Is small beautiful? Do small districts lead to better outcomes?

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Abstract

What is the optimal population level for local public service delivery? In the question over the optimal size of local government systems, small jurisdictions have been attributed a lot of merits. But does bifurcating larger districts into smaller ones pay off? I examine this question in the context of public education using data from a district bifurcation process in Karnataka, India. Performance of sub-districts which were allocated to newly created smaller districts is compared with sub-districts that remained in larger districts using a difference in difference estimation model. Education performance is measured in test scores, as well as inputs to schooling such as number of schools, funding to schools, academic inspections etc. The results seem to suggest that there is no significant improvement in education outcomes as a result of the bifurcation.

Is there an optimal size for local government systems? Aristotle in his treatise 'Politics' argued that political entities needed to balance the twin considerations of economic viability and effective citizenship (**aristotle_politics_1984**). In modern democracies, debates on the topic are framed in a similar language with two sets of normative criteria. The first one is *output legitimacy*. The function of local governments is to provide a set of public goods and services to its citizens and promote public welfare. A government that fulfils this duty better has higher output legitimacy. The other normative concern is 'citizen effectiveness' or the capability and willingness of citizens to control the decisions made on their behalf (**dahl_size_1973**). Enhancing citizen effectiveness raises the *input legitimacy* of the system. Both output and input legitimacy are prerequisites to democratic legitimacy (**scharpf_governing_1999**). The fundamental assumption in these debates is that changing the size of political units is likely to affect the democratic quality (input legitimacy) and functional effectiveness (output legitimacy) of governments.

Recent debates on the topic attribute considerable virtues to small jurisdictions. In democratic societies, the economic and political arguments tend to converge. Small jurisdictions are believed to enhance political participation, make politics less

abstract, politicians more responsive, and facilitate exit-based empowerment of citizens (**hansen_size_2014**). Decentralisation will also increase economic efficiency as the local governments have an information advantage and can respond better to variance in preferences at the local level (**oates_fiscal_1972**), and population mobility will lead to competition between local authorities and better provision of public goods. Decentralised service delivery especially when citizens directly elect the local governments is expected to provide better coverage, quality and efficiency (**smoke2015rethinking**). Competing local governments may experiment with various ways to provide public goods and lead to innovations that can be applied elsewhere. These considerations suggest that public goods that are (1) sensitive to local preferences and (2) do not have large spillover (3) nor scale effects: infrastructure, public education, etc. are better provided under decentralisation (**tiebout_economies_1960 oates_fiscal_1972**). At the same time there is a counter argument in favour of larger jurisdiction sizes because it allows for economies of scale in the providing public goods (**hirsch_expenditure_1959**).

In a bid to arrive at the optimal population size in a local government unit, many national governments have reorganized their sub-national boundaries. Europe has seen local government consolidation via municipal amalgamations while transitional economies have seen increasing decentralization at the local government level. Since the 1950s, India has seen frequent administrative bifurcations at the local government level (district level). The number of districts in the country has increased from 356 in the 1971 census period to 640 in the 2011 census (Table. 2) This is a trend that is continuing in the present day. West Bengal has created five new districts since 2015. The rationale for creating of new districts was stated to be - "...for *better administrative control* and so that *public service can be delivered at the door steps* of the people staying at remote areas" (emphasis added) (**Mamata**). Similarly, Telangana state is contemplating the creation of 14 - 15 new districts (**Telengana**) and Haryana state is considering 3 more districts (**Haryana**). In all these cases, the stated rationale for district bifurcation is decentralisation of administration and better public service. And India is not alone in the implementation of administrative bifurcations at the local government level. Brazil, in the period from 1990 to 2000, increased the number of municipalities from 4,491 to 5,560 (**tomio2005creation**). Russia adopted Local Government Reform in 2003 and since then has doubled the number of municipalities (**turgel2008new**). But does creation of new districts enhance public service outcomes?

This paper explores the impact of bifurcation of districts on the quality of public service delivery - specifically, the quality of public education. I present the theory behind reorganization and the available evidence on its effectiveness, and discuss the methodological challenges in the empirical examination of size effects. I test my propositions using data collected on public education in the districts of Karnataka in India over a 9 year period from 2005 to 2013. Karnataka created three new districts by bifurcating three existing ones during the period. Remaining districts were left untouched. A new district is created by reallocating some of the

taluks (sub-districts) within an existing district to a new one. This allows use of a difference in difference model to test for the effect of the policy on education outcomes. The reform was driven by the state government, following public demand for creation of new districts and had taken place at different times. But the rationale for the public demand was based on cultural factors rather than public education concerns.

