The World at 7 Billion: Demographic transition, economic development and the demographic dividend

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World Population Growth Through History

World Population Growth, in Billions

Number of years to add each billion (date reached)

Sources: First and second billion: Population Reference Bureau.
Where are they?

- China and India both one billion+
- Growth – high fertility, mainly African, countries
- 7 of the top 10 growth rates are in Africa
- Immigration key factor in developed countries

Source: exploredia.com/world-population-2011/
World Population by region, 1950-2010

What drives population change?
Population growth and its determinants

Globally: \[ P_{t_2} = P_{t_1} + B - D \]
Sub-globally: \[ P_{t_2} = P_{t_1} + B - D + I - E \]

Where:
- \( P_{t_2} \): Population at time \( t_2 \)
- \( P_{t_1} \): Population at time \( t_1 \)
- \( B \): Births
- \( D \): Deaths
- \( I \): In-migration
- \( E \): Out-migration
The Classic Stages of Demographic Transition

Natural increase is produced from the excess of births over deaths.

Note: Natural increase is produced from the excess of births over deaths.
THE DEMOGRAPHIC TRANSITION MODEL

STAGE ONE  
(Pre-Modern)

STAGE TWO  
(Urbanizing/Industrializing)

STAGE THREE  
(Mature Industrial)

STAGE FOUR  
(Post Industrial)

CBR, CDR Rate per 1000

YEAR

TOTAL POPULATION

CBR  
CDR  
Total Population
A healthier world

Trends in Life Expectancy

Life Expectancy at Birth, in Years

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Africa</td>
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<td>47</td>
<td>55</td>
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<tr>
<td>Asia</td>
<td>43</td>
<td>60</td>
<td>69</td>
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<tr>
<td>Latin America and the Caribbean</td>
<td>51</td>
<td>61</td>
<td>73</td>
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<td>More Developed Regions</td>
<td>66</td>
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<tr>
<td>World</td>
<td>48</td>
<td>59</td>
<td>68</td>
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</tbody>
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Share of world population by level of life expectancy 1950–2010

With smaller families

Trends in total fertility in selected countries

Average number of children per woman

- Uganda
- Kenya
- Egypt
- India
- Brazil
- Republic of Korea
### 10 Places With the Lowest Total Fertility Worldwide

<table>
<thead>
<tr>
<th>Country</th>
<th>Average number of children per woman, 2005-2010</th>
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<tbody>
<tr>
<td>China, Hong Kong SAR</td>
<td>0.99</td>
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<tr>
<td>China, Macao SAR</td>
<td>1.02</td>
</tr>
<tr>
<td>Bosnia and Herzegovina</td>
<td>1.18</td>
</tr>
<tr>
<td>Singapore</td>
<td>1.25</td>
</tr>
<tr>
<td>Slovakia</td>
<td>1.27</td>
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<tr>
<td>Republic of Korea</td>
<td>1.29</td>
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<tr>
<td>Japan</td>
<td>1.32</td>
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<tr>
<td>Poland</td>
<td>1.32</td>
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<tr>
<td>Malta</td>
<td>1.33</td>
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<tr>
<td>Romania</td>
<td>1.33</td>
</tr>
</tbody>
</table>

The next billion(s)?

8 billion  15 June 2025
9 billion  18 February 2043
10 billion  18 June 2083
Estimated and projected world population according to different variants, 1950-2100 (billions)

To Slow Population Growth, Developing Countries’ Fertility Decline Must Be Rapid.

Average Lifetime Births per Woman: 1800-2007

Sources: (United States) Ansley Coale and Melvin Zelnik (1963); and National Center for Health Statistics. (Bangladesh) United Nations; Demographic and Health Surveys; and other surveys.
The key challenge is how fast fertility in Africa falls

Countries and areas classified by level of net reproduction rate, 2010

Note: The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations.

Source: UN 2010
Better human development, lower fertility?

Population change and economic development: an on-going debate
Link between population growth & economic development


• Coale and Hoover undertook a basic simulation of India’s (then) economic prospects, under two very different fertility scenarios (i) ‘sustained’ fertility and (ii) ‘declining’ fertility.

• Found per capita income growth would be significantly higher with fertility decline. This was because - with a slowing rate of growth of children in the population - more resources could be invested per head.
Link between population growth & economic development

- In the 1960s and 1970s there emerged considerable scepticism among academic economists as to whether population growth did have a negative effect on per capita income growth.

- Scepticism arose from the failure of simple international cross-sectional regressions to detect a negative relationship between population growth and per capita income growth.

Source: Barlow 1994
Link between population growth & economic development

- From around the mid-1990s, economists became aware that a **negative** relationship was emerging.
- This negative relationship begins to become apparent from the mid-1970s on, and as data for longer periods of time become available.

Source: Fox and Dyson, 2010
Link between population growth & economic development

• “In contrast to assessments over the last several decades, rapid population growth is found to have exercised a quantitatively negative impact on the pace of aggregate economic growth in developing countries … rapid fertility decline is found to make a quantitatively relevant contribution to reducing the incidence and severity of poverty” (Birdsall & Sinding Population Matters, OUP, 2001)

• “Particularly strong is the evidence in support of the increasingly adverse effects of population growth [on economic growth] in the post-1980 period, suggesting that demographic issues should warrant greater attention than they currently receive from the policymaking community” (Headey & Hodge PDR 2009)
Demographic transition and the demographic dividend
Demographic transition & the age structure of the population

- The age distribution of a population is determined by the interaction of fertility, mortality and international migration.
- Where fertility is high, populations tend to have a young age structure.
- Where fertility is low / falling, populations tend to have an older age structure.
- Demographic transition is accompanied by the age transition.
Afghanistan: a young population

Sweden: An older population

Italy: A rapidly ageing population

Demographic ‘Window of Opportunity’

- Periods of declining total dependency ratios
  - ↓ ratio non-workers (children & older people) / workers
- Age-structure change can → economic growth
- Large, young working-age population (China vs. Germany)
- Fewer children; reduced social expenditure (or ↑ per capita spending) on the young
- ‘Older’ people save more → ↑ investment
Dependency ratios: Singapore, 1950-2100

Demographic dividend
Demographic ‘Window of Opportunity’

- Capitalising on the window of opportunity means investing in
  - Education - to raise human capital
  - Jobs – to harness the productive energy of young adults
- The future is in your hands.
Thank you!