The Demographic Transition

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Economic Growth and Comparative Development

Phases of Development: Standard of Living

- The Malthusian Epoch

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- The Post-Malthusian Regime

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- The Post-Malthusian Regime
- The Modern Growth Regime

Phases of Development: Timeline of the Most Developed Economies

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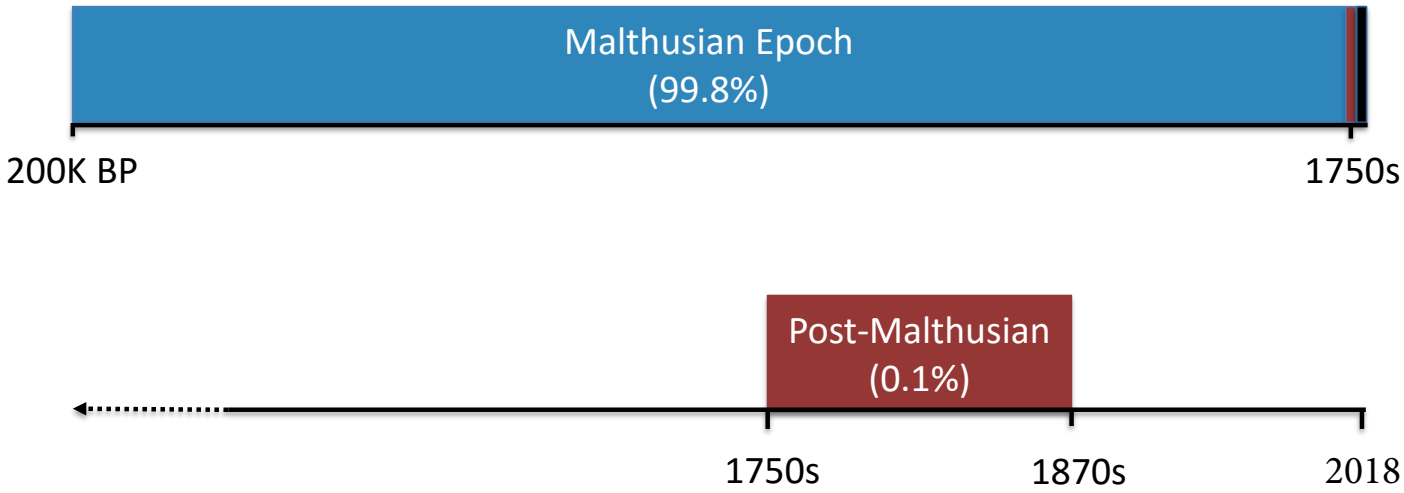

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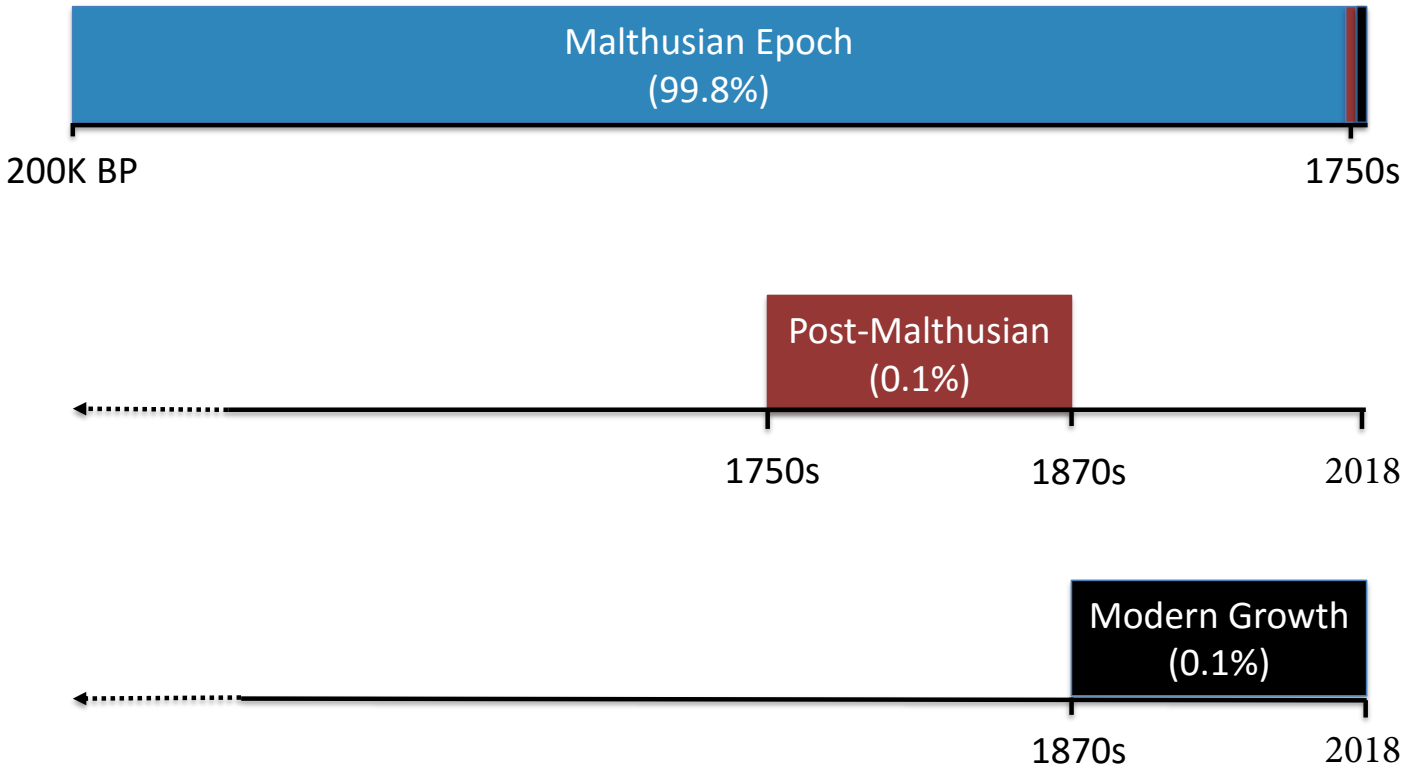

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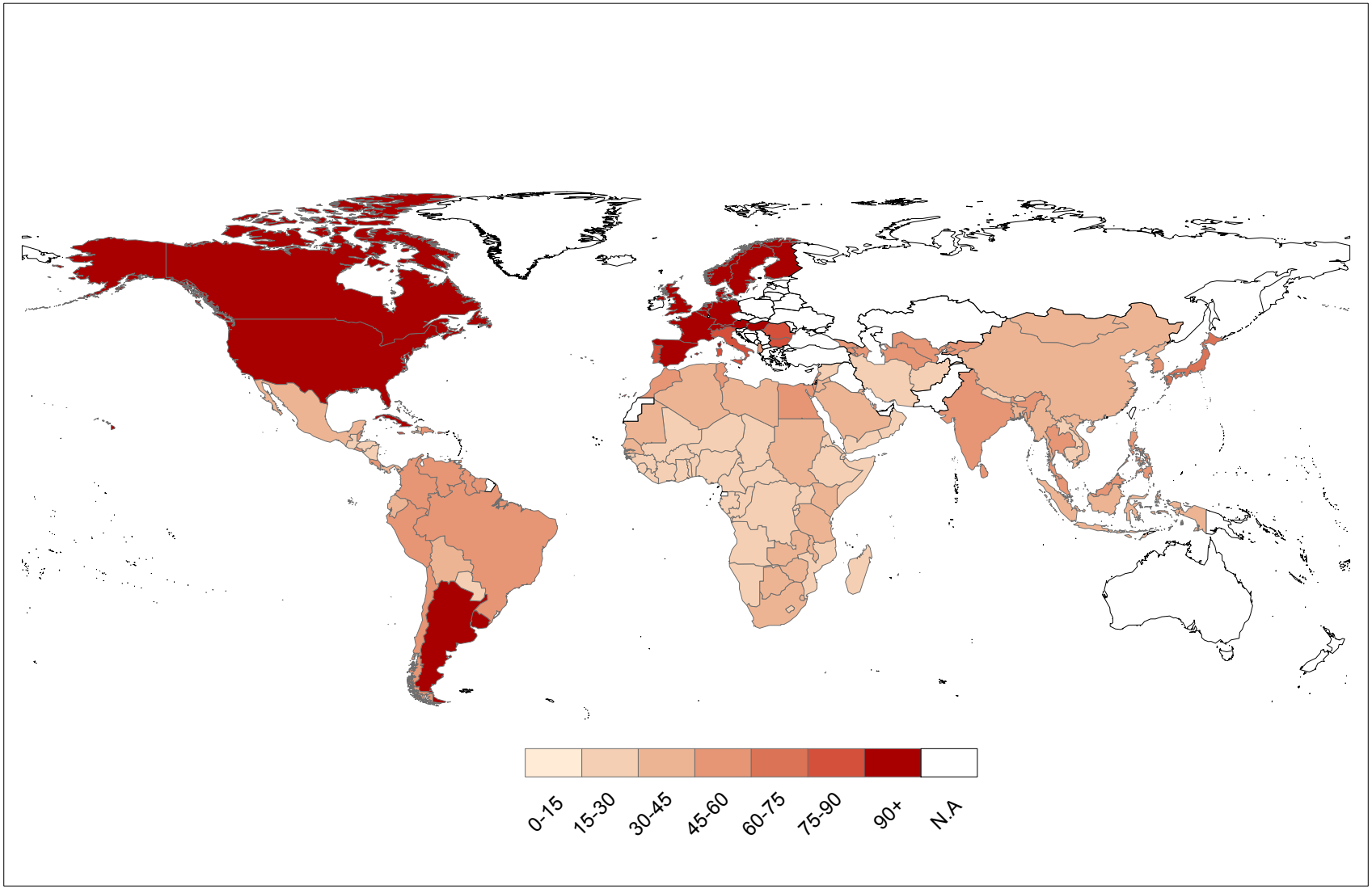
- Transition to Modern Growth

Variation in years elapsed since the Onset of the Fertility Decline



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$\Longrightarrow$ population growth excluding migration

