

Undergraduate Gender Diversity and the Direction of Scientific Research

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Motivation

Can diversity lead to greater research focus on populations underrepresented in science?

- ▶ Research topics of scientists have important welfare implications:
 - Lack of research focus on women's health linked to greater rates of misdiagnoses for common health conditions
- ▶ Previous studies on the role of diversity in science have focused exclusively on *who* is conducting research
- ▶ *However, exposure to diversity* may also inspire scientists, regardless of demographic identity, to pursue new topics

This paper: We study how an increase in female representation in the academic environment can lead to more research on gender by both male and female faculty

Historical Context

- ▶ Between 1960-1990, 76 male-only institutions transitioned to coeducation
 - Prominent institutions such as Princeton, Yale, Amherst, Williams
 - **Financial decision** due to increase in secular demand for coeducation

Data

1. University Data
 - Coeducation College Database (Goldin and Katz 2011): Year when school went coed, "has classes for men and women together"
 - HEGIS/IPEDS: enrollment, degrees awarded, faculty
 - Digitized historical course catalog data with class descriptions
2. Publications Data: Microsoft Academic Graph (MAG)
 - 1M publications in our sample 1950-2005
 - Titles, fields, abstracts, researchers' name and affiliations
 - Gender identified using name-matching algorithms

Gender-Related Research

Keyword-based text classification approach:

- ▶ Define paper as *gender-related* if a gender-related word (e.g., "female", "woman") appears at least once in title or abstract
- ▶ Key advantage: transparent, applied broadly to all fields
 - Focus on social sciences, humanities, biology and medicine
- ▶ Robust to alternative words list and ML classification model

Figure: Trends in Female Bachelor's Degrees Awarded and Gender-Related Research, 1900-2015

