Unemployment and Wages in New New Trade Models

Gabriel J Felbermayr

University of Stuttgart-Hohenheim

8th FIW Workshop, Vienna, April 2, 2009
What is new in the new new trade literature

More realistic picture of product markets

- Globalization acts as Darwinian selection mechanism (survival of the fittest)
- Trade liberalization triggers *intra*-sectoral reallocation of resources from unproductive to more productive firms
- Theoretical rationale why trade liberalization fosters aggregate productivity
  \[ \Rightarrow \] New (additional) gains from trade
  \[ \Rightarrow \] New (additional) potential costs due to labor churning reallocation
Caveats

The following is a survey on recent literature.

- It is selective
- It is incomplete
- It draws on very recent (partly unpublished and/or unrefered) research papers
Real wages and trade liberalization when labor markets are perfectly competitive, I

Single sector, single factor perspective (Melitz, AER, 2003; Melitz and Ottaviano, RES 2008)

- *Homogeneous firms*: Trade liberalization increases real wage due to increased availability of varieties and/or reduced monopoly power of firms

- *Heterogeneous firms*: Additional positive effect on real wages through higher average labor productivity; dominates a possible negative variety effect
Real wages and trade liberalization when labor markets are perfectly competitive, II

Two-sector, two-factor (high- and low-skilled) Heckscher-Ohlin perspective (Bernard, Redding and Schott [BRS], RES, 2007)

- **Homogeneous firms**: average real wage goes up, but Stolper-Samuelson theorem holds (real wage of one skill-group necessarily falls, the other rises)

- **Heterogeneous firms**: Stolper-Samuelson result may no longer hold as both skill-types work at more productive firms
Trade liberalization and *imperfectly* competitive labor markets

New new trade models allow to ask new questions

1. Link between aggregate productivity and aggregate labor market outcomes
   1. The structural rate of unemployment
   2. The average real wage
2. Link between firm heterogeneity and wage dispersion
3. Link between product market churning (firms) and labor market churning (workers)
Outline

1 Introduction

2 Trade liberalization and aggregate labor market outcomes

3 Trade and wage dispersion

4 Trade liberalization and labor market churning

5 Conclusion
Outline

1. Introduction

2. Trade liberalization and aggregate labor market outcomes

3. Trade and wage dispersion

4. Trade liberalization and labor market churning

5. Conclusion
Felbermayr and Prat (JEEA, 2009)

- Simplest combination of NTT framework with search-and-matching unemployment
- Wage rate is constant across heterogeneous firms
  - Despite costly labor turnover (search costs)
  - Despite rent sharing (cf. Eckel and Egger, JIE, 2009)

Intuition
Wage bargaining outcomes depends on two things:

- Firms’ marginal revenues: firms with different productivities charge different prices and achieve different sales; but, with the price-quantity trade-off identical across firms (CES!), firms have identical marginal revenues
- Outside options of workers: value of unemployment is identical over (identical) workers
Illustration: collective (efficient) bargaining at firm-level

Vertical contract curves; equalization of marginal revenues

Figure 2: Collective bargaining with $\phi_0 < \phi_1$. As shown by the dotted curves, the only difference is that both average and marginal revenues functions are shifted to the right. Furthermore, since firms apply the same mark-up, the two curves are shifted parallely. Accordingly, firms with a higher productivity hire more workers but pay the same wage.

The most significant difference with the individual bargaining regime is that now aggregate productivity $\Phi$ also raises the slope of the Wage curve. Yet, as stated in Corollary 2, this additional effect on the Wage curve is again unambiguously dominated by the shift of the Job Creation curve.

Corollary 2
When wages are collectively bargained, the vacancy-unemployment ratio $\theta_C$ is increasing in aggregate productivity $\Phi$.

We would like to acknowledge an important caveat before closing our characterization of the labor market: if search costs $c$ were measured in units of labor, then increasing $\Phi$ would raise the real wage but leave the labor market tightness unchanged. Similarly, if $c$ were indexed to aggregate productivity (e.g. $c = \bar{c}_\Phi$, with $\bar{c} > 0$) the equilibrium value of $\theta$ would change.

17 This illustrates that changes in search costs affect the labor market differently than changes in productivity.

Felbermayr University of Stuttgart-Hohenheim

Unemployment and Wages
The role of trade liberalization

Felbermayr, Prat and Schmerer [FPS] (2008, JET, r&r)

- Trade liberalization increases the real wage and lowers structural unemployment in the long-run

- **Intuition**
  Do firms have additional incentives to create jobs? Sufficient to look at the *average* firm. If marginal gain from additional filled job is larger than associated search costs, firms post more vacancies. As long as search costs are not fully indexed to wages, job creation goes up. This creates additional demand for workers, the real wage rises and the unemployment rate falls.

