

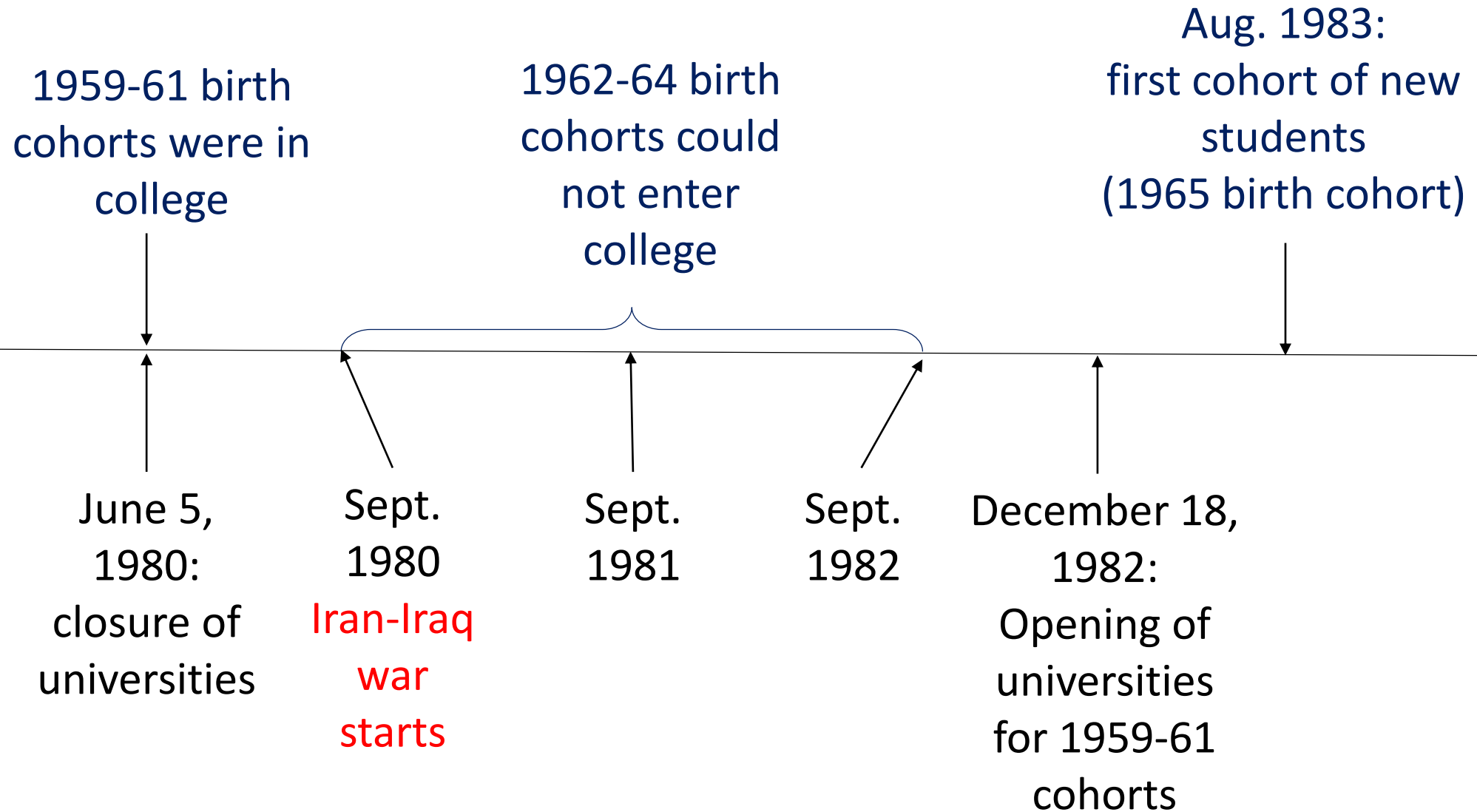
The Power of Demand: A Natural Experiment in Higher Education

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Babson College

Introduction

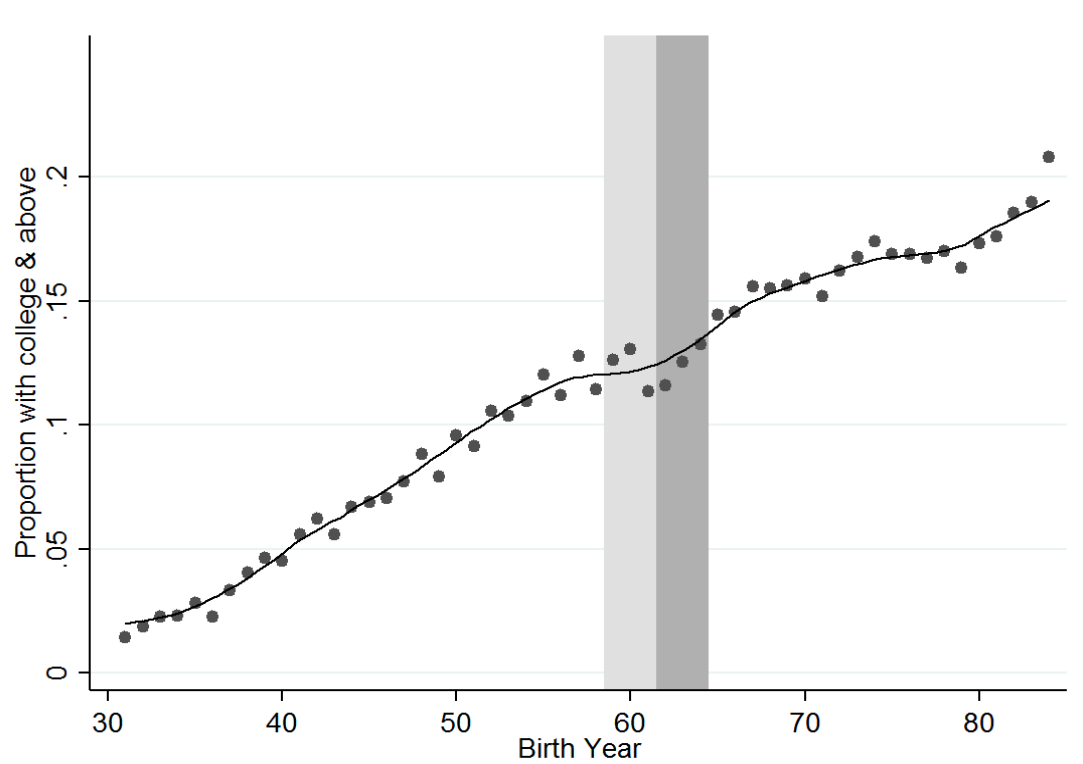


Tehran University Main Entrance – Spring of 1980.

