The Private Returns to Public Office

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We study the wealth accumulation of Indian state politicians using public disclosures required of all candidates. The annual asset growth of winners is 3–5 percent higher than that of runners-up, a difference that holds also in a set of close elections. The relative asset growth of winners is greater in more corrupt states and for those holding ministerial positions. These results are consistent with a rent-seeking explanation for the relatively high rate of growth in winners' assets.

I. Introduction

Understanding the motivations of politicians is a central question in economics and political science. It is crucial for modeling the pool of candidates who will seek office and also important for designing policies

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to constrain politicians' behavior while in office. Individuals may stand for election because of the nonpecuniary benefits of public service or because of the financial returns that come with political office. The latter may include official salaries, private-sector opportunities after leaving office, and also nonsalary earnings while in office, legal or otherwise. There is relatively limited evidence on the returns to public office in large part because, at least until recently, unofficial earnings have seldom been reported publicly.

In this paper, we examine the net financial returns for public officeholders in India, taking advantage of data gathered via India's Right to Information Act. Since 2003, the Right to Information Act has required all candidates standing for public office at all levels to disclose the value and composition of their assets. Disclosure was mandatory, with punitive consequences for misreporting. We calculate the asset growth of politicians using the disclosures of those competing in consecutive state assembly elections and use these figures to compare the asset growth of election winners versus election runners-up.

A common challenge in estimating the value of public office is to account properly for the unobserved skills or resources available to politicians regardless of whether they are elected. To provide a plausible group of "control" politicians, we focus on the subset of elections in which both the winner and runner-up from the same constituency run in the subsequent election, allowing us to compare the asset growth of plausibly similar political candidates. When we further limit the sample to very close elections, we argue that any difference in asset growth is unlikely to be driven by unobserved ability differences between winners and runners-up.

In our baseline specifications, we find that winning politicians' assets grow at 3–4 percent per year faster than the assets of runners-up; the estimated "winner's premium" is slightly higher for politicians winning in close elections (we consider winning margins of 10, 5, and 3 percentage points). When we use a regression discontinuity (RD) design, we estimate a winner's premium of 4.5 percent.

To understand the mechanism underlying the high returns of election winners, we examine the geographic and candidate-level heterogeneity in the winner's premium. First, we examine whether the winner's premium is higher in more corrupt constituencies, as one would predict if it were the result of bribery and other forms of rent extraction. We proxy for corruption by focusing on constituencies in the so-called BIMARU states (Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh) that have been singled out for corruption (see, e.g., Kumar 2007). Our estimates indicate that for BIMARU politicians, the winner's premium is more than twice that of lawmakers in other states. Employing an RD design, we observe even starker differences: we estimate a winner's premium of more than 10 percent per year for BIMARU politicians, whereas we observe no dis-

continuity at the winning margin in non-BIMARU states. We find similar results using alternative corruption proxies, including BIMAROU designation (which augments the BIMARU list with the state of Orissa) as well as Transparency International's state-level corruption index from 2005.

We also assess how the extent of political power—and the resultant funds at a politician's disposal—affects the returns to office. We find that despite similar official salaries, the winner's premium for state ministers is more than 10 percent higher than for nonminister winners. Interpretation of this estimate can be confounded by the fact that assignment to minister posts is nonrandom. To deal with concerns of unobserved ability correlated with minister assignment, we compare the asset returns of candidates who obtain minister positions in the period we study to those of politicians who were ministers in the past, won in this election, but do not hold ministerial posts during our sample period simply because of a shift in a state's ruling party. For this sample of "minister-quality" politicians, we still find a large and significant asset growth premium for holding ministerial positions of more than 6 percent per year.

As a separate measure of political advancement, we examine the winner's premium of incumbents versus candidates who had not recently held office. We find relatively low financial returns to winning for "freshman" politicians. Indeed, the point estimates imply a negative return to public office for nonincumbents, suggesting that their returns from private-sector outside options are comparable to or even higher than the returns obtained through public office. By contrast, for incumbents our estimate of the winner's premium is more than 12 percent.

Finally, we consider a pair of further analyses that are less subject to selection concerns. First, we examine the returns to political office of "seasoned candidates." Specifically, we focus on contests between pairs of politicians in which both had competed and been winner or runner-up in the two elections prior to 2003. We argue that these seasoned politicians are very likely to have similar abilities and outside options, and we obtain similar (though larger) estimates for the winner's premium using this subsample. Second, we look at a quasi experiment in the state of Bihar in which a hung assembly in February 2005 resulted in a follow-up election in October of the same year. By looking at candidates who won in February but lost in October, and vice versa, we argue that we come as close as possible to providing a causal estimate of the returns to public office. The Bihar quasi experiment yields estimates similar to those of our main analysis of BIMARU states.

Overall, our main empirical findings are best explained by a model of rent seeking in political office in which the scope for rent extraction increases as politicians rise in the legislative hierarchy: "freshman" returns are negative relative to outside options, incumbents and seasoned candidates benefit from a substantial winner's premium in asset growth, and

ministers benefit from a further asset growth premium over and above that of incumbents.

Our study contributes to the literature on politicians' motivations for seeking public office. There exist numerous theoretical models describing politician motivation and behavior. These include the seminal contributions of Barro (1973), Ferejohn (1986), and Buchanan (1989), as well as more recent work by Besley (2004), Caselli and Morelli (2004), and Matozzi and Merlo (2008). A number of recent papers examine empirically the role of official wages in motivating politician labor supply, including Ferraz and Finan (2011) and Gagliarducci and Nannicini (2013) for Brazilian and Italian mayors, respectively; Kotakorpi and Poutvaara (2011) for Finnish parliamentarians; and Fisman et al. (2013) for members of the European Parliament. Diermeier, Keane, and Merlo (2005) further consider the role of career concerns for members of Congress in the United States.

