What Drives Labor Market Volatility in Offshoring Industries?: Evidence from Mexico [during the 2008-09 U.S. Recession]

Bonus: Complementarity between U.S. and Mexican Workers

very preliminary!

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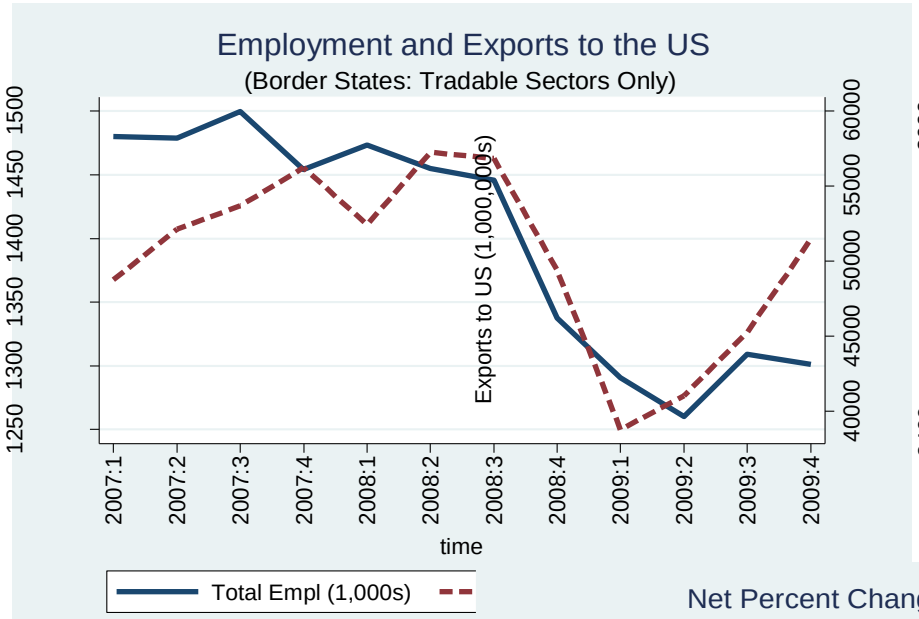
Motivation

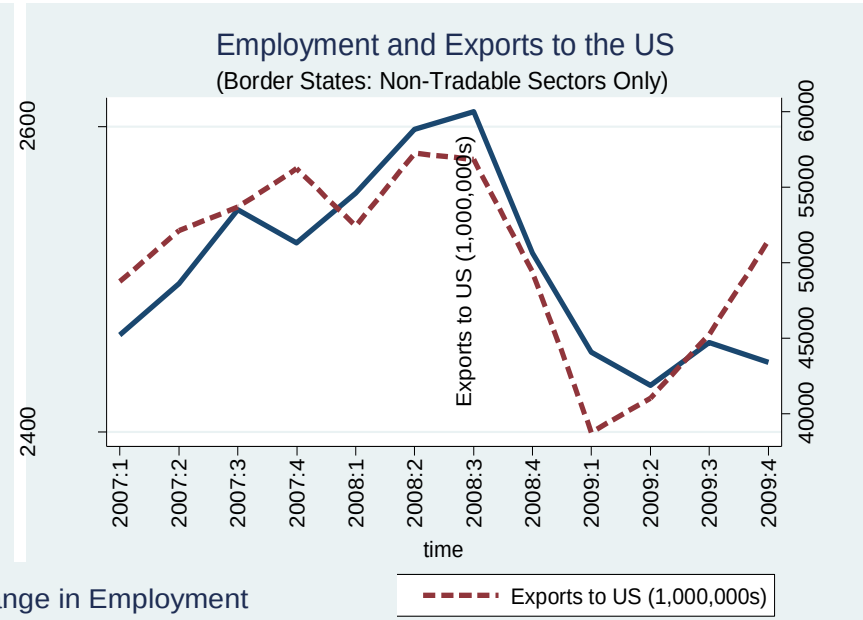
- Labor market adjustments in the short run
  - Employment versus wages and vertical integration
  - Import competition versus imported inputs → [U.S.-Mexico L complements]
  - Diffusion of shock through the labor market
  - Skill upgrading of employed workforce in the downturn
- Important for literature and policy
  - Bergin et al. (2009 AER): employment in Mexico's offshoring *maquiladora* sector is twice as volatile as employment in U.S.
  - Literatures make claims about each of the above (e.g. Kletzer 2001 IIE)
  - Policy: unemployment insurance versus income support in social protection programs
  - [Political economy: common destiny of workers across borders]

