Demography and economic growth

Why important

Data in the pre census era

Simple Malthusian model

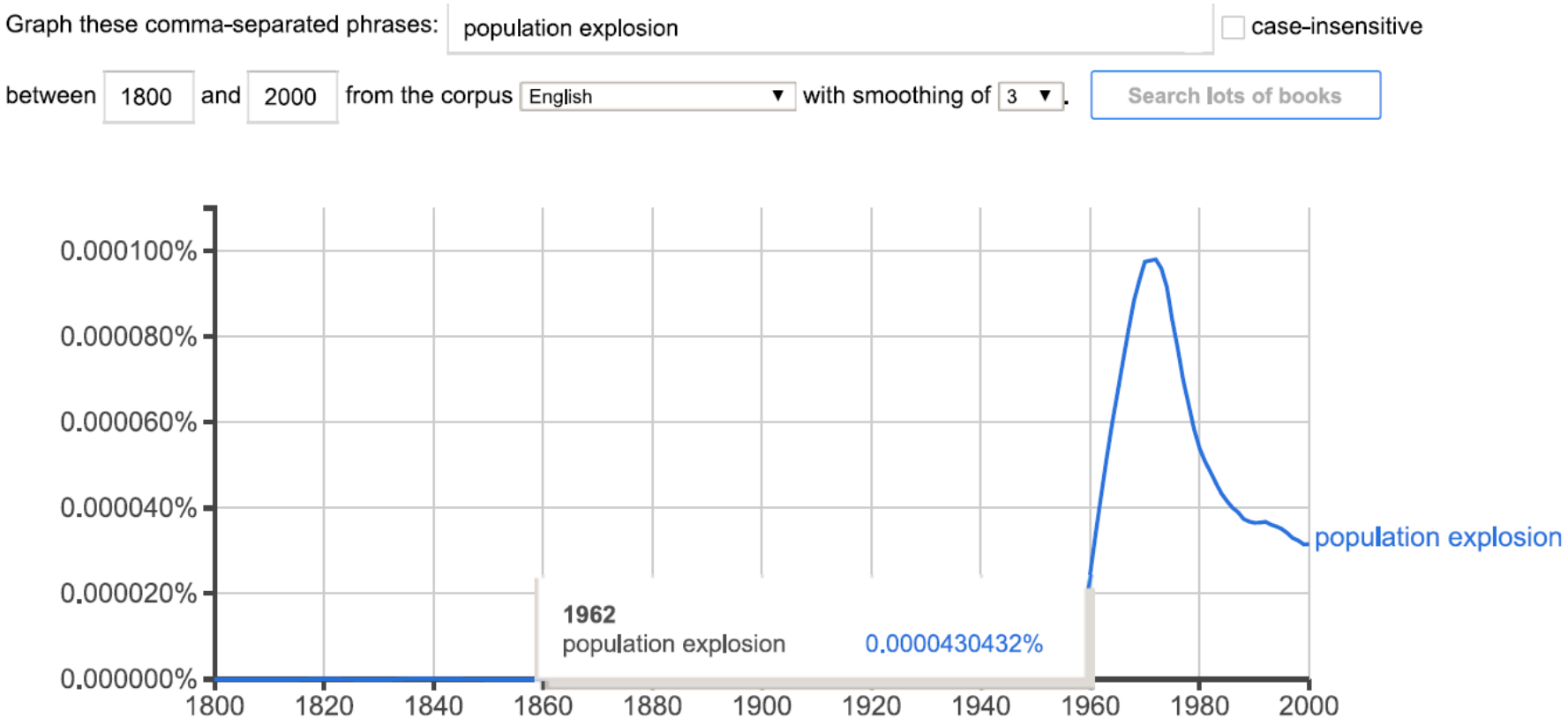
Demographic transition

Unified growth theory and other links to growth

Importance of demography

- Level effects in simplest Solow model
  - Or with exogenous technical change
  - More later about role in endogenous growth model
- Level effects seemed to justify fearing rapid population growth in LDC's
- So did simple arithmetic and experience of countries that were just beginning to grow
- Led to bad policy
  - Example: one child policy China

