Growth and Comparative Development: An Overview

Ömer Özak

Department of Economics
Southern Methodist University

Economic Growth and Comparative Development
Income per Capita across the Globe in 2010
Night Lights across the Globe in 2016
Night Lights across Regions – Africa
Night Lights across Regions – Asia
Night Lights across Regions – Australia
Night Lights across Regions – Europe
Night Lights across Regions – North America
Night Lights across Regions – South America
Divergence across Regions: 1820–2010

Source: Maddison Project (2013)
Divergence across Regions: 1500–2010

Source: Maddison Project (2013)
Regional Income per Capita: 1–2010

GDP per capita (1990 Int'l US$)
Region
Western Europe
Western Offshoots
East Europe
Latin America
Asia
Africa

Year
0 250 500 750 1000 1250 1500 1750 2000

GDP per capita (1990 Int'l US$)
Region
Western Europe
Western Offshoots
East Europe
Latin America
Asia
Africa

Year
0 250 500 750 1000 1250 1500 1750 2000
## Evolution of Inequality across Regions: 1–2010

<table>
<thead>
<tr>
<th>Region</th>
<th>Income per Capita (1990 Int'l $)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Western Offshoots</td>
<td>400</td>
</tr>
<tr>
<td>Western Europe</td>
<td>576</td>
</tr>
<tr>
<td>Latin America</td>
<td>400</td>
</tr>
<tr>
<td>Asia</td>
<td>456</td>
</tr>
<tr>
<td>Africa</td>
<td>472</td>
</tr>
<tr>
<td><strong>Richest-Poorest Ratio</strong></td>
<td><strong>1.4</strong></td>
</tr>
</tbody>
</table>

Western Offshoots: USA, Canada, Australia, New Zealand.
Evolution of Inequality across Regions: 1–2010

The graph illustrates the Richest-Poorest ratio from 1 to 2010, showing a steady increase until around 1750, followed by a sharp spike towards 2000.
Inferences from Growth Theory

- Diminishing returns to physical and human capital accumulation
- Diminishing effect of technological progress on productivity
  - $\implies$ Reduction in inequality
  - $\implies$ Convergence
Inferences from Growth Theory

- Diminishing returns to physical and human capital accumulation
- Diminishing effect of technological progress on productivity
  - $\implies$ Reduction in inequality
  - $\implies$ Convergence
Inferences from Growth Theory

- Diminishing returns to physical and human capital accumulation
- Diminishing effect of technological progress on productivity
  - $\implies$ Reduction in inequality
  - $\implies$ Convergence
Inferences from Growth Theory

- Diminishing returns to physical and human capital accumulation
- Diminishing effect of technological progress on productivity
  - $\Rightarrow$ Reduction in inequality
  - $\Rightarrow$ Convergence
Income Distribution in 1960

![Graph showing income distribution in 1960 with log income per capita on the x-axis and density of countries on the y-axis. The graph is shaded to illustrate the distribution.](image-url)
Persistent Inequality across Nations: 1980–2010

![Graph showing persistent inequality across nations from 1980 to 2010. The graph compares the logarithm of income per capita relative to the US for different countries. The countries are represented by dots, and the 45-degree line indicates countries with the same level of income per capita as the US.](image-url)
Fundamental Research Questions

- What is the origin of the vast inequality in income per capita across countries and regions?
- What accounts for the divergence in per-capita income across countries in the past two centuries?
- What are the factors that inhibited the convergence of poor economies toward richer ones in the past decades?
- What is the role of deep-rooted factors in explaining the observed patterns of comparative development?
Fundamental Research Questions

- What is the origin of the vast inequality in income per capita across countries and regions?
- What accounts for the divergence in per-capita income across countries in the past two centuries?
- What are the factors that inhibited the convergence of poor economies toward richer ones in the past decades?
- What is the role of deep-rooted factors in explaining the observed patterns of comparative development?
Fundamental Research Questions

- What is the origin of the vast inequality in income per capita across countries and regions?
- What accounts for the divergence in per-capita income across countries in the past two centuries?
- What are the factors that inhibited the convergence of poor economies toward richer ones in the past decades?
- What is the role of deep-rooted factors in explaining the observed patterns of comparative development?
Fundamental Research Questions

- What is the origin of the vast inequality in income per capita across countries and regions?
- What accounts for the divergence in per-capita income across countries in the past two centuries?
- What are the factors that inhibited the convergence of poor economies toward richer ones in the past decades?
- What is the role of deep-rooted factors in explaining the observed patterns of comparative development?
Phases of Development: Modes of Production

- Hunting
- Gathering
- Agriculture
- Industry

Hunting-Gathering

Growth & Comparative Development
Phases of Development: Standard of Living

- The Malthusian Epoch
- The Post-Malthusian Regime
- The Modern Growth Regime
Phases of Development: Standard of Living

- The Malthusian Epoch
- The Post-Malthusian Regime
- The Modern Growth Regime
Phases of Development: Standard of Living

- The Malthusian Epoch
- The Post-Malthusian Regime
- The Modern Growth Regime
Phases of Development: Timeline of the Most Developed Economies

Malthusian Epoch
(99.8%)

200K BP 1750s
Phases of Development: Timeline of the Most Developed Economies

- **Malthusian Epoch** (99.8%)
  - 200K BP to 1750s
- **Post-Malthusian** (0.1%)
  - 1750s to 2018
Phases of Development: Timeline of the Most Developed Economies

- **Malthusian Epoch** (99.8%)
  - 200K BP - 1750s

- **Post-Malthusian** (0.1%)
  - 1750s - 1870s
  - 1870s - 2018

- **Modern Growth** (0.1%)
  - 1870s - 2018
World Income per Capita: 1–2010

GDP per capita (1990 Int'l US$)

Year
Phases of Development

Growth of World Income per Capita: 1–2010

<table>
<thead>
<tr>
<th>Period</th>
<th>Growth Rate of Income per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1000</td>
<td>0.0%</td>
</tr>
<tr>
<td>1000-1500</td>
<td>0.2%</td>
</tr>
<tr>
<td>1500-1820</td>
<td>0.4%</td>
</tr>
<tr>
<td>1820-2008</td>
<td>1.2%</td>
</tr>
</tbody>
</table>
The Malthusian Epoch

- Characterized by Malthusian dynamics and the absence of economic growth

- Central characteristics of the period:
  - Positive effect of income on population growth
  - Diminishing returns to labor (reflecting the existence of fixed factor)

- Technological progress over this period
  - Increases income per capita in the short-run
  - Population adjust, as long as income remains above subsistence
  - Income per capita ultimately returns to its long-run level

- Technologically advanced & land-rich economies:
  - Higher population density
  - Similar levels of income per-capita in the long-run
The Malthusian Epoch

Characterized by Malthusian dynamics and the absence of economic growth

Central characteristics of the period:
- Positive effect of income on population growth
- Diminishing returns to labor (reflecting the existence of fixed factor)

Technological progress over this period
- Increases income per capita in the short-run
- Population adjust, as long as income remains above subsistence
- Income per capita ultimately returns to its long-run level

Technologically advanced & land-rich economies:
- Higher population density
- Similar levels of income per-capita in the long-run
The Malthusian Epoch

- Characterized by Malthusian dynamics and the absence of economic growth

- Central characteristics of the period:
  - Positive effect of income on population growth
  - Diminishing returns to labor (reflecting the existence of fixed factor)

- Technological progress over this period
  - Increases income per capita in the short-run
  - Population adjust, as long as income remains above subsistence
  - Income per capita ultimately returns to its long-run level

- Technologically advanced & land-rich economies:
  - Higher population density
  - Similar levels of income per-capita in the long-run
The Malthusian Epoch

- Characterized by Malthusian dynamics and the absence of economic growth

Central characteristics of the period:
- Positive effect of income on population growth
- Diminishing returns to labor (reflecting the existence of fixed factor)

- Technological progress over this period
  - Increases income per capita in the short-run
  - Population adjust, as long as income remains above subsistence
  - Income per capita ultimately returns to its long-run level

- Technologically advanced & land-rich economies:
  - Higher population density
  - Similar levels of income per-capita in the long-run
The Malthusian Epoch

- Characterized by Malthusian dynamics and the absence of economic growth

- Central characteristics of the period:
  - Positive effect of income on population growth
  - Diminishing returns to labor (reflecting the existence of fixed factor)

- Technological progress over this period
  - Increases income per capita in the short-run
  - Population adjust, as long as income remains above subsistence
  - Income per capita ultimately returns to its long-run level

- Technologically advanced & land-rich economies:
  - Higher population density
  - Similar levels of income per-capita in the long-run
The Malthusian Epoch

- Characterized by Malthusian dynamics and the absence of economic growth

- Central characteristics of the period:
  - Positive effect of income on population growth
  - Diminishing returns to labor (reflecting the existence of fixed factor)

- Technological progress over this period
  - Increases income per capita in the short-run
  - Population adjust, as long as income remains above subsistence
  - Income per capita ultimately returns to its long-run level

- Technologically advanced & land-rich economies:
  - Higher population density
  - Similar levels of income per-capita in the long-run
The Malthusian Epoch

- Characterized by Malthusian dynamics and the absence of economic growth

- Central characteristics of the period:
  - Positive effect of income on population growth
  - Diminishing returns to labor (reflecting the existence of fixed factor)

- Technological progress over this period
  - Increases income per capita in the short-run
  - Population adjust, as long as income remains above subsistence
  - Income per capita ultimately returns to its long-run level

- Technologically advanced & land-rich economies:
  - Higher population density
  - Similar levels of income per-capita in the long-run
The Malthusian Epoch

- Characterized by Malthusian dynamics and the absence of economic growth

- Central characteristics of the period:
  - Positive effect of income on population growth
  - Diminishing returns to labor (reflecting the existence of fixed factor)

- Technological progress over this period
  - Increases income per capita in the short-run
  - Population adjust, as long as income remains above subsistence
  - Income per capita ultimately returns to its long-run level

- Technologically advanced & land-rich economies:
  - Higher population density
  - Similar levels of income per-capita in the long-run
The Malthusian Epoch

- Characterized by Malthusian dynamics and the absence of economic growth

- Central characteristics of the period:
  - Positive effect of income on population growth
  - Diminishing returns to labor (reflecting the existence of fixed factor)

- Technological progress over this period
  - Increases income per capita in the short-run
  - Population adjust, as long as income remains above subsistence
  - Income per capita ultimately returns to its long-run level

- Technologically advanced & land-rich economies:
  - Higher population density
  - Similar levels of income per-capita in the long-run
The Malthusian Epoch

- Characterized by Malthusian dynamics and the absence of economic growth

- Central characteristics of the period:
  - Positive effect of income on population growth
  - Diminishing returns to labor (reflecting the existence of fixed factor)

- Technological progress over this period
  - Increases income per capita in the short-run
  - Population adjust, as long as income remains above subsistence
  - Income per capita ultimately returns to its long-run level

- Technologically advanced & land-rich economies:
  - Higher population density
  - Similar levels of income per-capita in the long-run
The Malthusian Epoch

- Characterized by Malthusian dynamics and the absence of economic growth

- Central characteristics of the period:
  - Positive effect of income on population growth
  - Diminishing returns to labor (reflecting the existence of fixed factor)