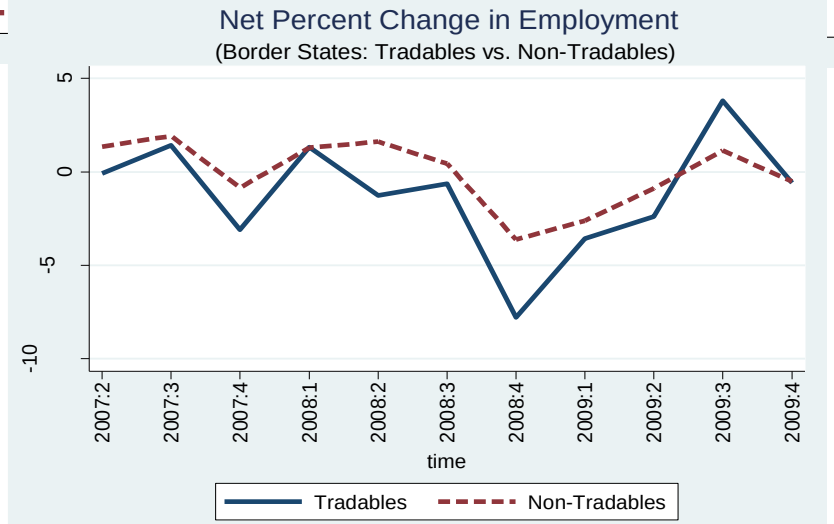
The Collapse in Trade: A Natural Experiment?

- Mexico's trade with the U.S. fell by about 42% (real)
  - Eaton et al. (2009): ~ 70% of global decline in global trade/GDP due to fall in demand for manufactured goods
  - Notable variance across industries: std. dev = 1.14
  - Shock unlikely to be due to Mexican industry trends (…)
- Shock for workers in Northern Mexico
  - Formal employment in trade-intensive northern states fell more than 9% between September 2008 & March 2009
  - Change in the log real wage of "stayers" between quarters was 0.030 and 0.018 in Q1 & Q2 2008 and -0.001 and -0.012 in Q3 & Q4

On the Diffusion of the Shock: Tighter Co-movement of Employment in NON-Tradables with Exports?

