
Development Economics

Lecture 18: Education

Professor Anant Nyshadham

ECON 2273

This lecture

1. Education as an investment
2. Returns to education
3. Education and growth
4. Education and health
5. Female education, gender bias, and the “Missing Women”

Different views on education

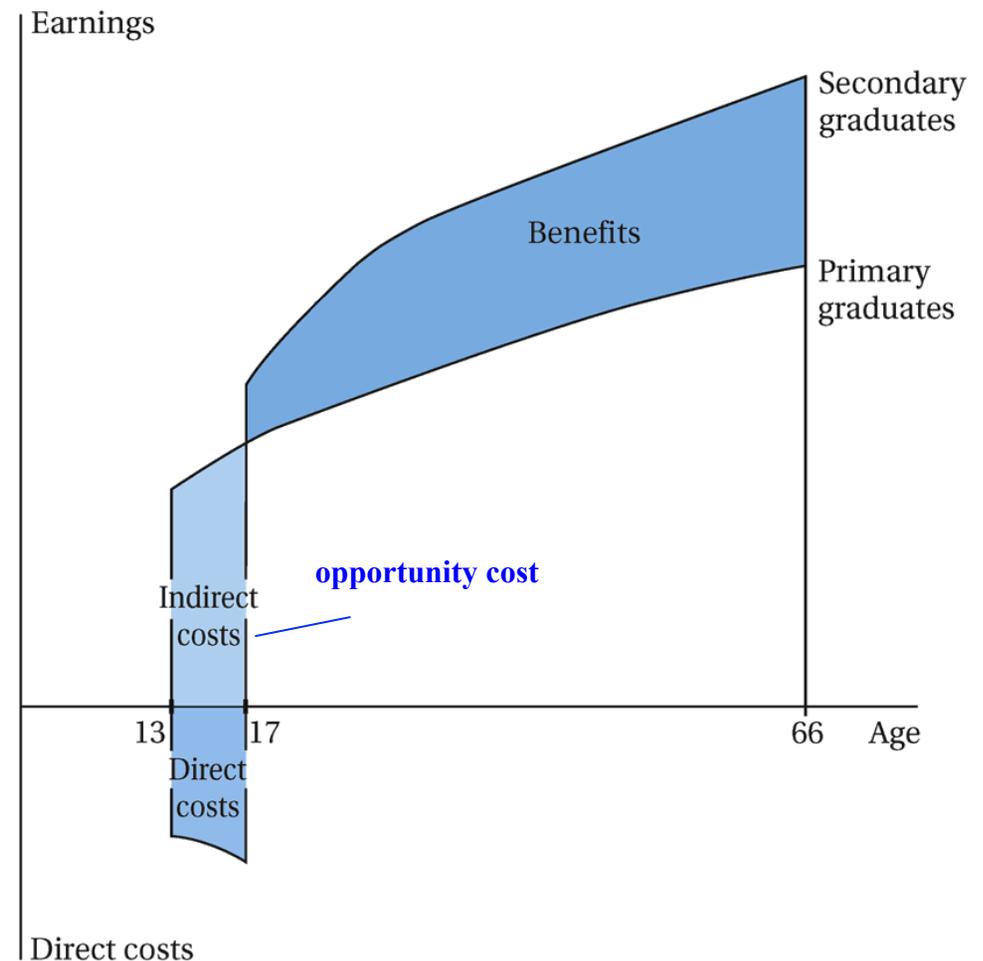
- Easterly in *Elusive Quest for Growth* has a negative view
 - Education has not done much for growth
- Case in “The Primacy of Education” a more positive view
 - Increases individual income
 - Increases health
 - Decreases fertility
- Todaro and Smith even more optimistic about education

Education: investment or consumption?

