

# China's Male-Biased Sex Ratios

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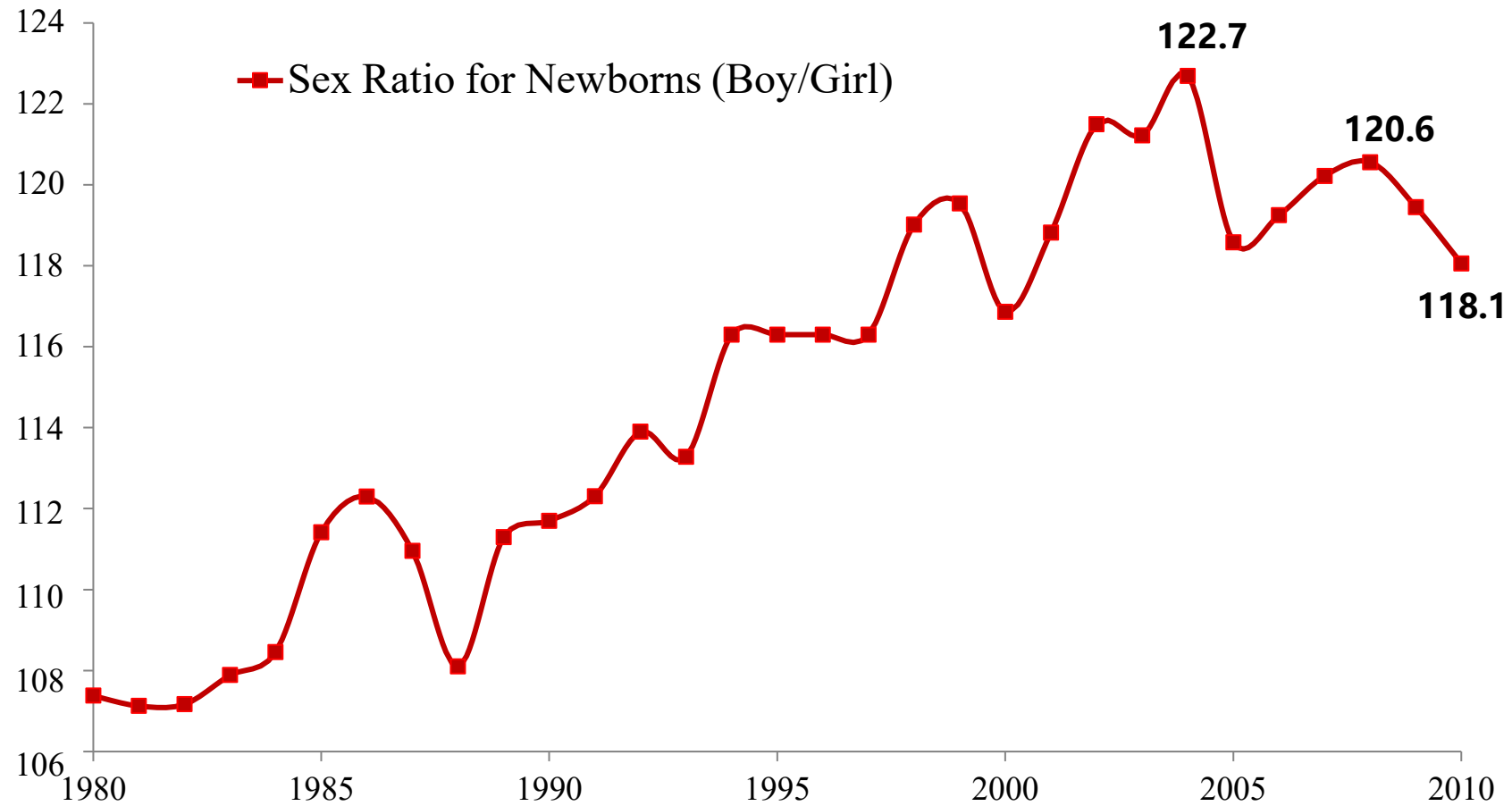
# Son Preference in China

- “Cultural” reasons: to continue the family line, etc
- Economic considerations in the traditional Chinese society
  - Labor: girls marry “out” of their natal families
    - “Raising a daughter is like watering a plant in another man’s garden” Chinese saying
    - “A daughter is a thief” old Cantonese saying
  - Old-age support from sons
    - “This [son] preference...is not simply an expression of feudalistic mentality. It is very much dictated by highly labor-intensive agricultural and related pursuits. ”

# China's one child policy

- Started in 1979
  - Population control was put into the Constitution of China
  - The government started a new ministry, State Family Planning Commission, and an office at each bureaucratic level to be in charge of birth control
- The policy
  - Late marriage, late pregnancy
  - One child per family
  - In rural areas, the second child was allowed if the first child is a girl

