# English skills and labor market outcomes in Mexico

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# Motivation: Returns to English language abilities

- Language skills are a form of human capital
- English is valuable in the world economy
  - Globalization: trade, technology and information
  - Mobility and better occupations

- In English-speaking countries, English language is the primary language for communication
- Even in non-English-speaking countries, English skills could be useful
  - How valuable is English for workers in non-English-speaking countries?
  - I study the case of Mexico

# Related literature

- English-speaking countries
  - Immigrants: Bleakley and Chin (2004); Chiswick and Miller (2015)
  - Former British colonies: Azam, Chin and Prakash (2013); Eriksson (2014); Chakraborty and Bakshi (2016)
- Non-English-speaking countries: Lang and Siniver (2009)
- English language skills in Mexico: McConnell and Leclere (2002); Flores-Yeffal (2019); Delgado-Helleseter (2020)

# This paper in a nutshell

**Research question**

- What are the returns to English language skills in Mexico?

**What I do**

- Describe the prevalence of English skills in Mexico
  - Take advantage of an unusual data set that measures English skills in Mexico
- Quantify the relationship between English skills and labor market outcomes in Mexico
  - Exploit state policy changes that give state-by-cohort variation in exposure to English instruction

# Background

- Importance of English language for Mexico
  - Neighboring country with the US
  - Investment, trade and migration
- Very little is known about English language skills in Mexico
  - Who speaks English?
  - I use the 2014 Subjective Well-being Survey (BIARE) to describe English skills in Mexico
- Very little is known about returns to English skills in Mexico
  - Public schools spend money on English instruction
  - Some industries and occupations demand workers who speak English

# English speaking ability: a rare skill in Mexico

- BIARE is a nationally representative survey with adult respondents 18 and older (ENIGH supplemental survey)
- I use the response to the following question to form a measure of English ability
  - Do you speak English?
  - I code it as one if the respondent says yes, and zero otherwise
- 7% of Mexicans speak English

# Empirical framework

We want to estimate the effect of English skills, $Eng_i$, on log-wages, $\omega_i$, which can be approximated with the following equation:

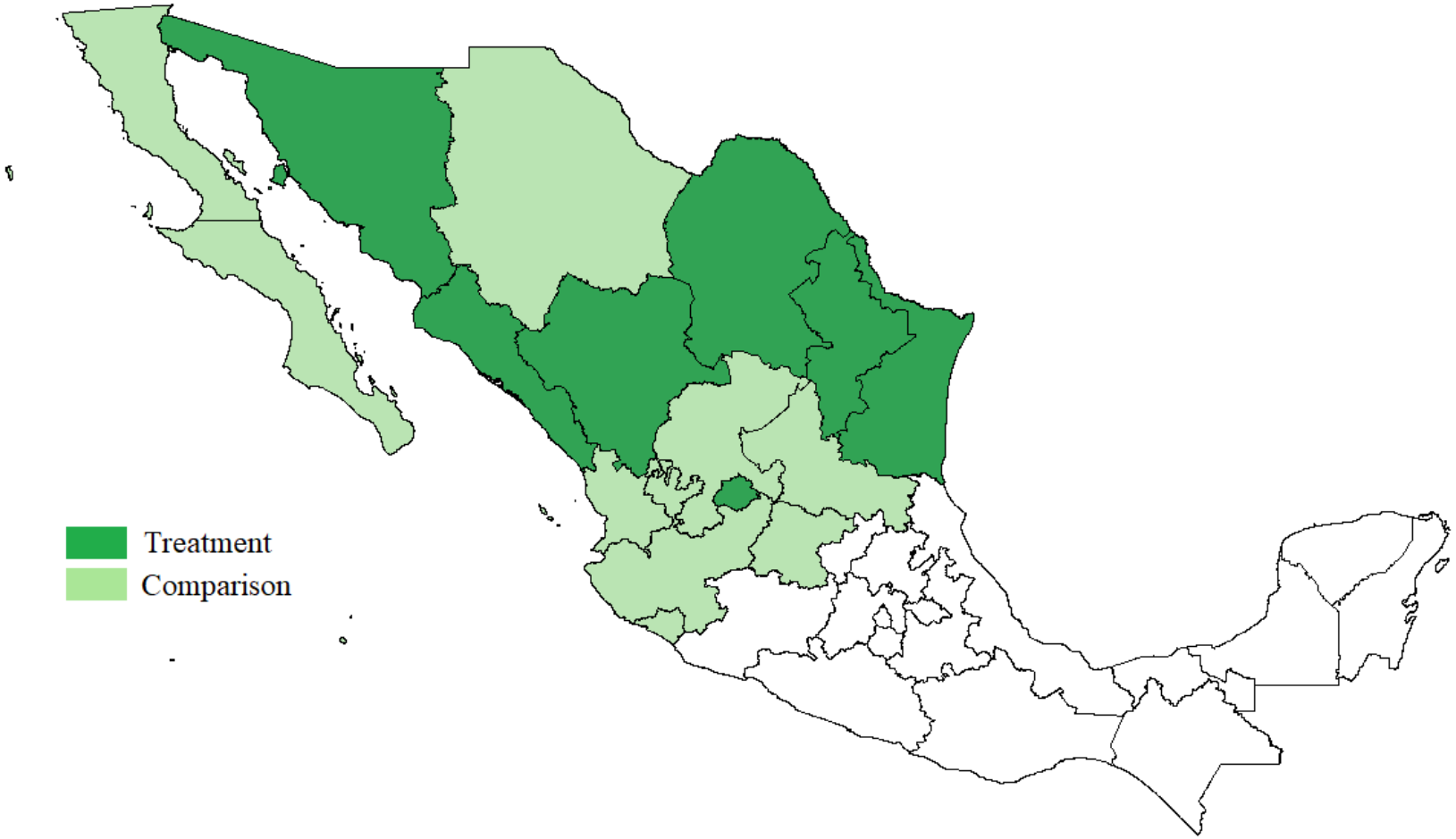
$$\omega_i = \alpha + \beta\, Eng_i + \boldsymbol{X_i}\boldsymbol{\Pi} + \epsilon_i$$

where $\boldsymbol{X_i}$ is a vector of controls including: education, experience, gender, marital status, ethnicity, student status, cohort FE and geographical context (rural/urban)

# Empirical challenges

- Concern that English skills, $Eng_i$, are endogenous in the wage equation
  - Omitted variables: abilities may be correlated with both English skills and wages
  - Measurement error of English skills variable
- OLS estimation would lead to a biased estimate of $\beta$
- Take advantage of state policy changes in English instruction to form an instrument for English skills to obtain a consistent estimate of $\beta$
- Since the early 1990's some Mexican states implemented English programs to offer English instruction in public primary schools

# Staggered Difference in Differences



# Staggered Difference in Differences

I examine all these policies at once, using the following specification:

$$y_{isc} = \theta + \psi\, HadPolicy_{sc} + \delta_s + \kappa_c + \boldsymbol{X_{isc}\Psi} + \varepsilon_{isc}$$

where $HadPolicy_{sc}$ takes the value of one if individual $i$ lives in a treated state and he/she belongs to one of the affected cohorts (zero otherwise)

# Parallel Trend Assumption (SDD)

I use an event study specification to examine if pre-trends are present

$$y_{isc} = \theta + \sum_{k} \psi_{c-c_s^*} I_{(k=c-c_s^*)} + \delta_s + \kappa_c + \boldsymbol{X_{isc}\Psi} + \varepsilon_{isc}$$

where $c_s^*$ denotes the first cohort affected by the intervention in state $s$, so $c - c_s^*$ is the time relative to $c_s^*$ with negative values reflecting older cohorts not exposed to the policy. $I_{(k=c-c_s^*)}$ is a dummy variable for $k = c - c_s^*$, so $\psi_{c-c_s^*}$ gives the effect of leads and lags of policy adoption. The omitted category is -1

PTA

# IV estimation

Equation of interest:

$$\omega_{isc} = \alpha + \beta\, Eng_{isc} + \delta_s + \kappa_c + \boldsymbol{X_{isc}\Psi} + \varepsilon_{isc}$$