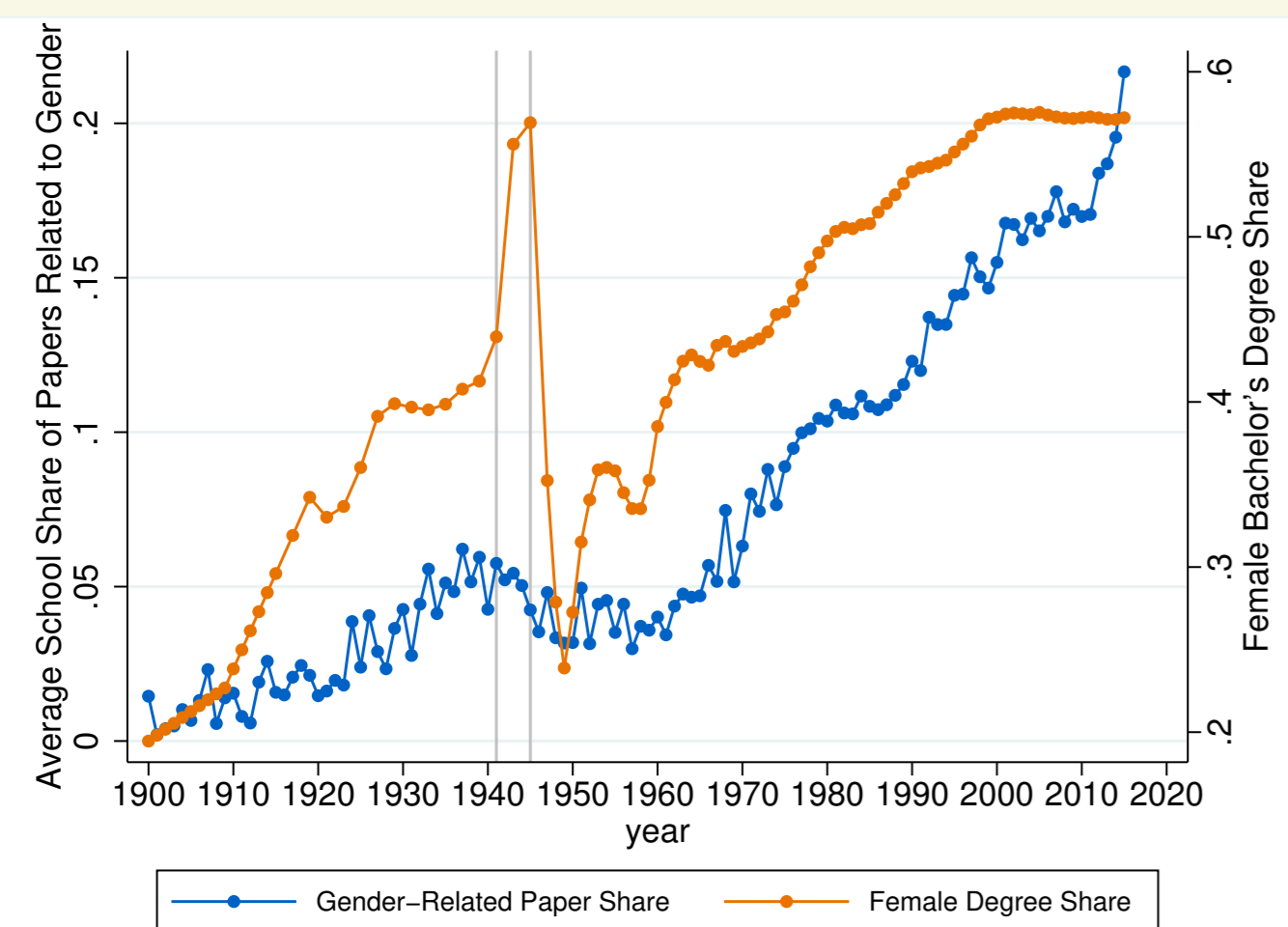