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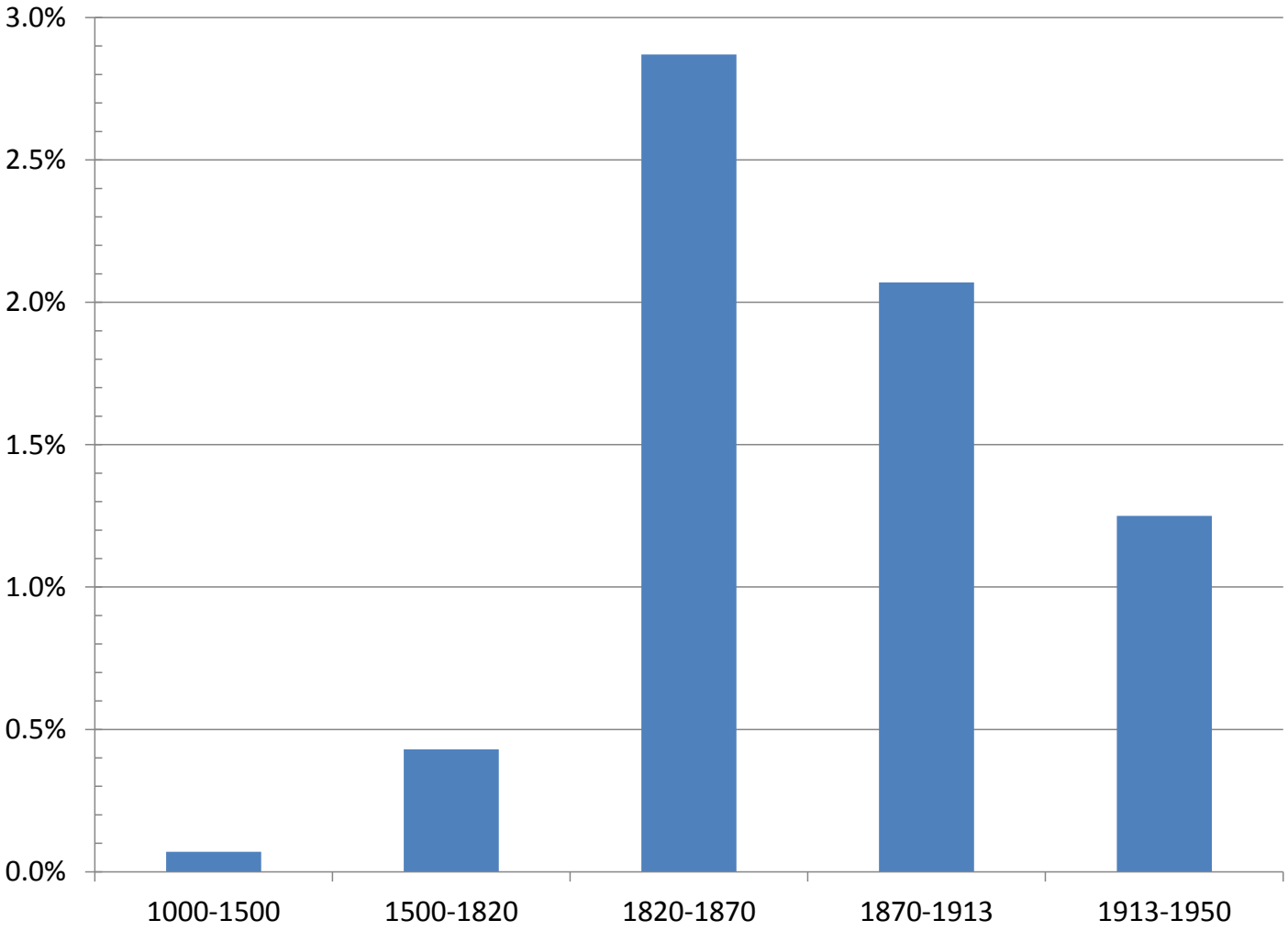
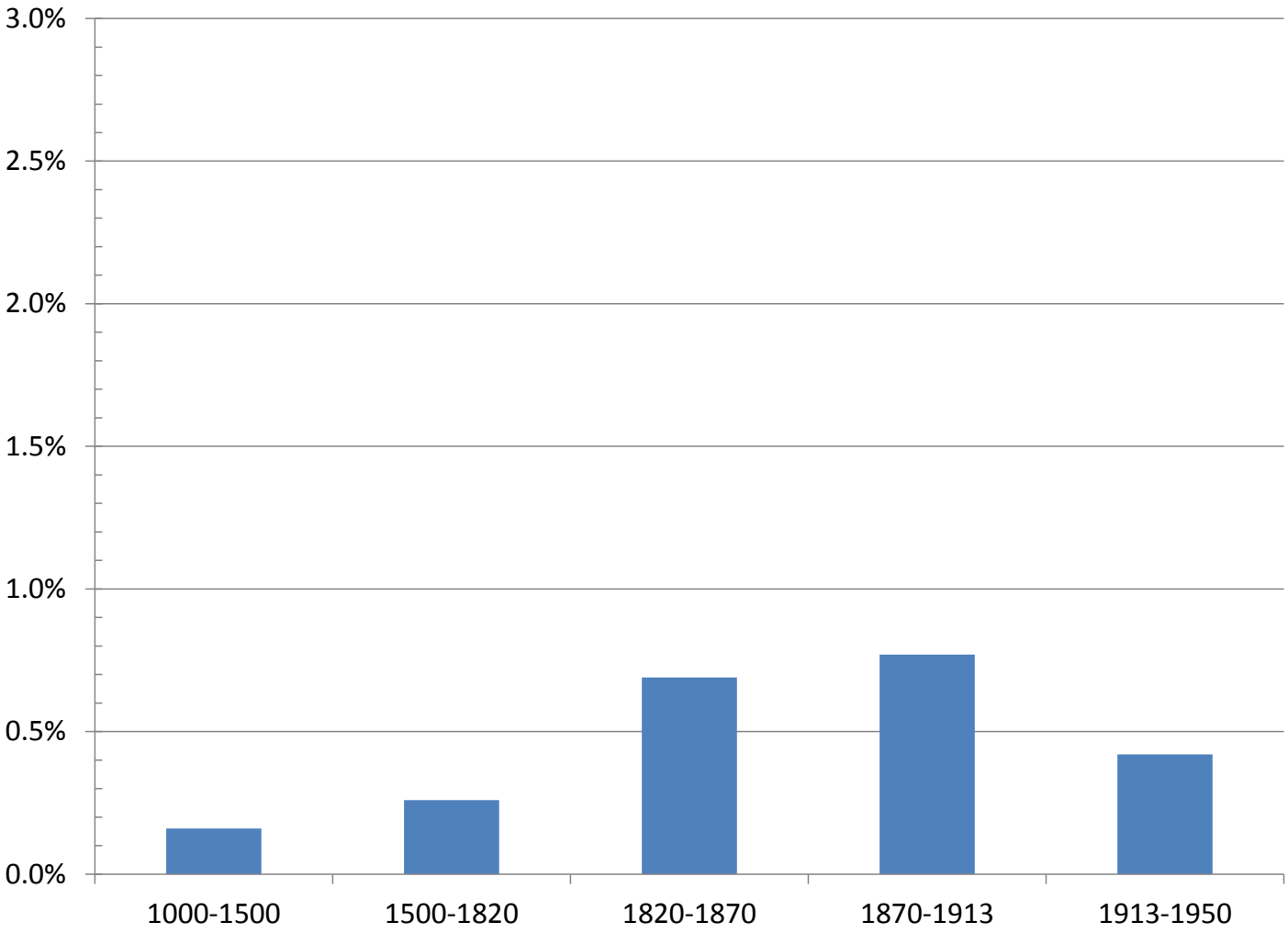
- TFR & NRR are synthetic rates

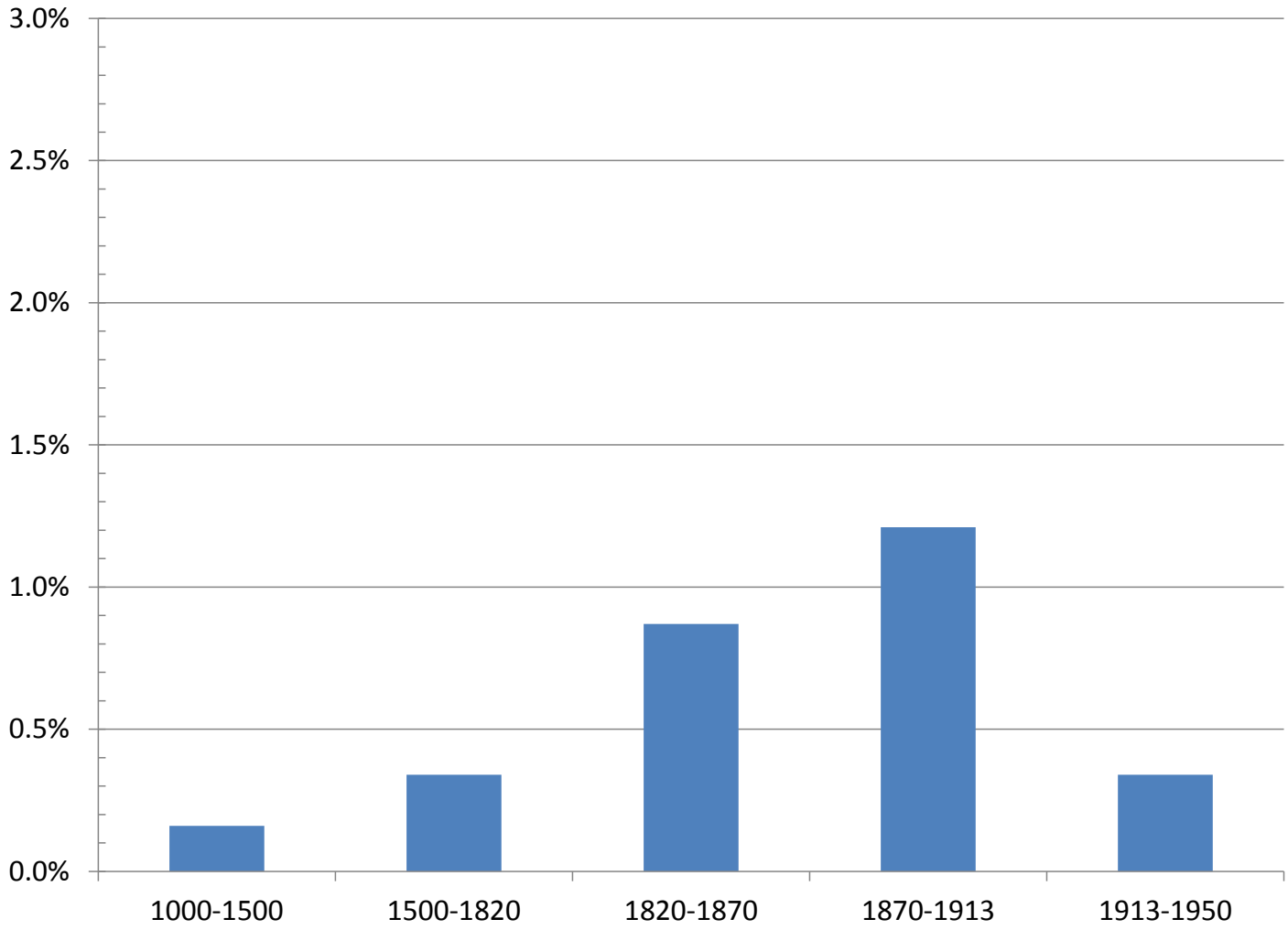
Early Fertility Decline – Western Offshoots



