

HUMAN CAPITAL: POPULATION

EE 462 Development Macroeconomics

Semester 1/2014

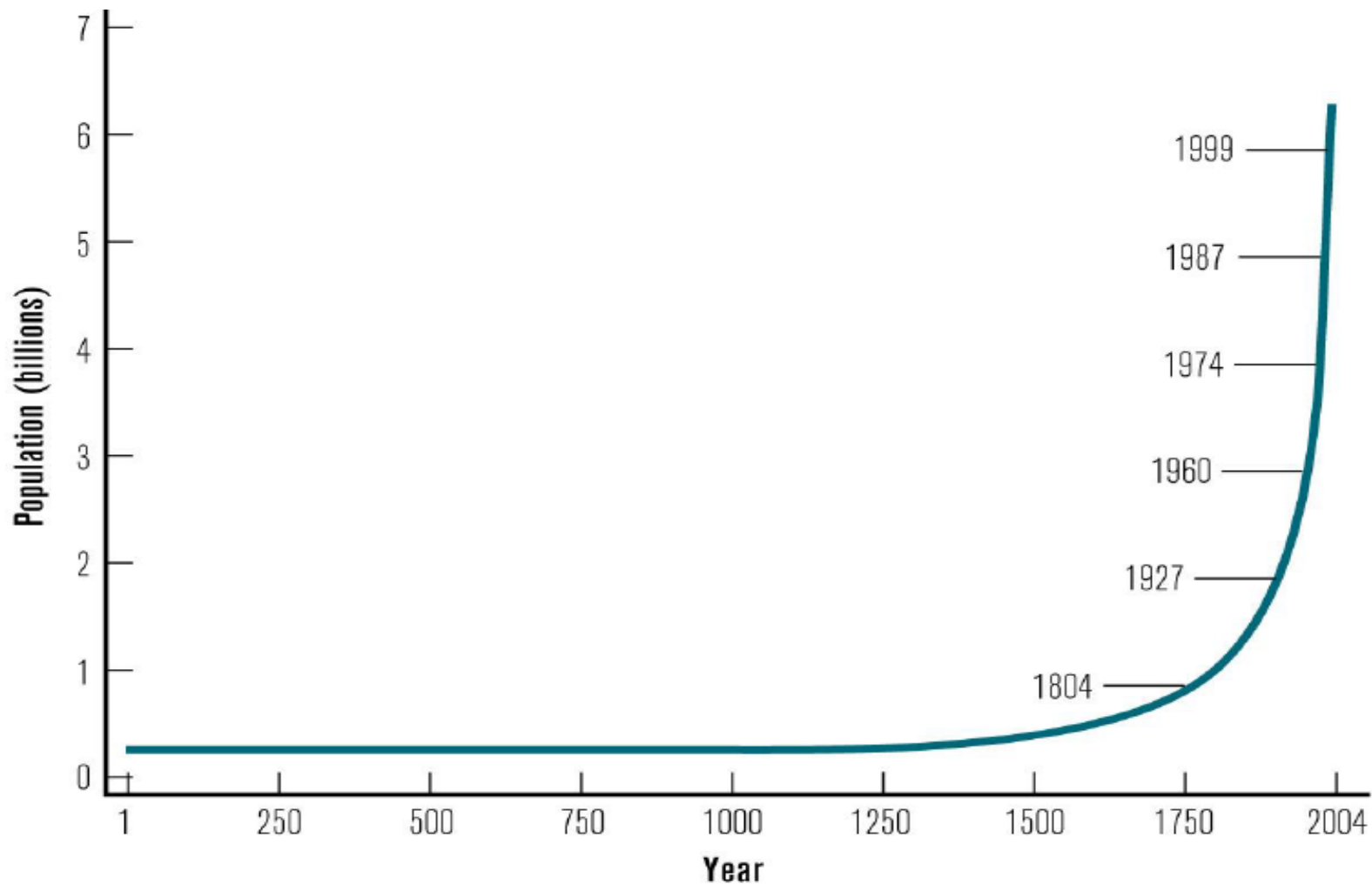
Topics

- Overview
- Demographic Transition
- Cause of Population Growth
- Population Growth and Economic Development
- Population Policy

Questions of Interests

- Do rising population numbers matter?
- Should we reduce population growth?
- Is population growth “good” or “bad” for development?
- What is the relationship between population growth and economic development?