Our work connects most directly to prior studies that examine the wealth accumulation of politicians, which have focused primarily on US and British lawmakers. Lenz and Lim (2009) compare the wealth accumulation of US politicians to a matched sample of nonpoliticians from the Panel Study of Income Dynamics. Their results suggest little benefit from public office. Using an RD design, Eggers and Hainmueller (2009) find that British Conservative Party members of Parliament benefit financially from public office while Labour MPs do not. Finally, Querubin and Snyder (2009) examine the wealth accumulation of US politicians during 1850–80 using an RD design and find that election winners outearn losers only during 1870–80.

We view our work as complementary to these studies in several ways. First, India differs from the United States and the United Kingdom in having far greater corruption (Transparency International 2000). This is critical in considering the mechanism through which politicians benefit from office. For example, in the study by Eggers and Hainmueller (2009), who base their measure of wealth accumulation on assets at the time of death, the primary source of financial benefit appears to be legitimate post office employment as company directors. By contrast, both our focus on India and our finding of a higher winner's premium in high-corruption states point to rent seeking while in office as the source of asset growth. Second, since our data afford the opportunity to examine the asset growth of politicians of differing degrees of experience and influence—in particular ministers versus rank-and-file members of the Legislative Assembly (MLAs)—our findings are better able to shed light on the nature of political rent seeking in a political hierarchy.[1]

[1] Our work also relates to several studies that attempt to infer the nonsalary financial benefits of public office. Two recent papers examine the stock-picking abilities of US legislators

Closest to our study is the concurrent work of Bhavnani (2012), which also examines politicians' wealth accumulation in India on the basis of mandatory asset disclosures. Given the similarities, it is important to note the distinguishing features of our work. Bhavnani's data include information on elections in 11 states, while we have a much more comprehensive database covering elections in 24 states. This affords a number of crucial advantages. Most importantly, this allows us to examine how the asset returns premium of winners varies across states as a function of proxies for corruption. The fact that the winner's premium is significantly higher in corrupt states helps to rule out many alternative explanations and connect our findings more credibly to rent seeking. Second, our approach of exploiting past ministers—who are elected to the assembly but lose their minister portfolios as a result of their parties no longer forming the government—presents a credible counterfactual to benchmark our measure of the minister asset growth premium, helping to rule out explanations based on parties selecting "higher-quality" politicians as ministers.[2]

Finally, we note that while our study focuses on India, comparable asset disclosure laws now exist for politicians in many countries. It is in theory possible to employ a similar approach in other countries where candidates for public office are required to disclose their assets and where these disclosures are subject to legal sanction and/or media scrutiny. This presents a promising avenue for future research.[3]

In Section II, we provide a detailed description of the data followed, in Section III, by institutional background on Indian politics and disclosure laws. We follow in Section IV with a simple model that will help to organize our results and motivate the empirical strategy. Section V presents our results, where we estimate the winner's premium and its correlates using both a regression approach and also an RD design. In Section VI, we provide a discussion of selection concerns and also consider

over different time periods, and with widely disparate results: Ziobrowski et al. (2011) report high positive abnormal returns for senators and members of the House of Representatives, while Eggers and Hainmueller (2011) report that Congress members' portfolios underperform the market. Braguinsky, Mityakov, and Liscovich (2010) estimate the hidden earnings of public servants in Moscow by cross-referencing officials' salary data with their vehicle registrations.

[2] Our specifications also differ in a number of ways; e.g., we focus on assets net of liabilities, a standard measure of wealth, while Bhavnani focuses only on assets. This distinction is potentially important in the presence of, e.g., preferential loan access for politicians, which would mechanically inflate asset measures. Our larger sample also means that we can, in most cases, include analyses that allow for constituency fixed effects, which helps to rule out many explanations for the winner's premium based on unobserved differences across candidates. Finally, our sample is formed by matching disclosures across elections by hand rather than via a matching algorithm, which may lead to fewer errors based on variability in the spelling of names.

[3] The comprehensive overview of politician disclosure laws in Djankov et al. (2010) provides an indication of the widespread adoption of such laws.

several alternative explanations for the winner's premium, and we argue that it is difficult to reconcile these explanations with our full set of findings. We provide our conclusions in Section VII.

II. Data

National Election Watch, in collaboration with the Association for Democratic Reforms (ADR), provides digitized records based on affidavits from candidates in state assembly elections (Vidhan Sabha). These records serve as the basis for most of our data set. For the nine elections in our sample prior to October 2004, however, digitized records were unavailable, so we collected data directly from scanned pictures or PDFs of candidate affidavits. The affidavits were gathered from either the GENESYS Archives of the Election Commission of India (ECI; http://eci.gov.in/archive/) or the various websites of the Office of the Chief Electoral Officer in each state. A sample affidavit is shown in online appendix A.

Since reporting requirements are limited to those standing for election, asset growth can be measured only for recontesting candidates, that is, those who contest and hence file affidavits, in two elections. Therefore, our study is limited to elections in the 24 states that had at least two elections between November 2003 and May 2012, covering about 94 percent of India's total electorate. Table 1 lists the 24 states in our sample along with descriptive information corresponding to the first of the two elections.

