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

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)

This paper in a nutshell

Research question

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

What I do

- 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

What I find

- Zero returns to English skills in Mexico
- Potential improvements in working conditions

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
- Very little is known about returns to English skills in Mexico
  - I use the 2014 Subjective Well-being Survey (BIARE)

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, ω_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, cohort FE and state FE

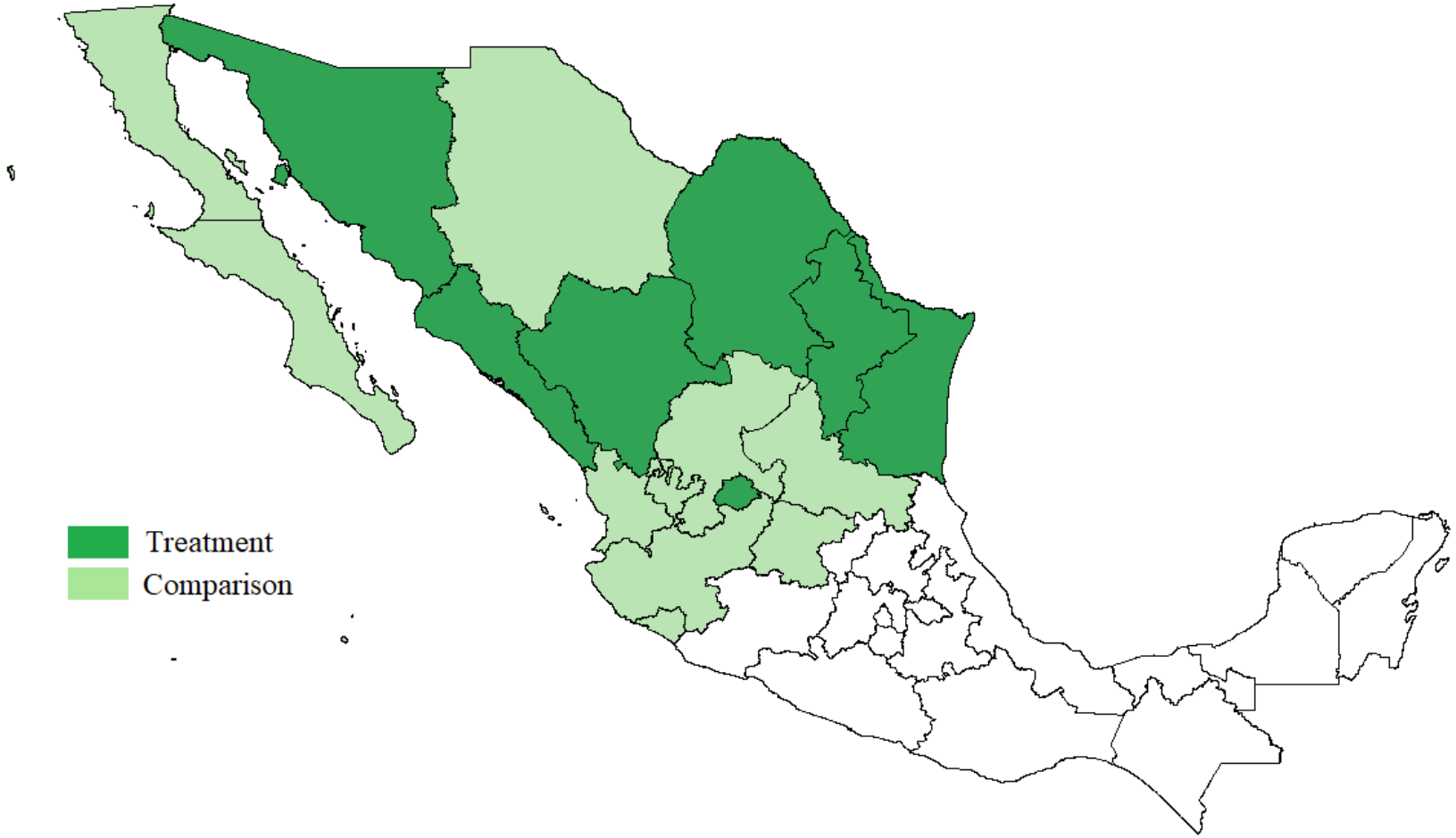
Empirical challenges

- 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 β

- Take advantage of state policy changes in English instruction to form an instrument for English skills to obtain a consistent estimate of β

States with and without the policy



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

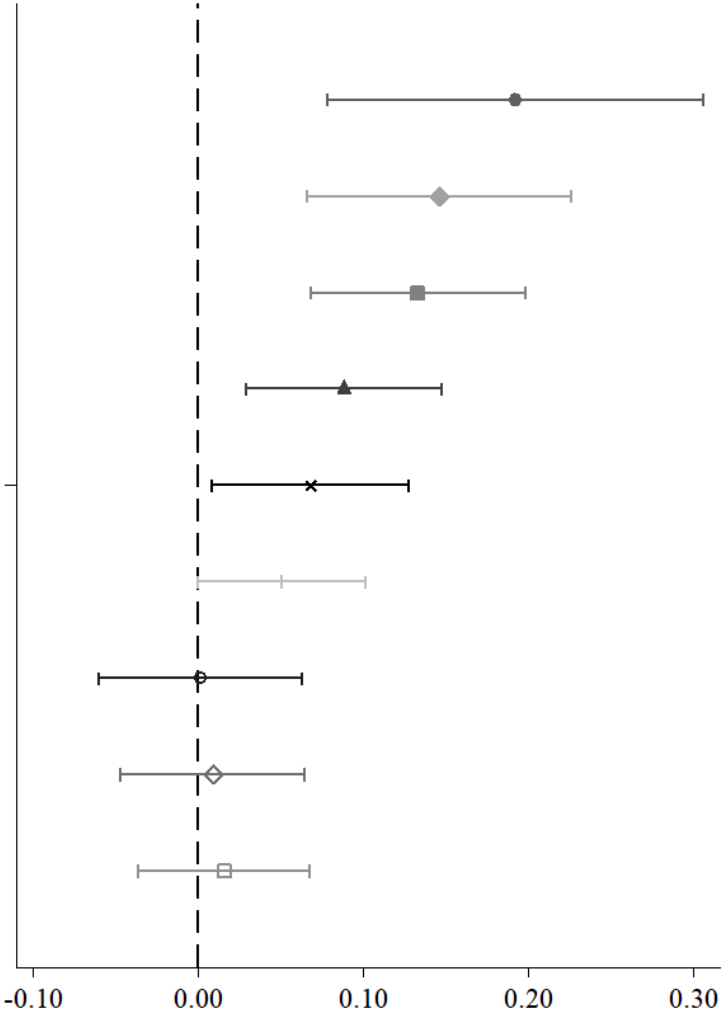
Table 5: Returns to English abilities
(IV estimate)

