Political Alignment and Local Economic Growth

Challenging the "Double Engine" Governance Rhetoric in India

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Motivation

Motivation: Political Decentralization Creates Scope for Vertical Alignment

- Countries with a Federal structure are characterized by vertically layered political authority (National legislature, State legislature, Local authority etc).
- Such structures creates the scope for formation of political alignments (non-alignments), and, by extension, the possibility of frictions in policy execution and resource allocation.
- Vertical political alignments are formed when the same political party controls adjacent tiers of governance.
- **Research Question:** Does a vertical political alignment between the national legislature (MP) and state legislature (MLA) measurably impact local economic outcomes of constituencies in India?

Results Preview

- **Design.** This paper uses assembly-constituency level night lights data as a proxy for local economic activity and implements an RD design that exploits close state assembly races to compare constituencies that narrowly achieve political alignment to constituencies that narrowly fail to do so.
- **Main result.** Estimated effects on night lights growth are small and statistically indistinguishable from zero (-0.0046 to 1.02 percentage points), and remain so across alternative specifications.
- **Supplementary evidence.** Constituency-level road construction outcomes also show null effects, suggesting no increase in public-goods provision under political alignment.

Contribution to the Literature

- This paper is the first, to the best of our knowledge, to empirically study if MP–MLA alignment matters for **local area development**.
- It contributes to a growing literature that uses **night-time lights as a proxy for economic activity**, but has focused specifically on political selection at a single tier (the state level) in India.
- **Broader contribution** – Contributes to the literature that lies at the intersection of **political economy** and **development economics** that studies the impact of varying political setups on local development.

Institutional Setting

The Indian Political System

- India's political system features three vertically related tiers of elected government: Members of Parliament (MP) representing constituencies at the national level, Members of Legislative Assemblies (MLA) (state) representing constituencies at the state level,and councilors/sarpanchs at the the local level.
- All Indian elections run on five-year cycles, with state assembly elections staggered across time and space and 1 election for Parliamentary constituencies throughout the country.
- In this paper, we specifically focus on the MP MLA alignment in terms of party affiliation

Indian Constituency Boundaries

State Constituencies

Parliamentary Constituencies

India has 4,100 State Constituencies (MLAs) and 543 Parliamentary Constituencies (MPs).

The "Double Engine" Rhetoric in India

- **What it means:** Political parties often argue that development is faster when the same party controls both
  - the **Union government** (via the Member of Parliament, MP), and
  - the **State government** (via the Member of Legislative Assembly, MLA).
- **The narrative:** Campaigns frequently use the slogan of a **"double engine government"** (*double engine sarkar*)—suggesting that voters should elect MPs and MLAs from the same party for "synergy" in delivering development.
- **Backed by perception, not evidence**
  - There is little evidence to if the "double engine" promise hold in practice, or is it just political messaging?

Linking Parliamentary (MP) and State (MLA) Constituencies

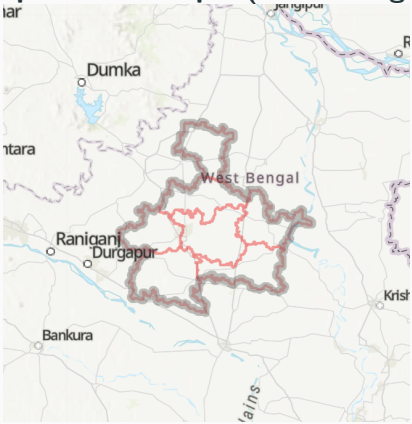
PC vs. SC Relationship

- Each parliamentary constituency (**PC**) encapsulates multiple state assembly constituencies (**SC**).
- The PC depicted here contains **7** SCs (the number varies by state).

The RD Design Setup

- Every State Assembly Election defines the new alignment status between the newly elected MLA and the sitting MP.
- **Identification:** We exploit the "close" SC elections to identify the causal effect of MP–MLA party alignment on local development.

Bolpur PC Example (West Bengal)



Literature

Literature Review: Political Selection and Local Growth

- **Party Alignment / Ties (MLA-Level):**
  - Electing a ruling-party candidate (MLA) is associated with $\sim +$**4** percentage points NL growth (Asher & Novosad, 2017).
  - Electing a party defector (MLA) shows similar positive effects ($\sim +$**4.6** p.p., Makkar, 2024).
- **Candidate Traits (MLA-Level, Larger Effects):**
  - Electing a **criminally** accused candidate leads to roughly **24** percentage points lower NL growth (Prakash et al., 2019) which can also be interpreted as a 2.4 percentage points lower GDP growth (using the India-specific elasticity of 0.1 of GDP growth with respect to night-light growth from Bickenbach et al. (2016)) in constituencies that elect criminal politicians with respect to those who do not in a close election.
  - Electing a **female** candidate is associated with about $+$**15** percentage points NL growth (Baskaran et al., 2018).

