When Work Disappears: Manufacturing Decline and the Falling Marriage Market Value of Young Men

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Summary

This paper addresses the question *how shifts in the relative economic stature of young men versus women affected **marriage**, **fertility**, and **children**'s living circumstances*, exploiting the gender-specific components of labour demand shocks.
As a exogenous labor demand shock, they use **Chinese import penetration** (*China Shock*) to the US manufacturing sector with different initial gender composition of the industries.
As in the literature of *China Shock*, their econometric method builds on the shift-share design, leveraging the inter-regional difference in initial industry structure and aggregate inter-industry difference in the intensity of the import penetration, with the instrument of other coutries' imports from China (**Bartik/shift-share instrument**).
Their focus is on labour market outcome (e.g. employment, earnings), population, health, and family structure.
They find that:

- gender-specific industry shocks differentially affect the labour market outcomes of men and women.

Their results are consistent with Becker (1973)'s model of household specialisation as well as sociological researches on the joblessness of men and family structure/living conditions.

0. Background

The US has experienced a large decline in the manufacturing employment since 1990s.
A series of the researches have shown that the rapid and large growth in the manufacturing imports from China (e.g. Autor, Dorn, and Hanson, 2013).
The literature has documented the economic/social/political transformation of the US as well as other developed countries, induced by *China Shock*.
As such, this paper relates to the literature of *China Shock* focusing on its more socioeconomic side.

Literature

1. Hypotheses in the work by sociologist William Wilson on *the decline of US blue-collar employment has diminished the pool of economically secure young adult*
    - This possibly reduced women's gains from marriage, eroded traditional parental roles, and deteriorate children's living circumstances.
    - **absolute economic stature**
2. Becker (1973)'s framework on *household specialisation*
    - The economic gains to marriaage partly arise from spousal earnings differences.
    - **relative economic stature**

The literature has faced the difficulty of distinguishing cause and consequence in the correlations between labour market opportunity and family structure.

> This paper tries to overcome it by assesing the differential adverse labour market shocks for young adults to men and women stemmed from rising import competition of US manufacturer with China (*China Shock*).

Local Labour Market and Marriage/Fertility

- Some episode of industry-specific shocks/booms
    - Black, McKinnish, and Sanders (2003)
      > Documents an increasing prevalence of signle-header households in four US states that suffered a decline in coal and steel industries.
    - Kearney and Wilson (2017)
      > Observes rising fertility but no change in marital pattern in the US regions that benefitted from the 2000s fracking boom.
    - Shenhav (2016)
      > Shows that a shock to relative pay of men and women (favourable to women) enhanced women's economic independence in the US
    - Schaller (2016)
      > Shows that improvements in men's labour market conditions predict increases in fertility, improvements in women's labour market conditions do the opposite.
- THIS PAPER complements them

> Assess whether US manufacturing employment contraction in the last two decades across industries and regions has affected marital and family outcomes
> Note that since falls in the empployment and earnings of young adult men by trade-induced manufacturing shocks are both absolete and relative.

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1. Empirical Approach

As a shock to the labour demand, this paper examine changes in trade exposure at the US *commuting zone*-level induced by the growth in the US imports fro China.

> It has shown that the expansion of the US imports from low-income coutries since 1990s is mostly attributed to rising trade with China.

Commuting Zone (CZ) is in the literature frequetly used as an approximation of locallabour markets.

Empirical Strategy

Based on Autor, Dorn, and Hanson (2013a) and Acemoglu et al. (2016).

Their measure of local labour market shock:

$$\Delta IP_{it}^{cu} = \sum_{j} \frac{L_{ij90}}{L_{i90}} \Delta IP_{jt}^{cu},$$

where $\Delta IP_{Jt}^{cu} = \Delta M_{jt}^{cu} / (Y_{j91} + M_{j91} - X_{j91})$ is the growth of CHinese import penetration in the US for industry j over period t,

- ΔM_{jt}^{cu}: the growth in US imports from China, and
- $Y_{j91} + M_{j91} - X_{j91}$: initial industry absorption,
  - Y: US industry shipments
  - $M - X$: net imports;

and L_{ij90} is the employment of industry j in CZ i as of 1990.
Hence, the average change in Chinese import penetration in a CZ's industries, weighted by each industry's share in initial CZ employment.
The variation in ΔIP_{it}^{cu} across CZs comes from heterogeneous local industry employment structure in 1990.
By controlling for the initial manufacturing share within CZs, they focus on the variation *within* local manufacturing sector.

To distinguish between employment shocks that differentially affect male and female workers, they decompose the aggregate import shock measure to the gender specific measures in the following way:

$$\Delta IP_{it}^{m,cu} = \sum_{j} \frac{(1 - f_{ij90}) L_{ij90}}{L_{i90}} \Delta IP_{jt}^{cu}, \text{ and } \Delta IP_{it}^{f,cu} = \sum_{j} \frac{f_{ij90} L_{ij90}}{L_{i90}} \Delta IP_{jt}^{cu},$$

This exploits the fact that manufacturing industries differ in their male and female employment intensity.
Hence, even a given magnitude of the import penetration can have differential effects on male and female employment, depending on their initial structure.

