“Just Do Your Job”: Obedience, Routine Tasks, and the Pattern of Specialization

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Motivation

- How does “culture” affect socioeconomic outcomes, including long-run development?
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- One narrative in the context of East Asia: “Asian” or “Confucian” values were critical for mobilizing the workforce to achieve economic growth.

  “Harmony and cooperation were preferred over disagreement and competition.” (Huntington 1991, p.24)
Motivation

- How does “culture” affect socioeconomic outcomes, including long-run development?

- **Caveat 1:** Cultural attitudes that promote worker productivity in some activities (e.g., assembly line manufacturing), may not be conducive in others (e.g., computer coding, research)

  “East Asians, who all share a tradition of strict discipline, respect for the teacher, no talking back to the teacher and rote learning, must make sure that there is this random intellectual search for new technologies and products.”

  (Lee Kuan Yew, Foreign Affairs, March/April 1994, interview by Fareed Zakaria)
Motivation

▶ How does “culture” affect socioeconomic outcomes, including long-run development?


▶ Caveat 2: Culture is not immutable, but evolves endogenously, partly in response to economic conditions (Bisin and Verdier 2011)

▶ Growing body of evidence that features of the economic environment in turn affect what cultural attitudes persist and get transmitted across generations (Alesina, Giuliano, and Nunn 2013, Giuliano and Nunn 2016)
This project: Overview

- Study one specific aspect of cultural attitudes relevant to workplace productivity:
  - “Obedience in the Workplace” (from the World Values Survey)
  - Propensity to follow instructions vs question them in a work environment

- Three components to this study:
This project: Overview

- Study one specific aspect of cultural attitudes relevant to workplace productivity:
  - “Obedience in the Workplace” (from the World Values Survey)
  - Propensity to follow instructions vs question them in a work environment

- Three components to this study:
  1. Establish a “Specialization Fact”: How does Workplace Obedience affect the pattern of specialization?
  2. Establish an “Obedience Fact”: How does the (lagged) pattern of specialization in turn shape Workplace Obedience?
  3. Motivated by these facts: Develop an overlapping generations model of endogenous cultural transmission, to understand the co-evolution of attitudes towards obedience and the structure of the economy.
Overview: 1. “Specialization Fact”

- **Hypothesize that**: Pro-obedience workplace attitudes are beneficial to productivity in relatively *routine* tasks
  - Turn to Autor, Levy and Murnane (2003)’s indices of task *routineness*, coded up from the Dictionary of Occupational Titles
  - Use export data to capture specialization patterns
Overview: 1. “Specialization Fact”

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  - Use export data to capture specialization patterns

- **“Specialization Fact”:** In countries where the workforce becomes (say) less pro-obedience, this is associated with a relative rise in exports for industries with a lower routine task content.

As stated, this is a within-country finding.
Overview: 2. “Obedience Fact”

- **Hypothesize that**: If the economy is oriented towards routine industries at time $t$, this incentivizes the adoption and transmission of pro-obedience workplace attitudes to generation $t + 1$
  - Turn to the micro WVS data.
  - Construct *export-routineness* ($\text{expRT}$) to summarize how oriented the economy was towards routine tasks
Overview: 2. “Obedience Fact”

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  - Turn to the micro WVS data.
  - Construct *export-routineness* ($expRT$) to summarize how oriented the economy was towards routine tasks

- **“Obedience Fact”**: More educated individuals less likely to agree that workplace obedience is important: $\frac{\partial ObedWork}{\partial Educ} < 0$, ...
  
  But: This effect of education is dampened when the individual’s birth cohort is exposed to a greater degree of export-routineness during their schooling years: $\frac{\partial^2 ObedWork}{\partial Educ \partial expRT} > 0$. 
Overview: 3. Model

Together, the two Facts motivate an overlapping generations model:

- A two-sector economy
- Parents make conscious decisions over how much Human Capital and Obedience to invest in their children

What the model delivers:

- Predictions on the determinants of transmitted obedience that are entirely consistent with the “Obedience Fact”
- Raises the possibility of an “Obedience Trap”:
  Specializing in routine sectors entrenches a culture of following instructions, at the expense of expanding into more nonroutine activities.

A cause for concern? Given the link between routine task specialization and labor market polarization. (Eg: Autor and Dorn 2013, Goos and Manning 2007, Goos, Manning and Salomons 2014, Deming 2016)
Roadmap for this talk

1. Motivation and Introduction

2. Two Stylized Facts
   2.1 Data
   2.2 The Specialization Fact
   2.3 The Obedience Fact

3. Model: Endogenous cultural transmission

4. Conclusion
Background on the Data
The World Values Survey (WVS)

Views on socioeconomic and cultural issues around the world:

- Six waves (1981-2014)
- > 300,000 observations from 229 surveys (97 countries/territories)
- Typical survey-wave: > 1000 respondents aged 15 and above; stratified random sample

Includes respondent characteristics:

- Education: 1 (‘Inadequately completed elementary education’) to 8 (‘University with degree/Higher education - upper-level tertiary certificate’)
- Biodata: Age, gender, number of children, marital status
- Auxiliary controls: Employment status, Occupation, Size of town
WVS: Obedience in the workplace

Question C061:

“People have different ideas about following instructions at work. Some say that one should follow one's superior's instructions even when one does not fully agree with them. Others say that one should follow one's superior's instructions only when one is convinced that they are right. With which of these two opinions do you agree?”

- Responses:
  - ‘2’ = Follow instructions
  - ‘1’ = Depends
  - ‘0’ = Must be convinced first

- Available in Waves 1-5.
Obedience in the workplace

How are such attitudes consequential?

Example 1:
Obedience in the workplace

How are such attitudes consequential?

Example 2:

“Singaporeans are academically brilliant and they have a tremendous respect for authority. A similar team in the US would keep questioning and want to have a healthy dialogue every step of the way. This may be good in the early stage of a project’s development. But it’s a real problem during the execution. Singaporeans rarely revisit and question the purpose of a task. They have a great ability to translate something from requirement to developed product. They just get it done. . . . [However,] ideas are seldom generated, as no incentives for creativity exist in the Singaporean education system. In three years of operation, our facility has not produced a single patent, and there is no record of new ideas.”