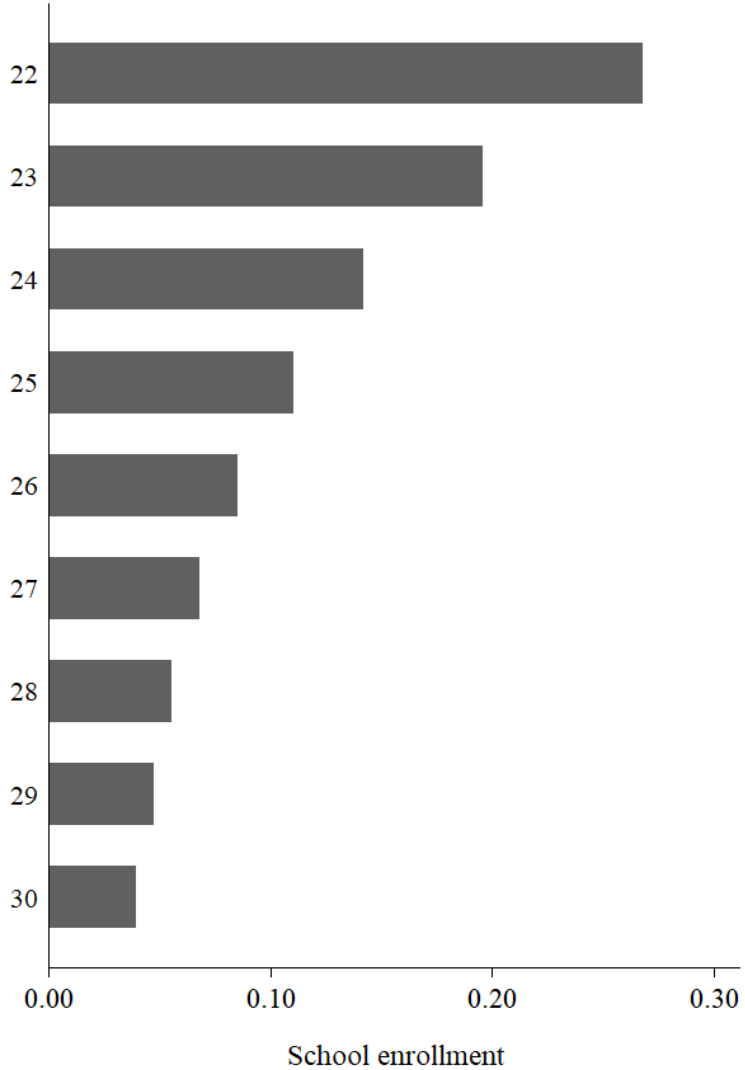
	(1) Structural-OLS	(2) First Stage	(3) Reduced Form	(4) Structural-IV
Speak Eng	0.061			-3.285
	(0.110)			(4.548)
Had Policy		0.028*	-0.093	
		(0.017)	(0.129)	
Observations	5,437	5,437	5,437	5,437
Adjusted R^2	0.172	0.177	0.172	