Theory

Conceptual Framework: Who does what, and why party ties might matter

Two elected layers

- **MPs (Parliament, national):** lobby for central programs (roads, power, welfare), influence intergovernmental funds, allocate small local grants through their MPLADS funds.
- **MLAs (State assemblies):** shape state budgets and line departments (Public Works Department, Rural development), steer local projects and service delivery.

Why same-party MP–MLA alignment might be beneficial

- **Fewer frictions:** smoother center→state→district flow.
- **Faster execution:** quicker approvals, contracting, clearances.
- **Bureaucratic pressure:** district officials face asymmetric pressure depending on party ties and ambitions.

Conceptual Framework: Why alignment might be detrimental

- **Rent-seeking behavior:** alignment may increase opportunities for corruption and extraction rather than service delivery.
- **Credit competition:** MPs and MLAs may block or delay projects to avoid the other side gaining political credit.
- **Political ambition:** ambitious MLAs may withhold cooperation if alignment undercuts their position within the party hierarchy.
- **Bureaucratic capture:** officials may face pressure to prioritize political interests over local needs, diluting development effects.

Example: Within Party Political Conflict

Source: Hindustan Times

Why Night-Lights?

Economic Growth Measurement using Night Lights Data

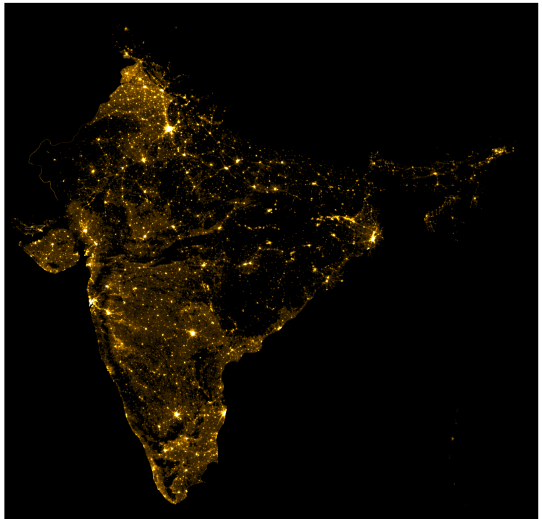
A key empirical challenge of looking at developmental outcomes at the assembly constituency units is that official GDP is not reported at that level in India. To address this limitation, night-time lights (NL) data is often used as a proxy for local economic activity.

Night-time lights are suitable for three key reasons:

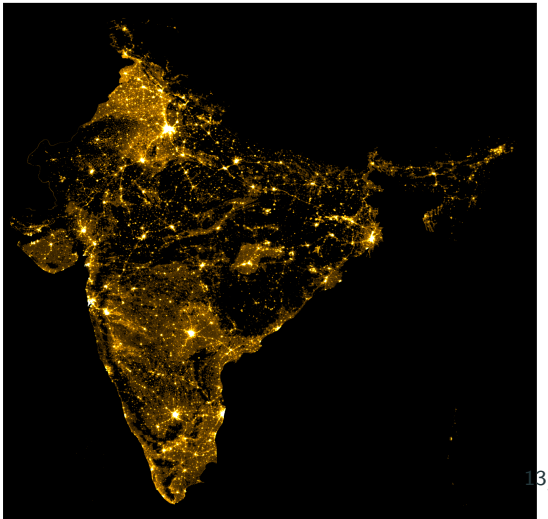
1. **Granular**: Radiance is observed on small grid cells that can be cleanly aggregated to constituency boundaries.
2. **Validated**: NL intensity has a **0.6** correlation with wealth and a **0.4** correlation with income at the assembly constituency level in India (Dhillon et al., 2016).
3. **Timely**: The series is available at least annually, thereby having a higher frequency than large household or economic surveys.

Night-time Lights in India: 1999 vs 2013

India 1999



India 2013



Night-Lights (NL): Caveats & Practical Fixes

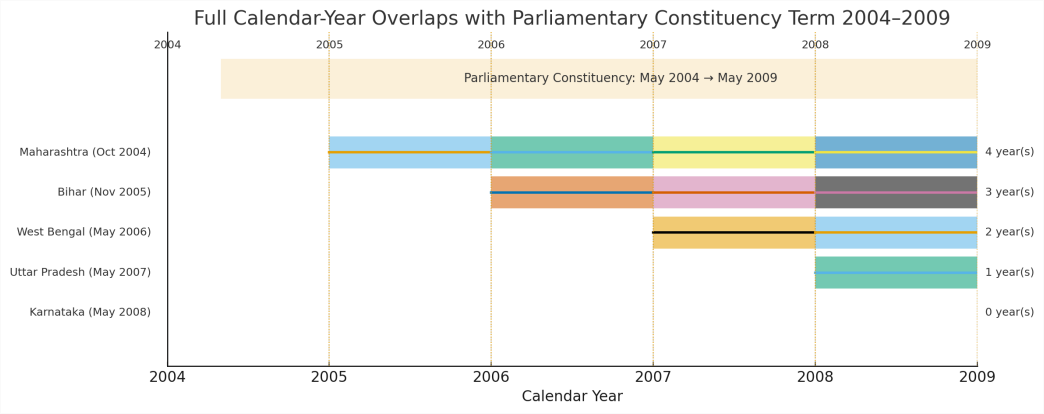
- Very dark constituencies (with DN values near zero) can exhibit mechanically large percentage changes from tiny absolute movements, which makes low baselines volatile.
- Inter-satellite differences and temporal calibration drift can create year-to-year level shifts that are unrelated to true changes in activity.