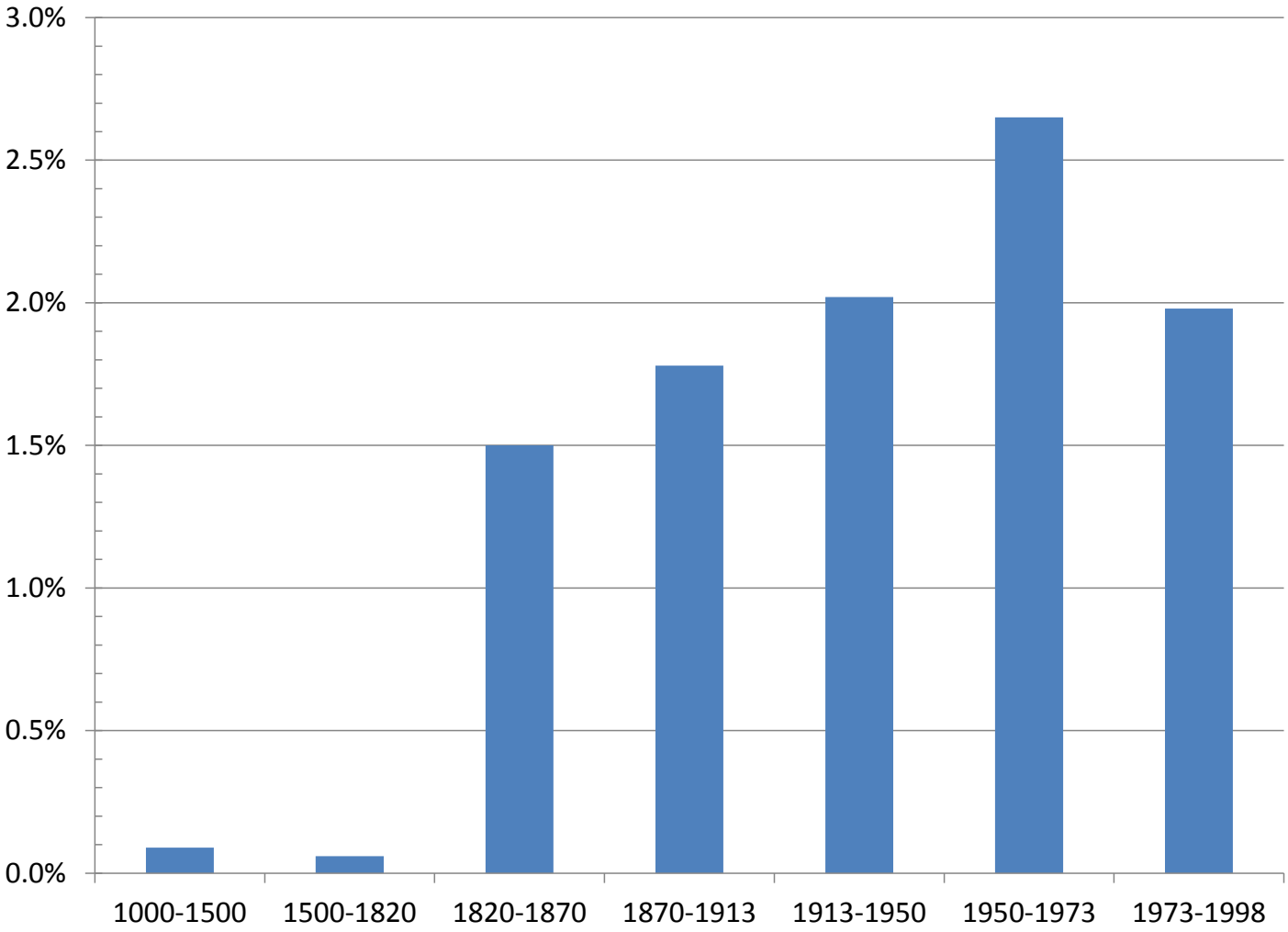
Early Fertility Decline – Western Europe



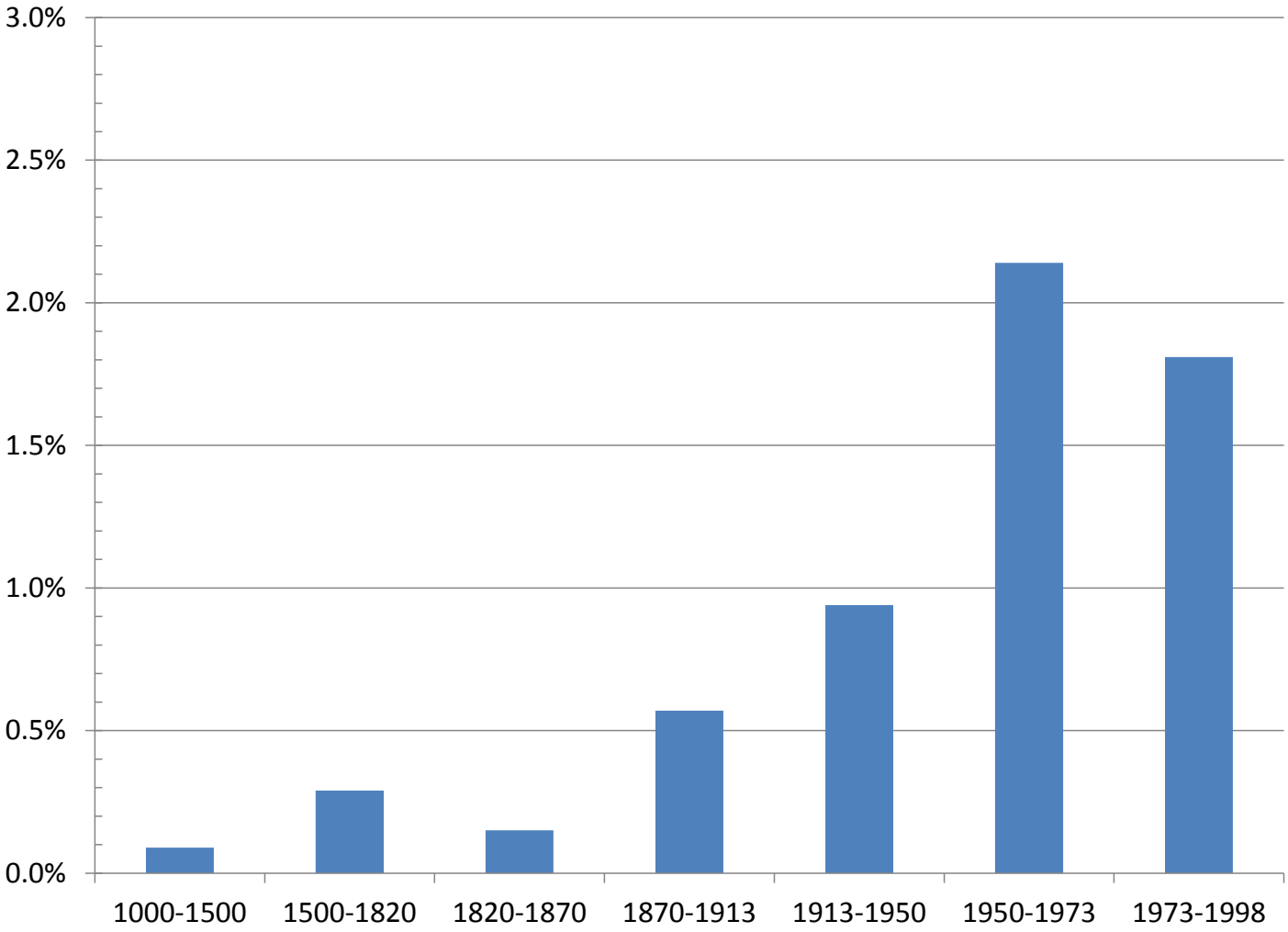
Early Fertility Decline – Eastern Europe