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

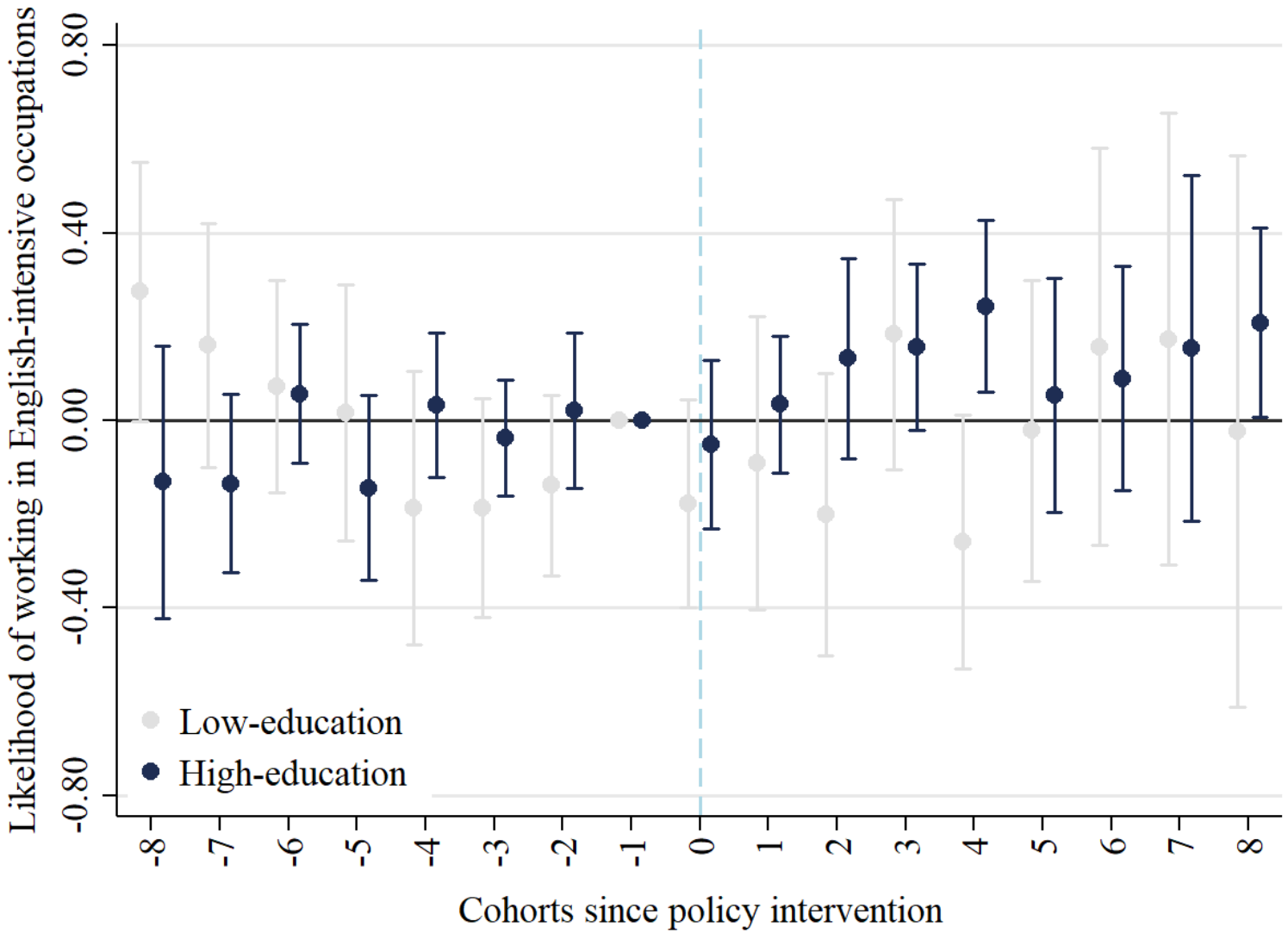
Mechanisms: School enrollment





More likely to work in English-intensive jobs?

Distribution



Less likely to work in physically demanding jobs?

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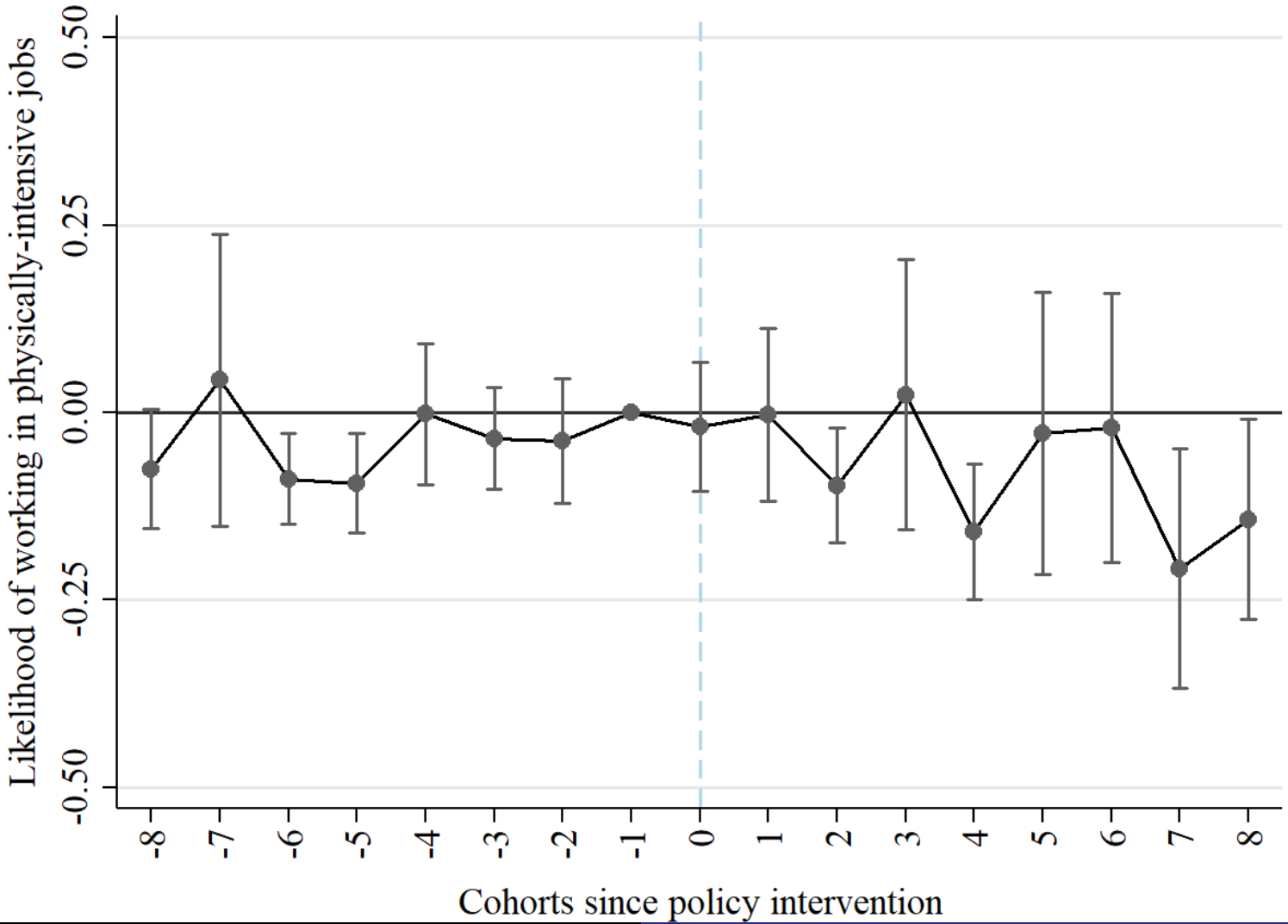