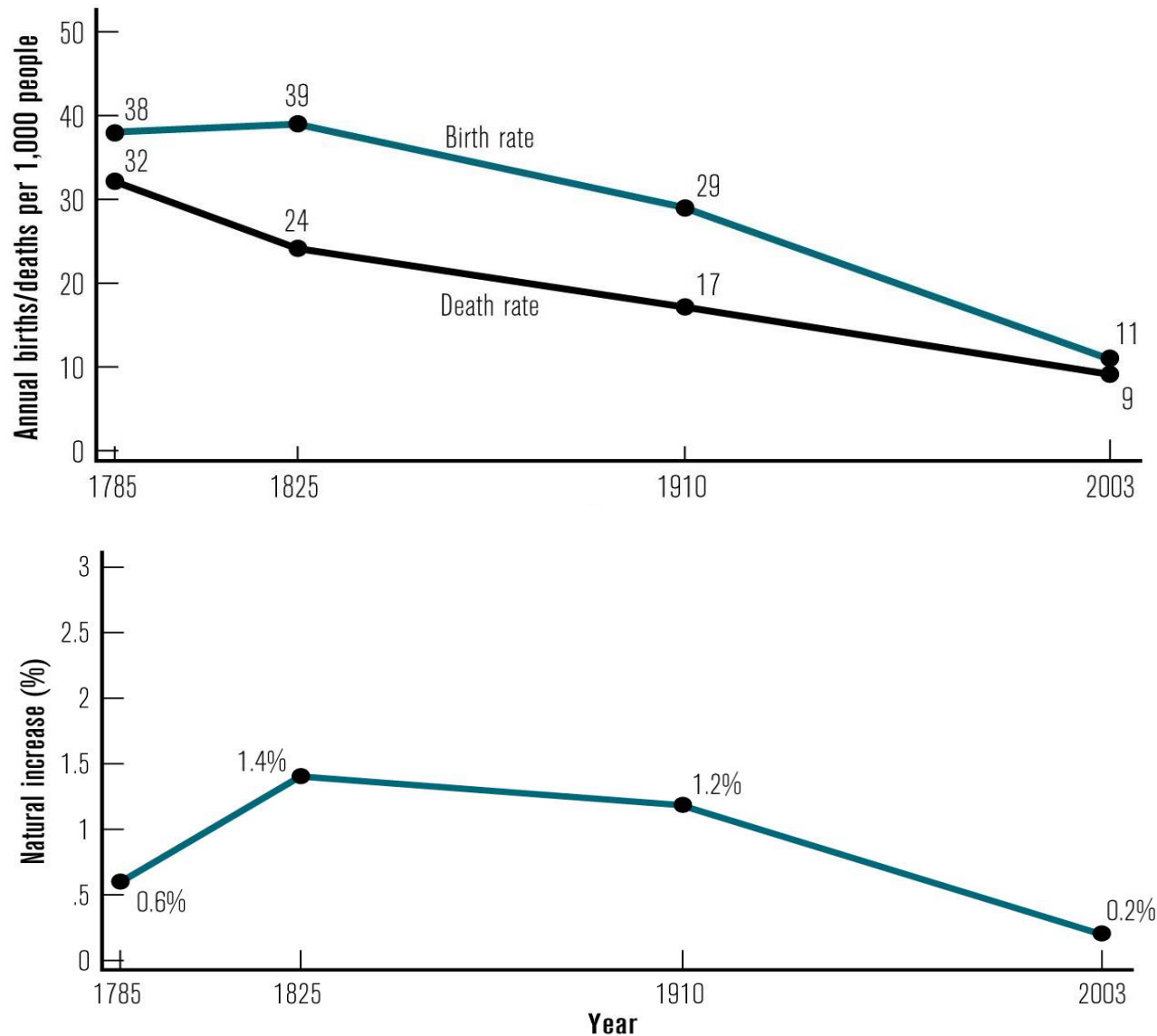
World Population Growth through History: Years Need to Add 1 Billion More People



