Structural Change in an Open Economy

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May 28, 2012

1The views expressed here are those of the authors are are not necessarily reflective of views of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.
### Structural Change

#### Share of employment (16 advanced nations)

<table>
<thead>
<tr>
<th>Sector</th>
<th>1870</th>
<th>1960</th>
<th>1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>0.49</td>
<td>0.17</td>
<td>0.06</td>
</tr>
<tr>
<td>Services</td>
<td>0.24</td>
<td>0.44</td>
<td>0.63</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.27</td>
<td>0.39</td>
<td>0.30</td>
</tr>
</tbody>
</table>

Source: Maddison (1991)

- Agriculture share **declines** over time.
- Services share **rises** over time.
- Manufacturing share **first rises** and **then declines** over time.
Global integration, Structural Change

- World’s economies increasingly interlinked via trade.
  - In past 30-40 years many emerging market countries have globalized

- Manufacturing labor shares are declining in developed nations, and rising (although not permanently) in emerging market countries.
  - Trade with emerging markets has been blamed for declining manufacturing employment in developed countries.

- In most countries, manufacturing has the highest productivity growth.
U.S. and South Korea Manufacturing Employment Share


<table>
<thead>
<tr>
<th>Country</th>
<th>Agriculture</th>
<th>Manufacturing</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>1.5%</td>
<td>3.8%</td>
<td>0.7%</td>
</tr>
<tr>
<td>South Korea</td>
<td>4.9%</td>
<td>7.0%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>
South Korea’s Manufacturing Net Exports As Share of GDP

Manufacturing Net Exports as a Share of GDP

- Korea, left axis
- USA, right axis


Y-axis: -0.15, -0.10, -0.05, 0.00, 0.05, 0.10, 0.15, 0.20


Graph showing trends of South Korea and USA manufacturing net exports as a share of GDP over time.
Figure: Manufacturing Net Exports and Manufacturing Employment
Services Employment and Trade

\[ l_{ist} = \beta_0 + \beta_1 trade_{it} + \beta_2 gdppc_{it} + \gamma_i + \epsilon_{it} \]

- \( i \): country; \( t \): period
- \( l_{ist} \): services employment share
- \( trade_{it} \): exports+imports as a share of GDP
- \( gdppc_{it} \): GDP per capita in 2005 international dollars

**Table:** Trade and Services Labor Share

<table>
<thead>
<tr>
<th></th>
<th>trade_{it}</th>
<th>gdppc_{it}</th>
<th>( \beta_0 )</th>
<th>( R^2 )</th>
<th>Obs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Effect(^a)</td>
<td>0.0801</td>
<td>1.23e-5</td>
<td>0.369</td>
<td>0.67</td>
<td>379</td>
</tr>
<tr>
<td>(0.0289)</td>
<td>(1.12e-6)</td>
<td>(0.0251)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Key Question

- What is the effect of international trade on the process of structural change?
Our Approach

- We develop a two-country, three-sector model with inter- and intra-sector Ricardian trade
Our Approach

- We develop a two-country, three-sector model with inter- and intra-sector Ricardian trade
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- We study the channels by which trade affects structural change:
  - Trade delinks sectoral production and sectoral expenditure:
    - Closed: labor share = expenditure share
    - Open: labor share = expenditure share + net export share
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  - Trade allows countries to specialize, affecting net export shares
  - Trade changes relative prices, affecting expenditure shares
Our Approach

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  - Trade allows countries to specialize, affecting net export shares
  - Trade changes relative prices, affecting expenditure shares
- We demonstrate two ways in which open economy can generate hump pattern in manufacturing employment.
Related Research

- Models of structural change:
  - Open economy models:
    - Matsuyama (2009): an example with Ricardian framework
    - Coleman (2007): model in which large emerging market country integrates with rest of world

Two Groups of Theories of Structural Change

- Non-homothetic preferences:
  - Engel (1895)
  - Kongsamut et. al (2001)

- Sector-biased productivity growth:
  - Baumol (1967)
  - Ngai and Pissarides (2007)

