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Political regime persistence and economic growth in Odisha: An empirical assessment of the Naveen Patnaik rule

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Abstract

We analyse the economic growth performance of Odisha, an Indian state, for the period 1980-2013 and examine the dynamic growth path of the state vis-a-vis the state's own recent history and that of the national economy and other major states. Our structural break analysis reveals that the state has registered an upward shift in its economic growth in the year 2003, after which the state has been doing significantly well; notching up an average annual growth rate of about 8 per cent. When compared to the national economy as well as other major states in a difference-in-differences regression analysis, we find a statistically significant positive differential trend break in Odisha's growth rate since 2003. The Naveen Patnaik government has been in power since 2000 to date, and this period has coincided with impressive economic growth of the state which potentially explains to great extent as to why it has been voted to power for four consecutive terms.

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1. Introduction

Although bestowed with bountiful natural resources, large coastal area and access to rivers, Odisha, an eastern Indian state, has long been widely considered as a poor backward region which has often featured in the national news media for its social movements owing to popular disenchantment in the wake of flawed redistribution of environmental and natural resources (Mohanty, 2014; Rajshekhar, 2015). In fact, the celebrated Rajan Committee Report in 2013 had ranked Odisha as the least developed state in India on its index of economic development (Government of India, 2013).[1] However, some recent studies suggest that Odisha has lately been performing quite well on several economic and human development indicators especially since the 2000s (Mishra, 2009; Samantaraya et al., 2014; Government of Odisha, 2015), a period which has coincided with a persistent political regime of a regional right-of-centre political party Biju Janata Dal headed by the Chief Minister Mr. Naveen Patnaik.[2] The periodicity of this perceptible economic change serves ample motivation for us to empirically examine the question: how has the Patnaik government which has been in power since March 2000 to date winning four democratic stints in office on the trot really performed on economic growth (measured by real gross state domestic product per capita)?[3] This question has its inspiration in an international economic literature on the impact of individual leaders on economic growth of nations (Jones and Olken, 2005).[4] A pertinent broader question arises as to whether a long-standing political regime is good in promoting economic growth at the sub-national level for which the empirical literature is very sparse.[5] The empirical economics literature on the state has so far been silent on a

[1] The Rajan Committee index was an average of the following ten sub-components: (i) monthly per capita consumption expenditure, (ii) education index, (iii) infant mortality rate, (iv) household amenities index, (v) poverty rate, (vi) female literacy, (vii) percentage of SC & ST in population, (viii) urbanization rate, (viii) percentage of households with access to banking, and (x) connectivity index.

[2] Samantaraya et al (2014) have found that Odisha's comparative economic position has marginally improved after the national economic reforms of the 1990s in that it specifically moved from being the third poorest state in the pre-reform period to the fourth poorest state in the post-reform period. They noted that although it continues to remain poor compared to the 16 major states in terms of per capita NSDP, in the post-reform period, Odisha's rank gradually improved from being the second poorest among the 16 major states in 1994-95 to the fifth poorest in 2004-05, and the sixth poorest in 2009-10. They concluded that despite lagging behind the national average in several socio-economic indicators, Odisha has become less poor in the last decade. Mishra (2010) has noted that Orissa has become potentially the most attractive destination for large capital-intensive projects by private-sector firms – typically mineral-based ones. His inter-district and inter-state panel analysis had highlighted the twin facts about the state – a serious decline in the Orissa's agricultural sector output and a flourishing mining sector doing well in production or exports.

[3] Naveen Patnaik is hailed in India as one of the longest serving chief ministers in history and in this connection, he is often compared with former West Bengal chief minister Jyoti Basu who was in power for 23 years, Manik Sarkar (Tripura) and Pawan Kumar Chamling (Sikkim). In 2019, when Odisha will go for the state Assembly elections, Naveen will have completed 19 years in power.

[4] Jones and Olken (2005) find that leaders matter for national growth and effects of individual leaders are strongest in autocratic settings where there are fewer constraints on a leader's power.