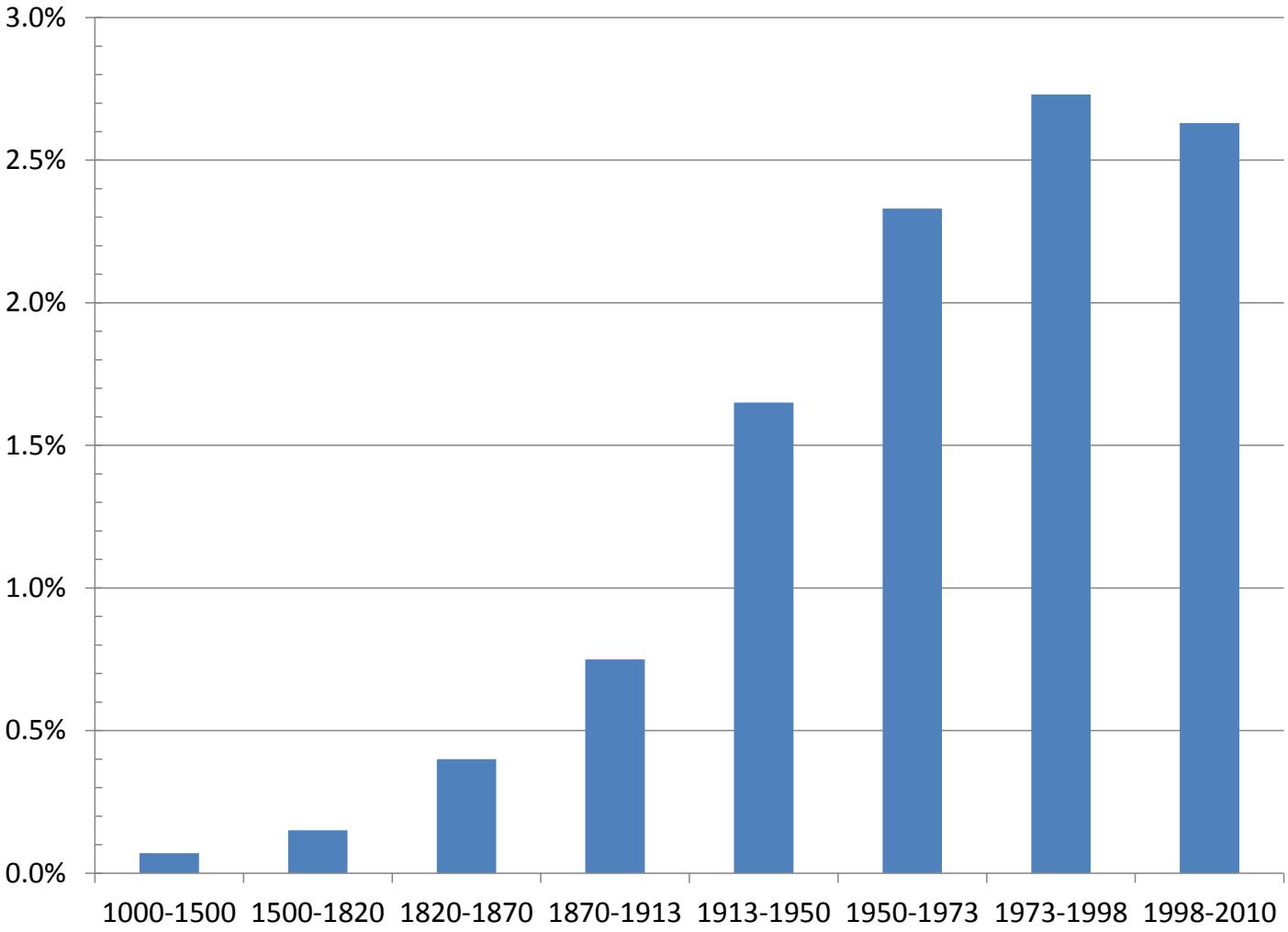
Late Fertility Decline – Latin America



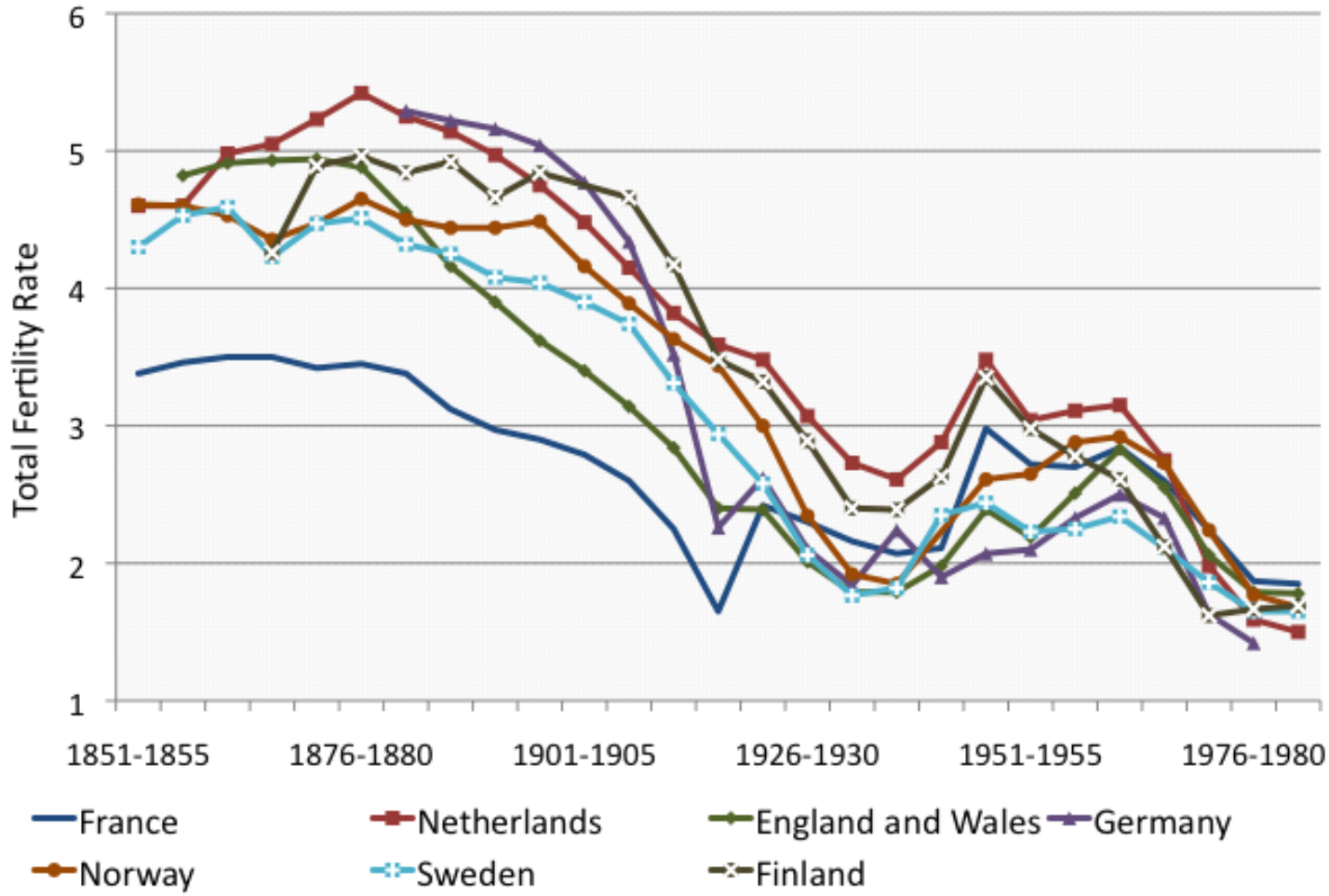
Late Fertility Decline – Asia



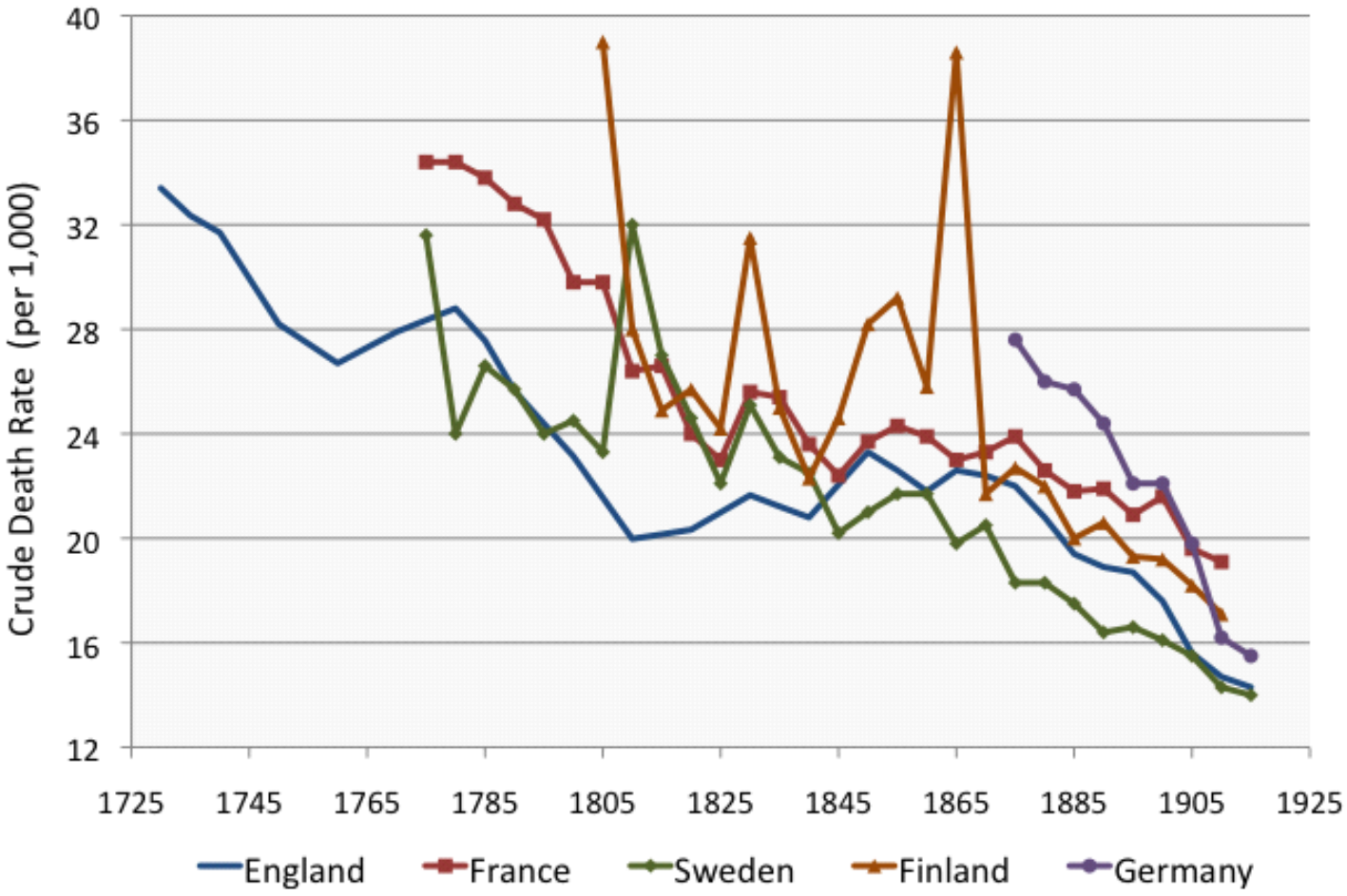
Late Fertility Decline – Africa



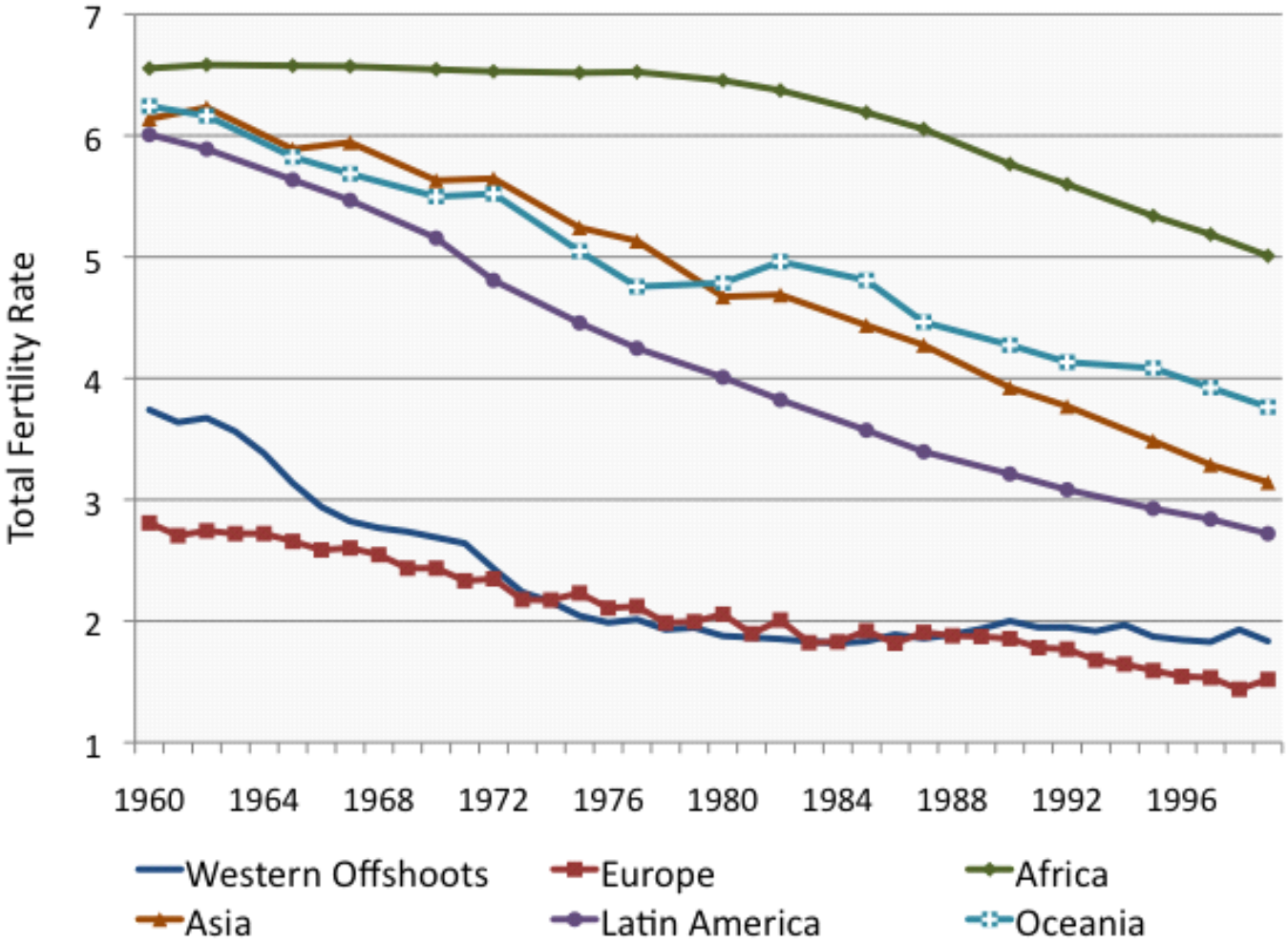