- Technological progress over this period
  - Increases income per capita in the short-run
  - Population adjust, as long as income remains above subsistence
  - Income per capita ultimately returns to its long-run level

- Technologically advanced & land-rich economies:
  - Higher population density
  - Similar levels of income per-capita in the long-run
Malthusian Dynamics - Prominent Examples

- The dynamics of Irish economy (1650 - 1850)
  - Triggered by the cultivation of a new world crop – potato

- The dynamics of the Chinese Economy (1500 - 1800)
  - Triggered by superior agricultural technology

- The dynamics of the English economy (1348 - 1700)
  - Triggered by the Black Death
Malthusian Dynamics - Prominent Examples

- The dynamics of Irish economy (1650 - 1850)
  - Triggered by the cultivation of a new world crop – potato

- The dynamics of the Chinese Economy (1500 - 1800)
  - Triggered by superior agricultural technology

- The dynamics of the English economy (1348 - 1700)
  - Triggered by the Black Death
Malthusian Dynamics - Prominent Examples

- The dynamics of Irish economy (1650 - 1850)
  - Triggered by the cultivation of a new world crop – potato

- The dynamics of the Chinese Economy (1500 - 1800)
  - Triggered by superior agricultural technology

- The dynamics of the English economy (1348 - 1700)
  - Triggered by the Black Death
Malthusian Dynamics - Prominent Examples

- The dynamics of Irish economy (1650 - 1850)
  - Triggered by the cultivation of a new world crop – potato

- The dynamics of the Chinese Economy (1500 - 1800)
  - Triggered by superior agricultural technology

- The dynamics of the English economy (1348 - 1700)
  - Triggered by the Black Death
The Malthusian Epoch

Malthusian Dynamics - Prominent Examples

- The dynamics of Irish economy (1650 - 1850)
  - Triggered by the cultivation of a new world crop – potato

- The dynamics of the Chinese Economy (1500 - 1800)
  - Triggered by superior agricultural technology

- The dynamics of the English economy (1348 - 1700)
  - Triggered by the Black Death
Malthusian Dynamics - Prominent Examples

- The dynamics of Irish economy (1650 - 1850)
  - Triggered by the cultivation of a new world crop – potato

- The dynamics of the Chinese Economy (1500 - 1800)
  - Triggered by superior agricultural technology

- The dynamics of the English economy (1348 - 1700)
  - Triggered by the Black Death
Malthusian Dynamics - Ireland (1650 - 1850)

- The Columbian Exchange $\implies$ massive cultivation of potato post-1650
  - 1650-1840s
    - Population increases from 2 to 6 million
    - Income per capita increases only very modestly
  - 1845-1852 Potato blight destroys crops $\implies$ Great Famine
    - Population decreases by about 2 million
    - (1M Famine death & 1M emigration to the New World)
Malthusian Dynamics - Ireland (1650 - 1850)

- The Columbian Exchange $\rightarrow$ massive cultivation of potato post-1650
  - 1650-1840s
    - Population increases from 2 to 6 million
    - Income per capita increases only very modestly
  - 1845-1852 Potato blight destroys crops $\rightarrow$ Great Famine
    - Population decreases by about 2 million
    - (1M Famine death & 1M emigration to the New World)
Malthusian Dynamics - Ireland (1650 - 1850)

- The Columbian Exchange $\implies$ massive cultivation of potato post-1650
  - 1650-1840s
    - Population increases from 2 to 6 million
    - Income per capita increases only very modestly
  - 1845-1852 Potato blight destroys crops $\implies$ Great Famine
    - Population decreases by about 2 million
    - (1M Famine death & 1M emigration to the New World)
Malthusian Dynamics - Ireland (1650 - 1850)

- The Columbian Exchange $\implies$ massive cultivation of potato post-1650
  - 1650-1840s
    - Population increases from 2 to 6 million
    - Income per capita increases only very modestly
  - 1845-1852 Potato blight destroys crops $\implies$ Great Famine
    - Population decreases by about 2 million
    - (1M Famine death & 1M emigration to the New World)
Malthusian Dynamics - Ireland (1650 - 1850)

- The Columbian Exchange $\implies$ massive cultivation of potato post-1650
  - 1650-1840s
    - Population increases from 2 to 6 million
    - Income per capita increases only very modestly
  - 1845-1852 Potato blight destroys crops $\implies$ Great Famine
    - Population decreases by about 2 million
    - (1M Famine death & 1M emigration to the New World)
Malthusian Dynamics - Ireland (1650 - 1850)

- The Columbian Exchange $\rightarrow$ massive cultivation of potato post-1650
  - 1650-1840s
    - Population increases from 2 to 6 million
    - Income per capita increases only very modestly
  - 1845-1852  Potato blight destroys crops $\rightarrow$ Great Famine
    - Population decreases by about 2 million
    - (1M Famine death & 1M emigration to the New World)
Malthusian Dynamics - Ireland (1650 - 1850)

- The Columbian Exchange $\implies$ massive cultivation of potato post-1650
  - 1650-1840s
    - Population increases from 2 to 6 million
    - Income per capita increases only very modestly
  - 1845-1852 Potato blight destroys crops $\implies$ Great Famine
    - Population decreases by about 2 million
    - (1M Famine death & 1M emigration to the New World)
Malthusian Dynamics - China (1500 - 1800)

- Superior agricultural technology
  - 1500-1820
    - Population increases from 103 to 381 million
    - Share of China in world population to increase from 23% to 37%
    - Income per capita was steady at $600
Malthusian Dynamics - China (1500 - 1800)

- Superior agricultural technology
  - 1500-1820
    - Population increases from 103 to 381 million
    - Share of China in world population to increase from 23% to 37%
    - Income per capita was steady at $600
Phases of Development

The Malthusian Epoch

Malthusian Dynamics - China (1500 - 1800)

- Superior agricultural technology
  - 1500-1820
    - Population increases from 103 to 381 million
    - Share of China in world population to increase from 23% to 37%
    - Income per capita was steady at $600
Malthusian Dynamics - China (1500 - 1800)

- Superior agricultural technology

  - 1500-1820
    - Population increases from 103 to 381 million
    - Share of China in world population to increase from 23% to 37%
    - Income per capita was steady at $600
Malthusian Dynamics - China (1500 - 1800)

- Superior agricultural technology
  - 1500-1820
    - Population increases from 103 to 381 million
    - Share of China in world population to increase from 23% to 37%
    - Income per capita was steady at $600
Malthusian Adjustments to the Black Death: England, 1348–1750

![Graph showing population and real wages over time from 1200 to 1700. The graph illustrates a decline in population followed by an increase, with fluctuations in real wages shown as blue line.](image-url)
Land Productivity and Population Density in 1500
Land Productivity and Income per Capita in 1500
Technology and Population Density in 1500

![Graph showing the relationship between log population density in 1500 CE and log years since transition.]
Technology and Income per Capita in 1500

![Graph showing Log Income Per Capita in 1500 CE against Log Years since Transition. The graph compares data from different regions including Africa, Europe, Asia, Oceania, and Americas.]
The Post-Malthusian Regime

- Characterized by the onset of economic growth:
  - Technological progress accelerates
  - Income per capita still has a positive effect on population growth
  - Technological progress:
    - Increases output more than population
    - \[ \rightarrow \text{growth in income per capita} \]
The Post-Malthusian Regime

- Characterized by the onset of economic growth:
  - Technological progress accelerates
  - Income per capita still has a positive effect on population growth
  - Technological progress:
    - Increases output more than population
    - $\Rightarrow$ growth in income per capita
Characterized by the onset of economic growth:

- Technological progress accelerates
- Income per capita still has a positive effect on population growth

Technological progress:

- Increases output more than population
- \( \implies \) growth in income per capita
The Post-Malthusian Regime

- Characterized by the onset of economic growth:
  - Technological progress accelerates
  - Income per capita still has a positive effect on population growth
  - Technological progress:
    - Increases output more than population
    - \[ \Rightarrow \] growth in income per capita
The Post-Malthusian Regime

- Characterized by the onset of economic growth:
  - Technological progress accelerates
  - Income per capita still has a positive effect on population growth
  - Technological progress:
    - Increases output more than population
    - \[\rightarrow\] growth in income per capita
The Post-Malthusian Regime

- Characterized by the onset of economic growth:
  - Technological progress accelerates
  - Income per capita still has a positive effect on population growth
  - Technological progress:
    - Increases output more than population
    - $\Rightarrow$ growth in income per capita
Regional Variation in the Timing of the Take-off

The graph illustrates the GDP per capita (1990 Int'l US$) for different regions over time, from 1700 to 2000. The regions include Western Europe, Western Offshoots, East Europe, Latin America, Asia, and Africa. The graph shows significant variation in GDP growth across these regions, with Western Europe and Western Offshoots experiencing substantial increases in GDP per capita over the 1850-2000 period, while East Europe, Latin America, Asia, and Africa show more modest gains.
Take-off: Growth of Population & Income per Capita – World

<table>
<thead>
<tr>
<th>Period</th>
<th>Income per capita</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1000</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>1000-1500</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td>1500-1820</td>
<td>0.4%</td>
<td>0.4%</td>
</tr>
<tr>
<td>1820-1913</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>
Take-off: Growth of Population & Income per Capita – Western Offshoots

<table>
<thead>
<tr>
<th>Period</th>
<th>Income per capita</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1000</td>
<td>0.0%</td>
<td>0.5%</td>
</tr>
<tr>
<td>1000-1500</td>
<td>1.0%</td>
<td>1.5%</td>
</tr>
<tr>
<td>1500-1820</td>
<td>1.5%</td>
<td>2.0%</td>
</tr>
<tr>
<td>1820-1913</td>
<td>2.5%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>
### Take-off: Growth of Population & Income per Capita – Western Europe

<table>
<thead>
<tr>
<th>Period</th>
<th>Income per capita</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1000</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>1000-1500</td>
<td>0.2%</td>
<td>0.4%</td>
</tr>
<tr>
<td>1500-1820</td>
<td>0.4%</td>
<td>0.6%</td>
</tr>
<tr>
<td>1820-1913</td>
<td>1.0%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>
### Take-off: Growth of Population & Income per Capita – Latin America

<table>
<thead>
<tr>
<th>Period</th>
<th>Income per capita</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1000</td>
<td>0.2%</td>
<td>0.0%</td>
</tr>
<tr>
<td>1000-1500</td>
<td>0.4%</td>
<td>0.2%</td>
</tr>
<tr>
<td>1500-1820</td>
<td>0.6%</td>
<td>0.4%</td>
</tr>
<tr>
<td>1820-1913</td>
<td>1.4%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

The diagram illustrates the growth rate of income per capita and population over different periods from 1-1000 to 1820-1913.
Take-off: Growth of Population & Income per Capita – Africa

<table>
<thead>
<tr>
<th>Period</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1000</td>
<td>0.0%</td>
</tr>
<tr>
<td>1000-1500</td>
<td>0.1%</td>
</tr>
<tr>
<td>1500-1820</td>
<td>0.2%</td>
</tr>
<tr>
<td>1820-1913</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

Diagram showing growth rates for income per capita and population over different periods:

- 1-1000: Small growth
- 1000-1500: Slight increase
- 1500-1820: Moderate growth
- 1820-1913: Rapid growth
Take-off: Growth of Population & Income per Capita – Asia

<table>
<thead>
<tr>
<th>Period</th>
<th>Income per capita</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1000</td>
<td>0.0%</td>
<td>0.1%</td>
</tr>
<tr>
<td>1000-1500</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>1500-1820</td>
<td>0.1%</td>
<td>0.2%</td>
</tr>
<tr>
<td>1820-1913</td>
<td>0.2%</td>
<td>0.4%</td>
</tr>
</tbody>
</table>
Take-off & Increased Industrialization per Capita

- Developed Countries
- Third World
- World
Phases of Development

The Post-Malthusian Regime

Take-off & Increased Industrialization per Capita – Developed Countries

- Belgium
- France
- Germany
- Italy
- Spain
- Sweden
- Switzerland
- United Kingdom
- Canada
- United States
- Japan

Year
1750 1800 1850 1900 1950

Industrialization per capita (UK in 1900=100)
Take-off in Developed Economies & Decline in Industrialization in LDCs

Phases of Development

The Post-Malthusian Regime

Growth and Comparative Development

Growth & Comparative Development

Omer Ozak
The Modern Growth Regime

- Sustained economic growth
  - Acceleration in technological progress
    - Industrial demand for human capital
  - Human capital formation
    - Decline in fertility rates (substitution of quantity by quality)
  - The decline in population growth
    - Freed the growth process from counterbalancing effects of population growth
- Technological progress, human capital formation & decline in population growth
  - Sustained economic growth
The Modern Growth Regime

- Sustained economic growth
  - Acceleration in technological progress
    - Industrial demand for human capital
  - Human capital formation
    - Decline in fertility rates (substitution of quantity by quality)
  - The decline in population growth
    - Freed the growth process from counterbalancing effects of population growth
  - Technological progress, human capital formation & decline in population growth
    - Sustained economic growth
The Modern Growth Regime

- Sustained economic growth
  - Acceleration in technological progress
    - \( \Rightarrow \) Industrial demand for human capital
  - Human capital formation
    - \( \Rightarrow \) Decline in fertility rates (substitution of quantity by quality)
  - The decline in population growth
    - \( \Rightarrow \) Freed the growth process from counterbalancing effects of population growth
- Technological progress, human capital formation & decline in population growth
  - \( \Rightarrow \) Sustained economic growth
The Modern Growth Regime

- Sustained economic growth
  - Acceleration in technological progress
    - \( \implies \) Industrial demand for human capital
  - Human capital formation
    - \( \implies \) Decline in fertility rates (substitution of quantity by quality)
  - The decline in population growth
    - \( \implies \) Freed the growth process from counterbalancing effects of population growth
  - Technological progress, human capital formation & decline in population growth
    - \( \implies \) Sustained economic growth
The Modern Growth Regime

- Sustained economic growth
  - Acceleration in technological progress
    - $\implies$ Industrial demand for human capital
  - Human capital formation
    - $\implies$ Decline in fertility rates (substitution of quantity by quality)
  - The decline in population growth
    - $\implies$ Freed the growth process from counterbalancing effects of population growth
- Technological progress, human capital formation & decline in population growth
  - $\implies$ Sustained economic growth
The Modern Growth Regime

- Sustained economic growth
  - Acceleration in technological progress
    - Industrial demand for human capital
  - Human capital formation
    - Decline in fertility rates (substitution of quantity by quality)
  - The decline in population growth
    - Freed the growth process from counterbalancing effects of population growth
- Technological progress, human capital formation & decline in population growth
  - Sustained economic growth
The Modern Growth Regime

- Sustained economic growth
  - Acceleration in technological progress
    - Industrial demand for human capital
  - Human capital formation
    - Decline in fertility rates (substitution of quantity by quality)
  - The decline in population growth
    - Freed the growth process from counterbalancing effects of population growth
- Technological progress, human capital formation & decline in population growth
  - Sustained economic growth
The Modern Growth Regime

- Sustained economic growth
  - Acceleration in technological progress
    - $\implies$ Industrial demand for human capital
  - Human capital formation
    - $\implies$ Decline in fertility rates (substitution of quantity by quality)
  - The decline in population growth
    - $\implies$ Freed the growth process from counterbalancing effects of population growth
- Technological progress, human capital formation & decline in population growth
  - $\implies$ Sustained economic growth
The Modern Growth Regime

- Sustained economic growth
  - Acceleration in technological progress
    - Industrial demand for human capital
  - Human capital formation
    - Decline in fertility rates (substitution of quantity by quality)
  - The decline in population growth
    - Freed the growth process from counterbalancing effects of population growth
- Technological progress, human capital formation & decline in population growth
  - Sustained economic growth
Variation in Years Elapsed since the Onset of the Fertility Decline
Early Fertility Decline – Western Offshoots

The Demographic Transition

Phases of Development

Growth and Comparative Development

Ömer Özak

Growth & Comparative Development
Early Fertility Decline – Western Europe
Early Fertility Decline – Eastern Europe

![Graph showing early fertility decline in Eastern Europe](image-url)
Late Fertility Decline – Latin America
Late Fertility Decline – Asia
Late Fertility Decline – Africa
Timing of the Demographic Transition and Current Income per Capita

Conditional on absolute latitude.
Timing of the Demographic Transition and Divergence across Regions
Sustained Economic Growth: 1870–2000

GDP per capita (1990 Int'l US$, log-scale)
Regional Variation in Growth of Income per Capita: 1950–2000

The graph shows the logarithm of GDP per capita (1990 International US$) for different regions over the years 1950 to 2010. The regions include Western Europe, Western Offshoots, East Europe, Latin America, Asia, and Africa.

- Western Europe shows a steady increase in GDP per capita, with values close to 10 by 2010.
- Western Offshoots also exhibit a significant increase, starting slightly lower than Western Europe in 1950.
- East Europe shows the least growth, with values remaining relatively flat compared to other regions.
- Latin America has a noticeable increase, especially after 1980, with values approaching 10 by 2010.
- Asia and Africa show rapid growth in the later years, with Asia having slightly higher values than Africa.

The data points indicate a general trend of increasing GDP per capita across all regions, with variations in growth rates and starting values.
Fundamental Research Questions: The Malthusian Epoch

- What accounts for the epoch of stagnation that characterized most of human history?
  - Why did episodes of technological progress in the pre-industrialization era fail to generate sustained economic growth?
  - Why did increased productivity generated population growth rather than growth in income per capita?
Fundamental Research Questions: The Malthusian Epoch

- What accounts for the epoch of stagnation that characterized most of human history?
  - Why did episodes of technological progress in the pre-industrialization era fail to generate sustained economic growth?
  - Why did increased productivity generated population growth rather than growth in income per capita?
Fundamental Research Questions: The Malthusian Epoch

- What accounts for the epoch of stagnation that characterized most of human history?
  - Why did episodes of technological progress in the pre-industrialization era fail to generate sustained economic growth?
  - Why did increased productivity generated population growth rather than growth in income per capita?
Fundamental Research Questions: Transition from Stagnation to Growth

- What are the factors that generated the transition from stagnation to growth of DCs?
- What are the hurdles faced by LDCs in the transition from stagnation to growth?
- What triggered the demographic transition?
- Is the demographic transition a necessary condition for sustained economic growth?
Fundamental Research Questions: Transition from Stagnation to Growth

- What are the factors that generated the transition from stagnation to growth of DCs?
- What are the hurdles faced by LDCs in the transition from stagnation to growth?
  - What triggered the demographic transition?
  - Is the demographic transition a necessary condition for sustained economic growth?
Fundamental Research Questions: Transition from Stagnation to Growth

- What are the factors that generated the transition from stagnation to growth of DCs?
- What are the hurdles faced by LDCs in the transition from stagnation to growth?
- What triggered the demographic transition?
- Is the demographic transition a necessary condition for sustained economic growth?
Fundamental Research Questions: Transition from Stagnation to Growth

- What are the factors that generated the transition from stagnation to growth of DCs?
- What are the hurdles faced by LDCs in the transition from stagnation to growth?
- What triggered the demographic transition?
- Is the demographic transition a necessary condition for sustained economic growth?
Fundamental Research Questions: Comparative Development

- What accounts for the transition from stagnation to growth in some countries and the persistent stagnation in others?
- What governs the differential timing of the demographic transition across nations?
- What is the origin of the vast inequality that emerged across countries in the past two centuries?
- Has the earlier transition of advanced economies adversely affected the process of development in LDCs?
- What is the contribution of deep rooted factors to the vast inequality across countries?
Fundamental Research Questions: Comparative Development

- What accounts for the transition from stagnation to growth in some countries and the persistent stagnation in others?
- What governs the differential timing of the demographic transition across nations?
- What is the origin of the vast inequality that emerged across countries in the past two centuries?
- Has the earlier transition of advanced economies adversely affected the process of development in LDCs?
- What is the contribution of deep rooted factors to the vast inequality across countries?
Fundamental Research Questions: Comparative Development

- What accounts for the transition from stagnation to growth in some countries and the persistent stagnation in others?

- What governs the differential timing of the demographic transition across nations?

- What is the origin of the vast inequality that emerged across countries in the past two centuries?

- Has the earlier transition of advanced economies adversely affected the process of development in LDCs?

- What is the contribution of deep rooted factors to the vast inequality across countries?
Fundamental Research Questions: Comparative Development

- What accounts for the transition from stagnation to growth in some countries and the persistent stagnation in others?
- What governs the differential timing of the demographic transition across nations?
- What is the origin of the vast inequality that emerged across countries in the past two centuries?
- Has the earlier transition of advanced economies adversely affected the process of development in LDCs?
- What is the contribution of deep rooted factors to the vast inequality across countries?
Fundamental Research Questions: Comparative Development

- What accounts for the transition from stagnation to growth in some countries and the persistent stagnation in others?
- What governs the differential timing of the demographic transition across nations?
- What is the origin of the vast inequality that emerged across countries in the past two centuries?
- Has the earlier transition of advanced economies adversely affected the process of development in LDCs?
- What is the contribution of deep rooted factors to the vast inequality across countries?
Proximate Causes of Growth

- **Factor Accumulation:**
  - Physical capital accumulation *(Solow, QJE 1956)*
  - Human capital accumulation *(Lucas, JME 1988)*

- **Technological Progress:**
Proximate Causes of Growth

- **Factor Accumulation:**
  - Physical capital accumulation (Solow, QJE 1956)
  - Human capital accumulation (Lucas, JME 1988)

- Technological Progress:
Proximate Causes of Growth

- **Factor Accumulation:**
  - Physical capital accumulation (Solow, QJE 1956)
  - Human capital accumulation (Lucas, JME 1988)

- **Technological Progress:**
Proximate Causes of Growth

- **Factor Accumulation:**
  - Physical capital accumulation (Solow, QJE 1956)
  - Human capital accumulation (Lucas, JME 1988)

- **Technological Progress:**
Proximate Causes of Growth

- **Factor Accumulation:**
  - Physical capital accumulation (Solow, QJE 1956)
  - Human capital accumulation (Lucas, JME 1988)