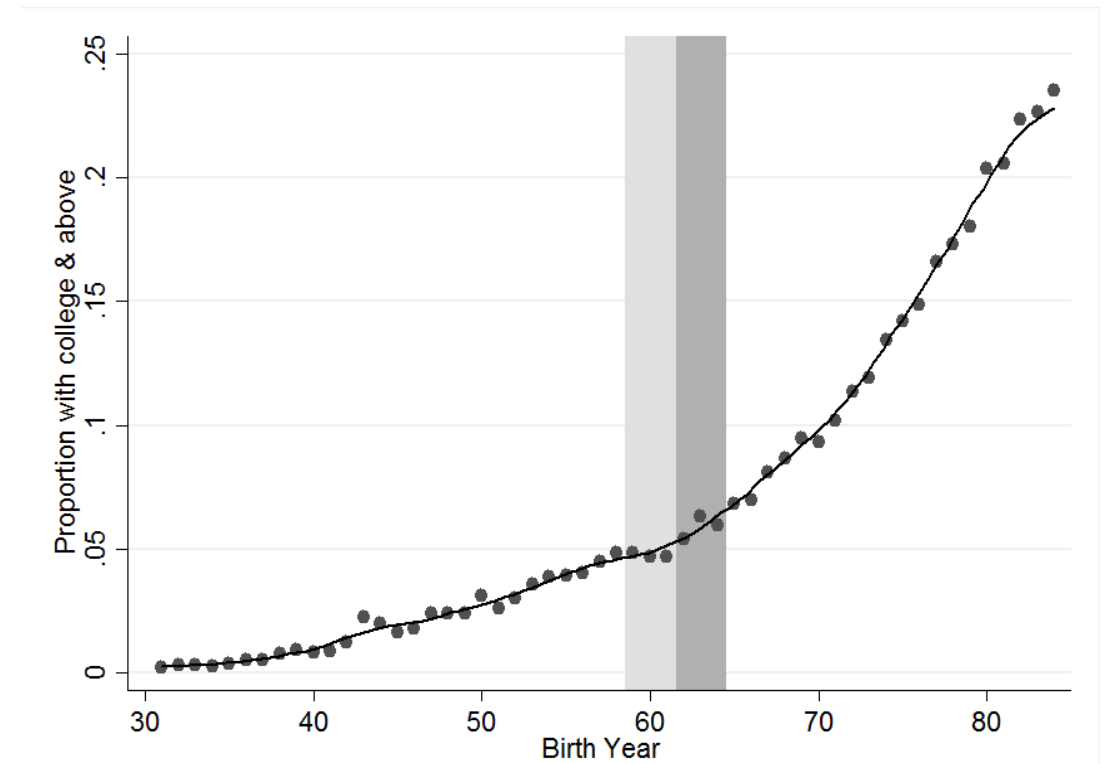


% with college and above

(a) Men



(b) Women



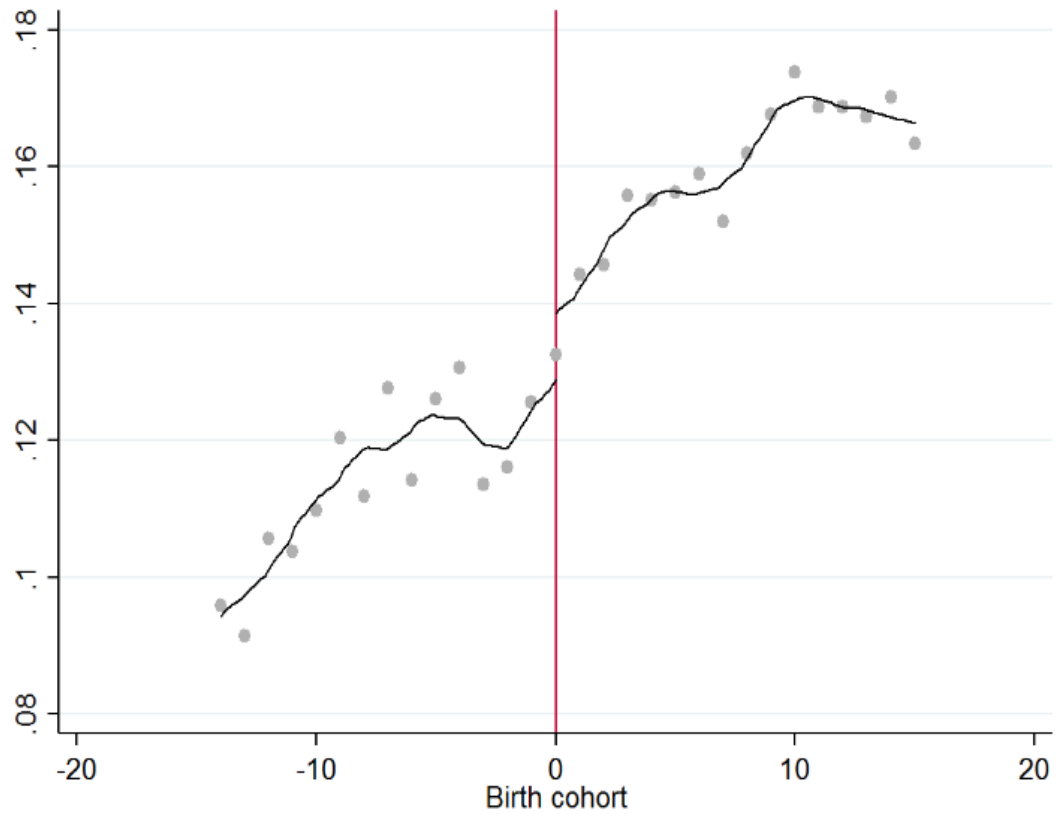
coHORTS that **were in school** before the cultural revolution