The Demographic Transition in Western Europe: Total Fertility Rates



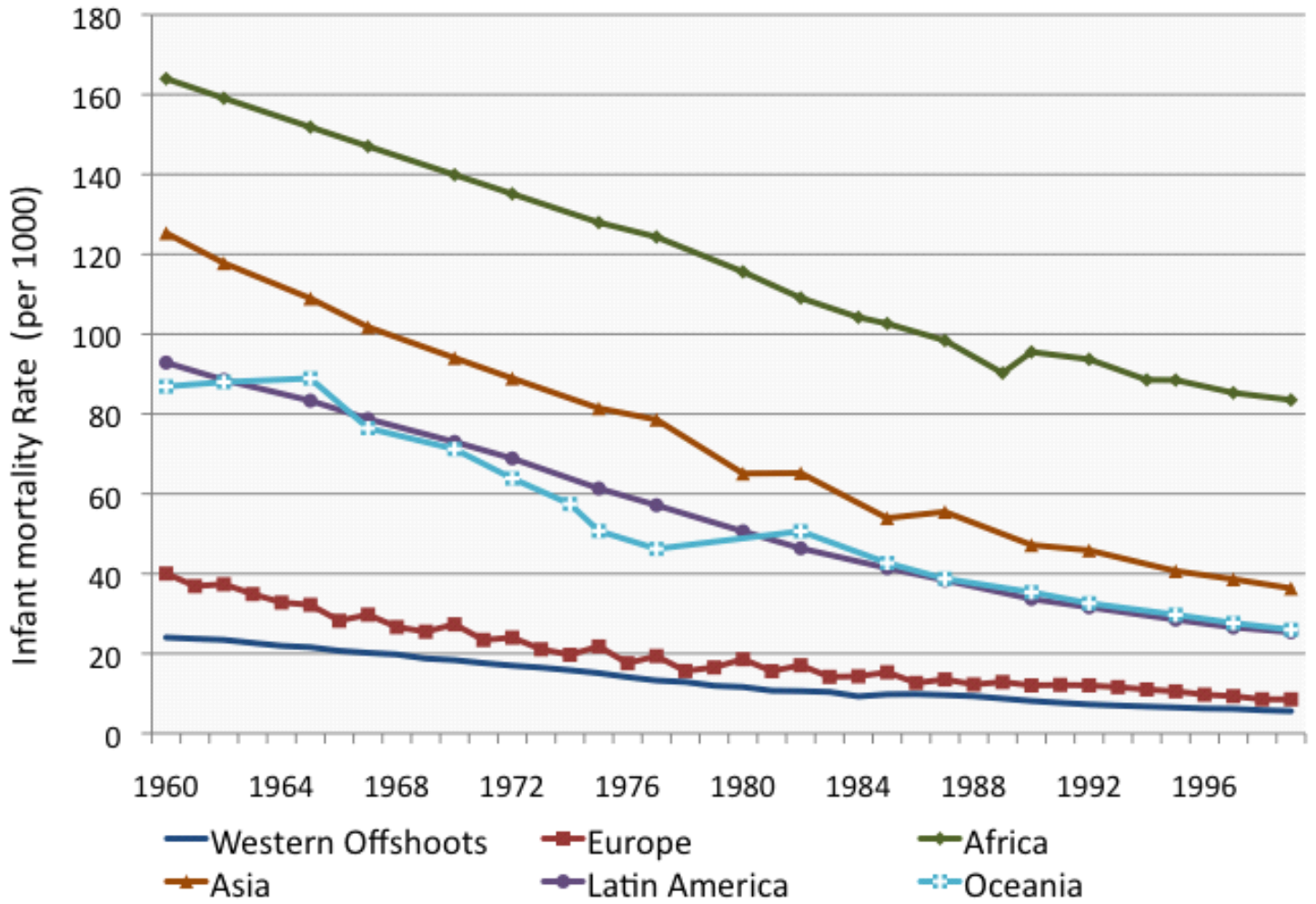
Mortality Decline Western Europe: 1730-1920



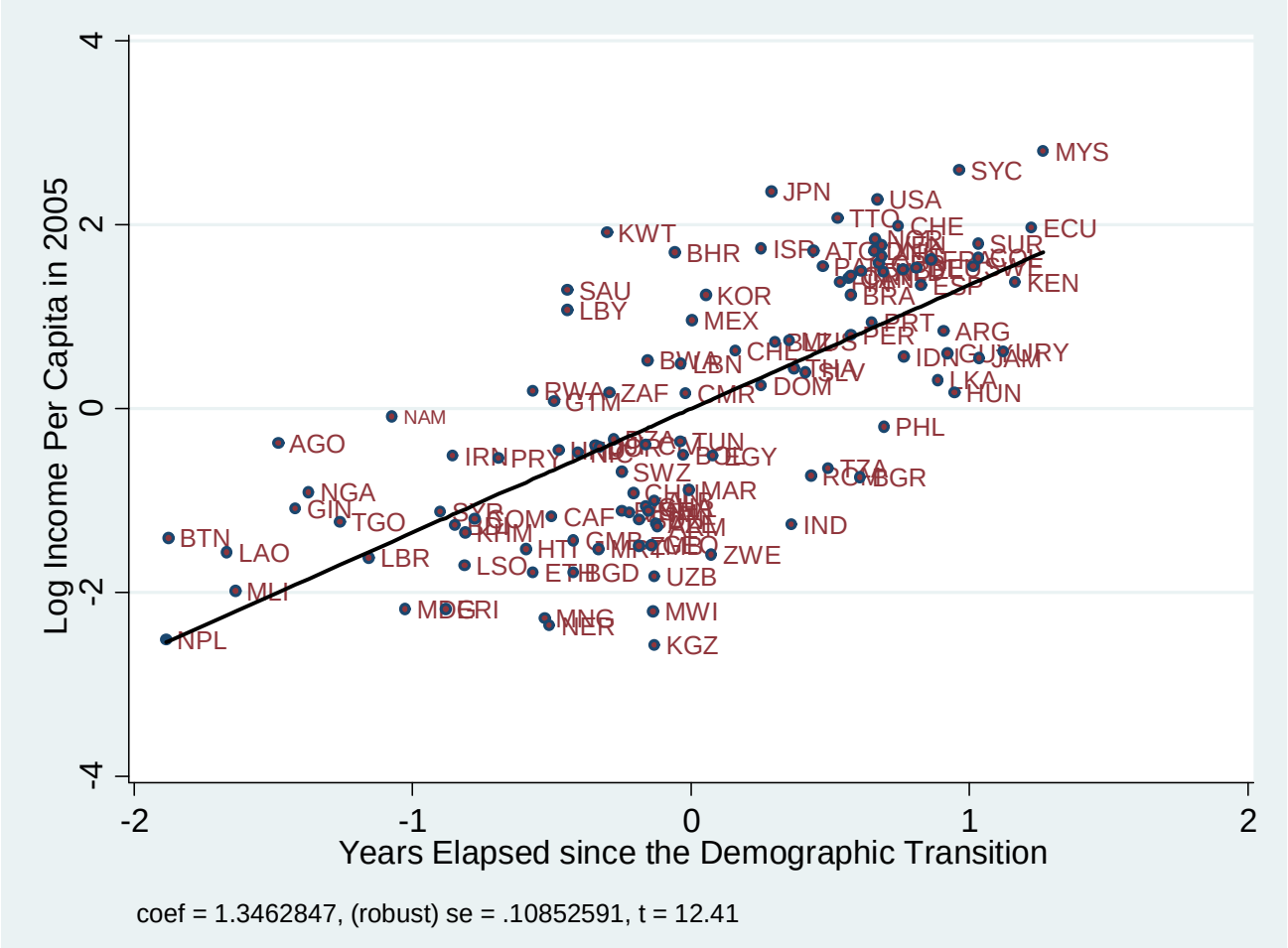
The Evolution of Total Fertility Rate across Regions, 1960-1999