Implementation choices.

- To address the first issue, we drop constituency years with <2 NL level reading.
- To address the second issue, we use year fixed effects and clustered standard errors at the assembly constituency level in line with the usual literature methodology.

Alignment Formation and overlap years

How is the alignment formed



Working with Night Lights: Defining the Clean Overlap Period

- **Data Requirement:** When analyzing the effect on annual outcomes like **Night Lights (NL) intensity**, it's crucial to identify the "clean overlap period".
- **Clean Overlap Period:** This is the number of full, consecutive calendar years in which the current **state-assembly (MLA) winner** remains in power *till the next* parliamentary (MP) election.
- **Duration Dependency:** The actual duration of this clean overlap period depends entirely on the timing of the State Assembly election relative to the parliamentary election:
  1. If the MLA election happens **in the same calender year** as the parliamentary election, the clean overlap period is 4 years.
  2. If the MLA election happens **late in the MP term**, the clean overlap periods are shorter.
  3. The overlapping period thus ranges from 0 to 4 years.

Data

Data Sources

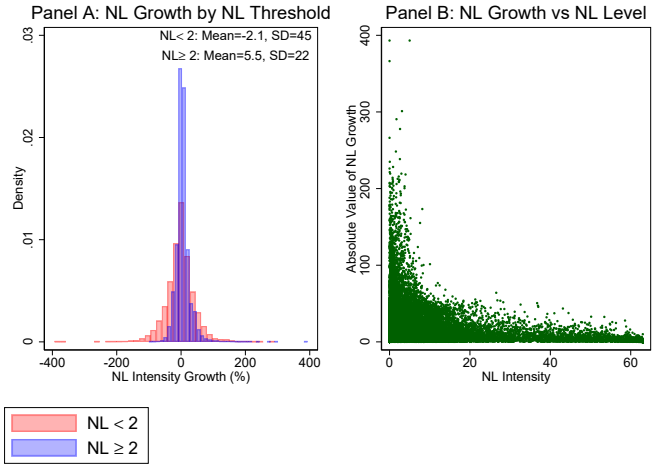
- **Elections (national & state).** Trivedi Centre for Political Data (TCPD) at Ashoka University: constituency-level results since independence (MPs, MLAs).
- **Constituency linkage.** Hand-built crosswalk from state assembly to parliamentary constituencies using Delimitation Commission orders (1976; 2008), checked against official maps.
- **Local economic activity (night lights).** NASA DMSP-OLS annual panels mapped to Indian constituencies (e.g., Henderson et al. 2012; Asher et al. 2021).
- **Public provision (roads).** Pradhan Mantri Gram Sadak Yojana (PMGSY) project-level data from the Ministry of Rural Development's online monitoring system, harmonized to constituencies (following Prakash et al. 2019).

Night-Lights (NL): Measurement & Scope (1999–2013)

- We measure local economic activity using annual DMSP–OLS night-lights composites for the years **1999–2013**.
- Each pixel reports a Digital Number (DN) on a **0–63** scale, where 0 indicates complete darkness and 63 reflects top-coded brightness.
- Our main outcome is **growth in night-lights** at the asssembly constituency level.

Sample coverage (1999–2013)	
Total state-assembly election observations	**12,374**
Observations with National Assembly winner in top two	**8,578**

Data: NL Level vs Growth



Empirical Strategy

Empirical Strategy: Local RD in Close MLA Races

I estimate the local-linear Regression Discontinuity (RD) below for elections where the top two candidates included one from the PC–winning party, restricted to $|Margin_{ct}| \leq h$:

$$Y_{c,t+1} = \beta_0 + \beta_1 \,\text{Alignment}_{ct} + \beta_2 \,\text{Margin}_{ct} + \beta_3(\text{Margin}_{ct} \times \text{Alignment}_{ct}) + X'_{ct}\delta + \varepsilon_{ct}.$$

- **Design. Local-linear RD** with a **Triangular Kernel**.
- **Bandwidth (h)**. Data-driven optimal choice using the Calonico et al. (CCT) algorithm.
- **Treatment (Alignment_{ct})**. Indicator: MLA winner is from the political party that won the previous **Lok Sabha** election in the corresponding Parliamentary Constituency (PC).
- **Running Variable (Margin_{ct})**. Signed vote-share difference (Winner − Runner-up). *Margin is positive if the aligned candidate won.*
- **Outcome ($Y_{c,t+1}$)**. Growth in **Night-Lights (NL)** intensity for constituency c in year $t+1$. The sample includes all MLA-MP overlapping years until the next MP election.
- **Controls ($X'_{ct}\delta$)**. Includes various **candidate and constituency-level controls**, as well as **year fixed effects**.

