

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

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Abstract

In developing countries where elections are costly and accountability mechanisms weak, politicians often turn to illicit means of financing campaigns. This paper examines one such channel of illicit campaign finance: India's real estate sector. Politicians and builders allegedly engage in a quid pro quo, whereby the former park their illicit assets with the latter, and the latter rely on the former for favorable dispensation. At election time, however, builders need to re-route funds to politicians as a form of indirect election finance. One observable implication is that the demand for cement, the indispensable raw material used in the sector, should contract during elections since builders need to inject funds into campaigns. Using a novel monthly-level data set, 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

Keywords: elections, election finance, corruption, political economy, India

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Builders, Politicians, and Election Finance in India**

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1. Introduction

In democracies across the developed and developing worlds, there is concern that the costs of elections are growing unabated (Pinto-Duschinsky 2002). In the United States, the Federal Election Commission calculates that candidates contesting the 2008 presidential election spent nearly \$1.8 billion, almost three times what was spent in the 2004 presidential election cycle and almost four times the 1996 figures.¹ On the other side of the globe, economists estimate that candidates and parties in the 2009 Indian national elections spent roughly \$3 billion on campaign expenditures. Election spending alone is said to have increased India's GDP growth by .5 percent for two quarters of 2009 (Timmons and Kumar 2009).

Yet one key difference between democracies in the developed and the developing worlds is the alleged 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 and observers have widely reported that illicit campaign finance expenditures often dwarf legal flows. As one scholar has noted, this reality is often referred to as the “rule of ten”—the idea that actual election expenditures are ten times the reported amounts (Gingerich 2010). While there is a great deal of 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 their very nature, flows of “black” money are opaque: they involve under-the-table transfers that are largely unobservable and therefore difficult to quantify. Yet black money can potentially undermine voters' confidence in the democratic process and can lead to severe governance failures.

In this paper, we examine one much-discussed channel of black money in Indian politics: the construction and real estate sector. In recent years, there has been growing speculation of cozy links between builders and politicians. The most common allegation proceeds along the

¹ These figures are in nominal terms, and include primary and general election spending as well as the costs of the nominating conventions. They do not include independent expenditures. See <http://www.fec.gov/press/press2009/20090608PresStat.shtml>.

² Of course, in countries such as the United States, 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.

following lines. Politicians in India often accumulate substantial assets while in office, above and beyond their official remuneration. In order to hide these assets from scrutiny and to invest them productively, many politicians park these assets with builders involved in real estate, a sector that has averaged annual growth rates of nearly ten percent over the last decade. Builders require the aid of politicians because politicians have ensured that land remains a highly regulated commodity over which the state has significant discretion. Furthermore, the real estate sector perennially needs large volumes of liquidity, much larger than banks are willing to finance. Thus, while politicians channel money to the sector and provide discretionary access to land, builders in turn help to launder these funds safely in a rapidly appreciating asset. More importantly for the purposes of this paper, at the time of elections developers route part of these funds back to the politicians to help finance their election campaigns. Although the aforementioned narrative is backed up by numerous journalistic accounts as well as interviews with businessmen, politicians and government officials conducted by the authors, this chain of events are nonetheless empirically unproven. This paper seeks to address this lacuna by assessing empirically whether fluctuations in construction activities are linked to electoral cycles in India. In so doing, it aims to shed light on the acknowledged, though understudied, role of black money in Indian elections. While we are not able to test each link in the causal chain empirically, we believe that the presence of electoral cycles serves as suggestive evidence of the kinds of activities we describe here.

Specifically, we hypothesize that what money is to elections, cement is to construction—it is the indispensable ingredient. Virtually all construction requires cement (for which there is no material substitute), and the burgeoning real estate sector accounts for the majority of India's domestic cement demand. When construction activity increases, cement consumption rises and vice versa. If therefore, the real estate sector is a key financier of elections, then just prior to elections, builders will need to provide the liquidity to politicians to finance their electoral campaigns. In turn, this will constrain the liquidity available to builders for their own activities; as a result, construction activity should drop from the expected trend—and so should cement consumption.

To assess the relationship between elections and activity in the real estate sector empirically, we construct a novel 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. Using an empirical model that controls for unobserved state and time-specific effects, we investigate whether the presence of elections is associated with an observable drop in cement consumption, which is consistent with a drying up of liquidity in the real estate sector around election time.

To preview our findings, we find that there is a statistically significant contraction in cement consumption (representing a 12 to 15 percent decline) during the month of state assembly elections. This effect is slightly larger for scheduled elections, state (as opposed to national) elections, dual elections (when elections to the state assembly and national parliament occur concurrently), and for more urban states. To assess the robustness of this result, we use randomization inference (Rader 2011) 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 three plausible challenges to our interpretation of the results: that the decline is indicative of a broader decline in economic activity due to political uncertainty (or what some authors have called a “reverse business cycle”); that builders should anticipate a liquidity crunch and smooth consumption over time; and that decreases in cement consumption are due to a pre-electoral slowdown in government investment. We demonstrate that these concerns do not invalidate our results.

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 (see Kupferschmidt 2009 for one review; and Gingerich 2010 for a unique empirical example from Brazil). This paper adds to this literature in two ways. First, it focuses on a specific sector—real estate—that is widely thought to be linked with “off-the-books” politics across the developing world. 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; Johnson and Mitton 2003; Khwaja and Mian 2005; Faccio 2006; Jayachandran 2006; and Goldman, Rocholl and So 2009). 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, we place an emphasis on the role of election finance incentives rather than mere rent seeking (though one notable exception is Sukhtankar 2011).

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; Khemani 2004; Shi and Svensson 2006; Brender and Drazen 2005; Cole 2008). Yet, like Sukhtankar (2011), our paper is unique in that our core hypothesis predicts a *contraction* in activity (within a specific sector) around elections. This stands in contrast to much of the political business cycle literature, which is premised around an *expansion* of economic activity around election time.

The remainder of the paper is organized as follows. In the next section we analyze the drivers of election expenditures, including the shift toward private financing. We then briefly review the workings of the alleged quid pro quo between politicians and builders and present our hypotheses. In the fourth section, we outline the data and methods used to assess our hypotheses empirically. Next, we present statistical evidence in support of our primary hypotheses on election timing and cement consumption. To build confidence in the result, we address some of the most plausible challenges to our interpretation of the findings. Finally, we conclude by summarizing the implications of our findings for the literature,

emphasizing the need for a research agenda on the impact of election finance on democracy and development outcomes.

2. The Indian context

Money is an essential ingredient of democratic politics; it is used to finance parties, mobilize voters and conduct political campaigns. And there is a deeply held belief among students of Indian politics that the costs of elections have skyrocketed in recent years. Taking a step back, in the abstract we might postulate that democratic elections have become more costly, with costs increasing in: a) the size of constituencies; b) the intensity of political competition; c) the number of elections; and d) the weakness of non-electoral systems of accountability. In our judgment, conditions a) through c) are clearly satisfied in India while d) presents a mixed picture. But it is clear we are seeing an increasing flow of money for elections, as well as a shift toward greater reliance on private mechanisms of campaign finance.

2.1 Factors influencing the cost of elections

First, as India's population has grown, the size of political constituencies has ballooned. While the median parliamentary constituency in 1952 (the date of India's first post-independence elections) had fewer than 300,000 voters, today's parliamentary constituencies contain between 1.5 and 2 million people. The growth in the size of the electorate over time means that candidates have to spend more money to woo potential supporters.