[5] In contrast, the international literature is divided on whether political regime persistence promotes or hinders economic growth in cross-country panel studies. A huge amount of literature has spun off since Alesina et al (1996) who in a sample of 113 countries for the period 1950-1982 find that in countries and time periods with a high propensity of government collapse, growth is significantly lower than otherwise. This effect remains strong when they restrict their definition of government change to cases of substantial changes of the government. For excellent surveys of the literature on the negative effect of political instability and economic growth, please refer to Carmignani (2003) and Jong-A-Pin (2009). On the other hand, Bellettini et al (2013) studied data for a panel

systematic and methodologically clean analysis of the historic growth dynamics of a state that is fast receding its tag of a poor state. We fill the very gap in this paper as we analyse Odisha's economic growth performance vis-a-vis that of the national economy and other major states for the period 1980-2013. Specifically, we identify the timing of structural breaks in Odisha's economic growth path, and then examine whether Odisha has witnessed a statistically significant differential trend break in the output series as compared to that of the national economy and other major states.

We carry out two different robust econometric analyses to study the question. First, our structural break analysis reveals that the state has registered an upward structural break in its economic growth in the year 2003, after which the state has been doing significantly well; notching up an average annual growth rate of about 8 per cent. Second, when compared to the national economy as well as other major states in a difference-in-differences regression analysis (similar to Ghatak and Roy, 2014), we find a statistically significant positive differential trend break in the output series since 2003, the period in which Patnaik has been in power, relative to the recent past.

The paper is structured as follows. We undertake an empirical analysis of Odisha's economic growth in the following section in which we describe the variables and its sources and the econometric methodologies. Then, we go on to discuss our estimation results before concluding with a summary.

2. Empirical Analysis

2.1 Data and Methodology

We have taken the annual data on gross state domestic product (GSDP), GSDP per capita, the national gross domestic product (GDP) and GDP per capita from the National Accounts Statistics, Central Statistical Organisation. Our empirical analysis is based on the sample period 1980-2013 as the GSDP data for all states are available since 1980. Though a longer time series data of GSDP is available for Odisha in the state government's annual Odisha Economic Survey, we chose to take the GSDP data for all states from a common source for the sake of comparability and ease. Also, for the all India GDP series, the base year has recently been changed to 2011-12 and there is a substantial change in the underlying data compilation methodology which makes the new GDP series incomparable to the previous one. Accordingly, we restrict our study period to 1980-2013 since our primary objective is to compare Odisha's economic performance to that of all India and other major states. We use alternative measures of output series such as aggregate output (GDP or GSDP) and output per capita (GDPPC or GSDPPC) in our analysis. All the output data are measured in real terms (i.e. at 2004-05 prices).

We follow the 'fit and filter approach' of Kar et al (2013) to identify the structural break dates in Odisha's output series. Here we briefly describe the procedure as follows. It is a two step method. First, the potential break dates are identified using the Bai-Perron (1998, 2003)

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of 62 partly to fully democratic countries in the period 1984–2008 and find that political persistence (measured as the longest tenure in office of main political entities) is negatively associated with growth, after controlling for country and time fixed effects, and that this association is stronger in countries with low bureaucratic quality, where the cost of red tape is high.

methodology.[6] In the second step, a filter is applied on the candidate break dates to identify the genuine break points. The main idea is that there must be a significant difference in average growth rate from one regime to another. An important limitation of Bai-Perron (B-P) methodology is that it fails to identify true break points in a volatile series. Similarly, for a smooth series, it may identify a small change as a break point even though the change is not significant from statistical point of view. The fit and filter approach is robust in the sense that it captures all major change points (see Kar et al., 2013 for detailed discussion of the method). Though the second step involves an ad hoc criteria (to filter out large changes), the method performs better in a volatile output series similar to our case.

