



Election cycles and electricity provision: Evidence from a quasi-experiment with Indian special elections



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ABSTRACT

We present evidence from India showing that state governments induce electoral cycles in electricity service provision. Our data and research strategy allow us to build on models of political business cycles and targeted distribution in two important ways. First, we demonstrate that by manipulating the flow of critical inputs into economic activity like electricity, elected leaders can influence economic outcomes even in contexts where they have constrained fiscal capacity. Second, we identify the effect of elections on electricity provision by focusing on special elections held for exogenous reasons. Our results show that state governments induce substantive increases in electricity service to constituencies that hold special elections. Manipulation of the power supply is stronger in contested constituencies and during special elections held in states where the government commands only a small majority. Overall, we find no evidence of positive welfare effects from the electoral manipulation of electricity supply.

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1. Introduction

An influential literature asserts that democratic governments have strong incentives to use their leverage over economic policies to improve their electoral prospects, generating political business cycles in the process. Most empirical research evaluating the existence of political business cycles draws on the industrialized world, where government control over economic policies can have significant impact on the national economy.² In much of the developing world, however, governments face constraints on fiscal capacity and budget shortfalls which may limit their ability to influence economic conditions in ways that are meaningful to the majority of voters. By focusing on special elections held to fill unexpected vacancies in Indian state legislatures, this paper demonstrates a means by which elected leaders in developing countries can influence economic outcomes through an alternative channel: by

manipulating the flow and quality of public services that are critical inputs into economic activity.

Our data and research strategy allow us to build on the existing literature on political business cycles in several ways. First, using a dataset of some 4000 state-level assembly constituencies observed from 1992 to 2009, we examine whether Indian state governments manipulate the provision of electricity before elections. Electricity is the lifeblood of the modern economy and a basic input into many productive activities (Dinkelman, 2011; Rud, 2012; Lipscomb et al., 2013). Yet, persistent power shortages in many developing countries require governments to actively manage the supply and distribution of power through load shedding and power outages. In India, electricity service provision is highly valued by citizens and power shortages are known to significantly reduce firm output and revenues (Allcot et al., 2014). As a result, electricity often features as one of the top priorities of Indian voters in election surveys (Chhibber et al., 2004). At the same time, state governments can apply significant pressure on public utilities regarding how, when, and where electricity is provided (Min, 2015; Min and Golden, 2014; Nagavarapu and Sekhri, 2014). They can thereby influence economic activity and welfare even when they have limited capacity to manipulate broader levers of fiscal and monetary policy that are more common objects of study in the industrialized world.

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¹ All errors are ours.

² Previous empirical contributions on political business cycles include Alesina (1989), Akhmedov and Zhuavskaya (2004), Brender and Drazen (2005), and Shi and Svensson (2006). See Drazen (2000) for a survey of the literature.

Second, given the lack of disaggregated data on electricity provision, we use time series data on the emission of night lights as an indicator of electricity service provision. Using satellite imagery of night lights offers several advantages in our context. Given its high spatial resolution, estimates can be constructed for a variety of jurisdictional units. In addition, the data are automatically recorded, providing an objective and consistent measure resistant to human biases in reporting. Administrative data, in contrast, is often unreliable or poorly measured in developing countries.

Third, we employ a strategy that credibly identifies the effect of elections on government policy and economic outcomes, overcoming concerns in existing studies regarding the potential endogenous timing of elections. Our identification strategy exploits the exogenous timing of special (or bye-) elections in India's states — state assembly (*Vidhan Sabha*) elections that are held to fill seats that become vacant in between two general elections due to the death of a sitting incumbent. These special elections due to death are credibly exogenous to economic conditions and electricity supply since death is a natural phenomenon. Moreover, special elections take place in different constituencies at different times. Previous studies of electoral business cycles at the local level, for example *Baleiras and Costa (2004)*, and *Drazen and Eslava (2010)*, typically face the problem that elections are held in all localities at the same date, making it difficult to separately identify electoral cycles from other contemporaneous shocks.

Fourth, we explore whether the extent of manipulation depends on constituency or state-level political variables. One plausible hypothesis that follows from the theoretical literature on tactical redistribution is that state governments will target swing constituencies in their pursuit of re-election (*Lindbeck and Weibull, 1987; Dixit and Londregan, 1998; Golden and Min, 2013*). Similarly, manipulation should be stronger if the state government commands only a narrow majority in the legislature and seeks to increase its party strength. Given our data and empirical framework, we can explicitly test these hypotheses.