These fears turn out to be unfounded—so economic history shows



Real reasons demography is important

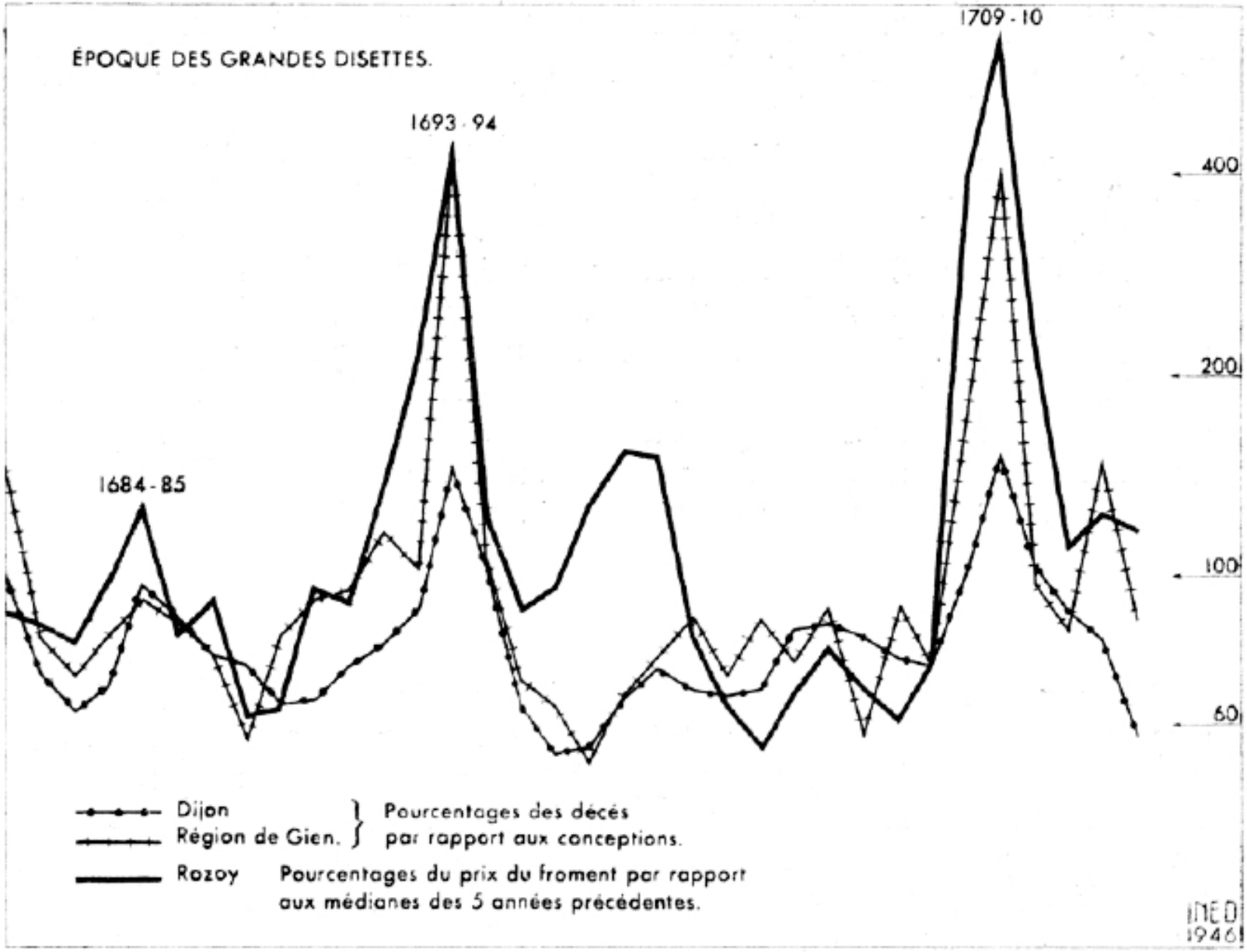
- Demographic change as growth begins
  - Demographic transition
  - Rapid population growth
  - Can slow economic growth
  - Helps areas of immigration (USA 19th century) or regions with young population (Asia late 20th)
- How then are demographic change and economic growth related?
- To find out we need to look over the long run at historical data

How to study before any census?

