

Quid Pro Quo: Builders, Politicians, and Election Finance in India

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Abstract

Where elections are costly but accountability mechanisms are weak, politicians often turn to private firms for illicit election finance. Where firms are highly regulated, politicians can exchange policy discretion or regulatory forbearance for bribes and monetary transfers from firms. Due to its regulatory intensity, we focus on the role of the construction sector. Specifically, we argue that builders will experience a short-term liquidity crunch as elections approach because of their need to re-route funds to politicians as a form of indirect election finance. We use variation in the demand for cement to investigate the presence of an electoral cycle in building activity in India consistent with this logic. Using a novel monthly-level dataset, we demonstrate that cement consumption does exhibit a political business cycle consistent with our hypothesis. Additional tests provide confidence in the robustness and interpretation of our findings.

JEL Codes: P16; D72; E32

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**Quid Pro Quo:
Builders, Politicians, and Election Finance in India**

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Introduction

Across developed and developing democracies alike, there is widespread concern about the cost of elections (Pinto-Duschinsky 2002). In the United States, candidates contesting the 2008 presidential election spent more than \$1.4 billion, more than three times what was spent in the 2000 election cycle.¹ Transparency Brazil estimates that parties and candidates spent roughly \$2 billion during the campaign for that country's 2010 presidential election (Thompson 2012). Economists estimate that candidates and parties in India's 2009 parliamentary elections spent roughly \$3 billion on campaign expenditures (Timmons and Kumar 2009).

Yet one key difference between democracies in the developed and the developing worlds is the role that illicit election funds play in the latter. In developed democracies, there are well-established systems of monitoring and accounting for election finance and for prosecuting those involved in alleged improprieties. The strength of these systems likely deters the transfer of illicit funds to a great extent.² In developing countries, however, scholars have reported that illicit campaign finance expenditures often dwarf legal flows (Gingerich 2010). While there is anecdotal evidence regarding the presence of illicit (or "black") money in elections, there has been little empirical analysis of these flows, and for obvious reasons. By definition, flows of black money are opaque.

This paper investigates the claim that private firms can serve as one important source of black money. Specifically, we build on the literature on the "regulation of entry," or the legal requirements and processes private firms must meet in order to conduct business (Djankov et al. 2002). In line with this literature, we theorize that the regulatory intensity of a sector is highly correlated with its rent extractive potential. Where firms are highly regulated, politicians can exchange policy and regulatory discretion for monetary transfers from firms that can be used to finance elections. One such sector is construction, which depends heavily on the availability of land, an input that is often tightly controlled by state authorities.

The comparative literature is strewn with examples of a widespread affinity between the construction industry and politicians, or what is often described as the "builder-politician nexus." A study of 166 corporate bribery cases reveals that construction was the single most bribe-laden industry in the entire sample (Cheung, Rau and Stouraitis 2012). Furthermore, this dynamic is not novel. Chubb's (1982) classic study of Palermo, Sicily describes how local politicians seeking to rebuild the city following World War II used their regulatory leverage to provide preferred access to builders in exchange for campaign contributions. Authors

¹ These figures are from the Center for Responsive Politics' "Open Secrets" database and are adjusted for inflation: <http://www.opensecrets.org/pres08/totals.php?cycle=2008>.

² There are real questions about the influence licit lobbying expenditures and campaign finance donations from industry can have on legislator behavior. For recent examples from the U.S. housing crisis, see Igan, Mishra and Tressel (2011); and Mian, Sufi and Trebbi (2010).

have described similar scenarios in the Philippines (Sidel 1999); Spain (Costas et al. 2010); and machine-era America (Erie 1990).

In this paper, we examine the connection between builders, politicians and election finance in India, the world’s largest democracy. In recent years, India has been beset by concerns over the cost of elections—cited by some prominent observers as the country’s biggest source of corruption due to the murky nature of election finance (Jha 2013; Mehta 2002). Given the regulatory intensity of the state with respect to land, builders have an incentive to pay for elections on behalf of politicians through unreported transactions in exchange for regulatory and policy favors.³ The overarching goal of this paper is to test whether there is an electoral cycle in the activity of builders which is consistent with this alleged quid pro quo.

Specifically, we hypothesize that as elections approach builders will have to direct some portion of their liquid financial assets to fund political campaigns. As a result of this transfer, builders will face a short-term liquidity crunch at the time of elections. Construction activity will therefore temporarily decline as money exits the sector to finance elections. The empirical challenge researchers face is how to measure this effect given the lack of reliable data on election financing or financial flows into the construction sector.

Our novel approach is to use unique micro-data on cement consumption, which we use as a proxy for construction activity. Cement is the indispensable ingredient of the modern construction sector, for which there is no material substitute. The construction sector is comprised of two principal components: real estate and infrastructure. We refer to “builders” as shorthand for firms engaged in construction projects of either type. Industry research estimates that real estate accounts for between 65 and 75 percent of India’s domestic cement demand, with infrastructure accounting for the remainder (India Brand Equity Foundation n.d.).⁴ When construction activity increases, cement consumption rises and vice versa. Empirically, we investigate whether the presence of elections is associated with an observable drop in cement consumption, consistent with a shrinkage of liquidity in the construction sector around election time. To assess the relationship between elections and construction activity, we construct a panel dataset comprising information on the monthly consumption of cement and the timing of elections in India’s 17 major states over the period 1995 to 2010. We exploit the staggering of state elections, which allows us to estimate a statistical model that controls for unobserved state and time-specific effects.

We find that there is a statistically significant contraction in cement consumption during the month of state assembly elections. To assess the robustness of this result, we use

³ The major sources of political corruption in India are thought to emanate from the sectors that are most heavily regulated—natural resources, spectrum allocation and defense (Rajan 2012).

⁴ Land used for real estate is regulated by the government but the investments for building on that land are usually made by private interests. Infrastructure, such as dams and roads, consists of projects that are largely publicly financed on land that is publicly acquired and often executed through government contracts.

randomization inference as a non-parametric method of testing the null hypothesis that there is no relationship between elections and a decline in cement consumption. Having built confidence in our core finding, we address several plausible challenges to our interpretation of the results.

In the next section, we briefly summarize the literature on corruption and regulation. We then describe why the construction sector is particularly amenable to channeling “black money” for elections and present some stylized facts from the Indian case. In the third section, we summarize the logic of using cement consumption as a proxy for construction activity, present our hypotheses, and outline the data and methods we employ. Next, we present statistical evidence in support of our primary hypotheses on election timing and cement consumption and address the most plausible challenges to our interpretation of the findings. We conclude by summarizing the implications of our findings for the literature.

Corruption and regulation

There is a large literature in economics on the regulation of entry, summarized nicely by Djankov (2009). This literature comprises numerous studies examining the relationship between government regulation of start-up business operations and several outcome variables—such as entrepreneurship, productivity and economic growth. The subset of this literature which has received the most attention, however, is that which examines the relationship between regulation and corruption. Numerous cross-national studies have found that countries with heavier regulation of entry experience greater levels of corruption (Djankov et al. 2002; Svensson 2005).

As Djankov et al. (2003) and Djankov (2009) state, most of the studies in this area build on the theoretical foundations rooted in public choice theory (Tullock 1967). Public choice theorists view regulation as inefficient and harmful from a social welfare perspective for one of two reasons. One strand of the literature focuses on regulatory “capture.” For instance, Stigler (1971) examines the ways in which incumbent firms can use their influence to ensure that government regulation creates rents for themselves while placing potential new entrants in the marketplace at a disadvantage.

The second strand is what Djankov et al. (2002) call the “tollbooth” view. According to this view, the prime beneficiaries of regulation are neither firms nor consumers, but politicians—or the individuals making the regulations. Politicians can use their discretionary powers to exchange favorable regulatory dispensation in exchange for rents. As Shleifer and Vishny (1993, 601) write: “An important reason why many of these permits and regulations exist is probably to give officials the power to deny them to collect bribes in return for providing the permits.”