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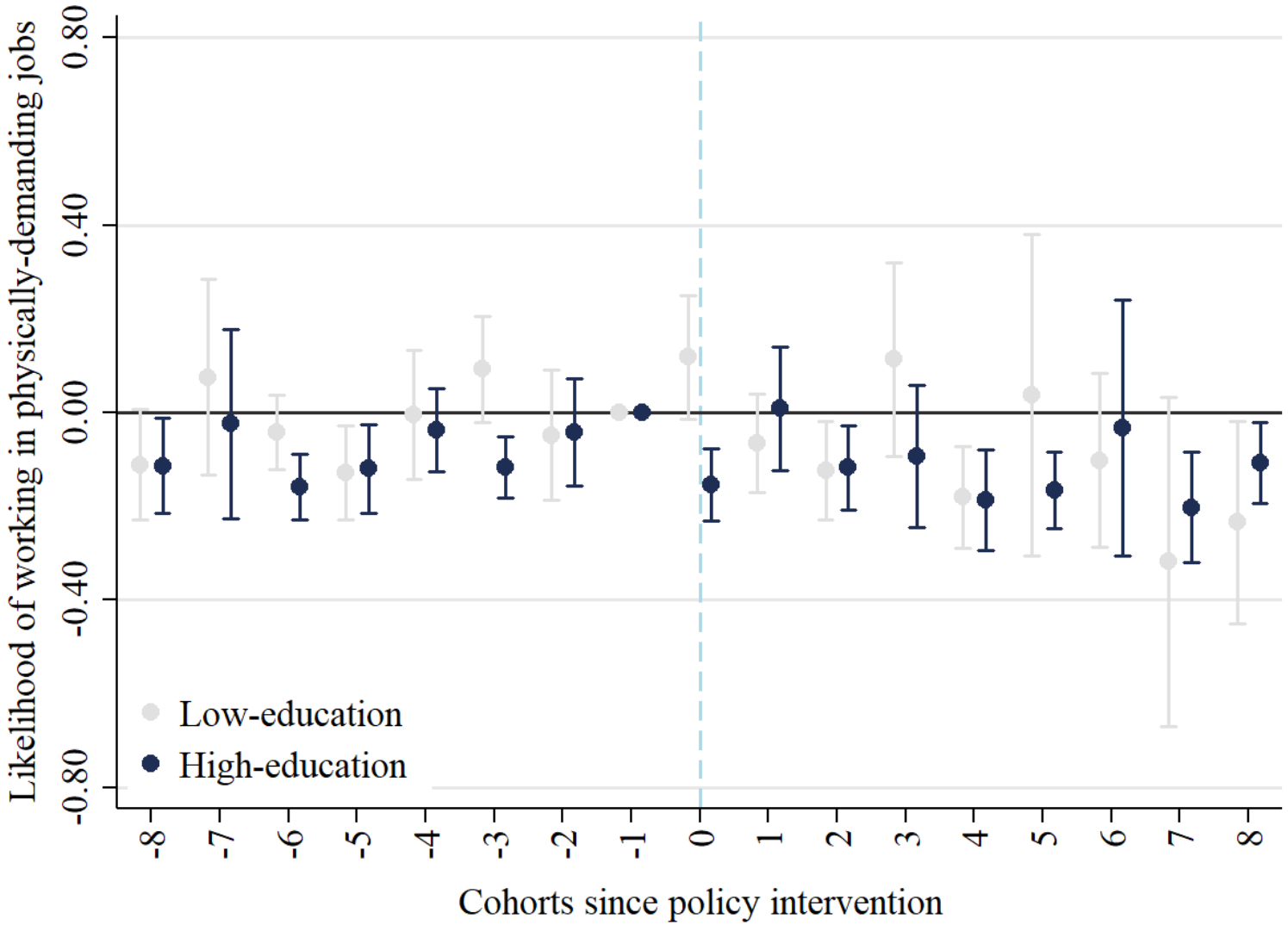

Robustness checks

- 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

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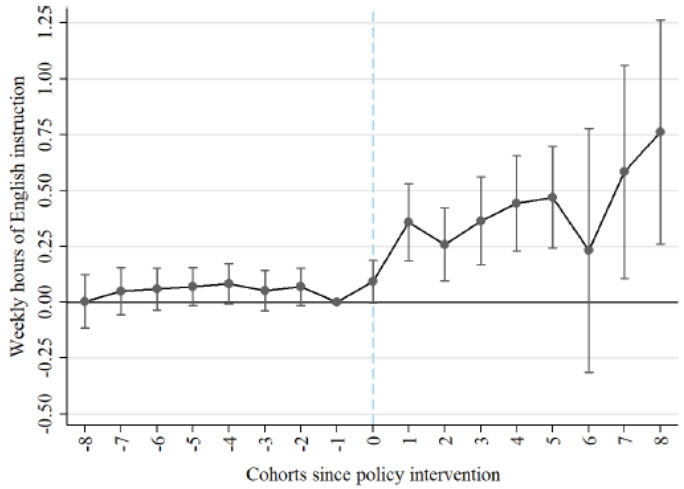
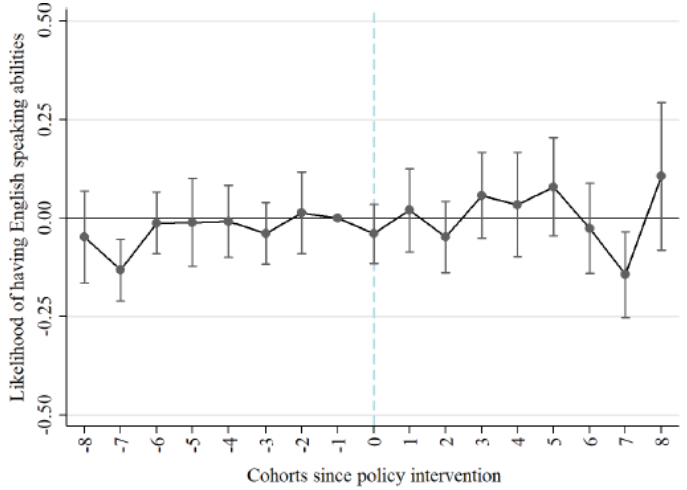
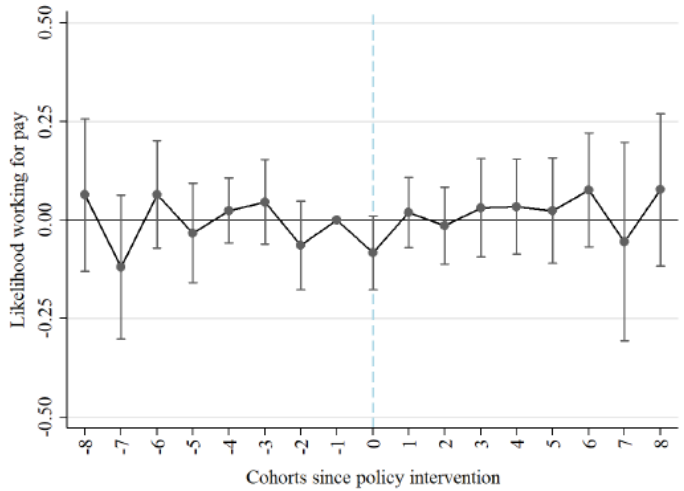