- **Technological Progress:**
Neoclassical Growth Theory (GT)

- Inconsistent with the development process over most of human history:
  - GT: growth rates decline in the transition to sustained growth
    - Evidence: non-decreasing growth rates in the development of DCs
  - GT: technological progress increases steady-state income per capita
    - Malthusian Epoch - tech progress had no effect on LR income
  - GT: does not capture the demographic transition (DT)
    - Evidence: DT is central for the take-off to modern growth
  - GT: does not capture the take-off from stagnation to growth
    - Evidence: key for the understanding of comparative development
  - GT: convergence
    - Evidence: divergence in the past two centuries
Neoclassical Growth Theory (GT)

- Inconsistent with the development process over most of human history:
  - GT: growth rates decline in the transition to sustained growth
    - Evidence: non-decreasing growth rates in the development of DCs
  - GT: technological progress increases steady-state income per capita
    - Malthusian Epoch - tech progress had no effect on LR income
  - GT: does not capture the demographic transition (DT)
    - Evidence: DT is central for the take-off to modern growth
  - GT: does not capture the take-off from stagnation to growth
    - Evidence: key for the understanding of comparative development
  - GT: convergence
    - Evidence: divergence in the past two centuries
Inconsistent with the development process over most of human history:

- GT: growth rates decline in the transition to sustained growth
  - Evidence: non-decreasing growth rates in the development of DCs
- GT: technological progress increases steady-state income per capita
  - Malthusian Epoch - tech progress had no effect on LR income
- GT: does not capture the demographic transition (DT)
  - Evidence: DT is central for the take-off to modern growth
- GT: does not capture the take-off from stagnation to growth
  - Evidence: key for the understanding of comparative development
- GT: convergence
  - Evidence: divergence in the past two centuries
Neoclassical Growth Theory (GT)

- Inconsistent with the development process over most of human history:
  - GT: growth rates decline in the transition to sustained growth
    - Evidence: non-decreasing growth rates in the development of DCs
  - GT: technological progress increases steady-state income per capita
    - Malthusian Epoch - tech progress had no effect on LR income
  - GT: does not capture the demographic transition (DT)
    - Evidence: DT is central for the take-off to modern growth
  - GT: does not capture the take-off from stagnation to growth
    - Evidence: key for the understanding of comparative development
  - GT: convergence
    - Evidence: divergence in the past two centuries
Neoclassical Growth Theory (GT)

- Inconsistent with the development process over most of human history:
  - GT: growth rates decline in the transition to sustained growth
    - Evidence: non-decreasing growth rates in the development of DCs
  - GT: technological progress increases steady-state income per capita
    - Malthusian Epoch - tech progress had no effect on LR income
  - GT: does not capture the demographic transition (DT)
    - Evidence: DT is central for the take-off to modern growth
  - GT: does not capture the take-off from stagnation to growth
    - Evidence: key for the understanding of comparative development
  - GT: convergence
    - Evidence: divergence in the past two centuries
Neoclassical Growth Theory (GT)

- Inconsistent with the development process over most of human history:
  - GT: growth rates decline in the transition to sustained growth
  - Evidence: non-decreasing growth rates in the development of DCs
  - GT: technological progress increases steady-state income per capita
  - Malthusian Epoch - tech progress had no effect on LR income
  - GT: does not capture the demographic transition (DT)
    - Evidence: DT is central for the take-off to modern growth
  - GT: does not capture the take-off from stagnation to growth
    - Evidence: key for the understanding of comparative development
  - GT: convergence
    - Evidence: divergence in the past two centuries
Inconsistent with the development process over most of human history:

- GT: growth rates decline in the transition to sustained growth
  - Evidence: non-decreasing growth rates in the development of DCs
- GT: technological progress increases steady-state income per capita
  - Malthusian Epoch - tech progress had no effect on LR income
- GT: does not capture the demographic transition (DT)
  - Evidence: DT is central for the take-off to modern growth
- GT: does not capture the take-off from stagnation to growth
  - Evidence: key for the understanding of comparative development
- GT: convergence
  - Evidence: divergence in the past two centuries
Neoclassical Growth Theory (GT)

- Inconsistent with the development process over most of human history:
  - GT: growth rates decline in the transition to sustained growth
    - Evidence: non-decreasing growth rates in the development of DCs
  - GT: technological progress increases steady-state income per capita
    - Malthusian Epoch - tech progress had no effect on LR income
  - GT: does not capture the demographic transition (DT)
    - Evidence: DT is central for the take-off to modern growth
  - GT: does not capture the take-off from stagnation to growth
    - Evidence: key for the understanding of comparative development
  - GT: convergence
    - Evidence: divergence in the past two centuries
Neoclassical Growth Theory (GT)

- Inconsistent with the development process over most of human history:
  - GT: growth rates decline in the transition to sustained growth
    - Evidence: non-decreasing growth rates in the development of DCs
  - GT: technological progress increases steady-state income per capita
    - Malthusian Epoch - tech progress had no effect on LR income
  - GT: does not capture the demographic transition (DT)
    - Evidence: DT is central for the take-off to modern growth
  - GT: does not capture the take-off from stagnation to growth
    - Evidence: key for the understanding of comparative development
  - GT: convergence
    - Evidence: divergence in the past two centuries
Neoclassical Growth Theory (GT)

- Inconsistent with the development process over most of human history:
  - GT: growth rates decline in the transition to sustained growth
    - Evidence: non-decreasing growth rates in the development of DCs
  - GT: technological progress increases steady-state income per capita
    - Malthusian Epoch - tech progress had no effect on LR income
  - GT: does not capture the demographic transition (DT)
    - Evidence: DT is central for the take-off to modern growth
  - GT: does not capture the take-off from stagnation to growth
    - Evidence: key for the understanding of comparative development
  - GT: convergence
    - Evidence: divergence in the past two centuries
Neoclassical Growth Theory (GT)

- Inconsistent with the development process over most of human history:
  - GT: growth rates decline in the transition to sustained growth
    - Evidence: non-decreasing growth rates in the development of DCs
  - GT: technological progress increases steady-state income per capita
    - Malthusian Epoch - tech progress had no effect on LR income
  - GT: does not capture the demographic transition (DT)
    - Evidence: DT is central for the take-off to modern growth
  - GT: does not capture the take-off from stagnation to growth
    - Evidence: key for the understanding of comparative development
  - GT: convergence
    - Evidence: divergence in the past two centuries
Non-Unified Growth Theory

- Captures the role of factor accumulation and technological progress in the modern growth regime
- Not designed to shed light on:
  - The historical origins of vast and persistent inequality across countries
  - The forces that triggered the transition of DCs from stagnation to growth
  - The hurdles faced by LDCs in their take-off from stagnation to growth
  - The factors that hindered convergence across countries
  - The historical origins of vast and persistent inequality across countries
Non-Unified Growth Theory

- Captures the role of factor accumulation and technological progress in the modern growth regime

- Not designed to shed light on:
  - The historical origins of vast and persistent inequality across countries
  - The forces that triggered the transition of DCs from stagnation to growth
  - The hurdles faced by LDCs in their take-off from stagnation to growth
  - The factors that hindered convergence across countries
  - The historical origins of vast and persistent inequality across countries
Non-Unified Growth Theory

- Captures the role of factor accumulation and technological progress in the modern growth regime

- Not designed to shed light on:
  - The historical origins of vast and persistent inequality across countries
  - The forces that triggered the transition of DCs from stagnation to growth
  - The hurdles faced by LDCs in their take-off from stagnation to growth
  - The factors that hindered convergence across countries
  - The historical origins of vast and persistent inequality across countries
Non-Unified Growth Theory

- Captures the role of factor accumulation and technological progress in the modern growth regime

- Not designed to shed light on:
  - The historical origins of vast and persistent inequality across countries
  - The forces that triggered the transition of DCs from stagnation to growth
  - The hurdles faced by LDCs in their take-off from stagnation to growth
  - The factors that hindered convergence across countries
  - The historical origins of vast and persistent inequality across countries
Non-Unified Growth Theory

- Captures the role of factor accumulation and technological progress in the modern growth regime

- Not designed to shed light on:
  - The historical origins of vast and persistent inequality across countries
  - The forces that triggered the transition of DCs from stagnation to growth
  - The hurdles faced by LDCs in their take-off from stagnation to growth
  - The factors that hindered convergence across countries
  - The historical origins of vast and persistent inequality across countries
Non-Unified Growth Theory

- Captures the role of factor accumulation and technological progress in the modern growth regime

- Not designed to shed light on:
  - The historical origins of vast and persistent inequality across countries
  - The forces that triggered the transition of DCs from stagnation to growth
  - The hurdles faced by LDCs in their take-off from stagnation to growth
  - The factors that hindered convergence across countries
  - The historical origins of vast and persistent inequality across countries
Non-Unified Growth Theory

- Captures the role of factor accumulation and technological progress in the modern growth regime

- Not designed to shed light on:
  - The historical origins of vast and persistent inequality across countries
  - The forces that triggered the transition of DCs from stagnation to growth
  - The hurdles faced by LDCs in their take-off from stagnation to growth
  - The factors that hindered convergence across countries
  - The historical origins of vast and persistent inequality across countries
Unified Growth Theory

Captures the:

- Process of development in its entirety
- Forces that permitted the transition from stagnation to growth
- Hurdles faced by LDCs in their transitions from stagnation to growth
- The origins of the uneven distribution of wealth across the globe
- Persistent effect of initial biogeographical factors on the growth process
Unified Growth Theory

- Captures the:
  - Process of development in its entirety
  - Forces that permitted the transition from stagnation to growth
  - Hurdles faced by LDCs in their transitions from stagnation to growth
  - The origins of the uneven distribution of wealth across the globe
  - Persistent effect of initial biogeographical factors on the growth process
Unified Growth Theory

- Captures the:
  - Process of development in its entirety
  - Forces that permitted the transition from stagnation to growth
  - Hurdles faced by LDCs in their transitions from stagnation to growth
  - The origins of the uneven distribution of wealth across the globe
  - Persistent effect of initial biogeographical factors on the growth process
Unified Growth Theory

- Captures the:
  - Process of development in its entirety
  - Forces that permitted the transition from stagnation to growth
  - Hurdles faced by LDCs in their transitions from stagnation to growth
  - The origins of the uneven distribution of wealth across the globe
  - Persistent effect of initial biogeographical factors on the growth process
Unified Growth Theory

- Captures the:
  - Process of development in its entirety
  - Forces that permitted the transition from stagnation to growth
  - Hurdles faced by LDCs in their transitions from stagnation to growth
  - The origins of the uneven distribution of wealth across the globe
  - Persistent effect of initial biogeographical factors on the growth process
Unified Growth Theory

- Captures the:
  - Process of development in its entirety
  - Forces that permitted the transition from stagnation to growth
  - Hurdles faced by LDCs in their transitions from stagnation to growth
  - The origins of the uneven distribution of wealth across the globe
  - Persistent effect of initial biogeographical factors on the growth process
Evolution of the Growth Literature

Major Challenge

- Policy based on insights from growth theory encourage
  - Investment in education and health
  - Openness to international capital markets
  - Technological diffusion