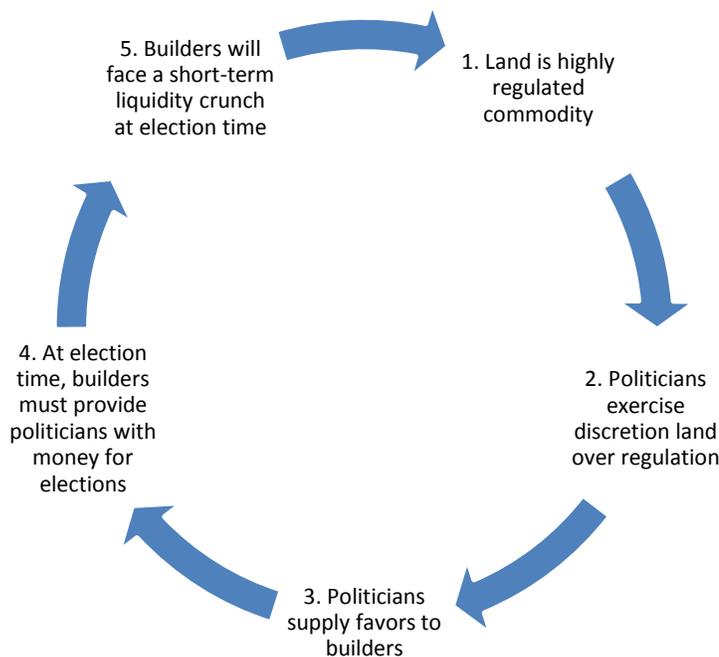
Our contention is that these two strands of public choice theory, rather than operating in isolation, often work in a complementary fashion. “Crony capitalism” represents an equilibrium in which businesses and politicians both stand to gain from intense regulation.

Politicians can benefit from intensive regulation because it allows them to manipulate the policy process to extract rents. Campaign contributions represent one specific manifestation of such rents. Businesses, on the other hand, do pay a cost when it comes to excessive regulation—in both financial and efficiency terms. However, there can be benefits as well. Politically connected firms can benefit from the fact that regulation can be used to ward off potential competition. This is especially likely to be true when the distinction between “business” and “politician” is blurred. As we elaborate below, self-dealing is often prevalent in intensely regulated sectors because politicians, their family members, and associates have an incentive to do business in these areas in order to exploit information asymmetries and privileged access.

Builder-politician nexus

If regulatory intensity is correlated with corruption and rent-seeking, there is an *a priori* reason to expect that the construction sector will be a hotbed for such activity. The construction sector requires access to adequate land, which is intensely politically and bureaucratically regulated in many countries (Chakravorty 2013). Firms are under intense pressure to acquire land, obtain permissions to utilize the land for their intended purposes, and procure licenses for the actual execution of the proposed project. One of the key implications of this nexus is that builders have an incentive to serve as financiers of elections. Figure 1 is a flow chart which presents the broad contours of this hypothesized quid pro quo, described below.

Figure 1: Flow chart of the builder-politician nexus



As a result of the regulatory intensity of land, politicians wield an enormous amount of discretion over business activity in sectors for which land is a primary input. They can intervene on behalf of favored entities to expedite clearances and permits; grant waivers to existing regulations; or alter land use designations. Often time, direct intervention by politicians on behalf of firms need not be necessary to ensure a favorable outcome for preferred firms. When the links between firms and politicians are publicly known, it sends a strong signal to regulators: enter at your own risk. The survival instincts of most government officials will ensure that acts of regulatory omission rather than commission will prevail.

As elections approach, however, builders are often compelled to provide politicians with money with which to contest elections; the mechanism can be a simple under-the-table transfer or an in-kind contribution. Although builders have to transfer funds back to politicians around elections, the transaction brings long-term benefits in terms of future goodwill.⁵ The sector's regulatory intensity not only makes it a boon for filling campaign war chests but also provides politicians with a mechanism to enforce its "contract" with builders. As a result of this exchange, builders will face a short-term liquidity crunch around elections because they must redirect some portion of their funds to election campaigns, money which otherwise could have been used toward business investments.

The India context

The stylized facts of the Indian case track nicely with the generalized theory. In India, the primary piece of legislation governing land acquisition today (the Land Acquisition Act) was written in 1894 by British colonial authorities. This and other laws, such as various land ceiling acts, have created a regulatory structure that empowers politicians and bureaucrats to manipulate control over land. Since independence, numerous attempts have been made to enact land reforms that would ostensibly reduce these discretionary powers. Yet, many of these efforts have been ridden with loopholes, since there is little incentive for politicians to alter the status quo given the benefits accrued under the current system (Pai 2011). The persistence of the bureaucratic morass dealing with land issues has served to consolidate entrenched methods of rent seeking (Srinivas 1991).⁶ A survey of firms conducted by KPMG (2011) reports that businesses perceive construction/real estate to be the single most corrupt industry in India.⁷ According to the World Bank (2013), out of 185 countries for which data is collected, India ranks 182nd in terms of the ease of obtaining a construction permit.

⁵ A former Congress MLA is quoted as remarking: "For builders, raising funds for candidates during elections is not a favour, but a transaction which can be encashed at a later date" (*India Realty News* 2009).

⁶ It is important to distinguish between sectors of the economy that are under the purview of the federal government and those that are state subjects. The liberalizing reforms that took place in India during the early 1990s focused on the former. The central government cannot mandate reform of sectors constitutionally under the states' purview.

⁷ 32 percent of respondents believed construction and real estate to be the most corrupt—nearly double the figure for telecommunications, the next most corrupt sector.

It is this regulatory intensity that accounts for the fact that many politicians are key players in the construction industry. For instance, relatives of politicians often establish their own construction firms and reap the rewards from the value of their familial connections (Bhushan 2001). In other instances, politicians become covert backers of firms because they represent powerful entities whose support must be won and retained.⁸ In some circumstances, politicians will have a direct financial stake in the construction industry. The recent history of the state of Maharashtra, for instance, contains numerous examples of powerful regional politicians with financial interests in construction (Khetan 2011).⁹ Because land is a valuable commodity and India's construction industry is booming, many politicians are believed to deposit a portion of their own financial assets with builders involved in construction.¹⁰ In addition to earning a decent return on their initial investment, politicians are also lured to the construction sector due to the sector's relative lack of transparency.

What helps grease the wheels of this quid pro quo is the industry's heavy reliance on cash and non-bank forms of finance. According to a Planning Commission (2011a) estimate, a mere 1.4 percent of total gross bank non-food credit disbursed during the year 2010-2011 went to the construction sector. The industry has limited access to bank finance for several reasons. First, the Reserve Bank of India (RBI) has imposed limits on the real estate exposure of a bank's lending portfolio due to concerns about speculative housing bubbles. Second, because many of the underlying land transactions might be of dubious legality, firms often think twice about bank financing.¹¹ Banks remain concerned about the lack of transparency in the construction sector and inadequate safeguarding mechanisms to protect investments.¹² Third, there are few barriers to entry for builders seeking to join the marketplace, and banks are reluctant to finance builders without established track records. The Government of India estimates that small contractors execute over 90 percent of all construction projects across India (*Ibid.*).¹³

The availability of liquid forms of finance is further bolstered by the fact that the sector has enjoyed a massive boom era over the past two decades. Over the last decade the

⁸ As one Member of Parliament asked rhetorically: "Which builder will give you money during elections if his work is not done?" (Khetan 2011).

⁹ One investigation into the builder-politician nexus in Mumbai, suggests "almost every MLA and MP, both past and present, cutting across party lines, owns at least one real estate project, either directly or through family members or a proxy" (Khetan 2011).

¹⁰ In an interview conducted by the authors, a builder constructing a hotel in Mumbai states that he was told by the government that it would only issue building permits if there was a quid pro quo. The quid pro quo sought was not cash but a five percent equity stake in the hotel in the name of a firm connected to a local politician (Author interview, New Delhi, December 3, 2012).