Note: This non-parametric, limited bandwidth estimation avoids the bias associated with using higher-order polynomials across the full sample (Gelman and Imbens,

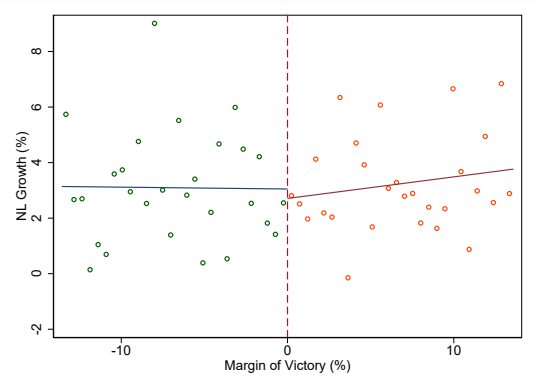
Results Roadmap

Results: Roadmap

1. **Main RD Results**
   - Baseline RD plot (No Controls)
   - Year–residualised RD plot
   - RD estimates with varying bandwidths (with / without controls)
2. **Validity Checks**
   - McCrary density test
   - Alternative functional forms (quadratic fits)
   - Covariate balance: constituency and candidate controls
3. **Heterogeneity Analyses**
   - By state type (BIMAROU, least developed, rich, high corruption)
   - By ruling party status, education, incumbency
   - By duration of overlap (short vs. long term)
4. **Public Goods Outcomes**
   - Roads construction RD Plot and RD estimates

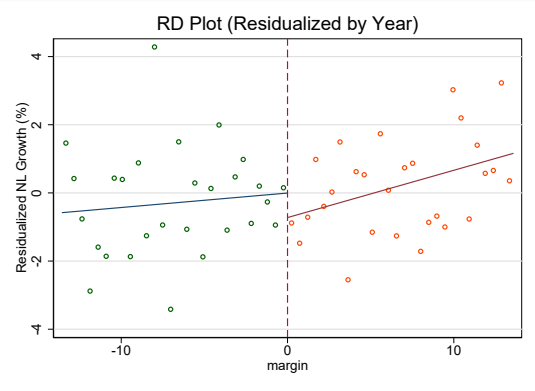
Results

Main Results: RD Plot (No Controls)



Notes: The x-axis equals the margin of victory (in percentage points) The number of bins is chosen using **2 bins per percentage point** of margin of victory. The lines on either side of the cutoff are linear best fits to the binned data. The **bandwidth** for which elections are included is selected by the **MSE** algorithm. Observations are restricted to constituency–years where the minimum NL intensity in the constituency is ≥ 2.

Main Results: RD Plot (Year Residualised)



Notes: The x-axis equals the margin of victory (in percentage points) The number of bins is chosen using **2 bins per percentage point** of margin of victory. The lines on either side of the cutoff are linear best fits to the binned data. The **bandwidth** for which elections are included is selected by the **MSE** algorithm. Observations are restricted to constituency–years where the minimum NL intensity in the constituency is ≥ 2.

Main Result: RD Estimates with varying bandwidths

	(1)	(2)	(3)	(4)	(5)
RD_Estimate	0.080	-0.0046	0.73	0.039	1.02
	(0.92)	(0.77)	(1.22)	(1.04)	(1.30)
Bandwidth Algorithm	CER	MSE	±5pp	0.5* MSE	0.5* CER
Bandwidth (pp)	8.89	13.6	5	6.80	4.44
Obs Left	2237	2918	1439	1853	1289
Obs Right	3033	4340	1787	2390	1575
Robust Standard Error	1.36	1.10	1.87	1.58	2.01

Notes: RD estimate equals coefficient β_3 from Eq. (1). Eq. (1) estimates a local regression discontinuity design with the margin of victory as the running variable, allowing the slope to differ on either side of the cutoff. Bandwidth is chosen by an optimal bandwidth algorithm. *Obs left* and *Obs right* refer to the number of observations in non-alignment and alignment cases, respectively. Polynomial order: 1. Standard errors in parentheses, clustered at the election level. $*$ $p < 0.10$, $**$ $p < 0.05$, $***$ $p < 0.01$.