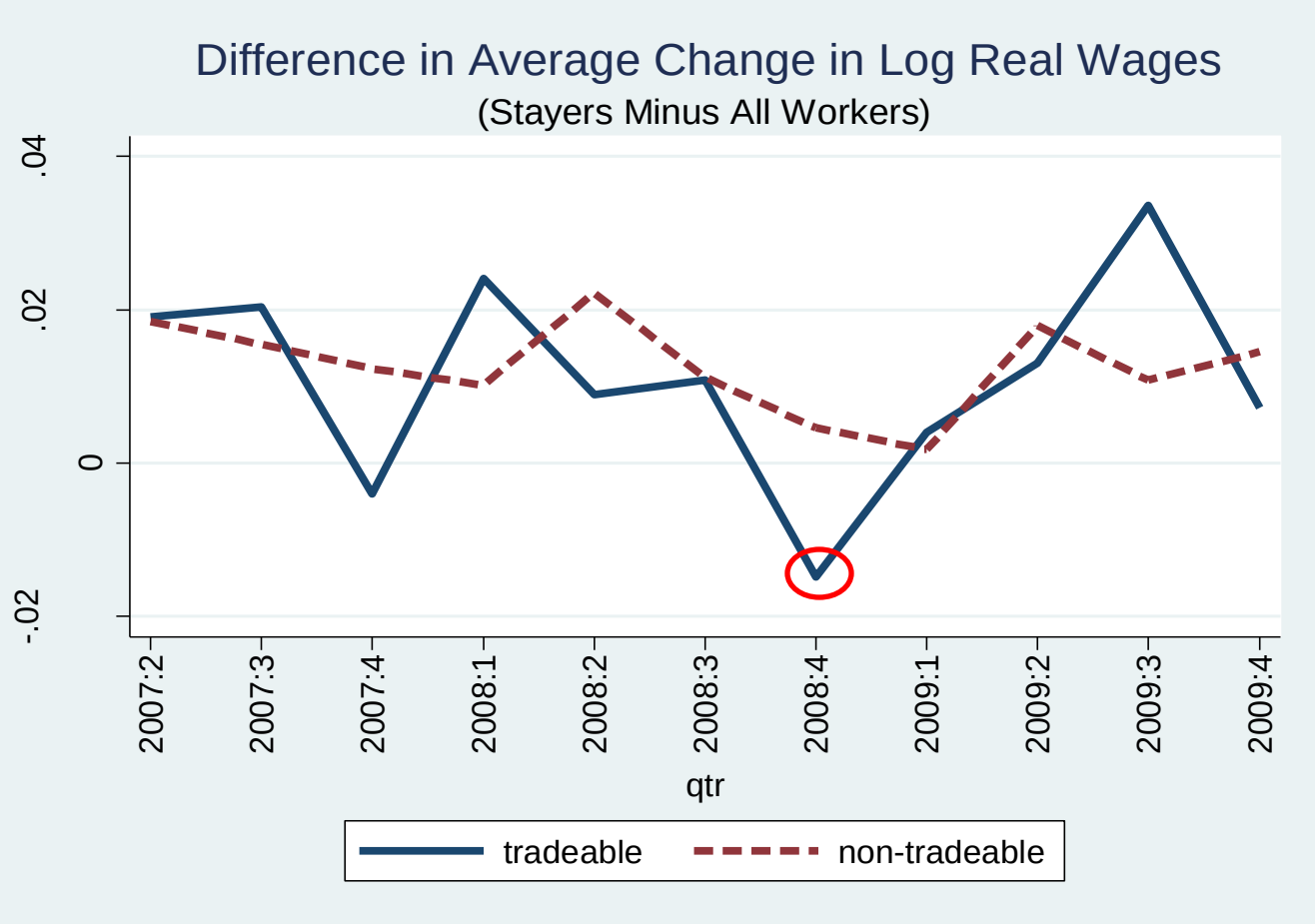






Data: IMSS

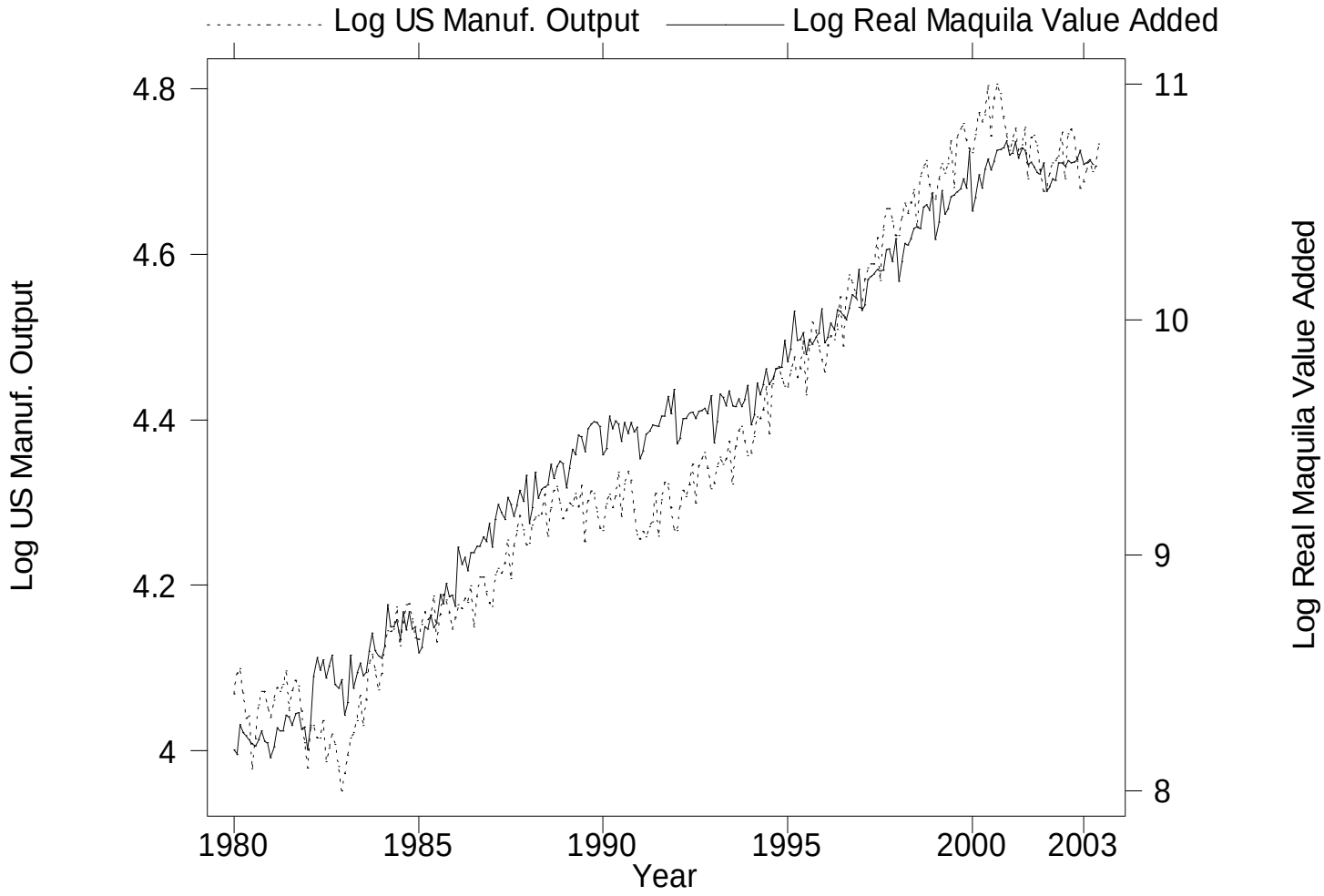
A Picture on Compositional Changes: Relative Wages of "Stayers" v. All



Results: “Within” Industry Effects (WLS)