Decline in infant mortality rates across regions, 1960-1999



Timing of the Demographic Transition and Current Income per Capita



coef = 1.3462847, (robust) se = .10852591, t = 12.41

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- The substitution effect dominates at a higher level of income
- As income increases fertility declines
- Fertility declines in the process of development

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- Preference-based theory (unattractive)
  - Innate bias against child quantity beyond a certain level of income - non-refutable
  - Non-robust (e.g., the class of homothetic preferences will not trigger a fertility decline)

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$$u = n^{\gamma} c^{(1-\gamma)} \qquad 0 < \gamma < 1$$

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$$y\tau n = \gamma y$$
$$c = (1-\gamma)y$$

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- Optimal number of children

$$n = \gamma/\tau$$

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$$|\text{Income effect}| = |\text{Substitution effect}|$$

- Fertility is unaffected by the process of development

The Rise in Income - Homothetic Preferences

The Rise in Income: Testable predictions

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The Rise in Income: Refuting Cross Country Evidence

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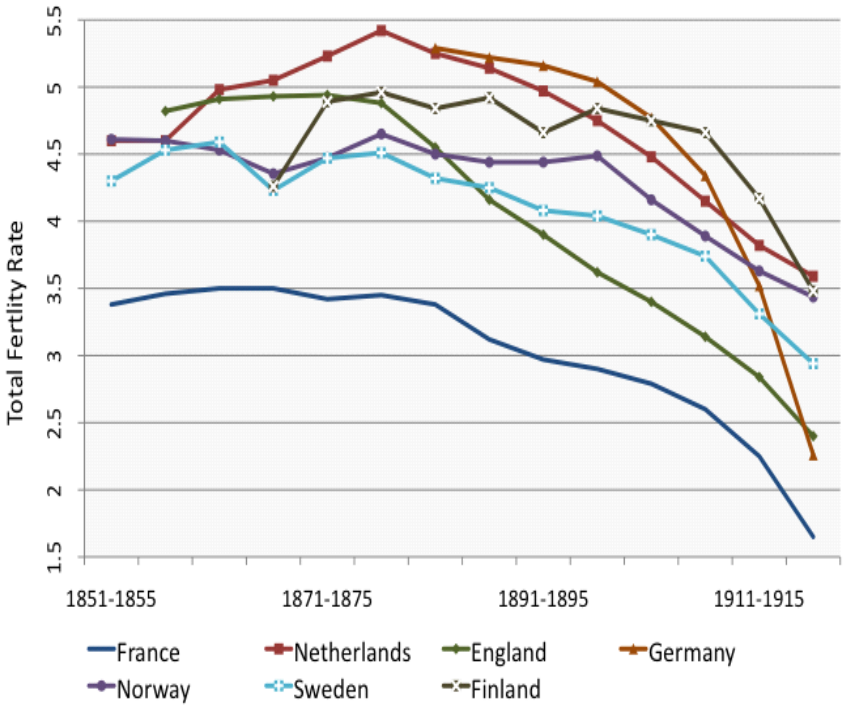
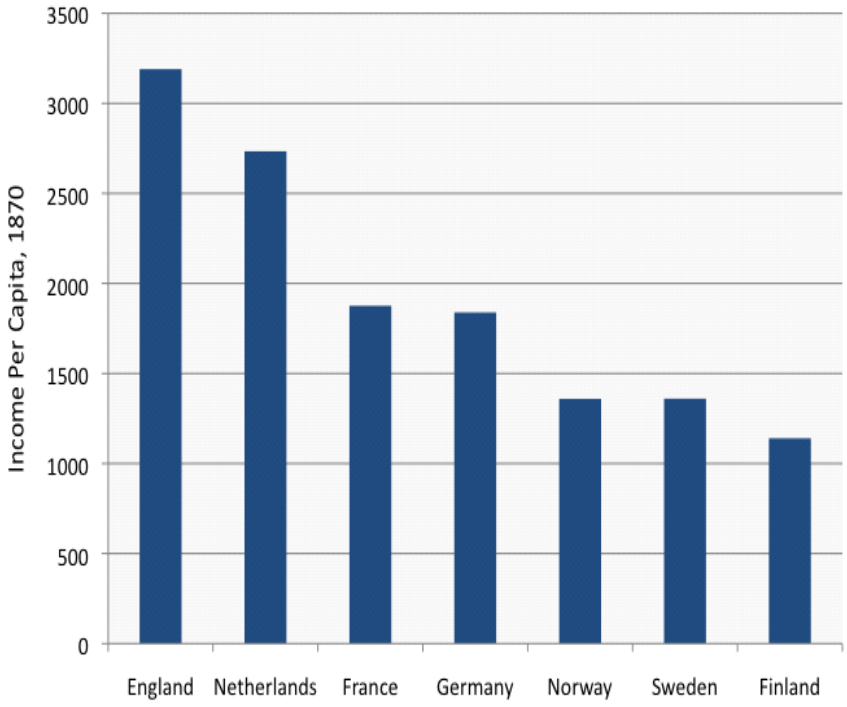
- Western Europe (1870s) The DT occurred among countries that differed significantly in their income per capita.

Simultaneous DT across European Countries that Differ in Income per Capita





The Rise in Income: Refuting Evidence from Individual Countries

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- England (1630s) Reproductive success increases with income (Clark and Hamilton JEH 2006)

The Decline in Child Mortality - Main Hypothesis

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$$n^b = n/\theta = \gamma/(\tau\theta)$$

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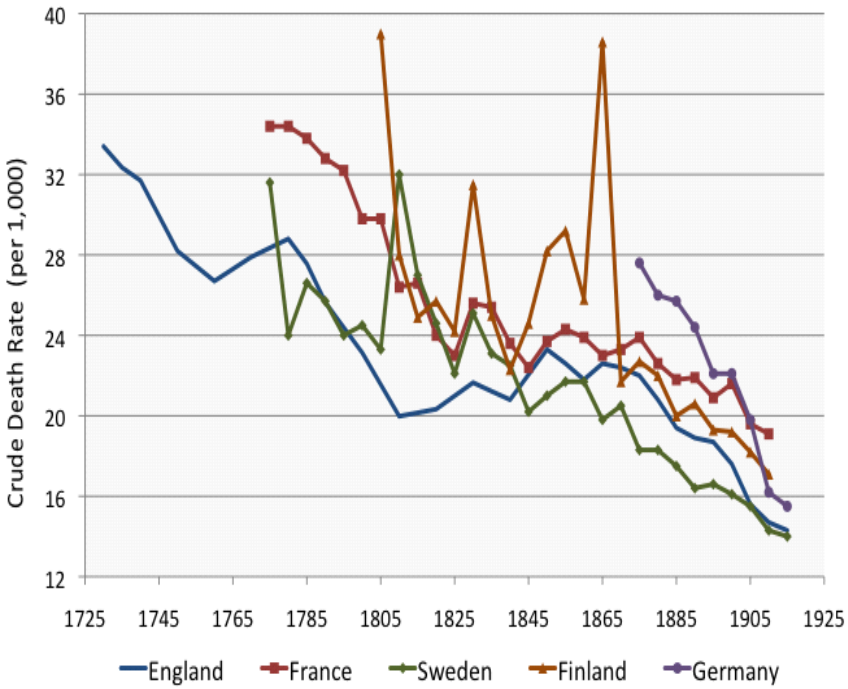