- For an individual the “Human Capital” view of education thinks of education as an investment
 - Can be analyzed like any other investment
 - Compare costs and benefits
- Education may also be a goal in its own right
 - Improves the capabilities and functionings of an individual
 - Leads to a more satisfying and fulfilling life
- Education may be both consumption and investment

Education as an investment

- How compare value of extra education?
 - Extra education has costs
 - Direct costs of school fees
 - Indirect costs of forgone earnings (opportunity cost of time)
 - Benefits of higher earnings
- Weight each year by how far away it is:
 - Net Present Value (NPV)



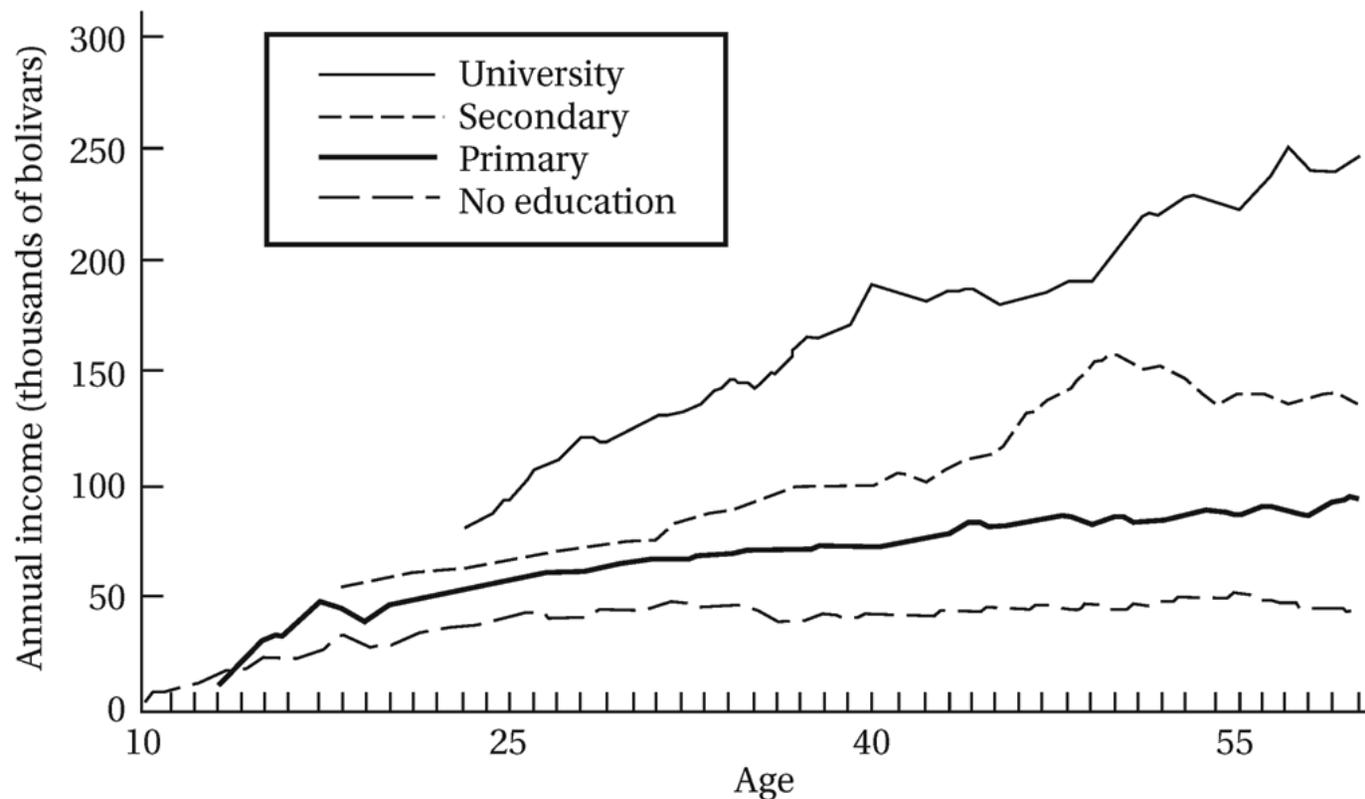
Source: Todaro and Smith (2009)

Education as an investment

- Rate of return r
- Investment gives a stream of payments
 - Sometimes positive, sometimes negative
 - Negatives often come first, and positives later
- $x_t = \text{benefits}_t - \text{costs}_t$

- Net present value
 - $\text{NPV} = \sum x_t / [(1+r)^{t-13}]$, $t=13$ to T
 - Non-mandatory schooling vs. labor trade-off starts at age 13 and retire at time T

Education as an investment: Venezuela



Source: George Psacharopoulos, *The Profitability of Investment in Education: Concepts and Methods* (Washington, D.C.: World Bank, 1995). Reprinted with permission.