Use $HadPolicy_{sc}$ to instrument for $Eng_{isc}$. First stage equation:

$$Eng_{isc} = \theta^{fs} + \psi^{fs}\, HadPolicy_{sc} + \delta_s^{fs} + \kappa_c^{fs} + \boldsymbol{X_{isc}\Psi^{fs}} + \varepsilon_{isc}^{fs}$$

Reduced form equation:

$$\omega_{isc} = \theta^{rf} + \psi^{rf}\, HadPolicy_{sc} + \delta_s^{rf} + \kappa_c^{rf} + \boldsymbol{X_{isc}\Psi^{rf}} + \varepsilon_{isc}^{rf}$$

# Data

Descriptive Stats

Household survey (2014 BIARE)

- Individual level data (18-38 years old)
- BIARE surveyed 44,518 households
  - Representative at national and state level
- Very rich questionnaire, including English skills

School data on exposure to English instruction in primary school

- Mexican School Census (1997-2007)
- Weekly hours of English instruction (exposure)
  - By school-cohort, average over primary school
  - By cohort, take locality average
- Merge English instruction measure to individual-level data (in BIARE) by locality and cohort

# Results: Effect of English policies

**Table 4:** Effect of English programs

| | (1) Hrs Eng | (2) Speak Eng | (3) ln(wage) | (4) Paid work |
|---|---|---|---|---|
| *Panel A: Staggered DiD* | | | | |
| Had Policy | 0.331*** | 0.028* | -0.093 | -0.002 |
| | (0.058) | (0.017) | (0.129) | (0.023) |
| Observations | 5,437 | 5,437 | 5,437 | 8,979 |
| Adjusted $R^2$ | 0.573 | 0.177 | 0.172 | 0.230 |
| Mean Dep. Var. | 0.119 | 0.106 | 7.972 | 0.606 |

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# Results: IV estimate of returns to English abilities

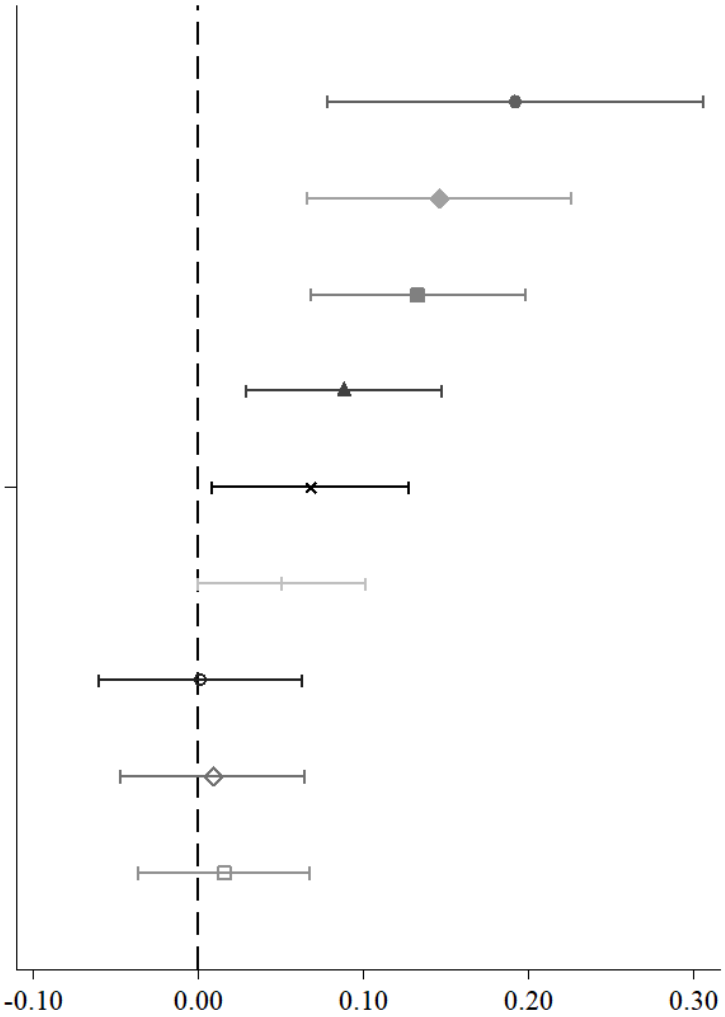
**Table 5:** Returns to English abilities
(IV estimate)

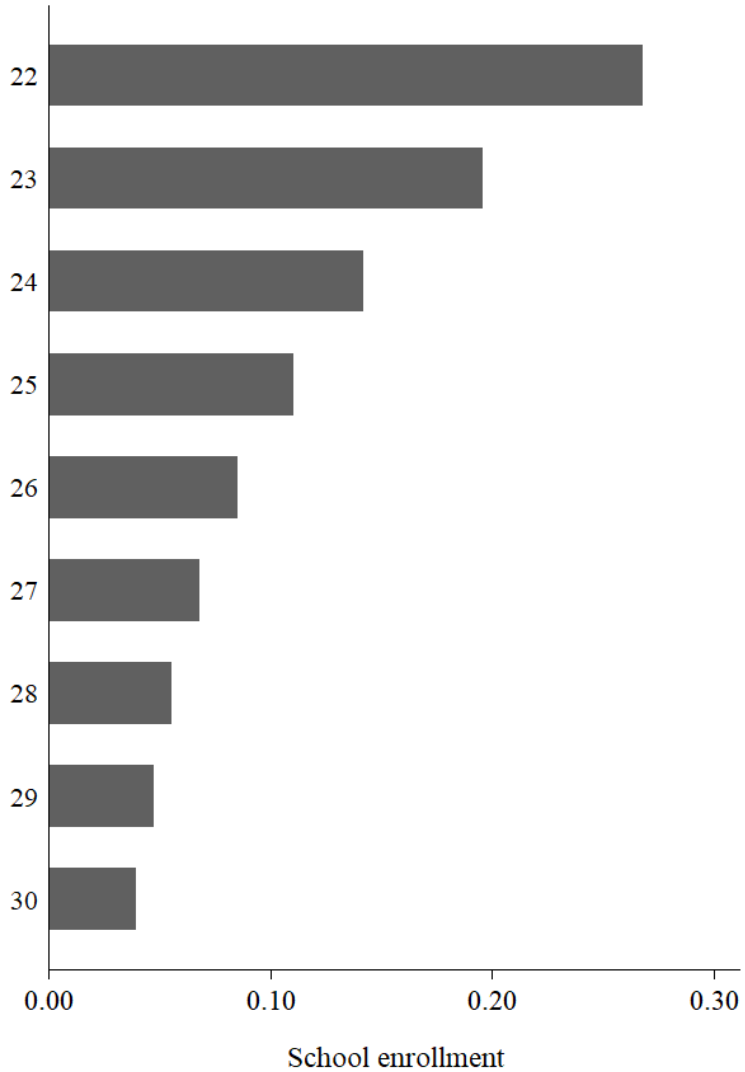
| | (1) Structural-OLS | (2) First Stage | (3) Reduced Form | (4) Structural-IV |
|---|---|---|---|---|
| Speak Eng | 0.061 | | | -3.285 |
| | (0.110) | | | (4.548) |
| Had Policy | | 0.028* | -0.093 | |
| | | (0.017) | (0.129) | |
| Observations | 5,437 | 5,437 | 5,437 | 5,437 |
| Adjusted $R^2$ | 0.172 | 0.177 | 0.172 | |

# Mechanisms

- Cognitive skills
  - Acquisition of English skills
  - No effect on other skills: Language and Mathematics (Gálvez-Soriano, 2023)
- School enrollment
  - Negative effect on wages in the short-run, but positive in the long-run?
- Occupational choices
  - Move into occupations that require English skills
  - Better working conditions