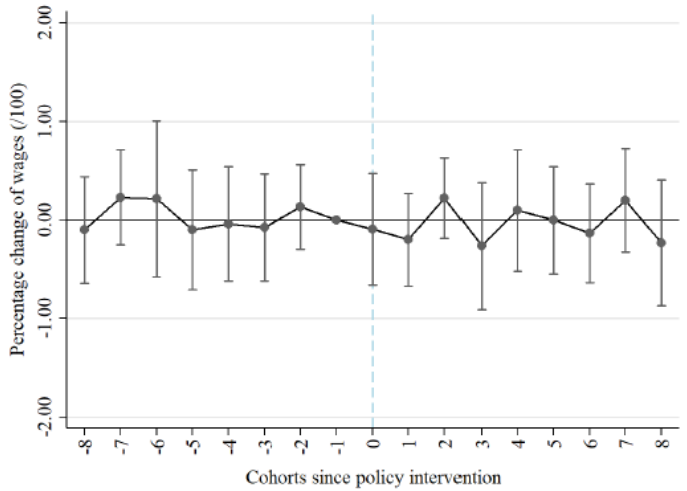
(a) Hours of English



(b) Speak English



(c) Paid work



(d) Ln(wage)

Mechanisms: Occupational choices

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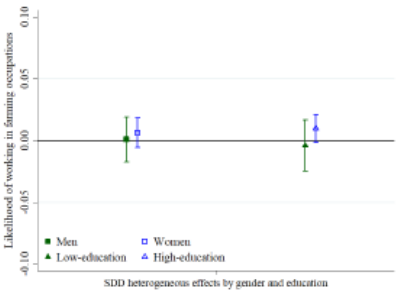
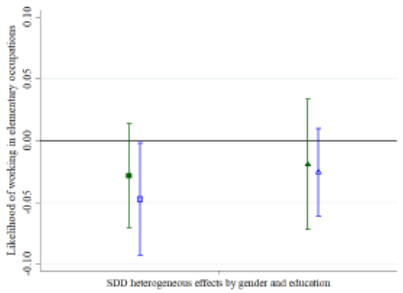
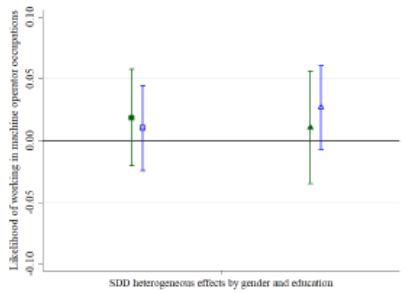