# Biased Sex Ratio



# China's Male-Biased Sex Ratios: Causes

# Three hypotheses on why

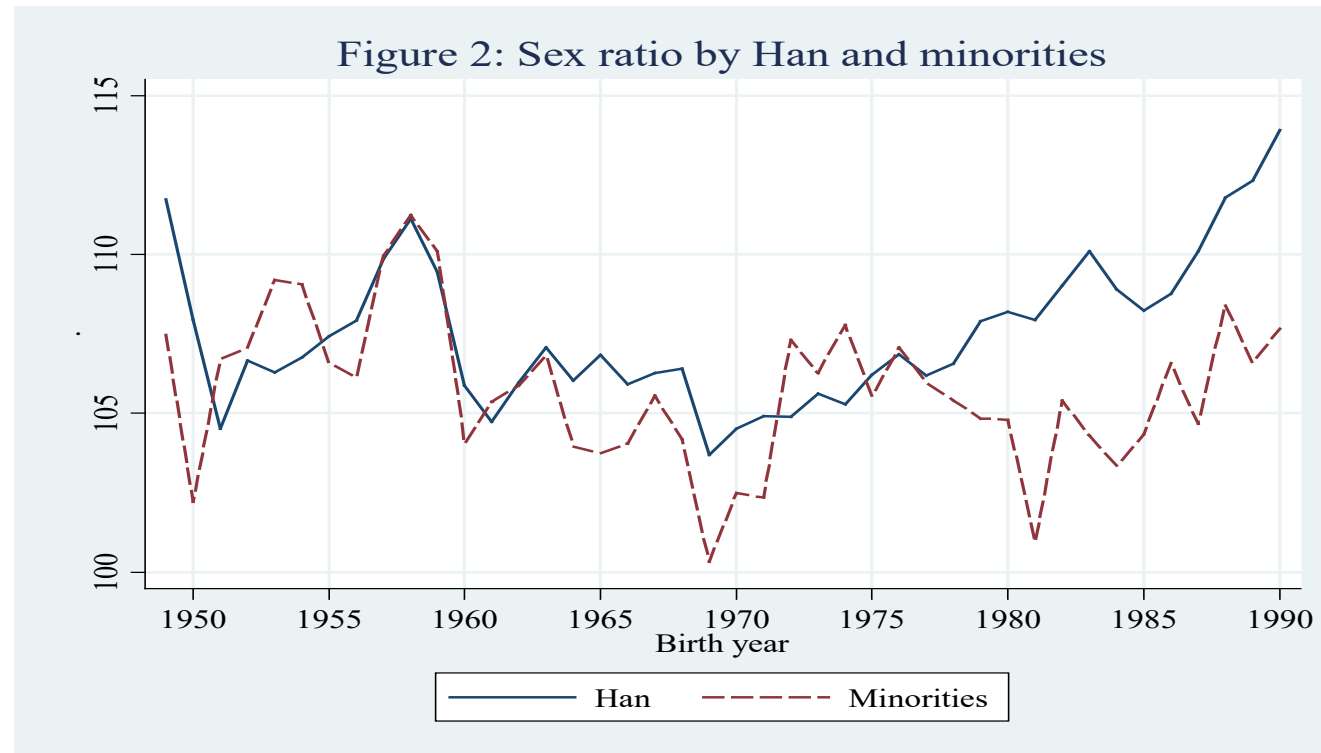
- The one child policy hypothesis (Li, Yi and Zhang, 2011)
  - Li, Hongbin, Junjian Yi and Junsen Zhang, “Estimating the Effect of the One-Child Policy on Sex Ratio Imbalance in China: Identification Based on the Difference-in-Differences,” *Demography* 48(4), November 2011, pp. 1535-1557..
- The ultrasound hypothesis (Chen, Li and Meng, 2013)
  - Chen, Yuyu, Hongbin Li and Lingsheng Meng), “Prenatal Sex Selection and Missing Girls in China: Evidence from the Diffusion of Diagnostic Ultrasound,” *Journal of Human Resources*, 48(1), 2013.
- The income hypothesis (Almond, Li and Zhang, 2019)
  - Almond Doug, Hongbin Li and Shuang Zhang, “Land Reform and Sex Selection in China,” *Journal of Political Economy*, 127(2), April 2019, pp. 560-585.

# The One Child Policy Hypothesis

*Li, Yi and Zhang (2011)*

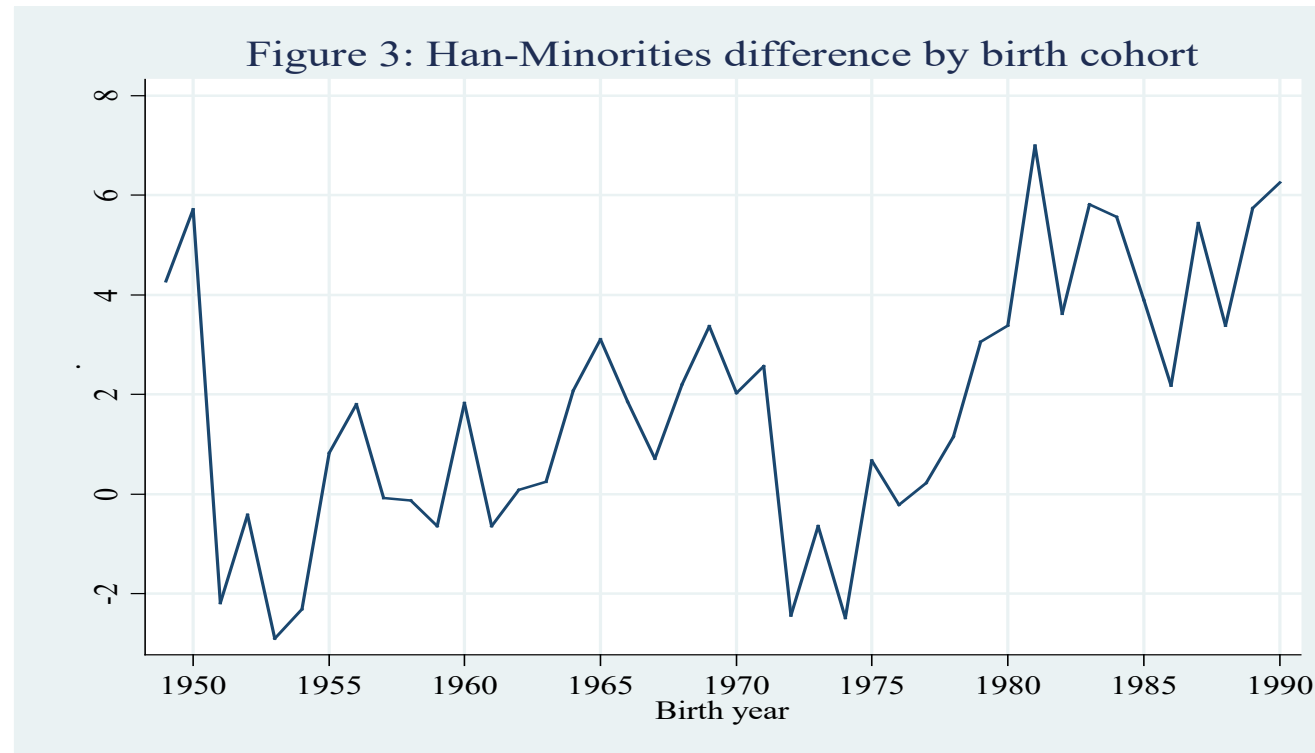
- Research question
  - How much of the increase in the sex ratio (males to females) at birth since the early 1980s and 1990s in China is due to the OCP?
- We answer this question by exploiting the differential policies for minorities and *han* Chinese—minorities were not subject to the OCP until the 1990s