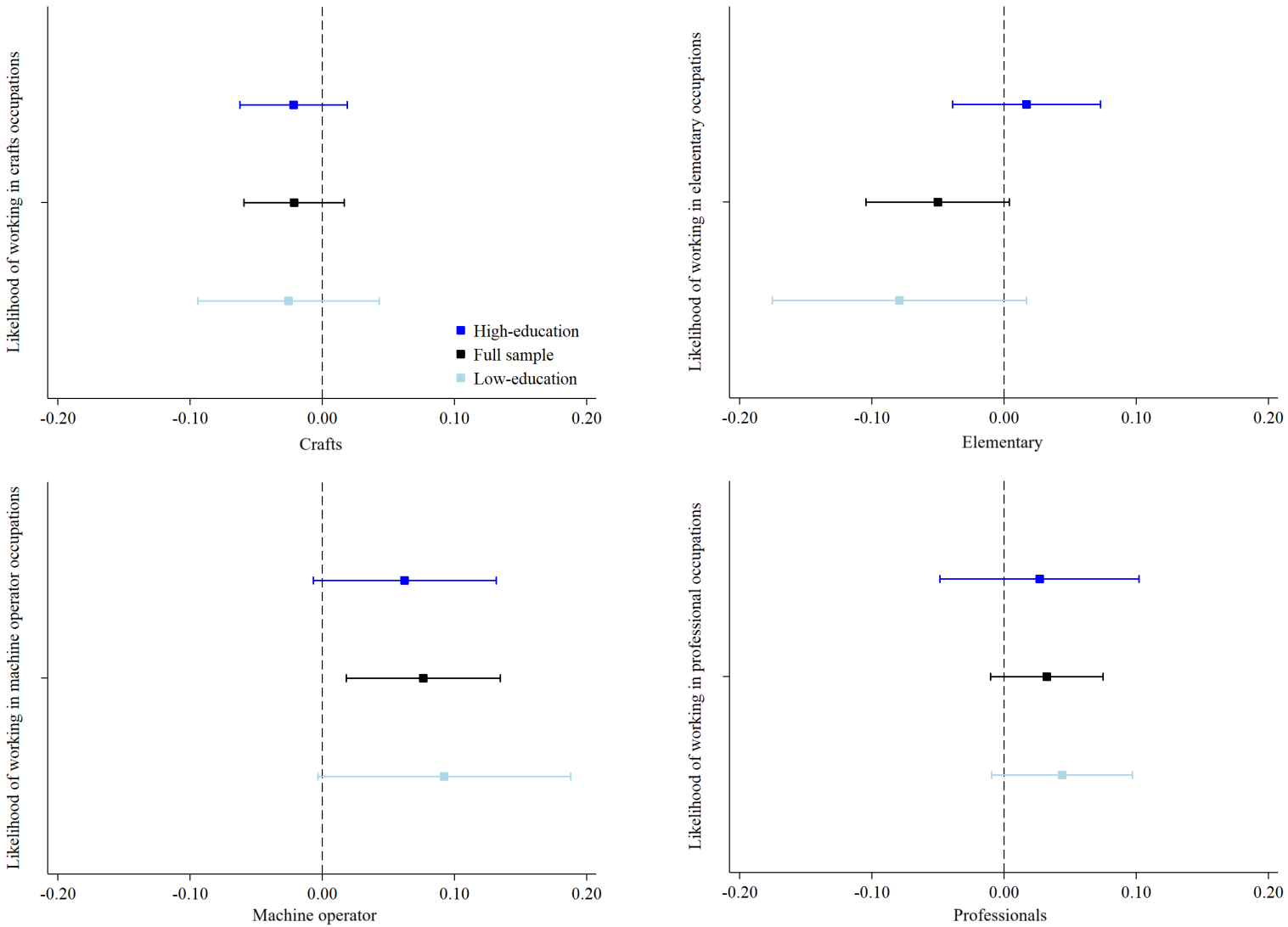
# Mechanisms: School enrollment



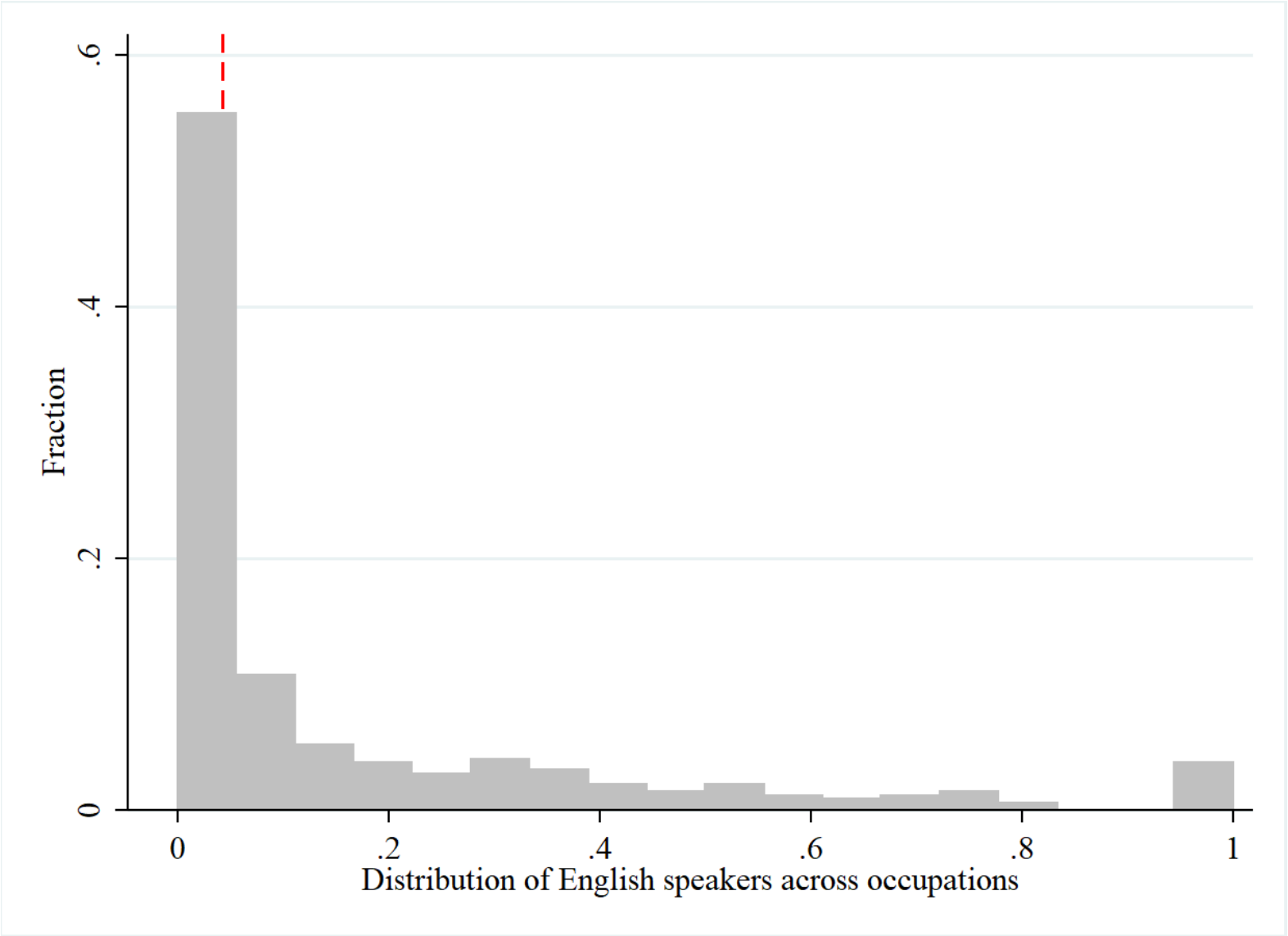



# Mechanisms: Occupational choices

All