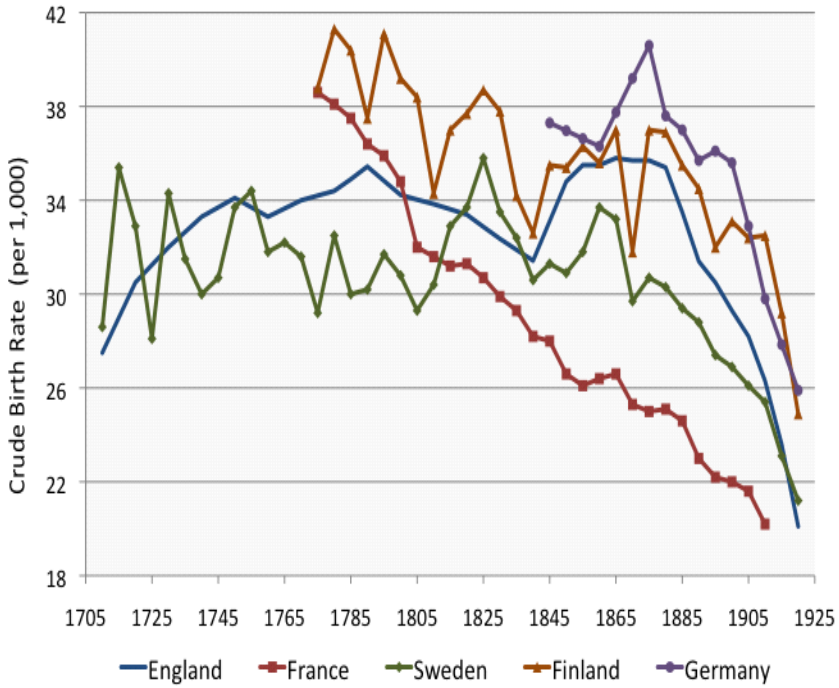

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  - England (16th century) Parents did not rely on support from children in their old age (Pelling and Smith 1991)
- Prior to the demographic transition, richer individuals who presumably had better access to financial markets, had larger number of surviving children

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    $\Rightarrow$ reduction in fertility

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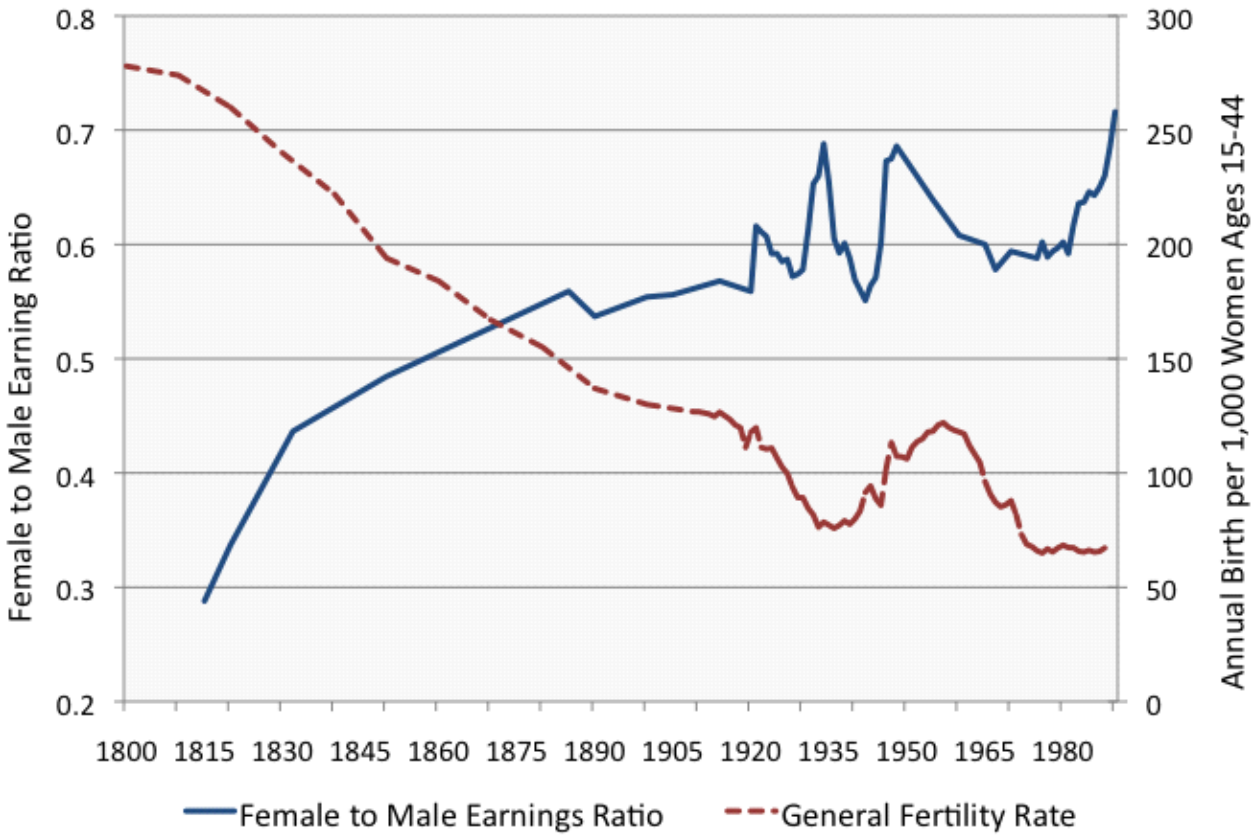
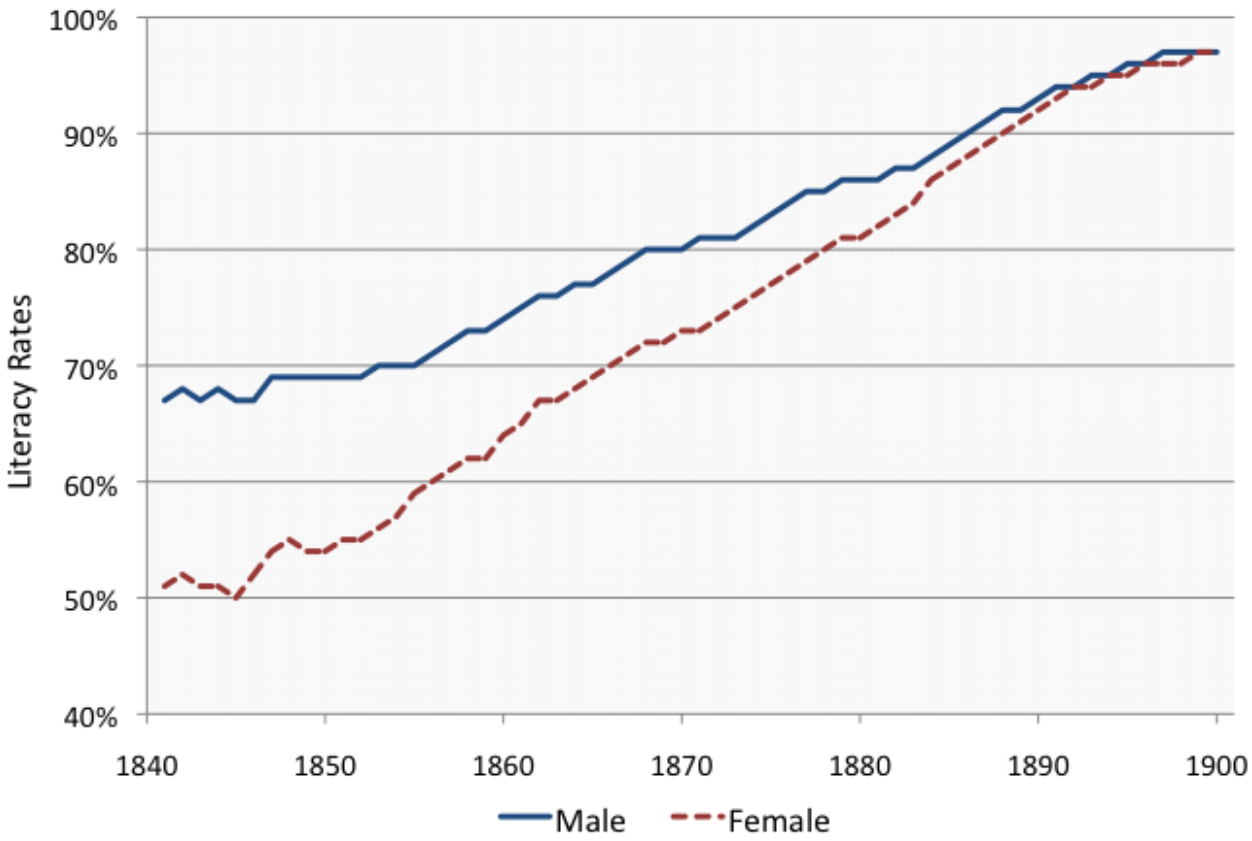


Evolution of the Gender Literacy Gap - England



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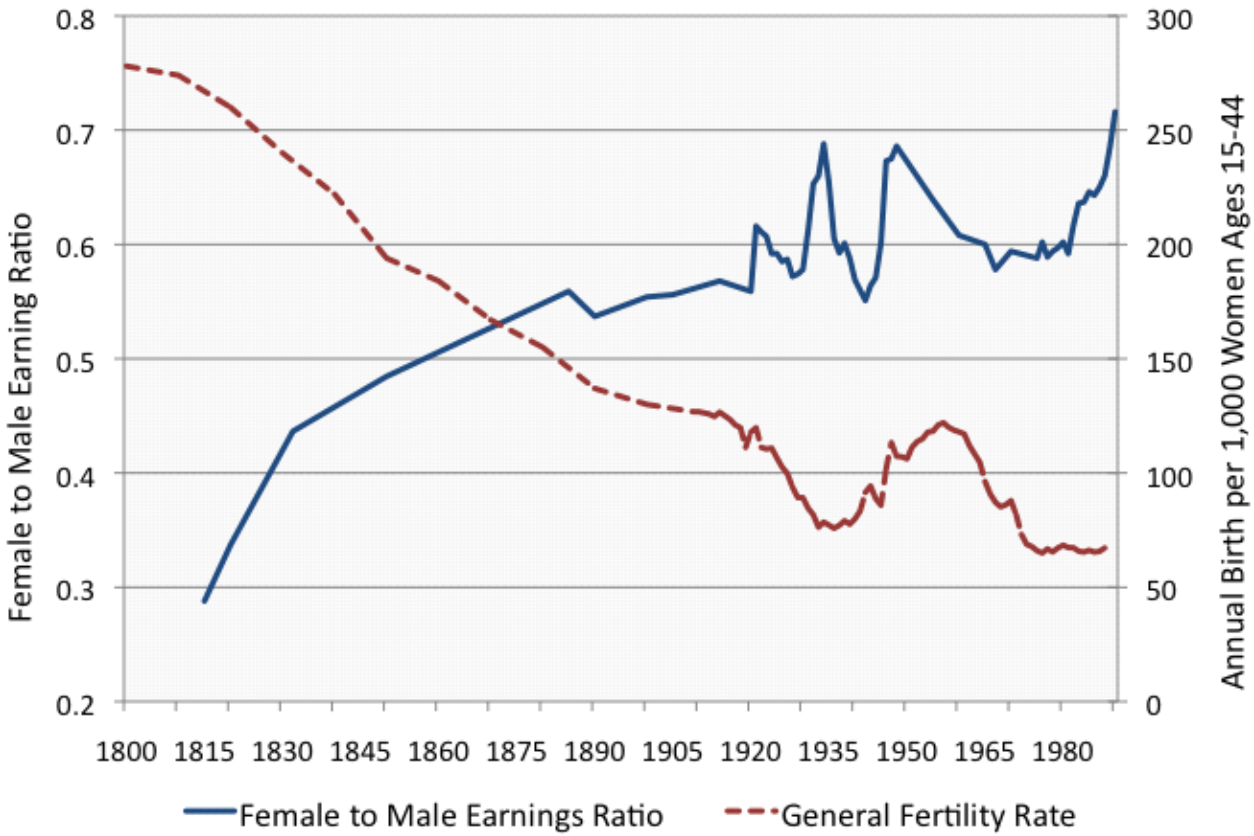