coHORTS that **could not enter college** during the cultural revolution

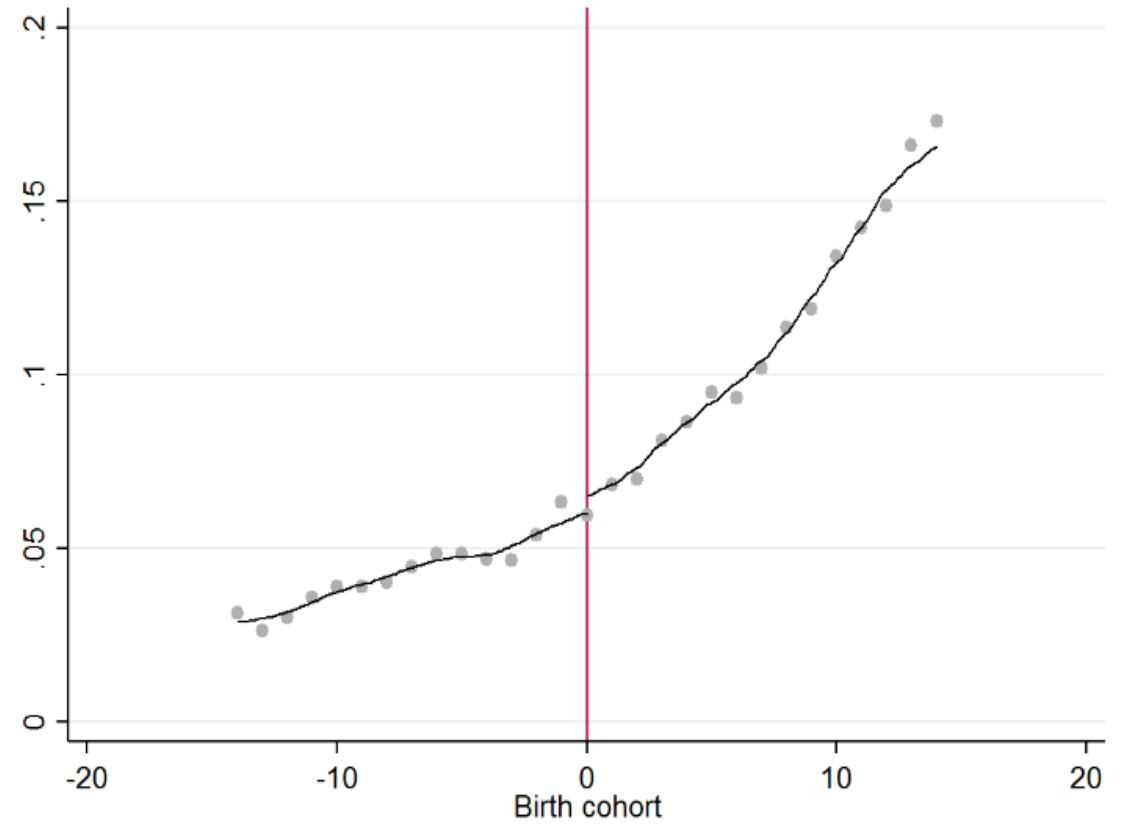
Preview of the Results

% with college and above

(a) Men



(b) Women



Preview of Results

Cultural Revolution resulted in:

- about 1.7 percentage points (about 12%) reduction in college attainment rate of men.
- No effect on women's college attainment rate.
- Return to college (and above) education is 120%.

Data

Data

- The 2% sample of the 2006 and 2011 Population Census of Iran.
- Over 800k households and more than 3 million observations.
- At most, 1.47 million observations are used in this study (1931-84 cohorts).

Table 1 – Summary Statistics

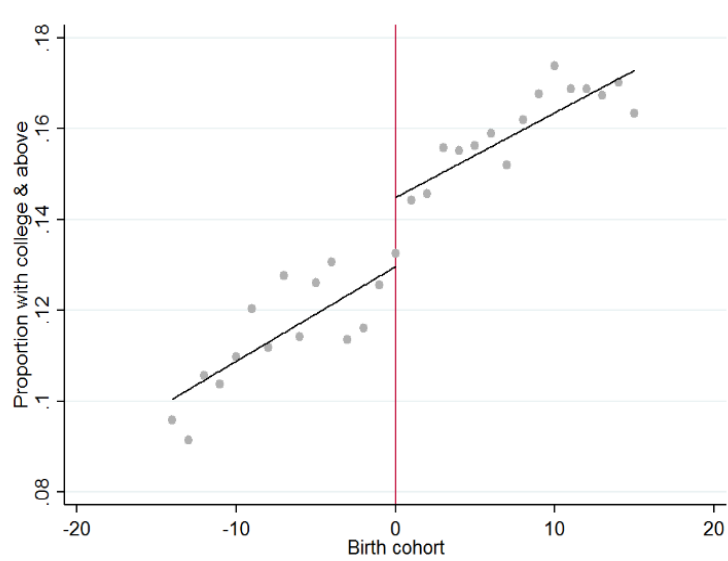
| Variable | Observations | Mean | St. dev. | Min | Max |
|-----------------|--------------|---------|----------|------|------|
| Female | 1,470,257 | 0.50 | 0.50 | 0 | 1 |
| Age | 1,470,257 | 41.37 | 13.81 | 22 | 80 |
| Literate | 1,470,257 | 0.77 | 0.42 | 0 | 1 |
| College & above | 1,470,257 | 0.13 | 0.33 | 0 | 1 |
| Birth year | 1,470,257 | 1967.09 | 13.61 | 1931 | 1984 |
| Birth month | 1,420,929 | 5.52 | 3.37 | 1 | 12 |

Note: Female is a dummy equal to one if the individual is a female and zero otherwise. College & Above is a dummy variable equal to one if the individual has attended college or graduate school. Note that when birth years are reported in Gregorian calendar but they are in Solar Hijri calendar in the dataset. The sample includes individuals whose birth year is between **1931 and 1984**.