# More likely to work in English-intensive jobs?



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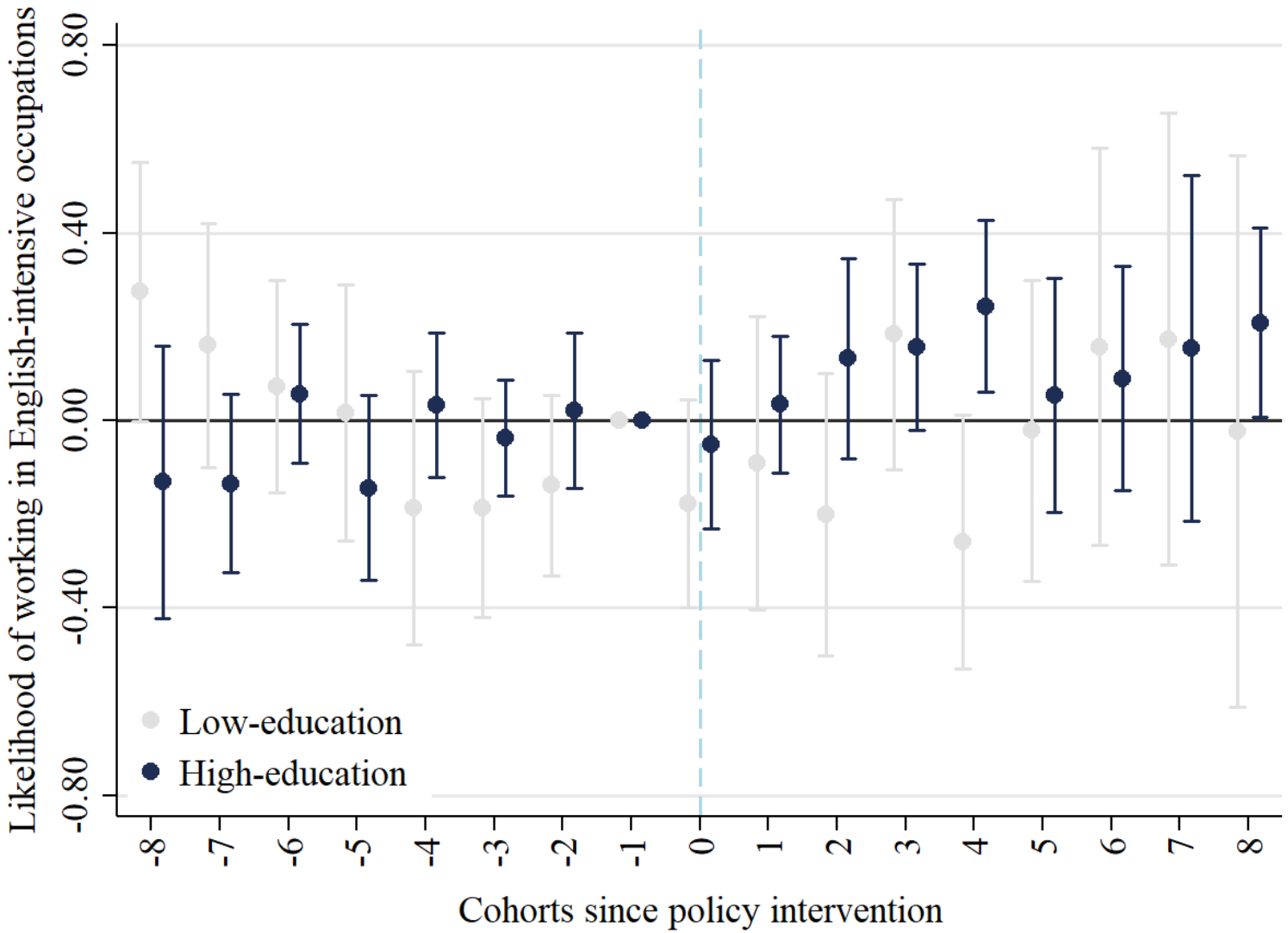
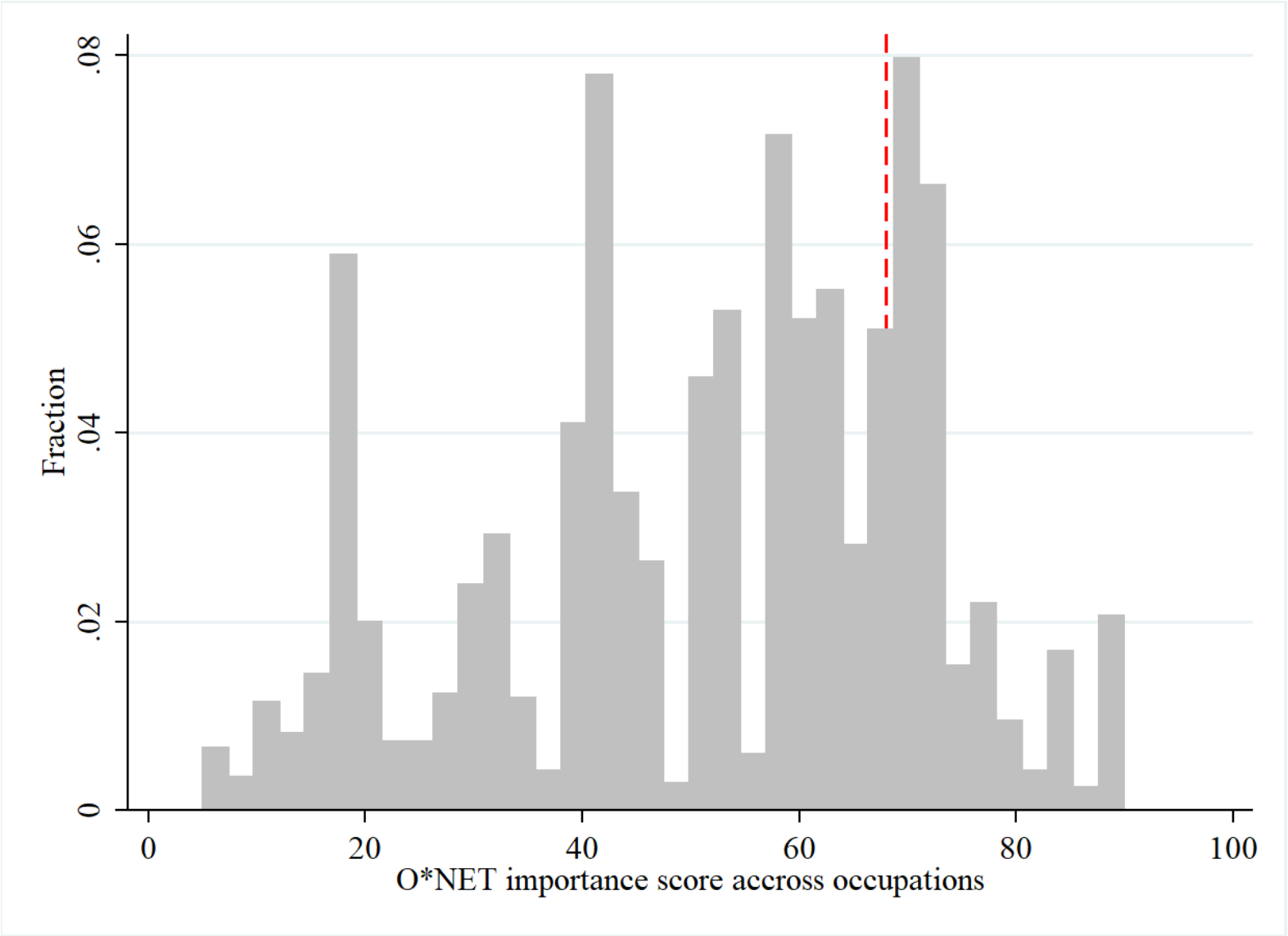