In a first step, among all the candidates who contest in the first election in each state, we filter out the winners and the runners-up using the Statistical Reports of Assembly Elections provided by ECI (http://eci.gov.in/eci_main1/ElectionStatistics.aspx). We then match the names of these winners and runners-up with candidates who contest in the subsequent election in that state (i.e., we can account for politicians who choose to rerun but switch constituencies within a state across elections). Because of the many commonalities among Indian names as well as different spellings of names across elections, matching was done manually. Overall, we are able to manually match a total of 3,715 recontesting candidates (2,347 winners and 1,368 runners-up from the first elections) using variables such as name, gender, age, education, address, and constituency, as well as family members' names (usually the name of the father or spouse).[4]

[4] A probabilistic matching algorithm, based on variables such as name and age, proved to be inefficient. To provide an example, in the Tamil Nadu election of 2006, there are two candidates with identical names (Rajendran. S), age (56), and education (10th pass) despite being identifiably distinct politicians. We also commonly encountered differential spellings of names between elections, for instance, Shakeel Ahmad Khan (Bihar, 2005) and Shakil Ahmad Khan (Bihar, 2010).

TABLE 1
Overview of Sample States

State	Year 1	Year 2	Corruption Index	Electorate	Turnout (%)	Constituencies	Total Contestants	Matched Candidates		
								Winners	Runners-Up	Pairs
BIMARU:										
Bihar*	2005	2010	695	51,385,891	45.85	243	2,135	180	114	84
								(131)	(72)	(34)
Madhya Pradesh	2003	2008	584	37,936,518	67.25	230	2,171	127	51	30
								(104)	(38)	(17)
Rajasthan	2003	2008	543	33,928,675	67.18	200	1,541	105	72	41
								(72)	(52)	(18)
Uttar Pradesh	2007	2012	491	113,549,350	45.96	403	6,086	300	221	172
								(267)	(179)	(124)
Non-BIMARU:										
Andhra Pradesh	2004	2009	421	51,146,498	69.96	294	1,896	152	94	57
								(112)	(76)	(35)
Arunachal Pradesh	2004	2009	. . .	683,512	64.02	60	168	55	22	19
								(38)	(11)	(7)
Assam	2006	2011	542	17,434,019	75.77	126	997	109	69	62
								(95)	(48)	(37)
Chhattisgarh	2003	2008	445	13,543,656	71.30	90	819	56	31	15
								(23)	(14)	(2)
Delhi	2003	2008	496	8,448,324	53.42	70	817	46	8	7
								(27)	(3)	(2)
Goa	2007	2012	. . .	1,010,246	70.51	40	202	36	19	18
								(34)	(18)	(17)
Haryana	2005	2009	516	12,735,888	71.96	90	983	59	44	29
								(48)	(38)	(15)
Jharkhand	2005	2009	520	17,766,202	57.03	81	1,390	63	51	43
								(41)	(33)	(19)
Karnataka	2004	2008	576	38,586,754	65.17	224	1,715	85	35	3
								(49)	(22)	(2)

Kerala	2006	2011	240	21,483,937	72.38	140	931	105 (62)	31 (23)	25 (15)
Maharashtra	2004	2009	433	65,965,792	63.44	288	2,678	214 (183)	112 (96)	85 (61)
Manipur	2007	2012	. . .	1,707,204	86.73	60	308	47 (33)	33 (24)	28 (14)
Mizoram	2003	2008	. . .	532,028	78.65	40	192	31 (13)	17 (9)	15 (5)
Orissa	2004	2009	475	25,651,989	66.05	147	802	108 (81)	78 (56)	60 (37)
Puducherry	2006	2011	. . .	659,420	86.00	30	218	25 (22)	17 (12)	14 (9)
Punjab	2007	2012	459	16,775,702	75.45	116	1,043	89 (75)	61 (48)	46 (29)
Sikkim	2004	2009	. . .	281,937	79.23	32	91	12 (11)	14 (11)	2 (2)
Tamil Nadu	2006	2011	509	46,603,352	70.82	234	2,586	127 (97)	43 (32)	23 (13)
Uttarakhand	2007	2012	. . .	5,985,302	59.45	69	785	57 (47)	30 (27)	23 (17)
West Bengal	2006	2011	461	48,165,201	81.97	294	1,654	159 (126)	101 (77)	60 (39)
Total				631,967,397		3,601	32,208	2,347 (1,791)	1,368 (1,019)	961 (570)
Lok Sabha	2004	2009		671,487,930	58.07	543	5,435			

SOURCE.—Statistical Reports on General Elections, Election Commission of India, New Delhi (various years); India Corruption Study 2005, Transparency International India (June 30, 2005).

NOTE.—This table provides an overview of the states in our sample along with some state characteristics at the time of the first elections. The columns labeled Winners and Runners-Up show the number of candidates we were able to manually match across elections, and in parentheses we show the number of matches that were potentially usable (i.e., good-quality affidavits and minimum candidate net wealth of Rs. 100,000). Pairs refers to the number of constituencies in which winners and runners-up both recontested.

* October 2005 reelection.

Of these initial 3,715 candidates who competed in consecutive elections, we were unable to locate affidavits for both elections for 53 candidates because of broken web links and hence discard them from our sample. Further, we filter out candidates with affidavits that are poorly scanned, have missing pages, or have handwriting that is too unclear or ambiguous to get a clear picture of a candidate's reported financial situation. This eliminates a total of 573 candidates, or about 15.6 percent of the remaining sample.[5] Next, we verify suspicious values and, since our main focus is on growth in wealth, remove candidates who list significant assets without corresponding market value information, leaving a sample of 3,021 matched candidates (1,911 winners and 1,110 runners-up). Of these 3,021 candidates, we have 658 constituencies in which both the winner and the runner-up recontest in the following election.