Endogeneity Issue

A simple regression on these measures can be contaminated by the endogeneity as it might contain demand-side component of Chinese imports.
To identify its supply-driven component, they employ the instruments using the contemporaneous composition and growth of Chinese imports in eight other developed coutries:

$$\Delta IP_{it}^{co} = \sum_{j} \frac{ij80}{L_i 80} \Delta IP_{jt}^{co},$$

where ΔIP_{jt}^{co} is constructed by replacing ΔM_{jt}^{cu} in ΔIP_{jt}^{cu} with ΔM_{jt}^{co} (realised imports from China by other high-income markets).

Their exclusion restriction

> the common component of import growth in the US and in these other countries derives from factors specfic to China, associated with its evolving productivity and trade costs.

Empirical Specification

They estimate the follwoing stacked first-difference model for two ten-year periods: 1990-2000 and 2000-2014:

$$\Delta Y_{sit} = \alpha_t + \beta_1 \Delta IP_{it}^{cu} + \mathbb{X}_{\text{it}}{}' \beta_2 + e_{sit},$$

where

- ΔY_{sit}: the decadal change in the manufacturing employment share of the young adult population ages 18-39 in CZ i amongst gener grup s (males, females, or both) during time period t.

> Focus on yound adult population that is disproportionately engated in marriage and child-rearing.

- $\mathbb{X}_{it}$: start-of-period CZ-level covariates
  - including: time trend for US census divisions; the mafacturing share of CZ employment; occupation composition controls; and CZ demographics (race, education, fraction of working-age women employmed)

Data

- Industry classification: 4-digit SIC
- CZ-level employment: County Business Patterns data in 1990
- trade data: UN Comtrade
- Gender composition of each industry and CZ: census IPUMS
- Outcomes (labour market, health, and family):
  - census IPUMN
  - American Community Survey sample

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2. Results

A. Employment and Earnings

Manufacturing Employment (Level): Panel A of Table 1

The impact of the trade exposure on manufacturing employment
The shares of manufacturing employment amongst young adults in 1990... men: 17.4%, and women: 8.7%.
Find that...

- Rising import competition reduces manufacturing employment amongst both sexes
  - A one unit trade shock depresses the share of young adults employed in manufacturing by 1.06 percentage points
  - The estimates imply large declines in manufcturing employment amongst young adults
- the negative employment effects of gender-specific shocks are observed in the corresponding genders
  - a unit trade shock to each gender-specific industries redues each employment by 2.6%

Gender Difference: Panel B of Table 1

Dependent variables are now the male-female gap in outcomes.
Find that

- The import penetration significantly depress the employment-to-population ratio for male relative to female (overall including non-manufacturing).
  - Over-representation of men in manufaturing may not explain as non-manufacturing seems to have expeienced a large reduction.

Wage/Income Distribution: Panel C of Table 1

Implement the technique for performing instrumental-variable estimates of the distributional effetcs of group-level treatments, proposed by Chetverikov, Larsen, and Palmer (2016).
Estimating the effect of the shock on the CZ-level male-female earnigns gap for 25th, 50th, and 75th percentiles of the distribution, they find that

- Initial gender earnings gap and the per unit effect of the exposure (all US dollar)
  - 25th: 6,926 and -672
  - 50th: 13,376 and -445
  - 75th: 17.489 and -847
- Figure 1
  - The negative impacts on the earning losses are larger for males than females at almost every quantile (Panel A)
  - The negative impacts on the male-female annual earnings gap is stronger in the lower percentile than the upper half of the earnings distribution.

These are all consistent with Wilson's observation that manufacturing contractions reduced economically secure young adult men, generating the falls in the young male adults' labour market conditions both in absolute and relative to women.

B. Gender Gaps in Idleness, Absence, and Mortality

Wilson's hypothesis

> adverse shocks to blue-collar employment deteriotate adult social funciton.

-> This part section devotes to test for such consequences with three **nonmarket** outcomes: *idleness*, *absence*, and *mortality*.

Idleness: Panel D of Table1

Ideleness: the state of begin neither employed nor in school (c.f. NEET)
Focus on the ages 18-25, covering the transition between school and work.

The dependent variable is the male-female gap in three main activity statutes:

- currently employed (panel D, column 1)
- not employed but enrolled in school (panel D, column 2)
- neither employed nor enrolled in school (panel D, column 3): idleness

Find that

- currently employed: young men employed decreased relative to women
- enrolled in school: little effect
- idleness: young men in idleness increased relative to women
    - Point estimate implies that this can fully explain the differential rise in nonparticipation amongst young males
    - This pattern is more salient when focusing on the gender-specific components of trade exposure (panel D-II)
    - Panel C of online Appendix Table A3 reports the impacts seperately by gender and suggests that
        - The differential effect of manufacturing shocks on the make-female idleness gap comes entirely from increases in male idleness
        - Reduction in female employment stems from increases in female school enrollment.