As we have a relatively short (34 annual observations) data series, maximum of two breaks are allowed in the break test. The B-P test is applied on the growth rate of GSDP since the growth rate series becomes stationary. It identifies 2003 as the candidate break date when we allow for a maximum of one break point, and allowing for a maximum of two breaks, it shows 1990 and 2003 as the potential break dates. Then, we apply a filter (i.e. 2 percentage point change in average growth rate) to see whether the change is significant enough to be identified as a genuine break year. The results of our structural break analysis are shown in Table 1.

After the structural break analysis, we move on to compare the economic growth performance of Odisha to that of all-India and other major states. The purpose of this comparison is to see whether Odisha has witnessed any significant differential trend break in growth rate as compared to other major states as well as the national economy. Our inter-state comparative analyses mostly follow Ghatak and Roy (2014) who had done a similar study for assessing then Chief Minister Narendra Modi's performance in Gujarat in the run up to the 2014 Lok Sabha elections (our descriptions of the method below mostly follow theirs).

In order to show that Odisha has achieved a distinct growth path (a high growth trajectory) under the Naveen Patnaik rule, it can be argued that Odisha has grown faster than other states during this period, or that it has grown faster compared to its own previous growth record. However, both methods are unsatisfactory since it is possible that the economic growth of other major states as well as all-India growth rate may also have increased during the same period. Similarly, for the sake of explanation, we can say that it is possible that Odisha has grown faster than the rest of India, but that may have been true in the earlier period too. In this context, a popular method called the "difference-in-differences" (DID) regression method is used to tease out the impact of the Patnaik regime. Let ϕ_T^O and ϕ_T^I denote the growth rate of Odisha and India over some time interval T (=1, 2). The DID estimate is defined as:

$$\theta = (\phi_2^O - \phi_1^O) - (\phi_2^I - \phi_1^I) = (\phi_2^O - \phi_2^I) - (\phi_1^O - \phi_1^I) \qquad (1)$$

Here we can have $(\phi_2^O - \phi_1^O) > 0$ or $(\phi_2^O - \phi_2^I) > 0$, and yet have θ positive, zero, or negative. Let s (= 1, 2, 3, ...) and t (= 0, 1, 2, ...) denote state and time respectively. y denotes the real GSDP per capita of the state, and ε is the error term. The model that estimates the log-linear trend is:

[6] The Bai-Perron structural break test is a two step procedure. First, it estimates the potential break points up to a maximum number of breaks as specified. Then it tests for the number of significant breaks.

$$\ln y_{st} = \alpha_s + \beta t + \varepsilon_{st} \qquad (2)$$

If we want to test for a trend break in year $t = T$, we let D_T be a dummy variable that equals 1 for $t \geq T$, and 0 otherwise; and then we run the standard model that allows for a break in both the intercept and the slope as follows:

$$\ln y_{st} = \alpha_s + \beta t + \gamma D_T + \delta t * D_T + \varepsilon_{st} \qquad (3)$$

Here, the coefficients β and δ capture the average growth rate over the entire period, and the increase (if any) in the growth rate from time T onwards, respectively. γ stands for the coefficient of the time dummy as defined above.

In order to examine whether Odisha has truly achieved a distinct high growth path, we compare the growth performance of Odisha to that of the national economy and other major states. We do two things. First, looking at Odisha and all-India data for the period 1980-2013, we let $s = O$ stand for Odisha and $s = I$ stand for India. Then, we look at $\frac{y_{O_t}}{y_{I_t}}$ so as to test for the trend break in the DID regression. Taking logs, this is $\log\left(y_{O_t}\right) - \log\left(y_{I_t}\right)$. We estimate the following regression model:

$$\log\left(y_{O_t}\right) - \log\left(y_{I_t}\right) = \alpha_s + \beta t + \gamma D_T + \delta t * D_T + \varepsilon_{st} \qquad (4)$$

Here, β captures the average difference between Odisha's growth rate and the national growth rate, and δ measures by how much this difference increased starting T. The double difference regression results of equation 4 are shown in Table 2.