- In Europe can use records of baptisms, marriages, burials
  - Population overwhelmingly Christian
  - Records back to 17th or 18th century and in some cases back to 1500 or before
- Family reconstitution in France
  - Biases and limitations
  - Discarding incomplete families overlooks mobile poor
- Backward projection in England
- Lineage records China

What reconstitution reveals

- Mortality would jump during crises
  - Often coincided with skyrocketing grain prices
  - Initially thought to be starvation
  - We know it was disease as people searched for food or fled from marauding armies
  - Chronic hunger a problem for minority
- High child and infant mortality
  - Roughly 50% chance of making it to age 18
  - Example of Mouy (France): 70% die before 19 in late 1600s, 42% in 1700s


ÉPOQUE DES GRANDES DISETTES.
1709 - 10
1693 - 94
1684 - 85
400
200
100
60
Dijon
Région de Gien.
Pourcentages des décés par rapport aux conceptions.
Rozoy
Pourcentages du prix du froment par rapport aux médianes des 5 années précédentes.
INED
1946

Data from larger samples 1750-99
Deaths, survivors per 1000 births

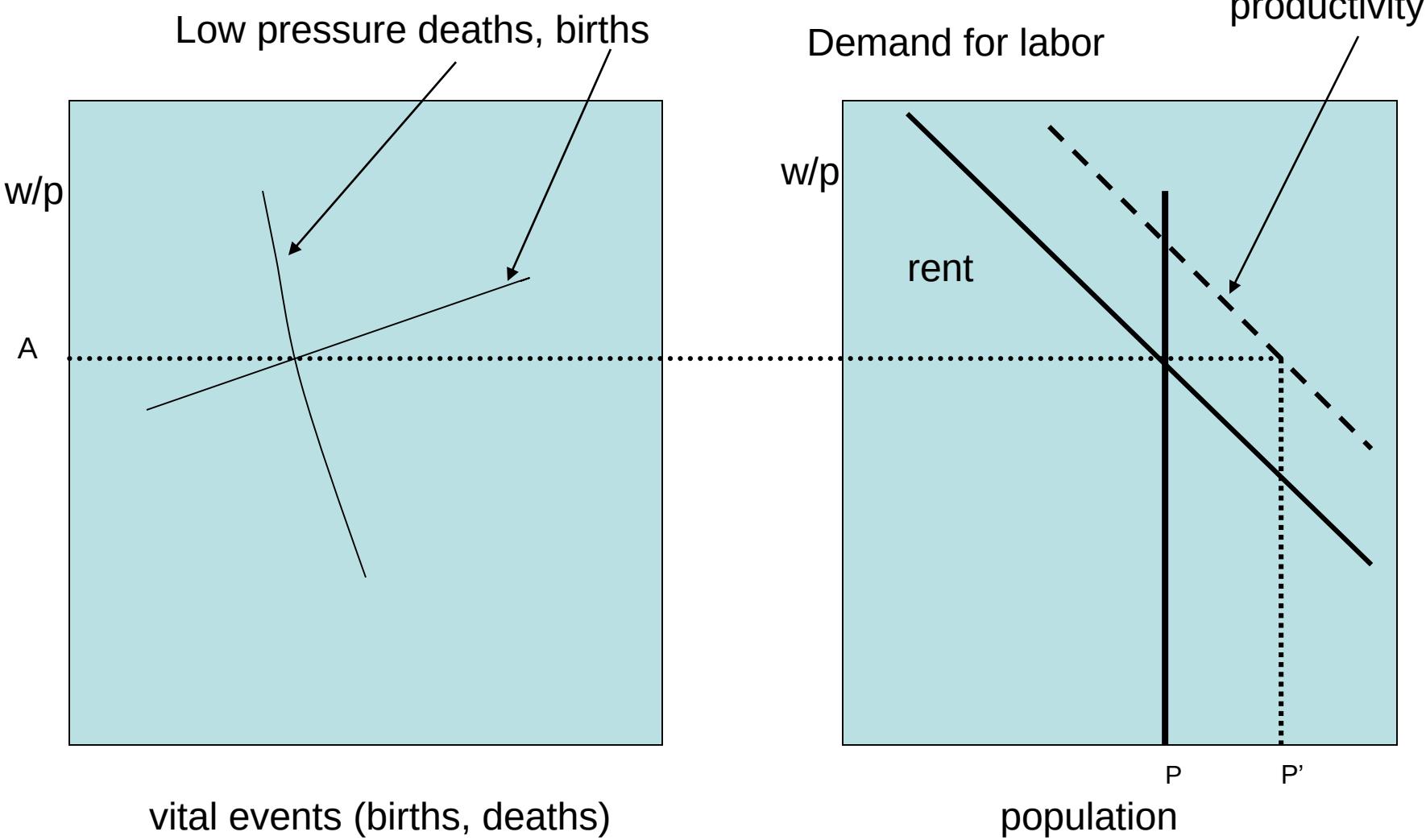
Country	France	England	Sweden	Denmark
Deaths age 0-1	273	165	200	191
Deaths age 1-5	215	104	155	156
Survivors to age 15	491	736	612	641
Life expectancy	27.9	36.9	37.3	37.3