Main Results: RD Estimates with controls

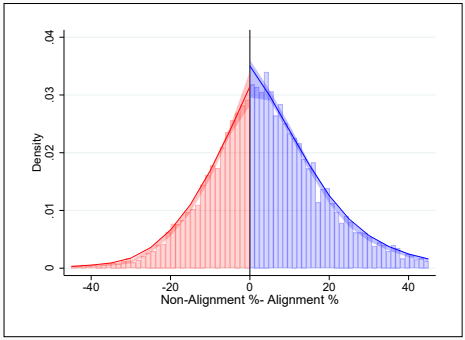
Impact of MP-MLA Alignment on NL Growth

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
RD_Estimate	0.080	-0.13	-0.037	-0.69	-0.0046	-0.19	-0.0023	-0.74
	(0.92)	(0.91)	(1.16)	(0.81)	(0.77)	(0.76)	(0.93)	(0.64)
Bandwidth Algorithm	CER	CER	CER	CER	MSE	MSE	MSE	MSE
Bandwidth (%)	8.89	8.89	8.89	8.89	13.6	13.6	13.6	13.6
Obs Left	2237	2203	1327	1327	2918	2871	1743	1743
Obs Right	3033	3012	1973	1973	4340	4310	2896	2896
Robust Standard Error	1.36	1.35	1.80	1.26	1.10	1.09	1.42	0.99
Candidate Controls	N	Y	Y	Y	N	Y	Y	Y
Constituency Controls	N	N	Y	Y	N	N	Y	Y
FE	N	N	N	Y	N	N	N	Y

Note: Columns 1 to 4 are based on CER bandwidth and 5 to 8 on MSE bandwidth, with various degrees of controls.

Validity and Robustness

McCrary Density Test



Notes. The x-axis reports the margin of victory for an election in percentage points and the y-axis represents the density of elections for different margin of victory intervals. The curves on either side of the cutoff are local polynomial fits of the density function. The discontinuity in density at the cutoff is not statistically significantly different from 0 ($p = 0.47$).

Alternative RD functional form Plot (Quadratic Fit)

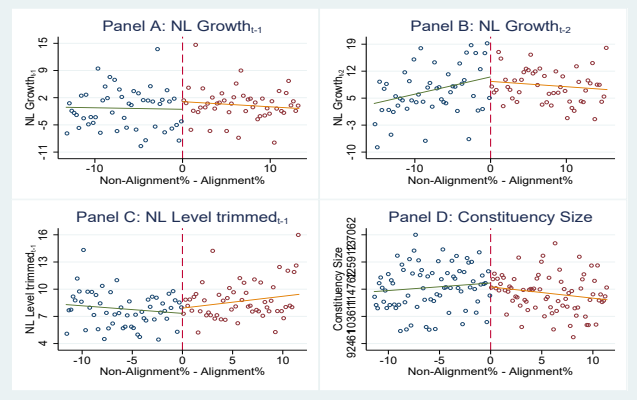
Notes: The x-axis equals the margin of victory (in percentage points) The number of bins is chosen using **2 bins per percentage point** of margin of victory. The lines on either side of the cutoff are quadratic best fits to the binned data. The **bandwidth** for which elections are included is selected by the **MSE** algorithm. Observations are restricted to constituency–years where the minimum NL intensity in the constituency is ≥ 2.

Alternative RD functional form Regression

	(1)	(2)	(3)	(4)	(5)
RD_Estimate	0.39	0.89	0.44	1.12	1.35
	(1.37)	(2.01)	(1.08)	(1.52)	(1.88)
Bandwidth Algorithm	CER	CER/2	MSE	MSE/2	±5pp
Bandwidth (pp)	8.87	4.43	14.4	7.21	5
Obs Left	2230	1285	2986	1942	1439
Obs Right	3033	1572	4534	2510	1787
Robust Standard Error	1.87	2.66	1.43	2.09	2.50

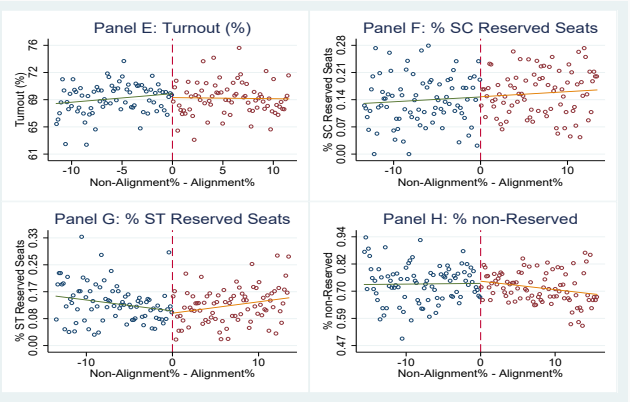
Notes: RD estimate equals coefficient β_3 from Eq. (1). Eq. (1) estimates a local regression discontinuity design with the margin of victory as the running variable with quadratic fits on either side. Bandwidth is chosen by an optimal bandwidth algorithm. *Obs left* and *Obs right* refer to the number of observations in non-alignment and alignment cases, respectively. Polynomial order: 1. Standard errors in parentheses, clustered at the election level. $*$ $p < 0.10$, $**$ $p < 0.05$, $***$ $p < 0.01$.

