Human Capital Strategies for Big Shocks
The Case of the Fall of the Ming

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Ming-Qing Transition in China & in Sample

36 million deaths, 16% of pop’n

7 Clans, Tongcheng county, Anhui
Big Shocks: Temporary or Persistent Effects?

- Work typically compares **regions** with and without shock using **cross-sectional approach**
  - Including Dell ’10, Nunn-Wantchekon ’11, Feigenbaum- Lee-Mezzanotti ’22

- We complement regional focus with **longitudinal micro data on 7 linked generations**
  - Did families hit by shock behave differently in short- & long-run?

- Intergenerational analysis
  - Outside intergenerational mobility includes Bleakley-Ferrie ’16, Lowes- Nunn- Robinson- Weigel ’17, Becker- Grosfeld- Grosjean-Voigtlaender- Zhuravskaya ’18, Ager- Boustan- Eriksson ’21
Data: Genealogies – family histories

▷ **Goal**: Representative sample

▷ **Calibrate to national data**
  ▷ 70% commoners, 3% high status
  ▷ Limit to 7 genealogies
  ▷ **All males** are recorded, no matter their wealth

▷ Info on: Vitals of men, wives, children; **human capital (HC)**; status; residence, ...

▷ HC: Skills for civil service exam 0/1

Exploiting **clan heterogeneity**:
▷ No wealth bias in sample
Treatment: First Generation and Descendants

- Lived in heavily impacted region during Fall of Ming
- Based on mortality in region

- 90% of regions treated

△ Treatment label of first gen applied to all descendants
Pre-Shock Analysis: No Differential Pre-Trends

<table>
<thead>
<tr>
<th>Control</th>
<th>Treatment</th>
<th>Difference</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 54</td>
<td>N = 436</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tests of Equality of Means

Generation (-1)
Father Human Capital 0.31 0.32 -0.01 0.93

Generation (-2)
Grandfather Human Capital 0.46 0.38 0.08 0.23

**Notes:** Figures for first generation (male born 1590-1644).
## Summary Statistics: Intergenerationally Linked Sample

<table>
<thead>
<tr>
<th>Generation</th>
<th>N</th>
<th>Human Capital</th>
<th>Migration</th>
<th>Sons</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1,667</td>
<td>0.259</td>
<td>0.198</td>
<td>3.272</td>
<td>0.104</td>
<td>2.998</td>
</tr>
<tr>
<td>2</td>
<td>1,661</td>
<td>0.264</td>
<td>0.276</td>
<td>3.667</td>
<td>0.092</td>
<td>3.517</td>
</tr>
<tr>
<td>3</td>
<td>1,632</td>
<td>0.200</td>
<td>0.229</td>
<td>3.322</td>
<td>0.071</td>
<td>3.222</td>
</tr>
<tr>
<td>4</td>
<td>1,609</td>
<td>0.145</td>
<td>0.147</td>
<td>3.391</td>
<td>0.049</td>
<td>3.275</td>
</tr>
<tr>
<td>5</td>
<td>1,515</td>
<td>0.106</td>
<td>0.104</td>
<td>2.224</td>
<td>0.096</td>
<td>1.929</td>
</tr>
<tr>
<td>All</td>
<td>8,084</td>
<td>0.196</td>
<td>0.189</td>
<td>3.193</td>
<td>0.083</td>
<td>3.005</td>
</tr>
</tbody>
</table>

> Sample range 1542 to 1886; link rate over 5 generations: 91% (1,515/1,667)
OLS Specification Stacked over 5 Generations

- Human capital $hc_{ic(p)g}$ of individual $i$ in couple $c$ of gen $g$

$$hc_{ic(p)g} = \beta_g [I[t = g] \times d_p] + \beta fstat_{c1} + \eta_g + \lambda_y + \theta_m + \omega_f + \epsilon_{ic(p)g}$$

**Treatment 0/1 var $d_p$, $p$: descendant of pair $p$ in first gen**

- $fstat_{c1}$: first gen couple’s husband’s **father’s status**

- Clan fixed effects
  - $\theta_m$: male (7 clans)
  - $\omega_f$: female (120; clans of **in-marrying women**)

- $\eta_g$: generation fixed effects, $\lambda_y$: birth year fixed effects

- **Two-way clustering** on first generation-pair and generation
Human Capital Response: Loss, Followed by Advantage
Mechanism: Increased Preference for Human Capital

- Shock meant that people lost land, house, and property
  - 75% of arable land destroyed in single year (Beattie ’79)
    - Land becomes arable again with time – memory may linger

- Norms shift more from land- to human capital-based wealth
  - Affects disproportionately those w/ first-hand experience of destruction

- Change in norms passed down from one generation to the next
Hypothesis: Increased Preference for HC ⇔ More Intergenerational Benefit from Father & Grandfather

**Intergenerational relation** in human capital:

\[ hc_{ic(p)g} = \alpha + \omega_1 hc_{ic(p)g-1} + \omega_2 hc_{ic(p)g-2} + X\psi + \varepsilon_{ic(p)g} \]

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Father HC</td>
<td>-0.033 (0.143)</td>
<td>-0.154 (0.215)</td>
</tr>
<tr>
<td>Grandfather HC</td>
<td>0.184+ (0.103)</td>
<td></td>
</tr>
<tr>
<td>Generations</td>
<td>3, 4, 5</td>
<td>4, 5</td>
</tr>
<tr>
<td>N</td>
<td>411</td>
<td>247</td>
</tr>
</tbody>
</table>

▷ And: Difference between T/C doesn’t exist before the shock
### Treated Descendants Also Exhibit More Upward Mobility & Less Downward Mobility

<table>
<thead>
<tr>
<th></th>
<th>Panel A: <strong>Control</strong> Descendants</th>
<th>Panel B: <strong>Treated</strong> Descendants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Father</strong></td>
<td>No HC</td>
<td>HC</td>
</tr>
<tr>
<td>No HC</td>
<td>96.6%</td>
<td>75.3%</td>
</tr>
<tr>
<td>HC</td>
<td>3.4%</td>
<td>24.7%</td>
</tr>
<tr>
<td>Son</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Transition matrices for generations 3, 4, and 5
Treatment of People vs Treatment of Regions

![Graph showing the cumulative human capital effect by generation. The graph compares the impact on historically treated persons and their descendants (red triangles) with the impact on historically treated regions (green circles).]
Summary

- **Persistent effects** from big shock using longitudinal individual **data over centuries**
  - Long-run can be different from faded version of short-run

- **Human capital reversal**: Fall of Ming first causes heavy loss, then advantage in human capital acquisition

- Mechanism: Families switch from land- to human capital-based wealth
  - Change in human capital norms **transmitted from generation to generation**
    - Evidence from inter-generational analysis

- What would economic history look like if we **combined** the **regional** perspective with the **people** perspective?