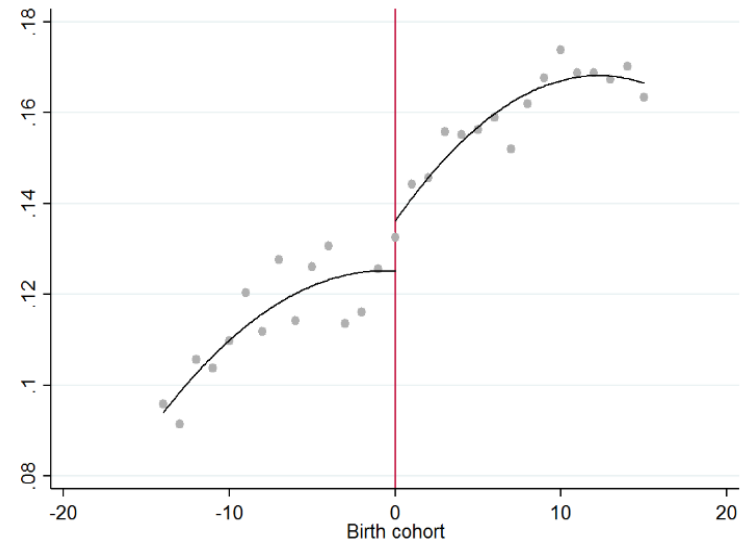
Results

Men: % with college and above

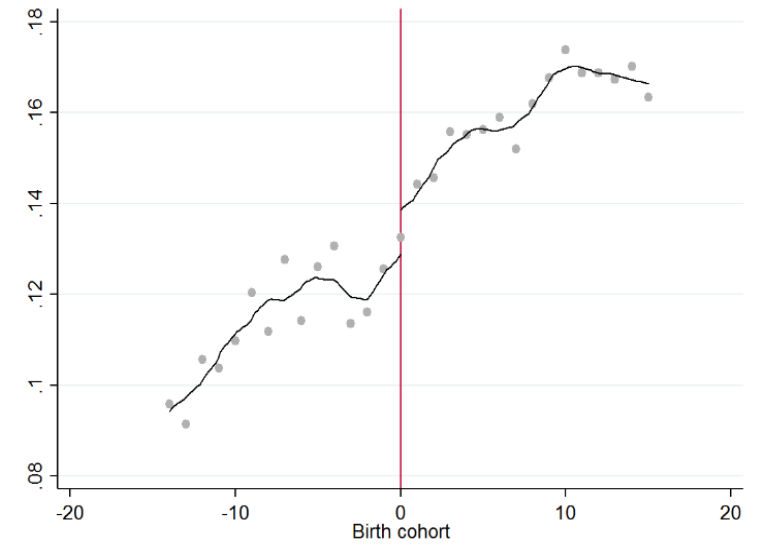
(a) linear



(b) quadratic

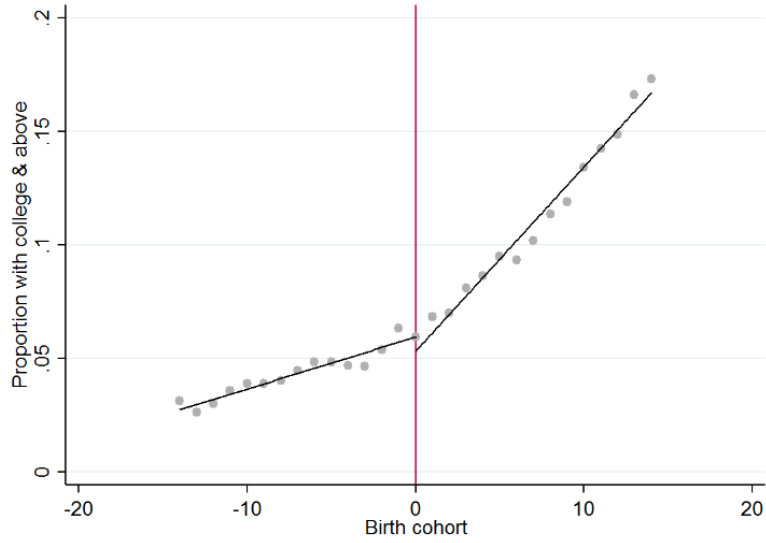


(c) polynomial

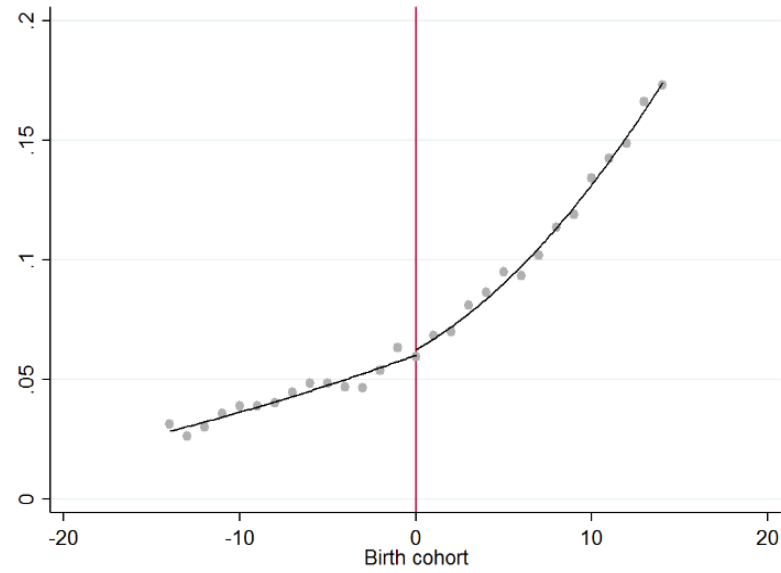


Women: % with college and above

(a) linear



(b) quadratic



(c) polynomial

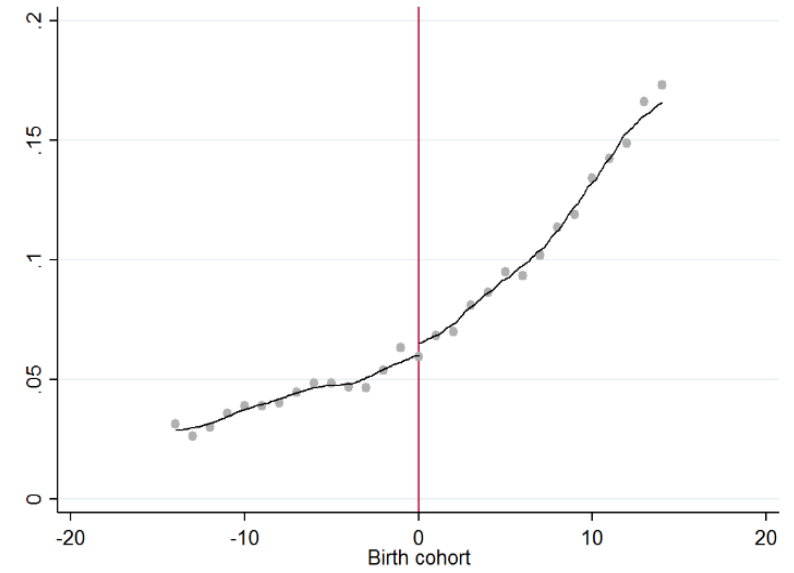


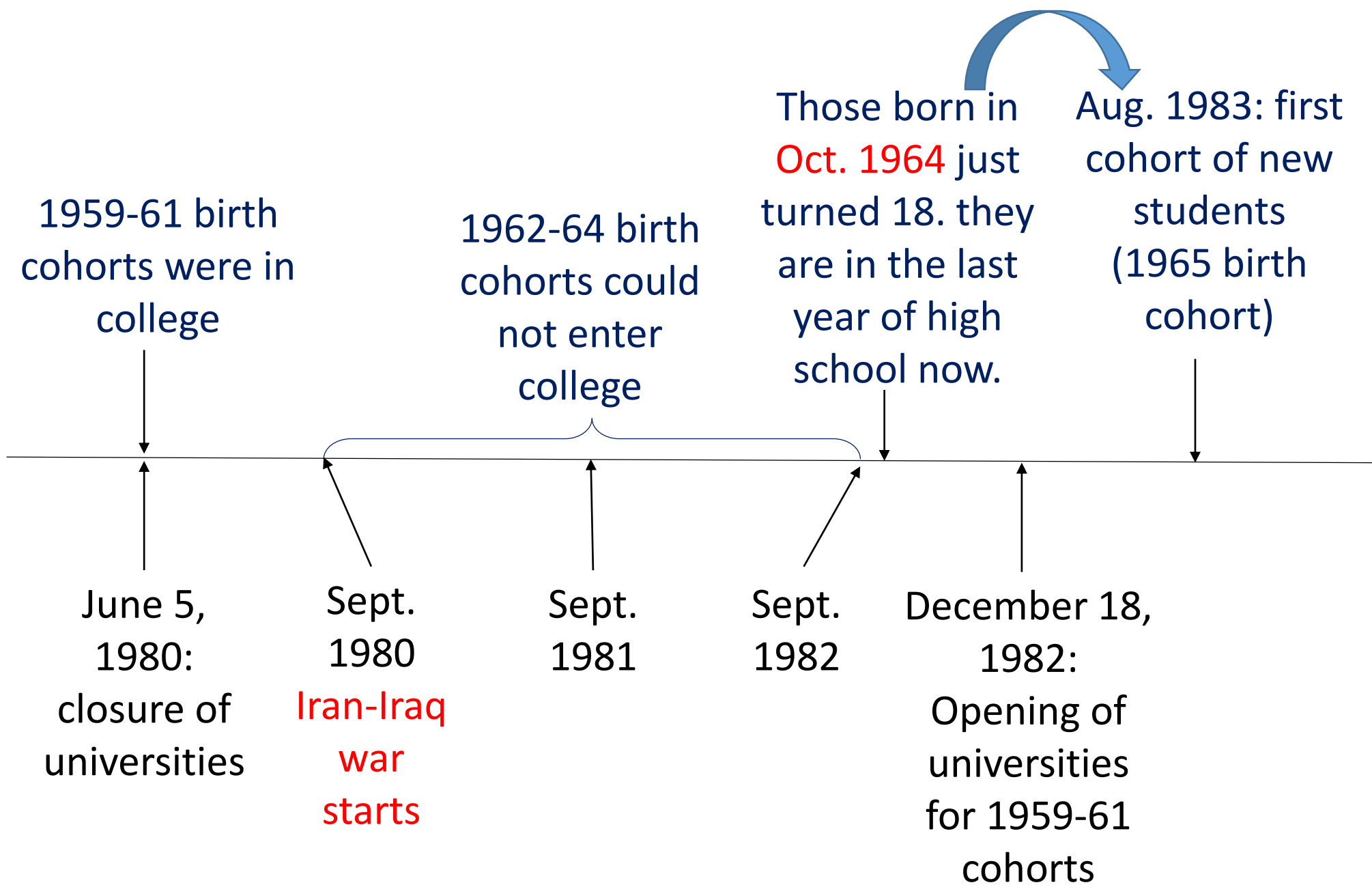
Table 3 – College Attendance and Cultural Revolution
 Bandwidth: ± 15 , i.e. Birth cohort is between 1950 and 1979

| | Men | | | Women | | |
|---|----------------------|--------------------|---------------------|-------------------|------------------|------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| D | -0.017*** (0.005) | -0.012* (0.006) | -0.014** (0.007) | -0.001 (0.005) | 0.001 (0.006) | 0.002 (0.007) |
| Polynomial order | 1st | 2nd | 3rd | 1st | 2nd | 3rd |
| Observations | 710,131 | 710,131 | 710,131 | 710,798 | 710,798 | 710,798 |
| Statistical significance level of coefficient of D when bandwidth is: | | | | | | |
| ± 8 [i.e. 1957-1972] | *** | *** | NS | NS | NS | NS |
| ± 10 [i.e. 1955-1974] | *** | *** | NS | NS | NS | NS |
| ± 12 [i.e. 1953-1976] | *** | *** | *** | NS | NS | NS |
| ± 20 [i.e. 1946-1984] | *** | *** | NS | NS | NS | NS |