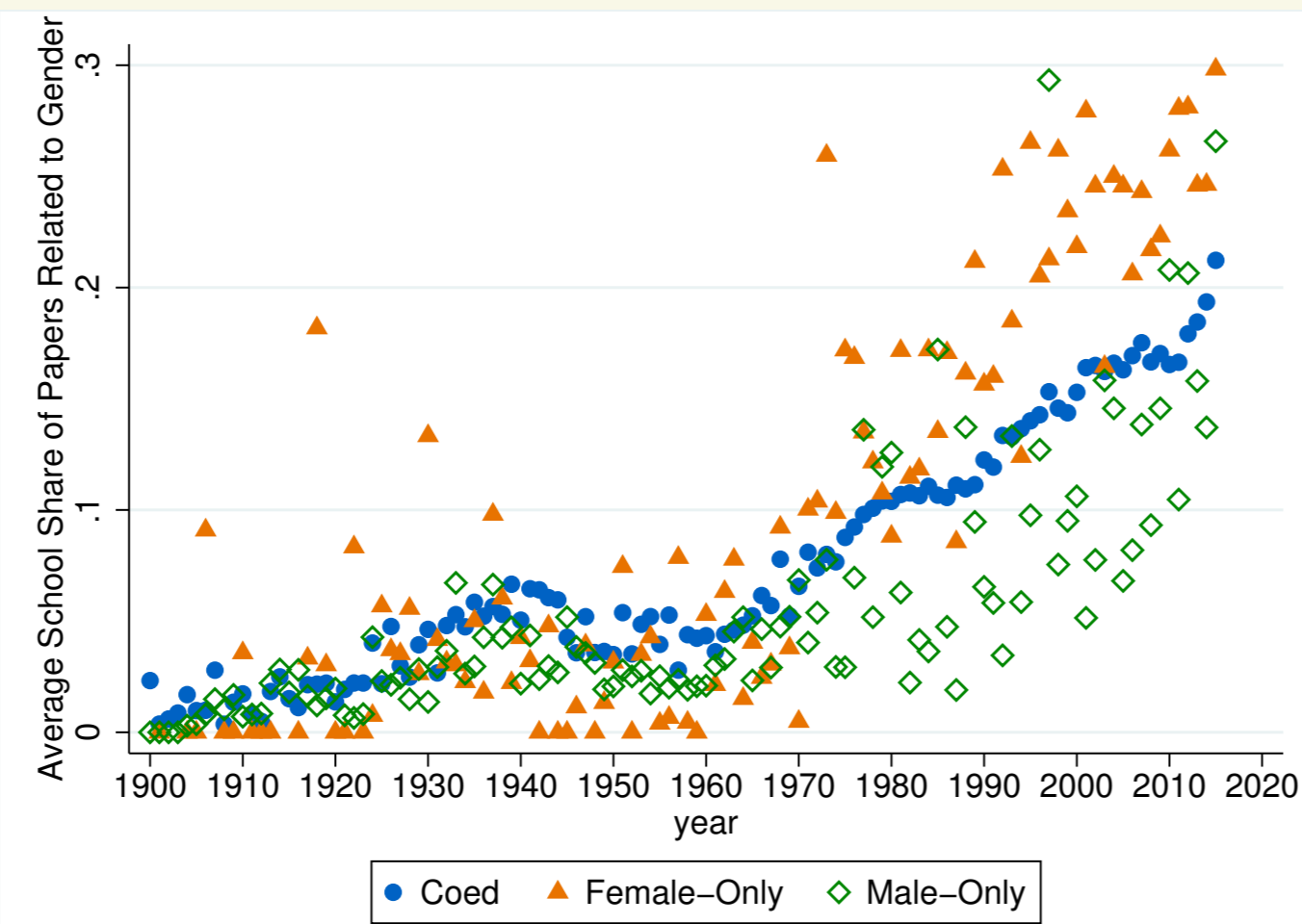