Absence and *Mortality*: Table 2

Panel A: Percentage of Male Residents as a dependent variable
Find that

- the exposure to the import shock reduces the supply of noninstitutionalised young men in a local labour market.
    - these shifts in the relative availability of young men stem fromshocks to male-intensive employment (panell A-II)

This reduced supply of young adult males: migration? incarceration? homelessnesss? or mortality?

> The previous studies find no robust evidence for increased outmigration (though no test for gender-specific migration patterns)
> Others find that the trade shock increases crime incidents and arrests, which in more prevalent amongst yougn males, plausibly contribute to the reduced supply.

They focus on *mortality*

- Case and Deaton (2015, 2017): drug and alcohol (D&A)-related mortality rose amongst working-age adults in the same period.
- Pierce and Schott (2016b): trade exposure -> rising mortality due to accidental poisoning and suicide in the working-age population.
    - Here examines mortality amongst young adults ages 20-39 with differential effects on males versus females.
    - Data: US Vital Statistics files (enumerating person-level death certificates for all US residents)

Find that

- The exposure to the import shock significantly increases the male-female mortality gap amongst young adults (panel B)
    - A unit shock induces 64.4 deaths per 100,000 amogst male relative to female
    - This is large as an average differential mortality rate per decade over 1990-2015: 936 per 100,000 adults
- By-cause category
    - D&A: the gender gap in this category surged by the trade exposure
        - Accounts for 30% of the total contribution of trade shocks to the gender mortality gap
    - HIV/AIDS: the large increase in the gender gap here too
        - often related to intravenous drug use
        - About similar or even larger impact than D&A effect
    - Homicide: moderate but significant effect of the import shock
    - Others (suicide, accident, and all the others): small and insignificant
- In net, the differential impact on male mortality can explain about 14% of the reduced supply of males amongst yougn adults

Only a small fraction of adults who engage in risky bahaviours directly experience fatal consequences
-> The rest of the impact may be less attractive marital partners due to substance abuse and exposure to HIV and violent crime.
-> -> marriage-market values may fall for a broader set of young men.

C. Fertility, Marriage, and Children's Living Circumstances

This section tests for impacts of the trade shokcs on *fertilty*, *marriage*, and *children's circumstances*.

Marriage: Panel A of Table 3

Focus on marital status amongst women ages 18-39

- currently married
- currently widowed
- divorced or separated
- never-married

Find that

- The exposure to the trade shock deter marriage formation
    - A significant decline in the fraction of young women who are currently married or previously married
    - A corresponding rise in the fraction of women never married
- The Shocks to male and female-intensive employment have opposing effects on marriage formation
    - The shock to male-intensive employment reduces the fraction of young adult women ever married or currently married
    - The shock to female-intensive employment has a opposite effect but only about two-thirds of the male-impact

Fertility: Panel B of Table 3

Fertility is measured as births epr 1,000 women ages 20-39
Find that

- the exposure to the trade shock significantly deter fertility
    - The shocks to male-intensive employment redues fertility
    - The shocks to female-intensive employment raises fertility

These results support Becker (1973)

> In his model, the gains to household formation are increasing in gender-based specialisation

This perspective explains why shocks to manufacturing employment are so damaging to adult social function.
The differential impact on earnings capacity, disproportionately detrimental to males, leads to the lower attractiveness of marriage, fertility, and joint child-rearing.

Family Structure and *Childen's Circumstances*: Panel B-E of Table 3

The impact on children's living circumstances is a empirical matter.

- If a fall in males' relative economic stature deters fertility by at least as much as it does to marriage...
    - More children would live in two-parent, married, and non-poor households.
- If motherhood is less electic than marriage to shocks to relative gender economic staature...
    - Children's living circumstances would move in the opposite direction

Find that:
In panel B and C,

- The exposure to the trade shock raises the share of mothers who unmarried
    - the shock reduces the fraction of adult women ages 18-39 with children in the household
    - But only half as large as the increase in never married-women
- The negative impact on the children's living conditions
    - the shock increases the share of children living in poverty
- The shock to male-intensive employment drives these dynamics
    - It reducess the women with children but increases the unmarried mothers more
    - Also raises the share of children living inpoverty
- The shock to female-intensive employment...
    - Increases the fraction of women with children in the household
    - Decreases the fraction of unmarried mothers
    - Decreases the fraction of children living in poverty;

In panel D and E,

- The exposure to the trade shock...
    - Reduces the fraction of women living with a married partner
    - Reduces the fraction of women cohabiting with an unmarried partner
        - The declining marriage rate is NOT compensated by a rising propensity of young unmarried women to live with partner
    - Reduces the fraction of children living in married two-parent households
    - Raises the fraction of children living in single-parent, non-cohabiting households
    - The effects of gender-specific shocks move in the opposite direction
        - The shock to male-intensive employment does all of them
        - The shock to female-intensive employment have **protective** effects for children

3. Key Questions Unanswered

- Whether reversing these current trend in the declining manufacturing employment would undo their effects on marriage, fertility, adn childhood povety, or these consequences would persist even if opportunities for blue-collar men improve.