# Figure: Sex Ratio by Han and Minorities





# Figure: Han-Minorities Difference by Birth Cohort



**1950-1979: Difference in sex ratios is 0.73 (2.08)**

**1980-1990: Difference in sex ratios is 4.75 (1.51)**

# DD Estimates of the Effect of the One-Child Policy by Birth Order

|                             | Han    | Minorities | Han-Minorities |        |
|-----------------------------|--------|------------|----------------|--------|
| Birth order = 1             |        |            |                |        |
| Pre-Treatment               | 0.5107 | 0.5065     | 0.0043         | (1.14) |
| Post-Treatment              | 0.5128 | 0.5052     | 0.0076         | (3.60) |
| DD                          |        |            | 0.0034         | (0.78) |
| DD (with control variables) |        |            | 0.0030         | (0.75) |
| Birth order = 2             |        |            |                |        |
| Pre-Treatment               | 0.5165 | 0.5076     | 0.0089         | (1.59) |
| Post-Treatment              | 0.5378 | 0.5193     | 0.0185         | (7.63) |
| DD                          |        |            | 0.0096*        | (1.70) |
| DD (with control variables) |        |            | 0.0100*        | (1.65) |
| Birth order > 2             |        |            |                |        |
| Pre-Treatment               | 0.5223 | 0.5190     | 0.0033         | (0.31) |
| Post-Treatment              | 0.5561 | 0.5267     | 0.0294         | (9.92) |
| DD                          |        |            | 0.0261**       | (2.35) |
| DD (with control variables) |        |            | 0.0260**       | (2.32) |

# The OCP has a large impact on the biased sex ratios in China (Li, Yi and Zhang, 2011)

**Table 7** The effects of the one-child policy on the sex ratio across the 1990 census, 2000 census, and the 2005 mini-census

| Period                       | Actual Sex Ratio<br>(1) | Total Increase in Sex Ratio<br>(2) | One-Child Policy Effect<br>(3) | % Explained by the One-Child Policy<br>(4) |
|------------------------------|-------------------------|------------------------------------|--------------------------------|--|
| 1973–1979 (1990 census)      | 106.31                  |                                    |                                |  |
| 1980–1990 (1990 census)      | 111.01                  | 4.70                               | 4.40                           | 93.62                                      |
| 1991–2000 (2000 census)      | 118.53                  | 12.22                              | 6.98                           | 57.12                                      |
| 2001–2005 (2005 mini-census) | 119.39                  | 13.08                              | 7.01                           | 53.59                                      |

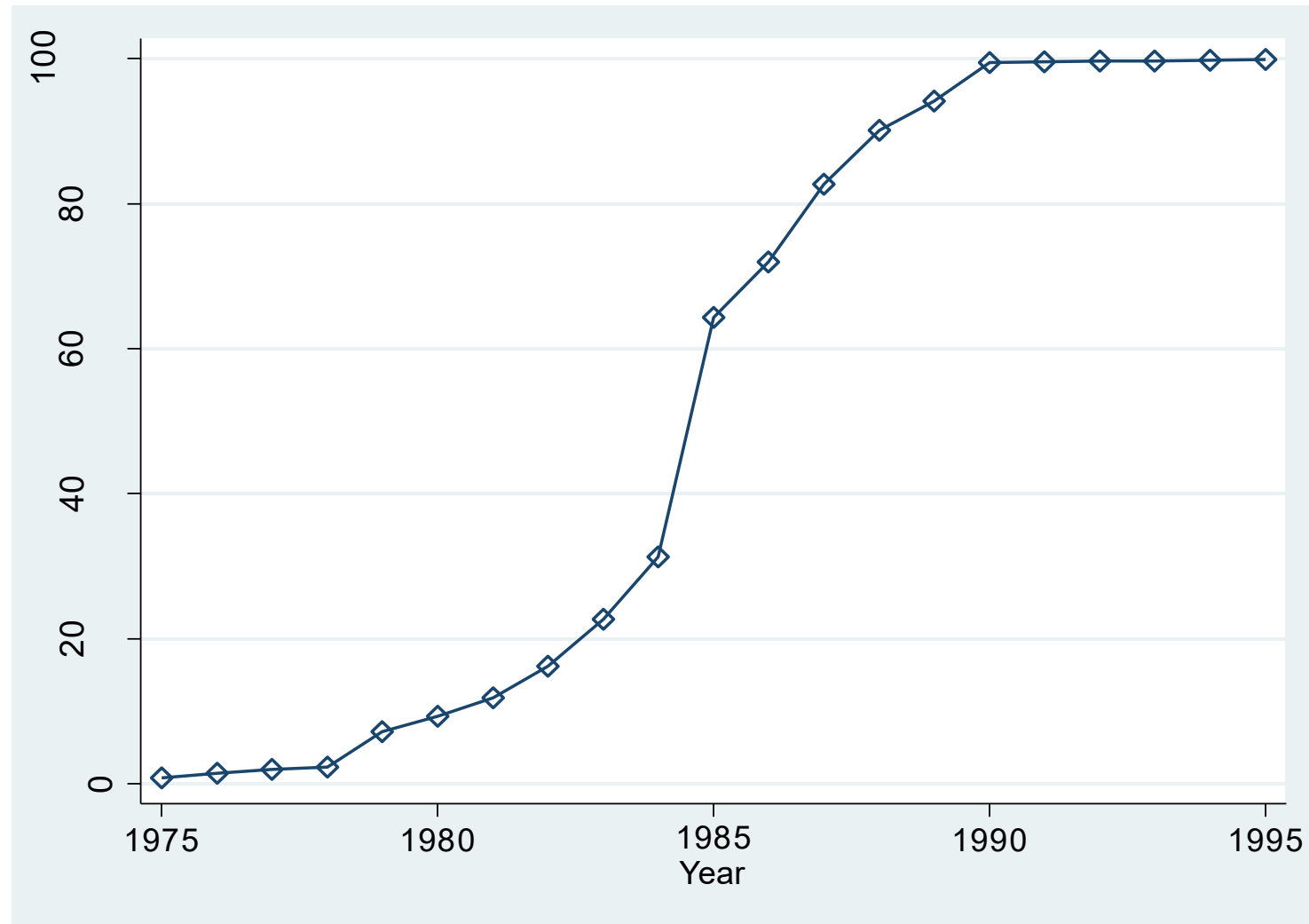
*Notes:* Column 1 reports actual sex ratios at different periods; column 2 calculates the total increases in the sex ratio in the periods 1980–1990, 1991–2000, and 2001–2005, compared with the period 1973–1979; column 3 calculates the effect of the one-child policy on sex ratio by using Eq. 3; column 4 calculates the percentage of the total increase in sex ratio accounted for by the one-child policy (column 3 / column 2).