# Less likely to work in physically demanding jobs?



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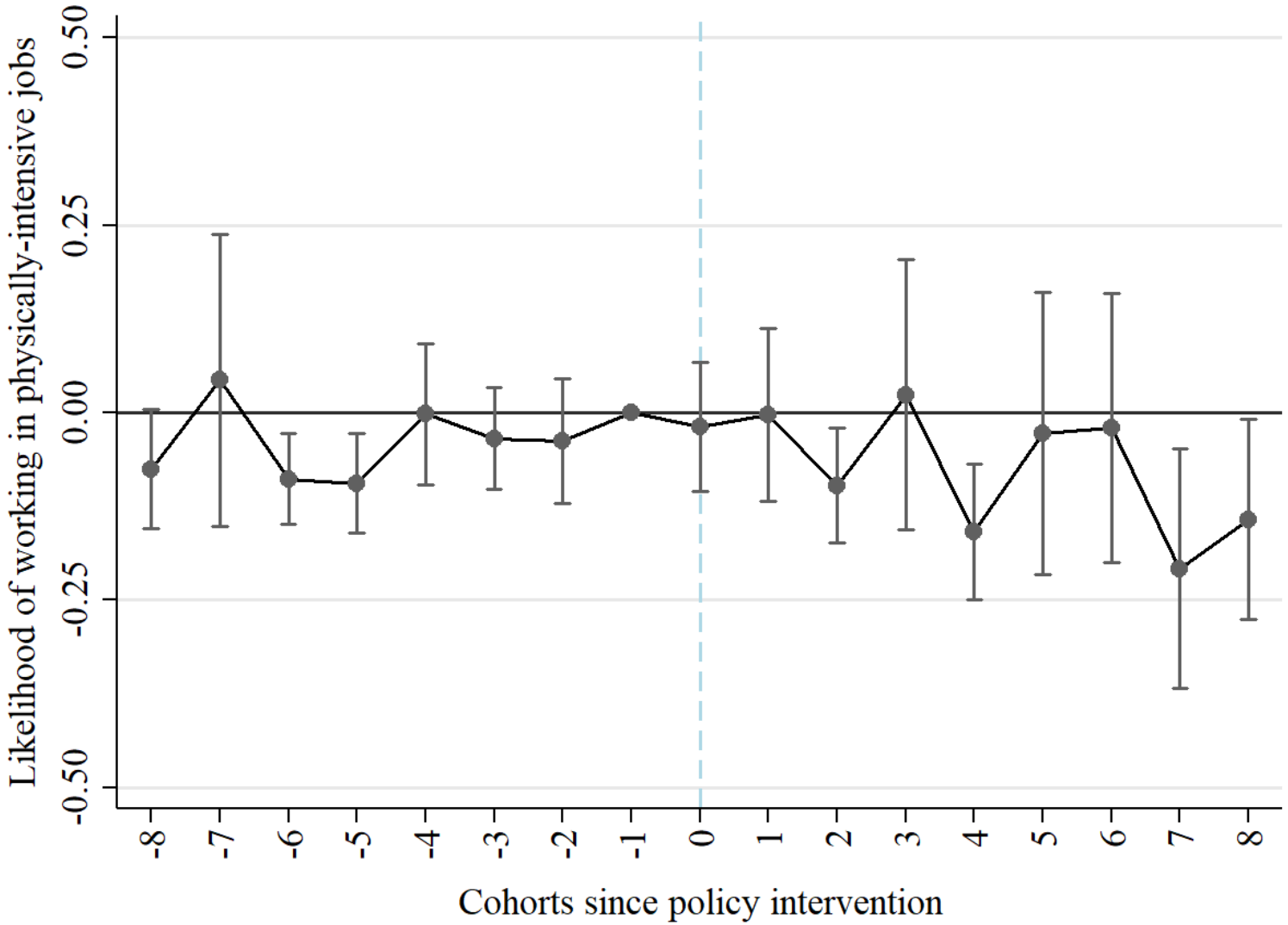

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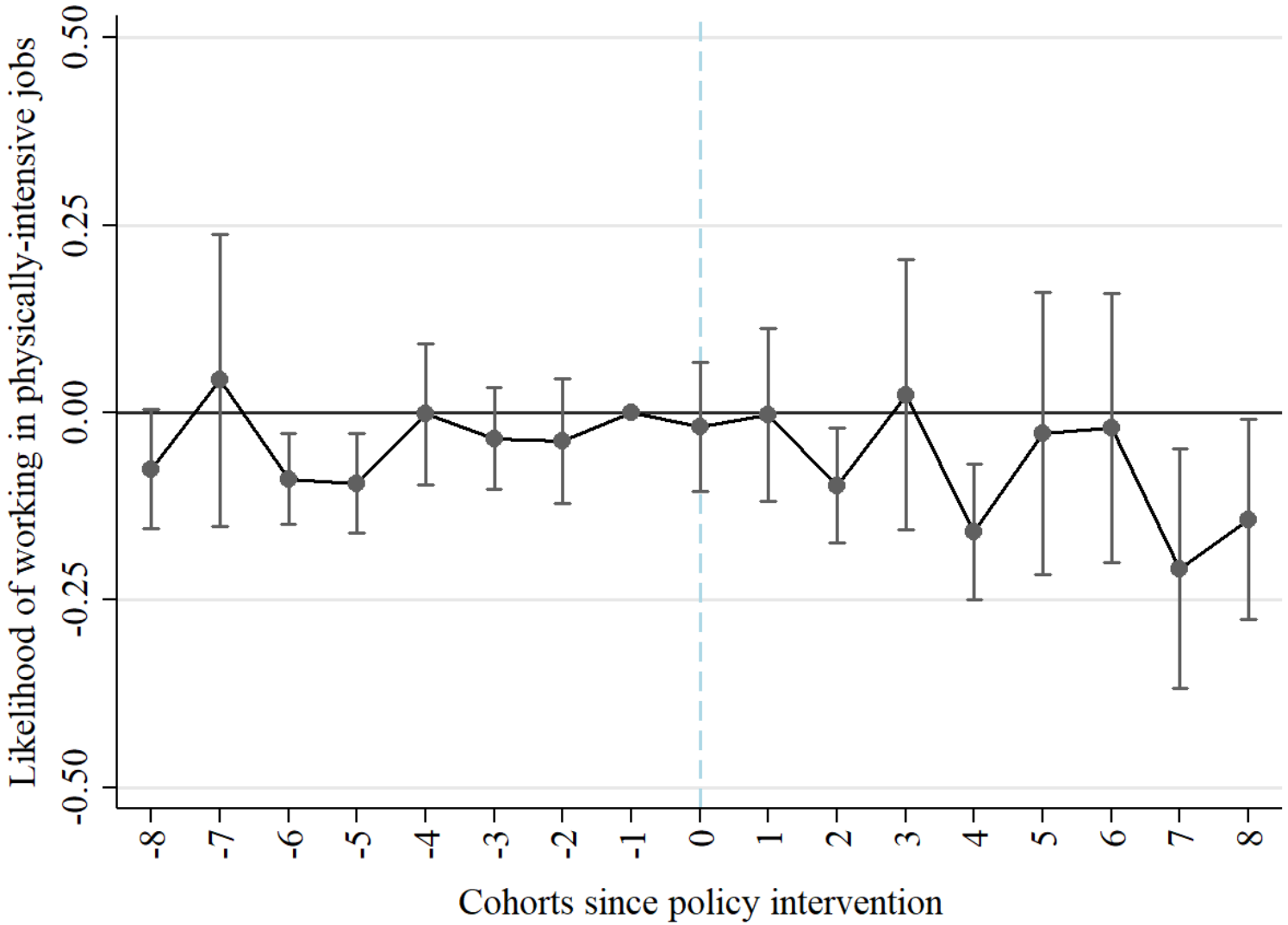