Figure: Trends in Gender-Related Research by Coeducational Status, 1900-2015



Empirical Strategy: Generalized DiD

$$E(y_{it}|\mathbf{X}_{it}) = \exp\left(\sum_{\tau \neq -1} \beta_{\tau} \text{YearRelativeCoed}_{\tau} + \theta_i + \delta_t + \gamma_{dt}\right)$$

- ▶ Restricted to only turn-coed universities
- ▶ y_{it} : number of gender-related papers in year t measured at the school-subfield i
- ▶ θ_i school-subfield FE, δ_t year FE, γ_{dt} field-by-year FE
- ▶ Conditional Poisson model using QMLE

Results

Three to six years after turning coed:

- ▶ 21pp↑ female student share
 - 18% increase in total students
 - Suggests schools enlarged student body rather than substituting female for male students
- ▶ 42%↑ in gender-related publications
 - Concentrated in schools with more female students
 - No effects on total faculty or productivity
 - Suggests a *shift in research focus* towards gender-related topics

Figure: Average Gender-Related Papers Before and After Coeducation Date

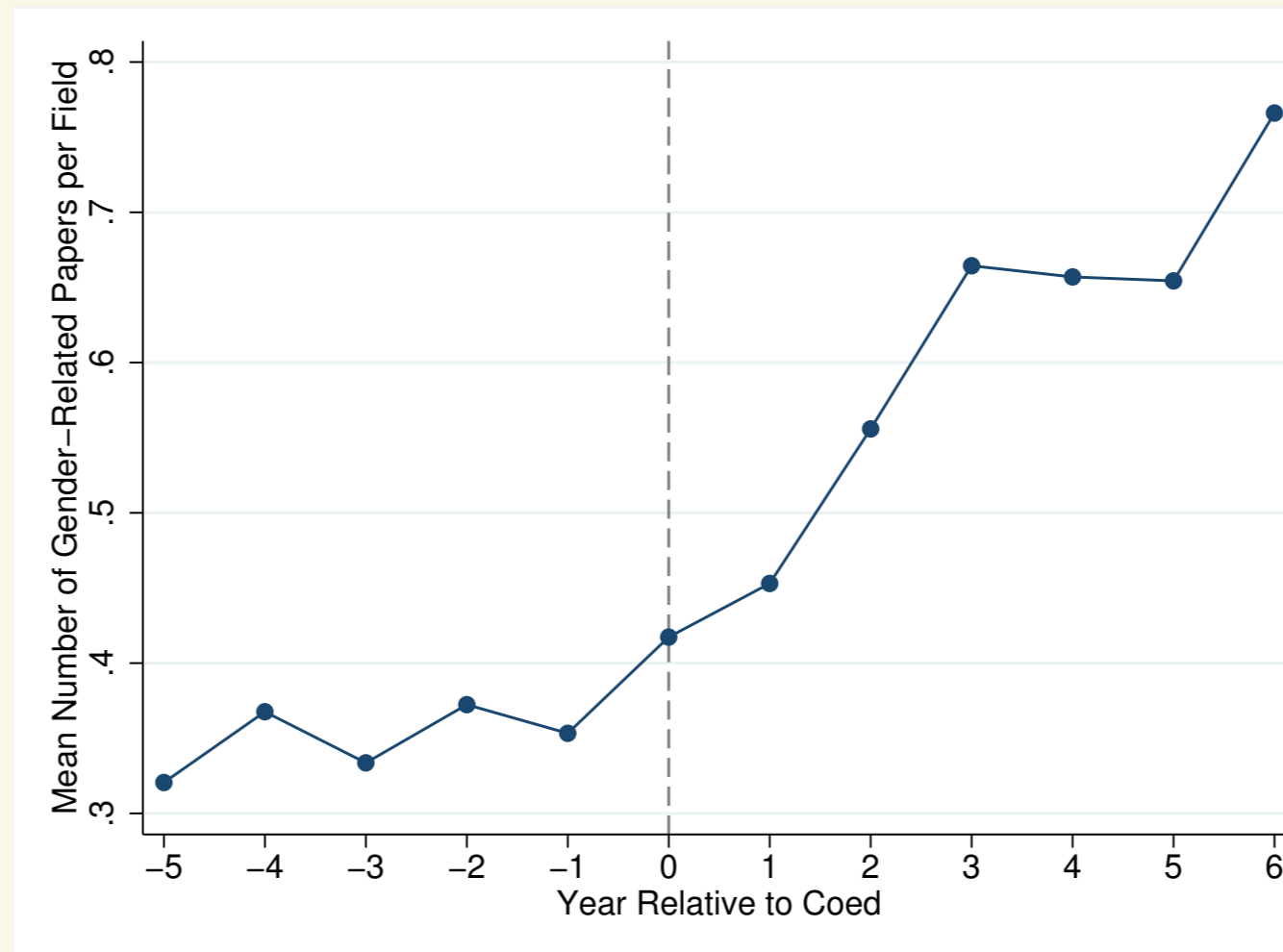
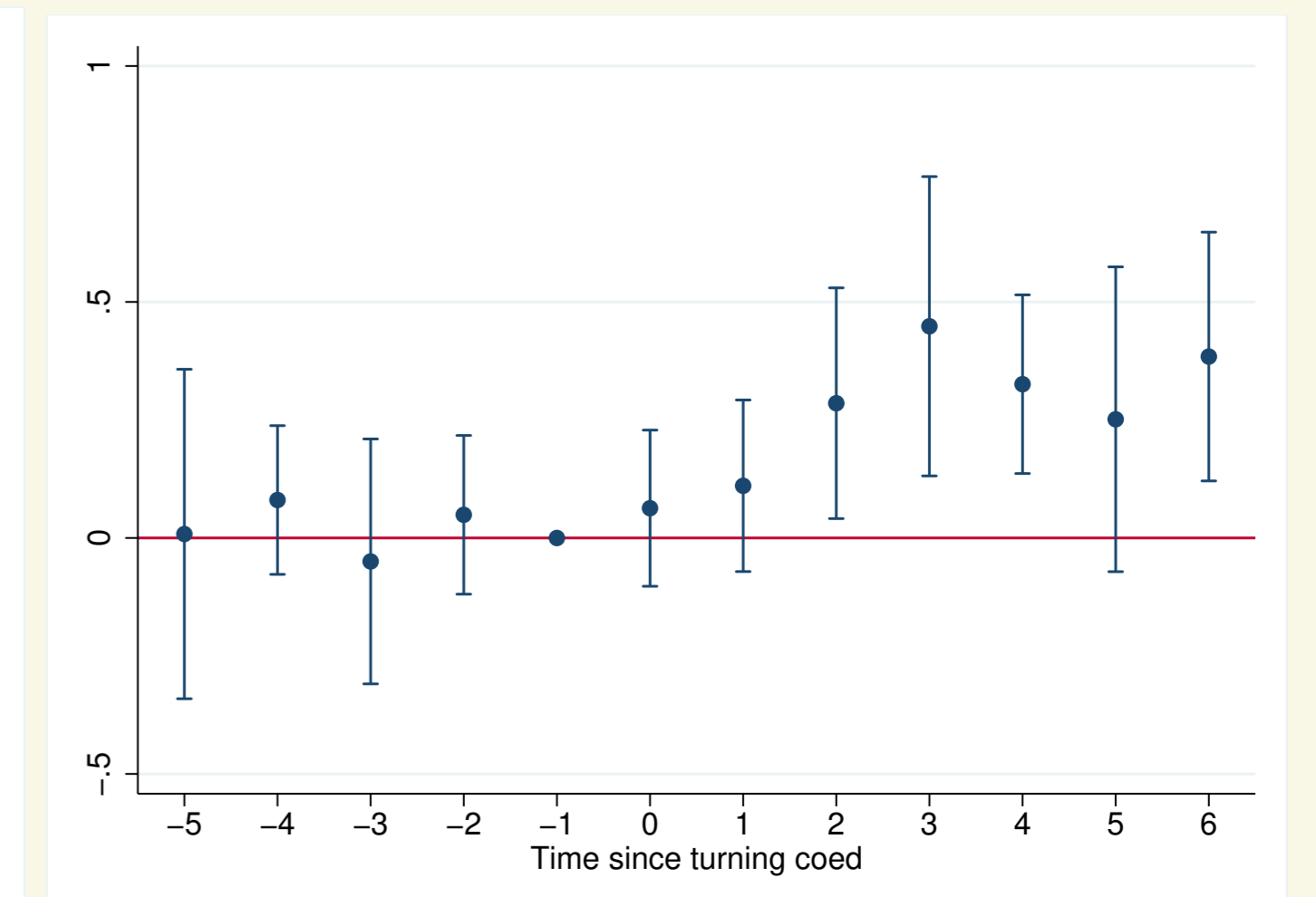