¹¹ Governments often sell land to private developers at sub-market rates, where the differential between the government and market price is the size of the kickback (or the corruption premium).

¹² According to the Planning Commission (2011a), "The construction sector is characterised by lots of project delays which are due to lack of adequate credit, harassment, problems in approvals, bad image of the contractors/builders, etc."

¹³ The *Economist* (2012) states that the non-bank finance builders often rely on "is not always kosher. One fraud expert reckons 80% of money-laundering in India uses property."

construction industry has enjoyed a compound annual growth rate of 11 percent and now accounts for over nine percent of India's Gross Domestic Product (GDP) (Planning Commission 2011a). The government estimates that between 2012 and 2017, there will be a need to construct 63 million new houses just to keep up with projected demand (Chang 2012; Planning Commission 2011b).

The affinity between builders and politicians is further compounded by the ineffectual regulation of election finance (Gowda and Sridharan 2012). The Election Commission of India (ECI) has regulatory authority over election financing, but its restrictions on campaign expenditures are widely seen as unrealistic. Candidates are required to disclose their campaign expenditures within 30 days of the election, but there is very weak enforcement of disclosure requirements.¹⁴ Political parties seem neither able nor willing to regulate election spending internally and are not subject to serious independent scrutiny. Second, efforts to regulate corporate contributions have not changed the under-the-table pattern of party funding because the potential costs of transparency outweigh any possible benefits (Sridharan 2009). Third, non-electoral mechanisms of accountability could help control the rising costs of elections, yet their unevenness has limited their effectiveness. India has a long tradition of a free media, yet in 2010 the Press Council of India warned that the practice of politicians paying journalists for favorable coverage was widespread.

The realities of the Indian system point to incentives for private financing of elections, which open the door to methods of “off-the-books” transactions. The overall magnitude of illicit election finance is difficult to determine. A 1999 independent election audit in 24 parliamentary constituencies found that the average winner spent Rs. 8.3 million (when the limit ranged from 1.0-2.5 million) (Sridharan 2006). Recent interdictions by the ECI prior to state elections have resulted in seizure of tens of millions of dollars in illicit cash intended for election purposes (*Economic Times*, May 12, 2011).

To quench the thirst for such “off-the-books” financing, politicians often turn to private firms for funds to fill their war chests. While private firms—and those in the construction sector, in particular—are not the only mechanism for funding elections, they are one important piece of the puzzle.¹⁵ To provide a sense of how widespread the connection between politicians and builders is, Table 1 provides an illustrative list of four recent scandals which have made headlines in India. Each involves powerful politicians exercising the government's discretionary authority to favor selected firms looking to develop land.¹⁶

¹⁴ The powers of the ECI are concentrated during the period when the election “model code of conduct” is in force. Once the election is over, the ECI's authorities greatly diminish. Hence, there is often no incentive for candidates to comply once the election is completed.

¹⁵ Political parties possess a diversity of mechanisms for funding elections disposal, including the recruitment of wealthy individuals involved in criminal activity (Vaishnav 2012).

¹⁶ To further elaborate the nature of the builder-politician nexus, 1 in the Online Appendix summarizes the sequences of events using the details of an alleged quid pro quo in the state of Andhra Pradesh.

Table 1: Examples of alleged discretionary abuse of land policy in India

State	Time period	Description
Maharashtra	2002-2009	Four ex-Chief Ministers allegedly used defense land to build a posh apartment complex in downtown Mumbai for family members, political allies, and business cronies. The housing complex, known as the Adarsh Housing Society, was originally intended to house widows of army veterans.
Goa	2006-2007	Town and Country Planning Minister Atansio Monserrate allegedly received over Rs. 26.6 crore in cash from an ex-bureaucrat turned real estate developer to convert 11 large tracts of agricultural land into settlement or commercial zones. As part of his portfolio, Monseratte oversaw the 2011 Regional Development Plan, which authorized the conversions.
Andhra Pradesh	2006-2009	A report of India's Comptroller and Auditor General found that ex-Chief Minister Y.S. Reddy (YSR) gave away nearly 90,000 acres of land to favored private entities on an ad hoc, discretionary basis, resulting in an estimated loss of Rs 1 lakh crore to the state. The benefitting firms are alleged to have invested in YSR's son's businesses.
Karnataka	2006-2010	A report of the state anti-corruption ombudsman (<i>Lokayukta</i>) found that Ex-Chief Minister B.S. Yeddyurappa (BSY) used his discretion to transfer government property to family members at a throw-away price. The family then sold the land to a mining company for a massive profit.

Hypotheses on cement consumption

Analyzing activity in India's construction sector presents difficulties for measurement because we lack reliable metrics. To overcome this, we use data on the amount of cement that is consumed in the major states of India on a monthly basis over a 15-year period. Cement consumption represents a suitable barometer of construction activity for two reasons. First, cement is the indispensable ingredient in virtually all construction; it has no obvious substitute as a binding agent for building materials. Second, cement consumption closely tracks short-term trends in building activity because inventory is largely fixed. Strictly speaking, our data are on cement purchases but industry insiders report that there is little lag time between purchases and consumption of cement due to high inventory costs, fear of theft, and cement's unique chemical properties.¹⁷ Furthermore, large end-users purchase cement from the major cement companies directly rather than middlemen.

Our core hypothesis is that cement consumption should exhibit a significant contraction during the month of the state election. Because builders are a leading source of election finance, one would expect activity in the sector to slow down during the month-long campaign period prior to Election Day. This is because existing liquidity in the sector is likely to dry up as resources otherwise slated for building must be channeled into campaign coffers (*Hypothesis #1*).

To probe whether the mechanism underlying the link between cement consumption and elections is related to election finance, as opposed to some other factor, we develop a series of secondary hypotheses. Under India's federal constitution, the state governments—as opposed to the national government—have regulatory responsibility for land and associated activities such as construction. Hence, there are stronger incentives for builders to cultivate ties with state-level, rather than national-level, politicians.¹⁸ However, there may be some residual benefit for builders to having connections to national-level politicians in parliament. Therefore, we expect that the contraction in cement consumption will be significant in national elections, though of a smaller magnitude than in state-level elections (*Hypothesis #2*).

However, elections in some states coincide with national elections; for instance, the last three state elections in Andhra Pradesh have coincided with national elections. In those instances, which we refer to as dual (or concurrent) elections, the need for election finance will be greater. Therefore, we expect the magnitude of the contraction in cement consumption to be larger for dual elections than if only a state or national election is being held (*Hypothesis #3*).

Fourth, we also expect to see variation according to the socioeconomic realities of the states. For instance, more urbanized states are comparatively richer; are more likely to possess well-

¹⁷ Authors' e-mail correspondence with executive of major cement manufacturer and CMA member firm, January 4, 2012.

¹⁸ The opposite would be true, for instance, for the allocation of telecommunications spectrum or defense contracts, which are activities governed by the central government.

developed real estate markets; and have higher demand for construction than their rural counterparts. As a result, linkages between politicians and builders are likely to be more intense in more urbanized states. Thus, we expect that cement consumption should exhibit a larger contraction in urban versus rural states (*Hypothesis #4*).

Our last hypothesis concerns political competition. There is substantial variation on this dimension in India, both across states as well as over time. The need for election finance is likely to be greatest for those elections where competition between parties is greatest and uncertainty about the outcome is highest. Therefore, we hypothesize that the contraction in cement consumption should be comparatively larger in more competitive elections (*Hypothesis #5*).