Better: backward projection

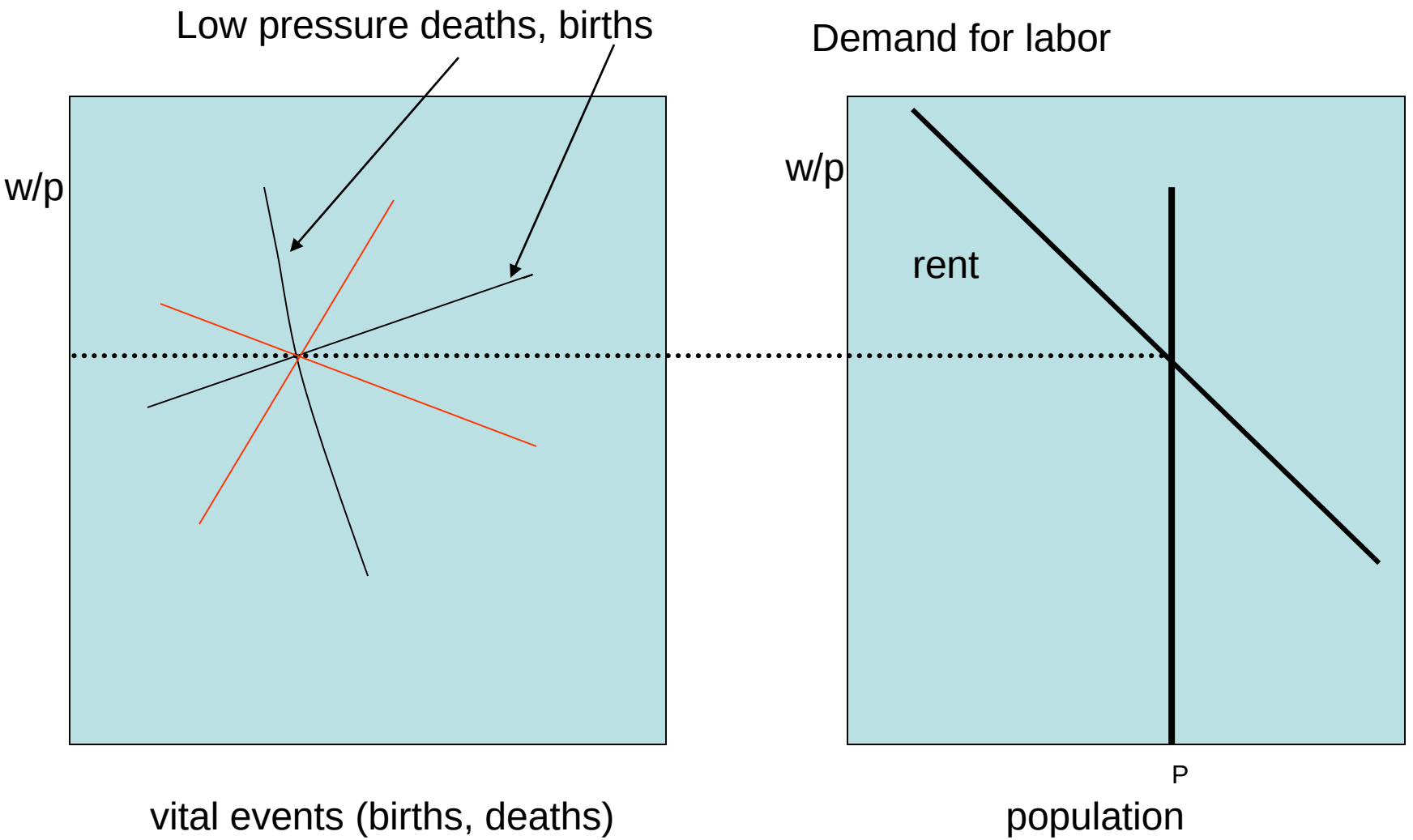
- Starts from population and age distribution in 19th century
- Uses births, deaths, marriages from sample villages to project backwards
  - Requires data on life expectancy by age
  - Based on baptisms, burials
- First done for England 1541-1871
  - Shows English fertility responds to real wages as people marry later when wages low