Closed economy frameworks
Model Set Up

- Two countries
- Three sectors: agriculture, manufacturing, services
  - Agriculture and manufactured goods are tradable
  - Services are nontradable
- One factor: labor with exogenous supply
  - Mobile across sectors, but immobile across countries
- Productivity growth differs across sectors and countries
- Free trade: based on Ricardian comparative advantage
- Services: a single good $Y_{ist} = A_{ist}L_{ist}$

- Agriculture and manufacturing: a continuum of goods

\[
y_{imt}(z) = A_{imt}(z)L_{imt}(z) \quad z \in [0, 1]
\]

\[
y_{iat}(z) = A_{iat}(z)L_{iat}(z) \quad z \in [0, 1]
\]

- $A$ is distributed as Fréchet: $F_{iqt}(z) = \exp(-T_{iqt}z^{-\theta})$

- Goods are combined to yield composite goods for consumption
Prices

- Perfect competition in goods and factor markets

- Service good price: $P_{ist} = \frac{w_{it}}{A_{ist}}$

- Agricultural good price:
  \[ p_{iat}(z) = \min \left\{ \frac{w_{1t}}{A_{1at}(z)}, \frac{w_{2t}}{A_{2at}(z)} \right\} \]

- Manufacturing good price:
  \[ p_{imt}(z) = \min \left\{ \frac{w_{1t}}{A_{1mt}(z)}, \frac{w_{2t}}{A_{2mt}(z)} \right\} \]
Preferences

- Tradable sector composite goods: elasticity of substitution $\eta$

$$C_{iqt} = \left( \int_0^1 c_{iqt}(z)^{\frac{\eta-1}{\eta}} \, dz \right)^{\frac{\eta}{\eta-1}}$$

- Intratemporal utility: elasticity of substitution $\epsilon$

$$C_{it} = \left( \omega_a C_{iat}^{\frac{\epsilon-1}{\epsilon}} + \omega_m C_{imt}^{\frac{\epsilon-1}{\epsilon}} + \omega_s C_{ist}^{\frac{\epsilon-1}{\epsilon}} \right)^{\frac{\epsilon}{\epsilon-1}}$$

- Intertemporal utility: $\sum_{t=0}^{\infty} \beta^t U(C_{it})$

- Budget constraint (period-by-period):

$$P_{it} C_{it} = P_{iat} C_{iat} + P_{imt} C_{imt} + P_{ist} C_{ist} = w_{it} L_{it}$$
Expenditure Shares

- Expenditure share:
  \[ X_{iqt} = \frac{P_{iqt} C_{iqt}}{w_t L_t} = \omega_q^{\epsilon} \left( \frac{P_{iqt}}{P_{it}} \right)^{1-\epsilon} \]

- Aggregate price:
  \[ P_{it} = \left( \omega_a^{\epsilon} P_{iat}^{1-\epsilon} + \omega_m^{\epsilon} P_{imt}^{1-\epsilon} + \omega_s^{\epsilon} P_{ist}^{1-\epsilon} \right)^{\frac{1}{1-\epsilon}} \]

- Sectoral composite good price:
  \[ P_{iqt} = \left( \int_0^1 p_{iqt}(z) \frac{\eta}{\eta-1} dz \right)^{\frac{\eta-1}{\eta}} \]
Market Clearing Conditions

- Labor markets:

\[ L_{it} = L_{ist} + \int_0^1 L_{imt}(z)dz + \int_0^1 L_{iat}(z)dz, \quad i = \{1, 2\} \]

- Services good markets:

\[ Y_{ist} = C_{ist}, \quad i = \{1, 2\} \]

- Agriculture goods markets:

\[ \sum_{i=1}^2 y_{iat}(z) = \sum_{i=1}^2 c_{iat}(z) \quad \forall z \in [0, 1] \]

