The Economic Consequences of Trade and Immigration for Local Labor Markets

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UCSD and NBER

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Transformation of the US labor market

Technological change
Transformation of the US labor market

Rising of emerging economies
Transformation of the US labor market

Technology, trade, immigration

- Labor market shocks
  - IT revolution has led to automation of routine tasks, reducing demand for middle-skill workers (Autor & Dorn)
  - Rise of China has increased import competition for US manufacturing, reducing labor demand (Autor Dorn & Hanson)
  - Sharp rise in immigration of very low skilled, very high skilled has reduced wages for some US workers (Borjas)

- How do we separate impact of these shocks from each other and from other confounding factors?
  - Exploit variation across local labor markets
Agenda

1. Labor market shocks
2. Local Labor Market Exposure
3. Labor Market Impacts
Share of world manufacturing value added

- China
- Other emerging economies
- Brazil, India, Russia
- Frontier economies
Trade and the US labor market

US imports from China >> US exports to China

Trade Flows Between U.S. and China
(Billions of 2007 US Dollars)


Imports
- $26.3 bil
- $121.6 bil

Exports
- $10.3 bil
- $23.0 bil
- $57.4 bil
Trade and the US labor market

Production workers are highly exposed to China imports

Notes: Numbers in parentheses in the legend indicate average growth of import penetration within industry group, weighted by 1991 employment. Values for growth of import penetration are winsorized at 100.
Trade and the US labor market

Import penetration and declining US manufacturing
Immigration and the US labor market

*Sharp increase in low-skilled immigration*

(Source: CPS, 1994 to 2012.)
Immigration and the US labor market

But low-skilled are ever smaller share of total labor force

![Graph showing share of hours worked by education group from 1993 to 2011.](Source: CPS, 1994 to 2012.)
Immigration and the US labor market

*Immigrants dominate STEM employment*

![Graph showing the foreign born share of employment in STEM occupations (%)]

(Source: CPS, 1994 to 2012.)
Immigration and the US labor market

Immigrants especially dominate in computer fields

Foreign born worker share, MA degree

- Operations Research
- Other Engineers
- Network Administrators
- Computer Scientists
- Electrical Engineers
- Software Engineers
- Software Developers

Middle-wage workers are concentrated in routine tasks
Agenda

1. Labor market shocks
2. Local Labor Market Exposure
3. Labor Market Impacts
Commuting zones as geographic unit of analysis

- Cluster mainland US counties in 722 commuting zones—strong commuting ties within a CZ, weak commuting ties across CZs
Spatial variation in exposure

• Which regions are exposed to labor-market shocks?
  • Regions differ strongly in their *industrial specialization*
    • *Initial patterns* create variation in later exposure to trade, technology (logic doesn’t apply to immigration, which tracks labor demand)
    • Approach requires that outmigration response to shocks is weak

• Regional exposure to trade with China
  • Sum over industries (1992–2007 change in *national industry imports per worker* \(\times\) *industry’s 1991 share of CZ employment*)

• Regional exposure to technology shocks
  • 1980 *share of CZ employment in routine-task-intensive occupations* (as opposed to abstract-task or manual-task occupations)
Regional exposure to trade with China

Trade Exposure by Commuting Zone, 1990-2007

Legend:
- Lowest Quartile (least exposed)
- 2nd Quartile
- 3rd Quartile
- Highest Quartile (most exposed)
Regional exposure to routinization

Routine Share by Commuting Zone, 1990-2007

Legend:
- Lowest Quartile (least routine)
- 2nd Quartile
- 3rd Quartile
- Highest Quartile (most routine)
Few regions are exposed to both trade and technology
Immigration-exposed regions are not trade-exposed regions.
1. Labor market shocks
2. Local Labor Market Exposure
3. Labor Market Impacts
Local employment effects of increased trade with China

Difference in impact for 75th vs. 25th percentiles of exposure

Import Exposure per Worker, Initial Routine Employment Share and Changes in Employment Status in Commuting Zones, 1990-2007

All Working-Age Adults

Import Exposure

Routine Employment Share

Emp/Pop
Unemp/Pop
NILF/Pop

-0.83%
0.65%
-0.19%

-0.83%
-0.21%
-0.19%

-0.83%
-0.01%
-0.21%

0.0%
0.2%
0.4%
0.6%
0.8%

-1.0% -0.8% -0.6% -0.4% -0.2% 0.0% 0.2% 0.4% 0.6% 0.8%
Local gov’t transfer effects of increased trade with China

Imports from China and Change of Government Transfer Receipts in Commuting Zones (1990-2007)

Effect of an $1000 Per Worker Increase in Imports from China during 1990-2007 on Dollar Change of Annual Transfer Receipts per Capita

- Unemployment and TAA Benefits: $3.65
- SSA Disability Benefits: $8.40
- SSA Retirement Benefits: $10.00
- Other Government Income Assistance: $15.04
- Govt Medical Benefits: $18.27
Labor market impacts of immigration

Confounds abound

- Increase in immigration of “high school dropouts”
  - If substitutable with high school graduates, then impacts wash out
    - Borjas versus Card

- Native HSDOs are progressively more negatively selected over time
  - National immigration wage impacts easily confounded
  - Local labor market immigration wage impacts hard to identify

- Increase in immigration of highly skilled STEM workers
  - Do high skilled immigrants significantly expand TFP?
    - Kerr & Lincoln (H1B workers), Hunt (patenting)
Discussion

Tentative answers and open questions

- Technology
  - IT has automated routine tasks, reducing demand for middle skills
  - *How much do we know about how IT has transformed workplace?*

- Trade
  - Rise of China has increased import competition for US manufacturing
  - *What about positive effects of US technology exports?*

- Immigration
  - Immigration of low, high skilled reduces wages for some US workers
  - *Do high-skill immigrants’ contributions to TFP growth compensate?*