# The Ultrasound Hypothesis

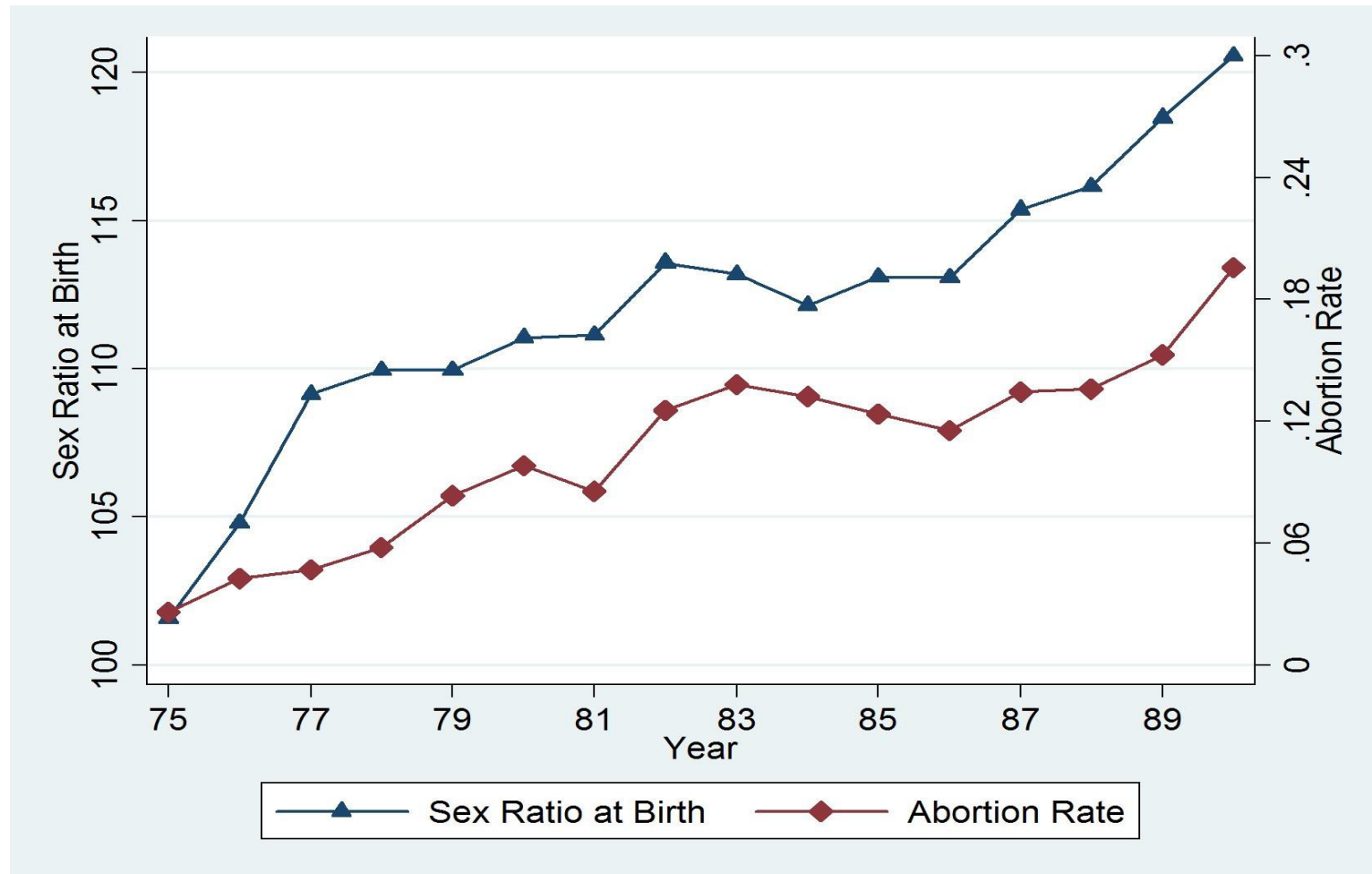
*Chen, Li and Meng (2013)*

- Research questions
  - How much of the increase in the sex ratio (males to females) at birth since the early 1980s in China is due to increased prenatal sex selection?
  - How much of it is due to fetus sex identification technology?
- We collect new data that tracks the differential diffusion of diagnostic ultrasound in China and use data that record gender of births
- We answer this question by exploiting the differential introduction of ultrasound throughout China during the 1980s, which significantly reduced the cost of prenatal sex selection.