From the affidavits, we compute each candidate's net wealth at the time of filing, just prior to each election. In each case, we define *Net Wealth* as the sum of movable assets (such as cash, deposits in bank accounts, and bonds or shares in companies) and immovable assets (such as land and buildings) less liabilities (such as loans from banks), aggregated over all dependent family members listed on the affidavit. Finally, we remove candidates with negative or extremely low net asset bases using a cutoff of beginning net worth of Rs. 100,000.[6] This yields a final sample of 2,810 matched candidates (1,791 winners and 1,019 runners-up) of which 1,140 are constituency-matched pairs; that is, we have 570 constituencies in which both the winner and runner-up recontest. The numbers in parentheses in the last column of table 1 provide a state-level breakdown of these 570 constituencies. We define *Final Net Wealth* as net wealth at the end of the electoral cycle under consideration and *Initial Net Wealth* as net wealth at the beginning of the cycle.

We also generate a number of control variables for our regressions. We define a *Criminal Record* dummy as equal to one if the candidate has pending or past criminal cases at the time of the first election and measure education on the basis of years of schooling (*Years of Education*). We collect data on election victory margins and incumbency from ECI's Statistical Reports of Assembly Elections. The reports also allow us to classify constituencies as Scheduled Caste (SC), Scheduled Tribe (ST), or "general" constituencies. SC and ST constituencies are reserved for candidates classified as SC or ST, in accordance with a policy introduced to promote the representation of historically underrepresented groups;

[5] Affidavit availability and quality differ somewhat across states and tend to be slightly worse in the earlier years. For example, out of 54 matched candidates in Delhi (2003), 27 percent of affidavits are unavailable or of very poor quality.

[6] None of these adjustments materially changes the quantitative nature of our results. Our findings are very robust to using different cutoff values (e.g., Rs. 500,000) or no adjustment at all. (This is shown in the online appendix, tables B.8–B.28.)

general candidates cannot compete in these constituencies. We also distinguish among winning candidates on the basis of whether they went on to hold significant positions in the state government, using an indicator variable *minister* to denote membership in the Council of Ministers, the state legislature's cabinet. To identify former ministers, we developed a list of all state-level ministers for the electoral cycle that preceded the 2003–12 elections that we study here.[7] We then matched these names with our sample of recontesting candidates, resulting in a total of 268 matches.

We use several state-level measures to proxy for opportunities for political rent extraction. First, we define an indicator variable, *BIMARU*, to denote constituencies located in the states of Bihar, Madhya Pradesh, Rajasthan, and Uttar Pradesh, which, as noted in the introduction, have been singled out for corruption and dysfunction (*bimar* means sick in Hindi). The neighboring state of Orissa is often added to the group, leading to the acronym *BIMAROU*; we generate an additional indicator variable denoting constituencies located in one of these five states. We also use a perception-based corruption measure provided in a 2005 study on corruption by Transparency International India. This report constructs an index for 20 Indian states on the basis of perceived corruption in public services using comprehensive survey results from over 10,000 respondents. The index takes on a low value of 240 for the state of Kerala and a high of 695 for Bihar. Our sample covers 17 of the 20 states for which the index is available; for ease of interpretation, we rescale the original measure such that it has a mean of zero and standard deviation of one, for the 17 states in our sample. There is a high degree of concordance between the Transparency measure, *TI Corruption* and the BIMARU classification. Three BIMARU states—Bihar, Madhya Pradesh, and Rajasthan—fill three of the five highest-corruption positions in the Transparency index, while Uttar Pradesh is ranked ninth out of 20.

Finally, we collected a cross section of state legislature salaries during 2003–8 and use the *base salary* of politicians to examine more formally whether official salaries are an important determinant of wealth accumulation.

Table 2 lists definitions of the main variables used in the analysis, and table 3 provides descriptive statistics for our constituency-matched sample of 1,140 candidates (panel A) as well as for candidates from the subsample of elections decided by margins of 5 percent or less (panel B). The median of log(Initial Net Assets) is identical for winners versus runners-up, at 15.15. This corresponds to about Rs. 3.8 million ($76,000 at an exchange rate of Rs. 50 per dollar) for winners and for runners-up.

[7] Most information was sourced from archives of state government websites as well as an extensive review of newspaper articles.

TABLE 2
VARIABLE DEFINITIONS

Variable	Description
Movable Assets (1)	Sum of (i) cash; (ii) deposits in banks, financial institutions, and nonbanking financial companies; (iii) bonds, debentures, and shares in companies; (iv) NSS, postal savings, etc.; (v) personal loans/advance given; (vi) motor vehicles; (vii) jewelry; and (viii) other assets such as values of claims/interests as reported on the candidate affidavit. This item excludes the value of life or other insurance policies (which are usually reported at payoff values)
Immovable Assets (2)	Sum of (i) agricultural land, (ii) nonagricultural land, (iii) commercial buildings, (iv) residential buildings ("buildings and houses"), and (v) others as reported on the candidate affidavit
Total Assets	Defined as the sum of (1) and (2)
Total Liabilities (3)	Sum of (i) loans from banks and financial institutions, (ii) loans from individuals/entities, (iii) any other liability, and (iv) any dues reported on the candidate affidavit
Net Assets	"Net worth" of the candidate, defined as the sum of (1) and (2) minus (3) and computed at the beginning (Initial Net Assets) and at the end (Final Net Assets) of the electoral cycle under consideration; We remove candidates with extremely low net asset bases (net assets below Rs. 100,000 as of election 1)
Net Asset Growth	Annualized growth in net assets over an election cycle; Winsorized at the 1 and 99 percentiles
Winner	Dummy variable taking on a value of 1 if the contestant won election at $t = 0$
Minister	Dummy variable indicating whether the constituency winner was appointed to the state's Council of Ministers
Margin	Vote share difference between winner and runner-up (negative for runners-up)
Incumbent	Dummy variable taking on a value of 1 if the contesting candidate won the preceding constituency election ($t = -1$)
Prior Member	Dummy variable taking on a value of 1 if the contesting candidate won the constituency election at $t = -2$
Education	Ordinary scale variable ranging from 1 to 9; we assign values based on the following education bands: 1 = illiterate, 2 = literate, 3 = 5th pass, 4 = 8th pass, 5 = 10th pass, 6 = 12th pass, 7 = graduate or graduate professional, 8 = postgraduate, 9 = doctorate; this variable is missing if education information was not given
Years of Education	Number of years of education the candidate has received; when using log specification, 1 is added to the number of years of education
Criminal Record	Dummy variable indicating whether the candidate has past or pending criminal cases
Government	Dummy variable indicating whether the candidate's party is part of the ruling state government
SC/ST–Quota	Dummy variable indicating whether the constituency of the candidate is that of disadvantaged groups, so-called Scheduled Castes and Tribes (SC/ST)
TI Corruption	Survey-based state corruption index (based on perceived corruption in public services) as reported in the 2005 Corruption Study by Transparency International India; the index takes on a low value of 240 for the state of Kerala (perceived as "least corrupt") and a high value of 695 for Bihar (perceived as "most corrupt"); we rescale the original measure such that it has a mean of 0 and standard deviation of 1, for the 17 states in our sample