(quotting a director of R&D at a medical device MNC located in Singapore)

http://sudhirtv.com/2013/05/17/why-has-singapore-failed-to-prepare-its-citizens-adequately-for-the-knowledge-economy/
Aggregating to the Country Level

**Needed:** A country-level measure of workplace obedience attitudes at various points in time, \( t = 1990, 1995, \ldots \)

- As a start: Can take a simple average of obedience scores for respondents from a *country-cohort-gender* bin, and then take a weighted-average of these based on the age structure of the workforce at time \( t \)

- However: Prevailing economic conditions can affect reported responses

  Eg: Someone currently working as an assembly-line worker more likely to agree with following instructions
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- To address this: Extract a country-cohort-gender specific component \((\hat{D}_{cb}^g)\) of reported workplace obedience attitudes...

  ... after controlling for respondent observables (including employment status and occupation) and country-survey wave fixed effects
Aggregating to the Country Level

Estimate:

\[ ObedWork_{r,cbw} = \beta_0 + \beta_1 Educ_{r,cbw} + \beta_X X_{r,cbw} + D^g_{cb} + D_{cw} + \epsilon_{r,cbw}. \] (1)

- \( r \): respondent; \( c \): country; \( w \): WVS wave
- \( b \): birth cohort (e.g.: 1965-1969, 1970-1974, 1975-1979...)
- \( Educ_{r,cbw} \): Education
- \( X_{r,cbw} \): Other respondent controls (number of children, marital status, employment status, occupation, size of town)
- \( D^g_{cb} \): country-cohort-gender fixed effect
- \( D_{cw} \): country-survey wave fixed effect
- \( \epsilon_{r,cbw} \): idiosyncratic noise
Aggregating to the Country Level

Estimate:

\[ O\text{bedWork}_{r,cbw} = \beta_0 + \beta_1 Edu\text{c}_{r,cbw} + \beta X_{r,cbw} + D^g_{cb} + D_{cw} + \epsilon_{r,cbw}. \]  

(1)

▶ Then compute:

\[ \text{AvgObedWork}_{ct} = \sum_{(c,b,g)} \omega_{cbt}^g \hat{D}^g_{cb}. \]  

(2)

where \( \omega_{cbt}^g \) is the population share of \((c, b, g)\) in the workforce aged 25-64 at time \( t \).

▶ Results similar when using in place of the \( \hat{D}^g_{cb} \)'s:

▶ a simple \((c, b, g)\)-average measure

▶ a predicted cohort-gender fixed effect from country-by-country regressions
Task Routineness

Premise: Obedience would be a complementary attribute for workers who are engaged in routine tasks.

From Autor, Levy and Murnane (2003):

- Index measures (0-10 scale) coded up from the 1977 Dictionary of Occupational Titles (DOT), US Dept of Labor
- Map to industry measures using weights from 1960 US Census PUMS
- Five raw measures:
  - $T^{r,c}$, routine cognitive: Set Limits, Tolerances, Standards
  - $T^{nr,c_1}$, nonroutine cognitive (interactive): Direction, Control, Planning
  - $T^{nr,c_2}$, nonroutine cognitive (analytic): Math
  - $T^{r,m}$, routine manual: Finger Dexterity
  - $T^{nr,m}$, nonroutine manual: Eye-Hand-Foot Coordination
Task Routineness

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- Index measures (0-10 scale) coded up from the 1977 Dictionary of Occupational Titles (DOT), US Dept of Labor
- Map to industry measures using weights from 1960 US Census PUMS
- Compute three summary measures of industry task routineness, similar to Autor and Dorn (2013):

\[
RTC = \ln(T^{r,c}) - \ln(T^{nr1,c}) - \ln(T^{nr2,c})
\]

\[
RTM = \ln(T^{r,m}) - \ln(T^{nr,m})
\]

\[
RT = RTM + RTC
\]
A first look at the routineness measures

Manufacturing features the highest degree of task routineness, on both cognitive and manual dimensions.

<table>
<thead>
<tr>
<th></th>
<th>Agriculture, Mining &amp; Construction</th>
<th>Manufacturing</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine cognitive</td>
<td>4.84 (1.90)</td>
<td>5.87 (0.81)</td>
<td>4.00 (1.57)</td>
</tr>
<tr>
<td>Nonroutine cognitive, interactive</td>
<td>2.23 (1.81)</td>
<td>1.44 (0.37)</td>
<td>2.24 (0.90)</td>
</tr>
<tr>
<td>Nonroutine cognitive, analytical</td>
<td>3.05 (0.94)</td>
<td>2.97 (0.52)</td>
<td>3.76 (0.82)</td>
</tr>
<tr>
<td>Routine manual</td>
<td>3.61 (0.43)</td>
<td>3.98 (0.27)</td>
<td>3.74 (0.56)</td>
</tr>
<tr>
<td>Nonroutine manual</td>
<td>2.06 (0.45)</td>
<td>1.32 (0.33)</td>
<td>1.14 (0.76)</td>
</tr>
</tbody>
</table>
A first look at the routineness measures

Cognitive vs Manual task routineness (within manufacturing):

<table>
<thead>
<tr>
<th>Cognitive (RTC)</th>
<th>Manual (RTM)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Five Least Routine</strong></td>
<td><strong>Five Least Routine</strong></td>
</tr>
<tr>
<td>Not specified food industries (122)</td>
<td>Logging (230)</td>
</tr>
<tr>
<td>Drugs (181)</td>
<td>Dairy Products (101)</td>
</tr>
<tr>
<td>Guided missiles, space vehicles, and parts. Ordnance, and Aircraft and parts (362)</td>
<td>Cement, concrete, and gypsum, and plaster products (251)</td>
</tr>
<tr>
<td>Plastics, synthetics, and resins; Soaps and cosmetics; Agricultural Chemicals; Industrial and miscellaneous chemicals (346)</td>
<td>Sawmills, planing mills, and millwork (231)</td>
</tr>
<tr>
<td>Newspaper publishing and printing (171)</td>
<td>Beverage (120)</td>
</tr>
<tr>
<td><strong>Five Most Routine</strong></td>
<td><strong>Five Most Routine</strong></td>
</tr>
<tr>
<td>Logging (230)</td>
<td>Not specified food industries (122)</td>
</tr>
<tr>
<td>Apparel and accessories, except knit (151)</td>
<td>Engine and turbines; Construction and material handling machines; metalworking machinery; machinery, except electrical, n.e.c.; etc. (176)</td>
</tr>
<tr>
<td>Footwear, except rubber and plastic (221)</td>
<td>Drugs (181)</td>
</tr>
<tr>
<td>Yarn, thread, and fabric mills (142)</td>
<td>Newspaper publishing and printing (171)</td>
</tr>
<tr>
<td>Knitting mills (132)</td>
<td>Printing, publishing, and allied industries except newspapers (172)</td>
</tr>
</tbody>
</table>
The “Specialization Fact”:
From Workplace Obedience to the Pattern of Specialization
Uncovering Specialization Patterns

\[
\log(\text{Export}_{ct}) = \alpha_0 + \alpha_1 \text{AvgObedWork}_{ct} \times RT_i + \sum_{\{l,m\}} \alpha_{lm} L_{l,ct} \times M_{m,i} \\
+ D_{ct} + D_{ci} + \epsilon_{ict}
\]  