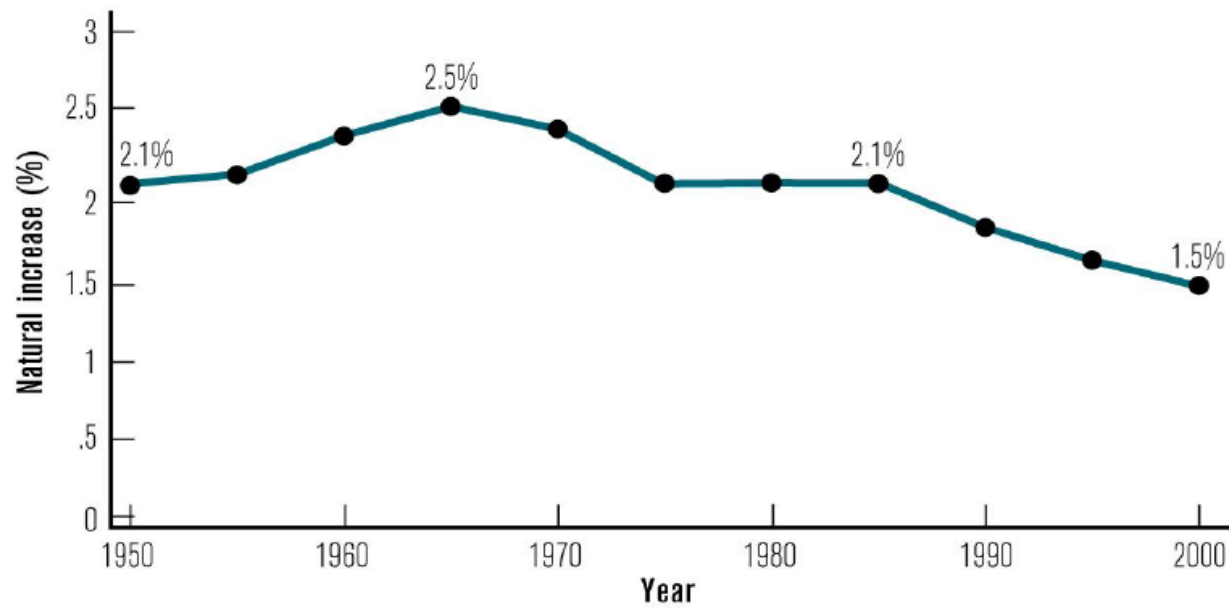
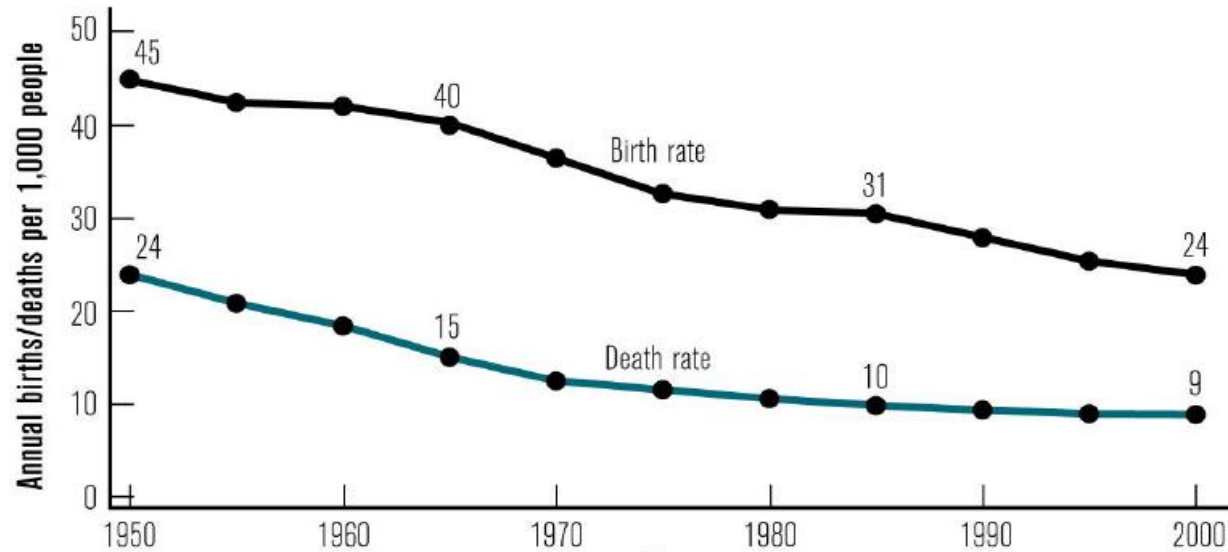
Demographic Transition

- **Demographic transition** occurs when population starts with low growth rates due to **high birth rates and high death rates**, moves through rapid growth stage with **high birth rates and low death rates**, and later becomes stable with low growth rates where **both birth and death rates are low**.
- Some definitions:
 - **Crude birth rate** = the number of live births per 1000 people (per year)
 - **Crude death rate** = the number of deaths per 1000 people (per year)
 - **Natural increase** = crude birth rate – crude death rate

Demographic Transition for Finland, 1785-2003



Demographic Transition for Less-Developed Regions, 1950-2000



Current Situation: Population Clock, 2010

		WORLD	MORE DEVELOPED COUNTRIES	LESS DEVELOPED COUNTRIES
Population		6,892,319,000	1,236,646,000	5,655,673,000
Births per	Year	140,184,169	14,215,211	125,968,959
	Day	384,066	38,946	345,120
	Minute	267	27	240
Deaths per	Year	56,907,606	12,125,055	44,782,552
	Day	155,911	33,219	122,692
	Minute	108	23	85
Natural increase (births-deaths) per	Year	83,276,563	2,090,156	81,186,407
	Day	228,155	5,726	222,429
	Minute	158	4	154
Infant deaths per	Year	6,383,531	80,133	6,303,398
	Day	17,489	220	17,270
	Minute	12	0.2	12

Source: Population Reference Bureau, *2010 World Population Data Sheet*,
www.prb.org/pdf10/10wpds_eng.pdf.