Data and methods

To test our hypotheses, we construct a dataset of monthly data on cement purchases by state. The source of the data is the Cement Manufacturers' Association of India (CMA), an industry trade group whose members include the country's largest public and private sector cement manufacturers. One of CMA's primary roles is to serve as a comprehensive clearinghouse for information on the capacity, production, dispatch and export of cement, using data collected from its member companies. CMA's data are proprietary but were provided to the authors by a member company. Monthly data on cement consumption (measured in metric tons) is available from April 1995 to March 2010, for a total of 180 calendar months per state. Our study emphasizes cement consumption, rather than production, because our hypotheses revolve around contractions in liquidity in the construction sector. We do not make any claims about linkages between electoral politics and the supply of cement (production), although we will address whether the contraction in cement consumption is a response to a corresponding contraction in production.

India is a federal parliamentary democracy comprised of 28 states and 7 union territories. For our analysis on cement consumption, we focus on the 17 major states, which account for over 92 percent of the country's population. We do not include data from three new states created in 2000 or several small microstates and union territories. As of 2009-2010, cement consumption in the 17 major states accounts for 90 percent of the all-India total. Thus, we are confident that we are working with data that has considerable explanatory power.

Before proceeding, we address two concerns about the reliability of our data. First, one might question whether firms have an incentive to report truthfully to the CMA, especially if data is shared with other manufacturers. However, the CMA does not provide firm-specific data; it merely collects, aggregates and reports data at the state-level. Second, although CMA comprises the biggest public and private sector cement manufacturers in India, not all firms are member companies. If, for instance, smaller cement manufacturers are underrepresented in the CMA, this could bias our results. To investigate, we compared government data on monthly cement production with the CMA data. The government data includes information

from all cement manufacturers between April 1999 and March 2010. The two data sources are highly correlated ($r = .98$), providing additional confidence in our reliance on the CMA data.

To our dataset on cement consumption, we add information on elections from the ECI. Between April 1995 and March 2010, there were a total of 52 state elections across India's 17 major states as well as five national elections. Roughly one-quarter of all state elections in our dataset coincide with national elections. State assembly elections take place every five years on a staggered schedule, although a state assembly can be dissolved before the conclusion of its full term and early elections can be called. Of the 52 state elections in our dataset, nine were unscheduled. Of the five national elections, two were unscheduled. In India's parliamentary system, the official campaign period prior to elections is very brief, lasting only a matter of weeks. To test for electoral cycles in cement consumption, we adapt the model used by Akhmedov and Zhuravskaya (2004) in their study of opportunistic political business cycles in Russia. Specifically, we estimate the following equation using regional monthly panel data:

$$\log y_{it} = \sum_{j \in \{-6,6\}} \alpha_j m_{jit} + \beta_1 y_{it-1} + \tau_t + f_{is} + \varepsilon_{it}, \quad (1)$$

where i identifies states, t represents the month of the year, and y stands for the level of cement consumption (in log terms) in a given state-month (*Log Cement Consumption*). m_{jit} is an indicator variable that equals one, when t is j months away from the state election. Our model includes time fixed effects, τ_t , where there is an indicator for each month-year. This fixed effects parameter controls for unobserved national-level trends as well as any general macroeconomic shocks. As in Akhmedov and Zhuravskaya (2004), we also need to control for state-specific fixed effects as well as any state-specific seasonal or time shocks. Hence, we include the fixed effects term, f_{is} , for each of the twelve calendar months of the year (s) in each state, i .

Our primary variable of interest is m_{jit} when $j = 0$, which signifies the month of the state election (*Election*). In the base specification, we also include dummies for each of the six months preceding and following a state election (*Election-1*, *Election-2*, etc). A negative coefficient on α_j when $j = 0$ would provide support for our hypothesis that the occurrence of a state election is associated with a drop in cement consumption.

Finally, we include a lag of our dependent variable, y_{it-1} , in the model because we believe there are strong theoretical reasons for expecting that cement consumption exhibits

temporal dependence. We are also concerned about serial correlation in the data, so including a lag makes sense from a modeling perspective.¹⁹

Using the Akaike information criterion (AIC), we tested for optimal lag selection. In half of the diagnostic tests (run separately for each state), the results suggested we should include three lags of the dependent variable, while half of the tests indicated we should include four lags. The regressions below include three lags, but the results do not change if we include four lags (See Online Appendix for full results).²⁰ As an additional robustness test, we also run all our models without any lags of the dependent variable. The results (in the Online Appendix) do not change. In addition, we tested for unit roots using the test developed by Im, Pesaran and Shin (2003). Based on the mean of the individual Dickey-Fuller t-statistics of each unit in the panel, the Im-Pesaran-Shin test assumes that all series are non-stationary under the null hypothesis. Based on the test statistics, we can reject the null hypothesis of non-stationarity. We estimate all models using Ordinary Least Squares (OLS), using the correction for panel-corrected standard errors (PCSE) suggested by Beck and Katz (1995) to deal with non-spherical errors (heteroskedasticity and contemporaneous correlation).

Empirical Results

We begin with our baseline series of multivariate regressions in which we estimate the effect of state elections on (log) cement consumption. As seen in Column 1 of Table 2 we first estimate our model without any fixed effects parameters, only including indicator variables for the election month and the six months before and after. The regression results indicate that state elections are associated with a significant decline in cement consumption, conditional on cement consumption in previous months. There is a slight increase in cement consumption immediately after the election, but otherwise the coefficient of the election lags and leads are insignificant. This basic specification does not control for time trends, so in Column 2 we add time fixed effects—or indicator variables for every month-year combination. In Column 3, we include only state-month fixed effects to account for state-specific seasonality in construction activity. Finally, in Column 4, we include both time and seasonal fixed effects parameters (as in Equation 1 above). Across all models, our results show that state elections are associated with a consistent, statistically significant 12 percent decline in cement consumption ($p < .01$). The estimates for the coefficient on the election indicator are strikingly similar across models, both in terms of magnitude and statistical significance.

In the full specification (Column 4), almost every other indicator variable marking the months before and after the election is insignificant (with the exception of the dummies for the six month-lag and five month-lead). The results demonstrate a clear, election-related

¹⁹ We tested for serial correlation using Wooldridge's test for linear panel data . The results indicate that we cannot reject the null hypothesis of no serial correlation in the data.

²⁰ <http://www.cgdev.org/sites/default/files/Kapur-Vaishnav-Online-Appendix.pdf>

Table 2: Cement consumption and state elections

DV:	(1) Log cement consumption	(2) Log cement consumption	(3) Log cement consumption	(4) Log cement consumption
Election _{t-6}	0.02 [0.78]	0.02 [0.73]	0.04 [1.54]	0.06*** [2.69]
Election _{t-5}	-0.01 [-0.42]	-0.00 [-0.04]	-0.02 [-0.88]	-0.00 [-0.03]
Election _{t-4}	-0.00 [-0.12]	-0.01 [-0.38]	-0.02 [-0.84]	-0.02 [-0.69]
Election _{t-3}	-0.03 [-1.08]	-0.03 [-1.19]	-0.03 [-1.21]	-0.03 [-1.55]
Election _{t-2}	0.04 [1.27]	0.03 [1.24]	0.02 [0.83]	0.01 [0.55]
Election _{t-1}	0.04 [1.38]	0.02 [0.85]	-0.01 [-0.31]	0.00 [0.21]
Election	-0.12*** [-4.12]	-0.12*** [-4.71]	-0.12*** [-4.87]	-0.12*** [-5.44]
Election _{t+1}	0.09*** [2.95]	0.05** [1.97]	0.03 [1.33]	0.03 [1.29]
Election _{t+2}	0.02 [0.82]	0.04 [1.50]	0.03 [1.19]	0.03 [1.17]
Election _{t+3}	0.03 [0.89]	0.04 [1.40]	0.07*** [3.06]	0.04 [1.56]
Election _{t+4}	-0.01 [-0.28]	-0.01 [-0.57]	0.03 [1.16]	0.01 [0.63]
Election _{t+5}	-0.04 [-1.46]	-0.01 [-0.25]	0.02 [0.98]	0.04* [1.82]
Election _{t+6}	-0.03 [-1.05]	-0.04* [-1.65]	-0.01 [-0.51]	0.00 [0.20]
Fixed effects	-	Time	State-Month	Time & State-Month
Observations	2,856	2,856	2,856	2,856
R-squared	0.95	0.96	0.97	0.97
Number of states	17	17	17	17

Note: Z statistics in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. All models include three lags of the dependent variable. Model (2) includes time fixed effects; Model (3) includes fixed effects for each state-month combination; and Model (4) includes time and state-month fixed effects. Models are estimated using OLS with panel-corrected standard errors. Dependent variable is natural log of cement consumption.

decline.²¹ To ensure that our core result is not an artifact of the number of leading and lagging months that we decide to control for, we re-estimate the model including both sets of fixed effects, iteratively adding more dummies for the election lags and leads. The results (reported in the Online Appendix), indicate that the negative effect of elections is consistently robust as we increase the number of controls for lagging and leading months.²²

National elections

Next, we explore our hypothesis that the election-related contraction in cement consumption should be smaller for national (*Lok Sabha Election*), as opposed to state elections.