- \(c\): country; \(i\): industry
- \(\log(\text{Export}_{cit})\): From BACI (CEPII)
- Uncovering sources of comparative advantage through interaction terms between exporter country characteristics (\(\text{Obedience}_{ct}, L_{l,ct}\)) and industry characteristics (\(RT_i, M_{m,i}\)); cf., Nunn and Trefler (2014)
Uncovering Specialization Patterns

\[
\log(\text{Export}_{cit}) = \alpha_0 + \alpha_1 \text{AvgObedWork}_{ct} \times RT_i + \sum_{\{l,m\}} \alpha_{lm} L_{l,ct} \times M_{m,i} + D_{ct} + D_{ci} + \epsilon_{ict}
\]  

- \( D_{ct} \): Country-year fixed effects
- \( D_{ci} \): Country-industry fixed effects
- Difficulty in comparing obedience scores across countries
  - \( \Rightarrow \) Focus on how within-country changes in country characteristics affect the pattern of specialization across industries
- OLS; country-clustered standard errors
- In practice: Use a five-year lagged value of \( \text{AvgObedWork}_{ct} \)
The Specialization Fact

- Higher workplace obedience associated with ↑ exports in routine industries

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Log (Exports&lt;sub&gt;cit&lt;/sub&gt;)</th>
<th>Routineness measure:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1) Overall (2) Overall</td>
<td>(3) Overall (4) Overall (5) Cognitive (6) Manual</td>
</tr>
<tr>
<td>AvgObedWork&lt;sub&gt;ct&lt;/sub&gt; × Routineness&lt;sub&gt;i&lt;/sub&gt;</td>
<td>2.7172*** 6.2967***</td>
<td>4.0717*** 4.1475***</td>
</tr>
<tr>
<td>Phy. Capital Stock&lt;sub&gt;ct&lt;/sub&gt; × Capital Intensity&lt;sub&gt;i&lt;/sub&gt;</td>
<td>0.1660*** [0.0448]</td>
<td>0.1500*** [0.0532]</td>
</tr>
<tr>
<td>Human Capital Stock&lt;sub&gt;ct&lt;/sub&gt; × Skill Intensity&lt;sub&gt;i&lt;/sub&gt;</td>
<td>0.9432*** [0.2074]</td>
<td>0.6860*** [0.2084]</td>
</tr>
<tr>
<td>Rule of Law&lt;sub&gt;ct&lt;/sub&gt; × Industry&lt;sub&gt;i&lt;/sub&gt; dummies?</td>
<td>N N N Y Y Y</td>
<td>N N N Y Y Y</td>
</tr>
<tr>
<td>Financial Devt&lt;sub&gt;ct&lt;/sub&gt; × Industry&lt;sub&gt;i&lt;/sub&gt; dummies?</td>
<td>N N N Y Y Y</td>
<td>N N N Y Y Y</td>
</tr>
<tr>
<td>Country-year (ct) dummies?</td>
<td>Y Y Y Y Y</td>
<td>Y Y Y Y Y</td>
</tr>
<tr>
<td>Country-industry (ci) dummies?</td>
<td>Y Y Y Y Y</td>
<td>Y Y Y Y Y</td>
</tr>
<tr>
<td>Observations</td>
<td>15,345 13,522</td>
<td>13,287 11,819</td>
</tr>
<tr>
<td>No. of countries</td>
<td>58 58</td>
<td>57 56</td>
</tr>
<tr>
<td>R²</td>
<td>0.9639 0.9667</td>
<td>0.9673 0.9708</td>
</tr>
</tbody>
</table>
The Specialization Fact: Remarks

- Effects load on $RTC$ (cognitive) rather than $RTM$ (manual)

- Coefficient estimate of 3.3510 for $AvgObedWork_{ct} \times RTC_i$:
  - For the median five-year change in $AvgObedWork_{ct}$, exports 1.2% lower in a one s.d. higher $RTC_i$ industry.
  - Slightly smaller in magnitude to corresponding Heckscher-Ohlin effects

- Robust to controlling for:
  - $AvgObedWork_{ct}$ interacted with: (i) industry skill-intensity; (ii) industry value-added share
  - $RTC_i$ interacted with: (i) country human capital; and (ii) country $\ln(Y/L)$
  - $AvgObedChild_{ct}$: Importance of obedience as a child quality

- Robust to dropping one country at a time.
The “Obedience Fact”:
How the (lagged) Pattern of Specialization Shapes Workplace Obedience
Introducing Export-Routineness

**Qn:** How does past exposure to a routine task-intensive economy shape one's obedience attitudes?

- **expRTC:** Compute weighted-average $RTC$ of country exports from 1962-2000 (Feenstra et al.), and from 2001-2013 (BACI CEPII).
  