Second, there has been a marked increase in the competitiveness of Indian elections. The decline of the Congress system and the dawn of the coalition era in Delhi provided direct incentives for leaders to form new parties (Ziegfeld 2010). According to Sridharan (2009), the number of national parties declined from 8 to 6 between 1989-2004, while the number of state parties increased from 20 to 36 and the number of registered parties doubled from 85 to 173.³ Competition has also added to electoral uncertainty, meaning that parties find it increasingly difficult to calculate the elasticity of votes to expenditures.⁴

Third, the scope of elections has increased dramatically over the last two decades. The 73rd and 74th Amendments to the Constitution (1992-1993) formally established a three-tier system of democratic governance at the local levels, adding nearly 2.9 million *new* elected positions to India's democratic patchwork (and, hence, the increased need for election finance). Political parties field candidates at all three levels, even at the village level where formal partisan affiliations are prohibited, though regularly brandished.

³ In 1977, 2,439 candidates from 35 parties contested parliamentary elections across 543 parliamentary constituencies. By 2009, the numbers had risen to 8,070 candidates and 207 parties. Authors' calculations, based on grouping Independents together as a single political party. The trends are similar for state assembly elections.

⁴ In the post-Congress era, an additional factor contributing to electoral uncertainty is incumbency disadvantage (Uppal 2009).

Fourth, non-electoral mechanisms of accountability could help control the rising costs of elections, yet their unevenness has limited their effectiveness. Political parties, for instance, are poorly organized and weakly institutionalized; hence, they are not able (or willing) to regulate election spending internally. Furthermore, parties are not able to cover the funds needed to for contest elections from their own coffers. While all parties collect membership dues, they are marginal to the cost of fighting elections. Without strong party organizations, candidates have had to look elsewhere for creative ways to accumulate campaign-related resources.

State regulation of election finance could curb rising costs, but here too the results have been disappointing. The thirst for election finance could be partially offset if elections were state funded, which could curb the demand for private financing. But in India, state funding does not exist. Furthermore, there is a yawning gap between *de facto* versus *de jure* election finance regulations. Under law, parliamentary candidates cannot spend more than Rs. 1-2.5 million, while assembly candidates can spend between Rs. 0.5-1.0 million (the exact amount varies by state) per election, but these spending limits have unrealistically low ceilings and numerous loopholes. On the contributions side, efforts to regulate corporate contributions have not changed the under-the-table pattern of party funding. As Sridharan (2009) notes: “[T]he potential costs and risks of transparency largely outweigh any tax benefits. In a still fairly discretionarily regulated economy, transparent donors run the risk of being penalized by parties in power at the state or center that are unhappy with who and in what amounts a company donates funds.”

New disclosure requirements have also been, at best, a partial success. For instance, candidates are required to disclose their campaign expenditures within 30 days of the election, yet there is often no incentive for the candidates to comply because authorities have very little motivation to follow up once the election is completed. And even when candidates do disclose campaign expenditures, the disclosures are often farcical.⁵

It is, of course, difficult to create a proper accounting of the scale of illicit election finance. 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 Election Commission of India (ECI) are also instructive. In advance of the 2011 state assembly elections in Tamil Nadu, the ECI seized Rs. 600 million (or \$13.3 million) in illicit cash that was intended for election purposes (*Economic Times*, May 12, 2011).⁶ Of course, we do not know how much illicit money was actually spent, only what

⁵ The average candidate in the 2009 Lok Sabha elections reported spending around half the legal limit, a fact that does not comport with the ground realities of Indian elections (ADR 2009).

⁶ In one instance, a ruling party aide was arrested while carrying illicit campaign cash along with a detailed diary of distributions. In one municipal ward alone, the party distributed Rs. 2.4 million (Krishnan 2011). If we assume these funds were distributed equally to all voters, this amounts to roughly Rs. 200 per voter (nearly seven times the daily urban poverty rate of Rs. 33).

the ECI was able to recover through its investigative operations (which itself is likely a small fraction).

Finally, other non-electoral mechanisms of accountability—namely civil society and the media—have had mixed success tracking the money trail. Thanks to public interest litigation filed by civil society organizations, the Supreme Court of India ruled in 2003 that all candidates must disclose their personal financial assets/liabilities. These affidavits have shed tremendous light on the influence of money in India's elected bodies (Vaishnav 2011). Yet, they contain no information on election expenditures. India has a long tradition of a free media, and they too have often played a role in exposing improprieties in election finance. Yet, unfortunately, some news organizations have become part of the problem themselves (*Economic and Political Weekly* 2009). In 2010, the Press Council of India documented several, high-profile instances of “cash for coverage,” whereby politicians and journalists exchanged money for favorable coverage.

2.2 Mechanisms of private financing

The stylized facts of the Indian system described above point to incentives for private financing of elections, which in turn, open the door to methods of “off-the-books” or illicit financing. To quench the thirst for such financing, there are at least five mechanisms that seem to be growing in intensity.

First, parties are actively recruiting candidates involved in serious criminal activity because they possess both the financial resources and the connections necessary to contest elections successfully. Vaishnav (2011) argues that one of the most important demand-side explanations for the “criminalization” of politics in India is the fact that alleged criminal candidates have significant financial assets at their disposal that allow them to self-finance.

Second, there is a growing number of businessmen directly contesting national elections. Sinha (2010) estimates that businessmen constitute 22 percent of the Lok Sabha (lower house of Parliament) and 16 percent of the Rajya Sabha (upper house of Parliament). These figures represent significant increases over the last decade—and possibly understate the increase, given the lack of transparency concerning members' business interests. Businessmen or not, the membership of elected bodies is increasingly being restricted to a plutocratic minority. More than 50 percent of both chambers of parliament are *crorepatis* or the Indian equivalent of millionaires (one “crore” rupees is equivalent to Rs. 10 million or about \$225,000), while the average wealth of a state-level Member of the Legislative Assembly (MLA) is 1.28 crores (Vaishnav 2011).

Third, wealthy individuals are not only contesting elections directly but they are also bankrolling entire political movements. For instance, the Reddy bothers (a sibling trio of mining magnates) from Karnataka have used their vast mining wealth to bankroll the BJP's rise to power in that state. As a reward, two of the three brothers received cabinet berths while the third was awarded directorship of a powerful state corporation (Sanjana 2008).

Fourth, many parties are said to readily accept payment in exchange for party nominations (“tickets,” in the Indian parlance). Indeed, Uttar Pradesh Chief Minister Mayawati readily admitted that asking candidates to “make a donation to the party” was a key component of her BSP party’s election strategy, with the proceeds derived from ticket buying used to subsidize less well-off candidates (Pradhan 2006).

Finally, parties and their private sector allies launder funds through domestic and international markets. Since the onset of economic liberalization in 1991 India has become much more integrated with the global economy, making it easier to move money into and out of the country. As a result, high net-worth individuals and participants in India’s underground economy have begun stashing their assets abroad to take advantage of generous foreign tax regimes. Assets sent abroad can also be repatriated for domestic use under the guise of foreign investment and are widely reported to be a source of election financing (Jaffrelot 2002).⁷ And funds can also be laundered domestically. It is one such channel—real estate—that we turn to in the next section.

3. The real estate channel

To date, we are not aware of any scholarly empirical work that examines the connections between the real estate sector and India’s political leaders. In this section, we describe why the sector is an important conduit for illicit election finance.

3.1 The builder-politician nexus

We start with the premise that the more regulatory intensive the sector, the more its rent extractive potential (Djankov et al. 2002). Indeed the major sources of political corruption (and illicit election financing) in India come from the sectors that are most heavily regulated—natural resources, spectrum allocation and defense—because they offer the most scope for discretion by politicians.⁸ In the case of the real estate sector the need for regulatory forbearance requires constant political favors because the acquisition and use of land is intensely politically and bureaucratically regulated. As Pratap Bhanu Mehta (2010) writes, “The discretionary power the state has with respect to land is the single biggest source of corruption” in India.