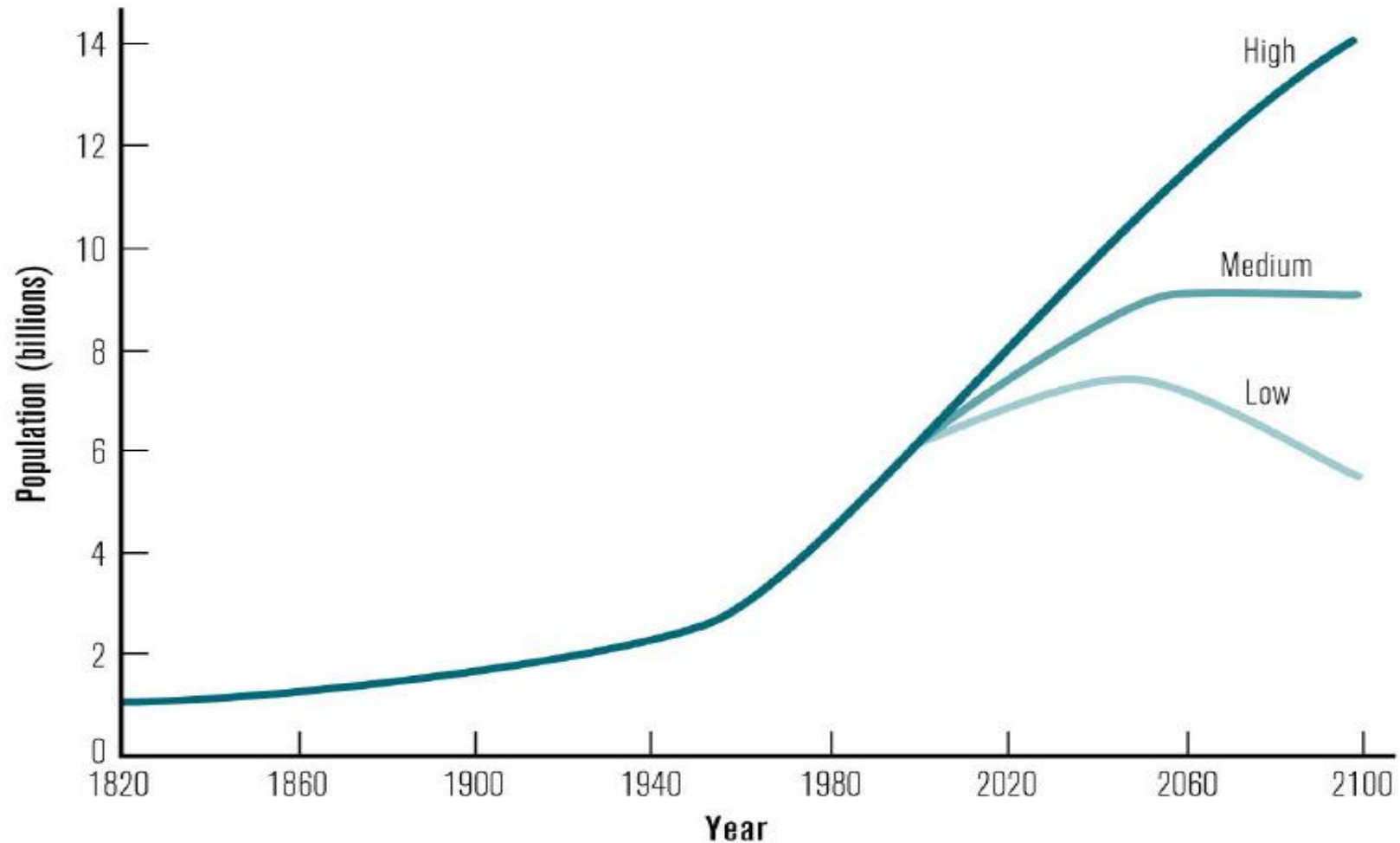
Current Situation: Countries with the Youngest and Oldest Populations, 2010

YOUNGEST	% AGES <15
Niger	50.1
Uganda	48.7
Burkina Faso	46.4
Congo, Dem. Rep.	46.4
Zambia	46.2
Malawi	45.9
Afghanistan	45.9
Chad	45.6
Somalia	44.9
Tanzania	44.7

OLDEST	% AGES 65+
Japan	22.6
Germany	20.5
Italy	20.4
Sweden	18.3
Greece	18.3
Portugal	17.9
Bulgaria	17.6
Austria	17.6
Latvia	17.4
Belgium	17.4

Source: Population Reference Bureau, *2010 World Population Data Sheet*, www.prb.org/pdf10/10wpds_eng.pdf.