Covariate Balance: Constituency Controls



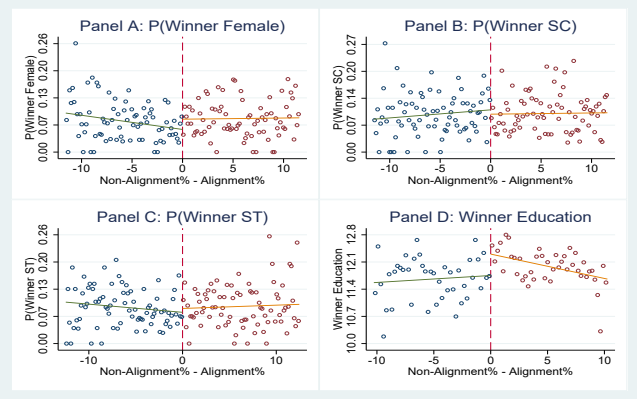
Notes. Each panel shown above uses a local-linear specification with triangular kernel and the MSE optimal bandwidth selection method. There are no systematic discontinuities at the cutoff for the constituency covariates studies above.

Covariate Balance: Constituency Controls



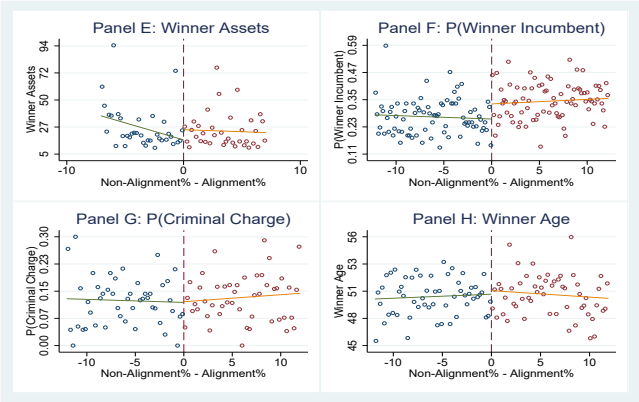
Notes. Each panel shown above uses a local-linear specification with triangular kernel and the MSE optimal bandwidth selection method. There are no systematic discontinuities at the cutoff for the constituency covariates studies above.

Covariate Balance: Candidate Controls



Notes. Each panel shown above uses a local-linear specification with triangular kernel and the MSE optimal bandwidth selection method. There are no systematic discontinuities at the cutoff for the constituency covariates studies above. MLAs whose win forms an MP MLA Alignment seem to have a higher educational qualification.

Covariate Balance: Candidate Controls



Notes. Each panel shown above uses a local-linear specification with triangular kernel and the MSE optimal bandwidth selection method. There are no systematic discontinuities at the cutoff for the constituency covariates studies above. MLAs whose win forms an MP MLA Alignment seem to have a higher probability of being an incumbent.

Heterogeneity

State Differences & Heterogeneity Check

- India has 28 states with very different development paths.
- Some states are doing very well (e.g., **Gujarat**, **Maharashtra**, **Karnataka**) while others lag behind on developmental indicators (e.g., **Bihar**, **Odisha**, **Uttar Pradesh**).
- Given this spread, **political alignment may have different effects** across state types.
- An overall ≈ 0 effect could be **offsetting impacts** across these groups.
- We therefore split by **state type** (e.g., rich vs. poor, least-developed, high-corruption) and re-estimate the local RD within each group.

Heterogeneity: Main Results by State Type

Panel A: BIMAROU States

	(1)	(2)	(3)	(4)
RD_Estimate	-2.94	-2.36	-0.71	-1.17
	(5.35)	(4.91)	(5.67)	(5.58)
Bandwidth Algorithm	CER	MSE	MSE/2	±5pp
Bandwidth	6.56	9.04	4.52	5.00
Obs.	350	458	271	295
Robust SE	5.78	5.68	6.65	6.57

Panel B: Least Developed States

	(1)	(2)	(3)	(4)
RD_Estimate	3.56**	2.89**	4.56**	4.39**
	(1.61)	(1.36)	(1.98)	(1.87)
Bandwidth Algorithm	CER	MSE	MSE/2	±5pp
Bandwidth	6.50	9.20	4.60	5.00
Obs.	1321	1799	942	1038
Robust SE	1.73	1.57	3.03	2.86

Panel C: High Corruption States

	(1)	(2)	(3)	(4)
RD_Estimate	-3.74	-3.29	-2.60	-1.90
	(2.79)	(2.30)	(3.36)	(3.57)
Bandwidth Algorithm	CER	MSE	MSE/2	±5pp
Bandwidth	8.23	11.49	5.75	5.00
Obs.	790	1041	587	529
Robust SE	3.03	2.78	4.66	4.94

Panel D: Rich States

	(1)	(2)	(3)	(4)
RD_Estimate	-1.27	-1.04	-1.89	-1.56
	(1.34)	(1.12)	(1.57)	(1.94)
Bandwidth Algorithm	CER	MSE	MSE/2	±5pp
Bandwidth	10.08	14.57	7.29	5.00
Obs.	1958	2594	1527	1078
Robust SE	1.46	1.34	2.45	3.20

Notes: RD estimates by state type. Standard errors in parentheses. The estimates are from a local linear regression using a triangular kernel. Asterisks denote significance levels ($* = 0.10$, $** = 0.05$, $*** = 0.01$).