⁷ A report by Global Financial Integrity, a Washington, DC-based think tank, estimates that between 1948 and 2008 India lost around \$213 billion in illicit financial flows. The report surmises that these funds were the product of corruption; bribery and kickbacks; criminal activity; and efforts by citizens to shelter their wealth from domestic tax authorities (Kar 2011).

⁸ Indeed, some of India’s most infamous corruption scandals involved bribery and kickbacks whereby politicians traded policy discretion for cash, some portion of which is alleged to have financed political activities. These include the Bofors and Tehelka.com scandals (defense); the Madhu Koda case (mining); and the 2G telecom scandal (spectrum).

Real estate has several attributes which makes it an obvious choice for black money. We assume that it is easier for politicians to accumulate resources than to hide them. When politicians want to hide the true value of their assets, they need a financial mechanism that has the features of a bank without the traceability of a physical account. We stipulate the mechanism should have at least three features:

- a) *Absorptive capacity*: It should have the ability to absorb large amounts of money quickly and directly
- b) *Liquid assets*: It should be able to carry liquid assets (i.e. the money should be available when needed)
- c) *Contract enforcement*: It should offer some mechanisms for contract enforcement

Real estate possesses all these characteristics. As one of the principal industries in India—recent estimates suggest real estate accounts for over seven percent of India’s Gross Domestic Product (GDP)—it can absorb large volumes of cash. The Indian government estimates that there will be a need to construct 26.5 million new houses to keep up with current demand (Planning Commission 2008). Still, banks have been wary of lending to this sector, for three reasons. First, banks are concerned about speculative bubbles in the housing sector. Second, because many of the underlying land transactions are executed “in the black” and might be of dubious legality, firms seeking funds might think twice about seeking bank financing.⁹ Third, there are few barriers to entry for builders seeking to join the marketplace, and banks are likely reluctant to finance builders without established track records.

Finally, the sector’s regulatory intensity not only makes it a boon for raising funds but also provides politicians with a mechanism to enforce its “contract” with builders. The rules that governed land use a century ago are still in force today, as there is little incentive for politicians to alter the status quo given the benefits that are accrued under the current system (Pai 2011).¹⁰ The primary piece of legislation governing land acquisition (the Land Acquisition Act) was written in 1894 by British colonial authorities. This and other laws, such as the Urban Land Ceiling Act, created a regulatory structure that empowered bureaucrats (and the politicians who oversee them) to control and manipulate the distribution of urban land. The resulting bureaucratic maze has created myriad methods of rent seeking (Srinivas 1991). The discretionary use of authority means that politicians can also take steps to punish builders who do not support them during elections.

⁹ For instance, 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. Firms cannot obtain official financing based on the actual purchase price, because this would expose the corruption premium.

¹⁰ It is important here 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 category. The central government cannot mandate reform of sectors primarily under the states’ control.

The affinity between builders and politics is not unique to India; in fact, the comparative literature is littered with similar examples. One of the more memorable examples comes from Chubb's (1982) work on Palermo, Sicily. She describes the quid pro quos between builders, the local administration and the mafia that shaped the city's post-war urban development. The sequence of events bears close resemblance to the situation in India. Local Palermo politicians used their regulatory leverage to provide preferred access to builders in exchange for political support and campaign contributions. Authors have described similar scenarios in the Philippines (Sidel 1999); Thailand (Ockey 1998); and machine-era America (Erie 1988, Chapter 2).¹¹

3.1 How the quid pro quo works

In this section, we briefly review how the quid pro quo between politicians and builders operates. There are three basic stages. In the first stage, politicians accumulate resources while in office. Although the salaries for MLAs and Members of Parliament (MPs) are modest, studies have shown that the asset holdings of many elected politicians are often disproportionately large.¹² Estimating the financial rewards to office is a difficult enterprise due to the variety of ways politicians can hide their assets from public scrutiny, but in recent years there have been numerous allegations of rent-seeking: chief ministers of at least six states have been investigated for "disproportionate assets" (and a seventh has been arrested for money laundering) (see also Bhavnani 2011).

Once politicians accumulate assets, they require a place to invest these assets where they can avoid public scrutiny while earning a decent return. Because land is a valuable commodity and India's real estate industry is booming as the size of the middle class expands, many politicians are thought to deposit a portion of their assets with real estate developers. Politicians' links with builders typically take three forms. First, relatives of politicians often establish their own real estate development firms and reap the rewards from the value of their familial connections. In other cases, politicians become covert backers of firms because they represent powerful entities whose support must be won and retained.¹³ One illustrative case comes from the prosperous Western state of Gujarat. A 2001 investigation by the news magazine *Outlook* revealed that a quarter of ministers in the state cabinet had links with real

¹¹ Although it is not a focus of this paper, many of the studies cited document a triangular connection between the mafia or other organized crime groups, politicians and real estate/construction interests. See Weinstein (2008) for one perspective on the illicit nexus between politicians, the bureaucracy and the mafia in Mumbai's real estate market.

¹² A 2009 civil society analysis of re-contesting MPs reported their assets increased, on average, by 289 percent while in office (Thakur 2011). An econometric analysis found less outlandish gains, but concluded that between 5-8 percent of MLAs and MPs have "suspect wealth" above what their official remuneration would suggest (Bhavnani 2011).

¹³ While politicians have leverage over builders, the reverse is also true. One MP in Maharashtra, concerned about a crackdown on state discretion over land, lamented: "Which builder will give you money during elections if his work is not done?" (Khetan 2011).

estate developers. The politicians, the report argues, colluded with state-level bureaucrats who granted favorable dispensation to the politician's preferred builders (Bhushan 2001).

On occasion politicians will have a direct financial stake in real estate development. Typically, however, his or her interest begins as a secret, and only becomes public knowledge when scandals erupt. For example, the recent history of Maharashtra contains numerous examples of powerful state politicians with direct or indirect financial interests in real estate, whose interests are not a matter of public record until civil society groups or the media expose the connection (Khetan 2011).¹⁴

In the third and final stage of the quid pro quo, builders transfer back to politicians assets that can be used to offset election expenses. In the case of family-owned firms, politicians can embezzle or transfer funds from family firms as a way of channeling money for elections (as in Sukhtankar 2011). When there is no direct familial connection, 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 favors, permits, and goodwill.¹⁵

Recent revelations from India's massive 2G telecommunications spectrum scandal provide some limited insight into these hypothesized stages of the quid pro quo. In early 2011, the government charged A. Raja, the Union Minister of Telecommunications, with underpricing the sale of the 2G telecommunications spectrum and manipulating the spectrum allocation process in favor of selected companies.¹⁶ According to the government, Raja, an MP from Tamil Nadu and a confidant of that state's Chief Minister, helped a telecom company (which served as a front for the country's third largest real estate developer) win access to 2G licenses. The government alleges that the developer transferred around \$40 million in kickbacks, through a series of shadowy transactions emanating from real estate entities, to a television network controlled by the family of Tamil Nadu's Chief Minister (Shenoy 2011).

3.2 Hypotheses on cement consumption

Analyzing activity in India's real estate sector, both over time and at the sub-national level, presents difficulties for measurement. Unlike in many developed economies, there are no reliable measures of building activity—at least at sufficiently meaningful levels of disaggregation. To circumvent this shortcoming, 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 proxy for real estate building activity for two reasons.

¹⁴ One investigation into the builder-politician nexus in Maharashtra suggests that in Mumbai, “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, at any given point in time” (Khetan 2011).

¹⁵ 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).

¹⁶ India's comptroller estimates the improprieties could have caused losses to the government worth around \$39 billion.

First, cement is the indispensable ingredient in virtually all real estate construction; it has no obvious substitute as a binding agent for building materials. As such, it is a reasonable barometer for construction activity. Second, 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.). Thus, we are confident that changes in the extent of building activity are highly correlated with fluctuations in cement consumption.