Source: Todaro and Smith (2009)

Education as an investment

- The NPV gives the total extra value of additional education today

- Rate of return of extra education:
 - The interest rate (or discount rate) r that makes the Net Present Value 0
 - $\text{NPV}(r) = \sum x_t / [(1+r)^{t-13}] = 0$
 - Solve for r that makes $\text{NPV} = 0$

Returns to education: the social return

Country Type and Region	Social Rate of Return (%)			Private Rate of Return (%)		
	Primary	Secondary	Higher	Primary	Secondary	Higher
Developing						
Sub-Saharan Africa	24	18	11	41	27	28
Asia	20	13	12	39	19	20
Latin America	18	13	12	26	17	20
Developed	14	10	9	22	12	12

Source: George Psacharopoulos. "Returns to investment in education: A global update," *World Development* 22 (1994): 1325–1343, tab. 1. Copyright © 1994. Reprinted with the permission of Elsevier.

Note: How these rates of return were calculated is explained in note 20 at the end of this chapter.

- ❑ The social rate of return includes the costs of payments made by the state
- ❑ Public school is typically subsidized, so the individual faces costs that are smaller than the cost of the education
- ❑ For public policy, it is the social returns that matter

Source: Todaro and Smith (2009)

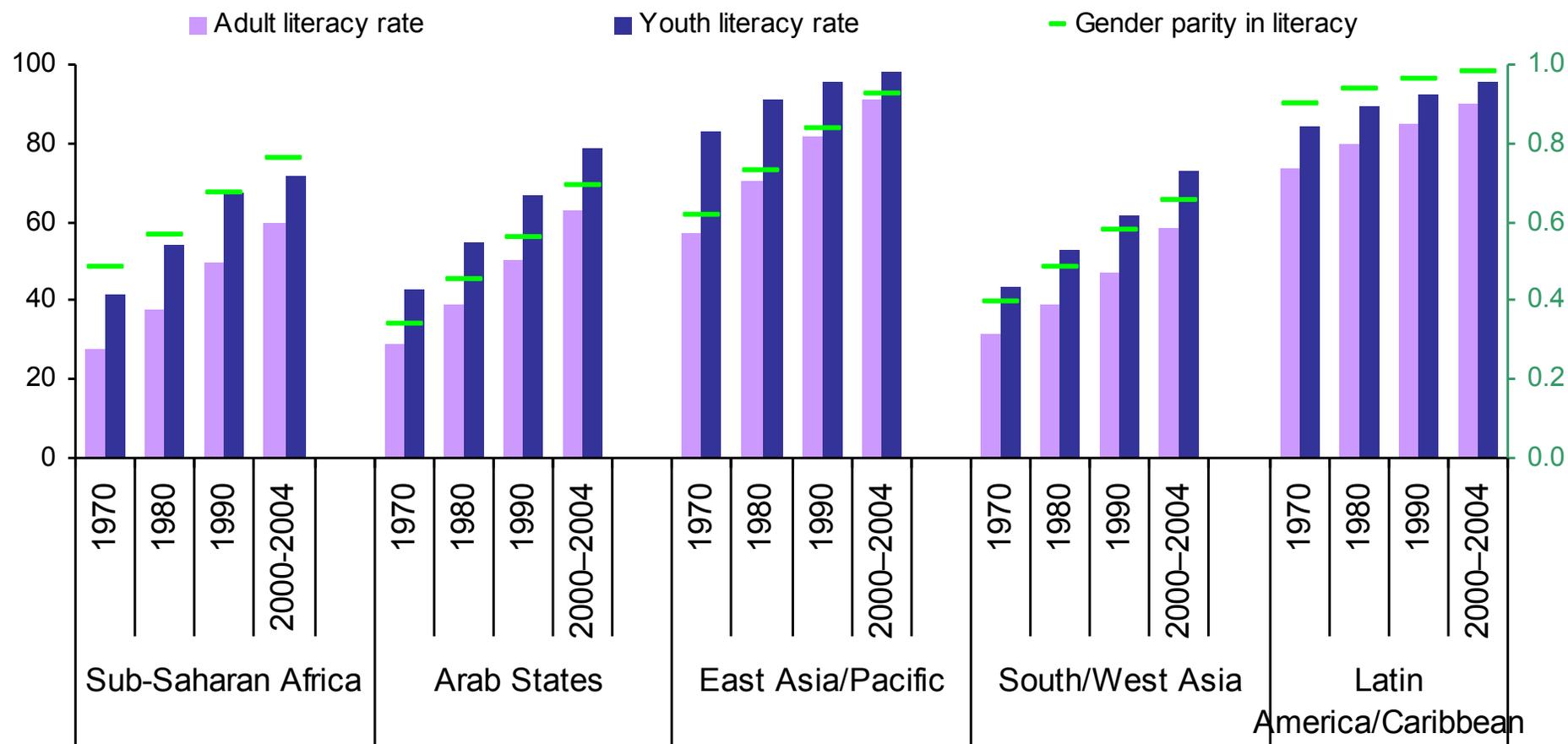
Overestimated returns to education

- Many efforts to calculate rates of return to education substantially overestimate the return
 - Which leads to overly optimistic policy
 - And puzzles of why the poor do not invest more in education—despite “returns” of 40%
- Why are returns overestimated?
 - Estimate returns by comparing the incomes of people with different levels of education
 - But people with different levels of education different for many reasons: better educated families, with better connections, higher health, and higher wealth
 - Attribute the benefits of all of the other factors to education, so education seems better investment than it is
- Credible estimates put returns around 10%, may be even lower.

Education and growth

- Since 1950 substantial increases in education in developing world
- But until recently, and mostly in China, growth in developing world has been disappointing
 - And China was well educated *before* its growth occurred
- After all, if education has 10% (or much higher) returns, and everyone goes to school for a year, then the economy should improve by 10%
- Africa has been nearly stagnant, despite much more education

Education and growth



Source: UNESCO. 2006. "EFA Global Monitoring Report 2006: Education for Life."
<http://www.unesco.org/en/efareport/reports/2006-literacy/>

Education and growth

- “Where has all the education gone?”
 - Large increases in education—but no corresponding increases in GDP
- Why so little relationship?
 - Quality may be very bad—there may have been very little increase in learning despite lots of “education”
 - No complementary inputs—education only useful with technology
 - Education as a sorting mechanism—better educated get better jobs, but are no more productive
 - Limited supply of jobs, education determines who gets what, but does not improve total output, despite being good for those who have more of it