World Population Historical Trends and Projections



The Demographic Future

- For all three scenarios, world population is expected to continue to grow over the next 50 years due to:
 - A desire for large families
 - A failure to achieve the desired number of children
 - Population momentum
- **Population momentum** is a dynamic latent process of population growth that continues *even after the birth rates fall* due to large youthful population that widens population's parent base.
 - This implies a given population will not stabilize until 2 or 3 generations.

Population Momentum

PERIOD ONE

Fertility above Replacement Line; Total Population, 12

First generation:



Second generation:



PERIOD TWO

Fertility at Replacement Line; Total Population, 16

First generation dies:



Second generation marries:

Third generation is born:



PERIOD THREE

Fertility at Replacement Level; Total Population, 16

Second generation dies:



Third generation marries:

Fourth generation is born:



Most Populous Countries, 2010 and 2050

2010

COUNTRY	POPULATION (MILLIONS)
China	1,338
India	1,189
United States	310
Indonesia	235
Brazil	193
Pakistan	185
Bangladesh	164
Nigeria	158
Russia	142
Japan	127

2050

COUNTRY	POPULATION (MILLIONS)
India	1,748
China	1,437
United States	423
Pakistan	335
Nigeria	326
Indonesia	309
Bangladesh	222
Brazil	215
Ethiopia	174
Congo, Dem. Rep.	166

Source: Population Reference Bureau, *2010 World Population Data Sheet*, www.prb.org/pdf10/10wpds_eng.pdf.

The Causes of Population Growth

- Thomas Malthus was population “pessimist”.
- Malthus believed that “passion between the sexes” would cause population to grow as long and far as food supplies permitted.
 - He argued population grows geometrically and food production grows arithmetically at best, leading to famines and starvation.
- It can only prevented by natural *positive checks* such as epidemics, famines, plague, natural disasters, and wars.
- Malthus did not live long enough to see European population growth decline.
- *Why did Birth Rates Decline in spite of Malthus pessimism?*

Why Birth Rates Decline?

- Alternative view: Children impose costs and incur benefits.
- Economic costs of children: Explicit (cash outlays) & Implicit (opportunity costs)
- Implications of viewing children as an “economic decision”:
 - Fertility should be higher when children earn income and contribute to the household
 - Reducing infant deaths should lower fertility
 - Institutionalized social security and pension will lower the need for parents to depend on their children for support in their old age.
 - Fertility should be lower if there is more opportunity for employment, especially for women.
 - Fertility may be higher with higher income because the explicit costs are more easily borne.

Becker's Theory of Household Economics

- Gary Becker analyzed whether children are “normal” or “inferior” goods.
 - Couples *maximize joint total utility function* from having children which is a function of the following factors: (i) *number of children*, (ii) *child quality* (associated with health & education), (iii) *goods and services*, subject to constraints of time and income or cost of goods and services.
 - *Fertility falls as income rises over time* due to higher cost of children, especially when the opportunity cost of parents' time goes up.
 - Given the rising cost of child *quantity*, parents opt to invest in *child quality* and spend more time and money on a smaller number of children. ➔ demand for children is a “*normal good*”.

Population Growth & Economic Development

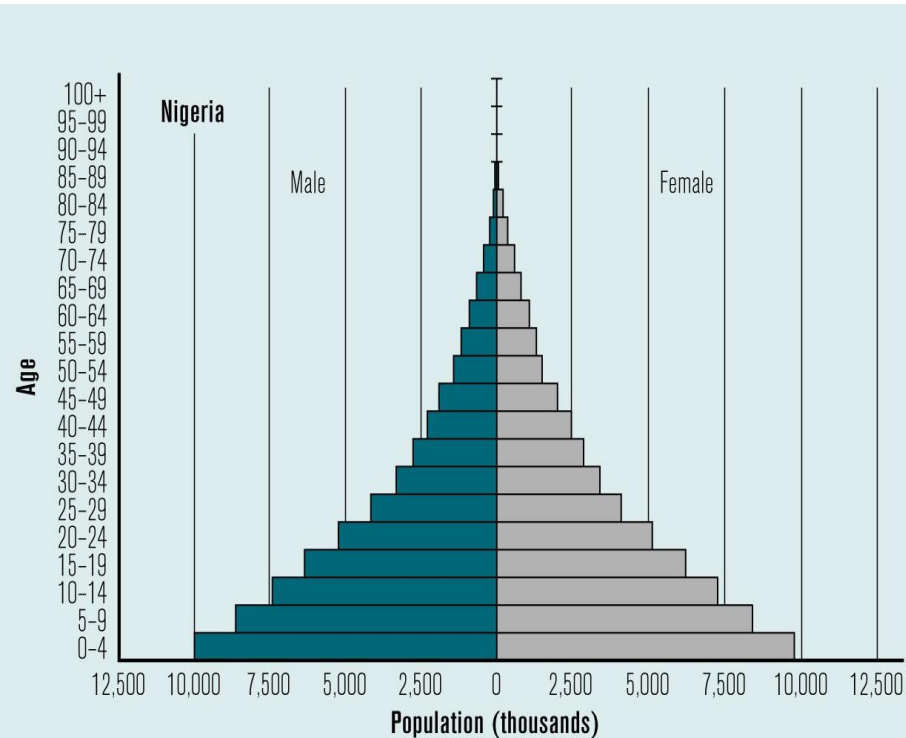
- Question: Is population an obstacle or helpful to development?
- **Population and Productivity:** Rapid population growth may retard labor productivity in the short run
- **There is no simple correlation between economic and population growth**
- Population and Market Failures