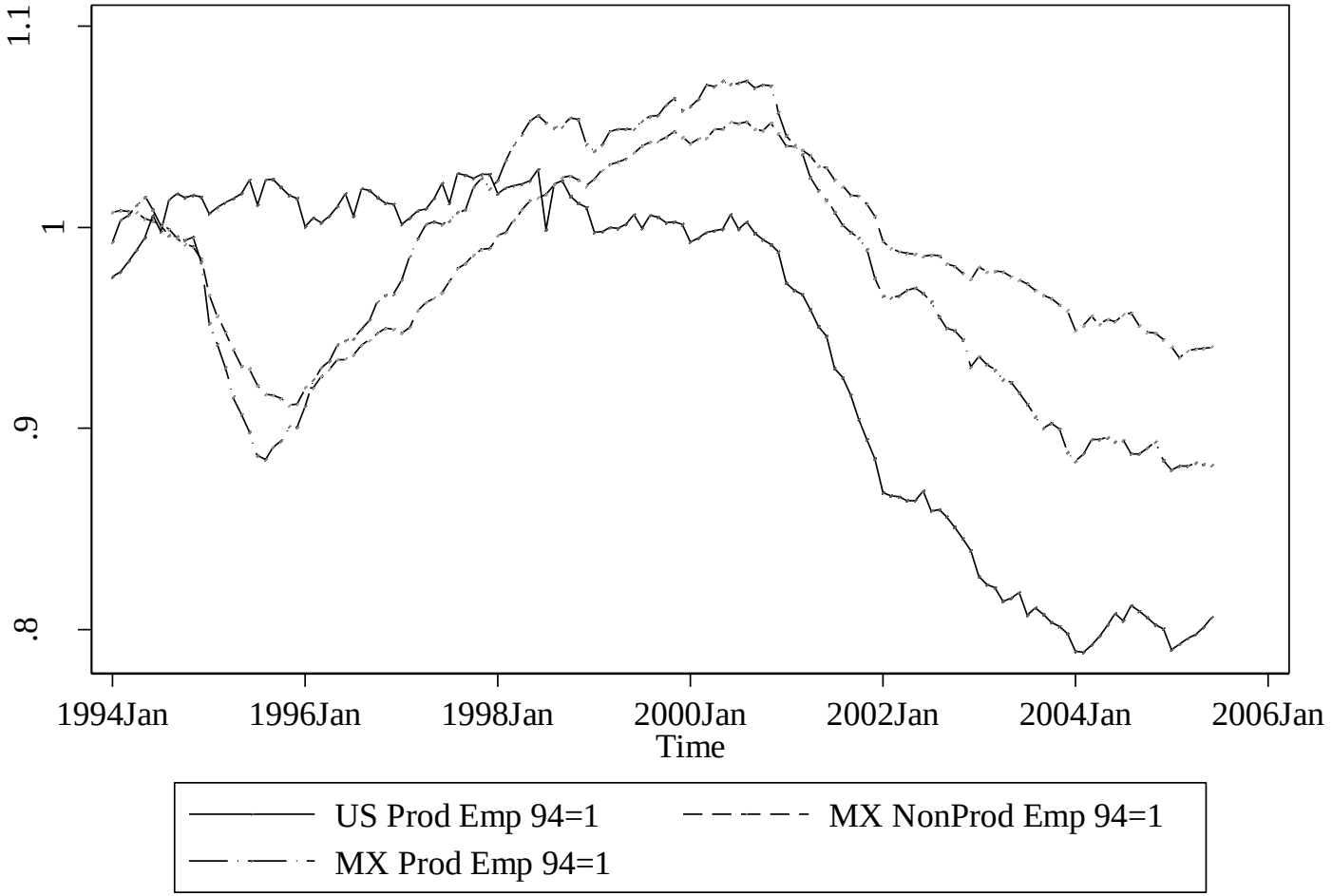
- Employment versus wages and vertical integration
  - Employment elasticity w.r.t. to one-period ahead exports: 0.03
  - Stayers’ wage elasticity w.r.t. to exports: 0.01
- Import competition versus imported inputs
  - Employment elasticity w.r.t. to imports ~ 0.01
  - Stayers’ wage elasticity w.r.t. to imports: ~ 0.006 (n.s.)
- Diffusion of shock through the labor market
  - Employment elasticity w.r.t. to “related” imports: 0.13
  - Stayers’ wage elasticity w.r.t. to “related” imports: 0.003 (n.s.)
- Labor upgrading in downturns: Relative wage of “stayers”
  - W.r.t. imports: 0.008; W.r.t. exports: 0.021
  - W.r.t. one-period ahead exports: 0.015
  - W.r.t. “related” imports: 0.065; W.r.t. “related” exports: 0.110