Recall, we expect that national elections will have a significant, negative effect on cement consumption, but of a smaller magnitude than for state elections given that land use is regulated by the states. To estimate the effect of national elections on cement consumption, we employ a slightly different empirical model. Namely, we can no longer include a full set of month-year fixed effects to account for the time trend because the indicator for Lok Sabha (national) elections does not vary across states (e.g. national elections are a common “shock” simultaneously experienced by all states). Thus, for the regressions testing this hypothesis we can only include fixed effects for years as well as for each state-month combination (e.g. seasonal time effects). Column 1 of Table 3 reports the results of the baseline model (with no fixed effects). According to this basic specification, national elections are associated with a 10 percent decline in cement consumption ($p < .01$). In Columns 2 and 3, we add year fixed effects and seasonal effects, respectively. The result holds although the coefficient is smaller (-.06) once seasonal effects are included. In Column 4, we include both sets of fixed effects and the results here indicate that national elections are associated with a 5 percent decline in the level of cement consumption ($p < .05$).²³

Dual elections

Hypothesis #3 posits that the magnitude of the contraction in cement consumption should be larger for “dual” elections—those instances in which states are concurrently holding state and national elections—than if only a state or national election is being held. As Column 1 of Table 4 attests, the negative effect of *Dual Election* on cement consumption is three times as strong as that of state elections. Dual elections are associated with a 38 percent drop in

²¹ Figure 3 in the Online Appendix plots the coefficients, starkly demonstrating the decline in cement consumption during the month of elections.

²² The estimates are remarkably consistent when we control for up to 11 months of lags and leads. When we control for the 12 months lagging and leading the election, the size of the effect declines as does the significance ($p < .05$).

²³ We also experiment with adding additional dummies for the lags and leads of the election month dummy variable. The results can be found in the Online Appendix.

Table 3: Cement consumption and national elections

DV:	(1) Log cement consumption	(2) Log cement consumption	(3) Log cement consumption	(4) Log cement consumption
Lok Sabha Election _{<i>t-6</i>}	0.03 [0.67]	0.04 [0.91]	-0.03 [-1.12]	-0.01 [-0.34]
Lok Sabha Election _{<i>t-5</i>}	0.02 [0.39]	0.03 [0.65]	0.00 [0.11]	0.01 [0.60]
Lok Sabha Election _{<i>t-4</i>}	0.07* [1.93]	0.09** [2.06]	0.04 [1.45]	0.05** [2.01]
Lok Sabha Election _{<i>t-3</i>}	0.05 [1.26]	0.05 [1.14]	0.02 [0.59]	0.02 [0.88]
Lok Sabha Election _{<i>t-2</i>}	-0.02 [-0.46]	-0.02 [-0.40]	0.00 [0.06]	0.01 [0.48]
Lok Sabha Election _{<i>t-1</i>}	0.04 [0.96]	0.03 [0.77]	-0.05** [-2.04]	-0.04 [-1.50]
Lok Sabha Election	-0.10*** [-2.58]	-0.10** [-2.37]	-0.06** [-2.26]	-0.05** [-2.01]
Lok Sabha Election _{<i>t+1</i>}	0.03 [0.81]	0.03 [0.63]	-0.04 [-1.51]	-0.04 [-1.48]
Lok Sabha Election _{<i>t+2</i>}	0.00 [0.03]	-0.00 [-0.06]	0.01 [0.51]	0.01 [0.26]
Lok Sabha Election _{<i>t+3</i>}	0.02 [0.64]	0.02 [0.48]	0.07*** [2.76]	0.06** [2.56]
Lok Sabha Election _{<i>t+4</i>}	-0.04 [-1.14]	-0.05 [-1.07]	0.02 [0.93]	0.03 [1.40]
Lok Sabha Election _{<i>t+5</i>}	-0.05 [-1.35]	-0.05 [-1.26]	-0.02 [-0.83]	-0.01 [-0.23]
Lok Sabha Election _{<i>t+6</i>}	0.02 [0.56]	0.02 [0.52]	-0.03 [-1.02]	-0.00 [-0.11]
Fixed effects	-	Year	State-Month	Year & State-Month
Observations	2,856	2,856	2,856	2,856
R-squared	0.95	0.95	0.97	0.97
Number of states	17	17	17	17

Note: Z statistics in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. All models include three lags of the dependent variable. Model (2) includes year fixed effects; Model (3) includes fixed effects for each state-month combination; and Model (4) includes year and state-month fixed effects. Models are estimated using OLS with panel-corrected standard errors. Dependent variable is natural log of cement consumption.

Table 4: Cement consumption, additional hypotheses

DV:	(1) Log cement consumption	-2 Log cement consumption	-3 Log cement consumption	-4 Log cement consumption
Sample:	All	Urban	Rural	All
Election _{t-6}	0.05** [2.06]	0.09*** [3.12]	0.06 [1.53]	0.05** [2.56]
Election _{t-5}	-0.01 [-0.45]	-0.00 [-0.00]	0.01 [0.39]	0.00 [0.08]
Election _{t-4}	-0.01 [-0.46]	0.03 [0.85]	-0.06* [-1.69]	-0.01 [-0.70]
Election _{t-3}	-0.02 [-1.00]	-0.04 [-1.44]	-0.03 [-0.86]	-0.04* [-1.76]
Election _{t-2}	0.02 [0.96]	0.00 [0.04]	0.04 [1.03]	0.01 [0.56]
Election _{t-1}	-0.01 [-0.26]	0.00 [0.12]	-0.00 [-0.09]	0.00 [0.25]
Election	-0.02 [-1.05]	-0.15*** [-4.95]	-0.11*** [-3.04]	
Dual Election	-0.38*** [-5.86]			
Lok Sabha Election	0.00 [0.10]			
Election _{t+1}	0.02 [1.06]	0.06* [1.91]	-0.01 [-0.17]	0.03 [1.36]
Election _{t+2}	0.01 [0.56]	0.05* [1.77]	-0.00 [-0.10]	0.03 [1.33]
Election _{t+3}	0.06*** [2.61]	0.07** [2.21]	0.02 [0.50]	0.04* [1.84]
Election _{t+4}	0.03 [1.29]	0.01 [0.34]	0.03 [0.74]	0.01 [0.70]
Election _{t+5}	0.03 [1.17]	0.06* [1.78]	0.01 [0.38]	0.04** [2.16]
Election _{t+6}	-0.00 [-0.17]	0.02 [0.66]	-0.01 [-0.20]	0.00 [0.18]
Low Margin				-0.39*** [-10.52]
Med Margin				-0.04* [-1.72]
High Margin				0.02 [0.40]
Fixed effects	Year & State- Month	Time & State- Month	Time & State- Month	Time & State- Month
Observations	2,856	1,512	1,344	2,838
R-squared	0.97	0.95	0.98	0.97
Number of states	17	9	8	17

Note: Z statistics in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. All models include three lags of the dependent variable, time fixed effects, and fixed effects for each state-month combination. Model (1) uses year, rather than time, fixed effects. Models are estimated using OLS with panel-corrected standard errors. Dependent variable is natural log of cement consumption.

the level of cement consumption ($p < .01$). This result suggests the imperative for election finance is significantly larger when candidates for state and national elections need to raise funds for their respective campaigns simultaneously.