Simple Malthusian Model

w/p = real wage



High pressure versus low



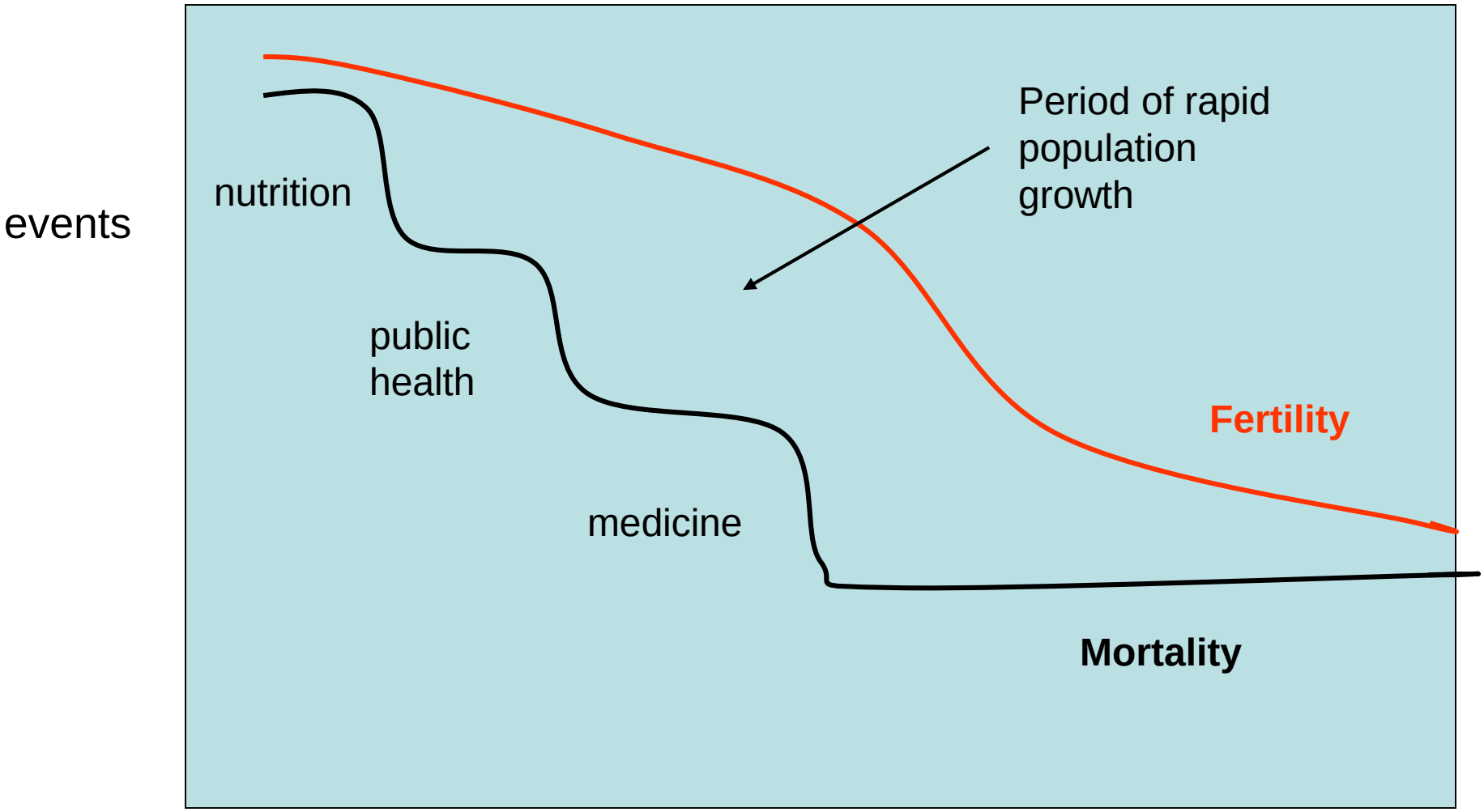
France not high pressure

- Test: responsiveness of marriages and births to real wages
  - Uses short term variation in wheat price
  - Assumes nominal wage constant in short run