Common Destiny: U.S. Manufacturing Output and *Maquiladora* Value Added



Common Destiny (since 1998): U.S. and Mexican Manufacturing Employment

Data: Mexico's EIM, U.S. BLS Current Employment Stats, 1994-2005



Common Destiny: Quantitative Estimates, SUR with Fixed Effects, 1994-2005

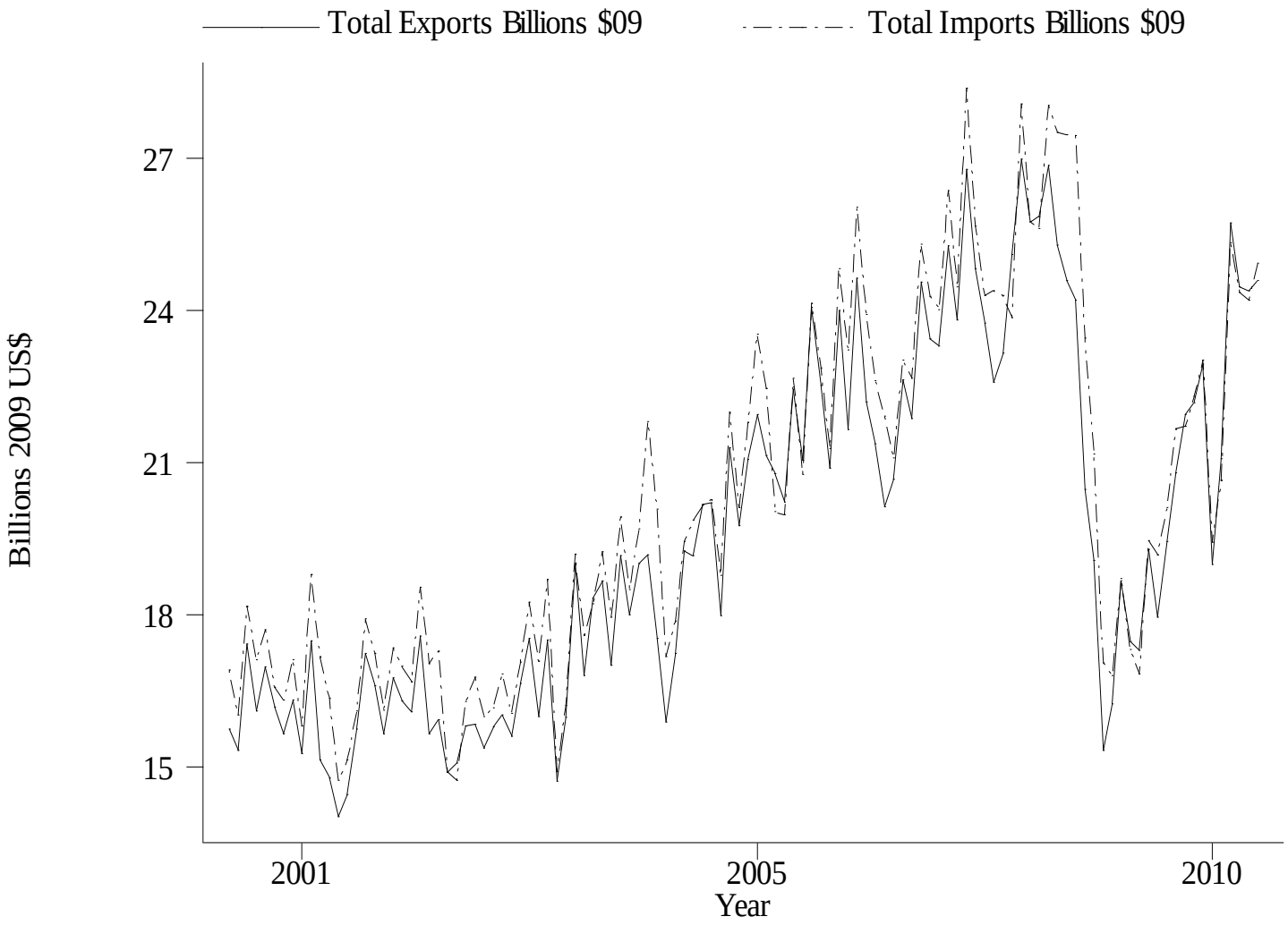
	(1) Constant Output	(2) Constant Output	(3) Constant Output	(4) Total Effect	(5) Total Effect	(6) Total Effect
	US Blue Collar Employment	MX White Collar Employment	MX Blue Collar Employment	US Blue Collar Employment	MX White Collar Employment	MX Blue Collar Employment
US Hourly Wage Blue	**-1.108**	**-0.035**	**-0.325**	**-1.150**	**-0.111**	**-0.426**
	(0.033)**	(0.034)	(0.034)**	(0.035)**	(0.039)**	(0.042)**
MX Hourly Wage White	0.127	0.027	0.131	0.127	0.028	0.132
	(0.010)**	(0.010)**	(0.010)**	(0.010)**	(0.012)*	(0.013)**
MX Hourly Wage Blue	**-0.183**	**-0.009**	**-0.142**	**-0.200**	**-0.040**	**-0.183**
	(0.010)**	(0.011)	(0.011)**	(0.011)**	(0.012)**	(0.013)**
Production Value	0.164	0.295	0.395			
	(0.005)**	(0.005)**	(0.005)**			
Constant	5.333	-1.763	-1.238	7.521	2.171	4.017
	(0.102)**	(0.106)**	(0.106)**	(0.078)**	(0.088)**	(0.096)**
Observations	9900	9900	9900	9900	9900	9900