*** p<0.01, ** p<0.05, * p<0.10, † NS stands for “Not Significant.”

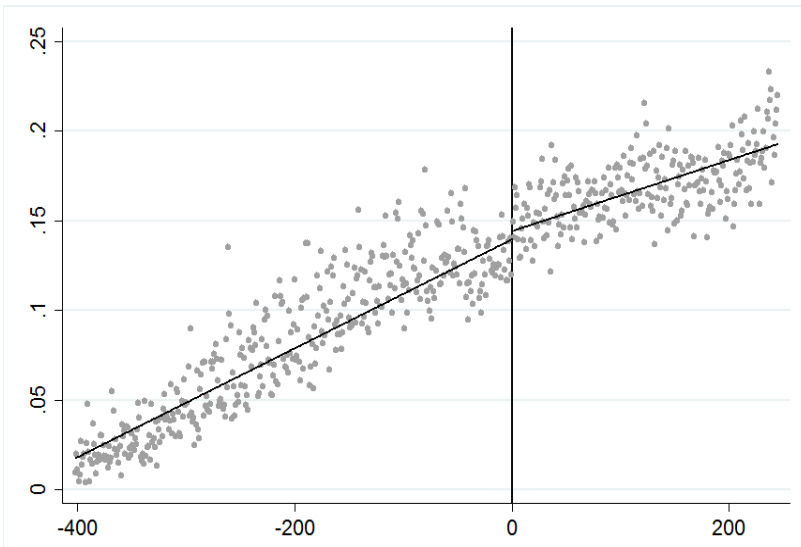
Identification based on birth month

- Schools open in September every year.
- Those who are six or older at the beginning of the year can enter first grade.
- Those born in the last three months of the year should wait for the following year.

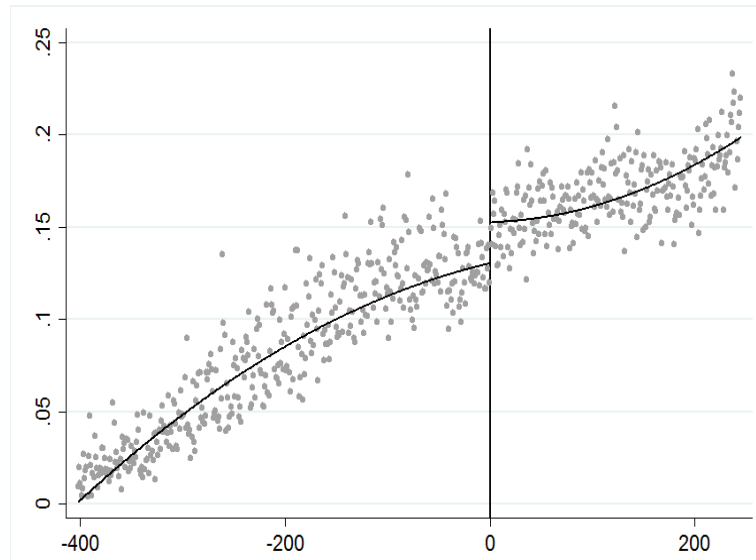


Men: % with college and above (birth month)