  - And real wages exogenous to short term birth/deaths

Cumulative effect after 4 years of 1% short term increase in wheat price (1740-1789)

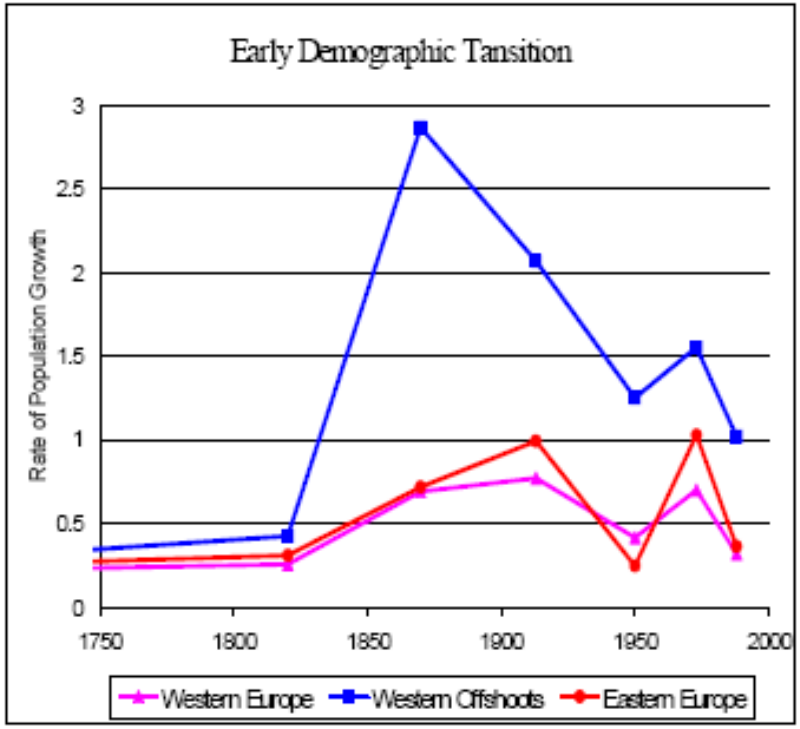
Effect on	England	France
Marriages	-0.113	-0.608
Births	-0.164	-0.170

