Skill-Biased Structural Change and the Skill Premium

Francisco J. Buera 
Joseph P. Kaboski 
Richard Rogerson

FRB Chicago 
Notre Dame 
Princeton

April, 2015
Motivating Trends

- Well-documented rise in the skill premium, e.g., +28 pp since 1977 in the US
  - Will skill premium continue rising, plateau, revert?

Skill-biased structural change (SBSC) in advanced economies:
- rising value added share of skill-intensive sectors
- rising relative price of skill-intensive sectors
Motivating Trends

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- Skill-biased structural change (SBSC) in advanced economies:
  - rising value added share of skill-intensive sectors
  - rising relative price of skill-intensive sectors
Complements the standard emphasis on skill-biased technical change (SBTC) to account for the rise in the skill premium by:

1. Documenting salient, pervasive skill-biased structural change (SBSC) patterns for advanced economies

2. Developing a two-sector model of skill-biased structural change and assessing its contribution to the rise of the skill premium
Complements the standard emphasis on skill-biased technical change (SBTC) to account for the rise in the skill premium by:

1. Documenting salient, pervasive skill-biased structural change (SBSC) patterns for advanced economies

2. Developing a two-sector model of skill-biased structural change and assessing its contribution to the rise of the skill premium
   - Fits cross-country panel well, with common preferences, technological change
   - Contribution of SBSC: 27-33% in U.S.
Literature Review

- Theories explaining the rise of the skill premium, w/ emphasis on SBTC:

- Structural change:
Theories explaining the rise of the skill premium, w/ emphasis an on SBTC:


Structural change:

Standard theories of structural change focused on agriculture, manufacturing, services categories.

Recent theories emphasize technology or preference defining characteristics:

- Capital intensity: Acemoglu & Guerrieri (2008)
- Skill intensity: rise of services explained by growth of skill-intensive services, Buera & Kaboski (2012)
Skill-Biased Structural Change

- Standard theories of structural change focused on agriculture, manufacturing, services categories

- Recent theories emphasize technological defining characteristics:
  - Capital intensity: Acemoglu & Guerrieri (2008)
  - Skill intensity: rise of services explained by growth of skill-intensive services Buera & Kaboski (2012)
Document salient patterns in cross-country panel

- Rising share of skill-intensive sector with per capita income
- Substitution: Rising relative price of skill-intensive output with per capita income

Non-homotheticity: VA share of skill-intensive sector in expenditures rises with household income (U.S. cross-section)
Cross-Country Data

- EUKLEMS Basic Tables
  - Current-value VA by (1-2 digit) industry
  - Price indexes by industry
  - 1970-2005 for most countries
  - PPP data for 1997 for cross-country comparisons

- EUKLEMS Labour Input Data for advanced economies
  - Percentage distribution of labor payments and hours
  - broken out by education level, age, sex, and (1-2 digit) industry
  - 1970-2005, but years vary by country

- PWT 7.1 GDP per capita
## High vs. Low Skill-Intensive Industries

<table>
<thead>
<tr>
<th>High Skill Share</th>
<th>1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>0.74</td>
</tr>
<tr>
<td>Health and Social Work</td>
<td>0.49</td>
</tr>
<tr>
<td>Real Estate and Business Activities</td>
<td>0.39</td>
</tr>
<tr>
<td>Financial Intermediation</td>
<td>0.27</td>
</tr>
<tr>
<td>Chemical, Rubber, Plastics &amp; Fuel</td>
<td>0.21</td>
</tr>
<tr>
<td>Electrical and Optical Equipment</td>
<td>0.21</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Wood and of Wood and Cork</td>
<td>0.05</td>
</tr>
<tr>
<td>Private Households with Employed Persons</td>
<td>0.02</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>High Skill Share</th>
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</tr>
<tr>
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<td>0.63</td>
</tr>
<tr>
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<td>0.39</td>
<td>0.66</td>
</tr>
<tr>
<td>Financial Intermediation</td>
<td>0.27</td>
<td>0.62</td>
</tr>
<tr>
<td>Chemical, Rubber, Plastics &amp; Fuel</td>
<td>0.21</td>
<td>0.46</td>
</tr>
<tr>
<td>Electrical and Optical Equipment</td>
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<td>0.57</td>
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<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Wood and of Wood and Cork</td>
<td>0.05</td>
<td>0.18</td>
</tr>
<tr>
<td>Private Households with Employed Persons</td>
<td>0.02</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Buera & Kaboski & Rogerson (FRBC, UND, PU)  
Skill-Biased Structural Change  
April, 2015
Skill-Biased Structural Change: Value Added

\[ y = 0.17 \ln(x) - 1.37 \]
\[ R^2 = 0.80 \]

\[ y = -0.17 \ln(x) + 2.37 \]
\[ R^2 = 0.80 \]