- These findings obtain also in a two-sector Ricardian setup with search frictions

- Firm heterogeneity magnifies quantitative effects
Aggregate evidence

- Model suggest causal chain: Trade liberalization $\rightarrow$ total factor productivity (TFP) $\rightarrow$ unemployment
  - Alcala and Ciccone (QJE, 2004): Trade liberalization increases total factor productivity
  - Dutt, Mitra, and Ranjan (JIE, 2009): Trade liberalization lowers rate of unemployment in a cross-section of countries
  - FPS (2009): confirm this finding in panel data analysis for 20 OECD countries. Moreover, the effect of trade operates through TFP

- Similarly, real wage up ...
  - Single-sector view not sufficient
  - But cross-sectional evidence suggests per capita income gains
Strategic foreign investment, trade-unions, and wage bargaining

Eckel and Egger (JIE, 2009)

- Melitz (2003) model, where firms can either serve foreign markets through exports (hiring domestic workers) or through a foreign plant (hiring foreign workers)
- There are plant-specific trade unions, “rights-to-manage” approach
- Highly productive firms have an incentive to invest in foreign country since this helps them to bargain lower wages (outside option improved); hence, multinational firms have lower wages
- Trade liberalization lowers wages, firms move down their marginal revenue curves and rate of unemployment falls
Multi-sector models

- Helpman and Itshoki (2008)
- Sector A: without search frictions, no trade costs, perfect competition, homogeneous firms
- Sector B: search frictions, trade costs, monopolistic competition, heterogeneous firms
- When trade costs fall, reallocation of workers into sector B. Hence, aggregate unemployment goes up, but also average real wage rises
- Sectoral assumptions drive unemployment results through composition effects
Outline

1. Introduction
2. Trade liberalization and aggregate labor market outcomes
3. Trade and wage dispersion
4. Trade liberalization and labor market churning
5. Conclusion
Evidence from matched employer-employee data

- Arai (JOLE, 2003): Swedish data
  Controlling for observed and unobserved worker heterogeneity, wages and firm-level profits are positively correlated

- Schank, Schnabel and Wagner (JIE, 2007): German data
  Exporters pay higher wages than non-exporters, controlling for size and productivity of firms, but wage premium is very small

- Problem: Unobserved firm characteristics?
  Hedonic/risk-adjusted wages?
  ⇒ Require some theory of firm-level rent-sharing to explain this fact
When does productivity heterogeneity imply wage dispersion for homogeneous workers?

- Interesting question, since *within group wage inequality* is a key ingredient in overall inequality (Autor et al., REStat, 2008)
- Need to modify standard model
  - Break proportional link between wage costs and firm size (i.e. employment)
  - Or: allow for convex search costs (average cost of vacancy posting rises with number of vacancies)
  - Or, easier: firm-level endogenous minimum wages motivated by efficiency (or fair) wage motive
Amiti and Harrigan (2008)

- Fair wage mechanism (cf. Egger and Kreickemeier, IER, 2009)
  - Workers require a minimum wage linked to their employer’s profits; otherwise they would not provide effort
  - No underbidding because workers are homogeneous and would behave similarly at the same firm

- This mechanism generates a wage distribution that follows the distribution of profits

- Trade liberalization triggers an increase in profit inequality and therefore also in wage inequality
Illustration: wages and the transition from autarky to trade

Indonesian data

The predominance of negative values near the origin indicates that non-globalizers lose from liberalization, and vice versa for those who globalize via exports or imports.
Introduction

Aggregate labor market outcomes

Wage dispersion

Labor market churning

Conclusion

Good Jobs, Bad Jobs, and Trade Liberalization

Davis and Harrigan (2008)

- Firms differ with respect to productivity and monitoring costs (jointly distributed)
- Efficiency wages
  - Workers dislike work effort; they need to be disciplined by threat of unemployment
  - Firms monitor workers, but monitoring is incomplete
  - Hence, need to pay higher than market clearing wages to make threat of unemployment big enough
- Firms with same productivity but worse monitoring technology pay higher wages ("good jobs")
- Trade liberalization threatens those "good jobs"
- [Complicated details, depending on correlation between productivity and monitoring costs)
**Assumption:** More productive firms have somewhat worse monitoring technologies

- Positive correlation of wages and firm sizes
- For fixed productivity, trade liberalization destroys jobs with highest wages
- It is, however, still possible that trade expands the number of high wage jobs such that average wage goes up
- Higher average wage requires higher unemployment rate to ensure that workers do not shirk
Outline