  $\Rightarrow$ failed to generate convergence

- Why do some societies fail to:
  - Efficiently invest in physical and human capital?
  - Adopt advanced technologies?
Major Challenge

- Policy based on insights from growth theory encourage
  - Investment in education and health
  - Openness to international capital markets
  - Technological diffusion
    - $\Rightarrow$ failed to generate convergence

- Why do some societies fail to:
  - Efficiently invest in physical and human capital?
  - Adopt advanced technologies?
Major Challenge

- Policy based on insights from growth theory encourage:
  - Investment in education and health
  - Openness to international capital markets
  - Technological diffusion

  → failed to generate convergence

- Why do some societies fail to:
  - Efficiently invest in physical and human capital?
  - Adopt advanced technologies?
Evolution of the Growth Literature

Major Challenge

- Policy based on insights from growth theory encourage
  - Investment in education and health
  - Openness to international capital markets
  - Technological diffusion
    - $\implies$ failed to generate convergence

- Why do some societies fail to:
  - Efficiently invest in physical and human capital?
  - Adopt advanced technologies?
Major Challenge

- Policy based on insights from growth theory encourage
  - Investment in education and health
  - Openness to international capital markets
  - Technological diffusion
    - $\rightarrow$ failed to generate convergence

- Why do some societies fail to:
  - Efficiently invest in physical and human capital?
  - Adopt advanced technologies?
Major Challenge

- Policy based on insights from growth theory encourage
  - Investment in education and health
  - Openness to international capital markets
  - Technological diffusion
    - $\implies$ failed to generate convergence

- Why do some societies fail to:
  - Efficiently invest in physical and human capital?
  - Adopt advanced technologies?
Major Challenge

- Policy based on insights from growth theory encourage
  - Investment in education and health
  - Openness to international capital markets
  - Technological diffusion
    - $\Rightarrow$ failed to generate convergence

- Why do some societies fail to:
  - Efficiently invest in physical and human capital?
  - Adopt advanced technologies?
Major Challenge

- Policy based on insights from growth theory encourage:
  - Investment in education and health
  - Openness to international capital markets
  - Technological diffusion
    - → failed to generate convergence

- Why do some societies fail to:
  - Efficiently invest in physical and human capital?
  - Adopt advanced technologies?
Barriers to Accumulation and Innovation

- **Inequality**
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)
  
- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Foster-Lowe, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- **Inequality**
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections *(Galor-Zeira, RES 1993)*
    - Sociopolitical instability *(Alesina et al., JEG 1996)*
    - Inferior institutions *(Engerman-Sokoloff, 1997)*
    - Inefficient provision of education *(Galor-Moav-Vollrath, RES 2009)*

-**Inefficient Institutions** *(limited protection of property rights & rule of law)*
  - Reduced incentive to accumulate/innovate *(North, 1981; Acemoglu-Robinson, 2012)*

- **Ethnic fractionalization**
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment *(Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)*

- **Limited Social capital** *(limited trust & cooperation)*
  - Suboptimal investment *(Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)*
Evolution of the Growth Literature

More Fundamental Causes of Growth

Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Barriers to Accumulation and Innovation

- Inequality
  - Suboptimal accumulation of human and physical capital
    - Credit market imperfections (Galor-Zeira, RES 1993)
    - Sociopolitical instability (Alesina et al., JEG 1996)
    - Inferior institutions (Engerman-Sokoloff, 1997)
    - Inefficient provision of education (Galor-Moav-Vollrath, RES 2009)

- Inefficient Institutions (limited protection of property rights & rule of law)
  - Reduced incentive to accumulate/innovate (North, 1981; Acemoglu-Robinson, 2012)

- Ethnic fractionalization
  - Sociopolitical instability & Inefficient provision of public goods
    - Suboptimal investment (Easterly-Levine, QJE 1997; Alesina et al., JEG 2003)

- Limited Social capital (limited trust & cooperation)
  - Suboptimal investment (Putnam, 1993; Guiso et al., JEP 2006; Tabellini, JEEA 2010)
Colonialism and the Persistent Effects of Institutions and Human Capital

- **Persistent effect of institutions implemented by colonial powers**
  - Reversal of fortune (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - Slavery (Nunn, QJE 2008)

- **Persistent effect of the human capital and diversity brought by the colonists**
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- **Persistent effect of the legal system of colonial powers**
  - Common law (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- **Persistent effect of artificial borders & ethnic division created by colonists**
  - Sub-Saharan Africa (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Colonialism and the Persistent Effects of Institutions and Human Capital

- Persistent effect of institutions implemented by colonial powers
  - Reversal of fortune (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - Slavery (Nunn, QJE 2008)

- Persistent effect of the human capital and diversity brought by the colonists
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- Persistent effect of the legal system of colonial powers
  - Common law (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- Persistent effect of artificial borders & ethnic division created by colonists
  - Sub-Saharan Africa (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Colonialism and the Persistent Effects of Institutions and Human Capital

- Persistent effect of institutions implemented by colonial powers
  - Reversal of fortune (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - Slavery (Nunn, QJE 2008)

- Persistent effect of the human capital and diversity brought by the colonists
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- Persistent effect of the legal system of colonial powers
  - Common law (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- Persistent effect of artificial borders & ethnic division created by colonists
  - Sub-Saharan Africa (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Colonialism and the Persistent Effects of Institutions and Human Capital

- Persistent effect of institutions implemented by colonial powers
  - Reversal of fortune (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - Slavery (Nunn, QJE 2008)

- Persistent effect of the human capital and diversity brought by the colonists
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- Persistent effect of the legal system of colonial powers
  - Common law (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- Persistent effect of artificial borders & ethnic division created by colonists
  - Sub-Saharan Africa (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Colonialism and the Persistent Effects of Institutions and Human Capital

- Persistent effect of institutions implemented by colonial powers
  - Reversal of fortune (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - Slavery (Nunn, QJE 2008)

- Persistent effect of the human capital and diversity brought by the colonists
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- Persistent effect of the legal system of colonial powers
  - Common law (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- Persistent effect of artificial borders & ethnic division created by colonists
  - Sub-Saharan Africa (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Colonialism and the Persistent Effects of Institutions and Human Capital

- Persistent effect of institutions implemented by colonial powers
  - Reversal of fortune (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - Slavery (Nunn, QJE 2008)

- Persistent effect of the human capital and diversity brought by the colonists
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- Persistent effect of the legal system of colonial powers
  - Common law (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- Persistent effect of artificial borders & ethnic division created by colonists
  - Sub-Saharan Africa (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Colonialism and the Persistent Effects of Institutions and Human Capital

- Persistent effect of institutions implemented by colonial powers
  - Reversal of fortune (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - Slavery (Nunn, QJE 2008)

- Persistent effect of the human capital and diversity brought by the colonists
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- Persistent effect of the legal system of colonial powers
  - Common law (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- Persistent effect of artificial borders & ethnic division created by colonists
  - Sub-Saharan Africa (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Colonialism and the Persistent Effects of Institutions and Human Capital

- Persistent effect of institutions implemented by colonial powers
  - **Reversal of fortune** (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - **Slavery** (Nunn, QJE 2008)

- Persistent effect of the human capital and diversity brought by the colonists
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- Persistent effect of the legal system of colonial powers
  - **Common law** (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- Persistent effect of artificial borders & ethnic division created by colonists
  - **Sub-Saharan Africa** (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Colonialism and the Persistent Effects of Institutions and Human Capital

- Persistent effect of institutions implemented by colonial powers
  - Reversal of fortune (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - Slavery (Nunn, QJE 2008)

- Persistent effect of the human capital and diversity brought by the colonists
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- Persistent effect of the legal system of colonial powers
  - Common law (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- Persistent effect of artificial borders & ethnic division created by colonists
  - Sub-Saharan Africa (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Colonialism and the Persistent Effects of Institutions and Human Capital

- Persistent effect of institutions implemented by colonial powers
  - Reversal of fortune (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - Slavery (Nunn, QJE 2008)

- Persistent effect of the human capital and diversity brought by the colonists
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- Persistent effect of the legal system of colonial powers
  - Common law (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- Persistent effect of artificial borders & ethnic division created by colonists
  - Sub-Saharan Africa (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Colonialism and the Persistent Effects of Institutions and Human Capital

- Persistent effect of institutions implemented by colonial powers
  - Reversal of fortune (Engerman-Sokoloff, 1997; Acemoglu et al., AER 2001, QJE 2002)
    - Exclusive institutions imposed in densely populated areas
    - Inclusive institutions implemented in sparsely populated areas
  - Slavery (Nunn, QJE 2008)

- Persistent effect of the human capital and diversity brought by the colonists
  - Larger effect of colonizers in sparsely populated areas (Glaeser et al., JEG 2004; Easterly-Levine, 2012; Ashraf-Galor, 2014)

- Persistent effect of the legal system of colonial powers
  - Common law (Britain) is more complementary than civil law (France, Spain & Portugal) to the development of financial systems (La Porta et al., JF 1997)

- Persistent effect of artificial borders & ethnic division created by colonists
  - Sub-Saharan Africa (Alesina et al., JEEA 2011; Papaioannou-Michalopoulos, ECT 2012)
Evolution of the Growth Literature

More Fundamental Causes of Growth

Origin and Persistence of Cultural Factors

- Geographical origins and persistence of:
  - Trust & Cooperation (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - Cultural diversity (Ashraf-Galor, 2012)
  - The European Marriage Pattern (Voigtländer-Voth, AER 2013)
  - Female labor force participation (Alesina et al., QJE 2013)
  - Time preference (Galor and Ozak, AER 2016)

- Religious origins of:
  - Preferences for human capital (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - Work ethic & thrift & entrepreneurial spirit (Weber, 1905; Andersen et al., 2013)

- Intergenerational transmission of:
  - Preferences for human capital (Galor-Moav, QJE 2002)
  - Entrepreneurial spirit & thrift (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulou, JET 2012)
Evolution of the Growth Literature

More Fundamental Causes of Growth

Origin and Persistence of Cultural Factors

- Geographical origins and persistence of:
  - **Trust & Cooperation** (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - **Cultural diversity** (Ashraf-Galor, 2012)
  - **The European Marriage Pattern** (Voigtlander-Voth, AER 2013)
  - **Female labor force participation** (Alesina et al., QJE 2013)
  - **Time preference** (Galor and Ozak, AER 2016)

- Religious origins of:
  - **Preferences for human capital** (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - **Work ethic & thrift & entrepreneurial spirit** (Weber, 1905; Andersen et al., 2013)

- Intergenerational transmission of:
  - **Preferences for human capital** (Galor-Moav, QJE 2002)
  - **Entrepreneurial spirit & thrift** (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Origin and Persistence of Cultural Factors

- Geographical origins and persistence of:
  - Trust & Cooperation (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - Cultural diversity (Ashraf-Galor, 2012)
  - The European Marriage Pattern (Voigtlander-Voth, AER 2013)
  - Female labor force participation (Alesina et al., QJE 2013)
  - Time preference (Galar and Ozak, AER 2016)

- Religious origins of:
  - Preferences for human capital (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - Work ethic & thrift & entrepreneurial spirit (Weber, 1905; Andersen et al., 2013)

- Intergenerational transmission of:
  - Preferences for human capital (Galor-Moav, QJE 2002)
  - Entrepreneurial spirit & thrift (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Origin and Persistence of Cultural Factors