Sector Share of Value-Added vs. Real GDP per Capita (Log Scale)

EUKLEMS 1970-2005: Australia, Austria Denmark, France, Germany, Italy, Japan, the Netherlands, South Korea, Spain, UK, US.

within manufacturing
within services
Skill-Biased Structural Change: Relative Prices

The graph shows the relationship between Real GDP per Capita (on a log scale) and the Relative VA Price of the High-Skill Intensive Sector. A linear regression line is fitted to the data, with the equation:

\[ y = 51.9 \ln(x) - 428.2 \]

The coefficient of determination, \( R^2 \), is 0.84, indicating a high level of fit between the variables. The data points represent the relative prices of the high-skill-intensive sector across different levels of real GDP per capita.
U.S. Cross-Section Data

- CEX (2012) gives expenditures on final goods/services (except investment)
- Most models are value-added models (Herrendorf et al., 2014)
- Factor intensity is at value-added level (use EUKLEMS for cross-country comparability)

Obtaining value-added content of consumer spending:

1. Designate industry VA as high or low-skill intensive
2. Get skill-intensive sector VA of one dollar of PCE categories by mapping through BEA I-O tables (BEA correspondence)
3. Mapping CEX expenditures to PCE categories (BLS correspondence) to get VA content

- Regress household skill-intensive VA content on household observables (education instruments for income)
### U.S. Cross-Section Evidence: Non-Homotheiticity

#### Table: Household High-Skill Intensive Expenditure Share vs. Income/Skill

<table>
<thead>
<tr>
<th></th>
<th>OLS</th>
<th>IV</th>
<th>OLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln Income</td>
<td>0.012***</td>
<td>0.049***</td>
<td>.</td>
</tr>
<tr>
<td>SE</td>
<td>0.001</td>
<td>0.002</td>
<td>.</td>
</tr>
<tr>
<td>High Skill Head</td>
<td>.</td>
<td>.</td>
<td>0.043***</td>
</tr>
<tr>
<td>SE</td>
<td>.</td>
<td>.</td>
<td>0.002</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.08</td>
<td>0.02</td>
<td>0.15</td>
</tr>
<tr>
<td>Observations</td>
<td>48,550</td>
<td>48,550</td>
<td>17,812</td>
</tr>
</tbody>
</table>

*** indicate significance at the 1 percent level.

Controls include: age; age squared; dummies for sex, race, state, urban, and month; number of boys (2-16 year); number of girls (2-16 years); number of men (over 16 years); number of women (over 16 years); and number of infants (less than 2 years). High skilled is defined as 16 years of schooling attained, while low skilled is defined as 12 years attained.
Quantitative Model

- Simple, standard structural change model incorporating two chief causes:
  1. (Low) substitution: relative productivity/prices
- Static
- Closed economy
- High- and low-skilled workers, exogenous supply
Quantitative Model: Preferences

\[ a_G \frac{c_G^{1-\varepsilon}}{\varepsilon} + (1 - a_G)(c_S + \bar{c}_S) \frac{1-\varepsilon}{\varepsilon} \]

- \( c_G \): goods (and low-skill intensive services)
- \( c_S \): high-skill intensive services
- \( \varepsilon \): elasticity of substitution (if \( \bar{c}_S = 0 \))
- \( \bar{c}_S > 0 \): (high-skill intensive) services are luxuries
Quantitative Model: Technologies

For each sector $j = G, S$

$$Y_j = A_j \left[ \alpha_j H_j^{\rho-1}\rho + (1-\alpha_j) L_j^{\rho-1}\rho \right]^{\rho\rho-1}$$