Overall, our research identifies significant increases in the provision of electricity in years in which a constituency holds a special election, which we interpret as efforts by political leaders to boost service provision and improve the economic climate prior to elections. We also find that manipulation is more pronounced in constituencies that are both closely contested (swing constituencies) and aligned with the state government. We observe furthermore that manipulation is more pronounced in states where the government holds only a weak majority. These findings are meaningful because they demonstrate a pathway by which politicians can engage in electorally-motivated manipulation of state resources even in contexts of limited policy flexibility and budget constraints.

Finally, our results indicate that the increase in electricity supply to special election constituencies is due to diversion from non-election constituencies rather than due to the creation of additional electricity. This observation and other pieces of evidence suggest that the overall welfare effects of manipulation around special elections are not positive and may even be negative.

A previous contribution close to our paper is *Khemani (2004)*, who studies electoral business cycles in India at the state level using within-state variation in fiscal policy. The author finds that Indian state governments do not manipulate aggregate fiscal variables such as total spending or deficits in the run-up to an election, but that they manipulate individual budget items and public investment projects. Similarly, *Cole (2009)* observes electoral cycles in agricultural credit provided by public sector banks in India. Our paper differs from *Khemani (2004)* and *Cole (2009)* in that they use state-level and district-level data, respectively, while we use smaller assembly constituency-level data, which allows us to study electoral manipulation at a more disaggregated level and for politically relevant units in which elections are actually held. *Min and Golden (2014)* find electoral cycles in the incidence of electricity theft and line losses in the state of Uttar Pradesh. More specifically, the discrepancy between power

supplied and billed increases in periods immediately prior to general elections. However, their study does not account for the potential endogeneity in the timing of elections.

The remainder of this paper is structured as follows. In the next section, we provide institutional background regarding electricity provision and elections in India, and discuss our main theoretical hypotheses. *Sections 3 and 4* describe the data and introduce our empirical model. *Section 5* discusses the main results. We examine how the competitiveness of an election affects manipulation before special elections in *Section 6* and discuss welfare implications in *Section 7*. We conclude in *Section 8*.

2. Background

2.1. Politics of electricity in India

As in much of the developing world, India's power sector is primarily owned and managed by the state. The public sector controls about 90% of generation and almost all transmission and distribution in India (*Lal, 2005*).³ Electricity provision is primarily a state-level responsibility, overseen by public power corporations that are led by political appointees and staffed by some 600,000 public employees.

Demand for electricity far outpaces available supply in much of India, resulting in regular and frequent power cuts, especially in rural areas. Many states provide so-called rostering schedules listing the times during which the power is scheduled to be shut off, though power cuts often exceed even these hours. In the World Bank Enterprise Survey of Indian businesses in 2006, a large fraction of firms (35%) cited access to reliable electricity as the number one obstacle facing their business.⁴ Indian firms estimated losing 6.6% of sales as a result of power outages. Given that electricity is so important to social and economic welfare, access to electrical power is an important issue for voters. In a 2001–02 national survey of public attitudes, three-quarters of Indians ranked electricity as an important problem in their lives and 93% said governments were primarily responsible for electricity service provision (*Chhibber et al., 2004*).

Given the constraints on overall electricity supply and the political salience of electricity, state governments routinely intervene in the operation of state power utilities, from patronage transfers of employees, interventions in the selection of villages for electrification projects, and influence over the location and length of power outages. *Min (2015)* documents how power officials in Uttar Pradesh are pressured to meet requests for uninterrupted electricity supply from different political interests. *Badiani et al. (2012)* argue that parties court rich farmers by promising them cheap or even free electricity. *Min and Golden (2014)* further note that the agriculture sector in Uttar Pradesh receives preferential supply of electricity, resulting in increased losses at the utility and degraded service for other sectors. Further, reforms to alleviate problems with electricity provision have hit roadblocks as constituents are reluctant to pay increased power tariffs (*Lal, 2005*).

Because of the influence it has over the distribution of electrical power and the selection of villages for electrification projects, state governments can manipulate public service provision and can do so in electorally motivated ways. Yet estimating whether governments manipulate delivery of public services before elections is difficult because in India, as in many parliamentary settings, incumbent governments also exercise influence over the timing of elections. India's state legislatures (*Vidhan Sabhas*) are required to hold elections at least every five years. But an opportunistic government may resign early to force early

³ The Electricity Act of 2003 sought to reform the power sector in India by introducing more competition in electricity provision by allowing entry of private firms. *Nagavarapu and Sekhri (2014)* and *Allcot et al. (2014)* note, however, that private entry into the sector, especially in distribution, has remained limited even after the reforms.

⁴ World Bank Enterprise Survey, <http://www.enterprisesurveys.org/> accessed in June 2014.

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