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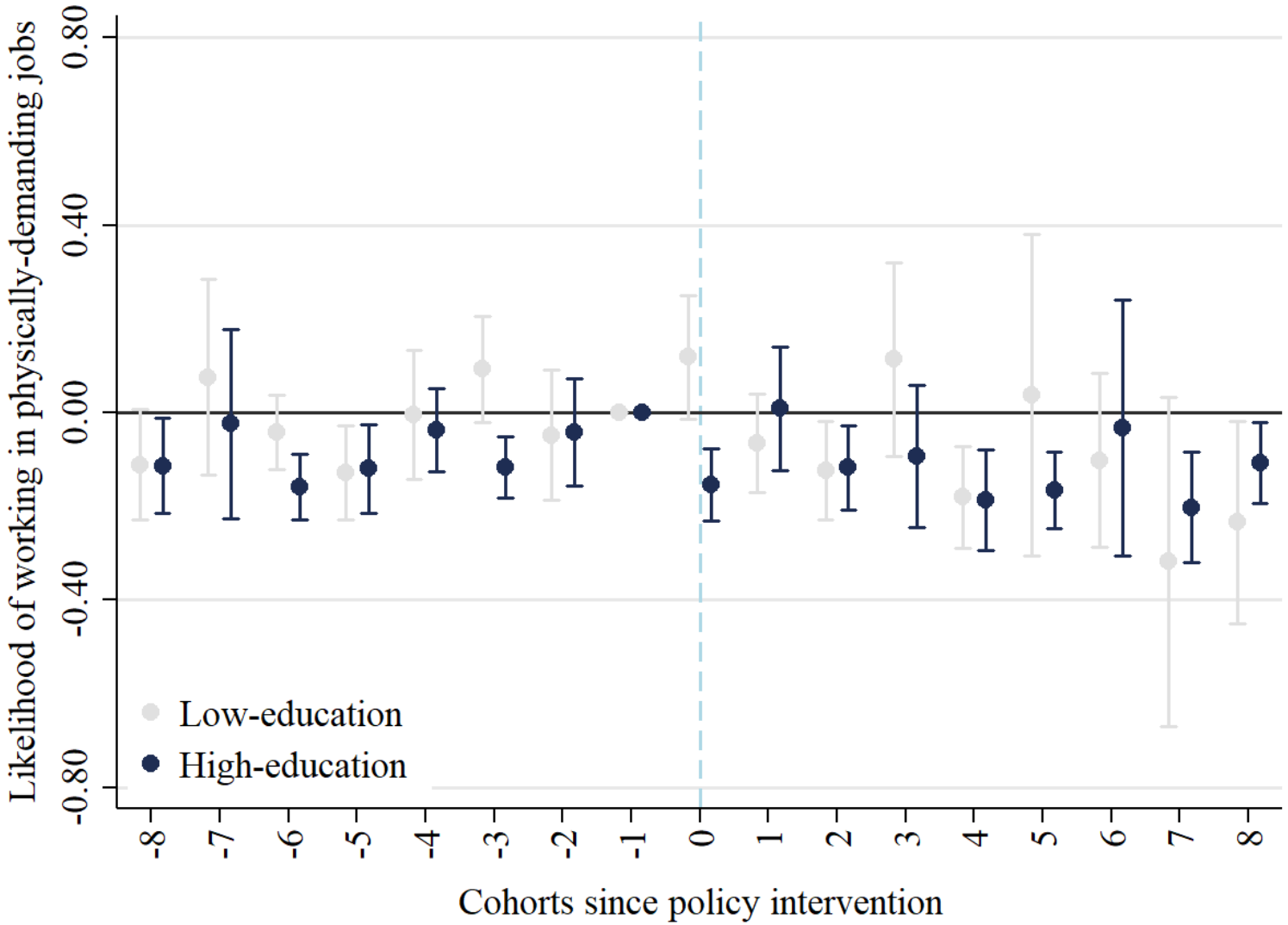

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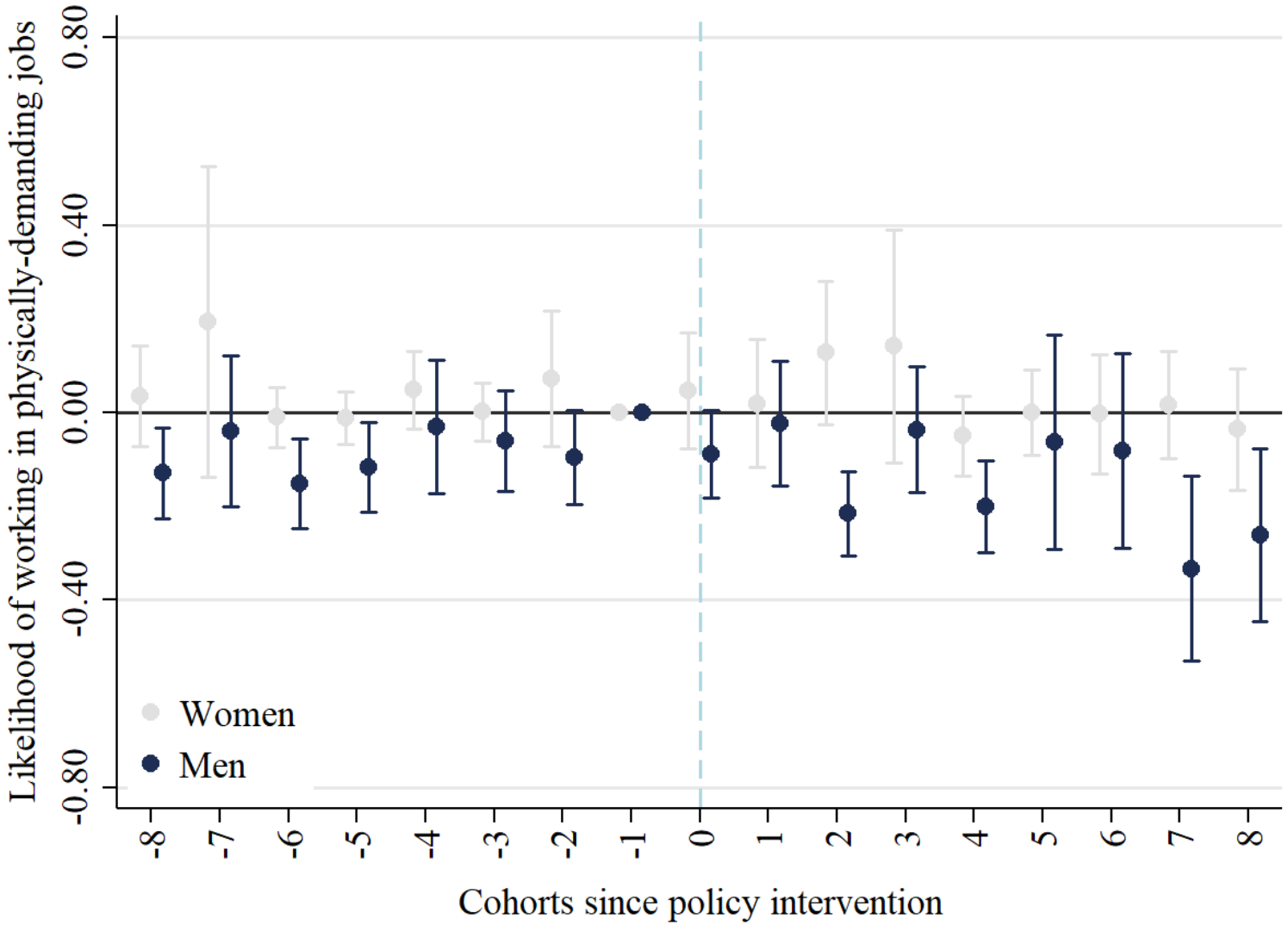

# Robustness checks

- Concern about staggered DiD estimator in the presence of heterogeneous treatment effects SDD
  - Sun and Abraham (2021)
  - Callaway and Sant'Anna (2021)
- Narrower cohorts SDD

# Conclusion

- First study to examine English skills and labor market outcomes in Mexico using large nationally representative sample
- I use variation in English skills generated by state policy changes
- I find no effect on wages, shifts across occupations. Highly educated are:
  - more likely to work in English intensive jobs
  - less likely to work in physically demanding jobs

# Thank you!

*For more about me and my research, please scan here:*

# English speakers different from non-Eng speakers

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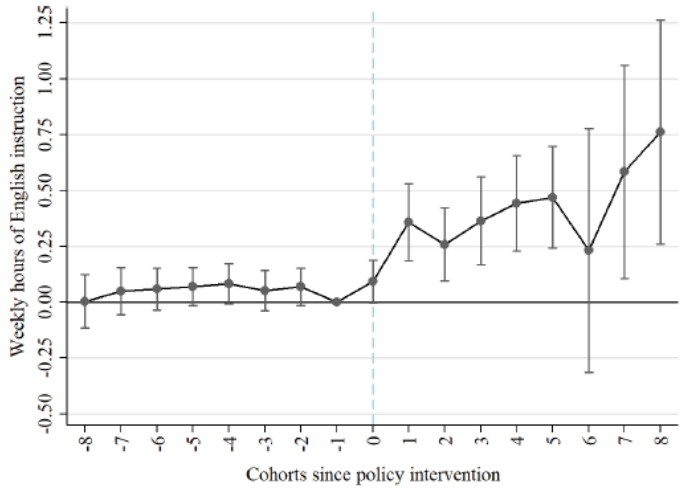
**Table 2:** Descriptive statistics

