

Cast into Castes?

Targeting Persistent Caste-based Inequalities with Affirmative Action

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Evaluating Affirmative Action

- ▶ Many countries around the world working to ameliorate historical discrimination and marginalization
- ▶ Affirmative Action changes opportunity set available to disadvantaged groups.
- ▶ Affirmative Action in Higher Education – preferential admission to one student implies exclusion of another.
- ▶ There is a trade-off to implementing policies of positive discrimination

Anticipatory Responses can lead to Spillovers

- ▶ Quota in Higher Education increases students' perceived ability to get into college – behavioral response along two margins of educational attainment
 - ▶ *direct* effect – more students enroll in college
 - ▶ *spillover* effect – students who plan to go to college in the future stay in school longer
- ▶ Recent extension of affirmative action in higher education to Other Backward Classes (OBC) presents an opportunity to examine impacts along these two margins.

Snapshot of Results

- ▶ Using Difference-in-Difference DID Graph for College DID Graph for High school
 - ▶ Differential increase in college enrollment rate for OBC by 5.3 percentage points as compared to Scheduled Castes.
 - ▶ Differential increase of 4.3 percentage points in high-school completion rate for OBC as compared to the Scheduled Castes.
- ▶ Using IV strategy
 - ▶ 10 percentage points increase in college enrolment rate increases school enrolment rates by 6 to 9 percentage points.

Mixed Bag of Evidence

- ▶ Improves enrollment/attendance in college and school, especially in higher quality schools
 - ▶ India: Bagde et al. (2016), Frisancho and Krishna (2016), Deshpande and Ramachandran (2015), Bertrand et al. (2010), Weisskopf (2004)
 - ▶ US: Epple et al. (2008), Arcidiacono (2005), Long (2004), Hinrichs (2012), Howell (2010), Domina (2007).
- ▶ Mismatch hypothesis:
 - ▶ Find Evidence: Bertrand et al. (2010), Frisancho and Krishna (2016), Arcidiacono et al. (2011)
 - ▶ No Evidence: Bagde et al. (2016), Fischer and Massey (2007), and Rothstein and Yoon (2008)

- ▶ I identify and estimate an effect of Affirmative Action on educational outcomes for the targeted group.
- ▶ Pan-India analysis using four rounds of nationally representative household survey – NSS Employment-Unemployment Surveys.
- ▶ *Focus on possible spillovers to earlier schooling outcomes*
- ▶ Adds along one margin to the political economy discussion on trade-offs inherent in affirmative action.
- ▶ Such policies change the opportunities available to underprivileged groups – this paper provides evidence that on an average, students from these targeted groups are able to utilize these opportunities.

Caste Hierarchy and Affirmative Action

- ▶ Scheduled Castes (SC), Scheduled Tribes (ST), Other Backward Classes (OBC), and Others (General). Caste Hierarchy

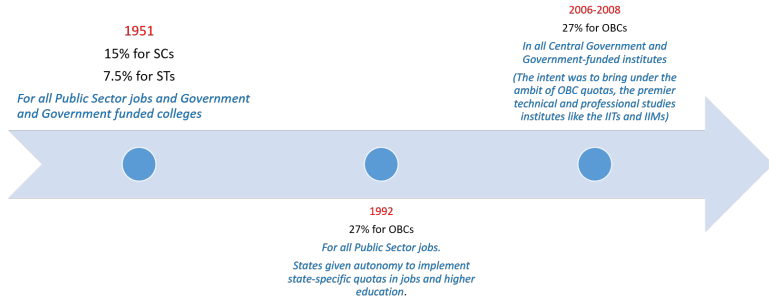


Figure 1: Time-line of Affirmative Action

- ▶ 2006 – Central Government announced 27 percent quota for OBC in all Central Government colleges.
- ▶ April 2008 – Supreme Court upheld the 27 percent OBC quota.

I use this exogenous shock in access to higher education in premier institutes to flesh out the impact increased access to college can have on school enrolments - especially at the secondary and higher secondary levels.