- $A_j$: skill-neutral, sector-biased technological parameter
- $\alpha_j, \alpha_S > \alpha_G$: skill-biased technological parameter
- $\rho$: elasticity of substitution
Equilibrium

1. Individuals with skill $i = L, H$

$$\max_{c_{Gi}, c_{Si}} a_G c_{Gi}^{\frac{\epsilon-1}{\epsilon}} + (1 - a_G) (c_{Si} + \bar{c}_S)^{\frac{\epsilon-1}{\epsilon}}$$

s.t.

$$p_G c_{Gi} + p_S c_{Si} = w_i$$

2. Firms in sector $j = G, S$

$$\max_{L_j, H_j} p_j A_j \left[ \alpha_j H_j^{\frac{\rho - 1}{\rho}} + (1 - \alpha_j) L_j^{\frac{\rho - 1}{\rho}} \right]^{\frac{\rho}{\rho - 1}} - w_H H_j - L_j$$

3. Markets clear

$$H_G + H_S = f_H, \quad L_G + L_S = 1 - f_H, ...$$
Equilibrium: Expenditure Share of Services

\[
\frac{p_{SC}S_i}{w_i} = \frac{(1-a_G/a_G)^\varepsilon \left( \frac{p_S}{p_G} \right)^{1-\varepsilon} - \frac{p_S\bar{c}_S}{w_i}}{(1-a_G/a_G)^\varepsilon \left( \frac{p_S}{p_G} \right)^{1-\varepsilon}} + 1
\]

Relative price: \( \Delta \frac{p_{SP}}{p_G} > 0 \) & \( \varepsilon < 1 \) (Baumol, 1969; Ngai & Pissarides, 2007)

Income effect: \( \bar{c}_S > 0 \) & \( \Delta w_i > 0 \) (Engel, 1857, Kongsamut et al., 2001)
Equilibrium: Expenditure Share of Services

\[ \frac{p_{SC}c_{Si}}{w_i} = \left( \frac{1-a_G}{a_G} \right)^\varepsilon \left( \frac{p_S}{p_G} \right)^{1-\varepsilon} - \frac{p_S \bar{c}_S}{w_i} \left( \frac{1-a_G}{a_G} \right)^\varepsilon \left( \frac{p_S}{p_G} \right)^{1-\varepsilon} + 1 \]

- Relative price: \( \Delta \frac{p_S}{p_G} > 0 \) & \( \varepsilon < 1 \) (Baumol, 1969; Ngai & Pissarides, 2007)
Equilibrium: Expenditure Share of Services

\[
\frac{p_{S} c_{S i}}{w_{i}} = \left(\frac{1-a_{G}}{a_{G}}\right)^{\varepsilon} \left(\frac{p_{S}}{p_{G}}\right)^{1-\varepsilon} \frac{p_{S} \bar{c}_{S}}{w_{i}} 
\]

- Relative price: \( \Delta \frac{p_{S}}{p_{G}} > 0 \) & \( \varepsilon < 1 \) (Baumol, 1969; Ngai & Pissarides, 2007)

- Income effect: \( \bar{c}_{S} > 0 \) & \( \Delta \frac{w_{i}}{p_{s}} > 0 \) (Engel, 1857, Kongsamut et al., 2001)
Equilibrium: Expenditure Share of Services

\[
\frac{p_{SCSi}}{w_i} = \frac{\left(\frac{1-a_G}{a_G}\right)^\varepsilon \left(\frac{p_S}{p_G}\right)^{1-\varepsilon}}{\left(\frac{1-a_G}{a_G}\right)^\varepsilon \left(\frac{p_S}{p_G}\right)^{1-\varepsilon}} - \frac{p_S\bar{c}_S}{w_i} + 1
\]

- Relative price: \( \Delta \frac{p_S}{p_G} > 0 \) & \( \varepsilon < 0 \) (Baumol, 1969; Ngai & Pissarides, 2007)

- Income effect: \( \bar{c}_S > 0 \) & \( \Delta \frac{w_i}{p_s} > 0 \) (Engel, 1857, Kongsamut et al., 2001)