Second, we use data from all 16 major states[7], and estimate the following regression equation:

$$\ln y_{st} = \alpha + \beta t + \gamma D_T + \delta t * D_T + \beta' Odisha * t + \gamma' Odisha * D_T + \delta' t * Odisha * D_T + \varepsilon_{st} \qquad (5)$$

The differential trend growth rate estimate for Odisha compared to the rest of India after the trend break year T relative to before is captured by δ. *Odisha* is a dummy variable that equals one for Odisha and equals zero for other states. The estimation results of equation 5 are shown in Table 3.

2.2 Results and discussion

In contrast to Ghatak and Roy (2014) analysis of Gujarat's economic performance under Modi, we determine the structural breaks in Odisha's output series endogenously. Simply put, instead of taking an exogenously given structural break (i.e. the break date is known *a priori* like in case of Ghatak and Roy who had not done any break tests as their sole motive was to assess the Modi rule), we allow the data to reveal the most significant turning points in the

[7] The 15 other major states include Andhra Pradesh, Assam, Bihar, Gujarat, Himachal Pradesh, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal.

output series. Allowing for a maximum of one break, we find that 2003 is a structural break year in Odisha's real GSDP per capita series (Table 1). The year 2003 is an up-break since the post-break regime average growth rate is higher than that of the pre-break regime. As is evident from Table 1, the post-break period (2003-2013) average growth rate of GSDP per capita is 4.6 per cent higher than that in the pre-break period (1981-2002). Similarly, allowing for a maximum of two breaks, we find 1990 and 2003 as break points in the output series. While the year 2003 is an up-break, the year 1990 is a down-break as the average growth rate of GSDP per capita declined significantly (2.45 percentage point decline) compared to the previous growth regime. The results are qualitatively similar when we employ the structural break analysis to the growth rates of aggregate output (GSDP) series (Table 1). We would like to highlight the fact that the year 2003 (Patnaik's third year as chief minister) is identified as an up-break irrespective of whether we use output per capita or aggregate output series, and the finding is robust to the choice of one or two breaks in the series.

Table 1. Regime-wise average growth rate

Period	GSDP per capita growth rate (%)	GSDP growth rate (%)
Break Year: 2003		
1981-2002	1.99	3.69
2003-2013	6.59	7.97
Difference in growth rate	**4.60**	**4.28**
Break Years: 1990 and 2003		
1981-1989 (regime1)	3.44	5.36
1990-2002 (regime2)	0.99	2.54
2003-2013 (regime3	6.59	7.97
Difference in growth rate (regime2 – regime1)	**-2.45**	**-2.82**
Difference in growth rate (regime3 – regime2)	**5.61**	**5.43**

Source: Authors' calculations.

Let us first look at how the economic situation in Odisha has evolved over time since 1980. Figure 1 is illustrative of our main point that the growth path of log GSDP per capita has two break years, 1990 and 2003 with the latter being an upward break point. Since 2003, Odisha has witnessed an uninterrupted upward mobility in economic growth. Similarly, in Figure 2, we graphically display how Odisha's economy has been placed compared to India's national economy in terms of log GSDP per capita for the period 1980-2013. It shows that both the economies co-move upwards in terms of economic performance.