The fundamental argument in favour of decentralized governance comes from the perspective that there is heterogeneity in demand for public services. The variance in demand can be better understood and catered to by a government that is closer to the citizens, thus raising well-being throughout society. Tiebout, in his 1956 paper, talks about citizens *voting with their feet* or *exiting*. He conceptualizes a fully mobile citizen that can move to a jurisdiction that matches her preferences for tax rates and public service levels, thus revealing her preferences (**tiebout_economies_1960**). This information can then be used by local governments to tailor their own activities and thus raise welfare. But how much decentralization should we demand? Oates' Decentralization theorem formalizes it as *"...in the absence of cost-savings from the centralized provision of a [local public] good and of interjurisdictional externalities, the level of welfare will always be at least as high (and typically higher) if Pareto-efficient levels of consumption are provided in each jurisdiction than if any single, uniform level of consumption is maintained across all jurisdictions"*(**oates_fiscal_1972** pg 54).

In other words, a public good that does not have large economies of scale or inter-jurisdictional externalities may be better provided under decentralization. Public education is not seen as imposing strong externalities on neighbouring regions, nor does it have large scale effects. Therefore, under the classic explanation, a smaller district should be able to provide better service. At the same time, practical considerations remain. We might need to build administrative capacity when a larger district is split into two or more before any benefits can be reaped. Also, if the districts are too small in the first place, there might be some benefit in consolidating two or more districts and managing them together. Larger jurisdiction size will allow you to spread fixed costs of a greater population. Some of these effects are likely to materialize over a longer period of time and would require a long research period.

Jurisdiction Size

There is evidence from the decentralisation reforms in Bolivia and Columbia to suggest that decentralisation has enhanced the local allocative efficiency of public funds. Notably, it has resulted in shifting resources towards education in regions where education performance has historically been worse. But data limitations prevent the authors from testing whether the improvement extends to education outcomes, such as literacy and test scores (**faguet2008decentralization**). Also, there is evidence from California state, to suggest that students in smaller districts perform better than those in larger districts in standardised tests after controlling

for a variety of other factors (**driscoll2003school**). The effect of either of these policies - bifurcation or consolidation (or a combination of both) - depends on the particular context and capabilities of the local administrative body. Holzer et al in 2009 provide a review of the empirical literature on this question. Their review suggests that the evidence on the effect of size on local government performance is inconclusive - there is very little correlation between size and efficiency for population sizes between 25,000 and 250,000 - anything above that or below is less efficient (**holzer2009literature**). Decentralization at the local government level is a step that is frequently taken - despite the lack of strong evidence in its favour.

The critics of decentralisation argue that the its effectiveness is often greatly hampered by the particular context of its implementation. Vito Tanzi offers an argument for corruption to be higher at local levels than at central government levels, because of closer interaction at the local level between the bureaucrats and citizens that can enable nepotism and personal favours (**tanzi1996macroeconomic**). Also, local bureaucracies may be poorly staffed and ill-equipped to handle the responsibilities associated with the decentralised provision of public goods (**prud1995dangers**). The precise nature of decentralisation, such as the financial autonomy of the local government may also pay a role in determining whether the benefits can be reaped. These factors caution against the implementation of decentralisation as a panacea for administrative ills. It also means that any instance of decentralisation can be explored further to understand the context of success or failure.

Spatial and temporal variation in public policy affords the conditions suitable for identifying the impact of the policy on outcomes. But the size and boundary of the administrative unit is an active response to a problem and is endogenous - it can be included in the left *or* right side of the estimation equation. In this paper I estimate the effect of the bifurcation of the administrative district on the public spending and quality of educational service delivered in the district. The identification is complicated by the fact the districts that were not split may be different from those that were. The demand for creation a new district usually arises from within the district, and the political traction gained by the idea has a role to play in the eventual decision made by the state. If the source of variation in policy action arises from within the characteristics of the intended beneficiaries of policy, then we have a policy endogeneity. Policy variation itself may be an outcome of some other characteristics.

At the 2001 census, Karnataka state had 27 districts - each with an average population of over 660,000 (If we exclude the urban district of Bangalore, the average drops to around 470,000). In the last decade Karnataka state in the south of India carved out three new districts from three existing ones. Two new districts (Chikballapura and Ramanagara) were created from two existing ones (Kolar and Bangalore rural respectively) in 2007, and a third new district (Yadgir) was created from an existing one (Gulbarga) in 2010 taking the total in the state up to 30. Creation of a new district entails additional administrative costs as the new districts often need to create the administrative infrastructure.