Our core hypothesis is that cement consumption should contract during the month of the election (denoted in the analysis as *Election*). Because real estate developers must transfer back to politicians resources invested with them as elections near, one would expect activity in the sector to slow down during the four-week campaign period prior to Election Day. This is because existing liquidity in the sector should dry up as resources otherwise slated for construction must be channeled out of the sector and into the hands of politicians and parties (*Hypothesis #1*).

Next, we hypothesize that the contraction in cement demand should be larger during scheduled elections (*Scheduled Election*) compared to unscheduled elections. When elections occur on time (once every five years), builders and politicians have an ex ante schedule to guide their transactions. When unscheduled elections are held—say, if a government loses a vote of no confidence and/or the government falls—it might be more difficult for builders to adjust their activities accordingly. We expect that, in the case of scheduled elections, there is sufficient time for politicians and builders to coordinate (*Hypothesis #2*). Furthermore, since elections in a parliamentary system can be considered endogenous, it could be the case that unscheduled elections are related to economic factors that are correlated with changes in the real estate sector. We can address this by separating out the effects of scheduled versus unscheduled elections.

In India's federal system, the state—as opposed to the national government—is the primary regulator of the land and building activity sectors. Hence, rents emanating from real estate are more relevant for state level politicians, while rents from spectrum or defense deals accrue to politicians at the national level. However, we expect that we should still observe a significant effect for national elections as firms also stand to benefit from connections to politicians in parliament. Therefore, we expect that the contraction in cement consumption will be significant in national elections (*Lok Sabha Election*), though of a smaller magnitude than in state-level elections (*Hypothesis #3*).

Yet, elections in some states coincide with national elections; for instance, the last three state assembly elections in Andhra Pradesh (in 1999, 2004 and 2009) have coincided with national parliamentary elections. In those instances, which we refer to as dual elections (*Dual Election*), the need for election finance will be greater; therefore, we expect the magnitude of the contraction to be larger than if only a state or national election is being held (*Hypothesis #4*).

Finally, more urbanized states are comparatively richer; are more likely to possess well-developed real estate markets; and have higher demand for construction—and therefore, cement—than their rural counterparts. As a result, linkages between politicians and builders are likely to be more intense in urban states (*Urban*). Thus, we expect that the negative impact of elections on cement consumption should be stronger in more urban states (*Hypothesis #5*).

4. Data and methods

To test our hypotheses, we construct a novel dataset of monthly data on cement consumption, disaggregated 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. We utilize data on cement consumption, rather than production, because our hypotheses on electoral cycles revolve around contractions in liquidity in the real estate sector, which is heavily dependent on the use of cement. In other words, we do not make any claims about linkages between electoral politics and the supply of cement (production).¹⁷

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 of the union, which account for over 92 percent of the country's population, for several reasons. First, we do not include data from the three new states created in 2000 (Chhattisgarh, Jharkhand and Uttarakhand) because we cannot disaggregate data on cement consumption before their creation. Second, we ignore several small microstates, which we treat as special cases because their economies are not comparable to their larger peers. Third, we do not consider the union territories for a similar reason and because they do not have elected assemblies.¹⁸ However, we do include the union territory of Delhi because it does have its own elected assembly and is a major economic center. According to data from 2009-2010, cement consumption in the 17 major states accounts for 90 percent of the all-India total. Thus, we are comfortable that we are working with data that has considerable explanatory power.

¹⁷ Having said that, we are aware of the numerous direct political connections many of India's largest cement firms possess. Several of India's major cement firms are owned by the Birla family, one of the country's most storied business dynasties, while one of the other major sectoral players is the state-owned Cement Corporation of India, Ltd.

¹⁸ Union territories are directly administered by the central government, with the exception of Delh and Puducherry.

To our dataset on cement consumption, we add information on state elections. Data on the frequency and timing of elections comes 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 parliamentary elections (1996, 1998, 1999 and 2004, 2009). Roughly one-quarter of all state elections in our dataset coincide with parliamentary elections. State assembly elections take place every five years, 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, only 9 were unscheduled (roughly 17 percent). Of the 5 national elections, 2 were unscheduled.

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. These authors construct a dataset of elections and monthly budgetary expenditures in Russia’s states in order to identify the influence of political opportunism on government spending. Although their subject is different, their model suits our empirical puzzle quite nicely. 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 want to explicitly model the temporal dependence in our data. We believe there are strong theoretical reasons for expecting that cement consumption in a given month is likely to be influenced

by earlier levels of consumption. Furthermore, we are concerned about the presence of 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 (results available on request). 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).

5. Results

5.1 Baseline analysis

Summary statistics for the data used in this cement analysis can be found in **Table 1**.

Table 1: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Election	3060	0.02	0.13	0	1
Scheduled election	3060	0.01	0.12	0	1
Lok Sabha election	3060	0.03	0.16	0	1
Scheduled Lok Sabha election	3060	0.02	0.13	0	1
Dual election	3060	0.00	0.06	0	1
Log cement consumption	3060	5.97	0.87	2.59	7.76
Urban	3060	0.53	0.50	0	1
Log cement production	2698	5.44	1.73	0	8.07

First, we proceed 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 begin by estimating our model without any fixed effects parameters and only including indicator variables for the election month and the six months before and after. The

¹⁹ We tested for serial correlation using Wooldridge’s test for serial correlation in linear panel data using the Stata command, `-xtserial-`. The results indicate that we cannot reject the null hypothesis of no serial correlation in the data.

regression results indicate that state elections are associated with a 12 percent decline in cement consumption. 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 simple 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 the occurrence of a state election is associated with a statistically significant decline in cement consumption ($p < .01$).

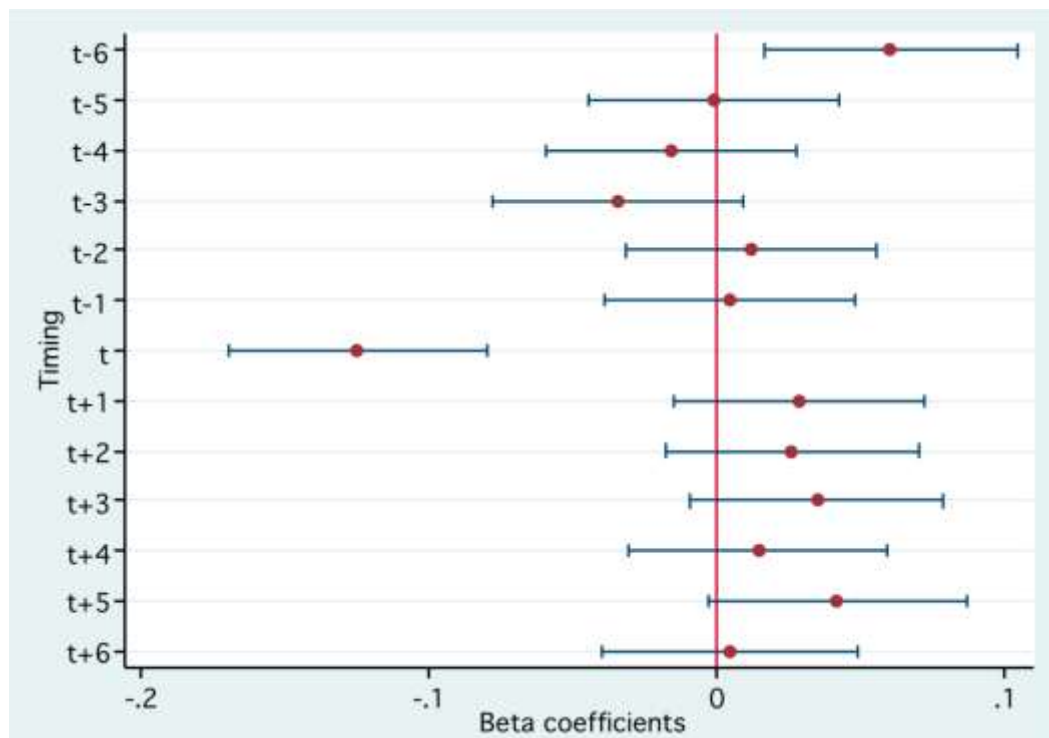
Table 2: Baseline estimates of the effect of state elections on cement consumption