- Manufacturing goods markets:

\[ \sum_{i=1}^2 y_{imt}(z) = \sum_{i=1}^2 c_{imt}(z) \quad \forall z \in [0, 1] \]
A competitive equilibrium is a sequence of goods and factor prices \( \{p_{iat}(z), p_{imt}(z), P_{iat}, P_{imt}, P_{ist}, P_{it}, w_{it}\}_{t=0}^{\infty} \) and allocations \( \{l_{iat}(z), l_{imt}(z), L_{iat}, L_{imt}, L_{ist}, y_{iat}(z), y_{imt}(z), Y_{ist}, c_{iat}(z), c_{imt}(z), C_{iat}, C_{imt}, C_{ist}, C_{it}\}_{t=0}^{\infty} \) for \( z \in [0, 1] \) and \( i = 1, 2 \), such that given prices, the allocations solve the firms’ maximization problems and the household’s maximization problem, and satisfy the market clearing conditions.
Closed Economy Equilibrium

- Sectoral labor share = sectoral expenditure share

\[ l_{qt} = \frac{L_{qt}}{L_t} = \frac{w_t L_{qt}}{w_t L_t} = \frac{P_{qt} C_{qt}}{P_t C_t} = X_{qt} \]

- Expenditure share:

\[ X_{qt} = \omega_q^\epsilon \left( \frac{P_{qt}}{P_t} \right)^{1-\epsilon} \]

- Prices: \( P_{qt} = \frac{w_t}{A_{qt}} \), where \( A_{qt} = T_{qt}^{1/\theta} / \gamma \).
Closed Economy Dynamics

\[ \hat{L}_{qt} = \hat{X}_{qt} = (1 - \epsilon) \left( \hat{P}_{qt} - (X_{at} \hat{P}_{at} + X_{mt} \hat{P}_{mt} + X_{st} \hat{P}_{st}) \right) \]

\[ = (\epsilon - 1) \left( \hat{A}_{qt} - (X_{at} \hat{A}_{at} + X_{mt} \hat{A}_{mt} + X_{st} \hat{A}_{st}) \right) \]

- $\epsilon = 1$: no structural change
- $\epsilon < 1$: labor moves from the highest productivity growth sector to the lowest productivity growth sector
- $\epsilon > 1$: labor moves from the lowest productivity growth sector to the highest productivity growth sector
Preferences play a major role in labor allocation across sectors.

Structural change does not occur if the elasticity of substitution equals one.

With elasticity of substitution less than one:

- The high productivity growth sectors experience declining relative prices, expenditure shares and labor shares.
- Labor moves from the most productive sector to the least productive sector.
Key Ingredients of Open Economy

- Trade based on comparative advantage (Ricardian)

- Assume country 1 has a comparative advantage in manufacturing.

That is, under free trade,

\[ \frac{A_{1mt}}{A_{2mt}} > \frac{A_{1at}}{A_{2at}}. \]

- Under free trade, the LOOP holds: \( p_{1qt}(z) = p_{2qt}(z) \).

- Tradable composite good prices are equalized across countries: \( P_{1qt} = P_{2qt} \).
**Open Economy: Prices**

- **Under Fréchet distribution (and free trade):**

  \[ P_{iqt} = \left[ \left( \frac{w_{it}}{A_{iqt}} \right)^{-\theta} + \left( \frac{w_{jt}}{A_{jqt}} \right)^{-\theta} \right]^{-\frac{1}{\theta}} \]

  \[ \frac{P_{iqt}}{w_{it}} = \frac{1}{A_{iqt}} \left[ 1 + \left( \frac{w_{jt}}{w_{it}} \frac{A_{iqt}}{A_{jqt}} \right)^{-\theta} \right]^{-\frac{1}{\theta}} \]

- **Services price:** \[ \frac{P_{ist}}{w_{it}} = \frac{1}{A_{ist}} \]
Prices in Open vs. Closed Economy

- $\frac{P_{iat}}{W_{it}}$ and $\frac{P_{imt}}{W_{it}}$ are lower in open economy

- $\frac{P_{ist}}{W_{it}}$ is the same

- $\frac{P_{it}}{W_{it}}$ is lower in open economy
  - Welfare is higher in open economy

- $\frac{P_{ist}}{P_{it}}$ rises, $\frac{P_{1at}}{P_{1t}}$ and $\frac{P_{2mt}}{P_{2t}}$ declines in open economy

- $\frac{P_{1mt}}{P_{1at}}$ is higher in the open economy
Relative prices and the elasticity of substitution play key role in determining expenditure shares $X_{iqt}$.