Population and Accumulation

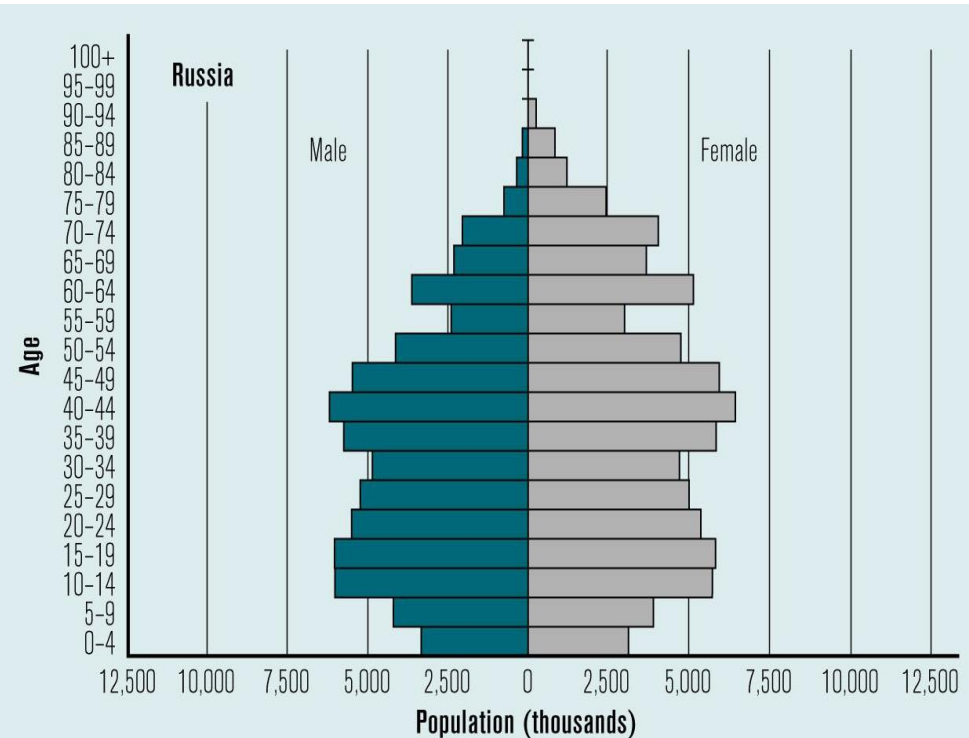
- **Population pessimists** - perceived **population growth** as harmful to economic development.
- **Coale and Hoover** argue that a *reduction in birth rate could raise per capita income* in three ways:
 1. With lower fertility, capital per worker for growing number of workers (*capital widening*) would decrease and permit **more investment to be used** to increase capital per worker (*capital deepening*).
 2. With lower fertility, **investment** will be diverted away from education and health **toward physical capital investment**.
 3. Slow population growth would **lower dependency ratio**, which is the **ratio of non-working population (0-14 & 65 and over)** divided by total working population.

Population Growth, Age Structure, and Dependency Ratios

Nigeria



Russia



Population and Productivity

- **Population optimists** – view population growth as having the potential to increase factor productivity.
- Why?
 1. A larger population can yield **economies of scale** in production and consumption.
 2. There's some evidence that **population pressures can induce technological change**.
 3. Julian Simon - a larger population contains **more entrepreneurs and other creators**, who can make major contribution to solving the problems of humanity.