Urban-rural states

We further hypothesized that the negative effect of elections on cement consumption should be larger in urban than in rural states. Columns 2 and 3 of **Table 4** split the sample into urban and rural states. State elections are associated with a statistically significant decline in cement consumption across both urban and rural states ($p < .01$). It appears at first glance that the effect is stronger for urban than rural states (15 percent versus 11 percent, respectively). Yet, regressions using an interaction term find that this difference is not statistically significant.

Political competition

Our final hypothesis explores the effect of political competition on the relationship between state elections and cement consumption. Specifically, we hypothesize that the contraction in cement consumption will be larger in more competitive elections. Our basic intuition is that more competitive elections are associated with greater uncertainty, increasing the returns to the marginal dollar of election finance raised. To capture the degree of political competition, we take the simple average of the margin of victory across constituencies (*Margin*). In the regressions, we then create dummy variables for each of three categories of competition: low, medium, and high margins of victory. Our results, from Column 4 of Table 4, find strong support for the mediating role of competition. It appears that highly competitive elections are responsible for the bulk of the election-related decline in cement consumption. The coefficient on the dummy for highly competitive elections (*Low Margin*) is substantively large and statistically significant ($p < .01$). There is also a modestly significant negative effect of elections with intermediate levels of competition (*Medium Margin*) ($p < .10$) but no effect when it comes to low competition elections (*High Margin*).

Randomization inference

To build confidence in our result, we make use of randomization inference (Fisher 1935; Rosenbaum 2002). Randomization inference is relevant to our case, as we are working with panel data where we are likely to have “clustering” or correlation among error terms within states. In the models described above, we addressed this issue using panel-corrected standard errors (PCSEs). Yet, we might be concerned about the robustness of these estimates as we have a relatively small number of states.

The basic procedure of conducting a randomization test is straightforward and proceeds in four steps, as outlined by Rader (2011). First, we estimate our baseline model using OLS and

record the t-statistic on our election variable. Rather than taking the t-statistic on our variable of interest at face value, we then shuffle the variable. By randomizing the election month variable, we are breaking any systematic connection between it and the dependent variable. In the next step, we use this shuffled variable to re-estimate the model. We repeat the randomization and estimation 1,000 times. By doing this, we create a reference distribution of t-statistics that would arise if the null hypothesis were true (that there is no statistically significant relationship between state elections and a decline in cement consumption). Finally, we compare the observed t-statistic with the reference distribution to determine what percentage of the time we observe a significant, spurious effect. If the observed t-statistic is larger than 95 percent of the simulated t-statistics, we can be confident in rejecting the null hypothesis of no relationship between elections and cement consumption.

We use the model in Column 4 of Table 1 as our baseline regression, but without using the correction for panel-corrected standard errors. The t-statistic on the election variable is 4.08 (see the Online Appendix for a graphic demonstration of the reference distribution of t-statistics obtained from the randomization test). The vertical reference line indicates the t-statistic on our baseline model. As the figure demonstrates, more than 95 percent of the time we obtain results that are of lesser statistical significance than in our baseline model. Thus, we are confident in the robustness of our finding.

Alternative explanations

Thus far, we have demonstrated that there is a robust, negative relationship between cement consumption and elections. We believe this is indicative of the role builders play as financiers of elections. In this section we address challenges to our interpretation of the results.

Economic uncertainty

One alternative explanation is that the decline in cement consumption is not symptomatic of the construction sector's role as a conduit for election finance, but instead the outcome of a decline in economic activity arising out of pre-election political uncertainty. For instance, Canes-Wrone and Park (2010) argue that, in OECD countries, political uncertainty associated with elections induces private sector actors to postpone investments with high costs of reversal. Hence, elections are associated with a decline in economic activity—a “reverse business cycle.”

We do not believe there is theoretical support for such a view in the context of India. For starters, the argument that general economic activity contracts on account of election-induced uncertainty stands in contrast to much of the literature on political business cycles in developing countries. Indeed, the literature on opportunistic business cycles suggests that policymakers in developing democracies induce short-term economic *expansions* (and increase deficits) before elections (Brender and Drazen 2005; Shi and Svensson 2006). Studies of

India have reached similar conclusions (Cole 2008) including work by Khemani (2004), who finds support for an expansion in public works projects, such as road construction, in anticipation of state elections.

Furthermore, we can devise empirical tests to help us distinguish between the election finance explanation we favor and the alternative hypothesis regarding economic uncertainty. First, we exploit the fact that India's parliamentary system allows for both "scheduled" and "unscheduled" elections. The latter occur when a government fails a vote of no confidence or calls early elections. According to our election finance logic, we hypothesize that the contraction in cement consumption will be larger for scheduled elections (*Scheduled Election*) compared to unscheduled elections. When elections occur as scheduled, there is a degree of certainty that allows builders and politicians to coordinate activities and they have an ex ante schedule to guide their transactions. When unscheduled elections are held, it is likely to be more difficult for builders to adjust their activities accordingly. In addition, builders might be less certain about the political outlook for the state and the electoral fortunes of various candidates and parties.

The logic of economic uncertainty would suggest the exact opposite hypothesis: given the uncertainty attached to unscheduled elections (often sparked by political instability and/or unforeseen events) the pace of economic activity should slow down as firms grapple with a potential change in government. So if uncertainty were driving the decline in cement consumption, this decline should be greater in unscheduled elections.²⁴

To adjudicate between these two explanations, we re-estimate our baseline model, replacing our election dummy variable with a dummy variable for scheduled elections. Our results, for state and national elections, can be found in Table 5 (for ease of comparison, we also show our original results using the standard election dummy). The occurrence of scheduled state elections (Column 2) has a significant negative effect on cement consumption. Cement consumption declines by 15 percent during the month of scheduled elections ($p < .01$). In line with our election finance logic, the coefficient on the scheduled state election variable is slightly larger than when we considered all state elections (Column 1). As for scheduled national elections, we find that the negative impact is slightly more pronounced, comparing the result in Column 4 to the baseline regression in Column 3. This effect is analogous to the differential impact of scheduled versus unscheduled state elections. Column 4 reports an 8 percent decline in cement consumption for scheduled national parliamentary elections ($p < .05$). Our results seem to favor a logic of election finance over one of economic uncertainty.

²⁴ There is another advantage to distinguishing between scheduled and unscheduled elections. Since elections in a parliamentary system can be considered endogenous, unscheduled elections might be related to economic factors that are correlated with changes in the construction sector. Hence, there is a concern that governments might call early elections for some reason that might also be correlated with changes in the economy that could impact the demand for cement.