Education and health

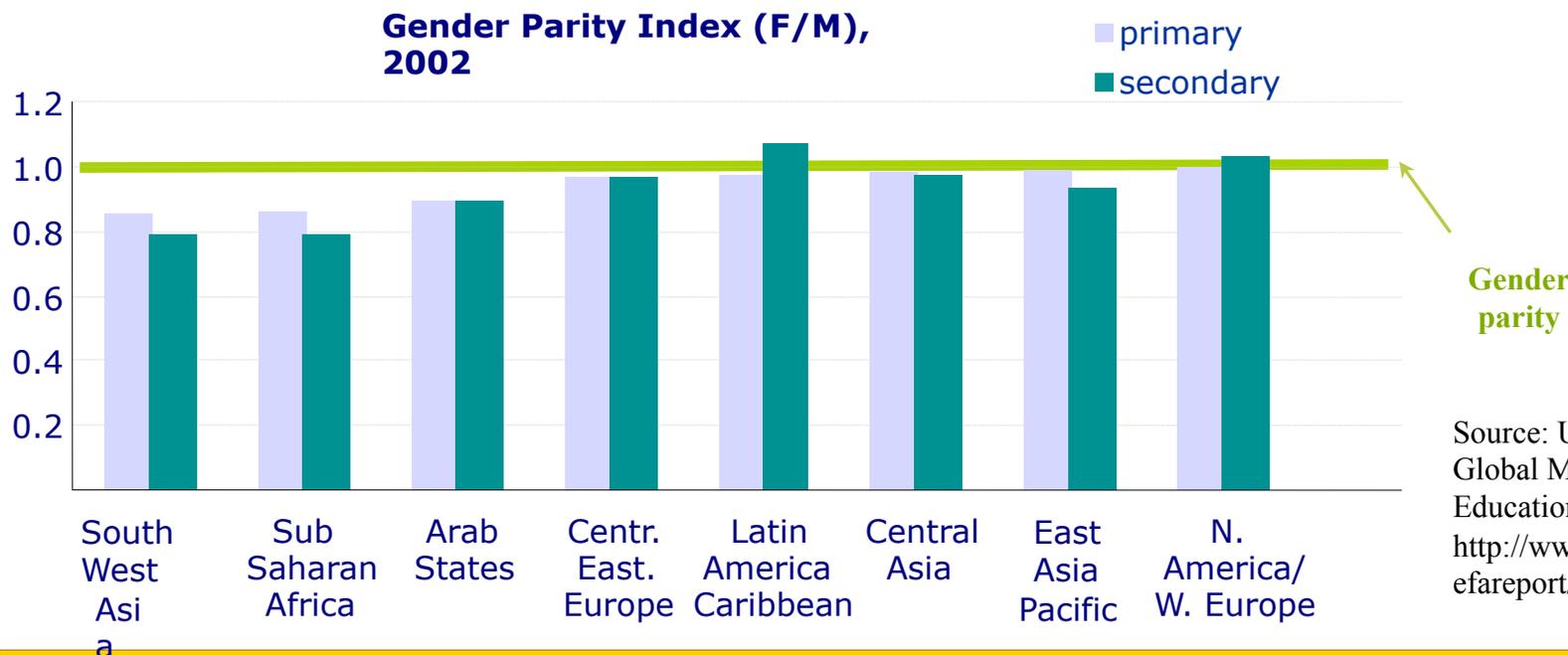
- Education may (or may not) improve productivity
- But it does seem to improve health
- How might education improve health?
 - Higher income
 - Better understanding of sanitation and hygiene
 - Ability to read labels and understand medicines, which often require complex doses,
 - Understand and avoid hazardous materials (pesticides, poisons . . .)
 - Better able to use health care system

Education and health

- Example: germ theory of disease
 - Until late in 1800s, little knowledge about cause of diseases
 - Infant mortality among better educated, such as school teachers, no lower than rest of population
 - But when germ theory of disease started spreading, school teachers could understand the implications of the new approach
 - By 1920s mortality of teacher's children 40% lower than rest of population
 - Conclusion: education matters for health

Female education

- Educational gender gap: difference between the education of females and males
 - Often look at enrollment ratios: Female enrolment/Male enrolment
 - Parity is 1, often much worse than 1
- Has been improving, but still far from equal



Source: UNESCO. 2006. "EFA Global Monitoring Report 2006: Education for Life."
<http://www.unesco.org/en/efareport/reports/2006-literacy/>

Female education

Why do we care about female education in particular?

- ❑ Care about equity—reason enough!
- ❑ Education may reduce fertility (and fertility reduces education)
- ❑ Female education seems to improve overall household and children's education and health
 - An inexpensive way to improve health, reduce poverty
- ❑ Evidence suggests (if believe it) that returns on female education are higher than for male education in many developing countries