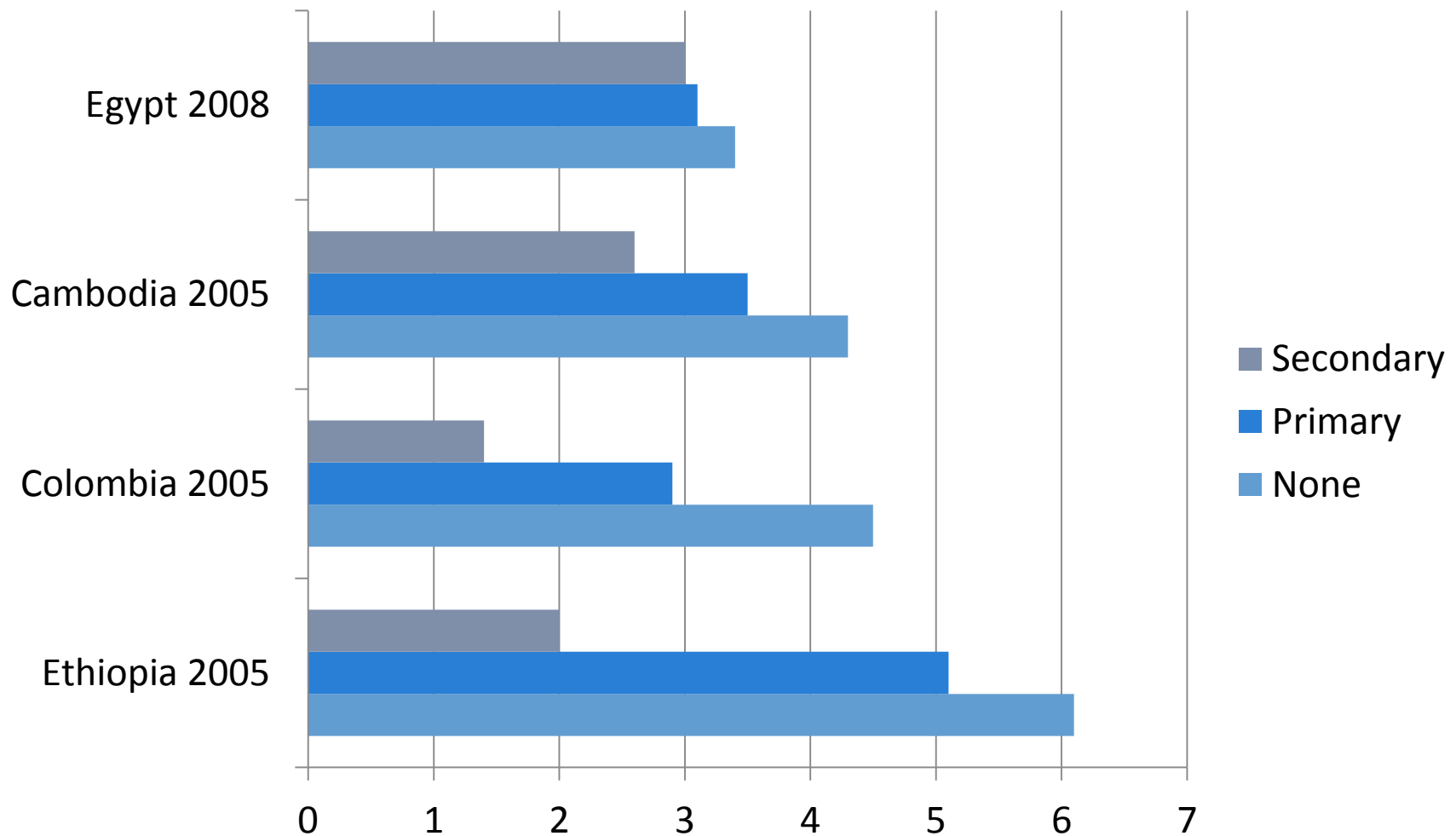
Population and Market Failures

- **Population revisionists** (or population neutralists) – **there is no one size that fits all on population matters.**
- Revisionists argue that the problem has to do with **market failures** where **costs and benefits of households reproductive behavior** are not fully borne by them.
- The fundamental problem is *not too many people*, but *the lack of well defined property rights*.
 - “The tragedy of commons” – pop growth can destroy a common resource.
 - If population grows too quickly, there can be congestion of government services.
 - Pay attention to a failure in the market for contraception
- Population revisionists also focus on other dimensions of human welfare, e.g. income distribution.