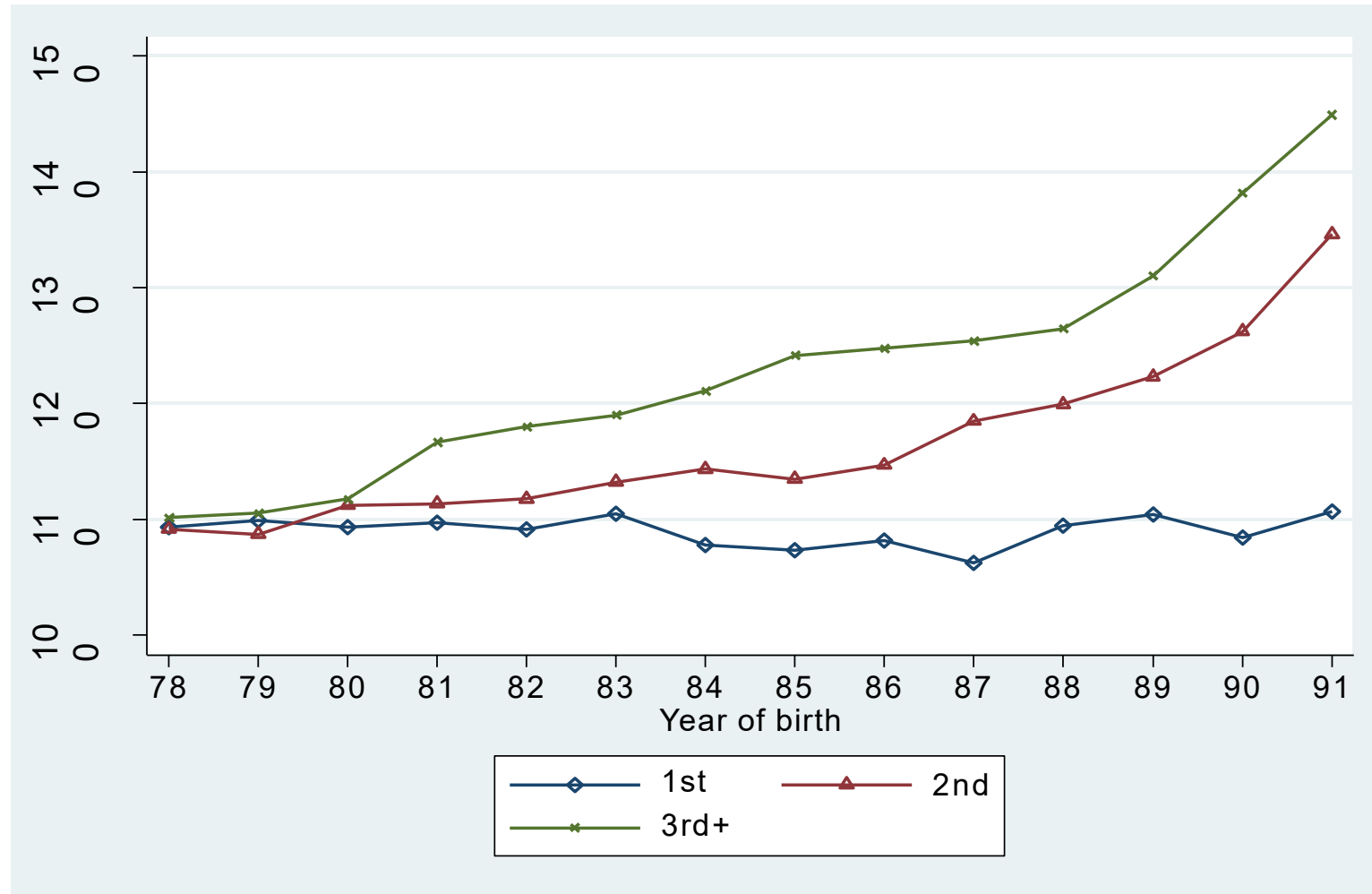
# Percent of Counties with Ultrasound Machines in the Data



# Sex Ratio at Birth and Abortion Ratio by Year

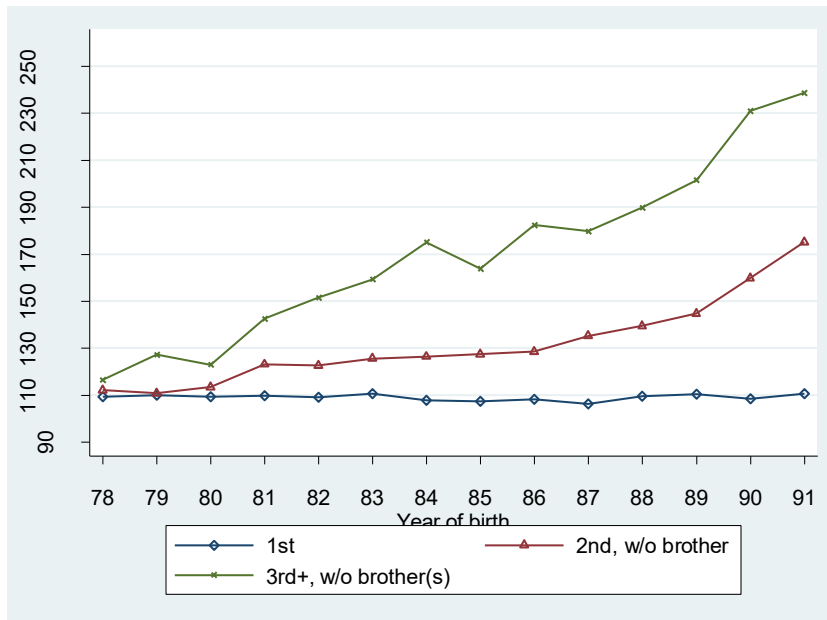


# Sex Ratio at Birth by Parity and by Year

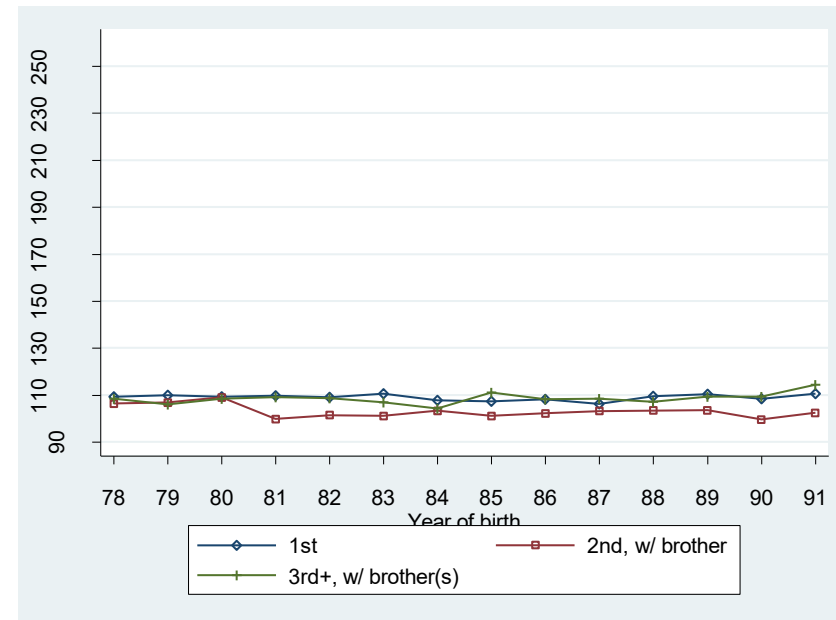


# Sex Ratio at Birth by Parity and Sex of Older Sibling(s) over Time

(a) First birth and higher order birth without brother(s)