Table 5: Cement consumption and scheduled elections

DV:	(1) Log cement consumption	(2) Log cement consumption	(3) Log cement consumption	(4) Log cement consumption
<i>Election type:</i>	<i>State</i>	<i>State</i>	<i>National</i>	<i>National</i>
Election _{t-6}	0.06*** [2.69]	0.06*** [2.76]	-0.01 [-0.34]	-0.01 [-0.30]
Election _{t-5}	-0.00 [-0.03]	-0.00 [-0.04]	0.01 [0.60]	0.01 [0.62]
Election _{t-4}	-0.02 [-0.69]	-0.01 [-0.67]	0.05** [2.01]	0.05** [2.07]
Election _{t-3}	-0.03 [-1.55]	-0.03 [-1.55]	0.02 [0.88]	0.02 [0.82]
Election _{t-2}	0.01 [0.55]	0.01 [0.54]	0.01 [0.48]	0.01 [0.54]
Election _{t-1}	0.00 [0.21]	0.00 [0.19]	-0.04 [-1.50]	-0.04 [-1.55]
Election	-0.12*** [-5.44]		-0.05** [-2.01]	
Scheduled Election		-0.15*** [-5.58]		-0.08** [-2.56]
Election _{t+1}	0.03 [1.29]	0.03 [1.27]	-0.04 [-1.48]	-0.04 [-1.52]
Election _{t+2}	0.03 [1.17]	0.03 [1.20]	0.01 [0.26]	0.00 [0.16]
Election _{t+3}	0.04 [1.56]	0.04 [1.56]	0.06** [2.56]	0.06*** [2.58]
Election _{t+4}	0.01 [0.63]	0.01 [0.63]	0.03 [1.40]	0.03 [1.34]
Election _{t+5}	0.04* [1.82]	0.04* [1.87]	-0.01 [-0.23]	-0.00 [-0.15]
Election _{t+6}	0.00 [0.20]	0.00 [0.20]	-0.00 [-0.11]	-0.00 [-0.14]
Fixed effects	Time & State- Month	Time & State- Month	Year & State- Month	Year & State- Month
Observations	2,856	2,856	2,856	2,856
R-squared	0.97	0.97	0.97	0.97
Number of states	17	17	17	17

Note: Z statistics in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. All models include three lags of the dependent variable. Models (1) and (2) include time fixed effects and fixed effects for each state-month combination. Models (3) and (4) include year fixed effects and fixed effects for each state-month combination. Models are estimated using OLS with panel-corrected standard errors. Dependent variable is natural log of cement consumption.

Another method of evaluating the uncertainty hypothesis is to collect time-series data on the announcements of new investment projects. If uncertainty compels firms to adopt a risk-averse position, firms might hold back on announcing new projects until the results of the election are known. While using project announcement data to evaluate the uncertainty hypothesis is clear in theory, it is complicated in practice. From the time elections are announced to the date results are made public, the ECI enforces a “model code of conduct,” a set of guidelines intended to create a level playing field so that the government does not exploit the benefits of incumbency for electoral purposes. A decline in project announcements could be linked to the model code since the public sector is an important player in the infrastructure industry. It then becomes difficult to separate the impact of uncertainty from that of the model code.²⁵

To circumvent this, we disaggregate project announcements into public and private sector announcements. Our data comes from the CAPEX database produced by the Center for Monitoring Indian Economy. CAPEX provides detailed project-level information of capital expenditure projects under various stages of planning and implementation across India. For each project in the database, CAPEX provides information on the date on which the project was announced, its location, and whether it is a public or private sector project. We used this data to create a monthly, state-level dataset on project announcements. The effects of the model code should only be on public sector project announcements, which should decline prior to elections. But the model code should not have an impact on private sector announcements. If private sector announcements do decrease before elections, this could be evidence in favor of the uncertainty hypothesis. The evidence, presented in Table 6, is in line with our expectation. There is an overall decline in project announcements the month of elections, but this decline is entirely a result of a decline in project announcements emanating from the public sector.

As a final test of the economic uncertainty logic, we utilize monthly data on the level of industrial production to examine whether the decline in cement consumption is robust to controlling for the pace of general economic activity. We rely on the monthly index of industrial production (*IIP*), an aggregate statistic that represents the status of production in the industrial sector. Since the *IIP* is a national-level measure, we cannot use this data to analyze state elections. However, we can use it as a control in our regressions looking at national election cycles. The inclusion of the *IIP* variable does not alter our estimates of the negative effect of national elections on cement consumption (as seen in the Online Appendix).

²⁵ The decrease in cement consumption during the month of elections is not a direct result of the model code. The model code only restricts the government from announcing new schemes and projects in advance of the elections (Singh 2011). It has no bearing on the government’s implementation of existing projects. Given the time lag inherent in tenders, contracts, etc. we do not believe this is biasing our results. According to data collected by the World Bank (2013), it takes an average of 158 days for a firm to obtain a construction permit.

Table 6: Project announcements and elections

DV:	(1) All projects	(2) Public projects	(3) Private projects
Election _{t-6}	-0.01 [-0.06]	-0.08 [-0.36]	-0.03 [-0.24]
Election _{t-5}	-0.07 [-0.58]	0.12 [0.60]	-0.02 [-0.13]
Election _{t-4}	0.04 [0.29]	-0.35 [-1.63]	0.11 [0.87]
Election _{t-3}	0.13 [1.12]	0.12 [0.61]	0.17 [1.34]
Election _{t-2}	-0.10 [-0.91]	-0.05 [-0.29]	-0.05 [-0.40]
Election _{t-1}	-0.10 [-0.81]	-0.14 [-0.69]	-0.19 [-1.51]
Election	-0.29** [-2.09]	-0.79*** [-2.76]	-0.05 [-0.31]
Election _{t+1}	-0.15 [-1.29]	-0.24 [-1.21]	-0.23* [-1.90]
Election _{t+2}	-0.15 [-1.15]	-0.40* [-1.77]	-0.12 [-0.79]
Election _{t+3}	0.03 [0.23]	-0.03 [-0.14]	0.05 [0.40]
Election _{t+4}	0.03 [0.28]	-0.26 [-1.35]	-0.01 [-0.11]
Election _{t+5}	-0.03 [-0.26]	-0.02 [-0.09]	-0.02 [-0.17]
Election _{t+6}	0.17 [1.32]	0.03 [0.15]	0.35** [2.53]
Fixed effects	Time & State-Month	Time & State-Month	Time & State-Month
Observations	2,856	1,863	1,863
Number of states	17	17	17

Note: Z statistics in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. Models include time fixed effects and fixed effects for each state-month combination. Models are estimated using negative binomial regression. Dependent variable in Model (1) is the number of announced new investment projects; in Model (2) is the number of announced new public sector investment projects; and in Model (3) is the number of announced new private sector investment projects.

Table 7: Cement production and state elections

DV:	(1) Log cement production	(2) Log cement production	(3) Log cement production	(4) Log cement production
Election _{<i>t-6</i>}	-0.01 [-0.15]	-0.02 [-0.43]	-0.02 [-0.50]	-0.02 [-0.58]
Election _{<i>t-5</i>}	-0.02 [-0.33]	-0.03 [-0.54]	-0.02 [-0.43]	-0.03 [-0.79]
Election _{<i>t-4</i>}	-0.01 [-0.16]	-0.02 [-0.31]	-0.05 [-1.30]	-0.04 [-1.00]
Election _{<i>t-3</i>}	-0.03 [-0.36]	-0.00 [-0.03]	-0.05 [-1.16]	-0.05 [-1.25]
Election _{<i>t-2</i>}	0.09 [1.27]	0.07 [1.05]	0.06 [1.48]	0.04 [0.96]
Election _{<i>t-1</i>}	0.01 [0.10]	-0.04 [-0.62]	-0.03 [-0.76]	-0.05 [-1.10]
Election	-0.03 [-0.38]	0.03 [0.48]	0.01 [0.20]	0.03 [0.74]
Election _{<i>t+1</i>}	0.21*** [2.86]	0.20*** [2.69]	0.05 [1.26]	0.07* [1.67]
Election _{<i>t+2</i>}	-0.04 [-0.98]	-0.05 [-0.96]	-0.02 [-0.40]	-0.03 [-0.78]
Election _{<i>t+3</i>}	-0.03 [-0.66]	-0.05 [-1.02]	0.01 [0.21]	-0.02 [-0.57]
Election _{<i>t+4</i>}	0.00 [0.08]	0.01 [0.15]	0.02 [0.59]	0.01 [0.20]
Election _{<i>t+5</i>}	-0.03 [-0.69]	-0.01 [-0.10]	0.01 [0.16]	0.00 [0.07]
Election _{<i>t+6</i>}	0.01 [0.13]	0.01 [0.12]	0.00 [0.03]	0.00 [0.10]
Fixed effects	-	Time	State-Month	Time & State-Month
Observations	2,579	2,579	2,579	2,579
R-squared	0.96	0.96	0.99	0.99
Number of states	17	17	17	17

Note: Z statistics in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. All models include two lags of the dependent variable. Model (2) includes time fixed effects; Model (3) includes fixed effects for each state-month combination; and Model (4) includes time and state-month fixed effects. Models are estimated using OLS with panel-corrected standard errors. Dependent variable is natural log of cement production.