Standard errors in parentheses
* significant at 5%; ** significant at 1%

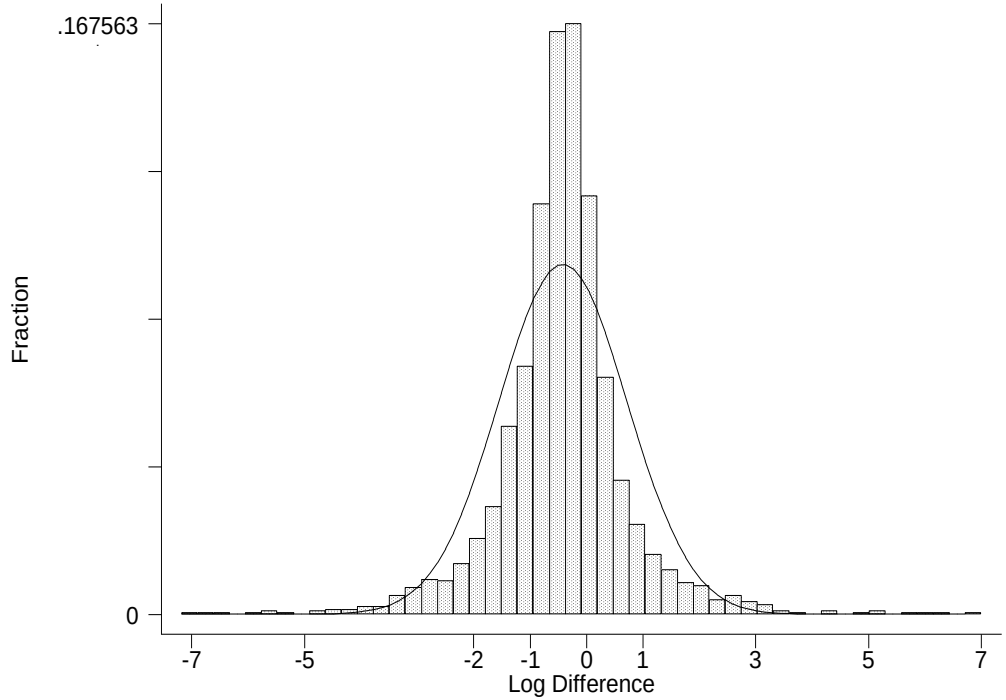
Conclusions

- Adjustment mostly through quantities
  - Trade variation in quantities > unit values (prices)
  - Magnitude of effects larger on employment than wages of stayers
  - Compositional effects reflected in relative wages of stayers
- Vertical trade
  - Positive partial correlation of imports with employment
  - “Time to assemble” specification does well
- Shock diffusion
  - Related industries: through input-output relationships
- U.S. and Mexican manufacturing workers have a common destiny

Total Mexican Exports and Imports Billions 2009 U.S. Dollars



Distribution of (log) Changes in Exports from Peak to Trough



Notes: Mean (standard deviation) log difference is -0.419 (1.138). Difference is calculated as the difference in the log of U.S. imports from Mexico between April 2008 (peak) and January 2009 (trough). Difference shown only represents the intensive margin (HS6 categories that had positive trade values in both periods). Normal distribution is superimposed over the histogram.

Compositional Accounting Algebra

The differential wage change variable:

$$diff_{i,t} = \frac{\sum_{w \in stayers}^{N_{stayers}} ln(w_{w,i,t}) - ln(w_{w,i,t-1})}{N_{i,stayers}} - \left(\frac{\sum_{w}^{N_t} ln(w_{w,i,t})}{N_{i,t}} - \frac{\sum_{w}^{N_{t-1}} ln(w_{w,i,t})}{N_{i,t-1}} \right)$$

Wage setting process: Wages = f(worker fixed effects + time-varying industry effects):

$$ln(w_{w,s,t}) = \alpha_w + \gamma_{i,t} + \varepsilon_{w,f,t}$$

$(\gamma_{i,t} - \gamma_{i,t-1})$ minus $(\gamma_{i,t} - \gamma_{i,t-1}) + (\bar{\alpha}_{i,t} - \bar{\alpha}_{i,t-1})$

Reduces to changes in average worker FE:

$$diff_{i,t} = (\bar{\alpha}_{i,t-1} - \bar{\alpha}_{i,})$$