Demographic Transition



Consequences for growth

- During transition, large number of children survive to adulthood and go to work
  - leads to rapid population growth and migration
- Labor force participation rises
  - boosts **measured** growth of y
- Effect large enough to explain
  - 92% of Old World/New World growth gap 1870-1913
  - 1.5 to 2% of 6.1 % faster growth in Asia 1970-95
- But fertility eventually falls



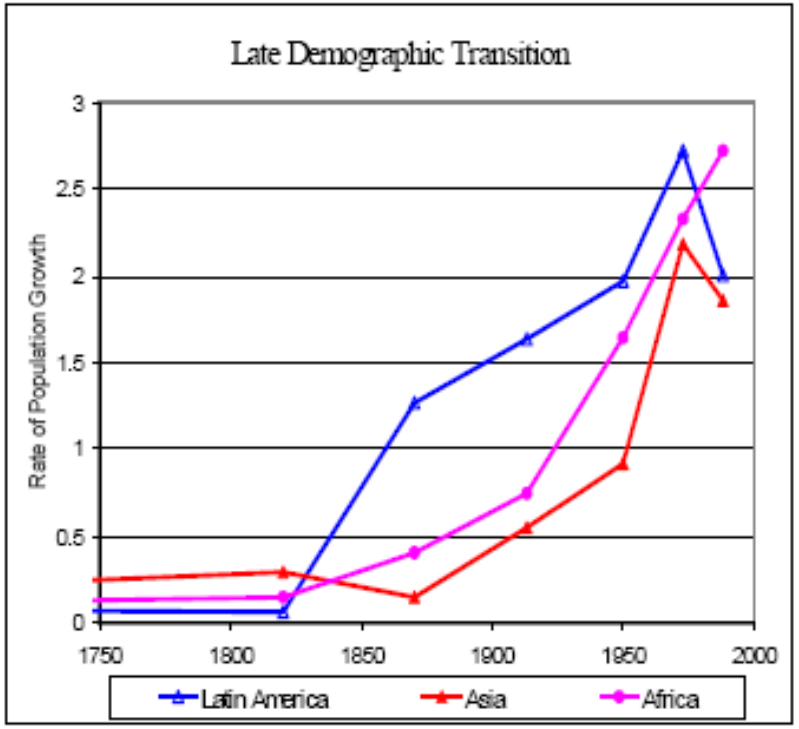


Figure 2.19. The Differential Timing of the Demographic Transition Across Regions
Source: Maddison (2001)

Historical evidence teaches important lesson

- We don’t have to fear population explosion when an economy begins to experience economic growth
  - Fertility eventually falls
- When it falls is difficult to predict though
  - Women’s education and labor market participation usually speed it up
  - But so do non economic variables
    - Example of France
    - Pension systems can be important

Big problem remains: what is relationship between economic growth and demographic change?