TABLE 2 (*Continued*)

Variable	Description
Female	Dummy indicating the gender of the candidate (1 = female)
Age	The age of the candidate at the first election
Base Salary	Monthly base salaries of MLAs; collected from states' Salaries and Allowances and Pension of Members of the Legislative Assembly (amendment) Acts, official websites, and newspaper articles
BIMARU	Dummy variable indicating whether the constituency is located in one of the states Bihar, Madhya Pradesh, Rajasthan, or Uttar Pradesh
BIMAROU	Dummy variable indicating whether the constituency is located in one of the states Bihar, Madhya Pradesh, Rajasthan, Orissa, or Uttar Pradesh
Income per Capita	Average state-level per capita net domestic product at factor cost between 2004 and 2009 (source: Reserve Bank of India)

The median of log(Final Net Assets) is 16.09 for winners versus 15.93 for runners-up, a difference of 15.5 percent, given the log scale, and is significant at the 10 percent level. Since there is an average of 4.9 years between the two snapshots of net assets, the difference between initial and final net assets implies a different rate of asset growth of 3.2 percent (15.7/4.9).

Winners and runners-up also differ on the basis of incumbency. Incumbents are less likely to win than nonincumbents in our sample, consistent with Linden's (2004) finding of an incumbency disadvantage for Indian politicians. About 14 percent of winners are members of the state Councils of Ministers (by definition, 0 percent among runners-up), and 18 percent of the elections in our sample are from SC/ST-designated constituencies. Runners-up in the subsample of close elections tend to be slightly more educated than winners on average (14.35 years of education vs. 13.69 for winners), though the median years of education is identical. Overall, on the basis of these observables, runners-up seem to constitute a reasonably comparable control group.

III. Background

A. State-Level Electoral Politics in India

As measured by revenues, there is a near-equal balance of power between the central and state governments in India (Global Financial Statistics 2012). Among other responsibilities, state governments play a role in industrial development, the assignment of mineral rights, education, and health policy. These areas often fall under the ultimate control of members of the state Council of Ministers.

MLAs are elected to 5-year terms. In most cases MLAs' duties are only part-time work, so they may continue to work in the private sector, albeit

TABLE 3
DESCRIPTIVE STATISTICS OF CONSTITUENCY-MATCHED PAIRS (1,140 CANDIDATES)

	WINNER AND RUNNER-UP			WINNER			RUNNER-UP			DIFFERENCE IN MEANS	
VARIABLE	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	Difference	*t*-Statistic
					A. All Constituencies						
Log(Initial Net Assets)	15.15	15.15	1.42	15.13	15.15	1.40	15.16	15.15	1.44	−.04	−.42
Log(Final Net Assets)	16.04	16.02	1.43	16.11	16.09	1.36	15.97	15.93	1.50	.14	1.67
Female	.06	0	.23	.06	0	.24	.06	0	.23	.00	.25
Age	48.42	48	9.89	47.83	48	9.80	49.02	49	9.94	−1.19	−2.03
Years of Education	13.90	15	3.15	13.74	15	3.38	14.05	15	2.90	−.32	−1.67
Incumbent	.37	0	.48	.34	0	.47	.40	0	.49	−.06	−2.15
Criminal Record	.30	0	.46	.30	0	.46	.31	0	.46	−.00	−.11
Minister	.07	0	.25	.14	0	.35					
Margin	8.39	6.29	7.43								
SC/ST_Quota	.18	0	.39								
MLA Base Salary	16,671	8,000	21,391								
					B. Constituencies Decided by Margin ≤ 5 Percent						
Log(Initial Net Assets)	15.08	15.18	1.38	15.04	15.12	1.34	15.13	15.19	1.42	−.08	−.65
Log(Final Net Assets)	15.97	15.99	1.36	16.02	16.02	1.26	15.92	15.95	1.46	.10	.79
Female	.06	0	.24	.05	0	.23	.07	0	.26	−.02	−.78
Age	48.44	48	9.83	47.63	47	9.53	49.26	49	10.09	−1.63	−1.76
Years of Education	14.02	15	3.15	13.69	15	3.49	14.35	15	2.73	−.66	−2.21
Incumbent	.37	0	.48	.34	0	.48	.40	0	.49	−.05	−1.17
Criminal Record	.32	0	.47	.30	0	.46	.35	0	.48	−.04	−1.01
Minister	.06	0	.23	.12	0	.32					
Margin	2.42	2.51	1.46								
SC/ST_Quota	.13	0	.34								