Figure 1: Odisha's log real GSDP per capita, 1980-2013

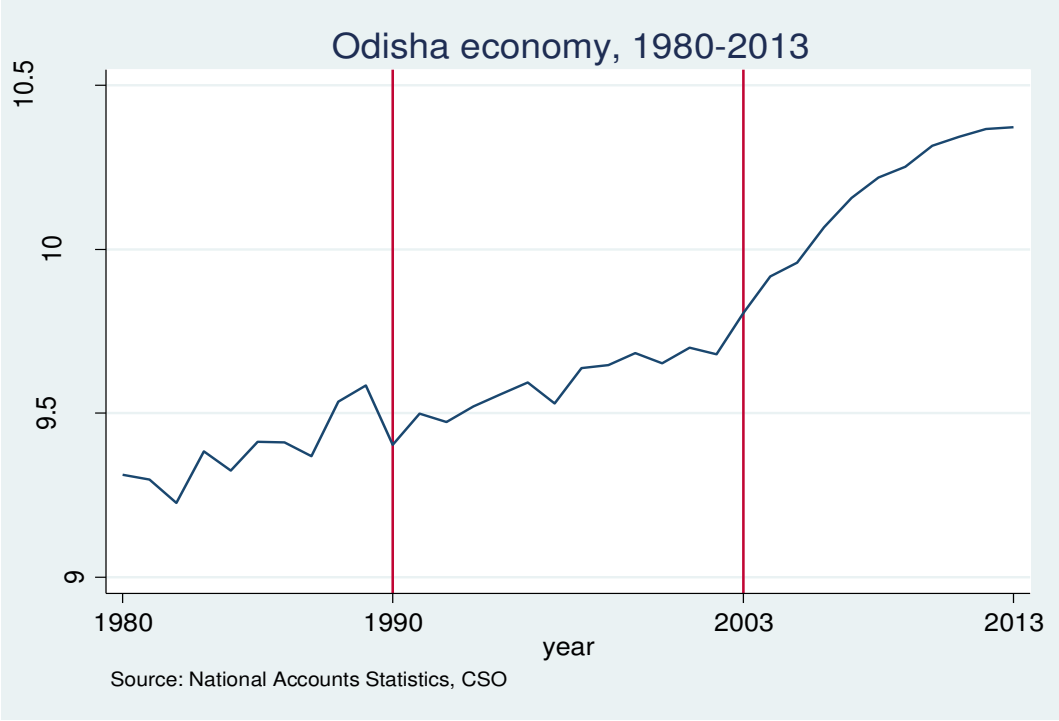
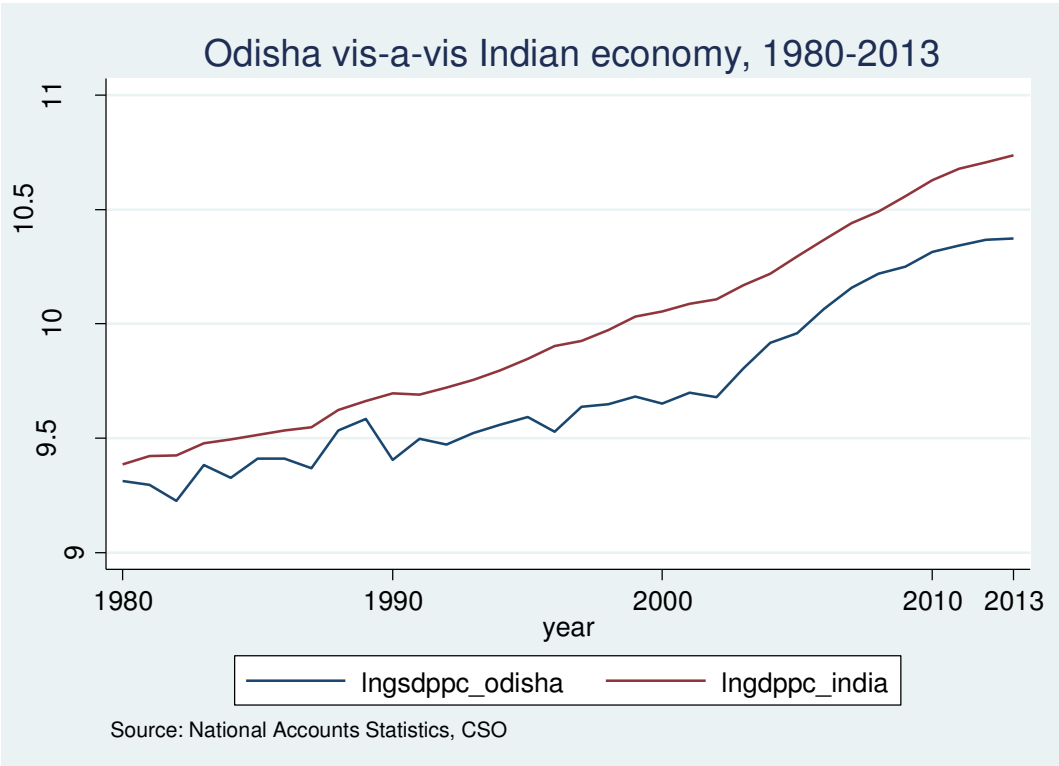