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- Sweden's demographic transition: $(w^F/w^M) \Uparrow \implies n \Downarrow$ (Schultz 1985)

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- Sweden's demographic transition: $(w^F/w^M) \Uparrow \implies n \Downarrow$ (Schultz 1985)
- France (1876–1896): reduction in the gender literacy gap had an adverse effect on fertility, accounting for income per capita, educational attainment, and mortality rates (Murphy 2015)

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- $h \equiv$ quality (human capital) of each child
- $\beta \equiv$ degree of preference for child quality; $\beta < 1$

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- $y(\tau^q + \tau^e e) \equiv$ opportunity cost of raising a child with quality e

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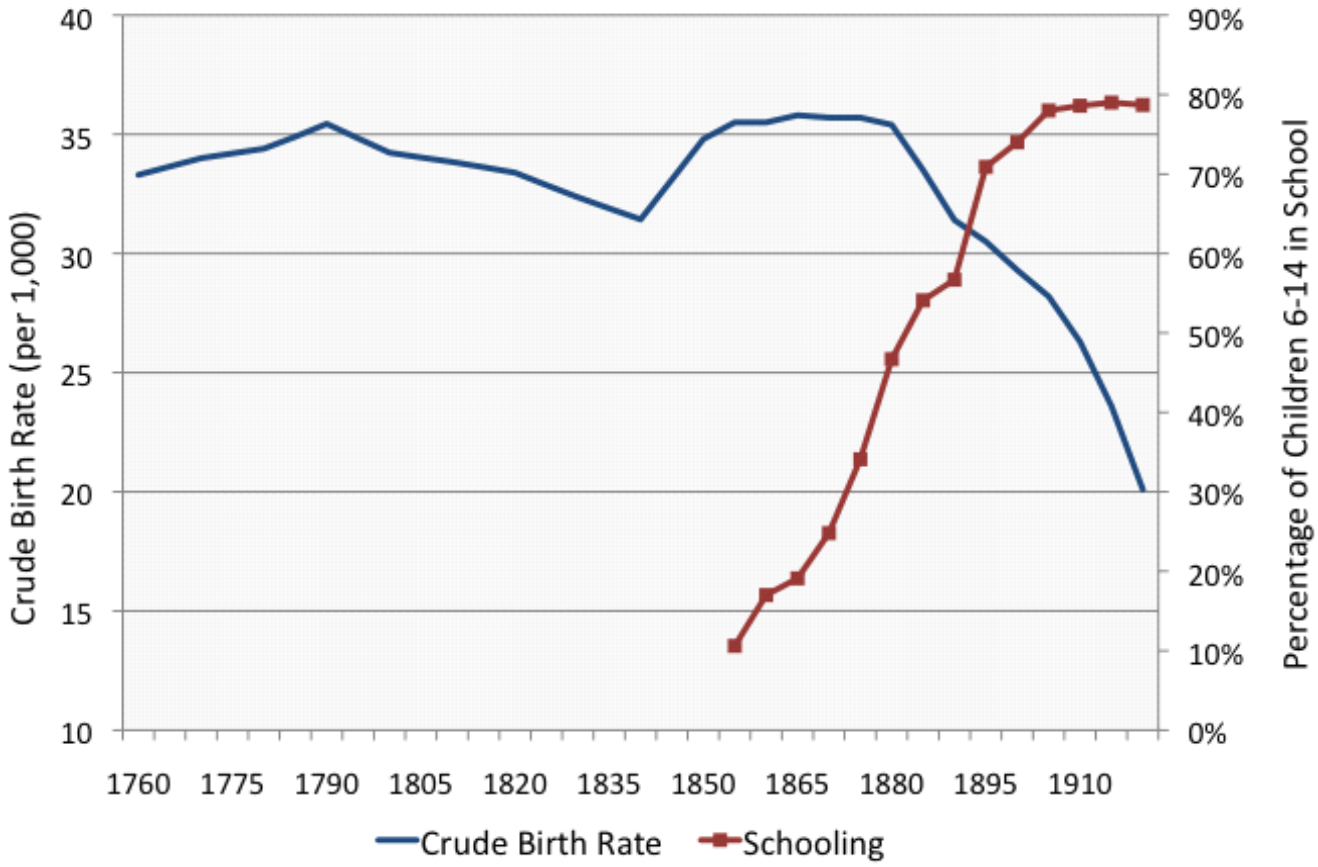
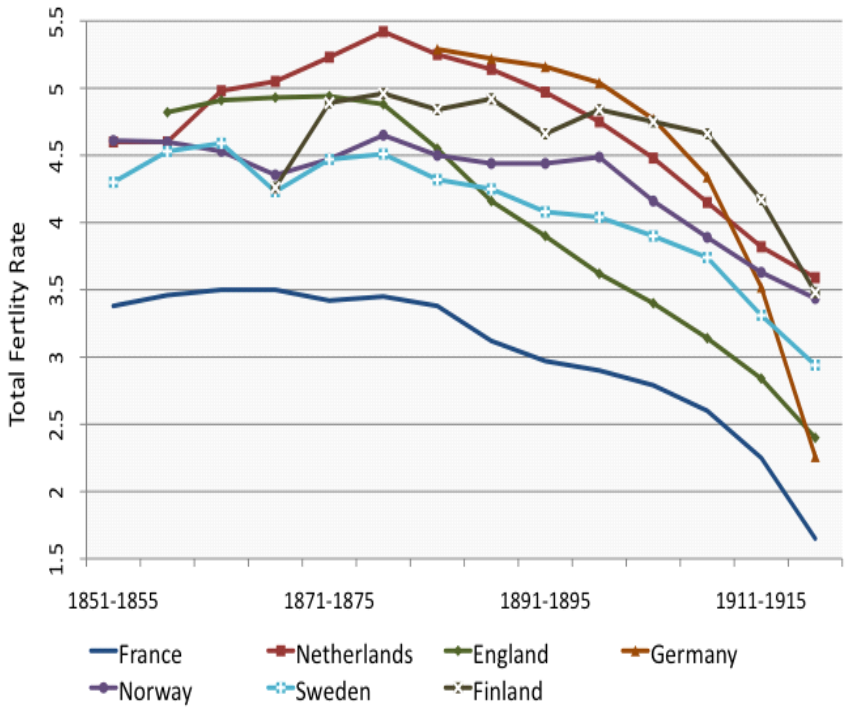
- The cost of educating a child increases and the elasticity of child quality with respect to the cost of child quality is smaller than one in absolute value

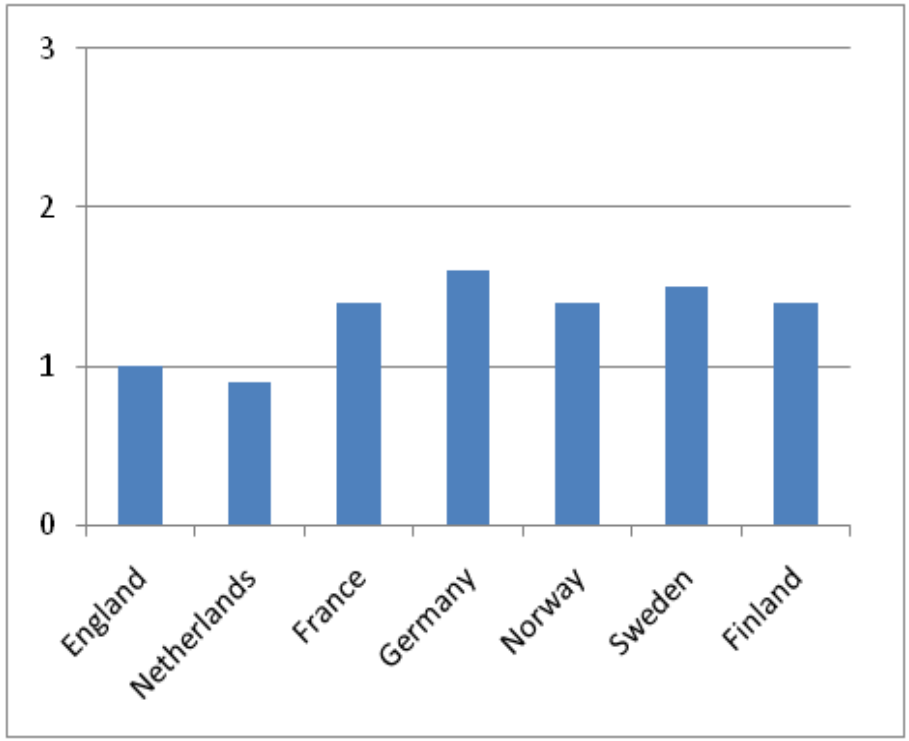
$$\partial n/\partial \tau^e < 0 \text{ if } [\partial e/\partial \tau^e][\tau^e/e] > -1$$

Human Capital Formation and the DT - England



Growth Rates 1870-1913 and DT





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- Cross Section of Countries (1960-1999): adverse effect on net fertility of an increase in productivity in advanced stages of development, when education demand dominates (Lehr 2009)

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- England (1580-1871) Adverse effect of family size on children's literacy. (Klemp-Weisdorf 2016)