Appendix

Table 1: New Districts created in India - Statewise

States/UTs	1971-81	1981-91	1991-2001	2001-11
Andaman and Nicobar Islands	1	0	0	1
Andhra Pradesh	2	0	0	0
Arunachal Pradesh	4	2	2	3
Assam	0	13	0	4
Bihar	14	11	8	1
Chhattisgarh	0	0	9	2
Daman and Diu	0	2	0	0
Delhi	0	0	8	0
Goa	0	-1	0	0
Gujarat	0	0	6	1
Haryana	5	4	3	2
Himachal Pradesh	2	0	0	0
Jammu and Kashmir	4	0	0	8
Jharkhand	0	0	5	6
Karnataka	0	1	7	3
Kerala	2	2	0	0
Madhya Pradesh	2	0	7	5
Maharashtra	0	4	5	0
Manipur	1	2	1	0
Meghalaya	3	0	2	0
Mizoram	3	0	5	0
Nagaland	4	0	1	3
Odisha	0	0	17	0
Punjab	1	0	5	3
Rajasthan	0	1	5	1
Tamil Nadu	2	5	9	2
Tripura	0	0	1	0
Uttar Pradesh	2	7	16	1
Uttarakhand	0	0	4	0
West Bengal	0	1	1	1
Overall	52	54	127	47

Table 2: No# of Districts in India - Statewise

States/UTs	1971	1981	1991	2001	2011
Andaman & Nicobar Islands	1	2	2	2	3
Andhra Pradesh	21	23	23	23	23
Arunachal Pradesh	5	9	11	13	16
Assam	10	10	23	23	27
Bihar	17	31	42	37	38
Chandigarh	1	1	1	1	1
Chhattisgarh				16	18
Dadra & Nagar Haveli	1	1	1	1	1
Daman & Diu			2	2	2
Delhi	1	1	1	9	9
Goa	3	3	2	2	2
Gujarat	19	19	19	25	26
Haryana	7	12	16	19	21
Himachal Pradesh	10	12	12	12	12
Jammu & Kashmir	10	14	14	14	22
Jharkhand				18	24
Karnataka	19	19	20	27	30
Kerala	10	12	14	14	14
Lakshadweep	1	1	1	1	1
Madhya Pradesh	43	45	45	45	50
Maharashtra	26	26	30	35	35
Manipur	5	6	8	9	9
Meghalaya	2	5	5	7	7
Mizoram		3	3	8	8
Nagaland	3	7	7	8	11
Orissa	13	13	13	30	30
Pondicherry	4	4	4	4	4
Punjab	11	12	12	17	20
Rajasthan	26	26	27	32	33
Sikkim	4	4	4	4	4
Tamil Nadu	14	16	21	30	32
Tripura	3	3	3	4	4
Uttar Pradesh	54	56	63	70	71
Uttaranchal				13	13
West Bengal	16	16	17	18	19
States	19	22	25	29	
Union Territories	10	9	7	6	
Districts	356	412	466	593	640