Empirical Strategy I: Difference-in-Difference

Policy change was affected only for OBC – compare the outcomes before and after for OBC with two potential comparison groups, Scheduled Castes (SC) and/or Other (upper) Castes

$$Y_{it} = \beta_1 post_{it} + \beta_2 OBC_{it} + \beta_3 post_{it} OBC_{it} + \beta_4 X_{it} + \lambda_s + \mu_{it}$$

- ▶ Y - whether enrolled in college/completed high school
- ▶ X - education of household head, log of monthly per capita expenditure, urban, female
- ▶ λ_s - State fixed effects

Empirical Strategy II: Instrumental Variable

First stage:

$$CollegeEnrollment_{cst} = \gamma_1 post_t + \gamma_2 OBC_{ct} + \gamma_3 post_t OBC_{ct} + \gamma_4 X_{cst} + \eta_{cst}$$

Second Stage:

$$SchoolEnroll_{icst} = \beta_1 \widehat{CollegeEnrollment}_{cst} + \beta_2 X_{icst} + \mu_{it}$$

- ▶ 'CollegeEnrollment' – mean college enrollment rate in a social group-state-year cell.
- ▶ 'SchoolEnroll' – whether individual enrolled in school

Threats to Identification

- ▶ Might be picking effect of social change – society changing in a way more favorable towards OBC group. Want to distinguish between that gradual social change and the effect of the policy. **SES**
- ▶ Ashenfelter Dip: do institutions strategically lower offers of admission to covered students in the period between announcement and implementation? Public Colleges have limited scope of that. But individuals can delay going to college, wait till the policy comes around. Do not see evidence **A-Dip**

College Enrolments

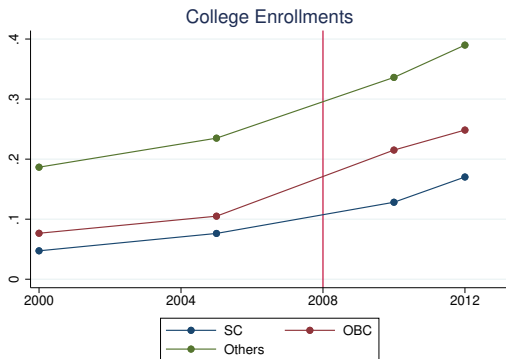


Figure 2: College Enrolment Rates: Before and After Policy

College Enrolment

| VARIABLES | SC | SC and Others |
|-----------------|-----------------|---------------|
| postxOBC | 0.053*** | 0.022* |
| | (0.009) | (0.012) |
| post | 0.023 | 0.060* |
| | (0.020) | (0.030) |
| OBC | -0.006 | -0.027*** |
| | (0.004) | (0.005) |
| Observations | 80,057 | 120,919 |
| R-squared | 0.264 | 0.325 |
| State FE | Yes | Yes |
| Age dummies | Yes | Yes |
| Mean | 0.105 | 0.105 |

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Sample restricted to Hindu HHs and ages 17-21
SE clustered at State level

Heterogenous Effects: College Enrolment

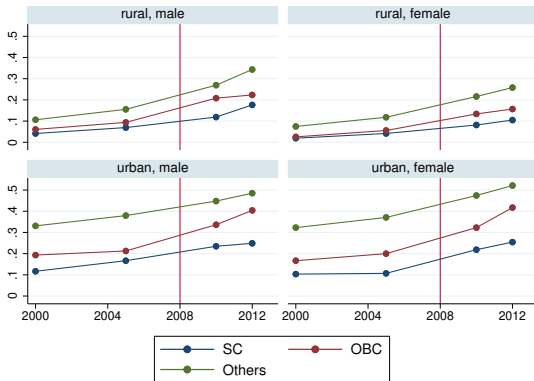


Figure 3: College Enrollment by place of residence and sex

Heterogenous Effects: College Enrolment

| VARIABLES | Rural Male | Rural Female | Urban Male | Urban Female |
|-----------------|--------------------|----------------------|----------------------------|----------------------------|
| postxOBC | 0.016 (0.023) | 0.008 (0.013) | 0.055*** (0.016) | 0.049*** (0.017) |
| post | 0.089** (0.035) | 0.067*** (0.018) | 0.035 (0.035) | 0.025 (0.033) |
| OBC | -0.015 (0.009) | -0.016*** (0.005) | -0.050*** (0.010) | -0.054*** (0.019) |
| Observations | 38,254 | 35,086 | 25,835 | 21,744 |
| R-squared | 0.229 | 0.184 | 0.455 | 0.451 |
| State FE | Yes | Yes | Yes | Yes |
| Age dummies | Yes | Yes | Yes | Yes |
| Mean | 0.0938 | 0.0557 | 0.213 | 0.200 |

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Sample restricted to Hindu HHs and ages 17-21