- Technological progress, either sector biased or neutral, drive these effects

\[
p_j = \frac{1}{A_j} \left[ \left(1 - \alpha_j\right)^\rho + \frac{\alpha_j^\rho}{w_H^{(\rho-1)}} \right]^{1-\rho}
\]
High Skill Labor Market Clearing

\[
\left[ \frac{\alpha_S \hat{p}_S(w_H) A_S}{w_H} \right]^\rho \sum_{i=L,H} f_i \hat{c}_{Si}(w_H) A_S + \left[ \frac{\alpha_G \hat{p}_G(w_H) A_G}{w_H} \right]^\rho \sum_{i=L,H} f_i \hat{c}_{Gi}(w_H) A_G = f_H.
\]
Quantitative Exploration: Roadmap

1. Given $\varepsilon$ and $\rho$, we calibrate $\{x_{jt}\}_{t=0}^{T}$, $\{A_{jt}\}_{t=0}^{T}$, $a_G$, and $\bar{c}_S$ to match high-skill intensities in each sector, relative prices, aggregate growth, and the value-added share of skill-intensive sector in 1977 and 2005 for U.S.

2. Data on skill premium and aggregate factor shares imply “effective” supply of skills

3. Examine U.S. fit over time

4. Examine out-of-sample fit in cross-country panel

5. Perform counterfactuals to quantify the fraction of the U.S. change in the skill-premium explained by SBSC ($\approx 30\%$) vs. SBTC ($\approx 70\%$)

6. Analyze the sensitivity to alternative values of $\varepsilon$ (not sensitive) and $\rho$ (relatively insensitive)
Calibration, setting $\varepsilon = 0.2$ and $\rho = 1.4$

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Moments</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha_G0$, $\alpha_{GT}$</td>
<td>0.28, 0.43</td>
</tr>
<tr>
<td>$\alpha_{S0}$, $\alpha_{ST}$</td>
<td>0.55, 0.66</td>
</tr>
<tr>
<td>$% \Delta \frac{A_G}{A_S}$</td>
<td>86%</td>
</tr>
<tr>
<td>$% \Delta A_G$</td>
<td>123%</td>
</tr>
<tr>
<td>$a_G$</td>
<td>0.71</td>
</tr>
<tr>
<td>$\bar{c}_S$</td>
<td>0.14</td>
</tr>
</tbody>
</table>

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Evolution of the Exogenous Shocks

- Supply of Skills
- Skill Biased Technology
- Sector Biased Technology

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Examining Fit in Cross-Country Panel

Approach:

1. Keep preferences and technology parameters the same as U.S.
2. Use countries’ income share, relative price, and aggregate growth data as targets
3. Examine fit for sector shares, skill premium
4. Examine imputed exogenous processes
Panel Results: Skill-Intensive Sector Fit

Service Share Fit: Model vs. Data

Predicted Skill-Intensive Service Share vs. Actual Skill-Intensive Service Share

45°
Panel Results: Skill-Intensive Sector Fit

Service Share Fit: Model vs. Data

Korea (high growth from low income)

45°

Predicted Skill-Intensive Service Share vs. Actual Skill-Intensive Service Share
Panel Results: Skill-Biased Technology Levels

Skill-Biased Technology Levels in Cross-Country Panel

\[ \alpha_S \]

\[ \alpha_G \]

Raw Results

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Skill-Biased Structural Change

April, 2015

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Panel Results: Sector-Biased Technology Levels

Sector-Biased Productivity Levels in Cross-Country Panel

Log Productivity Level vs. Real GDP per Capita (Log Scale)

Raw Results

Buera & Kaboski & Rogerson (FRBC, UND, PU)  Skill-Biased Structural Change

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Panel Results: Relative Sectoral Productivity Levels

Relative Productivity of Services in Cross-Country Panel

Log Relative Productivity of Skill-Intensive Services

Real GDP per Capita (Log Scale)

Raw Results

Buera & Kaboski & Rogerson (FRBC, UND, PU)
Skill-Biased Structural Change
April, 2015
Panel Results: Skill Premium Fit

Skill Premium Fit: Model vs. Data

Predicted Skill Premium vs. Actual Skill Premium

45°

Buera & Kaboski & Rogerson (FRBC, UND, PU)  
Skill-Biased Structural Change  
April, 2015
Panel Results: Supply of Skills