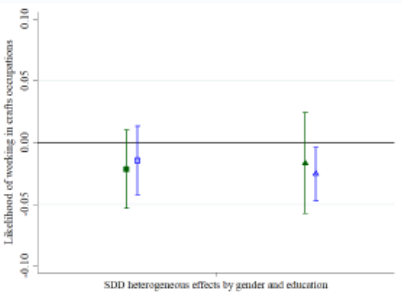
(a) Farming



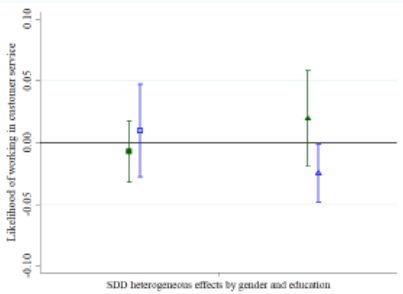
(b) Elementary



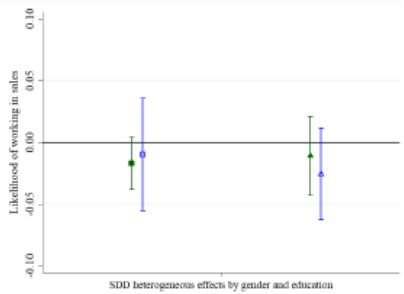
(c) Machine operator



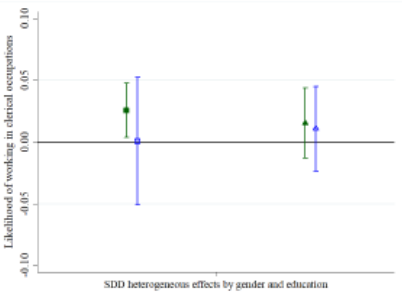
(d) Crafts



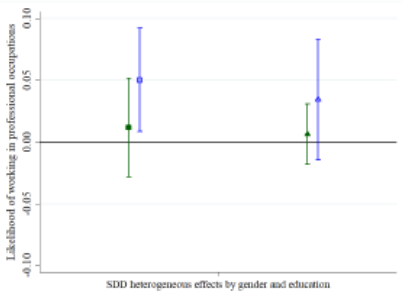
(e) Customer service



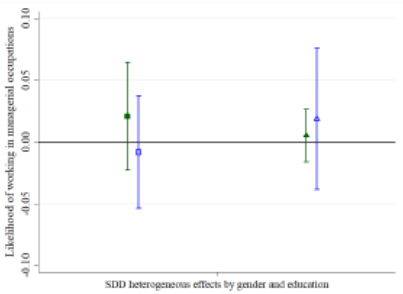
(f) Sales



(g) Clerks



(h) Professionals



(i) Managerial

More likely to work in English-intensive jobs?

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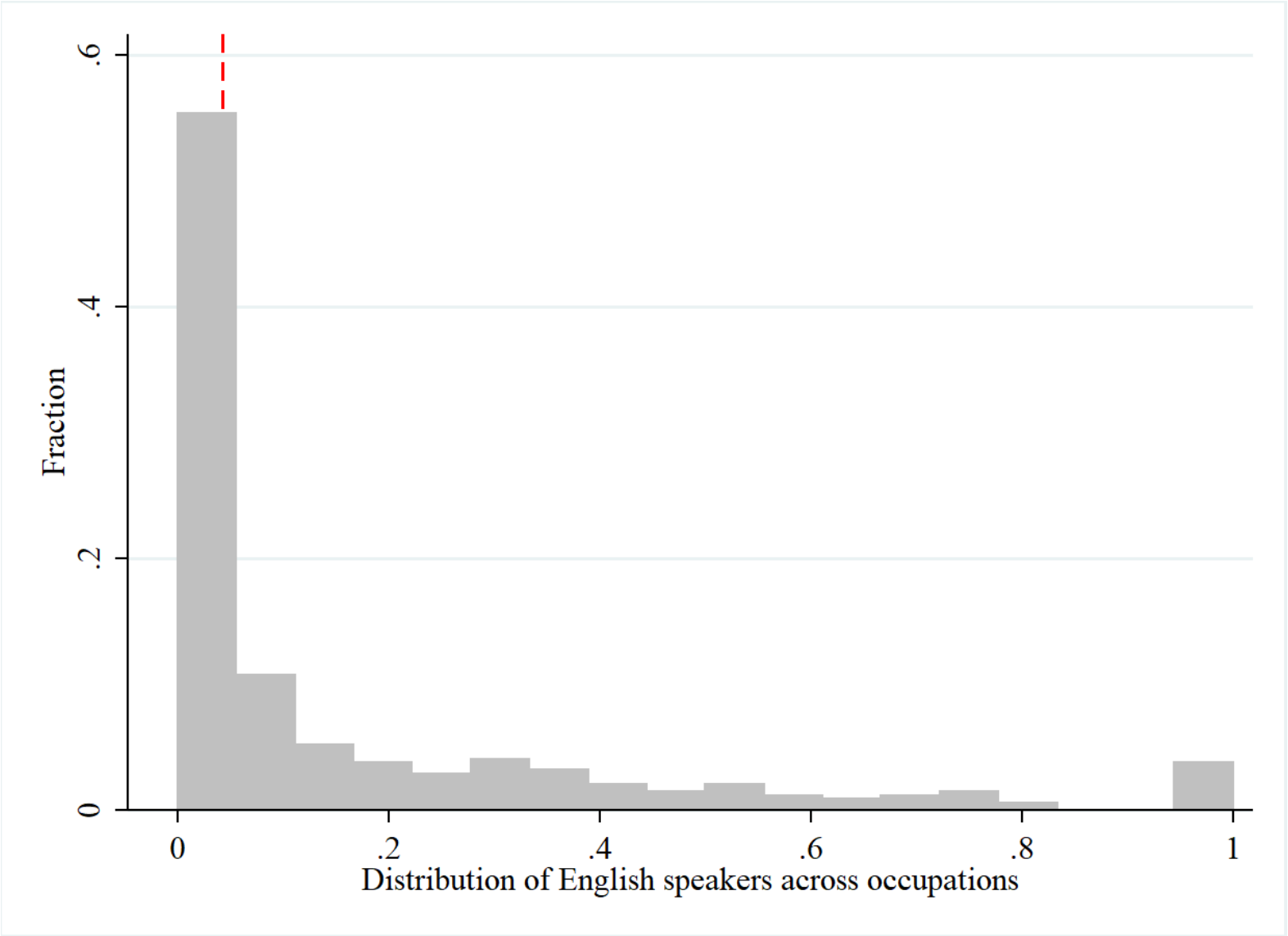

Less likely to work in physically demanding jobs?