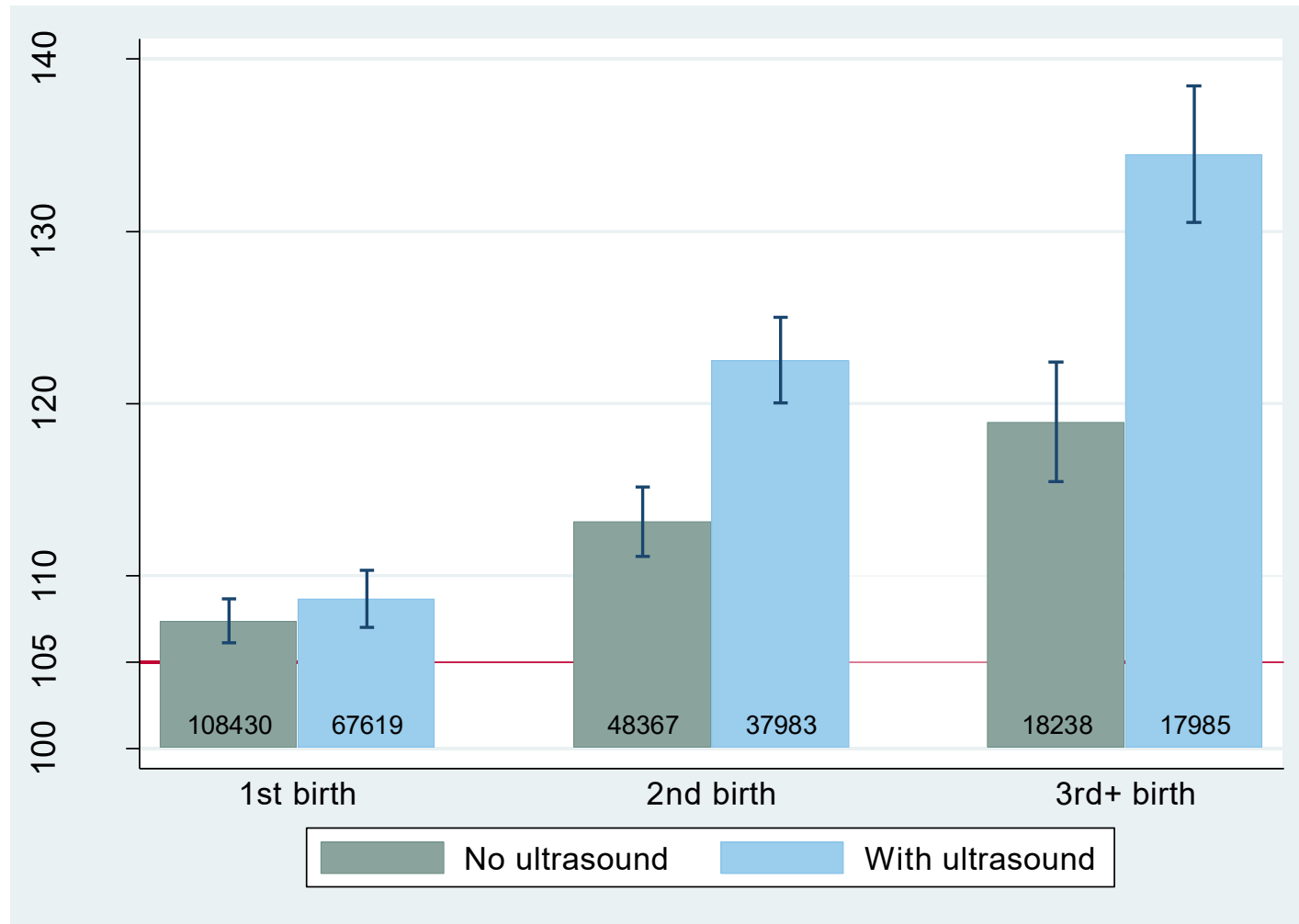


(b) First birth and higher order birth with brother(s)