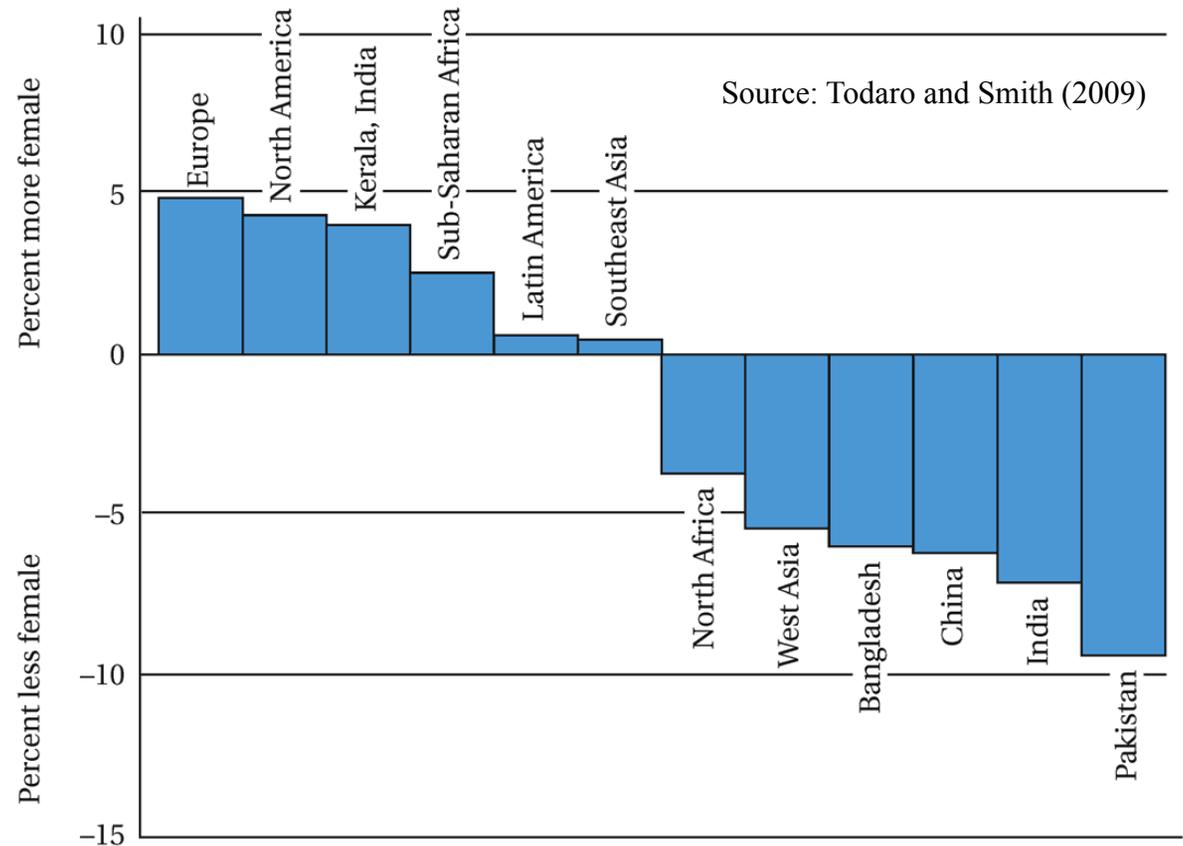
Female education

Why is female education so low in so many places?

- ❑ In much of Asia, girls are married off, and go to live with their husband's family, and sometimes require a dowry
- ❑ Boys stay with parents, often care for them in old age, and work on farm in rural areas
- ❑ Investment in boys can be recovered, while investment in girls benefits her husband's family
- ❑ Female education may even have a negative payoff—sometimes better educated girls are considered “less marriageable” (unclear how widespread)

Gender Bias and “Missing Women”

- Low female education is just one part of what seems to be pervasive gender bias
- Most obvious and stunning example is the “missing women”
 - In low discrimination societies typically 105 women for every 100 males
 - In many parts of Asia 95 to 90 women for every 100 males



Source: Amartya Sen, *Development as Freedom* (New York: Knopf, 1999), p. 104. Copyright © 1999 by Amartya Sen. Reprinted with the permission of Alfred A. Knopf, a division of Random House, Inc..

- Approximately 100-200 million women are “missing”

Gender Bias and “Missing Women”

- In 1990, the missing women were the result of:
 - Some infanticide (intentionally letting girls die)
 - Mostly lower inputs in health and education which left girls and women more likely to die
 - Female children had substantially higher mortality rates
 - Like education, investment in health expensive, and when female children not valued socially or valuable economically (to the parents), such investments do not take place
- In 2012, gender differences in child mortality much lower, but gender ratio is worse in many areas. Why?
 - Ultrasounds are now widely available even in rural areas
 - Allow parents to avoid the costly investment of even having a girl child by aborting before she is born

Gender Bias and “Missing Women”

- Consequences of sex selective abortion are very complex:
 - Women who are born may be better off
 - With parental gender choice, they are born into families who care for daughters—which may explain the reduction in the gender bias in infant mortality
 - Women may become more valued socially—supply and demand
 - Many men will not be able to marry
 - Large, disaffected, group in China and India
 - Possible source of social unrest, crime, violence against women