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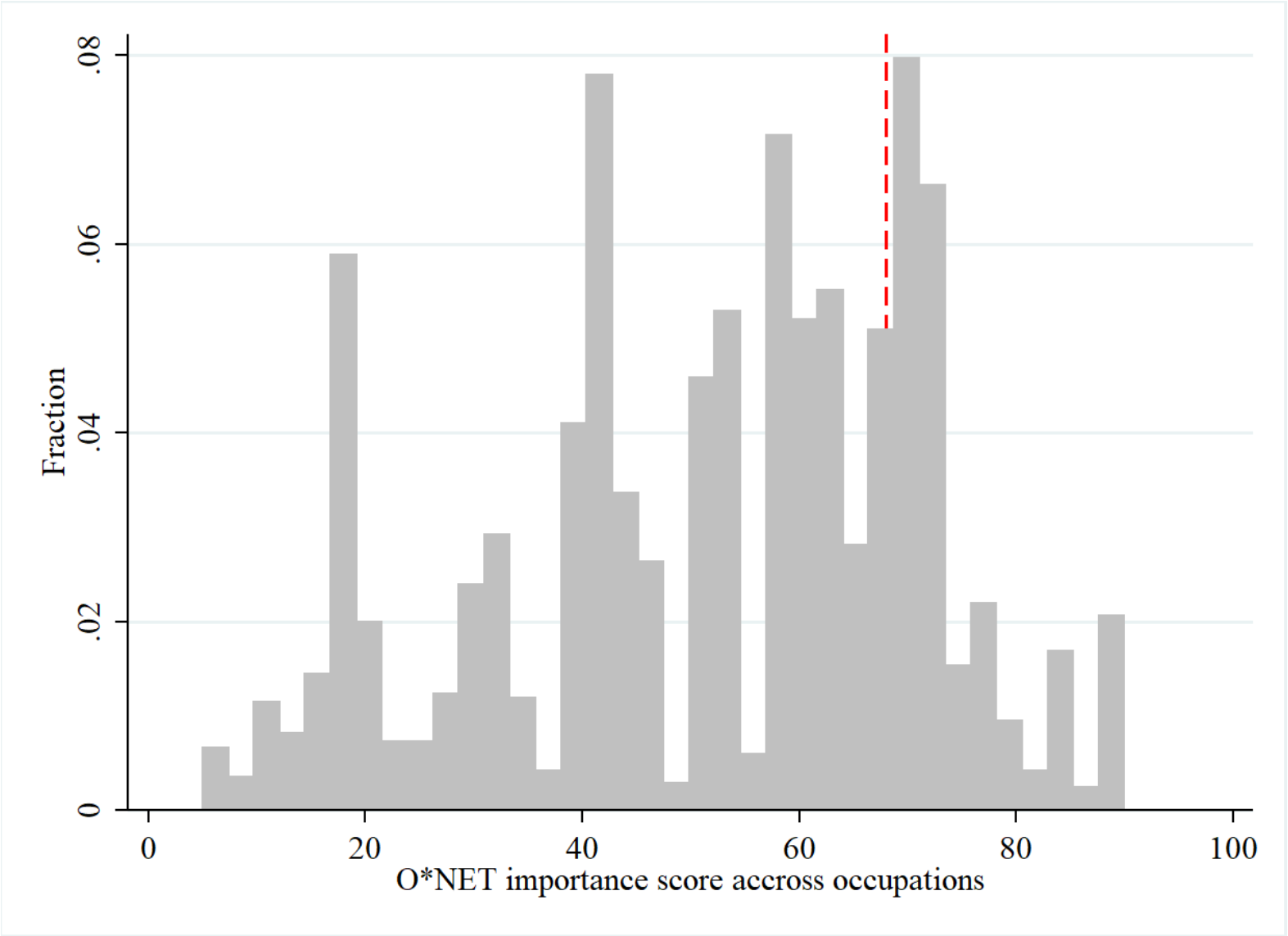

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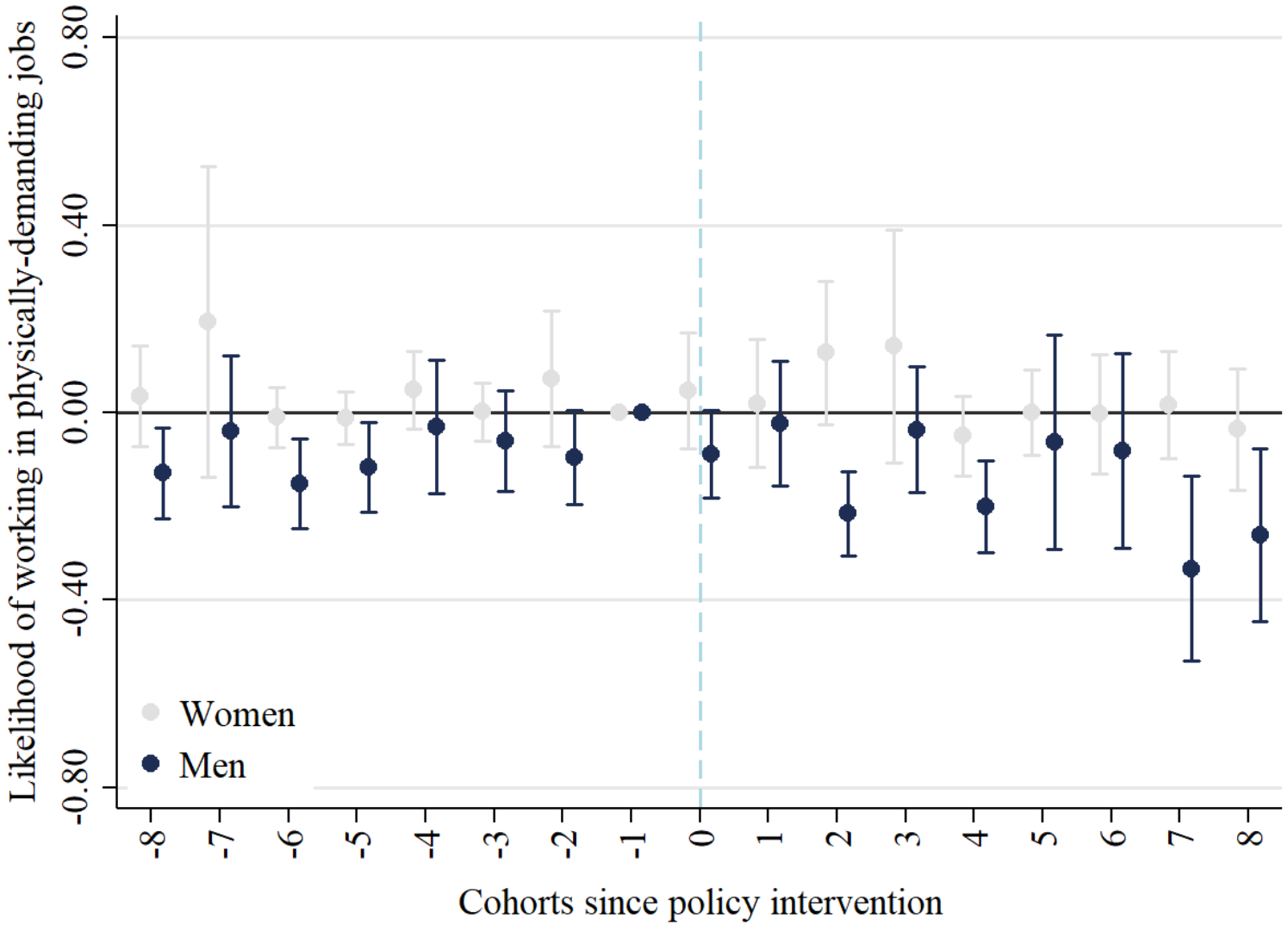