Table 3: No of Schools District-wise, across the years

	District	Yr2005	Yr2006	Yr2007	Yr2008	Yr2009	Yr2010	Yr2011	Yr2012	NA.
1	BAGALKOT	229	255.0	265.0	269.0	277.0	281	340.0	291.0	292.0
2	BANGALORE RURAL	330	324.0	330	328.0	332.0	330.0	367.0	340.0	343.0
3	BELGAUM	260	277.0	269.0	283	285.0	291.0	366.0	304.0	304.0
4	BELGAUM CHIKKODI	337.0	358.0	291	307.0	320.0	324.0	383.0	328.0	332.0
5	BELLARY	213.0	224.0	228	231.0	232	240.0	290.0	246.0	244.0
6	BIDAR	262.0	290	322.0	336.0	358.0	377.0	471.0	399.0	414.0
7	BIJAPUR	326.0	336.0	327	336.0	345	366	439	392.0	396
8	CHAMARAJANAGARA	310	254	180	184.0	186	188.0	229.0	189.0	188.0
9	CHIKKABALLAPURA	307.0	295.0	300	309.0	312.0	313.0	357	321.0	319.0
10	CHIKKAMANGALORE	253.0	261.0	235.0	224.0	218.0	221.0	258	223.0	225.0
11	CHITRADURGA	309.0	310.0	315	330.0	332.0	335.0	398	340	342
12	DAKSHINA KANNADA	218.0	223.0	226.0	229	231.0	232.0	294.0	234	235.0
13	DAVANAGERE	262.0	268.0	274.0	273.0	275.0	278.0	346.0	279.0	282.0
14	DHARWAD	197.0	207.0	145	148.0	153.0	149.0	185.0	152	156.0
15	GADAG	128.0	131	135.0	135.0	138.0	141.0	183	146	145.0
16	GULBARGA	244.0	252.0	262	283	290.0	300.0	365.0	322.0	326.0
17	HASSAN	364.0	367	365	367.0	366.0	371.0	428.0	362.0	363.0
18	HAVERI	171.0	176.0	180.0	187.0	191.0	195.0	242.0	199.0	200.0
19	KODAGU	168	172.0	173.0	178.0	178.0	178.0	226.0	179	181.0
20	KOLAR	421	437.0	419	402.0	403.0	405.0	449.0	406.0	404
21	KOPPAL	265	271	288	292.0	297.0	305.0	369.0	325.0	334
22	MANDYA	294.0	295.0	296.0	298	296.0	298.0	344.0	302.0	292.0
23	MYSORE	293.0	301.0	303.0	307.0	310.0	315.0	370	316.0	315.0
24	RAICHUR	294.0	308	324.0	348.0	361	381	445.0	394.0	402.0
25	RAMANAGARA	388.0	386.0	395.0	396.0	401	406.0	454.0	391.0	392.0
26	SHIMOGA	319.0	317.0	327.0	329.0	331.0	333.0	389.0	335.0	332
27	TUMKUR	436	436	445.0	435.0	436.0	429	496.0	427.0	423.0
28	TUMKUR MADHUGIRI	351	346	352.0	352.0	358.0	362.0	422	363.0	364.0
29	UDUPI	284.0	283	200	192.0	194.0	194.0	258.0	196.0	196.0
30	UTTARA KANNADA	212.0	216.0	215.0	219.0	219.0	219.0	249	221.0	221.0
31	UTTARA KANNADA SIRSI	200.0	200.0	203	208	209	207.0	234.0	209	209.0
32	YADAGIRI	298.0	311.0	328.0	339.0	358	374.0	441.0	398	404

Table 4: Summary Statistics in 2005

	Undivided	Divided
TotalMarks	321.0	302.0
Rural	0.9	0.9
WorkDays	89.0	102.0
AcadInsp	0.5	0.4
DevGrantR	2,765.0	2,592.0
DevGrantE	1,641.0	1,298.0
TLMGrantR	3,537.0	3,989.0
TLMGrantE	1,763.0	1,793.0
Classrooms	4.0	3.4
ToiletG	1	1
Electricity	0.7	0.5
Library	0.8	0.8
PlayGround	0.6	0.5
Male_Tch	2.4	2.0
Female_Tch	2.0	1.6
Grad_Tch	30.0	26.0
ProfQ_Tch	4.2	3.3
Days_nonTch	0.8	1.9
Public	0.9	0.9
Split	0	1
Households	49,571.0	47,044.0
TotPop	256,392.0	247,430.0
Pop0.6	35,845.0	36,113.0
Literates	138,828.0	120,988.0
TotWPop	116,550.0	117,529.0
SCST	63,916.0	75,581.0
Yr2005	276.0	333.0
SchoolperPop2005	1.2	1.4

Population figures used to calculate SchoolperPop2005 is from 2001

Table 5: Summary Statistics in 2005

	Variables	Old	New	p.value
1	Total Marks	295.00	310.00	0.17
2	Rural/Urban (rural = 1)	0.91	0.93	0.42
3	Working Days	103.00	102.00	0.93
4	Academic Inspection	0.49	0.31	0.09
5	School Dev Grant - R	2,554.00	2,639.00	0.8
6	School Dev Grant - E	1,290.00	1,309.00	0.93
7	TLM Grant - R	4,093.00	3,857.00	0.63
8	TLM Grant - E	1,872.00	1,691.00	0.56
9	Classrooms	3.60	3.20	0.16
10	Electricity (Yes = 1)	0.53	0.50	0.65
11	Library (Yes = 1)	0.77	0.75	0.63
12	PlayGround (Yes = 1)	0.48	0.49	0.85
13	Male teachers	2.00	2	0.96
14	Female teachers	1.80	1.40	0.02
15	Grad teachers	26.00	26.00	0.95
16	ProfQ teachers	3.50	3.00	0.05
17	Days_non teaching activity	1.50	2.50	0.35
18	Public Schools (\%)	0.90	0.90	0.99
19	Households	47,435.00	46,546	0.89
20	Total Population	252,924.00	240,437.00	0.71
21	Population 0 - 6	36,703.00	35,362.00	0.83
22	Literates	131,616.00	107,461.00	0.19
23	Total W Population	115,871.00	119,639	0.8
24	SC/ST Population	75,410.00	75,798.00	0.97
25	No of Schools in Taluk	333.00	333.00	1
26	Schools per 1000 people	1.40	1.50	0.41
27	New/Old Dist (New = 1)	0	1	-