- **Geographical origins and persistence of:**
  - **Trust & Cooperation** (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - **Cultural diversity** (Ashraf-Galor, 2012)
  - **The European Marriage Pattern** (Voigtlander-Voth, AER 2013)
  - **Female labor force participation** (Alesina et al., QJE 2013)
  - **Time preference** (Galor and Ozak, AER 2016)

- **Religious origins of:**
  - **Preferences for human capital** (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - **Work ethic & thrift & entrepreneurial spirit** (Weber, 1905; Andersen et al., 2013)

- **Intergenerational transmission of:**
  - **Preferences for human capital** (Galor-Moav, QJE 2002)
  - **Entrepreneurial spirit & thrift** (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Geographical origins and persistence of:

- **Trust & Cooperation** (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
- **Cultural diversity** (Ashraf-Galor, 2012)
- **The European Marriage Pattern** (Voigtlander-Voth, AER 2013)
- **Female labor force participation** (Alesina et al., QJE 2013)
- **Time preference** (Galor and Ozak, AER 2016)

Religious origins of:

- **Preferences for human capital** (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
- **Work ethic & thrift & entrepreneurial spirit** (Weber, 1905; Andersen et al., 2013)

Intergenerational transmission of:

- **Preferences for human capital** (Galor-Moav, QJE 2002)
- **Entrepreneurial spirit & thrift** (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Origin and Persistence of Cultural Factors

- Geographical origins and persistence of:
  - **Trust & Cooperation** (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - **Cultural diversity** (Ashraf-Galor, 2012)
  - **The European Marriage Pattern** (Voigtlander-Voth, AER 2013)
  - **Female labor force participation** (Alesina et al., QJE 2013)
  - **Time preference** (Galor and Ozak, AER 2016)

- Religious origins of:
  - **Preferences for human capital** (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - **Work ethic & thrift & entrepreneurial spirit** (Weber, 1905; Andersen et al., 2013)

- Intergenerational transmission of:
  - **Preferences for human capital** (Galor-Moav, QJE 2002)
  - **Entrepreneurial spirit & thrift** (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Origin and Persistence of Cultural Factors

- Geographical origins and persistence of:
  - Trust & Cooperation  (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - Cultural diversity  (Ashraf-Galor, 2012)
  - The European Marriage Pattern  (Voigtlander-Voth, AER 2013)
  - Female labor force participation  (Alesina et al., QJE 2013)
  - Time preference  (Galor and Ozak, AER 2016)

- Religious origins of:
  - Preferences for human capital  (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - Work ethic & thrift & entrepreneurial spirit  (Weber, 1905; Andersen et al., 2013)

- Intergenerational transmission of:
  - Preferences for human capital  (Galor-Moav, QJE 2002)
  - Entrepreneurial spirit & thrift  (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Origin and Persistence of Cultural Factors

- Geographical origins and persistence of:
  - **Trust & Cooperation** (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - **Cultural diversity** (Ashraf-Galor, 2012)
  - **The European Marriage Pattern** (Voigtlander-Voth, AER 2013)
  - **Female labor force participation** (Alesina et al., QJE 2013)
  - **Time preference** (Galor and Ozak, AER 2016)

- Religious origins of:
  - **Preferences for human capital** (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - **Work ethic & thrift & entrepreneurial spirit** (Weber, 1905; Andersen et al., 2013)

- Intergenerational transmission of:
  - **Preferences for human capital** (Galor-Moav, QJE 2002)
  - **Entrepreneurial spirit & thrift** (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Evolution of the Growth Literature

More Fundamental Causes of Growth

Origin and Persistence of Cultural Factors

- Geographical origins and persistence of:
  - Trust & Cooperation (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - Cultural diversity (Ashraf-Galor, 2012)
  - The European Marriage Pattern (Voigtlander-Voth, AER 2013)
  - Female labor force participation (Alesina et al., QJE 2013)
  - Time preference (Galor and Ozak, AER 2016)

- Religious origins of:
  - Preferences for human capital (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - Work ethic & thrift & entrepreneurial spirit (Weber, 1905; Andersen et al., 2013)

- Intergenerational transmission of:
  - Preferences for human capital (Galor-Moav, QJE 2002)
  - Entrepreneurial spirit & thrift (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Evolution of the Growth Literature

More Fundamental Causes of Growth

Origin and Persistence of Cultural Factors

- Geographical origins and persistence of:
  - Trust & Cooperation (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - Cultural diversity (Ashraf-Galor, 2012)
  - The European Marriage Pattern (Voigtlander-Voth, AER 2013)
  - Female labor force participation (Alesina et al., QJE 2013)
  - Time preference (Galor and Ozak, AER 2016)

- Religious origins of:
  - Preferences for human capital (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - Work ethic & thrift & entrepreneurial spirit (Weber, 1905; Andersen et al., 2013)

- Intergenerational transmission of:
  - Preferences for human capital (Galor-Moav, QJE 2002)
  - Entrepreneurial spirit & thrift (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Origin and Persistence of Cultural Factors

- Geographical origins and persistence of:
  - Trust & Cooperation (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - Cultural diversity (Ashraf-Galor, 2012)
  - The European Marriage Pattern (Voigtlander-Voth, AER 2013)
  - Female labor force participation (Alesina et al., QJE 2013)
  - Time preference (Galor and Ozak, AER 2016)

- Religious origins of:
  - Preferences for human capital (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - Work ethic & thrift & entrepreneurial spirit (Weber, 1905; Andersen et al., 2013)

- Intergenerational transmission of:
  - Preferences for human capital (Galor-Moav, QJE 2002)
  - Entrepreneurial spirit & thrift (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Origin and Persistence of Cultural Factors

- Geographical origins and persistence of:
  - Trust & Cooperation (Guiso et al., QJE 2009; Algan-Cahuc, AER 2010; Durante, 2010; Litina, 2016)
  - Cultural diversity (Ashraf-Galor, 2012)
  - The European Marriage Pattern (Voigtlander-Voth, AER 2013)
  - Female labor force participation (Alesina et al., QJE 2013)
  - Time preference (Galor and Ozak, AER 2016)

- Religious origins of:
  - Preferences for human capital (Becker-Woessmann, QJE 2009; Botticini-Eckstein, 2012)
  - Work ethic & thrift & entrepreneurial spirit (Weber, 1905; Andersen et al., 2013)

- Intergenerational transmission of:
  - Preferences for human capital (Galor-Moav, QJE 2002)
  - Entrepreneurial spirit & thrift (Deopke-Zilibotti, QJE 2008; Galor-Michalopoulos, JET 2012)
Persistent Effects of Geographical Factors

- **Biogeographical conditions that triggered the Neolithic Revolution**
  - Technological head-start: (Diamond, 1997; Olsson-Hibbs, EER, 2005)
    - Persistent effect on population density (1-1500) (Ashraf-Galor, AER 2011)
    - No effect on contemporary income per capita (Ashraf-Galor, AER 2013)
  - Persistent effect on life expectancy (Galor-Moav, 2009; Franck-Galor-Özak, 2019)

- **Disease environment**
  - Persistent effect on labor productivity & investment in human capital
    (Gallup-Sachs, 2001; Andersen-Dalgaard-Selaya, REStud 2012; Alsan AER 2015)

- **Geographical isolation**
  - Reduced trade and technological diffusion (Gallup-Mellinger-Sachs, 1999)
  - Persistence of culture conducive for innovations (Ashraf-Galor-Ozak, JEEA 2010; Özak, JOEG 2018)
Evolution of the Growth Literature

Ultimate Causes of Growth

Persistent Effects of Geographical Factors

- **Biogeographical conditions that triggered the Neolithic Revolution**
  - **Technological head-start:** (Diamond, 1997; Olsson-Hibbs, EER, 2005)
    - Persistent effect on population density (1-1500) (Ashraf-Galor, AER 2011)
    - No effect on contemporary income per capita (Ashraf-Galor, AER 2013)
    - Persistent effect on life expectancy (Galor-Moav, 2009; Franck-Galor-Özak, 2019)

- **Disease environment**
  - Persistent effect on labor productivity & investment in human capital (Gallup-Sachs, 2001; Andersen-Dalgaard-Selaya, REStud 2012; Alsan AER 2015)

- **Geographical isolation**
  - Reduced trade and technological diffusion (Gallup-Mellinger-Sachs, 1999)
  - Persistence of culture conducive for innovations (Ashraf-Galor-Özak, JEEA 2010; Özak, JOEG 2018)
**Evolution of the Growth Literature**

**Ultimate Causes of Growth**

### Persistent Effects of Geographical Factors

- **Biogeographical conditions that triggered the Neolithic Revolution**
  - Technological head-start: (Diamond, 1997; Olsson-Hibbs, EER, 2005)
    - Persistent effect on population density (1-1500) (Ashraf-Galor, AER 2011)
    - No effect on contemporary income per capita (Ashraf-Galor, AER 2013)
    - Persistent effect on life expectancy (Galor-Moav, 2009; Franck-Galor-Özak, 2019)

- **Disease environment**
  - Persistent effect on labor productivity & investment in human capital (Gallup-Sachs, 2001; Andersen-Dalgaard-Selaya, REStud 2012; Alsan AER 2015)

- **Geographical isolation**
  - Reduced trade and technological diffusion (Gallup-Mellinger-Sachs, 1999)
  - Persistence of culture conducive for innovations (Ashraf-Galor-Ozak, JEEA 2010; Özak, JOEG 2018)
Persistent Effects of Geographical Factors

- Biogeographical conditions that triggered the Neolithic Revolution
  - Technological head-start: (Diamond, 1997; Olsson-Hibbs, EER, 2005)
    - Persistent effect on population density (1-1500) (Ashraf-Galor, AER 2011)
    - No effect on contemporary income per capita (Ashraf-Galor, AER 2013)
  - Persistent effect on life expectancy (Galor-Moav, 2009; Franck-Galor-Özak, 2019)

- Disease environment
  - Persistent effect on labor productivity & investment in human capital
    (Gallup-Sachs, 2001; Andersen-Dalgaard-Selaya, REStud 2012; Alsan AER 2015)

- Geographical isolation
  - Reduced trade and technological diffusion (Gallup-Mellinger-Sachs, 1999)
  - Persistence of culture conducive for innovations (Ashraf-Galor-Özak, JEEA 2010; Özak, JOEG 2018)
Persistent Effects of Geographical Factors

- **Biogeographical conditions that triggered the Neolithic Revolution**
  - **Technological head-start:** (Diamond, 1997; Olsson-Hibbs, EER, 2005)
    - Persistent effect on population density (1-1500) (Ashraf-Galor, AER 2011)
    - No effect on contemporary income per capita (Ashraf-Galor, AER 2013)
  - **Persistent effect on life expectancy** (Galor-Moav, 2009; Franck-Galor-Özak, 2019)

- **Disease environment**
  - Persistent effect on labor productivity & investment in human capital (Gallup-Sachs, 2001; Andersen-Dalgaard-Selaya, REStud 2012; Alsan AER 2015)