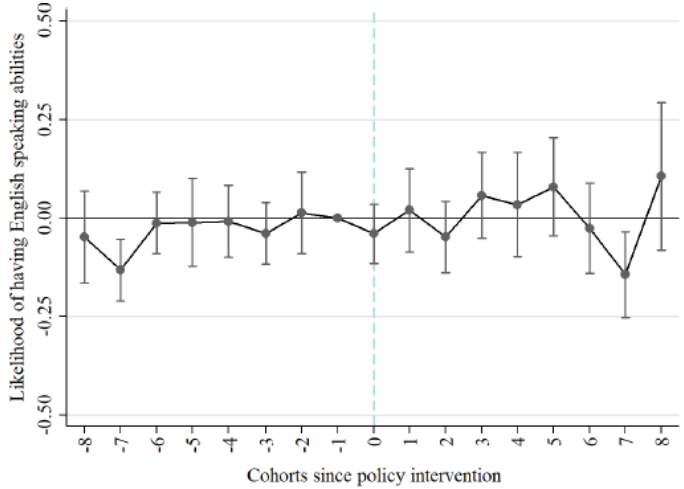
| Variable | Full Sample | Speak English (a) | Don't spk English (b) | Diff. (a-b) |
|---|---|---|---|---|
| *Dependent variable* | | | | |
| Wage (monthly pesos) | 6,261.81 | 15,042.61 | 5,529.11 | 9,513.50*** |
| Farming | 0.07 | 0.02 | 0.08 | -0.06*** |
| Elementary | 0.23 | 0.08 | 0.24 | -0.16*** |
| Machine operators | 0.09 | 0.04 | 0.10 | -0.05*** |
| Crafts | 0.10 | 0.05 | 0.11 | -0.06*** |
| Customer service | 0.08 | 0.05 | 0.08 | -0.03*** |
| Sales | 0.12 | 0.08 | 0.12 | -0.04*** |
| Clerical support | 0.06 | 0.08 | 0.06 | 0.02** |
| Professionals | 0.16 | 0.37 | 0.14 | 0.23*** |
| Managerial | 0.08 | 0.21 | 0.07 | 0.14*** |
| Abroad | 0.00 | 0.02 | 0.00 | 0.01*** |
| *Independent variables* | | | | |
| English (speaking ability) | 0.08 | 1.00 | 0.00 | - |
| Hrs English | 0.07 | 0.12 | 0.06 | 0.05*** |
| Age (years) | 39.54 | 38.35 | 39.64 | -1.29*** |
| Education (years) | 9.68 | 14.02 | 9.31 | 4.71*** |
| Female (%) | 0.41 | 0.33 | 0.42 | -0.09*** |
| Indigenous (%) | 0.06 | 0.02 | 0.07 | -0.04*** |
| Married (%) | 0.63 | 0.58 | 0.63 | -0.06*** |
| Rural (%) | 0.20 | 0.08 | 0.21 | -0.13*** |
| Observations | 20,492 | 1,658 | 18,834 | 20,492 |

# PTA Staggered DiD: All states

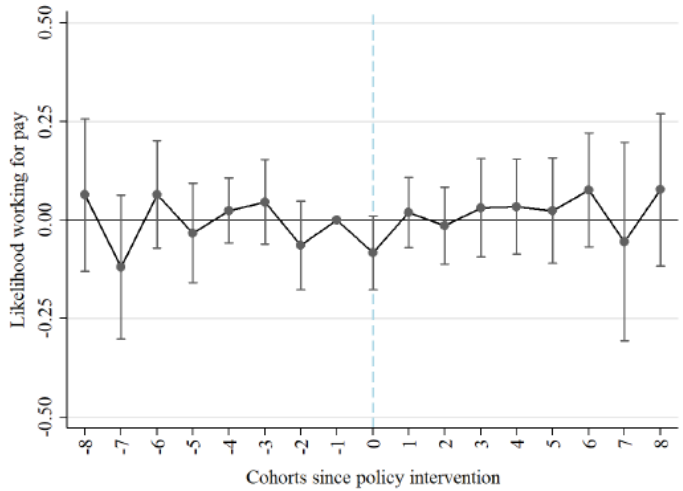
Back



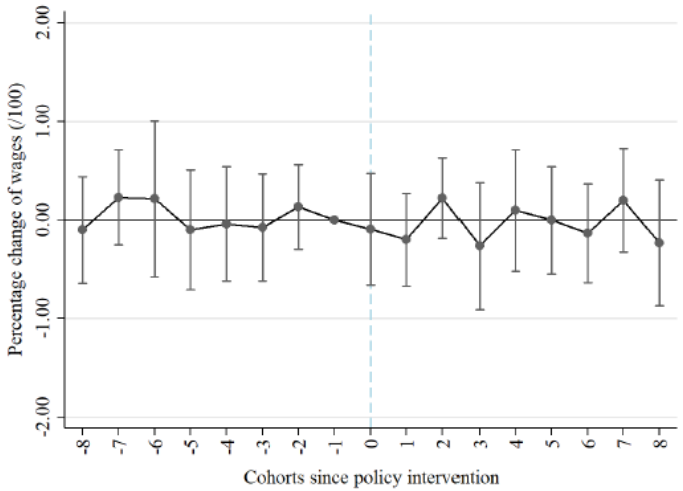

(a) Hours of English




(b) Speak English




(c) Paid work




(d) Ln(wage)

# Mechanisms: Occupational choices

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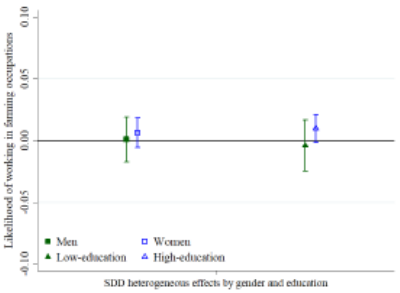
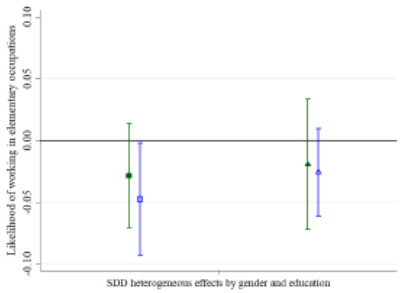
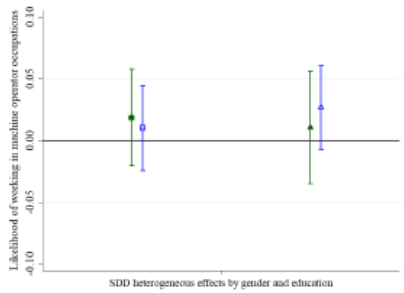