Population figures used to calculate SchoolperPop2005 is from 2001

Table 6: Summary Statistics in 2013

	Undivided	Divided
TotalMarks	344.0	337.0
Rural	0.9	0.9
WorkDays	0.7	0.8
AcadInsp	1.6	1.3
DevGrantR	8,657.0	7,328.0
DevGrantE	7,627.0	6,429.0
TLMGrantR	1,730.0	1,255.0
TLMGrantE	1,612.0	1,157.0
Classrooms	5.3	4.7
ToiletG	1.0	1.0
Electricity	1.0	1.0
Library	1.0	1.1
PlayGround	0.6	0.5
Male_Tch	2.3	2.0
Female_Tch	2.4	2.1
Grad_Tch	1.0	0.9
ProfQ_Tch	4.6	4.0
Days_nonTch	0.3	0.3
Public	0.9	0.8
Split	0	1
Households	45,257.0	45,717.0
TotPop	213,545.0	221,695.0
Pop0.6	25,976.0	27,859.0
Literates	129,884.0	121,608.0
TotWPop	104,540.0	110,617.0
SCST	61,425.0	75,293.0
Yr2005	272.0	329.0
SchoolperPop2005	1.4	1.6

Population figures used to calculate SchoolperPop2005 is from 2001

Table 7: Summary Statistics in 2013

	Variables	Old	New	p.value
1	Total Marks	341.00	332.00	0.35
2	Rural/Urban (rural = 1)	0.89	0.87	0.62
3	Working Days	0.66	1.00	0.55
4	Academic Inspection	1.30	1.40	0.88
5	School Dev Grant - R	7,354.00	7,291.00	0.91
6	School Dev Grant - E	6,527.00	6,295.00	0.46
7	TLM Grant - R	1,159.00	1,385.00	0.38
8	TLM Grant - E	1,057.00	1,293.00	0.31
9	Classrooms	4.90	4.40	0.12
10	Electricity (Yes = 1)	0.96	0.98	0.37
11	Library (Yes = 1)	0.97	1.20	0.34
12	PlayGround (Yes = 1)	0.55	0.52	0.56
13	Male teachers	2.10	2.00	0.57
14	Female teachers	2.40	1.80	0.01
15	Grad teachers	1.00	0.76	0.20
16	ProfQ teachers	4.30	3.60	0.02
17	Days_non teaching activity	0.43	0.11	0.21
18	Public Schools (\%)	0.84	0.87	0.12
19	Households	44,657.00	47,163.00	0.65
20	Total Population	219,607.00	224,543	0.87
21	Population 0 - 6	27,680.00	28,102.00	0.94
22	Literates	126,225.00	115,311.00	0.43
23	Total W Population	106,832.00	115,778.00	0.53
24	SC/ST Population	72,393.00	79,247.00	0.60
25	No of Schools in Taluk	326.00	333.00	0.87
26	Schools per 1000 people	1.50	1.70	0.54
27	New/Old Dist (New = 1)	0	1	-