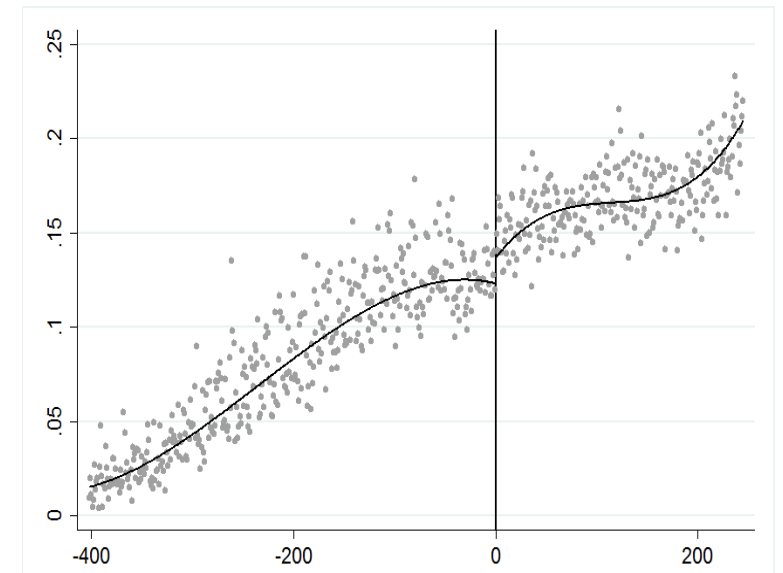
(a) linear



(b) quadratic

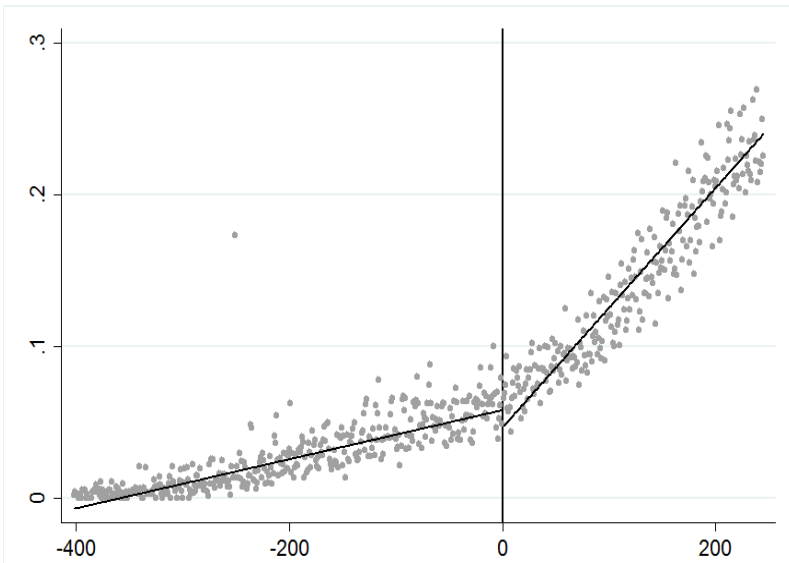


(c) polynomial

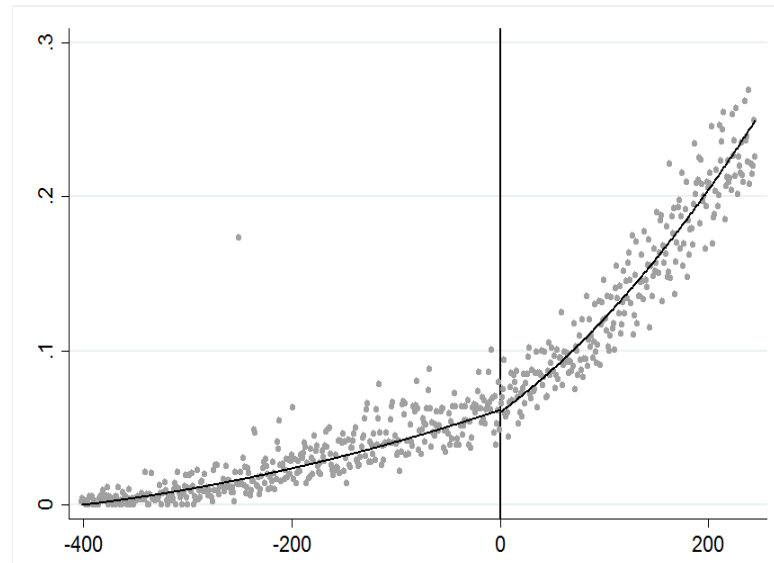


Women: % with college and above (birth month)

(a) linear



(b) quadratic



(c) polynomial

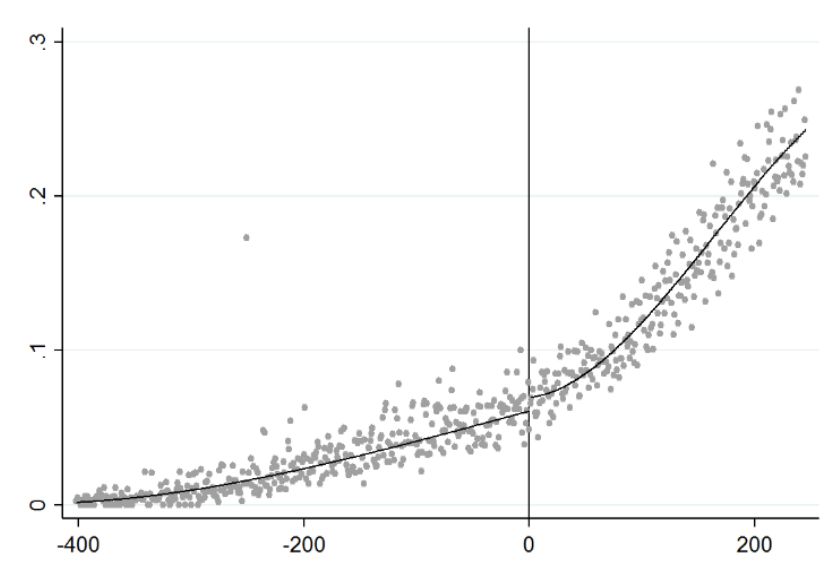


Table 3 – College Attendance and Cultural Revolution

| | Men | | | Women | | |
|------------------|----------------------|--------------------|---------------------|-------------------|------------------|------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| D | -0.017*** (0.005) | -0.012* (0.006) | -0.014** (0.007) | -0.001 (0.005) | 0.001 (0.006) | 0.002 (0.007) |
| Polynomial order | 1st | 2nd | 3rd | 1st | 2nd | 3rd |
| Observations | 710,131 | 710,131 | 710,131 | 710,798 | 710,798 | 710,798 |

*** p<0.01, ** p<0.05, * p<0.10

Also the results are statistically significant for Coverage Error Rate (CER, two-sided), Mean Square Error (MSE), and CER-RD.

| | OLS | IV | | |
|--|--------------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) |
| College & above | 0.830*** (0.020) | 1.222*** (0.068) | 1.209*** (0.067) | 1.211*** (0.067) |
| Age | 0.107*** (0.004) | 0.101*** (0.003) | 0.101*** (0.003) | 0.101*** (0.003) |
| Age ² × 10 ⁻³ | -1.170*** (0.050) | -1.084*** (0.039) | -1.087*** (0.039) | -1.086*** (0.039) |
| Constant | 11.393** * (0.093) | 11.452*** (0.080) | 11.450*** (0.080) | 11.450*** (0.080) |
| Polynomial order of the RD in the 1 st Stage | | 1st | 2nd | 3rd |
| Weak instruments test [†] | | 325.8 | 451.2 | 326.7 |
| Observations | 109,992 | 109,992 | 109,992 | 109,992 |

*** p<0.01, ** p<0.05, * p<0.10

[†] Kleibergen-Paap rk Wald F statistic for weak instruments.