1. Introduction
2. Trade liberalization and aggregate labor market outcomes
3. Trade and wage dispersion
4. Trade liberalization and labor market churning
5. Conclusion
Crucial role of worker reallocation

- Effect on number of available varieties is not crucial for welfare gains
- But reallocation is essential!
- Product marking churning leads to labor market churning

⇒ Trade liberalization: aggregate gains come with substantial costs on individual level
  - Workers transit through periods of unemployment (lost earnings)
  - Firms must engage in costly search for workers (search costs)
  - Steady-state churning: larger fraction of start-ups fail
Importance of labor market churning in two-sector setup
Bernard, Redding and Schott (2007)

Churning as a result of trade liberalization

<table>
<thead>
<tr>
<th>Job turnover as trade costs fall</th>
<th>Comparative advantage industry</th>
<th>Comparative disadvantage industry</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Job turnover</td>
<td>Decline from autarky to 20%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>20.7</td>
</tr>
<tr>
<td>Abundant factor</td>
<td>Between industry</td>
<td>7.3</td>
</tr>
<tr>
<td></td>
<td>Within industry</td>
<td>13.3</td>
</tr>
<tr>
<td>Scarce factor</td>
<td>Total</td>
<td>11.6</td>
</tr>
<tr>
<td></td>
<td>Between industry</td>
<td>6.9</td>
</tr>
<tr>
<td></td>
<td>Within industry</td>
<td>4.7</td>
</tr>
</tbody>
</table>
Importance of labor market churning in two-sector setup
Bernard, Redding and Schott (2007)

Steady state churning

Steady-state churning as trade costs fall

International trade
Following reductions in trade costs, countries specialize according to comparative advantage, leading to increased inter-industry trade and enhanced net trade in factor services. At the same time, trade liberalization raises demand for foreign varieties and induces increased participation in export markets, resulting in higher volumes of intra-industry trade. Larger increases in average industry productivity in comparative advantage industries give rise to non-neutral industry technology differences across countries that influence patterns of trade in goods and factor services. Trade costs and non-neutral technology differences result in factor price inequality that again influences trade in both goods and factors.

As shown in the top-left panel of Figure 8, the overall volume of trade is lower than the HK Benchmark. In the HK model, all firms are identical; therefore, all firms export whenever trade occurs. In our model, only a fraction of firms export, reducing the volume of trade in our model relative to the HK Benchmark. In our model, increases in average industry productivity would increase trade volume if the mass of varieties produced were held constant. However, increases in average productivity raise average firm output at the expense of the number of varieties (see Figure 4), which reduces the volume of trade. The higher productivity of exported varieties relative to those sold domestically is not sufficient to offset these other effects, and the overall impact is to reduce the volume of trade.

Although our model generates lower values of both inter- and intra-industry trade than the HK Benchmark, the relative importance of inter-industry trade is enhanced in our model by the magnification of comparative advantage.30 This is seen in the top-right panel of Figure 8, which displays intra-industry trade, as measured by the minimum value of exports and imports within each industry, summed across industries. The disparity in the extent of intra-industry trade between our model and the HK Benchmark is greater than the disparity in the overall volume of trade, as revealed by a comparison of the top two panels. In our model, varieties produced in the skill-intensive industry in the skill-abundant country have higher productivity and lower prices than varieties produced in the skill-intensive industry in the labour-abundant country (and vice versa), promoting inter-industry trade.

30. Lower inter-industry trade is due to both sectors having love of variety preferences, so that trade in both sectors is suppressed by only a fraction of varieties being exported and by the reduction in the mass of varieties produced. If one industry produced a homogeneous product under conditions of perfect competition with no uncertainty regarding productivity, the magnification of comparative advantage in the other sector might raise inter-industry trade relative to the HK Benchmark.
Outline

1. Introduction

2. Trade liberalization and aggregate labor market outcomes

3. Trade and wage dispersion

4. Trade liberalization and labor market churning

5. Conclusion
The possibility of ex post Pareto improvements

- Egger and Kreickemeier (2008)
  - Fair wage mechanism: wages linked to productivity; existence of unemployment
  - Profit-tax based redistribution system with lump-sum transfers

- Can an ex post Pareto improvement be “engineered”?
  - It effectively lowers labor income inequality
  - It also introduces an efficiency loss
  - But, if share of exporting firms is large enough, aggregate gains from trade liberalization persist
Policy implications

- Reallocation of workers within and between sectors is crucial for welfare gains
- Policy should not choke this mechanism
  ⇒ Protect workers, not firms!
  ⇒ Hidden wage subsidies are not the right way!
  ⇒ **Flexicurity**