Figure: Poisson Regression Estimates for Gender-Related Papers



What Explains Greater Focus on Gender-Related Research?

1. **Composition Effect:** Changes in *who* conducts research at the university
 - Increase in share of **female assistant professors**
 - Increase in researchers with **prior interests in gender topics**
2. **Treatment Effect:** Direct impacts on scientists' research focus
 - Exploiting within researchers variation for incumbent researchers
 - 54%↑ gender-related papers, 28%↑ share of gender-related research
 - Notably, 88% of incumbent researchers are male

Figure: Number of Gender-Related Papers for Male Incumbent Researchers

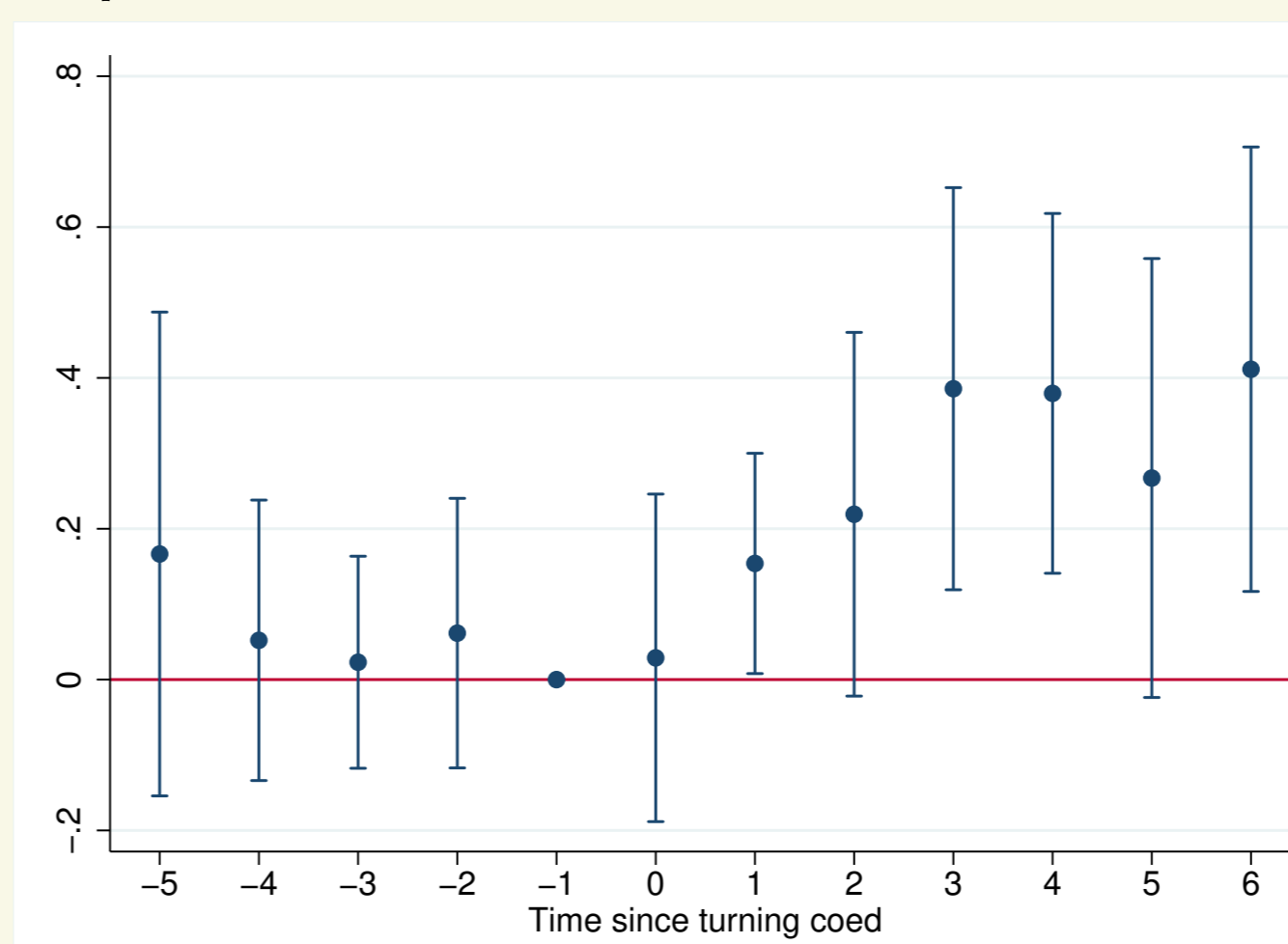
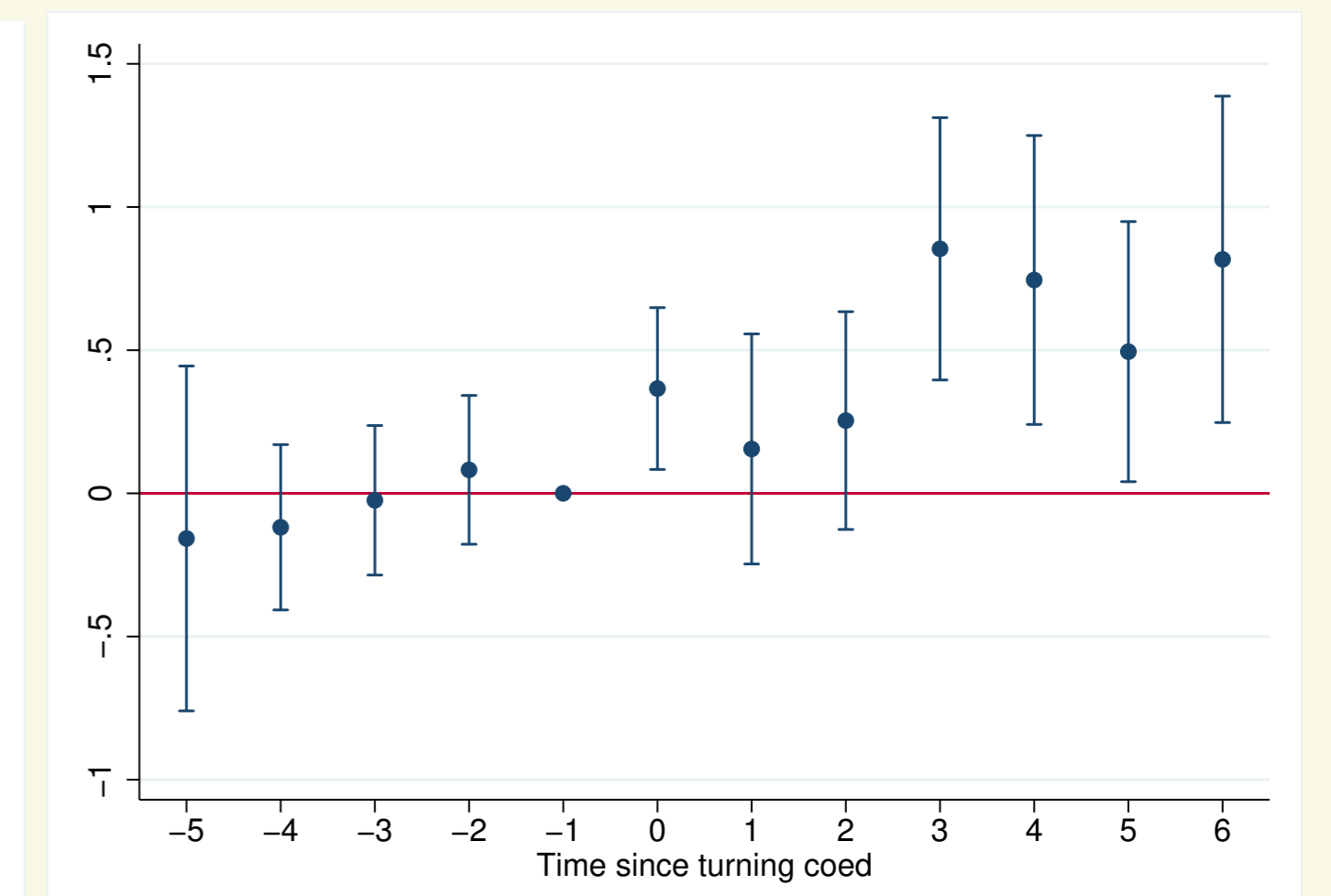


Figure: Gender-Related Share for Female Incumbent Researchers



- ▶ **Key Takeaway:** Faculty shift research focus in a more diverse environment

How did Coeducation Change Research Interests? Interaction with Diverse Students and Peers

1. **Classroom interaction**
 - Digitized historical class catalogue
 - Increase in course offerings related to gender
2. **Interaction with students in research settings**
 - Case study in psychology, field that traditionally enrolls undergraduate students as lab participants
 - In psychology, effects driven by *experimental* research
3. **Interaction with peer researchers**
 - Increase in gender-related research of male incumbent researchers comes partly from collaborations with *new* female researchers

Contact

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