With elasticity less than one, in both countries in open economy,

- services expenditure shares are higher;
- expenditure share of the sector with comparative disadvantage is lower;
- expenditure share of the sector with comparative advantage is ambiguous.
Open Economy: Intra-Sector Trade

In addition to (sectoral) expenditure shares, another share matters: the share of sectoral spending that is on imports:

- Share of country 1’s expenditure on sector \( q \) goods from country 2 (under free trade):

\[
\pi_{12qt} = \frac{(w_{2t}/A_{2qt})^{-\theta}}{(w_{2t}/A_{2qt})^{-\theta} + (w_{1t}/A_{1qt})^{-\theta}} = \frac{1}{1 + (w_{1t}/A_{1qt})^{-\theta}(w_{2t}/A_{2qt})^{-\theta}}
\]

- \( \pi_{12qt} \) rises as \( w_{2t}/A_{2qt} \) decreases relative to \( w_{1t}/A_{1qt} \)

- The rise is larger with larger \( \theta \) (a low productivity dispersion)

- Comparative advantage implies \( \pi_{12mt} < \pi_{12at} \)
Putting together these two shares:

- **Manufacturing net exports of country 1 as share of its GDP:**

  \[ N_{1mt} = \frac{\pi_{21mt}X_{2mt}w_{2t}L_{2t}}{w_{1t}L_{1t}} - \pi_{12mt}X_{1mt} \]

- **Comparative advantage implies** \( N_{1mt} > 0 \) and \( N_{1at} < 0 \).

- **The net export ratio of the sector with comparative advantage is positive in each country.**
Open Economy: Labor Allocation

- Services labor share: \( l_{ist} = \frac{L_{ist}}{L_{it}} = X_{ist} \)

- Manufacturing labor share of country i:
  \[
  l_{imt} = \frac{L_{imt}}{L_{it}} = X_{imt} + N_{imt}
  \]

  - **Direct** contribution of trade: \( N_{imt} \)
    - Country 1 has a comparative advantage in manufacturing
      - \( N_{1mt} > 0 \) and \( N_{2mt} < 0 \)

  - **Indirect** contribution of trade: \( X_{imt} \)

- Similarly for agriculture labor share
Growth in manufacturing labor share:

$$\hat{l}_{1mt} = \frac{X_{1mt}}{l_{1mt}} \hat{X}_{1mt} + \frac{N_{1mt}}{l_{1mt}} \hat{N}_{1mt}$$

- First term: the expenditure effect
- Second term: the trade or net export effect

Positive growth in manufacturing net export share contributes positively to labor share.

To focus on trade effect, consider case with elasticity of substitution across sectors $= 1$; hence, $\hat{X}_{1mt} = 0$
Impact of Trade on Structural Change

- Trade
  - Expenditure Effect
  - Net Export Effect
    - Specialization Channel
    - Country Size Channel

Sectoral Labor Allocation
Productivity Growth and Hump Pattern in Manufacturing

- Necessary condition for $\hat{N}_{1mt} > 0$: $\hat{A}_{mt} > \hat{A}_{at}$, $(A_{qt} = \frac{A_{1qt}}{A_{2qt}})$
- Under free trade, manufacturing labor share equation:

$$l_{1mt} = \omega_m \pi_{11m} \left( \frac{w_t L_{1t} + L_{2t}}{w_t L_{1t}} \right)$$

- $\pi_{11m} = \pi_{21m}$: specialization term
- Reciprocal of GDP share: country-size term

- As manufacturing productivity grows, specialization term contributes positively to manufacturing labor share, while country-size term contributes negatively.

- Each country buys more of its manufactured goods from country 1 (e.g., South Korea).

- If $\hat{A}_{at} > 0$, country 1 relative wage grows, country 2 (e.g., United States) purchasing power falls. Country 1 needs less labor to meet country 2 demand.
Initially, specialization term is dominant.