Figure 2: Comparison of Odisha with Indian economy on log real GSDP per capita, 1980-2013



Now, we discuss the DID regression results presented in Table 2. Column 5 shows the estimates of our parameters of interest. The results imply that on average the national economy has grown faster than Odisha as the trend coefficient (which indicates the average difference between Odisha's growth rate and the national growth rate) is statistically significantly negative. Nevertheless, the trend break (T=2003) is positive and statistically significant at 5% level, implying that on average, Odisha has grown faster than the national economy since 2003. Moreover, when we consider 1990 as an additional break year, the coefficient on it turns out to be negative, while the trend break at 2003 remains positive and statistically significant. The results are qualitatively similar when we conduct the same analysis on aggregate output series instead of output per capita (the results for GSDP compared to the national economy are given in Table A1 in the Supplementary Appendix). Thus, we conclude that Odisha has witnessed a significant differential trend break compared to the national economy in 2003, the period during which Naveen Patnaik has been at the helm.

Similarly, when we test for a differential trend break in Odisha's GSDP per capita compared to other major states in a panel data framework, our previous results remain intact (see Table 3). Here, the coefficient of interest is the interaction term (Odisha dummy*trend break dummy). For a single trend break (T=2003), the interaction term (Odisha dummy*Trend 1980-2013*post 2003 dummy) is found to be positive and significant at 1% level (see column 1 and 2, Table 3). This implies that Odisha has a distinct and relatively high growth path since 2003 compared to other major states. This finding is robust to an alternative measure of output (results for GSDP are reported in Table-A2) and inclusion of an additional trend break in the regression (see column 3 and 4, Table-3). With two trend breaks (one in 1990 and the other one in 2003), we find that the interaction term for trend break in 1990 is negative and significant at 1% level whereas the interaction term for trend break in 2003 is positive and statistically significant. These results suggest that Odisha's economic growth was relatively slow in the 1990s compared to other major states in India, whereas since 2003 its growth rate is relatively fast which is significantly different than other major states. To sum up, based on the empirical findings, we argue that Odisha's economic performance has been impressive in the post 2003 period as compared to its own historical record and other major states in India.

A strong right-of-centre, welfare-minded, populist, authoritarian but non-controversial and image-conscious Naveen Patnaik has won electoral landslides since 2000 as he has been successful on delivering economic growth although the state has not registered significant progress on industrialisation in the last decade (Manor, 2015). We argue that the empirical evidence of good economic growth coincident with his regime could explain a major part of his electoral fortunes.[8] While political stability may have been a vital factor that has contributed to this growth performance, one flip side of the Patnaik years has been a perceived decline of political competition amongst the parties in the state politics. That the ruling BJD faces a relatively weaker electoral competition has the potential of adversely affecting both democratic governance and long run sustainability of economic growth.

[8] For instance, Brender and Drazen (2008) find that higher growth rates over the term raise reelection probabilities only in developing countries and new democracies.

Table- 2. Testing for trend break in 1990 and 2003 in GSDP per capita using the DID regressions