  Take five-year moving-window averages

- For transition countries, associate the $expRTC$ values of the original country at the time of cohort exposure.
Introducing Export-Routineness

\[ ObedWork_{r,cbw} = \beta_0 + \beta_1 Educ_{r,cbw} + \beta_2 Educ_{r,cbw} \times \text{expRTC}_{\text{age}A_{cb}} + \beta_3 \text{expRTC}_{\text{age}A_{cw}} + \beta_g \text{Gender}_{r,cbw} + \beta_X X_{r,cbw} + D_b + D_{cw} + \epsilon_{r,cbw} \] (4)

\[ ObedWork_{r,cbw} = \beta_0 + \beta_1 Educ_{r,cbw} + \beta_2 Educ_{r,cbw} \times \text{expRTC}_{\text{age}A_{cb}} + \beta_X X_{r,cbw} + D^g_{cb} + D_{cw} + \epsilon_{r,cbw} \] (5)

- \textbf{expRTC}_{\text{age}A_{cb}}: Export-routineness that birth cohort \(b\) in country \(c\) was exposed to when they were age \(A\), where \(A = 0, 5, 10 \ldots\)

For eg.: \(\text{expRTC}_{\text{age}10_{cb}}\) for the cohort \(c\) born in the years 1960-1964 is the value of \(\text{expRTC}\) for 1970-1974.
Introducing Export-Routineness (cont.)

1: USA

2: CHN

3: GBR

Graphs by gpnam

- expRTC
- expRTM
- expRT
Obedience Fact: Baseline

- More educated individuals less likely to “just follow instructions”
- **BUT:** Greater exposure to cognitive export-routineness during one’s schooling years weakens this negative effect of education on obedience.
- Effects strongest for age 5 and age 10 exposure; absent for exposure after age 20. Consistent with a story of cultural transmission at a young age.

### Table: Importance of Obedience in the Workplace

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>(1) Age 0</th>
<th>(2) Age 5</th>
<th>(3) Age 10</th>
<th>(4) Age 15</th>
<th>(5) Age 20</th>
<th>(6) Age 25</th>
<th>(7) Age 30</th>
<th>(8) Age 35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (1=Female; 0=Male)</td>
<td>-0.0258*</td>
<td>-0.0242*</td>
<td>-0.0298**</td>
<td>-0.0327***</td>
<td>-0.0288***</td>
<td>-0.0277***</td>
<td>-0.0283***</td>
<td>-0.0236**</td>
</tr>
<tr>
<td>Education</td>
<td>-0.0198***</td>
<td>-0.0203***</td>
<td>-0.0207***</td>
<td>-0.0216***</td>
<td>-0.0236***</td>
<td>-0.0247***</td>
<td>-0.0257***</td>
<td>-0.0255***</td>
</tr>
<tr>
<td>Educ × ExpRTC Exposure</td>
<td>0.0095</td>
<td>0.0148**</td>
<td>0.0153***</td>
<td>0.0128**</td>
<td>0.0099*</td>
<td>0.0069</td>
<td>0.0025</td>
<td>0.0053</td>
</tr>
<tr>
<td>ExpRTC Exposure</td>
<td>-0.0155</td>
<td>-0.0976**</td>
<td>-0.0851</td>
<td>-0.0395</td>
<td>-0.0540</td>
<td>-0.0517</td>
<td>-0.0233</td>
<td>-0.0138</td>
</tr>
<tr>
<td>Additional controls:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country-wave (cw) dummies?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Cohort (b) dummies?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Observations</td>
<td>50,500</td>
<td>65,202</td>
<td>78,812</td>
<td>90,115</td>
<td>99,231</td>
<td>105,638</td>
<td>106,125</td>
<td>97,893</td>
</tr>
<tr>
<td>No. of countries</td>
<td>65</td>
<td>65</td>
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<td>65</td>
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<td>65</td>
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<td>R²</td>
<td>0.0636</td>
<td>0.0624</td>
<td>0.0639</td>
<td>0.0637</td>
<td>0.0647</td>
<td>0.0667</td>
<td>0.0666</td>
<td>0.0665</td>
</tr>
</tbody>
</table>
Obedience Fact: With $D_{cb}^g$ fixed effects

- More stringent specification: $\beta_2$ estimated from...
  - within-country-wave, cross-cohort variation in $\text{expRTC}$ exposure, and
  - within-country-cohort-gender variation across individuals with different levels of education.

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Education_r</th>
<th>$\text{Educ}<em>c \times \text{ExpRTCexposure}</em>{cb}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>ExpRTC exposure at:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 0</td>
<td>-0.0199***</td>
<td>0.0106</td>
</tr>
<tr>
<td>Age 5</td>
<td>-0.0204***</td>
<td>0.0139**</td>
</tr>
<tr>
<td>Age 10</td>
<td>-0.0207***</td>
<td>0.0156***</td>
</tr>
<tr>
<td>Age 15</td>
<td>-0.0220***</td>
<td>0.0105</td>
</tr>
<tr>
<td>Age 20</td>
<td>-0.0239***</td>
<td>0.0068</td>
</tr>
<tr>
<td>Age 25</td>
<td>-0.0247***</td>
<td>0.0044</td>
</tr>
<tr>
<td>Age 30</td>
<td>-0.0254***</td>
<td>-0.0010</td>
</tr>
<tr>
<td>Age 35</td>
<td>-0.0251***</td>
<td>0.0013</td>
</tr>
</tbody>
</table>

Additional controls:
- Country-wave (cw) dummies?
- Cty-cohort-gender (cbg) dummies?
- Observations: 50,497 65,199 78,809 90,112 99,228 105,635 106,122 97,889
- No. of countries: 65 65 65 65 65 65 65 65
- $R^2$: 0.0727 0.0719 0.0740 0.0740 0.0756 0.0774 0.0783 0.0792

Importance of obedience in the workplace
- All columns: Dummies for Number of children, Marital status
Obedience Fact: With $Educ_{i,cbw} \times D_{cw}$ interactions

- Soaks up the effect that contemporaneous country conditions may have on the education coefficient.

- Take age 5: One s.d. increase in $expRTC$ (0.35) translates into a 0.07 s.d. increase in $ObedWork$ for an individual with $Educ = 8$ (complete tertiary).

Cumulative effect potentially bigger if individuals are exposed to a persistent increase in $expRTC$.