Conclusion

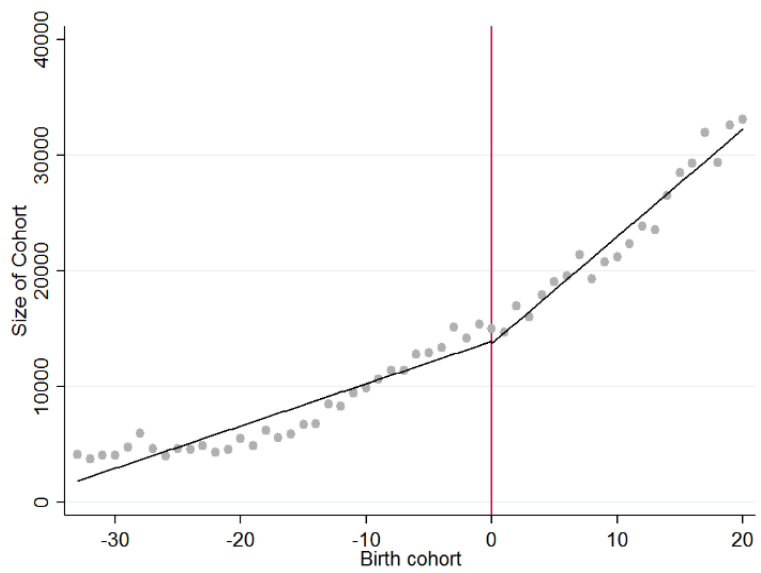
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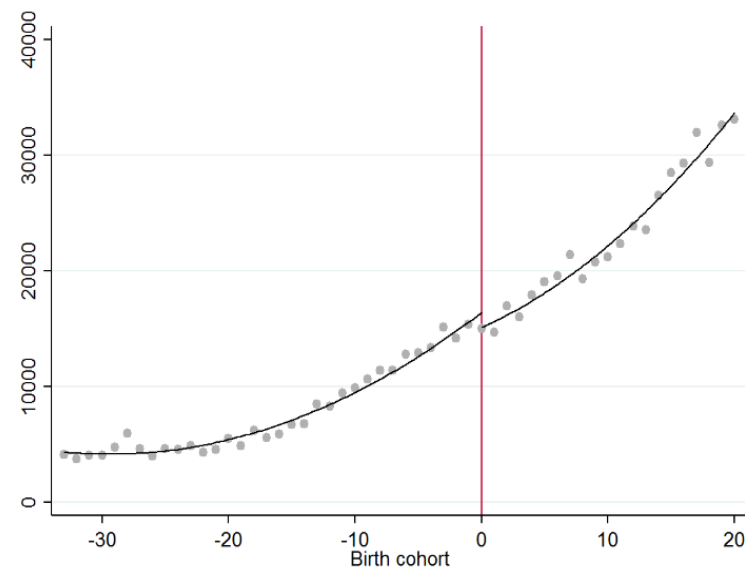
Appendix

Size of male cohorts (birth year)

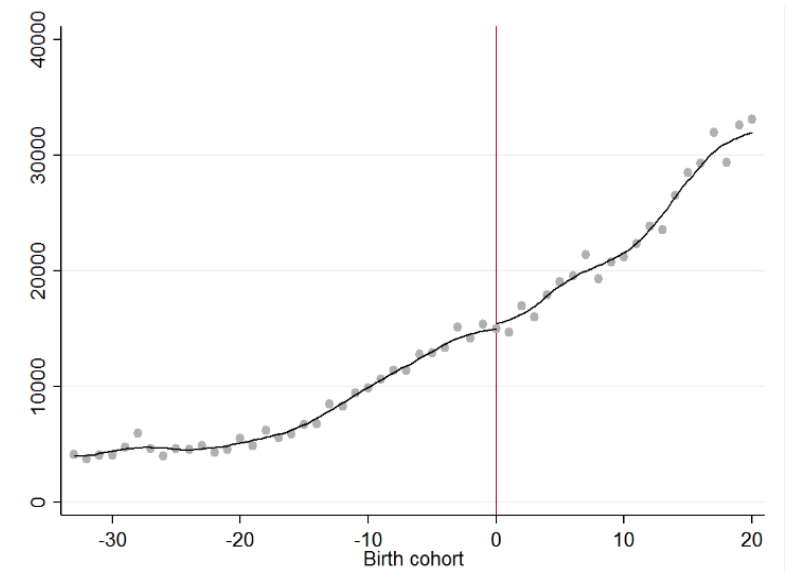
(a) linear



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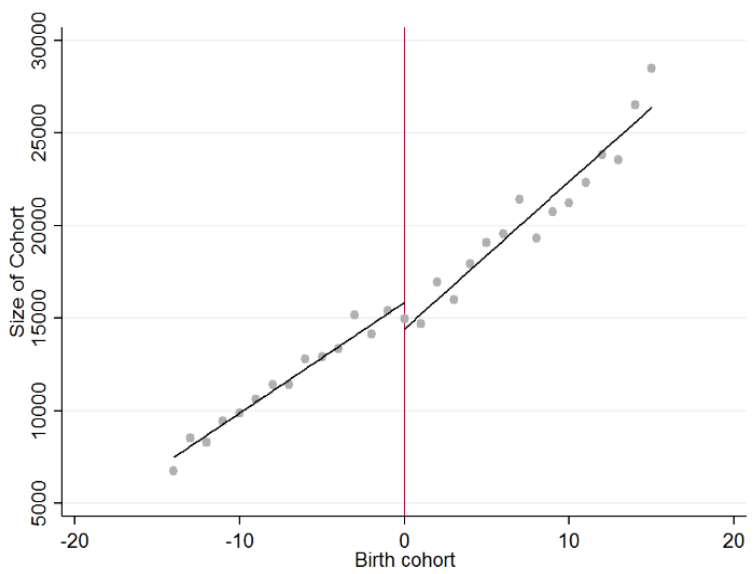


(c) polynomial

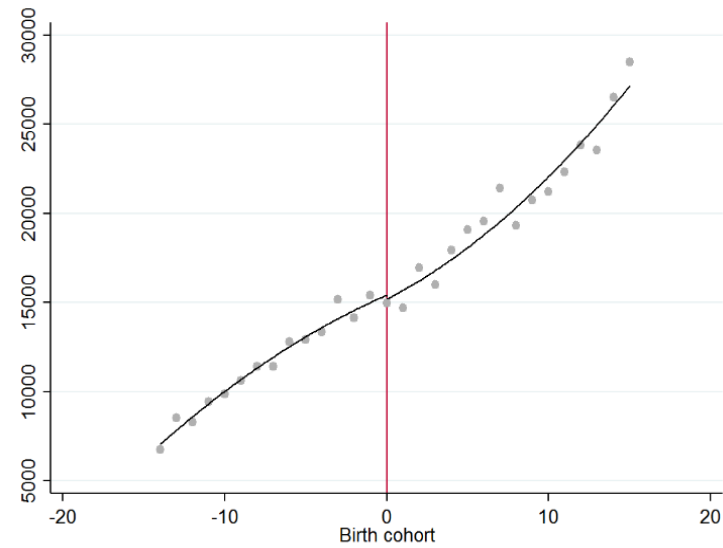


Size of male cohorts (birth month)

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(c) polynomial