Supply of Skills in Cross-Country Panel

Log Relative Productivity of Skill-Intensive Services

Real GDP per Capita (Log Scale)

Raw Results

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No Clear Skill Premium Patterns in Data

Skill Premium in Cross-Country Panel

Skill Premium (Relative Wage of College to HS)

Real GDP per Capita (Log Scale)

Raw Results

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Taking Stock

- Model fits U.S. data well
- Model fits cross-country panel
  - Variation in skill premia, stock of skills, SBTC, but...
  - Salient sectoral productivity patterns emerge
- Now return to the U.S. for counterfactuals
Counterfactual Dynamics: Fixed $A_G$ and $A_S$

![Graph of Skill Premium](chart1)

![Graph of Value Added Share of the High Skill Intensive Sector](chart2)
### Accounting for the Rise in the Skill-Premium, 1977-2005

\[ \Delta \left( \frac{w_H}{w_L} - 1 \right) \text{ (percentage points)} \]

<table>
<thead>
<tr>
<th>Counterfactuals:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No SBSC or SBTC (( \Delta f_H ) only)</td>
<td>-49</td>
</tr>
<tr>
<td>Implied total ( \Delta ) from technology</td>
<td>98</td>
</tr>
<tr>
<td>No SBSC (( \Delta f_H ) and ( \Delta \alpha_j ) only)</td>
<td>18</td>
</tr>
<tr>
<td>Implied SBSC contribution (( \Delta A_j ))</td>
<td>31</td>
</tr>
<tr>
<td>SBSC as percent of total</td>
<td>31%</td>
</tr>
</tbody>
</table>

\( \varepsilon = 0.2 \)

Data 49
Model 49
### Sensitivity to $\varepsilon$

\[ \Delta \left( \frac{w_H}{w_L} - 1 \right) \text{ (percentage points)} \]

<table>
<thead>
<tr>
<th></th>
<th>$\varepsilon = 0.5$</th>
<th>$\varepsilon = 0.2$</th>
<th>$\varepsilon = 0.1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>49</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Model</td>
<td>49</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td><strong>Counterfactuals:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No SBSC or SBTC ($\Delta f_H$ only)</td>
<td>-46</td>
<td>-49</td>
<td>-49</td>
</tr>
<tr>
<td>Implied total $\Delta$ from technology</td>
<td>95</td>
<td>98</td>
<td>98</td>
</tr>
<tr>
<td>No SBSC ($\Delta f_H$ and $\Delta \alpha_j$ only)</td>
<td>20</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Implied SBSC contribution ($\Delta A_j$)</td>
<td>29</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>SBSC as percent of total</td>
<td>31%</td>
<td>31%</td>
<td>31%</td>
</tr>
</tbody>
</table>
### Sensitivity to $\rho$

\[ \Delta \left( \frac{w_H}{w_L} - 1 \right) \text{ (percentage points)} \]

<table>
<thead>
<tr>
<th></th>
<th>$\rho = 0.8$</th>
<th>$\rho = 1.4$</th>
<th>$\rho = 2.5$</th>
</tr>
</thead>
<tbody>
<tr>
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<td>49</td>
<td>49</td>
</tr>
<tr>
<td>Model</td>
<td>49</td>
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<td>49</td>
</tr>
<tr>
<td><strong>Counterfactuals:</strong></td>
<td></td>
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</tr>
<tr>
<td>No SBSC or SBTC ($\Delta f_H$ only)</td>
<td>-76</td>
<td>-49</td>
<td>-34</td>
</tr>
<tr>
<td>Implied total $\Delta$ from technology</td>
<td>125</td>
<td>98</td>
<td>63</td>
</tr>
<tr>
<td>No SBSC ($\Delta f_H$ and $\Delta \alpha_j$ only)</td>
<td>-5</td>
<td>18</td>
<td>27</td>
</tr>
<tr>
<td>Implied SBSC contribution ($\Delta A_j$)</td>
<td>54</td>
<td>31</td>
<td>17</td>
</tr>
<tr>
<td>SBSC as percent of total</td>
<td>44%</td>
<td>31%</td>
<td>22%</td>
</tr>
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</table>
### Accounting for Changes in the Skill-Premium, OECD