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Importance of obedience in the workplace</th>
</tr>
</thead>
<tbody>
<tr>
<td>ExpRTC exposure at:</td>
<td>(1) (2) (3) (4) (5) (6) (7) (8)</td>
</tr>
<tr>
<td>Age 0</td>
<td>0.0217*** 0.0189*** 0.0081*** 0.0083*** 0.0068*** 0.0032*** 0.0013** -0.0067***</td>
</tr>
<tr>
<td>Age 5</td>
<td>[0.0023] [0.0025] [0.0024] [0.0016] [0.0008] [0.0004] [0.0005] [0.0009]</td>
</tr>
<tr>
<td>Age 10</td>
<td>0.0301*** 0.0234*** 0.0177** 0.0113* 0.0052 0.0012 -0.0073 -0.0057</td>
</tr>
<tr>
<td>Age 15</td>
<td>[0.0060] [0.0071] [0.0073] [0.0058] [0.0050] [0.0053] [0.0059] [0.0072]</td>
</tr>
</tbody>
</table>
| Age 20              | Education$_{i}$  
| Age 25              | Educ$_{i}$ × ExpRTC Exposure$_{cb}$  
| Age 30              | Additional controls:  
| Age 35              | Country-wave (cw) dummies?  
|                     | Cty-cohort-gender (cbg) dummies?  
|                     | Educ$_{i}$ × Country-wave (cw) dummies?  
|                     | Observations  
|                     | No. of countries  
|                     | R$^2$  
|                     | (1) (2) (3) (4) (5) (6) (7) (8) | (1) (2) (3) (4) (5) (6) (7) (8) |
|                     | Y Y Y Y Y Y Y Y | Y Y Y Y Y Y Y Y |
|                     | Y Y Y Y Y Y Y Y | Y Y Y Y Y Y Y Y |
|                     | 50,497 65,199 78,809 90,112 99,228 105,635 106,122 97,889 | 65 65 65 65 65 65 65 65 |
|                     | 0.0774 0.0762 0.0780 0.0777 0.0791 0.0810 0.0819 0.0827 |
Additional remarks

Results are specific to obedience in the *workplace*:

- No distinct pattern when looking at the importance of obedience as a quality in children

Results robust to . . .

- Using overall routineness ($RT$) instead of $RTC$
- Using the cognitive routineness of *manufacturing* exports
- Controlling for $Educ_{r,cbw}$ interacted with country-cohort exposure (at age $A$) to the skill-intensity, as well as the capital-intensity, of exports
- Controlling for education interacted with country-cohort exposure (at age $A$) to openness, income per capita, population, democracy
- Dropping transition countries
A Model of Intergenerational Cultural Transmission
Overview of Setup

0. Two sectors: a “Basic” sector where workplace obedience raises productivity, and a “Complex” sector where the converse holds

1. Obedience and Human capital at time $t$ determine the pattern of specialization at time $t$

2. Specialization patterns at time $t$ in turn affect Obedience and Human capital at time $t+1$, through the endogenous investment decisions that parents make over cultural transmission and schooling respectively (a la Bisin-Verdier)
Basic setup

Consider a representative individual \( (r) \) with an endowment of human capital, \( H_{rt} \), and workplace obedience, \( \theta_{rt} \), at time \( t \).

- Decides on how to allocate \( H_{rt} \) across production activities.

Taking guidance from the Specialization Fact, adopt a within-country (or small-open economy) perspective, with two sectors:

- \( B \) (“Basic”): Routine sector where workplace obedience is complementary to human capital

\[
y_{Brt} = A_B (f(\theta_{rt}) h_{Brt})^\beta
\]

where: \( f’ > 0, \ f’’ \leq 0 \), and \( 0 < \beta < 1 \).
Basic setup

Consider a representative individual \((r)\) with an endowment of human capital, \(H_{rt}\), and workplace obedience, \(\theta_{rt}\), at time \(t\).

- Decides on how to allocate \(H_{rt}\) across production activities.

Taking guidance from the Specialization Fact, adopt a within-country (or small-open economy) perspective, with two sectors:

  - \(C\) ("Complex"): Nonroutine sector where workplace obedience hurts the productivity of individual human capital

\[
y_{Crt} = A_C(g(\theta_{rt})h_{Crt})^\gamma \left( \int_{\tilde{r} \in \mathbb{R}} g(\theta_{\tilde{r}t})h_{C\tilde{r}t} \right)^{1-\gamma}
\]

where: \(g' < 0, \ g''(\cdot) \leq 0\), and \(0 < \gamma < 1\).

Assume: Nature of "nonroutine cognitive" activity generates the scope for human capital externalities.
Basic setup

- Overlapping generations: “myopic altruism”
  Time-\(t\) individual maximizes the pdv of income earned by herself and her (unique) time-(\(t + 1\)) descendent

\[
\max_{h_{Brt}, h_{Crt}, H_{r,t+1}, \theta_{r,t+1}} \quad y_{Brt} + y_{Crt} + \delta(y_{Br,t+1} + y_{Cr,t+1}) - \omega(H_{r,t+1}) - \tau(\theta_{r,t+1} - \theta_{r,t})
\]

- Other choice variables:
  - \(H_{r,t+1}\): Human capital of next generation.
    Cost in monetary terms given by \(\omega(H_{r,t+1})\), where \(\omega' > 0\) and \(\omega'' > 0\).
  - \(\theta_{r,t+1}\): Attitudes towards obedience instilled in next generation.
    “Inertia” cost given by \(\tau(\theta_{r,t+1} - \theta_{r,t})\), where \(\tau'(0) = 0\) and \(\tau'' > 0\) (cf., Bisin and Verdier)
Solving the Model

- Time-$t$ human capital allocation problem is separable from investment decisions.

- Take FOC for individual $r$ and then assume symmetry across individuals. Get:

  \[
  h_{Bt} = \min \left\{ \left( \frac{\beta A_B}{\gamma A_C} \frac{f(\theta_t)^\beta}{g(\theta_t)} \right)^{\frac{1}{1-\beta}}, H_t \right\}
  \]

  \[
  h_{Ct} = \max \left\{ H_t - \left( \frac{\beta A_B}{\gamma A_C} \frac{f(\theta_t)^\beta}{g(\theta_t)} \right)^{\frac{1}{1-\beta}}, 0 \right\}
  \]

- If $A_B/A_C$ is large, get complete specialization in the $B$-sector.

- Nature of exercise: Exploring the steady-state behavior of this system (where $H_t = H_{t+1}$ and $\theta_t = \theta_{t+1}$).
Characterization

**Case I:** Complete specialization in the $B$-sector.

- Individual decisions push economy towards raising both $\theta$ and $H$.
- Any shift in the deep parameters of the model – in particular, $A_B/A_C$ – that tends to raise $\theta$ will also raise $H$ in steady state.

$\Rightarrow$ A complementarity between human capital and obedience, when only the $B$ sector is operative.