DV:	-1 Log cement consumption	-2 Log cement consumption	-3 Log cement consumption	-4 Log cement consumption
election-6	0.02 [0.78]	0.02 [0.73]	0.04 [1.54]	0.06 [2.69]***
election-5	-0.01 [0.42]	0.00 [0.04]	-0.02 [0.88]	0.00 [0.03]
election-4	0.00 [0.12]	-0.01 [0.38]	-0.02 [0.84]	-0.02 [0.69]
election-3	-0.03 [1.08]	-0.03 [1.19]	-0.03 [1.21]	-0.03 [1.55]
election-2	0.04 [1.27]	0.03 [1.24]	0.02 [0.83]	0.01 [0.55]
election-1	0.04 [1.38]	0.02 [0.85]	-0.01 [0.31]	0.01 [0.21]
election	-0.12 [4.12]***	-0.12 [4.71]***	-0.12 [4.87]***	-0.13 [5.44]***
election+1	0.09 [2.95]***	0.05 [1.97]**	0.03 [1.33]	0.03 [1.29]
election+2	0.02 [0.82]	0.04 [1.50]	0.03 [1.19]	0.03 [1.17]
election+3	0.03 [0.89]	0.04 [1.40]	0.07 [3.06]***	0.04 [1.56]
election+4	-0.01 [0.28]	-0.02 [0.57]	0.03 [1.16]	0.01 [0.63]
election+5	-0.04 [1.46]	-0.01 [0.25]	0.02 [0.98]	0.04 [1.82]*
election+6	-0.03 [1.05]	-0.04 [1.65]*	-0.01 [0.51]	0.01 [0.20]
Fixed effects?	-	Time	State-Month	Time + State-Month
Observations	2856	2856	2856	2856
Number of states	17	17	17	17
R-squared	0.95	0.96	0.97	0.97

Note: Z statistics in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. All models include three lags of the dependent variable. Models are estimated using OLS with panel-corrected standard errors. Dependent variable is natural log of cement consumption

According to our estimates, the presence of an election is associated with a 12-13 percent decline in the level of cement consumption. 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 decline. Figure 1 plots the coefficient estimates obtained in Column 4 of Table 2. The figure starkly demonstrates the decline in cement consumption during the month of elections, relative to the months before and after.

Figure 1: Coefficient plot of effect of state elections on cement consumption



Note: Coefficients on variables taken from Column 4 of Table 2. Circles represent point estimates and horizontal bars represent 95 percent confidence intervals.

We want to ensure that our core result is not an artifact of the number of leading and lagging months that we decide to control for. To address this concern, we re-estimate the model including both sets of fixed effects, but iteratively add in dummies for the election lags and leads. The results, reported in **Table 3**, indicate that the negative effect of elections is consistently robust as we increase the number of controls for lagging and leading months—beginning with one month before and after the election and moving to six months before

Table 3: Baseline estimates of the effect of state elections on cement consumptions, varying lags and leads

	-1	-2	-3	-4	-5	-6
DV:	Log cement consumption	Log cement consumption	Log cement consumption	Log cement consumption	Log cement consumption	Log cement consumption
election-6						0.06 [2.69]***
election-5					0.00 [0.04]	0.00 [0.03]
election-4				-0.02 [0.66]	-0.01 [0.62]	-0.02 [0.69]
election-3			-0.03 [1.39]	-0.03 [1.43]	-0.03 [1.55]	-0.03 [1.55]
election-2		0.01 [0.46]	0.01 [0.48]	0.01 [0.53]	0.01 [0.50]	0.01 [0.55]
election-1	0.00 [0.10]	0.00 [0.09]	0.00 [0.13]	0.00 [0.15]	0.00 [0.20]	0.01 [0.21]
election	-0.12 [5.46]***	-0.12 [5.46]***	-0.12 [5.45]***	-0.12 [5.48]***	-0.12 [5.47]***	-0.13 [5.44]***
election+1	0.03 [1.42]	0.03 [1.43]	0.03 [1.42]	0.03 [1.49]	0.03 [1.34]	0.03 [1.29]
election+2		0.03 [1.39]	0.03 [1.32]	0.03 [1.26]	0.03 [1.22]	0.03 [1.17]
election+3			0.04 [1.56]	0.03 [1.49]	0.04 [1.54]	0.04 [1.56]
election+4				0.01 [0.46]	0.01 [0.53]	0.01 [0.63]
election+5					0.04 [1.72]*	0.04 [1.82]*
election+6						0.01 [0.20]
Fixed effects?	Time + State- Month	Time + State- Month	Time + State- Month	Time + State- Month	Time + State- Month	Time + State- Month
Observations	2992	2975	2958	2924	2890	2856
Number of states	17	17	17	17	17	17
R-squared	0.98	0.98	0.97	0.98	0.97	0.97

and after. Indeed, in results not reported here, the results are consistent even if we include dummies for a larger set of months before and after the election.²⁰

5.2 Scheduled elections

We hypothesized that the contraction in cement consumption will be larger for scheduled elections because they provide politicians and builders with some degree of certainty that allows them to coordinate activities. It is also important to distinguish between scheduled and unscheduled elections because election timing is not strictly exogenous. 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. Our results for scheduled elections can be found in Column 1 of **Table 4**. Even when using this restricted measure, the occurrence of state elections continues to have a negative effect on cement consumption. In line with our expectations, the coefficient on the scheduled state election variable is slightly larger than when we considered all state elections (scheduled or not). Cement consumption declines by 15 percent during the month of scheduled elections ($p < .01$).

5.3 Dual elections

We hypothesized that there should be a stronger negative effect of elections on cement consumption in those states that are experiencing simultaneous state and national elections. As Column 2 of **Table 4** attests, the negative effect of dual elections on cement consumption is nearly three times as strong as that of state elections (and more than twice as strong as unscheduled state elections). Dual elections are associated with a 38 percent drop in 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.

5.4 Urban-rural states

We hypothesized that the effect of elections of cement consumption should be larger in urban states. To classify states, we take advantage of population figures provided in the 1991 and 2001 census. We use the urban/rural population figures from the 1991 census to create a dichotomous indicator for urban/rural states for the years 1995-2000. Using the 2001 census, we do the same for the years 2001-2010. We code states as urban if their urban population is above the median for all states, and rural otherwise.²¹ Columns 3 and 4 of **Table 4** confirm our hypothesis. While elections are associated with a decline in cement

²⁰ 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 ($p < .05$).

²¹ The classification for the two periods is identical, with the exception of Haryana—which moves in to the “urban” category after 2001.

consumption in both urban and rural states, the effect is much stronger for urban states (15 percent decline versus 11 percent) as well as more significant.