<table>
<thead>
<tr>
<th>Country</th>
<th>SBSC Contribution (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>18</td>
</tr>
<tr>
<td>Austria</td>
<td>40</td>
</tr>
<tr>
<td>Denmark</td>
<td>11</td>
</tr>
<tr>
<td>Spain</td>
<td>32</td>
</tr>
<tr>
<td>Germany</td>
<td>37</td>
</tr>
<tr>
<td>Italy</td>
<td>54</td>
</tr>
<tr>
<td>Japan</td>
<td>22</td>
</tr>
<tr>
<td>Netherlands</td>
<td>27</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>36</td>
</tr>
</tbody>
</table>
Projecting the Evolution of SBSC

- Assume $A_G$ and $A_S$ follow previous trends

- Assume $\alpha_G$, $\alpha_S$ and $f_H$ remain at 2005 values
Projecting the Evolution of SBSC
Conclusions

- With development consumption shifts toward high-skill intensive industries, increasing the relative demand for high skill workers (SBSC)
- This trend is pervasive across advanced economies

- This leads to a substantial, and persistent, rise in the skill-premium, even without skill-biased technological progress (SBTC)
### Decomposing Relative Productivity and Non-Homotheticity

- $\Delta \frac{pS Ys}{Y}$ (percentage points), 1977-2005 U.S.

<table>
<thead>
<tr>
<th></th>
<th>$\varepsilon = 0.5$</th>
<th>$\varepsilon = 0.2$</th>
<th>$\varepsilon = 0.1$</th>
</tr>
</thead>
<tbody>
<tr>
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<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Model</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td><strong>Counterfactuals:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No productivity growth (no $\Delta A_j$)</td>
<td>-3</td>
<td>-4</td>
<td>-4</td>
</tr>
<tr>
<td>Implied total $\Delta$ from technology</td>
<td>18</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>No relative productivity change (no $\Delta A_S/A_G$)</td>
<td>11</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Implied relative productivity contrib. ($\Delta A_j$)</td>
<td>4</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Rel. prod. as % of total prod.</td>
<td>24%</td>
<td>58%</td>
<td>68%</td>
</tr>
</tbody>
</table>
Skill-Biased Structural Change within Manufacturing

\[ y = -0.01 \ln(x) + 0.10 \]
\[ R^2 = 0.01 \]

\[ y = -0.22 \ln(x) + 2.54 \]
\[ R^2 = 0.88 \]

Sector Share of Value-Added

Real GDP per Capita (Log Scale)

High Skill-Intensive Goods
Low-Skill Intensive Goods
Skill-Biased Structural Change within Services

\[ y = 0.22 \ln(x) - 1.92 \]
\[ R^2 = 0.91 \]
\[ y = 0.01 \ln(x) + 0.17 \]
\[ R^2 = 0.02 \]

Real GDP per Capita (Log Scale)

Sector Share of Value-Added

- High Skill-Intensive Services
- Low Skill-Intensive Services
No Clear Pattern in Skill Premium: Raw Data
Service Share Fit: Raw Results

Predicted Skill-Intensive Service Share vs. Actual Skill-Intensive Service Share

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Supply of Skills: Raw Data

Raw Supply of Skills in Cross-Country Panel

- Supply of Skills (Fraction of Labor Force)
- Real GDP per Capita (Log Scale)

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Skill-Biased Technology Levels: Raw Results

Raw Skill-Biased Technology Levels in Cross-Country Panel

Real GDP per Capita (Log Scale)

Skill-Biased Technology Parameter

α_S

α_G

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Skill-Biased Structural Change
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Sector-Biased Technology Levels: Raw Results

Raw Sector-Biased Productivity Levels in Cross-Country Panel

Log Productivity Level
Real GDP per Capita (Log Scale)
Raw Sector-Biased Productivity Levels in Cross-Country Panel

AS

AG

$2,000

$20,000

Real GDP per Capita (Log Scale)

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Relative Sectoral Productivity Levels: Raw Results

Raw Relative Productivity of Services
in Cross-Country Panel

Log Relative Productivity
of Skill-Intensive Services

Real GDP per Capita (Log Scale)

Raw Relative Productivity of Services
in Cross-Country Panel