	Log (GSDPPC Odisha)		Log (GDPPC India)		Log (GSDPPC Odisha) – Log (GDPPC India)	
	(1)	(2)	(3)	(4)	(5)	(6)
Trend (1980-2013)	0.019***	0.030***	0.034***	0.029***	-0.015***	0.002
	(0.002)	(0.005)	(0.001)	(0.002)	(0.002)	(0.004)
Trend (1980-2013) x Post 1990 dummy		-0.008		0.010***		-0.018***
		(0.006)		(0.003)		(0.005)
Trend (1980-2013) x Post 2003 dummy	0.039***	0.036***	0.026***	0.021***	0.013**	0.015***
	(0.005)	(0.006)	(0.002)	(0.002)	(0.005)	(0.005)
Post 1990 dummy		-0.017		-0.120***		0.103*
		(0.069)		(0.029)		(0.058)
Post 2003 dummy	-0.787***	-0.722***	-0.572***	-0.485***	-0.215	-0.237*
	(0.143)	(0.145)	(0.069)	(0.060)	(0.135)	(0.122)
Constant	9.268***	9.219***	9.319***	9.352***	-0.051**	-0.133***
	(0.022)	(0.032)	(0.011)	(0.013)	(0.021)	(0.027)
Number of observations	34	34	34	34	34	34
Adjusted R-squared	0.98	0.98	0.99	0.99	0.78	0.85

Note: Statistical significance is shown by *p < 0.1, **p < 0.05, ***p < 0.01. Standard errors are in parentheses. A small note on interpretation: in the log-linear model, the trend coefficient shows instantaneous growth in the series. Trend (1980-2013) x Post 1990 dummy or the Trend (1980-2013) x Post 2003 dummy indicates any change in the growth rate. Post 1990 dummy or Post 2003 dummy denotes intercept break where intercept can be interpreted as initial value which is not of primary interest.

Table 3. Testing for differential trend break in Odisha's growth path (using panel data of 16 major states, 1980-2013)

	A single trend break (2003)		Two trend breaks (1990, 2003)	
	Log(GSDPPC)	Log(GSDPPC)	Log(GSDPPC)	Log(GSDPPC)
Trend 1980-2013	0.032***	0.030***	0.024***	0.027***
	(0.003)	(0.002)	(0.003)	(0.004)
Trend 1980-2013 x post 1990 dummy			0.011*	0.003
			(0.005)	(0.003)
Trend 1980-2013 x post 2003 dummy	0.029***	0.010***	0.026***	0.010***
	(0.003)	(0.001)	(0.004)	(0.001)
Post 1990 dummy			-0.092	
			(0.055)	
Post 2003 dummy	-0.661***		-0.611***	
	(0.072)		(0.083)	
Odisha dummy x Trend 1980-2013	-0.013***	-0.013***	0.006	0.006
	(0.003)	(0.003)	(0.004)	(0.004)
Odisha dummy x Trend 1980-2013 x post 1990 dummy			-0.019***	-0.019***
			(0.005)	(0.005)
Odisha dummy x Trend 1980-2013 x post 2003 dummy	0.010***	0.010***	0.010**	0.010**
	(0.003)	(0.003)	(0.004)	(0.004)
Odisha dummy x post 1990 dummy			0.075	0.075
			(0.055)	(0.056)
Odisha dummy x post 2003 dummy	-0.126	-0.126	-0.111	-0.111
	(0.072)	(0.074)	(0.083)	(0.086)
Constant	9.302***	9.346***	9.339***	9.347***
	(0.046)	(0.041)	(0.043)	(0.042)
State fixed effects	YES	YES	YES	YES
Year fixed effects	NO	YES	NO	YES
Number of observations	544	544	544	544
R-squared (within)	0.927	0.930	0.928	0.930

Note: Statistical significance is shown by *p < 0.1, **p < 0.05, ***p < 0.01. Robust standard errors are in parentheses. A small note on interpretation: in the log-linear model, the trend coefficient shows instantaneous growth in the series. Trend (1980-2013) x Post 1990 dummy or the Trend (1980-2013) x Post 2003 dummy indicates any change in the growth rate. Post 1990 dummy or Post 2003 dummy denotes intercept break where intercept can be interpreted as initial value which is not of primary interest.

3. Conclusion

We set out to empirically enquire why a particular regime (in our case, Naveen Patnaik's BJD) has been voted to power for the last four democratic stints in office. One of the foremost reasons could possibly be a considerable economic growth performance since the Patnaik government has taken office. Our main objective of this study was to find out whether Odisha's economic growth has witnessed an upward break since the Patnaik government has come into being. We found substantive evidence that Odisha under the Naveen Patnaik rule has done significantly well in terms of economic growth compared to the state's history, major Indian states and the national economy. We argue that a major part of his electoral fortunes can be explained by the empirical evidence of good economic growth performance of the state coincident with his regime.