Table 4: Disaggregating estimates of the effect of elections on cement consumption, by election type

	-1	-2	-3	-4
DV:	Log cement consumption	Log cement consumption	Log cement consumption	Log cement consumption
Sample:			<i>Urban states</i>	<i>Rural states</i>
election-6	0.06 [2.76]***	0.05 [2.06]**	0.09 [3.12]***	0.06 [1.53]
election-5	0.00 [0.04]	-0.01 [0.45]	0.00 [0.00]	0.01 [0.39]
election-4	-0.02 [0.67]	-0.01 [0.46]	0.03 [0.85]	-0.06 [1.69]*
election-3	-0.03 [1.55]	-0.02 [1.00]	-0.04 [1.44]	-0.03 [0.86]
election-2	0.01 [0.54]	0.02 [0.96]	0.00 [0.04]	0.04 [1.03]
election-1	0.00 [0.19]	-0.01 [0.26]	0.00 [0.12]	0.00 [0.09]
election		-0.02 [1.05]	-0.15 [4.95]***	-0.11 [3.04]***
election+1	0.03 [1.27]	0.02 [1.06]	0.06 [1.91]*	-0.01 [0.17]
election+2	0.03 [1.20]	0.01 [0.56]	0.05 [1.77]*	0.00 [0.10]
election+3	0.04 [1.56]	0.06 [2.61]***	0.07 [2.21]**	0.02 [0.50]
election+4	0.02 [0.63]	0.03 [1.29]	0.01 [0.34]	0.03 [0.74]
election+5	0.04 [1.87]*	0.03 [1.17]	0.06 [1.78]*	0.01 [0.38]
election+6	0.00 [0.20]	0.00 [0.17]	0.02 [0.66]	-0.01 [0.20]
scheduled_election	-0.15 [5.58]***			
dual_election		-0.38 [5.86]***		
lok_sabha_election		0.00 [0.10]		
Fixed effects?	Time + State-Month	Year + State-Month	Time + State-Month	Time + State-Month
Observations	2856	2856	1512	1344
Number of states	17	17	9	8
R-squared	0.97	0.97	0.92	0.98

Table 5: Estimates of the effect of national elections on cement consumption

	-1	-2	-3	-4	-5
DV:	Log cement consumption	Log cement consumption	Log cement consumption	Log cement consumption	Log cement consumption
Lok Sabha election-6	0.03 [0.67]	0.04 [0.91]	-0.03 [1.12]	-0.01 [0.34]	-0.01 [0.30]
Lok Sabha election-5	0.02 [0.39]	0.03 [0.65]	0.00 [0.11]	0.02 [0.60]	0.02 [0.62]
Lok Sabha election-4	0.08 [1.93]*	0.09 [2.06]**	0.04 [1.45]	0.05 [2.01]**	0.05 [2.07]**
Lok Sabha election-3	0.05 [1.26]	0.05 [1.14]	0.02 [0.59]	0.02 [0.88]	0.02 [0.82]
Lok Sabha election-2	-0.02 [0.46]	-0.02 [0.40]	0.00 [0.06]	0.01 [0.48]	0.01 [0.54]
Lok Sabha election-1	0.04 [0.96]	0.03 [0.77]	-0.05 [2.04]**	-0.04 [1.50]	-0.04 [1.55]
Lok Sabha election	-0.10 [2.58]***	-0.10 [2.37]**	-0.06 [2.26]**	-0.05 [2.01]**	
Lok Sabha election+1	0.03 [0.81]	0.03 [0.63]	-0.04 [1.51]	-0.04 [1.48]	-0.04 [1.52]
Lok Sabha election+2	0.00 [0.03]	0.00 [0.06]	0.01 [0.51]	0.01 [0.26]	0.00 [0.16]
Lok Sabha election+3	0.03 [0.64]	0.02 [0.48]	0.07 [2.76]***	0.06 [2.56]**	0.06 [2.58]***
Lok Sabha election+4	-0.04 [1.14]	-0.05 [1.07]	0.02 [0.93]	0.04 [1.40]	0.03 [1.34]
Lok Sabha election+5	-0.05 [1.35]	-0.05 [1.26]	-0.02 [0.83]	-0.01 [0.23]	0.00 [0.15]
Lok Sabha election+6	0.02 [0.56]	0.02 [0.52]	-0.03 [1.02]	0.00 [0.11]	0.00 [0.14]
Scheduled Lok Sabha election					-0.08 [2.56]**
Fixed effects?	-	Year	State-Month	Year + State-Month	Year + State-Month
Observations	2856	2856	2856	2856	2856
Number of states	17	17	17	17	17
R-squared	0.95	0.95	0.97	0.97	0.97

Note: Z statistics in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. All models include three lags of the dependent variable. Models are estimated using OLS with panel-corrected standard errors. Dependent variable is natural log of cement consumption.

5.5 National elections

Thus far, we have focused on the effect of state assembly elections on cement consumption. In **Table 5**, we explore the impact of national elections on cement consumption. As hypothesized previously, we expect that the negative effect of elections on cement consumption will be significant, though smaller, for national elections given that both land and real estate/construction are regulated at the state-level. To estimate the effect of national elections on cement consumption, we use 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 in a given month-year). Thus, in the regressions 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 5** 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 ($p < .05$). As for scheduled national elections, we find that the negative impact is slightly more pronounced, as shown in Column 5. This effect is analogous to the differential impact of scheduled versus unscheduled state elections. Column 5 reports an 8 percent decline in cement consumption for scheduled national parliamentary elections ($p < .05$).

5.6 Randomization inference

To build confidence in our result, we make use of randomization inference, which is a non-parametric method of hypothesis testing that does not rely on asymptotic properties or distributional assumptions regarding the error terms in a model. This is particularly relevant to our case, as we are working with panel data where we are likely to have “clustering” or correlation among error terms within a particular group (in our case, 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 clusters (states).

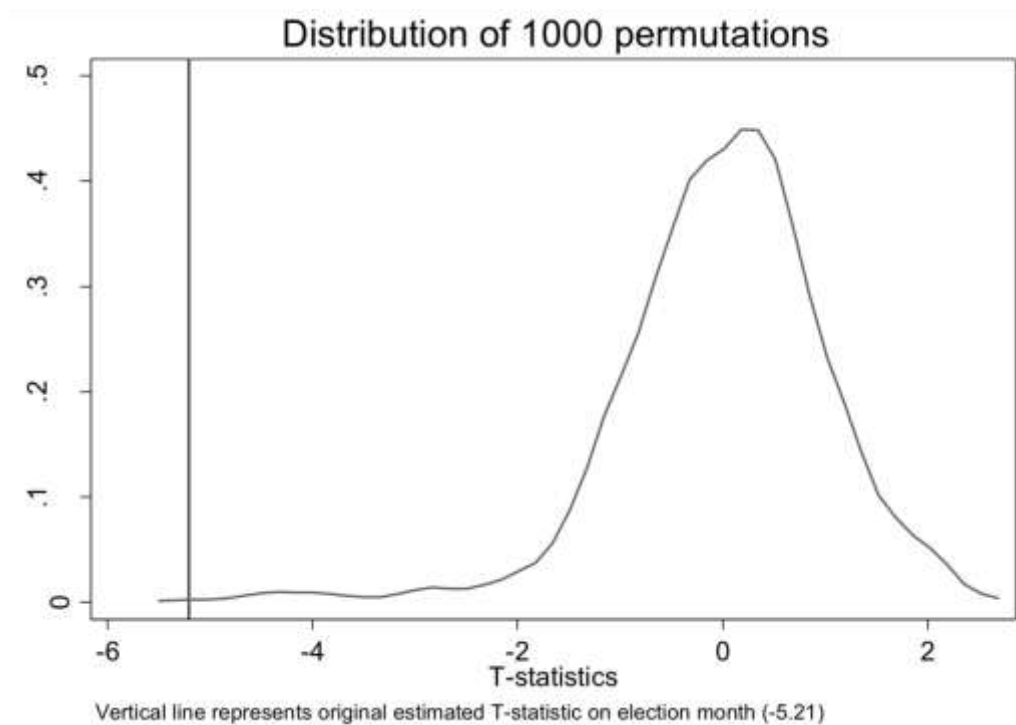
The basic procedure of conducting a randomization test is relatively straightforward and proceeds in four steps, as outlined by Rader (2011).²² First, we estimate our baseline model using OLS. We record the t-statistic on our election variable. Next, rather than taking the t-statistic on our variable of interest at face value, we shuffle the variable. By randomizing the election month variable, we are theoretically breaking any systematic connection between it and the dependent variable. In the next step, we use this shuffled variable (in place of the

²² One recent empirical application of randomization inference in political science is Erikson, Pinto and Rader (2010).

observed 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. Finally, we can 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 2 as our baseline regression, but without using the correction for panel-corrected standard errors. The t-statistic on the election variable is 5.21. **Figure 2** graphically demonstrates the reference distribution of 1,000 t-statistics we 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.

