Comparative Advantage and Skill-Specific Unemployment

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Why bother about Unemployment

- It’s the main public concern
- Labor market frictions might alter the effects of trade liberalization
- Distributional consequences
- Optimal economic policy
Recent Literature

• Felbermayr, Prat and Schmerer (2008) introduce search and matching unemployment into the Melitz-model
• Egger and Kreickemeier (2008a,b) introduce fair wages to generate in-group wage dispersion
• Helpman, Itskhoki and Redding (2008) introduce worker heterogeneity
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- Egger and Kreickemeier (2008a,b) introduce fair wages to generate in-group wage dispersion
- Helpman, Itskhoki and Redding (2008) introduce worker heterogeneity
- One common feature of these models: There is only one factor of production
- We introduce search and matching unemployment into the model of Bernard, Redding and Schott (2007)
Main Features of our Model

- Firms are heterogeneous with respect to their productivity.
- Fixed costs of production, of exporting and entering the market.
- Two factors of production: Skilled labor and unskilled labor.
- Two goods: One skill-intensive, one unskill-intensive.
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- Firms are heterogeneous with respect to their productivity
- Fixed costs of production, of exporting and entering the market
- Two factors of production: Skilled labor and unskilled labor
- Two goods: One skill-intensive, one unskill-intensive
- Four separate labor markets with search and matching unemployment
- Mobility of workers: Workers can move from one sector to the other or train themselves
Worker Mobility

Sector 1

\[ S_1 \quad s \quad \theta_{S1}m[\theta_{S1}] \quad u_{S1} \]

\[ U_{S1-U_{L1}}=k_1 \]

\[ s \quad u_{L1} \quad \theta_{L1}m[\theta_{L1}] \]

Sector 2

\[ S_2 \quad s \quad \theta_{S2}m[\theta_{S2}] \quad u_{S2} \]

\[ U_{S2-U_{L2}}=k_2 \]

\[ u_{L2} \quad s \quad \theta_{L2}m[\theta_{L2}] \quad L_2 \]

\[ U_{L1}=U_{L2} \]
Consumption and Production

Utility function:

\[ U = C_i^\alpha C_j^{1-\alpha}, \]
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Aggregation of intermediate goods:

\[ Q_i = \left[ M_i^{\frac{1}{\sigma}} \int_{\omega \in \Omega} q_i(\omega)^{(\sigma-1)/\sigma} d\omega \right]^{\sigma/(\sigma-1)} \]
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Production function:

\[ q_i[\varphi_i] = \varphi_i S^{\beta_i} L^{1-\beta_i}, \]
Labor Market

- Standard matching function for four separate labor markets:
  \[ m[\theta_{Li}] = m_0 (\theta_{Li})^{-\gamma}, \]

- As in Stole and Zwiebel (96) each worker bargains individually and is treated as the marginal worker.

- The wage is driven down to the outside option:
  \[ w_{Li} = rU_{Li} + \frac{\beta}{1 - \beta} \left( \frac{c}{m(\theta_{Li})} \frac{r + s}{1 - \delta} \right) \]
Productivity-Thresholds

- After learning its productivity the firm will decide whether to take up production and whether to export

- Entry threshold:

\[
(1 - \delta) \frac{\pi_d[\varphi_{id}^H]}{r + \delta} = \frac{cP_i^H S[\varphi_{id}^H]}{m[\theta_{Si}^H]} + \frac{cP_i^H L[\varphi_{id}^H]}{m[\theta_{Li}^H]} + fP_i^H,
\]
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**Entry threshold:**

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\]

**Exporting threshold:**

\[
(1 - \delta) \frac{\pi_x[\phi_{ix}^H]}{r + \delta} = \frac{cP_i^H S[\phi_{ix}^H]}{m[\theta_{Si}^H]} + \frac{cP_i^H L[\phi_{ix}^H]}{m[\theta_{Li}^H]} + f_x P_i^H,
\]
Calibration

- Product market similar to Bernard, Redding, Schott (2007)
- Labor market of low-skilled workers in sector one similar to Felbermayr, Prat, Schmerer (2008)
- Same parameter values for the other labor markets
- Asymmetry:
  - Sector 1 is skill-intensive: $\beta_1 = 1 - \beta_2 = 0.8$
  - Country 1 has better training-opportunities: 50% skilled workers vs. 20% skilled workers in country 2
Specialization in Output

![Graph showing specialization in output with variable trade costs (\(\tau^{-1}\)) on the x-axis and output on the y-axis. The graph compares output for Country 1, Sector 1, Country 2, Sector 1, Country 1, Sector 2, and Country 2, Sector 2.]
Sector-specific Unemployment

![Graph showing sector-specific unemployment rates](image-url)
Sector-specific Wages

The graph shows the percentage change in real wages for unskilled and skilled workers in two sectors, as a function of variable trade costs. The x-axis represents the variable trade costs ($\tau-1$), while the y-axis shows the percentage change in real wage.
Average Unemployment and Wages

The diagram shows the percentage change in average wages and unemployment rates for both skilled and unskilled workers as a function of variable trade costs ($\tau^{-1}$).

- **Average Wage, Unskilled Worker**
- **Average Wage, Skilled Worker**
- **Average UR, Unskilled Worker**
- **Average UR, Skilled Worker**

The x-axis represents the variable trade costs ($\tau^{-1}$), while the y-axis shows the percentage change in wages and unemployment rates.
Intra-Industry Trade

Variable Trade Costs ($\tau - 1$)
Share of Intra−Industry Trade

Sector 1
Sector 2
Conclusion

- As trade costs decrease, a country with a relative advantage in the training technology will specialize in the production of the skill-intensive good.
- Workers will migrate to this sector and invest more in their human capital.
- The big winners are the skilled workers in the export sector, while skilled workers in the import sector lose.
- The effects for unskilled labor (the more mobile factor) are much more equally distributed. In line with the Heckscher-Ohlin model, in the country exporting the skill-intensive good, unskilled labor will suffer losses: Unemployment goes up and wages go down. Only for very low trade costs, intraindustry trade can overturn this result.