- Rationalizing early stages of development?
  - East Asia (high $\theta$, high $H$) vs Latin America (low $\theta$, low $H$)
Characterization (cont.)

**Case II: Diversified economy.**

- Define $\rho_t \equiv y_{Bt}/y_{Ct}$ to be the “routineness” of the economy at time $t$.

- Manipulating the FOC with respect to $\theta_{t+1}$ yields the following prediction on the endogenous transmission of pro-obedience attitudes:
  
  (i) When the economy is very nonroutine: $\frac{\partial \theta}{\partial H} < 0$ in a neighborhood of $\rho = 0$
  
  (ii) Conversely, when it is very routine: $\frac{\partial \theta}{\partial H} > 0$ as $\rho \to \infty$
  
  (iii) $\frac{\partial \theta}{\partial H}$ is increasing in $\rho$

- **Upshot:** The economic environment as summarized by $\rho$ affects the transmission of pro-obedience attitudes, in a manner consistent with the Obedience Fact.
Characterization (cont.)

**Case II:** Diversified economy.

- Manipulating the FOC with respect to $H_{t+1}$ leads to the following conclusion:

  In steady state, a shift in the deep parameters — in particular, $A_B/A_C$ — that raises $\theta$ can now lower $H$ instead in steady state.

  $\Rightarrow$ This breaks the complementarity between obedience and human capital.
Obedience Traps

When the economy is diversified (i.e., Case II):

- Steady state in $\theta$ and $H$ pinned down by the two FOCs

- The presence of human capital externalities in the $C$ sector implies multiple equilibria are possible
  - Eg: Set $f(\theta) = \theta$ and $g(\theta) = 1 - \theta$
  - If $A_B/A_C$ lies in an intermediate range of values, get two stable equilibria: (i) $\theta = 1$; and (ii) $\theta$ low
  - (Also, one unstable equilibrium in between.)
Obedience Traps

When the economy is diversified (i.e., Case II):

- Steady state in $\theta$ and $H$ pinned down by the two FOCs
- The presence of human capital externalities in the $C$ sector implies multiple equilibria are possible
  - Eg: Set $f(\theta) = \theta$ and $g(\theta) = 1 - \theta$
  - If $A_B/A_C$ lies in an intermediate range of values, get two stable equilibria: (i) $\theta = 1$; and (ii) $\theta$ low
  - (Also, one unstable equilibrium in between.)

- **Upshot:** Can end up in a high-$\theta$, low-$H$ “obedience trap”:
  - The predominant workplace mindset is to follow instructions, and the economy is tilted towards the routine $B$-sector...
  - ...at the expense of the development and expansion of the nonroutine $C$-sector.
Conclusion
Conclusion

- Report two new facts on the relationship between cultural attitudes towards workplace obedience and the structure of the economy:
  
  1. “Specialization”: Pro-obedience attitudes associated with more exporting in routine industries
  
  2. “Obedience”: In turn, exposure to a more (cognitive) export-routine economy during one’s schooling years shapes pro-obedience attitudes.

- These inform thinking about a model in which parental decisions are actively made over investment in schooling and the transmission of cultural attitudes:
  
  - How do these co-evolve?
  
  - How do they shape the structure of the economy in the long run?
### Constructing $AvgObedWork_{ct}$

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Following Instructions in the workplace (0-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
</tr>
<tr>
<td>Gender, $1=$Female; $0=$Male</td>
<td>-0.0291***</td>
</tr>
<tr>
<td>Education,</td>
<td>-0.0240***</td>
</tr>
<tr>
<td></td>
<td>[0.0099]</td>
</tr>
<tr>
<td>Country-cohort-gender (cbg) dummies?</td>
<td>N</td>
</tr>
<tr>
<td>Country-wave (cw) dummies?</td>
<td>N</td>
</tr>
<tr>
<td>Dummies for number of children?</td>
<td>Y (0.0315)</td>
</tr>
<tr>
<td>Dummies for marital status?</td>
<td>Y (0.0000)</td>
</tr>
<tr>
<td>Dummies for size of town</td>
<td>Y (0.0582)</td>
</tr>
<tr>
<td>Dummies for employment status?</td>
<td>Y (0.0803)</td>
</tr>
<tr>
<td>Dummies for occupation?</td>
<td>Y (0.0000)</td>
</tr>
<tr>
<td>Observations</td>
<td>125,709</td>
</tr>
<tr>
<td>No. of countries</td>
<td>65</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.0121</td>
</tr>
</tbody>
</table>

Notes: Standard errors are clustered by country; ***, **, and * denote significance at the 1%, 5%, and 10% levels respectively. The dependent variable is the response provided to WVS question C061 on one's propensity to follow instructions in the workplace. Column 1 contains only respondent characteristics as explanatory variables, while Column 2 adds country-cohort-gender fixed effects and Column 3 further adds country-survey wave fixed effects. Each column includes full sets of dummy variables for number of children, marital status, size of town, employment status, and occupation of the respondent. The p-value from a test for the joint significance of each of these sets of dummy variables is reported, where the null hypothesis is that all the respective dummy variable coefficients are equal to zero.
### Appendix 1: Definitions of Task Measures from the 1977 Dictionary of Occupational Titles