- **Geographical isolation**
  - Reduced trade and technological diffusion (Gallup-Mellinger-Sachs, 1999)
  - Persistence of culture conducive for innovations (Ashraf-Galor-Ozak, JEEA 2010; Özak, JOEG 2018)
Persistent Effects of Geographical Factors

- Biogeographical conditions that triggered the Neolithic Revolution
  - Technological head-start: (Diamond, 1997; Olsson-Hibbs, EER, 2005)
    - Persistent effect on population density (1-1500) (Ashraf-Galor, AER 2011)
    - No effect on contemporary income per capita (Ashraf-Galor, AER 2013)
  - Persistent effect on life expectancy (Galor-Moav, 2009; Franck-Galor-Özak, 2019)

- Disease environment
  - Persistent effect on labor productivity & investment in human capital
    (Gallup-Sachs, 2001; Andersen-Dalgaard-Selaya, REStud 2012; Alsan AER 2015)

- Geographical isolation
  - Reduced trade and technological diffusion (Gallup-Mellinger-Sachs, 1999)
  - Persistence of culture conducive for innovations (Ashraf-Galor-Ozak, JEEA 2010; Özak, JOEG 2018)
**Persistent Effects of Geographical Factors**

- **Biogeographical conditions that triggered the Neolithic Revolution**
  - **Technological head-start:** (Diamond, 1997; Olsson-Hibbs, EER, 2005)
    - Persistent effect on population density (1-1500) (Ashraf-Galor, AER 2011)
    - No effect on contemporary income per capita (Ashraf-Galor, AER 2013)
  - Persistent effect on life expectancy (Galor-Moav, 2009; Franck-Galor-Özak, 2019)

- **Disease environment**
  - Persistent effect on labor productivity & investment in human capital
    (Gallup-Sachs, 2001; Andersen-Dalgaard-Selaya, REStud 2012; Alsan AER 2015)

- **Geographical isolation**
  - Reduced trade and technological diffusion (Gallup-Mellinger-Sachs, 1999)
  - Persistence of culture conducive for innovations (Ashraf-Galor-Özak, JEEA 2010; Özak, JOEG 2018)
Persistent Effects of Geographical Factors

- Biogeographical conditions that triggered the Neolithic Revolution
  - Technological head-start: (Diamond, 1997; Olsson-Hibbs, EER, 2005)
    - Persistent effect on population density (1-1500) (Ashraf-Galor, AER 2011)
    - No effect on contemporary income per capita (Ashraf-Galor, AER 2013)
  - Persistent effect on life expectancy (Galor-Moav, 2009; Franck-Galor-Özak, 2019)

- Disease environment
  - Persistent effect on labor productivity & investment in human capital
    (Gallup-Sachs, 2001; Andersen-Dalgaard-Selaya, REStud 2012; Alsan AER 2015)

- Geographical isolation
  - Reduced trade and technological diffusion (Gallup-Mellinger-Sachs, 1999)
  - Persistence of culture conducive for innovations (Ashraf-Galor-Ozak, JEEA 2010; Özak, JOEG 2018)
Persistent Effects of Geographical Factors

- Biogeographical conditions that triggered the Neolithic Revolution
  - Technological head-start: (Diamond, 1997; Olsson-Hibbs, EER, 2005)
  - Persistent effect on population density (1-1500) (Ashraf-Galor, AER 2011)
  - No effect on contemporary income per capita (Ashraf-Galor, AER 2013)
  - Persistent effect on life expectancy (Galor-Moav, 2009; Franck-Galor-Özak, 2019)

- Disease environment
  - Persistent effect on labor productivity & investment in human capital
    (Gallup-Sachs, 2001; Andersen-Dalgaard-Selaya, REStud 2012; Alsan AER 2015)

- Geographical isolation
  - Reduced trade and technological diffusion (Gallup-Mellinger-Sachs, 1999)
  - Persistence of culture conducive for innovations (Ashraf-Galor-Ozak, JEEA 2010; Özak, JOEG 2018)
Persistent Effects of Geographical Factors

- Biogeographical conditions that triggered the Neolithic Revolution
  - Technological head-start: (Diamond, 1997; Olsson-Hibbs, EER, 2005)
    - Persistent effect on population density (1-1500) (Ashraf-Galor, AER 2011)
    - No effect on contemporary income per capita (Ashraf-Galor, AER 2013)
  - Persistent effect on life expectancy (Galor-Moav, 2009; Franck-Galor-Özak, 2019)

- Disease environment
  - Persistent effect on labor productivity & investment in human capital
    (Gallup-Sachs, 2001; Andersen-Dalgaard-Selaya, REStud 2012; Alsan AER 2015)

- Geographical isolation
  - Reduced trade and technological diffusion (Gallup-Mellinger-Sachs, 1999)
  - Persistence of culture conducive for innovations (Ashraf-Galor-Ozak, JEEA 2010; Özak, JOEG 2018)
Persistent Effects of Geographical Factors

- Land suitable for large plantations
  - Inequality:
    - Extractive institutions (Engerman-Sokoloff, 1997)
  - Concentration of landownership:
    - Suboptimal investment in public education (Galor-Moav-Vollrath, RES 2009)

- Soil quality conducive for agriculture
  - Specialization in unskilled-intensive goods
    - Reduces human capital formation & increases fertility & slows the transition to modern growth (Galor-Mountford, RES 2008)
Persistent Effects of Geographical Factors

- Land suitable for large plantations
  - Inequality:
    - Extractive institutions (Engerman-Sokoloff, 1997)
    - Concentration of landownership:
      - Suboptimal investment in public education (Galor-Moav-Vollrath, RES 2009)

- Soil quality conducive for agriculture
  - Specialization in unskilled-intensive goods
    - Reduces human capital formation & increases fertility & slows the transition to modern growth (Galor-Mountford, RES 2008)
Persistent Effects of Geographical Factors

- Land suitable for large plantations
  - Inequality:
    - Extractive institutions (Engerman-Sokoloff, 1997)
    - Concentration of landownership:
      - Suboptimal investment in public education (Galor-Moav-Vollrath, RES 2009)

- Soil quality conducive for agriculture
  - Specialization in unskilled-intensive goods
    - Reduces human capital formation & increases fertility & slows the transition to modern growth (Galor-Mountford, RES 2008)
Persistent Effects of Geographical Factors

- Land suitable for large plantations
  - Inequality:
    - Extractive institutions (Engerman-Sokoloff, 1997)
  - Concentration of landownership:
    - Suboptimal investment in public education (Galor-Moav-Vollrath, RES 2009)

- Soil quality conducive for agriculture
  - Specialization in unskilled-intensive goods
    - Reduces human capital formation & increases fertility & slows the transition to modern growth (Galor-Moav-Vollrath, RES 2009)
Persistent Effects of Geographical Factors

- Land suitable for large plantations
  - Inequality:
    - Extractive institutions (Engerman-Sokoloff, 1997)
  - Concentration of landownership:
    - Suboptimal investment in public education (Galor-Moav-Vollrath, RES 2009)

- Soil quality conducive for agriculture
  - Specialization in unskilled-intensive goods
    - Reduces human capital formation & increases fertility & slows the transition to modern growth (Galor-Moav, RES 2009)
Persistent Effects of Geographical Factors

- Land suitable for large plantations
  - Inequality:
    - Extractive institutions \cite{Engerman-Sokoloff, 1997}
  - Concentration of landownership:
    - Suboptimal investment in public education \cite{Galor-Moav-Vollrath, RES 2009}

- Soil quality conducive for agriculture
  - Specialization in unskilled-intensive goods
    - Reduces human capital formation & increases fertility & slows the transition to modern growth \cite{Galor-Mountford, RES 2008}
Persistent Effects of Geographical Factors

- Land suitable for large plantations
  - Inequality:
    - Extractive institutions (Engerman-Sokoloff, 1997)
  - Concentration of landownership:
    - Suboptimal investment in public education (Galor-Moav-Vollrath, RES 2009)

- Soil quality conducive for agriculture
  - Specialization in unskilled-intensive goods
    - Reduces human capital formation & increases fertility & slows the transition to modern growth (Galor-Mountford, RES 2008)
Persistent Effects of Geographical Factors

- Land suitable for large plantations
  - Inequality:
    - Extractive institutions (Engerman-Sokoloff, 1997)
  - Concentration of landownership:
    - Suboptimal investment in public education (Galor-Moav-Vollrath, RES 2009)

- Soil quality conducive for agriculture
  - Specialization in unskilled-intensive goods
    - Reduces human capital formation & increases fertility & slows the transition to modern growth (Galor-Mountford, RES 2008)
Persistent Effects of Geographical Factors

- **Range of soil quality**
  - Emergence of geographical specific human capital $\implies$ reduced mobility $\implies$ ethnic fractionalization (Michalopoulos, AER 2012)
  - Persistent effect of ethnic fractionalization (Easterly-Levine, QJE 1997)

- **Ecological diversity & storable crops**
  - Emergence & persistence of state capacity (Fenske, JEEA 2014; Mayshar-Moav-Neeman, 2013)

- **Geographical determinants of body size**
  - Determined fertility & income per capita in the Malthusian epoch and the timing of the take-off (Dalgaard-Strulik, 2013)
Persistent Effects of Geographical Factors

- Range of soil quality
  - Emergence of geographical specific human capital $\implies$ reduced mobility $\implies$ ethnic fractionalization (Michalopoulos, AER 2012)
    - Persistent effect of ethnic fractionalization (Easterly-Levine, QJE 1997)

- Ecological diversity & storable crops
  - Emergence & persistence of state capacity (Fenske, JEEA 2014; Mayshar-Moav-Neeman, 2013)

- Geographical determinants of body size
  - Determined fertility & income per capita in the Malthusian epoch and the timing of the take-off (Dalgaard-Strulik, 2013)
Persistent Effects of Geographical Factors

- Range of soil quality
  - Emergence of geographical specific human capital $\implies$ reduced mobility $\implies$ ethnic fractionalization (Michalopoulos, AER 2012)
  - Persistent effect of ethnic fractionalization (Easterly-Levine, QJE 1997)

- Ecological diversity & storable crops
  - Emergence & persistence of state capacity (Fenske, JEEA 2014; Mayshar-Moav-Neeman, 2013)

- Geographical determinants of body size
  - Determined fertility & income per capita in the Malthusian epoch and the timing of the take-off (Dalgaard-Strulik, 2013)
Persistent Effects of Geographical Factors

- Range of soil quality
  - Emergence of geographical specific human capital \(\Rightarrow\) reduced mobility
    \(\Rightarrow\) ethnic fractionalization (Michalopoulos, AER 2012)
  - Persistent effect of ethnic fractionalization (Easterly-Levine, QJE 1997)

- Ecological diversity & storable crops
  - Emergence & persistence of state capacity (Fenske, JEEA 2014; Mayshar-Moav-Neeman, 2013)

- Geographical determinants of body size
  - Determined fertility & income per capita in the Malthusian epoch and the timing of the take-off (Dalgaard-Strulik, 2013)
Persistent Effects of Geographical Factors

- Range of soil quality
  - Emergence of geographical specific human capital $\rightarrow$ reduced mobility $\rightarrow$ ethnic fractionalization (Michalopoulos, AER 2012)
  - Persistent effect of ethnic fractionalization (Easterly-Levine, QJE 1997)