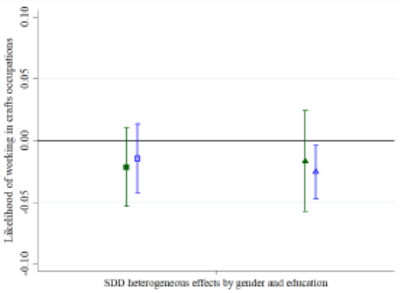

(a) Farming



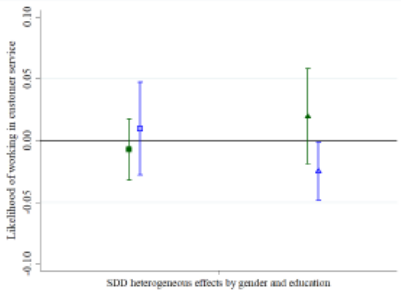

(b) Elementary



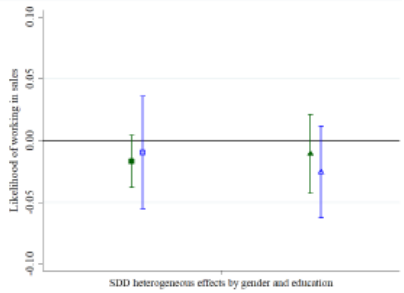

(c) Machine operator



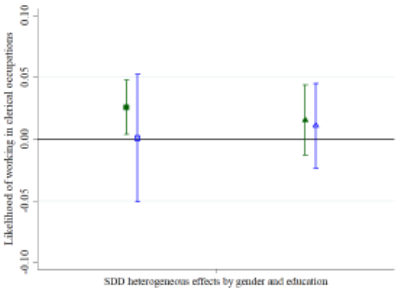

(d) Crafts



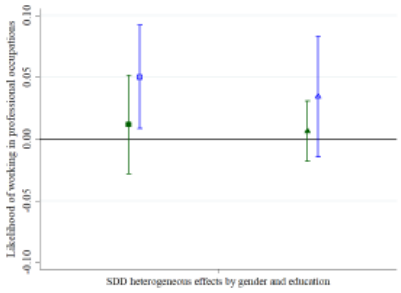

(e) Customer service



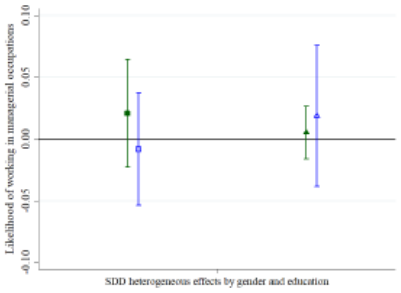

(f) Sales




(g) Clerks




(h) Professionals




(i) Managerial

# Staggered DiD correction

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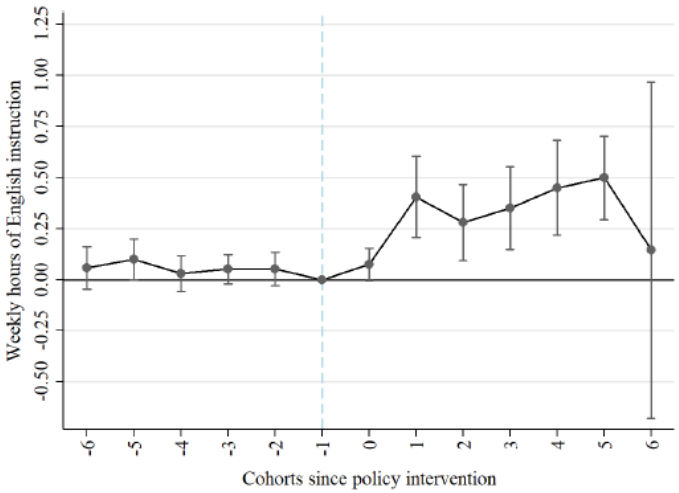
**Table 4:** Effect of English programs

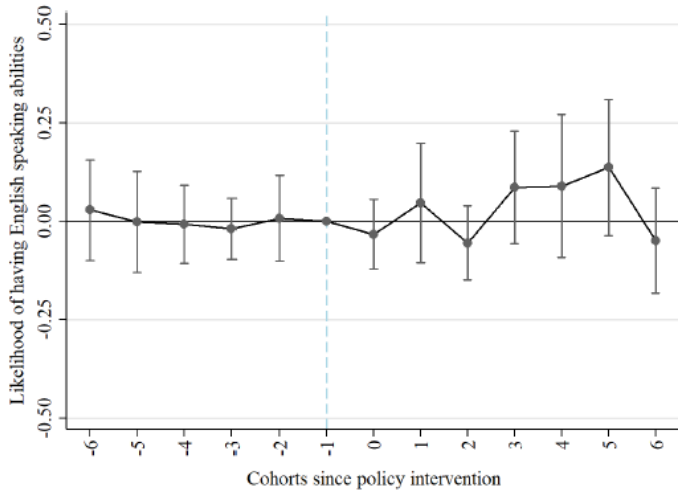
| | (1) Hrs Eng | (2) Speak Eng | (3) ln(wage) | (4) Paid work |
|---|---|---|---|---|
| *Panel B: Sun and Abraham (2021) interaction weighted estimator* | | | | |
| Had Policy | 0.336*** | 0.028* | -0.096 | 0.000 |
| | (0.055) | (0.015) | (0.123) | (0.021) |
| Observations | 5,339 | 5,339 | 5,339 | 8,917 |
| Adjusted $R^2$ | 0.600 | 0.176 | 0.159 | 0.229 |
| *Panel C: Callaway and Sant'Anna (2021)* | | | | |
| Had Policy | 0.327*** | 0.068 | 0.001 | 0.072 |
| | (0.070) | (0.044) | (0.195) | (0.050) |
| Observations | 5,418 | 5,418 | 5,418 | 8,979 |
| Pre-trend Test [p-value] | [0.000] | [0.1719] | [0.2747] | [0.2006] |
| Mean Dep. Var. | 0.119 | 0.106 | 7.972 | 0.606 |

# Robustness check: Narrower cohort window

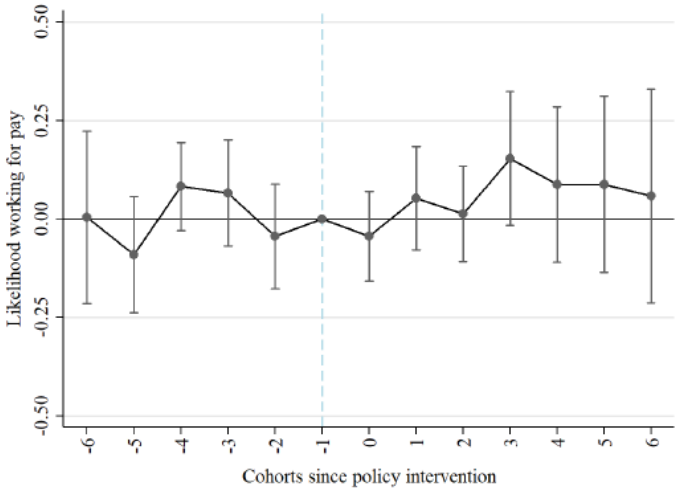
Back



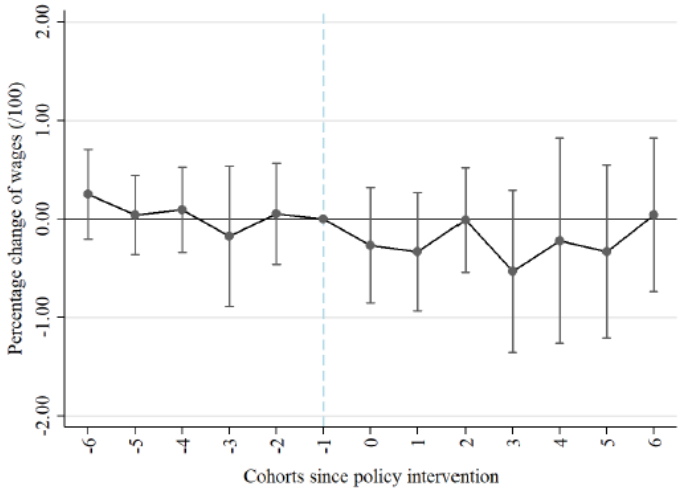

(a) Hours of English




(b) Speak English




(c) Paid work




(d) Ln(wage)

# Robustness check: Narrower cohort window

Back

**Table 6:** Returns to English abilities
(IV estimate with narrower comparison group)

| | (1) Structural-OLS | (2) First Stage | (3) Reduced Form | (4) Structural-IV |
|---|---|---|---|---|
| Speak Eng | 0.011 | | | -11.824 |
| | (0.190) | | | (14.160) |
| Had Policy | | 0.022 | -0.257 | |
| | | (0.029) | (0.189) | |
| Observations | 2,283 | 2,283 | 2,283 | 2,283 |
| Adjusted $R^2$ | 0.171 | 0.147 | 0.173 | |