# Sex Ratio at Birth by Parity and by Availability of Ultrasound



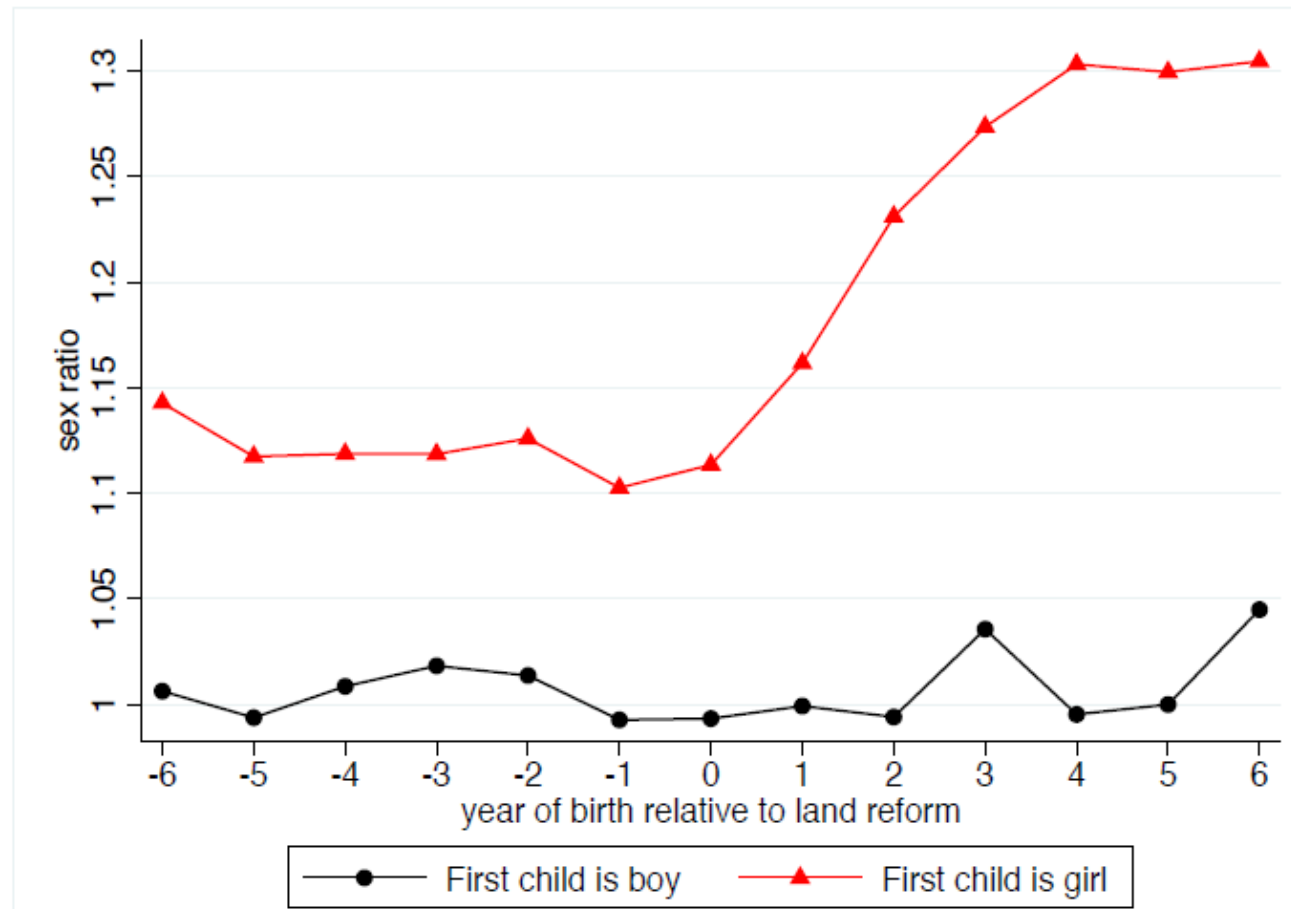
# The Income Hypothesis

*Almond, Li and Zhang (2019)*

- Research question
  - How much of the increase in the sex ratio at birth in the late 1970s and early 1980s in China is due to increased the rise of income?
- We use early land reform (which increased farmers' income significantly) as a natural experiment
- We find: land reform contributed about half of the rise in rural sex ratios in the early 1980s
- Why? Boys were luxury goods and the demand of them rose with income

# Land Reform and Sex Ratios of the Second Birth in the late 1970s and early 1980s *Almond, Li and Zhang (2019)*

Sex ratio of the **second** child



# China's Male-Biased Sex Ratios: Consequences

# 30 million Unmarried Men



Edlund, Lena, Hongbin Li, Junjian Yi and Junsen Zhang, "Sex Ratios and Crime: Evidence from China" *Review of Economics and Statistics*, 95(5), December 2013, pp. 1520-1534.

Gao Xin, professor from Nankai university said yesterday that according to the documents, it can be concluded that the population of male is much larger than that of the female who were born between the period of 1980 to 2000. The gap was about 33,31 million.

# Our question

- Sex ratios (males to females) up
- Crime up

Do the rising sex ratios of 16-25 cause more crimes?

Figure 1: 16-25 sex ratios by year

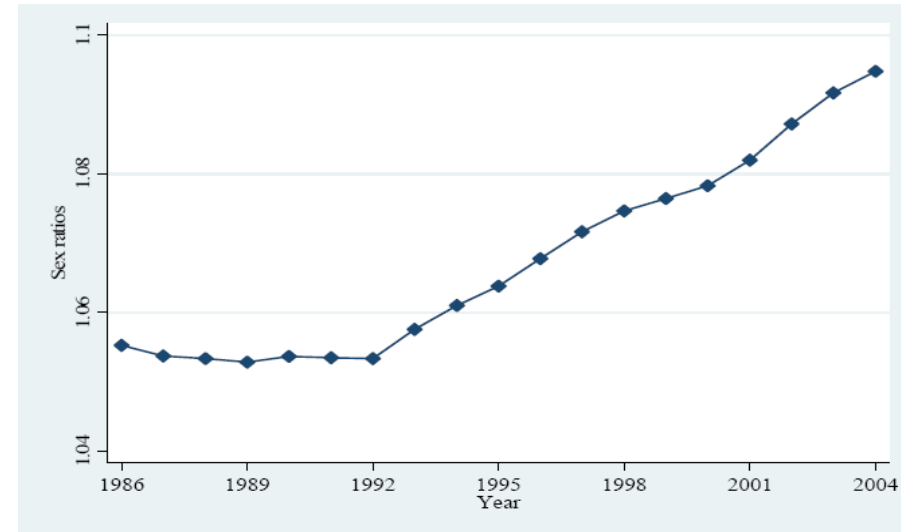


Figure 2: Criminal arrest rates: 1986-2004

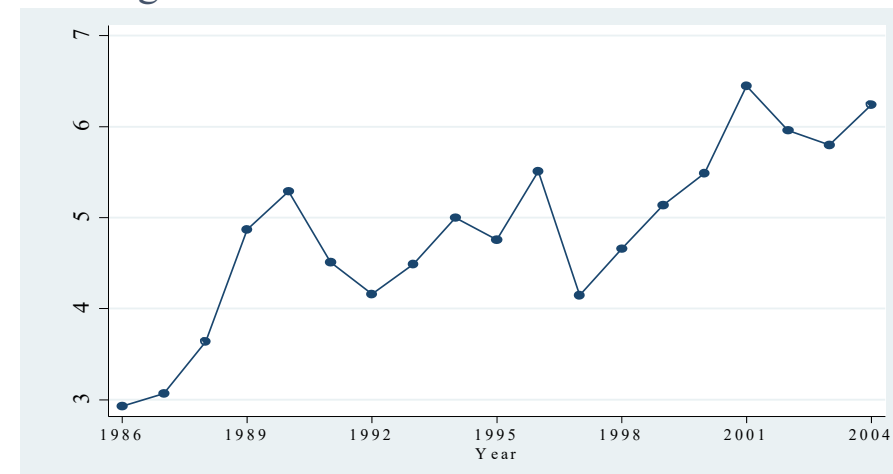


Table 2: OLS Estimates of Sex Ratios and Crime, 1988-2004.