Key Finding: The significant positive effect of political alignment on NL growth is concentrated solely in the **Least Developed States** with all other panels showing negative but insignificant estimates of alignment.

Least Developed States with Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
RD_Estimate	3.56**	2.38	3.16	-0.12	2.89**	1.75	1.84	-0.20
	(1.62)	(1.53)	(2.48)	(1.74)	(1.36)	(1.29)	(2.11)	(1.45)
Bandwidth Algorithm	CER	CER	CER	CER	MSE	MSE	MSE	MSE
Bandwidth (%)	6.50	6.50	6.50	6.50	9.20	9.20	9.20	9.20
Obs Left	534	528	269	269	697	690	346	346
Obs Right	787	782	412	412	1102	1096	604	604
Robust Standard Error	2.49	2.39	4.16	2.79	2.05	1.95	3.30	2.27
Candidate Controls	N	Y	Y	Y	N	Y	Y	Y
Constituency Controls	N	N	Y	Y	N	N	Y	Y
FE	N	N	N	Y	N	N	N	Y

Standard errors in parentheses. The causal effect of political Alignment on NL Growth in Least Developed states is sensitive to specification. While simple RD models show a significant positive discontinuity, the effect vanishes after controlling for pre-determined candidate and constituency characteristics.

Contextualizing Overlap Periods: Short vs. Long Term Influence

- **Common Concern:** One or two years of electoral overlap (the "short term") may be considered too brief a period for a newly elected politician to significantly **influence local development**.
- **Motivation for Time Breakdown:** This concern suggests that any observed effects might be clearer or stronger after a longer tenure.
- **Precedent in Literature:** This approach is supported by findings in related research:
  - Nishith Prakash's work on the election of politicians with criminal backgrounds found **negative estimates overall**, but identified **clear-cut evidence of effects 3 and 4 years** after the MLAs were elected.
- **Data Strategy:** To investigate the potential temporal lag in influence, we segment the data into:
  - **Short Term:** 1 and 2 years of overlap.
  - **Long Term:** 3 and 4 years of overlap.

Short Term Overlap: RD Estimates

	(1)	(2)	(3)	(4)	(5)
RD_Estimate	1.45	3.68	1.20	2.70	2.76
	(1.87)	(2.59)	(1.59)	(2.14)	(2.16)
Bandwidth Algorithm	CER	CER/2	MSE	MSE/2	±5pp
Bandwidth (pp)	6.83	3.41	10.2	5.08	5
Obs Left	716	401	954	561	555
Obs Right	845	422	1190	646	633
Robust Standard Error	2.71	3.68	2.24	3.09	3.11

Methodology: The estimates are derived from a local **Regression Discontinuity (RD) design**, with the **Margin of Victory** as the running variable. The model allows the slope of the local regression to differ on either side of the cutoff (zero margin). The **Bandwidth** is chosen using an optimal bandwidth algorithm.
Note: "Obs left" and "Obs right" refer to the number of observations in the **non-alignment** and **alignment** cases, respectively.

Long Term Overlap: RD Estimates

	(1)	(2)	(3)	(4)	(5)
RD_Estimate	-1.16	-1.10	-0.66	-1.25	-1.13
	(1.14)	(1.62)	(0.96)	(1.32)	(1.39)
Bandwidth Algorithm	CER	CER/2	MSE	MSE/2	±5pp
Bandwidth (pp)	7.56	3.78	11.1	5.54	5
Obs Left	1239	686	1585	958	884
Obs Right	1687	852	2428	1275	1154
Robust Standard Error	1.69	2.54	1.40	2.03	2.15

Methodology: The estimates are derived from a local **Regression Discontinuity (RD) design**, with the **Margin of Victory** as the running variable. The model allows the slope of the local regression to differ on either side of the cutoff (zero margin). The **Bandwidth** is chosen using an optimal bandwidth algorithm.
Note: "Obs left" and "Obs right" refer to the number of observations in the **non-alignment** and **alignment** cases, respectively.

Heterogeneity by MLA Traits & State Party Status

- **What we examine:** Heterogeneity by MLA **education**, **incumbency**, and **state ruling-party status**.
- **State ruling-party status.** Instances where the state government shares the MLA/MP party in a constituency, it may direct more resources, ease clearances, and co-finance more readily.
- **Education.** Within the *educated-MLA* subgroup, we compare **aligned** vs **non-aligned** constituencies. Education can help translate alignment into delivery—or, conversely, facilitate rent-seeking .
- **Incumbency.** Incumbents' experience, networks, and procedural know-how can make alignment more effective (faster approvals, smoother execution)—but could also amplify rents.