Population Policy

- Reducing birth rates is one solution to lower population growth. But How?
- **Family planning** or **broad-based socioeconomic development**
 - *Educating girls*
 - All policies that *promote economic development* → more education, better health, higher per capita income → lower fertility
 - **Family Planning Programs**: Use of persuasion and education to influence couples to have less children, or reduce *unwanted births*
- Authoritarian approaches
 - **Chinese one child policy campaign in 1979**
 - Dramatic decline in fertility
 - Rapidly ageing population in the next decades
 - Growing imbalance between the number of males and females

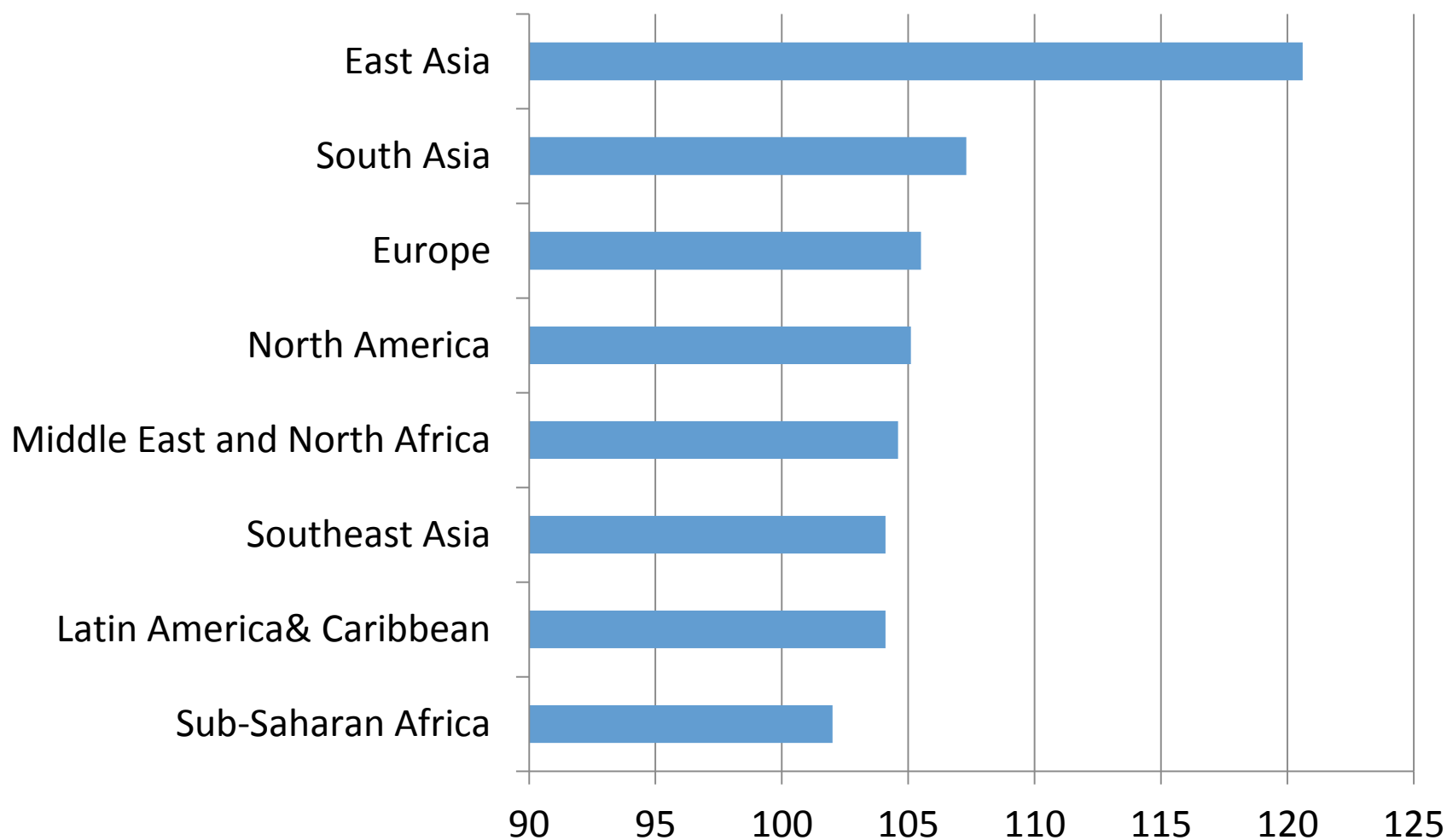
Total Fertility Rates by Mother's Education



Missing Women & Girls

- In most countries **male: female ratio** is not equal or 50: 50. It is more like 105:100.
 - In Africa, it is 102:100.
 - In East Asia, it is 121:100.
- This is due to cultural male preference by couples in traditional societies for various reasons.
- Other factors such as sex selection abortion, abandonment of female infants, including murder of female children in the Chinese case.
- In 2000, China reported male: female ratio of 105:100 for first births, but 152:100 for second births. This due to high “one child” population policy.

Male/Female Ratio of Children 0-4 Years Old (2005)



Source: http://www.un.org/esa/population/publications/wpp2008/wpp2008_highlights.pdf