Eventually, country-size term dominates.

- Once manufacturing becomes close to completely specialized, employment growth from specialization effect becomes small.

- In limiting case, country 2 buys all its manufactured goods from country 1, but country 2 has zero mass, so the global economy is effectively just country 1.

- Country 1 employment share declines until it equals expenditure share.
### Structural Change in Open Economy: Example 1

<table>
<thead>
<tr>
<th>Preferences</th>
<th>Labor Endowment</th>
<th>Sectoral Productivities</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\epsilon = 0.5$</td>
<td>$L_{10} = 1$</td>
<td>$\theta = 4.0$</td>
</tr>
<tr>
<td>$\sigma^* = 1.0$</td>
<td>$L_{20} = 10$</td>
<td>$A_{1a0} = 1.0$</td>
</tr>
<tr>
<td>$\omega_a = 1/3$</td>
<td>$\hat{L}<em>{1t} = \hat{L}</em>{1t} = 1.0$</td>
<td>$A_{1m0} = 1.0$</td>
</tr>
<tr>
<td>$\omega_m = 1/3$</td>
<td></td>
<td>$A_{1s0} = 1.0$</td>
</tr>
<tr>
<td>$\omega_s = 1/3$</td>
<td></td>
<td>$A_{2a0} = A_{1a0}(L_{20}/L_{10})^{1/\theta}$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$A_{2m0} = A_{1m0}(L_{20}/L_{10})^{1/\theta}$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$A_{2s0} = A_{1s0}(L_{20}/L_{10})^{1/\theta}$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\hat{A}_{1at} = 1.01$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\hat{A}_{1mt} = 1.02$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\hat{A}_{1st} = 1.0$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\hat{A}_{2at} = 1.02$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\hat{A}_{2mt} = 1.01$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\hat{A}_{2st} = 1.0$</td>
</tr>
</tbody>
</table>
Structural Change in Country 1

Figure: Employment Shares, Closed and Open

(a) Agriculture  (b) Manufacturing  (c) Services
Structural Change in Country 2

Figure: Employment Shares, Closed and Open

(a) Agriculture  (b) Manufacturing  (c) Services
Figure: Import Shares

(a) Country 1

(b) Country 2
Wages, Prices, and Welfare

Figure: Wages, Prices, and Welfare

(a) Wages
(b) Prices
(c) Welfare
Structural Change and Trade Costs

- Introduce iceberg trade costs

  - Prices:
    \[
    P_{iqt} = \left[ (w_{it}/A_{iqt})^{-\theta} + (\tau_{qt} w_{jt}/A_{jqt})^{-\theta} \right]^{-\frac{1}{\theta}}
    \]

  - Import shares:
    \[
    \pi_{ijqt} = \frac{(\tau_{qt} w_{jt}/A_{jqt})^{-\theta}}{(\tau_{qt} w_{jt}/A_{jqt})^{-\theta} + (w_{it}/A_{iqt})^{-\theta}}.
    \]

  - Decline in \(\tau_{qt}\) affects \(P_{iqt}\) and \(\pi_{ijqt}\) like increase in \(A_{jqt}\)

  - Decline in trade costs can also generate structural change, even in absence of biased sectoral productivity growth
Suppose country 1 has comparative advantage in manufacturing and is small relative to country 2.

- Productivity levels are constant over time.

As trade costs decline, specialization increases (manufacturing net export surplus grows) and country 1 relative wage rises.

- Initially, specialization effect dominates country-size effect, so manufacturing labor share in country 1 rises.