Heterogeneity by Ruling Party Status at the State

Ruling vs Non-Ruling

	Non-Ruling				Ruling			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Vertical Alignment	-2.070	-1.425	-1.065	-1.402	1.918	1.354	1.673	1.694
	(2.108)	(1.760)	(2.985)	(2.501)	(2.097)	(1.748)	(3.024)	(2.437)
Bandwidth size	7.644	11.13	3.822	5.564	9.482	14.16	4.741	7.082
No. of observations	2223	2840	1302	1721	3015	4208	1534	2272
Bandwidth type	CER	MSE	CER/2	MSE/2	CER	MSE	CER/2	MSE/2

Note: Ruling party estimates are positive throughout, while Non-Government estimates are negative throughout, but none are statistically significant.

Heterogeneity by Education of MLA

Education (Below College vs College)								
	Below College				College			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Vertical Alignment	-1.024	-0.414	-2.420	-1.504	-0.664	-0.750	0.112	-0.154
	(4.122)	(3.614)	(5.515)	(4.842)	(1.888)	(1.609)	(2.654)	(2.221)
Bandwidth size	6.761	9.313	3.381	4.657	8.318	12.12	4.159	6.062
No. of observations	543	703	293	378	1867	2427	1024	1425
Bandwidth type	CER	MSE	CER/2	MSE/2	CER	MSE	CER/2	MSE/2

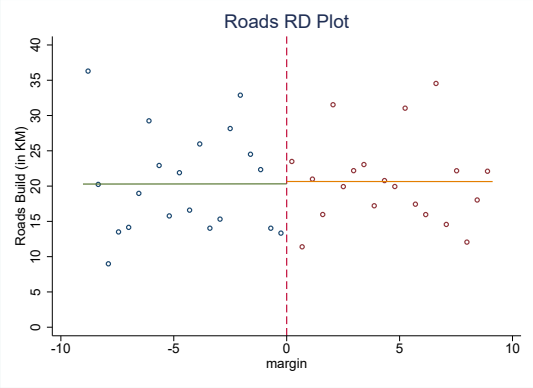
Heterogeneity by Incumbency status of MLA

Incumbency (Non-Incumbent vs Incumbent)

	Non-Incumbent				Incumbent			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Vertical Alignment	1.038	0.405	2.017	1.035	-1.975	-1.260	-1.948	-2.414
	(1.506)	(1.264)	(2.157)	(1.751)	(2.327)	(1.929)	(3.497)	(1.824)
Bandwidth size	10.30	15.43	5.149	7.716	8.784	12.72	4.392	6.361
No. of observations	4170	5455	2315	3292	1565	2097	864	1219
Bandwidth type	CER	MSE	CER/2	MSE/2	CER	MSE	CER/2	MSE/2

Public Goods Outcomes

Public Goods Provision: Roads Data



Note: The x-axis equals the margin of victory (in percentage points). The number of bins is chosen using **2 bins per percentage point** of margin of victory. The lines on either side of the cutoff are linear best fits to the binned data. The **bandwidth** for which elections are included is selected by the **MSE** algorithm.

Local linear RD estimates of co-partisanship on road construction (km).

	(1)	(2)	(3)	(4)	(5)
RD Estimate	0.42	6.60	-0.38	2.88	2.17
	(4.35)	(5.74)	(3.86)	(5.04)	(4.88)
Bandwidth Algorithm	CER	CER/2	MSE	MSE/2	±5pp
Bandwidth (pp)	6.61	3.31	9.13	4.56	5
Obs Left	179	98	222	132	135
Obs Right	196	101	251	134	151
Robust SE	5.89	7.16	5.24	6.73	6.54

Notes: All specifications use a triangular kernel, robust bias-corrected SEs clustered at the assembly constituency level, and no covariates or fixed effects.

Conclusion

Conclusion & Implications

- **Main finding.** No systematic evidence that MP–MLA co-partisanship ("double engine") raises local development; effects are near zero on night-time lights and roads.
- **Heterogeneity.** Positive estimates in *least-developed states* in simple models *do not survive* richer controls; splits by ruling status, education, and incumbency are not robust.
- **Interpretation.** India's institutions and federal structure likely constrain partisan favoritism; vertical alignment alone is *not sufficient* to move average outcomes.
- **Limitations & next steps.**
  - *Measurement.* Night lights are a proxy; test additional administrative outcomes (health, schooling, electrification).
  - *Dynamics.* Examine longer horizons/overlap duration; probe mechanisms (fund flows, bureaucratic channels).
- **Takeaway.** The "double engine" claim is **not data-backed**. Voting for better developmental outcomes does not require choosing an MLA candidate aligned with the constituency MP's political party.