Production shortfalls

A second alternative hypothesis relates to output changes in the cement industry. For instance, it is plausible that cement producers will anticipate a decline in consumption and cut production prior to elections. If production significantly declines before elections, one could contend that our results on consumption are a direct consequence of cutbacks in production. We do not expect that production will decline prior to elections because cement is a continuous processing industry with increasing returns to scale.²⁶ This means that producers incur high costs if they choose to reduce their overall rates of capacity utilization. Nevertheless, we re-estimate our empirical model using monthly data on cement *production*, rather than cement *consumption*, as our dependent variable. In line with our expectation, we find no clear evidence of an electoral cycle in cement production (Table 7). Across all models, state elections are not associated with a significant change in cement production. If anything, there is some support for a small increase in cement production the month following elections. In any case, it does not appear that the observed decline in cement consumption around elections is a result of a corresponding decline in cement production.

Consumption smoothing

Another possible objection to our findings relates to consumption smoothing. If prior to elections builders anticipate the need to redirect funds to election campaigns, wouldn't they take action to "smooth" their consumption? After all, private firms are thought to prefer a stable consumption path over time. Thus, if businesses know that their consumption will likely decline in the future, they should anticipate this by gradually redirecting funds over time.

While an impulse to smooth consumption makes sense in theory, we argue that it does not happen in practice for at least two reasons. First, as stated above, builders provide payments to politicians off-the-books because neither party want an official record of the transaction. This is particularly true for politicians, who do not want to have suspicious assets show up in their accounts (which they publicly disclose prior to elections under Indian law). Thus if builders, anticipating elections, redirected funds to politicians in installments, it would partially defeat the purpose of keeping these transactions in the "black." Instead, politicians want funds during election season because they can route these funds into campaigns immediately, without keeping them on their own books—a "cash in, cash out" system.

Second, because builders operate in a cash-intensive environment, there might also be constraints on their liquidity that hamper their ability to smooth consumption. First, as was mentioned earlier, banks are generally cautious about lending to the construction sector. RBI

²⁶ "Continuous" production industries such as oil refining and cement are characterized by a discontinuous production function, increasing returns to scale, inelastic factor substitutability and high barriers to entry and exit (Buffa and Sarin 1987).

regulations mandate that banks' exposure to real estate lending be no more than 15 percent of a bank's total deposits (RBI 2009).²⁷ Second, banks are unlikely to provide builders with financing to address liquidity constraints in advance of elections when the underlying motivations are expressly political. Third, election-season borrowing is likely to be costly for builders because the cost of borrowing will increase if the general demand for credit is higher as elections approach.

Finally, builders are less concerned with production slowdowns than firms in comparable sectors because many customers in India's real estate market pay builders up-front (often with a corruption premium) prior to construction (*Economist* 2012). It is also possible that builders accept that idea that providing election finance—and thus facing a short-term liquidity shortage—is part of the cost of doing business in a highly regulated economy. Builders may be willing to put up with a temporary slowdown in building activity if they are reaping benefits from the state in other ways.

Other explanations

Before concluding, we briefly address several other possible alternative explanations. One alternative is that construction slows down during elections because laborers employed by builders are being used as temporary labor for campaigns. However, such a hypothesis assumes that only labor from the construction sector is used for elections and not from other sectors (we noted earlier our measure of industrial production does not decline during elections). There is no obvious reason why this might be the case.

A second alternative explanation involves migrant labor. Across India, the construction sector is thought to employ a significant number of migrant workers. If migrant workers return home to vote in elections, this might create a labor supply shortage in their state of residence—hence accounting for a slowdown in construction activity. However, this argument falls short because of India's system of staggered elections. A worker from the state of Bihar (a state with net out-migration) who is working on construction projects in Maharashtra (a state with net in-migration) might take leave to go home to Bihar to vote in its state elections. This could possibly have an impact on cement consumption in Maharashtra but it should not have any impact on cement consumption in Bihar. However, we find evidence of exactly the opposite effect: in this scenario, it is cement consumption in Bihar that declines.

A final alternative explanation relates to transportation. Construction activity could decline prior to elections if the transport of construction-related materials is constrained. Since trucks are in heavy demand around election time—for campaigning, transporting voters to rallies and to the polls, and ferrying election workers—there could be an election-induced

²⁷ Patnaik, Shah and Suri (2011) find that penetration of commercial finance in the real estate sector is very low in India.

shortage of transport vehicles, which might adversely impact construction activity. However, if this were the case, we would expect to see suggestive evidence of an election-related decline in economic activity. Yet, our regressions using cement production, controlling for industrial production, and looking at private sector project announcements, do not uncover any evidence of an economic slowdown around elections.

Conclusion

The presence of “black” money is a well-known feature of elections in many developing democracies. Yet due to its opacity, much of what we know is based on anecdotal evidence or journalistic investigations. This paper builds on the insights of a growing literature on regulation and corruption to empirically demonstrate—and quantify—the flows of illicit election finance.

Due to the nature of state regulations governing land use, we focus on the role of the construction sector in providing off-the-books campaign contributions to politicians—a dynamic which the comparative record demonstrates is not uncommon. In particular, we use variation in the demand for cement to demonstrate the presence of an electoral cycle in building activity, using data from India. This effect is consistent with the belief that the sector serves as a key conduit of illicit election finance. Using a variety of models, we demonstrate that our key empirical finding is robust and address what we see are the leading objections to our interpretation of the underlying mechanism.

Our findings have broad relevance for the study of money politics in the developing world, where we are most likely to observe illicit election finance. There is a small, but growing literature in this area (Gingerich 2010; Mironov and Zhuravskaya 2013). This paper adds to this literature in two ways. First, it focuses on a specific sector—construction—that is widely thought to be linked with “off-the-books” politics. Second, it contributes a novel measure for capturing election cycles in this sector that is consistent with its role as a source of election finance.

Our findings are also broadly related to the field of “forensic” economics, which has developed innovative methods of estimating the private returns to political power. Work in this area attempts to estimate the extent to which firms benefit from possessing political connections (Fisman 2001; Khwaja and Mian 2005; Faccio 2006; Jayachandran 2006). A second strand of the literature attempts to identify the benefits politicians obtain on the basis of their political power (Eggers and Hainmueller 2009; Querubin and Snyder 2011; Bhavnani 2011). In contrast to this larger literature (one notable exception is Sukhtankar 2012), we place an emphasis on the role of election finance incentives rather than mere rent seeking. Given the centrality of the election cycle to our argument, this paper is also linked to the literature on political business cycles (Akhmedov and Zhuravskaya 2004; Shi and Svensson 2006; Brender and Drazen 2005).

Looking ahead, we believe that this work has several implications for the field of political economy. Scholars need to pay greater attention to the role black money is playing across the developing world. If there are large sums of money moving through the political system independent of official expenditures, our estimates of election finance will be downward-biased if we do not take them into account. To date, much of the comparative literature focuses on licit flows (Scarrow 2007), but such flows likely constitute but a fraction of total election spending in many developing countries. Finally, the growing expense of elections has serious implications for public policy in developing countries. Raising money from “supporters” has the potential effect of post-election paybacks in terms of distorting public policies. Indeed, the builder-politician nexus has implications for decisions on land acquisition and conversion; land and housing prices and land inequality; and the overall public management of urbanization.

But perhaps most seriously, even the perception of money “buying” elections among voters can severely undermine citizens’ confidence in the democratic process itself.

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