NOTE.—Panel A shows descriptive statistics for the 1,140 constituency-paired candidates that constitute our main sample (570 winners and 570 runners-up). In panel B, we include only candidates of those constituencies that are decided by a winning margin of 5 percent or less ("close elections"). Except for net wealth, which is shown for both elections, all variables are as of the first of the two elections. Variables are defined in detail in table 2. The last two columns show average differences and *t*-statistics of difference-in-means tests.

on a more limited basis.[8] This right to continue private-sector pursuits while in office was reinforced by 2012 legislation affirming the right of lawyers to continue their practice while in office (Supreme Court Ruling under Advocates Act and Bar Council Rules, 2012). Six hundred of the 1,140 candidates in our main sample list a primary profession in public disclosures, as shown in online appendix table B.1. The most common self-identified profession is agriculture (29.8 percent) followed by business (23.5 percent).

The number of days in session for state assemblies is listed in appendix table B.2, ranging from a low of just over 8 (Arunachal Pradesh) to 50.2 (Kerala) with a median of 28.2.[9] This is clearly a lower bound on the time required by holding office, which involves committee obligations, constituency meetings, and management of disbursement of local development funds.[10] Attendance rates, which are available only for a small set of states, are also included and range from 23 to 95 percent, with most states falling in the 70–90 percent range. These figures indicate that the average MLA could expect to lose about a month's worth of workdays that might otherwise be devoted to private-sector pursuits.

MLA salaries range from Rs. 2,000 to Rs. 70,000 per month (though they also receive substantial expense allowances), with a median of Rs. 8,000 (or $160 at an exchange rate of Rs. 50 to the dollar). This is potentially a material sum relative to the median annual asset accumulation of the MLAs in our sample of just over Rs. 900,000 if one thinks about the job of an MLA as constituting solely time spent in the legislature. We consider below whether official salaries can explain the greater asset growth of winners.

Ministers face a much more stringent set of constraints on outside employment than rank-and-file MLAs. The same ruling that affirmed MLAs' right to continue legal practices stated explicitly that this did not extend to ministers, who are forbade from practicing law while in office. Also important is the fact that ministers receive official salaries that are only modestly higher than those of rank-and-file MLAs.

Neither regular MLAs nor ministers are required to divest themselves of commercial interests, and many maintain active involvement in running businesses. A number of prominent and wealthy business owners

[8] In recent years, opportunities for elected MLAs to work concurrently in other public posts have opened up. Articles 102 and 191 of the Indian Constitution barred legislators from collecting salaries from other public posts, but this was amended in 2006 to exempt 45 government posts from this disqualification.

[9] Notably, these figures are uncorrelated with our measures of state-level corruption. We have insufficient overlap between data on attendance and our measures of corruption to examine whether these are related in their impact on asset accumulation.

[10] In the United States, e.g., both the Michigan and Pennsylvania legislatures are considered full-time, though neither meets for more than 80 or so days per year. The bulk of state representatives' time is taken up with other duties.

have served as MLAs or members of Parliament, most prominently Rahul Bajaj, chairman of the Bajaj group of companies with a personal net worth estimated as US$3.4 billion in 2012.

In addition to the personal asset disclosures that we exploit in this paper, campaign spending information is available for a subset of MLA candidates.[11] There is a cap on campaign expenditures of Rs. 1.6 million in 16 of the 25 states in our sample (in the remainder—mostly small states—the limit ranges from Rs. 800,000 to Rs. 1.4 million). We have collected campaign finance data on 359 of the MLAs in our sample, who report, on average, expenditures of about Rs. 664,000. Importantly, campaign expenditures are uncorrelated with a candidate's status as winner versus runner-up (average expenditures of Rs. 651,000 vs. Rs. 681,000, respectively). Of course, there may also be differences in the time that standing politicians versus runners-up devote to election campaigns. There is little anecdotal evidence on this point in either direction, and we consider a number of tests below to examine this issue empirically.

To summarize, MLAs receive modest direct financial benefits for holding office but are also required to devote a significant amount of time to participating in legislative activities.

B. Anecdotal Evidence on the Returns to Public Office

Journalists and investigators have uncovered a number of cases that directly implicate politicians in exploiting public office for financial benefit, often leading to criminal proceedings. These involve the trading of favors for bribes as well as direct theft of government funds. Documented bribery cases include payments in exchange for government contracts, such as the awarding of a Commonwealth Games contract to a Swiss firm in 2010 that reportedly cost the government over US$20 million. The mining industry is also thought to be afflicted with widespread corruption, with accusations of politicians and other public officials accepting bribes to facilitate illegal mining, the acquisition of concessions, and underpayment of royalties. In one high-profile case, for example, two state ministers from Karnataka, Janardhana Reddy and Karunakara Reddy, were arrested for illegal mining. The most infamous of recent bribe scandals, the 2G scam, involved the allocation of India's spectrum rights on the basis of bribes, costing the government billions of dollars in forgone revenues (see Sukhtankar [2013] for details).

High-profile embezzlement cases include the Fodder Scam, which involved the siphoning off of over US$200 million from Bihar's treasury and implicating, among others, the state's chief minister at the time.

[11] This set is limited by the data available on the myneta.info website, which had campaign finance information on only a subset of politicians for the 2011/12 elections.

Uttar Pradesh's health minister was similarly implicated in the National Rural Health Mission Scam of 2011, which involved fraudulent claims that ran into the billions of dollars. A number of cases involve the embezzlement of assets instead of cash: in 2011, Karnataka's former chief minister, B. S. Yeddyurappa, was charged with acquiring government land parcels at extremely favorable prices before selling them off to mining companies.[12] Uttar Pradesh chief minister Mayawati Kumari was charged in connection with the Taj Corridor Scam, which involved the embezzlement of funds earmarked for upgrading tourist facilities near the Taj Mahal. (Separately, Kumari drew criticism for openly accepting gifts from the public on her birthday.)