SE clustered at State level; SC and Others used as Control

Robustness Checks: College

High-School Completion

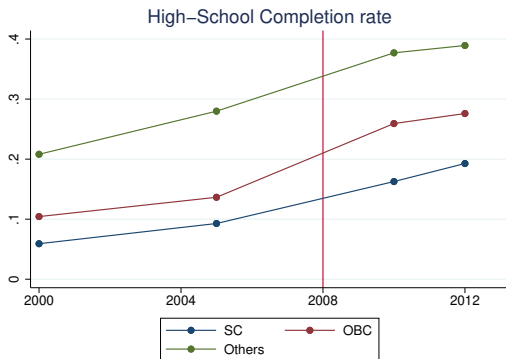


Figure 4: High-School Completion: Before and After Policy

High-School Completion

| VARIABLES | SC | SC and Others |
|-----------------|-----------------|---------------|
| postxOBC | 0.043*** | 0.027 |
| | (0.013) | (0.016) |
| post | 0.050** | 0.082*** |
| | (0.020) | (0.028) |
| OBC | 0.011** | -0.024*** |
| | (0.005) | (0.007) |
| Observations | 47,968 | 72,387 |
| R-squared | 0.286 | 0.340 |
| State FE | Yes | Yes |
| Age dummies | Yes | Yes |
| Mean | 0.136 | 0.136 |

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Sample restricted to Hindu HHs and ages 17-19
SE clustered at State level

Heterogeneous Effects: High-School Completion

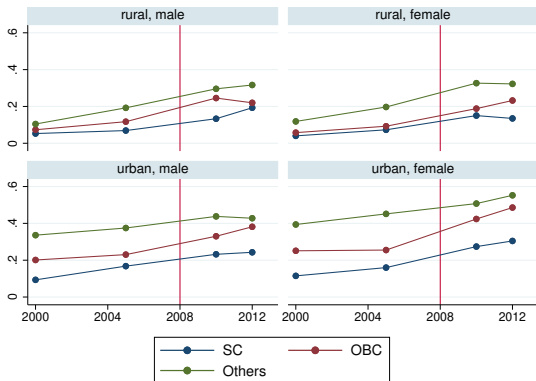


Figure 5: High-School Completion by place of residence and sex

Heterogenous Effects: High-School Completion

| VARIABLES | Rural Male | Rural Female | Urban Male | Urban Female |
|-----------------|---------------------|----------------------|----------------------------|----------------------------|
| postxOBC | 0.012 (0.028) | 0.010 (0.020) | 0.063*** (0.015) | 0.071*** (0.023) |
| post | 0.108*** (0.030) | 0.098*** (0.024) | 0.038 (0.030) | 0.041 (0.035) |
| OBC | -0.006 (0.008) | -0.024*** (0.006) | -0.041*** (0.011) | -0.053** (0.021) |
| Observations | 23,782 | 20,224 | 15,691 | 12,690 |
| R-squared | 0.236 | 0.237 | 0.444 | 0.517 |
| State FE | Yes | Yes | Yes | Yes |
| Age dummies | Yes | Yes | Yes | Yes |
| Mean | 0.117 | 0.0926 | 0.230 | 0.255 |

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Sample restricted to Hindu HHs and 17-19 years

SE clustered at State level; SC and Others used as Control

Robustness Checks: HS

IV (2SLS) Estimates

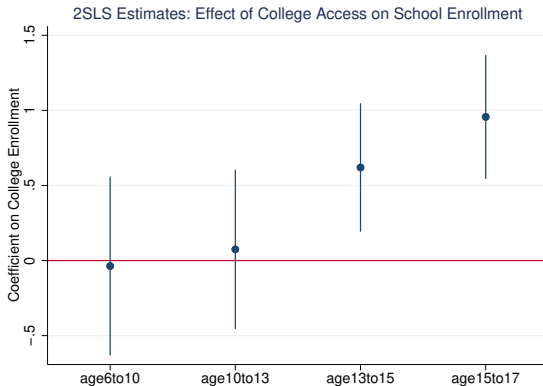


Figure 6: Impact of College Access on School Enrolment - 2SLS Estimates

IV (2SLS) Estimates

| VARIABLES | Age 15-17 | Age 13-15 | Age 10-13 | Age 6-10 |
|----------------|----------------------|----------------------|----------------------|----------------------|
| college_access | 0.957*** (0.211) | 0.620*** (0.221) | 0.075 (0.260) | -0.037 (0.297) |
| urban | -0.126*** (0.029) | -0.106*** (0.032) | -0.036 (0.037) | -0.020 (0.044) |
| female | -0.082*** (0.019) | -0.085*** (0.017) | -0.081*** (0.018) | -0.063*** (0.019) |
| hhedu | 0.028*** (0.002) | 0.022*** (0.002) | 0.015*** (0.003) | 0.014*** (0.003) |
| logmpce | 0.104*** (0.008) | 0.100*** (0.008) | 0.096*** (0.014) | 0.089*** (0.014) |
| Observations | 75,838 | 79,466 | 112,779 | 138,448 |
| State FE | Yes | Yes | Yes | Yes |
| Age dummies | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| F-test IV | 13.49 | 17.09 | 15.27 | 16.90 |