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Supplementary Appendix

Table- A1. Testing for Trend Break in 1990 and 2003, GSDP using the difference in differences regressions

	Log(GSDP Odisha)		Log(GDP India)		Log(GSDP Odisha) – Log(GDP India)	
	(1)	(2)	(3)	(4)	(5)	(6)
Trend (1980-2013)	0.036***	0.049***	0.054***	0.050***	-0.019***	-0.002
	(0.002)	(0.005)	(0.001)	(0.002)	(0.002)	(0.004)
Trend (1980-2013) x Post 1990 dummy		-0.011*		0.008***		-0.019***
		(0.006)		(0.003)		(0.005)
Trend (1980-2013) x Post 2003 dummy	0.035***	0.033***	0.021***	0.017***	0.014***	0.016***
	(0.005)	(0.006)	(0.002)	(0.002)	(0.005)	(0.005)
Post 1990 dummy		0.021		-0.095***		0.117*
		(0.070)		(0.029)		(0.058)
Post 2003 dummy	-0.707***	-0.668***	-0.471***	-0.401***	-0.236*	-0.268**
	(0.146)	(0.146)	(0.064)	(0.061)	(0.136)	(0.122)
Constant	10.214***	10.153***	13.510***	13.535***	-3.296***	-3.381***
	(0.022)	(0.033)	(0.010)	(0.014)	(0.021)	(0.027)
Number of observations	34	34	34	34	34	34
Adjusted R-squared	0.99	0.99	0.99	0.99	0.87	0.91

Note: Statistical significance is shown by *p < 0.1, **p < 0.05, ***p < 0.01. Standard errors are in parentheses.

Table- A2. Testing for differential trend breaks in Odisha's growth path, (using data of major states)

	Testing for one trend break (2003)		Testing for two trend breaks (1990, 2003)	
	Log(GSDP)	Log(GSDP)	Log(GSDP)	Log(GSDP)
Trend 1980-2013	0.052***	0.050***	0.048***	0.050***
	(0.003)	(0.002)	(0.002)	(0.003)
Trend 1980-2013 x post 1990 dummy			0.004	-0.001
			(0.003)	(0.002)
Trend 1980-2013 x post 2003 dummy	0.024***	0.008***	0.024***	0.008***
	(0.003)	(0.001)	(0.003)	(0.001)
Post 1990 dummy			-0.013	
			(0.030)	
Post 2003 dummy	-0.567***		-0.572***	
	(0.079)		(0.082)	
Odisha dummy x Trend 1980-2013	-0.016***	-0.016***	0.001	0.001
	(0.003)	(0.003)	(0.002)	(0.002)
Odisha dummy x Trend 1980-2013 x post 1990 dummy			-0.015***	-0.015***
			(0.003)	(0.003)
Odisha dummy x Trend 1980-2013 x post 2003 dummy	0.011***	0.011***	0.009**	0.009**
	(0.003)	(0.003)	(0.003)	(0.003)
Odisha dummy x post 1990 dummy			0.034	0.034
			(0.030)	(0.031)
Odisha dummy x post 2003 dummy	-0.140*	-0.140	-0.096	-0.096
	(0.079)	(0.082)	(0.082)	(0.085)
Constant	10.428***	10.452***	10.441***	10.450***
	(0.041)	(0.035)	(0.036)	(0.036)
State fixed effects	YES	YES	YES	YES
Year fixed effects	NO	YES	NO	YES
Number of observations	544	544	544	544
R-squared (within)	0.970	0.971	0.970	0.971

Note: Statistical significance is shown by *p < 0.1, **p < 0.05, ***p < 0.01. Robust standard errors are in parentheses. The panel dataset covers 16 major states over 1980-2013.