<table>
<thead>
<tr>
<th>Variable</th>
<th>DOT definition</th>
<th>Task interpretation</th>
<th>Example tasks from <em>Handbook for Analyzing Jobs</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. GED Math (MATH)</td>
<td>General educational development, mathematics</td>
<td>Measure of nonroutine analytic tasks</td>
<td>Lowest level: Adds and subtracts 2-digit numbers; performs operations with units such as cup, pint, and quart. Midlevel: Computes discount, interest, profit, and loss; inspects flat glass and compiles defect data based on samples to determine variances from acceptable quality limits. Highest level: Conducts and oversees analyses of aerodynamic and thermodynamic systems ... to determine suitability of design for aircraft and missiles.</td>
</tr>
<tr>
<td>2. Direction, Control, Planning (DCP)</td>
<td>Adaptability to accepting responsibility for the direction, control, or planning of an activity</td>
<td>Measure of nonroutine interactive tasks</td>
<td>Plans and designs private residences, office buildings, factories, and other structures; applies principles of accounting to install and maintain operation of general accounting system; conducts prosecution in court proceedings ... gathers and analyzes evidence, reviews pertinent decisions ... appears against accused in court of law; commands fishing vessel crew engaged in catching fish and other marine life.</td>
</tr>
<tr>
<td>3. Set Limits, Tolerances, or Standards (STS)</td>
<td>Adaptability to situations requiring the precise attainment of set limits, tolerances, or standards</td>
<td>Measure of routine cognitive tasks</td>
<td>Operates a billing machine to transcribe from office records data; calculates degrees, minutes, and second of latitude and longitude, using standard navigation aids; measures dimensions of bottle, using gauges and micrometers to verify that setup of bottle-making conforms to manufacturing specifications; prepares and verifies voter lists from official registration records.</td>
</tr>
<tr>
<td>4. Finger Dexterity (FINGDEX)</td>
<td>Ability to move fingers, and manipulate small objects with fingers, rapidly or accurately</td>
<td>Measure of routine manual tasks</td>
<td>Mixes and bakes ingredients according to recipes; sews fasteners and decorative trimmings to articles; feeds tungsten filament wire coils into machine that mounts them to stems in electric light bulbs; operates tabulating machine that processes data from tabulating cards into printed records; packs agricultural produce such as bulbs, fruits, nuts, eggs, and vegetables for storage or shipment; attaches hands to faces of watches.</td>
</tr>
<tr>
<td>5. Eye Hand Foot Coordination (EYEHAND)</td>
<td>Ability to move the hand and foot coordinately with each other in accordance with visual stimuli</td>
<td>Measure of nonroutine manual tasks</td>
<td>Lowest level: Tends machine that crimps eyelets, grommets; next level: attends to beef cattle on stock ranch; drives bus to transport passengers; next level: pilots airplane to transport passengers; prunes and treats ornamental and shade trees; highest level: performs gymnastic feats of skill and balance.</td>
</tr>
</tbody>
</table>
Question A042:

“Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? Please choose up to five. (CODE FIVE ONLY)"

- Out of a list of up to 11 qualities, including: “good manners”, “independence”, “religious faith”, “thrift”

- Responses:
  - ‘1’ = Important
  - ‘0’ = Not mentioned

- Available in all six waves.
# The Specialization Fact: Robustness

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routineness measure: Cognitive</td>
<td>5.4450***</td>
<td>4.4173*</td>
<td>6.2456***</td>
<td>4.4996*</td>
<td>3.8880*</td>
<td>0.3321</td>
<td>4.0146*</td>
</tr>
<tr>
<td>AvgObedWork(_{ct}) × Routineness(_i)</td>
<td>[2.0402]</td>
<td>[2.2089]</td>
<td>[1.8261]</td>
<td>[2.3183]</td>
<td>[1.9782]</td>
<td>[0.4432]</td>
<td>[2.2820]</td>
</tr>
<tr>
<td>Phy. Capital Stock(_{ct}) × Capital Intensity(_i)</td>
<td>0.1197**</td>
<td>0.1002**</td>
<td>0.1091**</td>
<td>0.1164**</td>
<td>0.1170**</td>
<td>0.1097</td>
<td>0.0246</td>
</tr>
<tr>
<td>Human Capital Stock(_{ct}) × Skill Intensity(_i)</td>
<td>-0.2500</td>
<td>-0.2483</td>
<td>0.0408</td>
<td>-0.1963</td>
<td>-0.3544</td>
<td>0.2555</td>
<td>-0.0120</td>
</tr>
<tr>
<td>AvgObedWork(_{ct}) × Skill Intensity(_i)</td>
<td>5.0082***</td>
<td>3.8110**</td>
<td>5.6078***</td>
<td>3.8810*</td>
<td>3.9639**</td>
<td>0.1573</td>
<td>4.8307***</td>
</tr>
<tr>
<td>Human Capital Stock(_{ct}) × Routineness(_i)</td>
<td>-1.3813***</td>
<td>-1.2072***</td>
<td>-1.0000**</td>
<td>-1.2906***</td>
<td>-1.5368***</td>
<td>0.0227</td>
<td>0.1139</td>
</tr>
<tr>
<td>AvgObedWork(_{ct}) × Value-Added(_i)</td>
<td>4.2878</td>
<td>4.4404</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log(GDP per capita)(_{ct}) × Routineness(_i)</td>
<td>-0.2530*</td>
<td>[0.1390]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AvgObedChild(_{ct}) × Routineness(_i)</td>
<td>-12.7887***</td>
<td>[3.2894]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AvgObedChild(_{ct}) × Skill Intensity(_i)</td>
<td>-9.4481***</td>
<td>[3.0923]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rule of Law(_{ct}) × Industry, dummies?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Financial Devt(_{ct}) × Industry, dummies?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Country-year (ct) dummies?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Country-industry (ci) dummies?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Industry (i) dummies?</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Industry-year (it) dummies?</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Observations</td>
<td>11,819</td>
<td>11,819</td>
<td>11,819</td>
<td>12,054</td>
<td>11,819</td>
<td>11,937</td>
<td>11,819</td>
</tr>
<tr>
<td>No. of countries</td>
<td>56</td>
<td>56</td>
<td>56</td>
<td>57</td>
<td>56</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>R²</td>
<td>0.9710</td>
<td>0.9710</td>
<td>0.9711</td>
<td>0.9707</td>
<td>0.9710</td>
<td>0.8174</td>
<td>0.9790</td>
</tr>
</tbody>
</table>
Placebo: Obedience in Children

- No distinct pattern when looking at the importance of obedience as a quality in children

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Importance of obedience in children</th>
</tr>
</thead>
<tbody>
<tr>
<td>ExpRTC exposure at:</td>
<td>(1)</td>
</tr>
<tr>
<td>Age 0</td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td>[0.0015]</td>
</tr>
<tr>
<td>Age 5</td>
<td>Educ × ExpRTCexposure</td>
</tr>
<tr>
<td></td>
<td>[0.0038]</td>
</tr>
<tr>
<td></td>
<td>Additional controls:</td>
</tr>
<tr>
<td>Country-wave (cw) dummies?</td>
<td></td>
</tr>
<tr>
<td>Cty-cohort-gender (cbg) dummies?</td>
<td></td>
</tr>
<tr>
<td>Educ × Country-wave (cw) dummies?</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>139,846</td>
</tr>
<tr>
<td>No. of countries</td>
<td>93</td>
</tr>
<tr>
<td>R²</td>
<td>0.1697</td>
</tr>
</tbody>
</table>