Eventually, country 1 labor used to satisfy country 2 manufacturing demand declines, so manufacturing labor share in country 1 falls.
<table>
<thead>
<tr>
<th>Preferences</th>
<th>Labor Endowment</th>
<th>Sectoral Productivities</th>
<th>Trade Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\epsilon = 0.5$</td>
<td>$\omega_a = 1/3$</td>
<td>$L_{10} = 1$</td>
<td>$\tau_{q_0} = 2.5$</td>
</tr>
<tr>
<td>$\sigma^* = 1.0$</td>
<td>$\omega_m = 1/3$</td>
<td>$L_{20} = 10$</td>
<td>$\tau_{q_t} - 1$ declines at 3% per period</td>
</tr>
<tr>
<td>$\omega_s = 1/3$</td>
<td></td>
<td>$\hat{L}<em>{1t} = \hat{L}</em>{1t} = 1.0$</td>
<td></td>
</tr>
<tr>
<td>$L_{10} = 1$</td>
<td></td>
<td>$\theta = 4.0$</td>
<td></td>
</tr>
<tr>
<td>$L_{20} = 10$</td>
<td></td>
<td>$A_{1a0} = 1.5$</td>
<td></td>
</tr>
<tr>
<td>$\hat{L}<em>{1t} = \hat{L}</em>{1t} = 1.0$</td>
<td></td>
<td>$A_{1m0} = 2.0$</td>
<td></td>
</tr>
<tr>
<td>$\hat{A}_{1at} = 1.0$</td>
<td></td>
<td>$A_{2m0} = 1.5(L_{20}/L_{10})^{1/\theta}$</td>
<td></td>
</tr>
<tr>
<td>$\hat{A}_{2at} = 1.0$</td>
<td></td>
<td>$A_{2s0} = 1.0(L_{20}/L_{10})^{1/\theta}$</td>
<td></td>
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<tr>
<td>$A_{1s0} = 1.0$</td>
<td></td>
<td>$A_{1st} = 1.0$</td>
<td></td>
</tr>
<tr>
<td>$A_{2st} = 1.0$</td>
<td></td>
<td>$A_{2st} = 1.0$</td>
<td></td>
</tr>
</tbody>
</table>
Figure: Employment Shares, Closed and Open

(a) Agriculture

(b) Manufacturing

(c) Services
International trade provides environment in which sectoral output and sectoral expenditure need not be equal.

With neoclassical trade, comparative advantage interacts with global sectoral demand to determine patterns of expenditure, trade, production, and employment.

We study structural change in an open economy with a model that highlights these themes.

Model yields rich insights and can potentially better explain patterns in data.

Extending model to include non-homothetic preferences, intermediate goods, and trade costs does not alter the main implications.

Companion project: quantitative assessment.
### Accounting: the U.S.

<table>
<thead>
<tr>
<th>Year</th>
<th>( I_{mt} )</th>
<th>( X_{mt} )</th>
<th>( N_{mt} )</th>
<th>( X_{mt} + N_{mt} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>25.6%</td>
<td>27.9%</td>
<td>-1.1%</td>
<td>26.8%</td>
</tr>
<tr>
<td>2000</td>
<td>14.5%</td>
<td>21.6%</td>
<td>-4.8%</td>
<td>16.8%</td>
</tr>
<tr>
<td>Change</td>
<td>-11.1%</td>
<td>-6.3%</td>
<td>-3.7%</td>
<td>-10.0%</td>
</tr>
</tbody>
</table>

- The direct trade effect accounts for one third of the decline in US manufacturing labor share.
Accounting: the U.K.

<table>
<thead>
<tr>
<th>Year</th>
<th>$l_{mt}$</th>
<th>$X_{mt}$</th>
<th>$N_{mt}$</th>
<th>$X_{mt} + N_{mt}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>34.6%</td>
<td>31.0%</td>
<td>2.4%</td>
<td>33.4%</td>
</tr>
<tr>
<td>2000</td>
<td>16.8%</td>
<td>22.9%</td>
<td>-7.8%</td>
<td>15.1%</td>
</tr>
<tr>
<td>Change</td>
<td>-17.8%</td>
<td>-8.1%</td>
<td>-10.2%</td>
<td>-18.3%</td>
</tr>
</tbody>
</table>

- The direct trade effect accounts for more than one half of the decline in British manufacturing labor share.
Manufacturing Labor Share and Income

The graph shows the labor share and income for various countries over several years. The x-axis represents the income level, while the y-axis shows the labor share. Different countries are represented by various markers: US (diamonds), Korea (squares), UK (triangles), and Japan (circles). The data points indicate trends and changes in labor share and income over time for these countries.