Population figures used to calculate SchoolperPop2013 is from 2001

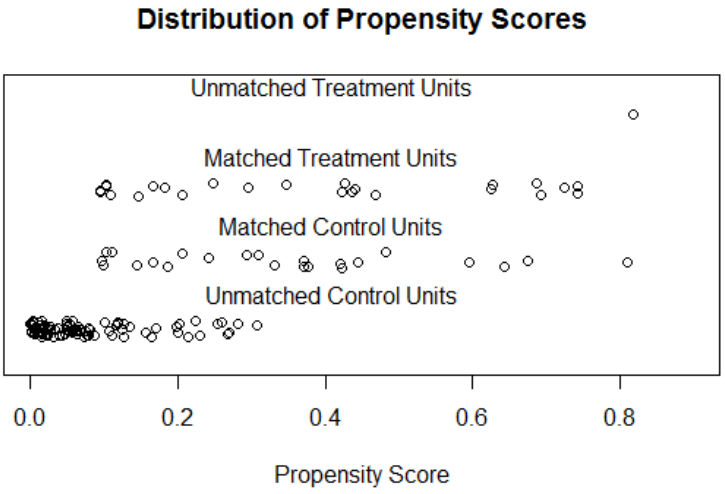

Figure 1: Propensity Score Matching: Jitter Plot

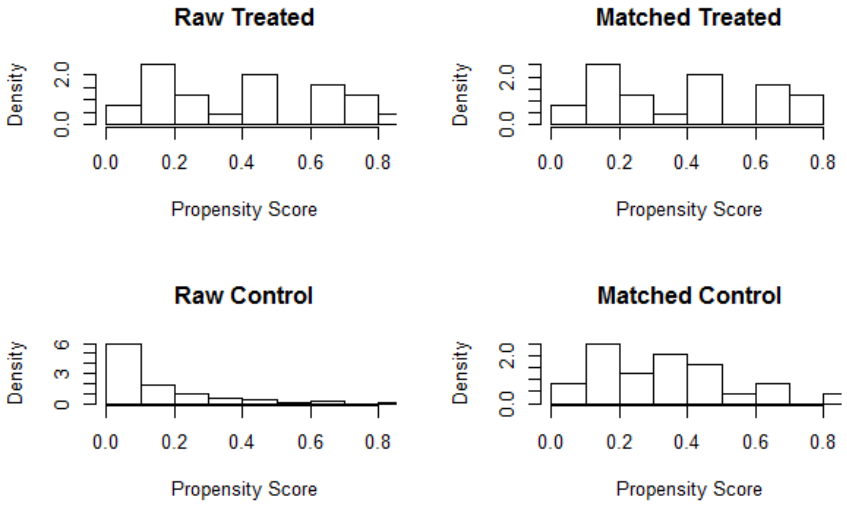

Figure 2: Propensity Score Matching: Histogram

Table 8: Summary Statistics in 2005 - With PS Matched Control Group

	Undivided	Divided
TotalMarks	308.0	302.0
Rural	0.9	0.9
WorkDays	90.0	102.0
AcadInsp	0.5	0.4
DevGrantR	2,659.0	2,608.0
DevGrantE	1,470.0	1,279.0
TLMGrantR	3,585.0	4,007.0
TLMGrantE	1,966.0	1,777.0
Classrooms	3.7	3.5
ToiletG	1	1
Electricity	0.6	0.5
Library	0.8	0.8
PlayGround	0.5	0.5
Male_Tch	2.3	2.0
Female_Tch	1.7	1.7
Grad_Tch	26.0	26.0
ProfQ_Tch	3.8	3.3
Days_nonTch	1.5	1.8
Public	0.9	0.9
Split	0	1
Households	42,187.0	47,476.0
TotPop	220,056.0	250,669.0
Pop0.6	31,895.0	36,710.0
Literates	111,360.0	122,912.0
TotWPop	101,262.0	118,593.0
SCST	66,376.0	75,755.0
Yr2005	299.0	332.0
SchoolperPop2005	1.5	1.4

Population figures used to calculate SchoolperPop2005 is from 2001

Table 9: Summary Statistics in 2005 - With PS Matched Control Group

	Variables	Old	New	p.value
1	Total Marks	295.0	311.0	0.17
2	Rural/Urban (rural = 1)	0.9	0.9	0.58
3	Working Days	102.0	101.0	0.88
4	Academic Inspection	0.5	0.3	0.14
5	School Dev Grant - R	2,554.0	2,684.0	0.73
6	School Dev Grant - E	1,290.0	1,263.0	0.91
7	TLM Grant - R	4,093.0	3,888.0	0.69
8	TLM Grant - E	1,872.0	1,644.0	0.48
9	Classrooms	3.6	3.3	0.22
10	Electricity (Yes = 1)	0.5	0.5	0.81
11	Library (Yes = 1)	0.8	0.7	0.56
12	PlayGround (Yes = 1)	0.5	0.5	0.73
13	Male teachers	2.0	2.0	0.93
14	Female teachers	1.8	1.4	0.03
15	Grad teachers	26.0	26.0	0.97
16	ProfQ teachers	3.5	3.1	0.08
17	Days_non teaching activity	1.5	2.3	0.46
18	Public Schools (\%)	0.9	0.9	0.80
19	Households	47,435.0	47,534.0	0.99
20	Total Population	252,924.0	247,512.0	0.88
21	Population 0 - 6	36,703.0	36,719.0	1.00
22	Literates	131,616.0	110,726.0	0.26
23	Total W Population	115,871.0	122,404.0	0.68
24	SC/ST Population	75,410.0	76,238.0	0.95
25	No of Schools in Taluk	333.0	332.0	0.98
26	Schools per 1000 people	1.4	1.4	0.60
27	New/Old Dist (New = 1)	0	1	-