Notes: Standard errors are clustered by country; ***, **, and * denote significance at the 1%, 5%, and 10% levels respectively. The dependent variable is based on WVS question A042, and is an indicator variable for whether obedience was selected as an important quality for children. Each successive column tests for whether the cognitive routineness of exports (RTC) that the respondent was exposed to in the five-year window where he/she turned age A (where A=0, 5, 10 etc.) affects attitudes towards workplace obedience. All columns include survey country-wave and country-cohort-gender fixed effects, respondent education interacted with country-wave fixed effects, as well as a full set of dummies for the number of children and marital status.
### Obedience Fact: With Overall Routineness (RT)

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>Importance of obedience in the workplace</th>
</tr>
</thead>
<tbody>
<tr>
<td>ExpRT exposure at:</td>
<td>Age 0</td>
</tr>
<tr>
<td>Education(_r)</td>
<td>0.0001</td>
</tr>
<tr>
<td></td>
<td>[0.0019]</td>
</tr>
<tr>
<td>Edu(<em>c) × ExpRT(</em>{exposure_cb})</td>
<td>0.0229***</td>
</tr>
<tr>
<td></td>
<td>[0.0043]</td>
</tr>
<tr>
<td>Additional controls:</td>
<td>All columns: Dummies for Number of children, Marital status</td>
</tr>
<tr>
<td>Country-wave (cw) dummies?</td>
<td>Y</td>
</tr>
<tr>
<td>Cty-cohort-gender (cbg) dummies?</td>
<td>Y</td>
</tr>
<tr>
<td>Edu(_c) × Country-wave (cw) dummies?</td>
<td>Y</td>
</tr>
<tr>
<td>Observations</td>
<td>50,497</td>
</tr>
<tr>
<td>No. of countries</td>
<td>65</td>
</tr>
<tr>
<td>R(^2)</td>
<td>0.0774</td>
</tr>
</tbody>
</table>
### Obedience Fact: Robustness

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
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</thead>
<tbody>
<tr>
<td>ExpRTC exposure at:</td>
<td>Age 0</td>
<td>Age 5</td>
<td>Age 10</td>
<td>Age 15</td>
<td>Age 20</td>
<td>Age 25</td>
<td>Age 30</td>
<td>Age 35</td>
</tr>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Edu_c × ExpRTCExpposure_{cb}</td>
<td>0.0301***</td>
<td>0.0234***</td>
<td>0.0177**</td>
<td>0.0110*</td>
<td>0.0014</td>
<td>-0.0023</td>
<td>-0.0109</td>
<td>-0.0122</td>
</tr>
<tr>
<td></td>
<td>[0.0060]</td>
<td>[0.0071]</td>
<td>[0.0073]</td>
<td>[0.0059]</td>
<td>[0.0050]</td>
<td>[0.0054]</td>
<td>[0.0065]</td>
<td>[0.0075]</td>
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<tr>
<td>Edu_c × ExpRTCExpposure_{cb}</td>
<td>0.0317***</td>
<td>0.0240***</td>
<td>0.0179**</td>
<td>0.0143***</td>
<td>0.0083*</td>
<td>0.0035</td>
<td>-0.0086</td>
<td>-0.0090</td>
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<td>[0.0060]</td>
<td>[0.0072]</td>
<td>[0.0076]</td>
<td>[0.0051]</td>
<td>[0.0042]</td>
<td>[0.0054]</td>
<td>[0.0062]</td>
<td>[0.0069]</td>
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<tr>
<td>Edu_c × ExpRTCExpposure_{cb}</td>
<td>-0.0154</td>
<td>0.0744***</td>
<td>0.0575***</td>
<td>0.0124</td>
<td>-0.0176</td>
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<td>-0.0185</td>
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<td>[0.0156]</td>
<td>[0.0176]</td>
<td>[0.0205]</td>
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<tr>
<td>Edu_c × ExpRTCExpposure_{cb}</td>
<td>0.0579</td>
<td>0.0918***</td>
<td>0.0638*</td>
<td>0.0206</td>
<td>-0.0039</td>
<td>-0.0317</td>
<td>-0.0616**</td>
<td>0.0109</td>
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<td>[0.0438]</td>
<td>[0.0310]</td>
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<td>[0.0265]</td>
<td>[0.0236]</td>
<td>[0.0294]</td>
<td>[0.0391]</td>
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<tr>
<td>Edu_c × ExpRTCExpposure_{cb}</td>
<td>0.0257</td>
<td>0.0207</td>
<td>0.0227**</td>
<td>0.0227***</td>
<td>0.0081</td>
<td>-0.0031</td>
<td>-0.0173**</td>
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<td>[0.0166]</td>
<td>[0.0135]</td>
<td>[0.0110]</td>
<td>[0.0067]</td>
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<td>[0.0081]</td>
<td>[0.0068]</td>
<td>[0.0077]</td>
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</tbody>
</table>

**Notes:** Standard errors are clustered by country; ***, **, and * denote significance at the 1%, 5%, and 10% levels respectively. The dependent variable is the response provided to WVS question C061 on one’s propensity to follow instructions in the workplace. Each successive column tests for whether the cognitive routineness of exports (RTC) that the respondent was exposed to in the five-year window where he/she turned age A (where A=0, 5, 10 etc.) affects attitudes towards workplace obedience. All columns include survey country-wave and country-cohort-gender fixed effects, respondent education interacted with country-wave fixed effects, as well as a full set of dummies for the number of children and marital status. For each set of robustness checks, only the coefficient on the interaction term between respondent education and export RTC exposure at age A is reported.

- **Drop transition countries**
- **Manufacturing Exports Only**
- **Controlling for Edu_c × Country-Cohort Exposure to Export Skill- and Capital-Intensity**
- **Controlling for Edu_c × Country-Cohort Exposure to Income per capita, Openness, Population, Democracy**

**Additional controls:**
- Country-wave (cw) dummies?
- Cty-cohort-gender (cbg) dummies?
- Edu_c × Country-wave (cw) dummies?

**All columns:** Dummies for Number of children, Marital status
Obedience Traps

\[ Z(\theta) \]

\[ \theta^L \quad \theta^M \quad \theta^H \]

\[ 0 \]