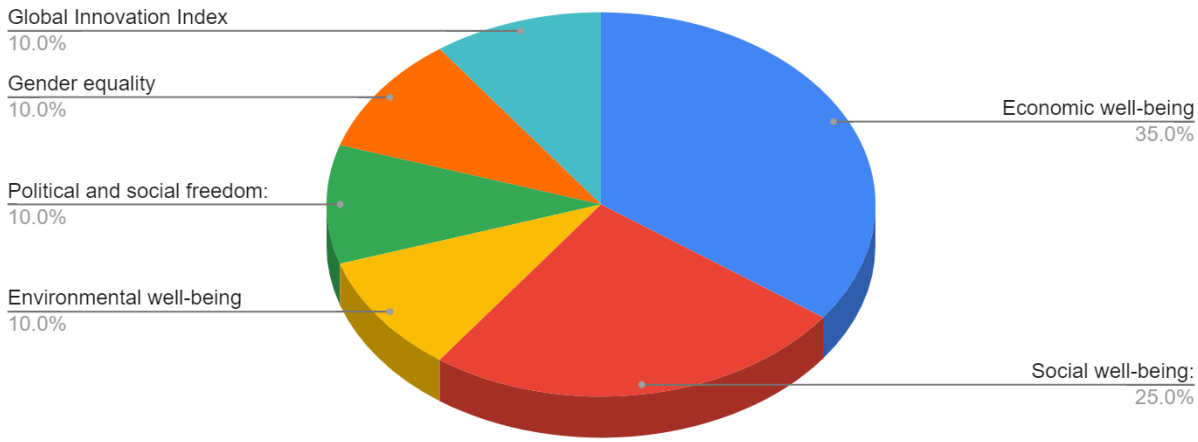
Step 3: Weight the factors: Assign weights to each factor based on its importance to development. This is done using a combination of opinion and statistical methods.

For example, we could use a statistical method such as principal component analysis (PCA) or simply by general opinion to identify the factors that are most strongly correlated with overall development, and then assign weights based on the importance of these factors.

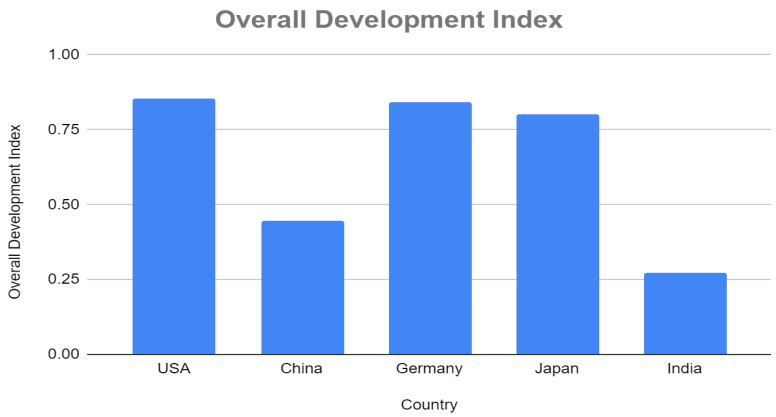
In this example, let's say that we have assigned the following weights to the factors:



Step 4: Aggregate the factors: Calculate a weighted average of the factors to produce a single measure of development.

Earlier Rankings	Country	Gini Coefficient	HDI	GNP per capita	EPI	Global Innovation Index	Gender Equality	Political Stability	Overall Development Index	New Rankings
1	USA	1	0.9787234043	1.00	0.8189102564	1	0.75	0	0.8542314512	1
2	China	0.9204819277	0.8191489362	0.17	0.4551282051	0.8948220065	0.84375	-0.48	0.4479109159	4
3	Germany	0.7638554217	1	0.72	1	0.925566343	1	0.76	0.842680476	2
4	Japan	0.7927710843	0.9893617021	0.61	0.9166666667	0.8673139159	0.875	1	0.8004636059	3
5	India	0.8602409639	0.670212766	0.03	0.3028846154	0.5922330097	0.4479166667	-0.62	0.2743939023	5

Based on the weights decided above , we calculated the Overall Development Index (ODI) for the top 5 countries using the IMF and World Bank factor values. The results are as follows:



Hence it can be concluded that , The higher the ODI, the more developed the country is considered to be. These countries rank is based on levels of development in all five areas.

Although China ranks second in GDP, it ranks fourth in the Overall Development Index, as Germany and Japan outperform China in other development factors.

Data References :

IMF and World Bank data : Link

Graphs Source data : Link