Criminal cases need not be based on a specific, documented instance of bribery or embezzlement. Under the 1988 Prevention of Corruption Act, a politician with "resources or property disproportionate to his known sources of income" may be charged. This has resulted in proceedings against several Jharkhand ministers (including chief minister Madhu Koda) in 2009, who, investigators found, owned assets far greater in value than those declared in their election disclosures. Mayawati Kumari was charged under the same law on the basis of evidence that she paid taxes on income far in excess of her modest chief minister's salary.

There are several notable attributes of the examples described above, which are largely representative of corruption cases highlighted in the Indian media.[13] First, they tend to focus almost exclusively on higher-level officeholders—ministers and even chief ministers—and involve diverse channels of rent extraction.[14] Additionally, many of the most flagrant abuses appear to come up in BIMARU states long noted for their lack of effective governance.

There is, to our knowledge, no systematic repository of corruption cases in India. Several sources provide some indication, however, that the above examples may be generalized beyond individual anecdotes. First, a survey of public perceptions of corruption, conducted by *India Today* in 1997, asked Indian voters which part of government was most rife with corruption.[15] "Ministers" was ranked first, ahead of police. Re-

[12] "Ministers Stole Millions in Karnataka Mining Scam," *BBC South Asia*, July 21, 2011.

[13] Further details on several of these and other cases may be found in "Indian Politicians in Jail: Rendezvous of a Different Kind," *Gulf News*, November 5, 2011. This compendium is limited to examples of politicians serving jail time as a result of their behaviors in office.

[14] While the potential for rent extraction may be greatest for ministers, every MLA has control over a Local Area Development (LAD) fund of up to several million rupees, providing even lower-level politicians with opportunities to obtain rents. MLAs from some larger states have access to as much as Rs. 20–40 million to spend at their discretion on the development of their constituencies. (The LAD program has been criticized in the Indian media as being a conduit for corruption. See, e.g., "The Lad Fails to Deliver," *Business Today*, March 6, 2011.)

[15] "India's Sleaze Sheet," *India Today*, November 24, 1997, http://www.india-today.com/itoday/24111997/sleaze.html.

spondents were also asked to name the country's most corrupt individual; all top responses, aside from a single prime minister, were state-level ministers. The high visibility of ministers could of course account for this result, which underscores the value of our empirical exercise.[16] Second, India's ADR has compiled a list of MLAs who, in 2013, had declared cases against them for "Offences and Corrupt Practices in Connection with Elections."[17] While these cases reflect both corruption and effective enforcement and election-related corruption is arguably different from what we explore below, it is nonetheless noteworthy that the fraction of politicians with declared cases against them is more than twice as high in BIMARU than in non-BIMARU states (5.5 vs. 2.3 percent).

C. Asset Disclosure Laws

Prompted by a general desire to increase transparency in the public sector, a movement for freedom of information began during the 1990s in India. These efforts eventually resulted in the enactment of the Right to Information Act (2005), which allows any citizen to request information from a "public authority," among other types of organizations. During this period, the ADR successfully filed public interest litigation with the Delhi High Court requesting disclosure of the criminal, financial, and educational backgrounds of candidates contesting state elections (http://adrindia.org/about-adr/). Disclosure requirements of politicians' wealth, education, and criminal records were de facto introduced across all states beginning with the November 2003 assembly elections in the states of Chhattisgarh, Delhi, Madhya Pradesh, Mizoram, and Rajasthan.

Candidate affidavits provide a snapshot of the market value of a contestant's assets and liabilities at a point in time, just prior to the election when candidacy is filed. In addition to reporting her own assets and liabilities, a candidate must disclose the wealth and liabilities of her spouse and dependent family members. This requirement prevents simple concealment of assets by putting them under the names of immediate family members. Further, criminal records (past and pending cases) and education must be disclosed.

Punishment for inaccurate disclosures may include financial penalties, imprisonment for up to 6 months, and disqualification from political office. While there have been a handful of revelations of politicians' asset misstatements and at least one prosecution, against Jharkhand

[16] We have found several partial listings of corruption cases pending in India (such as those referenced above) in which state-level ministers constitute a very high fraction of total cases relative to their total numbers. But this could also be a result of the high visibility of minister-level politicians.

[17] Further details, along with the list of cases, may be obtained at http://adrindia.org/content/sitting-mps-mlas-declared-cases-related-electoral-offences.

minister Harinarayan Rai, for failing to disclose assets, for the most part popular accounts focus instead on the very high level of asset accumulation implied by these disclosures.[18]

IV. Empirical Strategy

We present a simple model of electoral incentives based on the costs of running for office and the financial returns of private versus political employment. We model a politician's career as lasting for two periods; candidates who contest elections in period 0 may recontest in period 1. Initially, we assume that periods are independent and that candidate i's probability of winning an election is given by p_i. The cost of running a political campaign is fixed as M in each period, which must be covered by the candidates themselves. We assume an initial wealth level of W^0 after payment of M (this is consistent with what we measure in the data). We denote returns for candidates by R_j, where $j \in \{\mathcal{W}, \mathcal{L}\}$ denotes whether a politician won or lost the election. Our goal is to estimate $R_{\mathcal{W}} - R_{\mathcal{L}}$, that is, the difference in rates of asset growth as a result of being in office. Differential return opportunities across constituencies c are captured by a_c, and candidate i's wealth growth can further be affected by her characteristics $\mathbf{x}_i$ such as, for example, level of education. We model candidate i's wealth dynamics as