|                             | Dependent variable: ln(Crime rate) |         |          |          |
|-----------------------------|------------------------------------|---------|----------|----------|
|                             | (1)                                | (2)     | (3)      | (4)      |
| ln(16-25 Sex ratio)         | 3.339***                           | 3.436** | 3.753*** | 3.694*** |
| 1990 census                 | (1.126)                            | (1.286) | (1.195)  | (1.164)  |
| ln(Income, per capita)      |                                    | -0.063  | 0.013    | -0.009   |
|                             |                                    | (0.209) | (0.169)  | (0.171)  |
| Employment rate             |                                    | -0.006  | -0.004   | -0.004   |
|                             |                                    | (0.004) | (0.004)  | (0.004)  |
| Secondary school enrollment |                                    | 0.003   | 0.004    | 0.003    |
|                             |                                    | (0.002) | (0.003)  | (0.003)  |
| Inequality                  |                                    |         | 0.137    | 0.135    |
|                             |                                    |         | (0.091)  | (0.087)  |
| Urbanization                |                                    |         | 0.008*   | 0.008*   |
|                             |                                    |         | (0.004)  | (0.004)  |
| ln(Welfare exp.)            |                                    |         |          | -0.053   |
|                             |                                    |         |          | (0.058)  |
| Observations                | 442                                | 442     | 442      | 442      |
| R-squared                   | 0.54                               | 0.55    | 0.58     | 0.59     |

Crimes  
increase  
with sex  
ratios

Robust standard errors clustered at the province level in parentheses; \* significant at 10%;

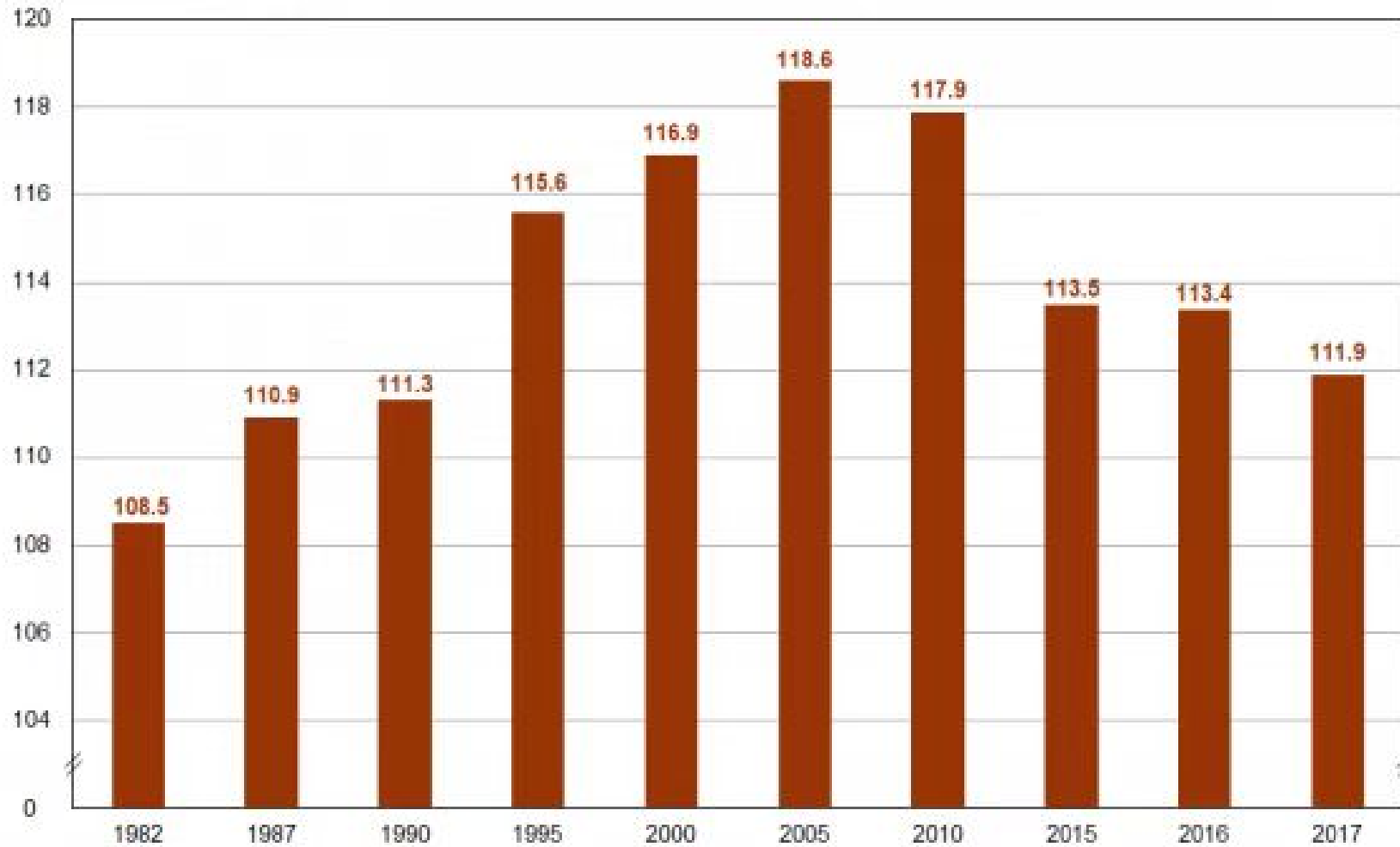
# Male-biased sex ratios have much broader impacts

- Marriage market:
  - Men less likely to get married; Opposite for women
- Labor Market
  - Men less likely to find a job, or a good job
- Education
  - Men have more education, but marrying women with less education; opposite for women
- Intra-household division of power and labor
  - Men do more household chores; women less



# Recent trend of sex ratios (Censuses and mini-censuses)

每100名活产女婴对应的活产男婴数





# One-Child Policy abolished

2013: one-child parent can  
have 2 children

2015: two-children policy

2021: three-children policy