Population figures used to calculate SchoolperPop2005 is from 2001

Table 10: Summary Statistics in 2013 - With PS Matched Control Group

	Undivided	Divided
TotalMarks	333.0	340.0
Rural	0.9	0.9
WorkDays	0.7	0.9
AcadInsp	1.4	1.4
DevGrantR	8,057.0	7,383.0
DevGrantE	7,440.0	6,503.0
TLMGrantR	1,427.0	1,238.0
TLMGrantE	1,384.0	1,148.0
Classrooms	4.8	4.7
ToiletG	1.0	1.0
Electricity	1.0	1.0
Library	1.0	1.1
PlayGround	0.6	0.6
Male_Tch	2.1	2.1
Female_Tch	2.0	2.1
Grad_Tch	0.9	0.9
ProfQ_Tch	4.1	4.1
Days_nonTch	0.2	0.3
Public	0.9	0.8
Split	0	1
Households	44,302.0	46,508.0
TotPop	209,137.0	227,783.0
Pop0.6	25,456.0	28,933.0
Literates	123,107.0	125,461.0
TotWPop	103,334.0	113,280.0
SCST	72,192.0	77,860.0
Yr2013	318.0	367.0
SchoolperPop2013	1.7	1.7

Population figures used to calculate SchoolperPop2013 is from 2001

Table 11: Summary Statistics in 2013 - With PS Matched Control Group

	Variables	Old	New	p.value
1	Total Marks	344.0	333.0	0.33
2	Rural/Urban (rural = 1)	0.9	0.9	0.56
3	Working Days	0.7	1.1	0.57
4	Academic Inspection	1.3	1.6	0.67
5	School Dev Grant - R	7,260.0	7,574.0	0.60
6	School Dev Grant - E	6,542.0	6,442.0	0.76
7	TLM Grant - R	1,098.0	1,456.0	0.19
8	TLM Grant - E	1,017.0	1,352.0	0.18
9	Classrooms	4.9	4.5	0.20
10	Electricity (Yes = 1)	1.0	1.0	0.62
11	Library (Yes = 1)	1.0	1.2	0.36
12	PlayGround (Yes = 1)	0.6	0.5	0.57
13	Male teachers	2.1	2.1	0.94
14	Female teachers	2.4	1.8	0.00
15	Grad teachers	1.0	0.7	0.21
16	ProfQ teachers	4.4	3.7	0.03
17	Days_non teaching activity	0.5	0.1	0.20
18	Public Schools (\%)	0.8	0.9	0.18
19	Households	45,379.0	48,264.0	0.66
20	Total Population	222,491.0	236,014.0	0.70
21	Population 0 - 6	27,863.0	30,597.0	0.69
22	Literates	129,369.0	119,382.0	0.53
23	Total W Population	108,226	121,141	0.44
24	SC/ST Population	73,461.0	84,702	0.45
25	No of Schools in Taluk	333.0	337.0	0.93
26	Schools per 1000 people	1.5	1.6	0.77
27	New/Old Dist (New = 1)	0	1	-

Population figures used to calculate SchoolperPop2013 is from 2001

Table 12:

	Dependent variable:			
	SchoolNo	Public	DevGrantR	TLMGrantR
	(1)	(2)	(3)	(4)
Split	0.1	0.01	−173.0	452.0
	(0.1)	(0.01)	(324.0)	(301.0)
Post	0.01	−0.04***	5,892.0***	−1,807.0***
	(0.03)	(0.01)	(191.0)	(178.0)
Split:Post	−0.01	−0.01	−1,156.0**	−927.0**
	(0.1)	(0.02)	(453.0)	(422.0)
Constant	0.1***	0.9***	2,765.0***	3,537.0***
	(0.02)	(0.01)	(136.0)	(127.0)
Observations	287	287	287	287
R^2	0.01	0.1	0.8	0.4
Adjusted R^2	−0.002	0.1	0.8	0.3
Residual Std. Error	0.3	0.1	1,468.0	1,367.0
F Statistic	0.8	11.0***	365.0***	51.0***
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 13:

	Dependent variable:			
	Classrooms	ToiletG	Electricity	Library
	(1)	(2)	(3)	(4)
Split	-0.5^{***}	-0.000	-0.2^{***}	-0.02
	(0.2)	(0.001)	(0.03)	(0.1)
Post	0.4	-0.01^{***}	0.4^{***}	0.3^{***}
	(0.2)	(0.002)	(0.04)	(0.1)
SchoolNo	-0.01	0.004^{***}	-0.1^{***}	-0.3^{***}
	(0.2)	(0.001)	(0.03)	(0.1)
Public	-9.4^{***}	0.01	-0.04	0.2
	(0.7)	(0.01)	(0.1)	(0.3)
DevGrantR	0.000^{***}	0.000^{*}	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
TLMGrantR	0.000^{***}	-0.000^{*}	0.000^{***}	0.000^{**}
	(0.000)	(0.000)	(0.000)	(0.000)
Split:Post	0.3	0.002	0.2^{***}	0.1
	(0.2)	(0.002)	(0.04)	(0.1)
Constant	11.0^{***}	1.0^{***}	0.6^{***}	0.5^{**}
	(0.7)	(0.01)	(0.1)	(0.2)
Observations	287	287	287	287
R^2	0.7	0.1	0.7	0.2
Adjusted R^2	0.7	0.1	0.6	0.2
Residual Std. Error	0.8	0.01	0.1	0.3
F Statistic	78.0^{***}	5.0^{***}	74.0^{***}	11.0^{***}
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 14:

	Dependent variable:			
	Male_Tch	Female_Tch	Grad_Tch	ProfQ_Tch
	(1)	(2)	(3)	(4)
Split	-0.5^{***}	-0.3^{*}	-1.4	-0.9^{***}
	(0.1)	(0.1)	(6.5)	(0.2)
Post	-0.5^{**}	0.2	-27.0^{***}	-0.1
	(0.2)	(0.2)	(9.0)	(0.2)
SchoolNo	1.2^{***}	-0.7^{***}	-43.0^{***}	0.5^{***}
	(0.2)	(0.2)	(7.0)	(0.2)
Public	-2.5^{***}	-7.7^{***}	-22.0	-8.9^{***}
	(0.6)	(0.6)	(27.0)	(0.7)
DevGrantR	0.000^{**}	-0.000	0.000	0.000^{**}
	(0.000)	(0.000)	(0.001)	(0.000)
TLMGrantR	0.000^{**}	0.000	0.002	0.000^{***}
	(0.000)	(0.000)	(0.001)	(0.000)
Split:Post	0.3	0.02	4.3	0.4^{*}
	(0.2)	(0.2)	(9.1)	(0.2)
Constant	4.1^{***}	8.8^{***}	46.0^{*}	12.0^{***}
	(0.6)	(0.5)	(25.0)	(0.6)
Observations	287	287	287	287
R^2	0.3	0.4	0.3	0.5
Adjusted R^2	0.3	0.4	0.3	0.5
Residual Std. Error	0.7	0.6	29.0	0.7
F Statistic	17.0^{***}	31.0^{***}	15.0^{***}	43.0^{***}
Note:				*p<0.1; **p<0.05; ***p<0.01

Table 15:

	Dependent variable:			
	WorkDays	Days_nonTch	AcadInsp	TotalMarks
	(1)	(2)	(3)	(4)
Split	12.0***	1.3***	−0.1	−18.0***
	(3.3)	(0.4)	(0.3)	(5.8)
Post	−97.0***	−1.2**	−0.2	26.0***
	(4.6)	(0.5)	(0.4)	(8.1)
SchoolNo	−1.9	−0.004	0.3	−26.0***
	(3.6)	(0.4)	(0.3)	(6.3)
Public	5.4	2.7*	−3.8***	47.0*
	(14.0)	(1.5)	(1.2)	(24.0)
DevGrantR	0.003***	0.000	0.000***	−0.001
	(0.001)	(0.000)	(0.000)	(0.001)
TLMGrantR	0.003***	−0.000***	0.000	−0.003**
	(0.001)	(0.000)	(0.000)	(0.001)
Split:Post	−7.2	−1.4***	0.1	9.6
	(4.7)	(0.5)	(0.4)	(8.2)
Constant	64.0***	−0.6	2.9***	295.0***
	(13.0)	(1.4)	(1.1)	(22.0)
Observations	287	287	287	287
R^2	0.9	0.1	0.3	0.3
Adjusted R^2	0.9	0.1	0.2	0.3
Residual Std. Error	15.0	1.7	1.2	26.0
F Statistic	389.0***	6.5***	14.0***	16.0***
Note:				*p<0.1; **p<0.05; ***p<0.01