Figure 2: Randomization test results



Note: Baseline model used to obtain original estimated t-statistic adapted from Column 4 of Table 2. The difference in t-statistics reported there and in this figure is due to the fact that we do not use panel-corrected standard errors when conducting the randomization test. Otherwise, the underlying models are identical.

6. Robustness

Thus far, we have demonstrated empirically that there is a robust, negative relationship between cement consumption and elections. We believe this is suggestive of real estate's role as a key financier of elections. In this section we address three of the most obvious challenges to our interpretation of the results.

6.1 *Economic uncertainty*

What if the decline in cement consumption is not symptomatic of the real estate sector's role as a conduit for election finance, but instead the outcome of a broad decline in economic activity arising out of political uncertainty that often precedes elections? For instance, Canes-Wrone and Park (2010) argue that, in OECD countries, the 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”—as opposed to an economic expansion predicted by the literature on opportunistic cycles.

Our results do not support such a view in the context of India for three reasons. First, we find that there is a decline in cement consumption in both scheduled as well as unscheduled elections. One would expect, given the uncertainty attached to unscheduled elections (often sparked by political instability) that the pace of economic activity might naturally slow down as business grapples with a potential change in government. Nonetheless, we find the decline in cement consumption is *larger* in scheduled elections, when there is arguably *less uncertainty*.

Second, as an additional robustness test, we run our empirical model using monthly data on cement production, rather than cement consumption, as our dependent variable. Recall, we are primarily interested in election shocks to cement consumption (demand). If builders face a liquidity shock during elections, we should not necessarily detect any systematic effect on cement production (supply).²³ But if production significantly declines during elections itself, one could contend that our results on consumption are merely symptomatic of a larger economic or sectoral cycle (rather than a demand-side shock).

As demonstrated by **Table 6**, we find no clear evidence of an electoral cycle in cement production. Across all models, state elections are not associated with a significant change in cement production. The results are also displayed in graphical form in **Figure 3**. The coefficients on our election indicator variable are positive when we include the fixed effects parameters, though they do not reach statistical significance. As for the months preceding the elections, there does appear to be a contraction in production three months prior to the elections. However, this decline is only half as large as the consumption decline we observe

²³ Of course, it is plausible that cement producers will anticipate a decline in consumption and cut production prior to elections. If this were the case, we should expect that some of the dummies for months preceding elections to be positive and significant.

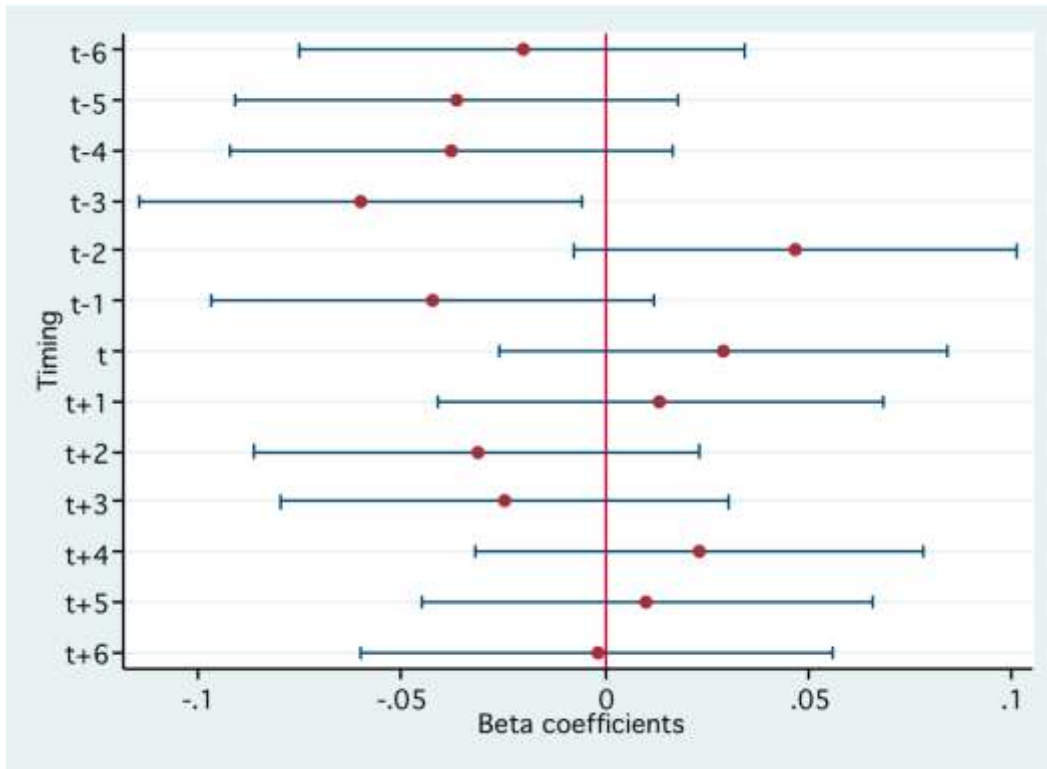
around elections. Furthermore, there are signs of a slight *growth* in cement production two months prior to the elections. Overall, we can conclude that there is no indication of an overall economic shock during the month of elections.

Table 6: Estimates of the effects of state elections on cement production

DV:	-1	-2	-3	-4
	Log cement production	Log cement production	Log cement production	Log cement production
Election-6	-0.01 [0.24]	-0.03 [0.92]	-0.02 [0.67]	-0.02 [0.73]
Election-5	-0.02 [0.50]	-0.01 [0.45]	-0.02 [0.69]	-0.04 [1.31]
Election-4	0.00 [0.02]	0.00 [0.03]	-0.04 [1.63]	-0.04 [1.35]
Election-3	-0.03 [0.88]	-0.02 [0.79]	-0.06 [2.17]**	-0.06 [2.18]**
Election-2	0.11 [3.31]***	0.08 [2.74]***	0.07 [2.40]**	0.05 [1.71]*
Election-1	0.01 [0.20]	-0.04 [1.18]	-0.03 [1.11]	-0.04 [1.56]
Election	-0.03 [0.88]	0.03 [0.91]	0.01 [0.23]	0.03 [1.04]
Election+1	0.01 [0.27]	-0.02 [0.54]	0.00 [0.16]	0.01 [0.47]
Election+2	-0.05 [1.37]	-0.04 [1.43]	-0.01 [0.44]	-0.03 [1.12]
Election+3	-0.02 [0.53]	-0.02 [0.63]	0.01 [0.47]	-0.02 [0.60]
Election+4	0.01 [0.30]	0.01 [0.21]	0.03 [1.19]	0.02 [0.83]
Election+5	-0.03 [0.83]	-0.01 [0.41]	0.01 [0.52]	0.01 [0.37]
Election+6	0.01 [0.14]	-0.01 [0.25]	0.00 [0.08]	0.00 [0.07]
Fixed effects?	-	Time	State-Month	Time + State-Month
Observations	2514	2514	2514	2514
Number of states	15	15	15	15
R-squared	0.99	0.99	0.99	0.99

Note: Z statistics in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. All models include two lags of the dependent variable. Models are estimated using OLS with panel-corrected standard errors. Dependent variable is natural log of cement consumption. Delhi and Haryana are dropped due to missing data.