- Ecological diversity & storable crops
  - Emergence & persistence of state capacity (Fenske, JEEA 2014; Mayshar-Moav-Neeman, 2013)

- Geographical determinants of body size
  - Determined fertility & income per capita in the Malthusian epoch and the timing of the take-off (Dalgaard-Strulik, 2013)
Persistent Effects of Geographical Factors

- Range of soil quality
  - Emergence of geographical specific human capital $\implies$ reduced mobility $\implies$ ethnic fractionalization (Michalopoulos, AER 2012)
  - Persistent effect of ethnic fractionalization (Easterly-Levine, QJE 1997)

- Ecological diversity & storable crops
  - Emergence & persistence of state capacity (Fenske, JEEA 2014; Mayshar-Moav-Neeman, 2013)

- Geographical determinants of body size
  - Determined fertility & income per capita in the Malthusian epoch and the timing of the take-off (Dalgaard-Strulik, 2013)
Persistent Effects of Geographical Factors

- Range of soil quality
  - Emergence of geographical specific human capital $\implies$ reduced mobility $\implies$ ethnic fractionalization (Michalopoulos, AER 2012)
  - Persistent effect of ethnic fractionalization (Easterly-Levine, QJE 1997)

- Ecological diversity & storable crops
  - Emergence & persistence of state capacity (Fenske, JEEA 2014; Mayshar-Moav-Neeman, 2013)

- Geographical determinants of body size
  - Determined fertility & income per capita in the Malthusian epoch and the timing of the take-off (Dalgaard-Strulik, 2013)
Persistent Effects of Intergenerationally Transmitted Traits

- **Natural selection of traits that are complementary to the growth process:**
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- **Cultural distance between societies reduces:**
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- **Cultural diversity within a society:**
  - Reduces cohesiveness:
    - Higher cultural fragmentation (Ashraf-Galor, AER-PP 2013)
    - Increased mistrust & prevalence of civil conflict (Arbatli-Ashraf-Galor, 2018)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)
  - Emergence of states & autocracy (Depetris-Özak, 2016; Galor-Klemp, 2015)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
  - Lower income in overly homogenous & diverse societies
Persistent Effects of Intergenerationally Transmitted Traits

- **Natural selection of traits that are complementary to the growth process:**
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-¨Ozak, AER 2016)

- **Cultural distance between societies reduces:**
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-¨Ozak, 2019)

- **Cultural diversity within a society:**
  - Reduces cohesiveness:
    - Higher cultural fragmentation (Ashraf-Galor, AER 2013)
    - Increased mistrust & prevalence of civil conflict (Ashraf-Ashraf-Galor, 2018)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-¨Ozak, 2015, 2016)
  - Emergence of states & autocracy (Depetris-¨Ozak, 2015; Galor-Klemp, 2015)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
  - Lower income in overly homogenous & diverse societies
Persistent Effects of Intergenerationally Transmitted Traits

- **Natural selection of traits that are complementary to the growth process:**
  - **Preference for education** (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - **Entrepreneurial spirit** (Galor-Michalopoulos, JET 2012)
  - **Time Preference** (Galor-Özak, AER 2016)

- **Cultural distance between societies reduces:**
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- **Cultural diversity within a society:**
  - Reduces cohesiveness:
    - Higher cultural fragmentation reduces cohesiveness (Ashraf-Galor, AER 2013)
    - Increased mistrust & prevalence of civil conflict (Ashraf-Ashraf-Galor, 2018)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)
  - Emergence of states & autocracy (Depetris-Özak, 2016; Galor-Klemp, 2018)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
  - Lower income in overly homogenous & diverse societies
Persistent Effects of Intergenerationally Transmitted Traits

- **Natural selection of traits that are complementary to the growth process:**
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- **Cultural distance between societies reduces:**
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- **Cultural diversity within a society:**
  - Reduces cohesiveness:
    - Higher cultural fragmentation (Depetris-Özak, 2015, 2016)
    - Increased mistrust & prevalence of civil conflict (Depetris-Özak, 2019)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)
  - Emergence of states & autocracy (Depetris-Özak, 2018; Galor-Klemp, 2018)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
    - Lower income in overly homogenous & diverse societies

---

Ömer Özak

Growth and Comparative Development

Growth & Comparative Development
Evolution of the Growth Literature

Ultimate Causes of Growth

Persistent Effects of Intergenerationally Transmitted Traits

- Natural selection of traits that are complementary to the growth process:
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- Cultural distance between societies reduces:
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- Cultural diversity within a society:
  - Reduces cohesiveness:
    - Higher cultural fragmentation reduces social cohesion
    - Increased mistrust & prevalence of civil conflict (Ashraf-Ashraf-Galor, 2018)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)
  - Emergence of states & autocracy (Depetris-Özak, 2018; Galor-Klemp, 2018)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
    - Lower income in overly homogenous & diverse societies
Evolution of the Growth Literature

Ultimate Causes of Growth

Persistent Effects of Intergenerationally Transmitted Traits

- Natural selection of traits that are complementary to the growth process:
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- Cultural distance between societies reduces:
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- Cultural diversity within a society:
  - Reduces cohesiveness:
    - Higher cultural fragmentation results in increased mistrust & prevalence of civil conflict (Ashraf-Ashraf-Galor, 2013)
    - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)
  - Emergence of states & autocracy (Depetris-Özak, 2016; Galor-Klemp, 2015)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
    - Lower income in overly homogenous & diverse societies
Persistent Effects of Intergenerationally Transmitted Traits

- **Natural selection of traits that are complementary to the growth process:**
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- **Cultural distance between societies reduces:**
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- **Cultural diversity within a society:**
  - Reduces cohesiveness:
    - Higher cultural fragmentation reduces social cohesion
    - Increased mistrust & prevalence of civil conflict (Ashraf-Ashraf-Galor, 2013)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)
  - Emergence of states & autocracy (Depetris-Özak, 2016; Galor-Klemp, 2018)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
  - Lower income in overly homogenous & diverse societies

\[\Rightarrow\]
**Persistent Effects of Intergenerationally Transmitted Traits**

- **Natural selection of traits that are complementary to the growth process:**
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- **Cultural distance between societies reduces:**
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- **Cultural diversity within a society:**
  - Reduces cohesiveness:
    - Higher cultural fragmentation (Ashraf-Galor, AER-PP 2013)
    - Increased mistrust & prevalence of civil conflict (Arbatli-Ashraf-Galor, 2018)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)
  - Emergence of states & autocracy (Depetris-Özak, 2015; Galor-Klemp, 2015)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
  - Lower income in overly homogenous & diverse societies
Evolution of the Growth Literature

Persistent Effects of Intergenerationally Transmitted Traits

- Natural selection of traits that are complementary to the growth process:
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- Cultural distance between societies reduces:
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- Cultural diversity within a society:
  - Reduces cohesiveness:
    - Higher cultural fragmentation (Ashraf-Galor, AER-PP 2013)
    - Increased mistrust & prevalence of civil conflict (Arbatli-Ashraf-Galor, 2018)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)
  - Emergence of states & autocracy (Depetris-Özak, 2015; Galor-Klemp, 2015)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
    - Lower income in overly homogenous & diverse societies
Persistent Effects of Intergenerationally Transmitted Traits

- Natural selection of traits that are complementary to the growth process:
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- Cultural distance between societies reduces:
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- Cultural diversity within a society:
  - Reduces cohesiveness:
    - Higher cultural fragmentation (Ashraf-Galor, AER-PP 2013)
    - Increased mistrust & prevalence of civil conflict (Arbatli-Ashraf-Galor, 2018)
    - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)

  $\Rightarrow$ Emergence of states & autocracy (Depetris-Özak, 2015; Galor-Klemp, 2015)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
    Lower income in overly homogenous & diverse societies
Persistent Effects of Intergenerationally Transmitted Traits

- Natural selection of traits that are complementary to the growth process:
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- Cultural distance between societies reduces:
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- Cultural diversity within a society:
  - Reduces cohesiveness:
    - Higher cultural fragmentation (Ashraf-Galor, AER-PP 2013)
    - Increased mistrust & prevalence of civil conflict (Arbatli-Ashraf-Galor, 2018)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)
  - Emergence of states & autocracy (Depetris-Özak, 2015; Galor-Klemp, 2015)
  - Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
    - Lower income in overly homogenous & diverse societies
Evolution of the Growth Literature

Ultimate Causes of Growth

Persistent Effects of Intergenerationally Transmitted Traits

- Natural selection of traits that are complementary to the growth process:
  - Preference for education  (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit  (Galor-Michalopoulos, JET 2012)
  - Time Preference  (Galor-Özak, AER 2016)

- Cultural distance between societies reduces:
  - Diffusion from the technological frontier  (Spolaore-Wacziarg, QJE 2009)
  - Conflict  (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- Cultural diversity within a society:
  - Reduces cohesiveness:
    - Higher cultural fragmentation  (Ashraf-Galor, AER-PP 2013)
    - Increased mistrust & prevalence of civil conflict  (Arbatli-Ashraf-Galor, 2018)
  - Generates a wider range of complementary traits conducive for specialization & innovations  (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)

  ➔ Emergence of states & autocracy  (Depetris-Özak, 2015; Galor-Klemp, 2015)
  - Has a hump-shaped effect on productivity  (Ashraf-Galor, AER 2013)
  - Lower income in overly homogenous & diverse societies
Persistent Effects of Intergenerationally Transmitted Traits

- Natural selection of traits that are complementary to the growth process:
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- Cultural distance between societies reduces:
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, RESStat 2016; Depetris-Özak, 2019)

- Cultural diversity within a society:
  - Reduces cohesiveness:
    - Higher cultural fragmentation (Ashraf-Galor, AER-PP 2013)
    - Increased mistrust & prevalence of civil conflict (Arbatli-Ashraf-Galor, 2018)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)

  $\Rightarrow$ Emergence of states & autocracy (Depetris-Özak, 2015; Galor-Klemp, 2015)

- Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
  Lower income in overly homogenous & diverse societies
Persistent Effects of Intergenerationally Transmitted Traits

- Natural selection of traits that are complementary to the growth process:
  - Preference for education (Galor-Moav, QJE 2002; Galor-Klemp, 2018)
  - Entrepreneurial spirit (Galor-Michalopoulos, JET 2012)
  - Time Preference (Galor-Özak, AER 2016)

- Cultural distance between societies reduces:
  - Diffusion from the technological frontier (Spolaore-Wacziarg, QJE 2009)
  - Conflict (Spolaore-Wacziarg, REStat 2016; Depetris-Özak, 2019)

- Cultural diversity within a society:
  - Reduces cohesiveness:
    - Higher cultural fragmentation (Ashraf-Galor, AER-PP 2013)
    - Increased mistrust & prevalence of civil conflict (Arbatli-Ashraf-Galor, 2018)
  - Generates a wider range of complementary traits conducive for specialization & innovations (Ashraf-Galor, AER 2013; Depetris-Özak, 2015, 2016)

  ➞ Emergence of states & autocracy (Depetris-Özak, 2015; Galor-Klemp, 2015)

- Has a hump-shaped effect on productivity (Ashraf-Galor, AER 2013)
  Lower income in overly homogenous & diverse societies