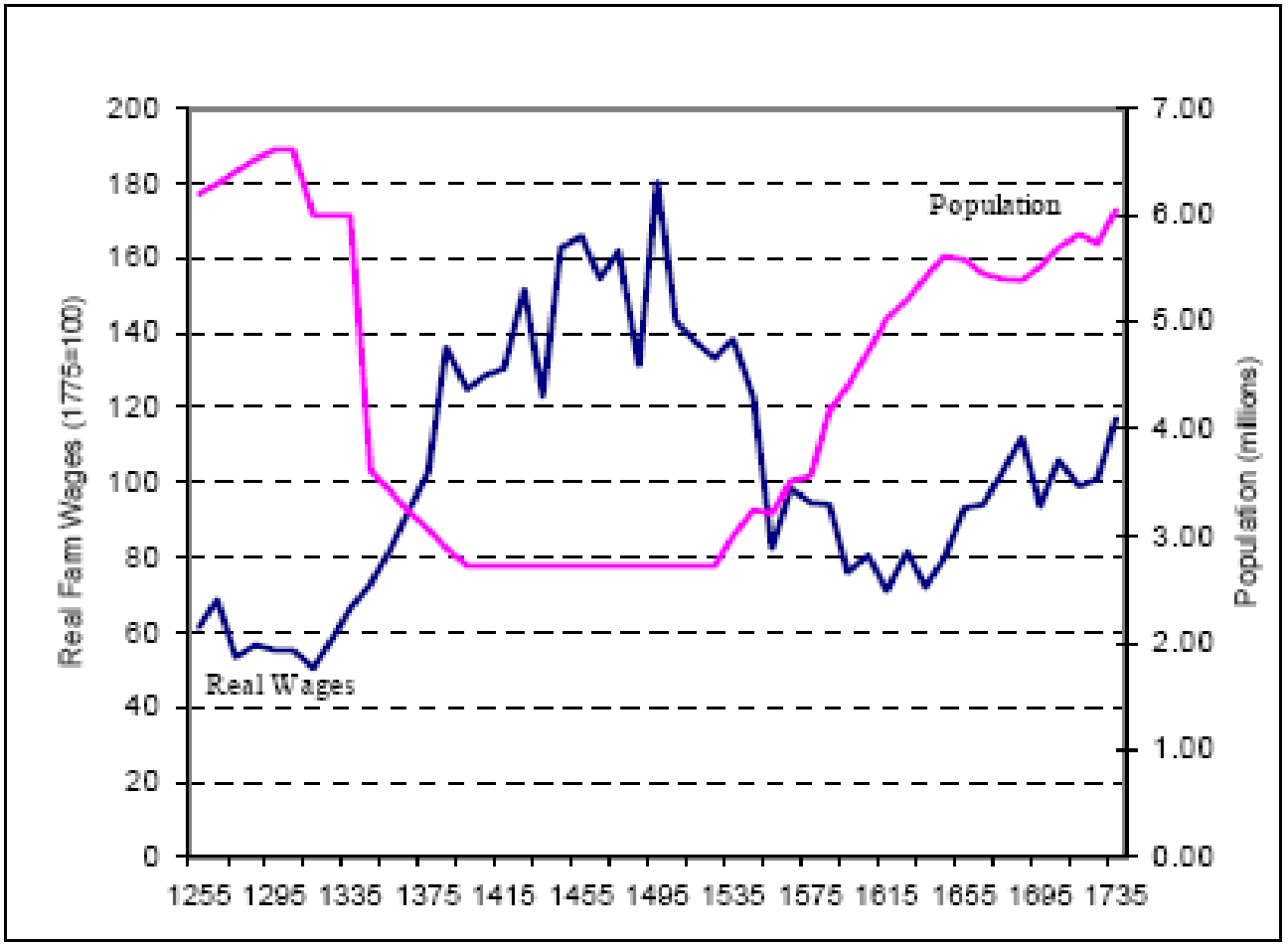


Figure 2.5. Population and Real Wages: England, 1250-1750

Source: Clark (2001, 2002)

Solution: unified growth theory?

- Seeks to explain
  - Enduring Malthusian regime of economic stagnation
  - Post-Malthusian regime of growth and rising population
  - Demographic transition to modern growth regime
- Seems to fit English history 1700-2000
  - At least pattern of wages and population growth in previous slide

But there are big problems

- Predicts education of children and more human capital as productivity rises
  - But early English factories employed unskilled child and adult labor
  - Not educated workers with human capital
- Also can't explain great divergence
  - why Europe grew rich before China, India, and Middle East
  - Left to accidents, institutions, culture, etc.

Another possible link between demography and growth?

- European marriage pattern: late marriage, high female celibacy, nuclear family
  - Origins in manorial economy?
- Claim: this pattern
  - Characterized and unique to western Europe
  - Stimulated economic growth by encouraging accumulation of human capital

Econometric meta study refutes this claims (Dennison & Ogilvie)

- European marriage pattern does not characterize western Europe
- Does not encourage human capital formation
- Extreme versions associated with economic stagnation

Demography and growth

- Real reasons why demography important
- Learned thanks to historical research
  - How done in pre-census era
- Simply Malthusian model
- Demographic transition
- Unified growth theory and claims for European marriage pattern
  - Both have problems