*** p<0.01, ** p<0.05, * p<0.1

Sample includes SC, OBC, Others; SE clustered at State

To Summarize

- ▶ College Enrollment increased for OBC
- ▶ High School completion rates increased for OBC
- ▶ Heterogeneous effects
- ▶ IV estimates show that increased access to college improves school enrollments – significantly for older age-groups closer to higher education

Robustness Checks: College Enrollments

| VARIABLES | before 2005 | after 2010 | Ages 25-30 |
|--------------|----------------------|----------------------|----------------------|
| postxOBC | 0.001 (0.006) | 0.011 (0.014) | -0.001 (0.002) |
| post | 0.012 (0.009) | -0.004 (0.013) | -0.004 (0.003) |
| OBC | -0.026*** (0.004) | -0.017 (0.010) | -0.004*** (0.001) |
| hhedu | 0.018*** (0.001) | 0.025*** (0.002) | 0.002*** (0.000) |
| urban | 0.070*** (0.012) | 0.045*** (0.012) | 0.007*** (0.002) |
| female | -0.036*** (0.006) | -0.058*** (0.009) | -0.012*** (0.001) |
| logmpce | 0.053* (0.028) | 0.087** (0.034) | 0.011*** (0.003) |
| Observations | 93,720 | 68,411 | 136,710 |
| R-squared | 0.249 | 0.384 | 0.038 |
| Mean | 0.0647 | 0.198 | 0.0125 |

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Robust SE in parentheses; SE clustered at state-year
 Sample restricted to individuals aged 17 to 22 years
 SC and Others used as Control

Robustness Checks: High-School Completion

| VARIABLES | before 2005 | after 2010 | Ages 25-30 |
|--------------|----------------------|---------------------|----------------------|
| postxOBC | -0.009 (0.009) | 0.017 (0.020) | -0.009 (0.006) |
| post | 0.028** (0.011) | -0.014 (0.013) | -0.002 (0.010) |
| OBC | -0.023*** (0.005) | -0.022 (0.018) | -0.010*** (0.004) |
| hhedu | 0.021*** (0.001) | 0.025*** (0.002) | 0.019*** (0.001) |
| urban | 0.070*** (0.011) | 0.034*** (0.013) | 0.024*** (0.007) |
| female | -0.002 (0.009) | 0.006 (0.010) | -0.061*** (0.005) |
| logmpce | 0.043 (0.029) | 0.058** (0.028) | 0.034*** (0.011) |
| Observations | 44,557 | 32,957 | 132,812 |
| R-squared | 0.263 | 0.396 | 0.193 |
| Mean | 0.0903 | 0.243 | 0.0650 |

Robust SE in parentheses; SE clustered at state-year
 Sample restricted to individuals aged 17 to 19 years
 SC and Others used as Control

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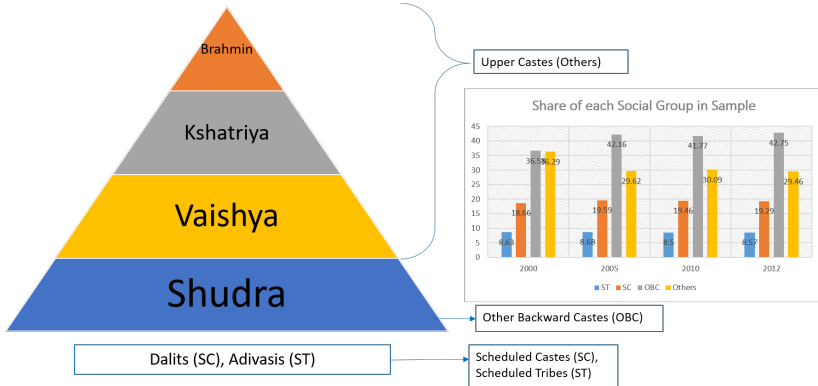


Figure 7: Caste Hierarchy

Back to Timeline

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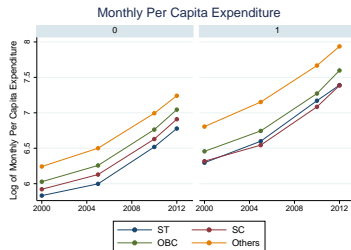
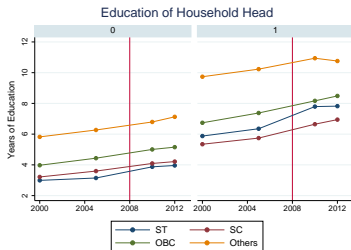


Figure 8: Caste Hierarchy

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