Staggered DiD correction

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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

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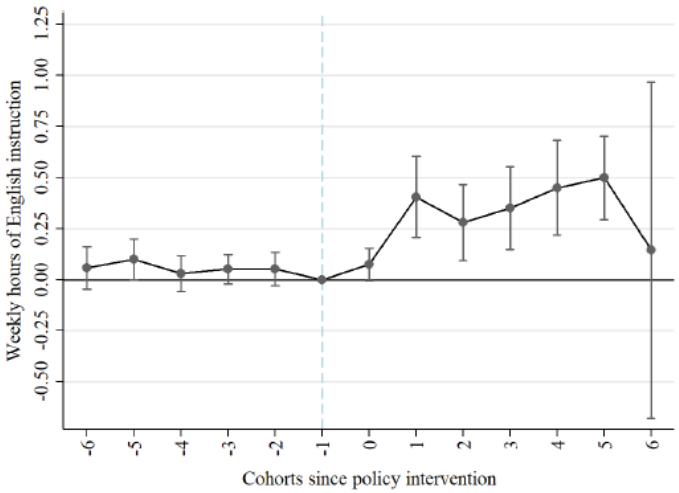

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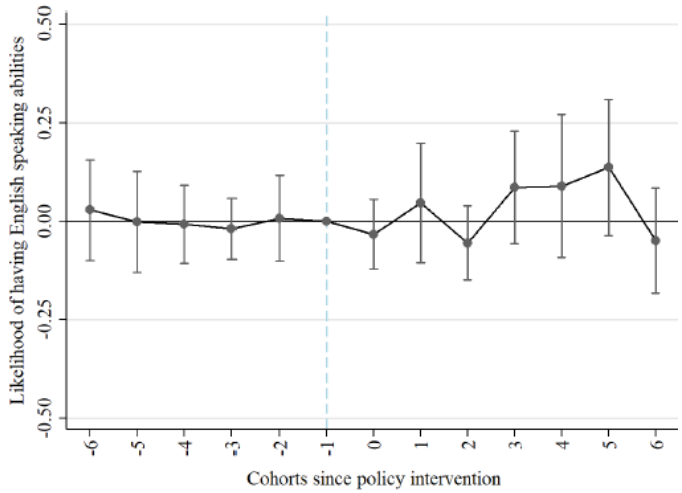
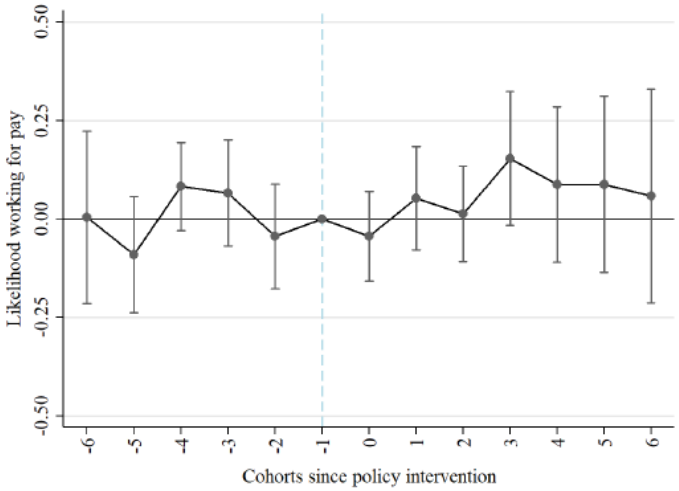
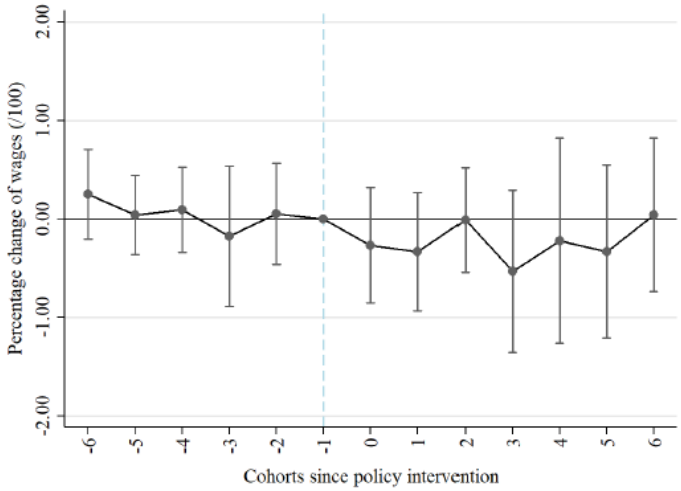


(b) Speak English



(c) Paid work



(d) Ln(wage)

Robustness check: Narrower cohort window

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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	