Figure 3: Coefficient plot of effect of state elections on cement production



Note: Coefficients on variables taken from Column 4 of Table 6. Circles represent point estimates and horizontal bars represent 95 percent confidence intervals.

Third, we can utilize 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. To control for the state of the economy, we utilize the index of industrial production (*IIP*), an aggregate statistic that represents the status of production in the industrial sector for a given period of time compared to a previous reference period. 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 elections. The inclusion of the *IIP* variable does not substantively alter our estimates of the negative effect of national elections on cement consumption (as seen in **Table 7**).

Finally, it is worth noting that 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; Khemani 2004).

Table 7: Estimates of the effect of national elections on cement consumption, controlling for IIP

	-1	-2	-3	-4
DV:	Log cement consumption	Log cement consumption	Log cement consumption	Log cement consumption
Lok Sabha election-6	0.03 [0.73]	0.04 [0.90]	-0.02 [0.83]	0.00 [0.03]
Lok Sabha election-5	0.02 [0.45]	0.03 [0.66]	0.00 [0.06]	0.02 [0.67]
Lok Sabha election-4	0.08 [1.98]**	0.09 [2.07]**	0.04 [1.52]	0.05 [2.16]**
Lok Sabha election-3	0.05 [1.31]	0.05 [1.12]	0.02 [0.75]	0.03 [1.04]
Lok Sabha election-2	-0.02 [0.41]	-0.02 [0.41]	0.01 [0.28]	0.01 [0.57]
Lok Sabha election-1	0.04 [1.01]	0.03 [0.75]	-0.04 [1.71]*	-0.04 [1.44]
Lok Sabha election	-0.10 [2.53]**	-0.10 [2.36]**	-0.05 [2.18]**	-0.05 [2.00]**
Lok Sabha election+1	0.03 [0.86]	0.03 [0.62]	-0.03 [1.43]	-0.03 [1.22]
Lok Sabha election+2	0.00 [0.07]	0.00 [0.06]	0.01 [0.24]	0.00 [0.17]
Lok Sabha election+3	0.03 [0.67]	0.02 [0.49]	0.06 [2.56]**	0.06 [2.39]**
Lok Sabha election+4	-0.04 [1.11]	-0.05 [1.06]	0.02 [0.90]	0.03 [1.09]
Lok Sabha election+5	-0.05 [1.32]	-0.05 [1.25]	-0.02 [0.79]	-0.01 [0.55]
Lok Sabha election+6	0.03 [0.64]	0.02 [0.52]	-0.01 [0.45]	-0.01 [0.19]
IIP	0.00 [0.79]	0.00 [0.11]	0.00 [10.55]***	0.00 [2.46]**
Fixed effects?	-	Year	State-Month	Year + State-Month
Observations	2856	2856	2856	2856
Number of states	17	17	17	17
R-squared	0.95	0.95	0.97	0.97

Note: Z statistics in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. All models include three lags of the dependent variable. Models are estimated using OLS with panel-corrected standard errors. Dependent variable is natural log of cement consumption.

6.2 Consumption smoothing

Another possible objection to our findings relates to the behavior of builders. For instance, if builders anticipate the future need to redirect funds to election campaigns, why wouldn't

they take action to smooth their consumption? After all, private firms (and economic agents, in general) are said to prefer a stable consumption path over time. Thus, if firms know that their consumption will likely decline in the future, they should anticipate this by gradually redirecting funds over time rather than waiting for the month of elections.

While an impulse to “smooth” consumption makes sense in theory, we argue that it does not happen in practice for two reasons. First, politicians provide funds to builders precisely because they need a place to hide their assets from scrutiny. If builders redirected funds to politicians in installments, it would undermine politicians’ incentives to move the assets off their balance sheets this way. Instead, politicians want funds during election season because they can route these funds into campaigns immediately, without keeping them on their own books.

Second, because builders operate in a “black money” environment, there are constraints on their liquidity that hamper their ability to smooth consumption. There are three reasons for this. First, as was mentioned earlier, banks are generally cautious about lending to the real estate sector. For instance, Reserve Bank of India (RBI) regulations mandate that banks’ exposure to real estate lending be no more than 15 percent of a bank’s total deposits (RBI 2009).²⁴ Indeed, it is instructive to note that while the U.S. economy was severely hampered by a mortgage-lending crisis in 2007-8, India avoided a similar fate thanks to conservative lending practices and increased regulation in sectors such as real estate. 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.

Of course, 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.

6.3 Model code of conduct

A third possible objection to our findings concerns the rules of the ECI. From the time elections are announced to the date results are made public, the ECI enforces a “model code of conduct,” which is a set of guidelines that govern the conduct of the incumbent government as well as parties and candidates taking part in elections. One of the motivations of the model code is to create a level playing field so that the government does not exploit the benefits of incumbency for electoral purposes.

²⁴ Indeed, Patnaik, Shah and Suri (2011) find that penetration of commercial finance in the real estate sector is very low in India.

One might argue that the decrease in cement consumption during the month of elections is a direct result of the enforcement of the model code because it constrains the ability of the government to carry out its regular business, which could include a variety of infrastructure projects. Yet 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 undertaking of existing projects. Given the time lag inherent in tenders, contracts, siting, etc. we do not think this is biasing our results.

Furthermore, governments are likely to be strategic (especially when elections take place as scheduled) in announcing new schemes prior to the formal enforcement of the model code prior to elections. Doing so allows them to minimize the possibility of a slowdown in projects come election time. For instance, as elections approach the incumbent government has an incentive to get as much money out to contractors working on ongoing government contracts (the quid pro quo is that contractors often lend their vehicles for campaigns). This is consistent with Khemani (2004), who finds election-related increases in public investment spending and spending on road expansion using subnational data from India.²⁵

7. 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 about illicit election finance is based on anecdotal evidence or journalistic investigations. This paper represents a contribution to a new literature, which seeks to use new or innovative sources of data to demonstrate empirically—and quantify—the flows of black money in elections.

The role of the real estate sector in providing off-the-books campaign contributions to politicians has been a hallmark in many developing economies due to the nature of state regulations governing land use. This paper uses 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 black money in elections. Using a variety of models, we demonstrate that our key empirical finding is robust. Furthermore, we address what we see are the leading objections to our interpretation of the underlying mechanism.

We believe that this work has several implications for the field of political economy. First, 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-

²⁵ One interpretation of our finding is that building activity slows down during elections because laborers in the real estate sector are being used as temporary labor for campaigns. This is an interesting hypothesis for which we would need additional data; but we believe this can be seen in our framework as an “in-kind” contribution from builders.

biased if we do not take them into account. To date, much of the comparative literature focuses on licit flows (see Scarrow 2007 for a review), but such flows likely constitute but a fraction of total election spending in many developing countries.

Second, 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.²⁶

Third, election finance (its sources and methods) has ramifications for how democracy functions. In principle, greater political competition, decentralization (i.e. greater number of elected sub-national bodies), and more frequent elections can enhance citizen accountability of elected representatives. But each of these benefits also comes with a financial cost with respect to increasing electoral expenditure. While one could argue that costly elections can serve as a screening device to weed out non-serious candidates, if privileged access to resources becomes a pre-condition for winning election, this could have obvious effects on the nature of political selection. Finally, there is the troubling prospect of the long-term cognitive implications if election financing results in negative selection effects and a broader corruption of the body politic. If the resulting cynicism among voters leads them to lose faith in the democratic process, there will be little left to hold up the edifice itself.

²⁶ The title of a recent article in the *New York Times* on Gurgaon, one of the fastest growing and richest cities in India, says it all: “In India Dynamism meets Dysfunction” (Yardley 2011).

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