$$\frac{dW_{ic}^t}{W_{ic}^t} = [R_{\mathcal{L}} + (R_{\mathcal{W}} - R_{\mathcal{L}}) \cdot D_i + b'\mathbf{x}_i + a_c]dt + d\epsilon_i^t, \tag{1}$$

where D_i indicates whether the candidate has been in office during the period and $d\epsilon_i^t \sim N(0, dt)$ captures idiosyncratic shocks to wealth. The log of final wealth accumulated by a candidate at $t = 1$ is given by

$$\log W_{ic}^1 = \log W_{ic}^0 + (R_{\mathcal{W}} - R_{\mathcal{L}}) \cdot D_i + b'\mathbf{x}_i + \alpha_c + \epsilon_i^1, \tag{2}$$

where $\alpha_c = R_{\mathcal{L}} + a_c - 0.5$. Our objective is to measure final assets for the typical individual elected to public office, relative to the counterfactual in which he was not elected:

$$\mathbb{E}(\log W_{ic}^1 | D_i = 1) - \mathbb{E}(\log W_{ic}^1 | D_i = 0) = R_{\mathcal{W}} - R_{\mathcal{L}}. \tag{3}$$

Initially, we will assume that all candidates (winners and losers) recontest, which in the model corresponds to the case with $M = 0$. We then discuss the implications of relaxing this assumption. Equation (2) gives

[18] For example, Firstpost India reported that Himachal Pradesh MLA Anil Kumar failed to declare ownership of a pair of properties in his 2007 disclosure. See also "How the Political Class Has Looted India," *Hindu*, July 30, 2012, http://www.thehindu.com/opinion/lead/how-the-political-class-has-looted-india/article3700211.ece.

us an unbiased estimate of $R_{\mathcal{W}} - R_{\mathcal{L}}$ based on ordinary least squares, provided that ϵ_i^1 is uncorrelated with the regressors. However, given that winning candidates may differ from those who lose, the presence of omitted variables may generate a bias in the estimated coefficients. To confront this issue, our identification strategy focuses on close elections, which, we argue, results in a comparison of the returns of very similar candidates (i.e., those who barely win vs. those who barely lose).

Of course, in equation (3) we cannot measure winner versus loser wealth for politicians who are winners and so instead will make a comparison across observed winners i and losers j. That is, we observe

$$\begin{aligned}\mathbb{E}(\log W_{ic}^1|D_i = 1) - \mathbb{E}(\log W_{jc}^1|D_j = 0) \\ = \mathbb{E}(\log W_{ic}^1|D_i = 1) - \mathbb{E}(\log W_{ic}^1|D_i = 0) \\ + \mathbb{E}(\log W_{ic}^1|D_i = 0) - \mathbb{E}(\log W_{jc}^1|D_j = 0).\end{aligned} \tag{4}$$

Comparison of similar candidates ensures that the selection term (in the third row above) is small.

While looking at close elections allows us to compare similar candidates, another mechanical selection arises when we allow $M > 0$ even in the case in which ϵ_i^1 is independent of D_i, α_c, and $\mathbf{x}_i$. In the context of our simple model, selection arises from the fact that some candidates will be hit by negative wealth shocks that prevent them from recontesting at $t = 1$. Specifically, in order for a candidate to be observed in the sample, he must have sufficient funds to cover the election expense, $W_{ic}^1 \geq M$.[19] Given that the wealth of winners is larger than that of runners-up as a result of higher earnings in office, there is a natural discontinuity in the recontesting probabilities: winners are more likely to recontest elections than losers.[20] To understand how this affects our estimates, suppose that all candidates with sufficient funds wish to contest, and consider the selection equation capturing the recontesting decision z_i:

$$z_i = \begin{cases} 1 & \text{if } \log W_{ic}^0 + R_j + b'\mathbf{x}_i + \alpha_c + \epsilon_i^1 \geq \log M \\ 0 & \text{if } \log W_{ic}^0 + R_j + b'\mathbf{x}_i + \alpha_c + \epsilon_i^1 < \log M. \end{cases}$$

[19] Consistent with the model, we find that the runners-up who exit the sample have lower initial wealth (and are thus relatively more affected by wealth shocks).

[20] In this model, one can identify four cases in which wealth shocks may affect electoral participation for a given pair of candidates: (1) positive wealth shocks leading both candidates, winner and runner-up, to recontest; (2) large negative wealth shocks such that both candidates exit the sample; (3) negative wealth shocks such that only runners-up exit the sample; and (4) wealth shocks such that only the winner exits the sample. If one assumes that shocks to wealth are idiosyncratic and follow the same distribution for runners-up and winners, then it follows that case 3 is more likely than case 4 since it requires a relatively larger negative shock for winners to exit the sample.

We do not observe final wealth of candidates for which $z_i = 0$ and must therefore compare only candidates who recontest. Our estimate of the returns to office, denoted by $\hat{\beta}$, corresponds (in population) to the difference in expected values when D_i switches from zero to one. This can be written as[21]

$$\begin{aligned}\hat{\beta} &= \mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 1, z_i = 1] - \mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 0, z_i = 1] \\ &= R_{\mathcal{W}} - R_{\mathcal{L}} + \{\mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 1, z_i = 1] \\ &\quad - \mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 1, z_i = 0]\} \cdot P(z_i = 0|\mathbf{x}_i, D_i = 1) \\ &\quad - \{\mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 0, z_i = 1] - \mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 0, z_i = 0]\} \\ &\quad \cdot P(z_i = 0|\mathbf{x}_i, D_i = 0).\end{aligned} \tag{5}$$

Thus, $\hat{\beta}$ is the true β plus a selection term generated by differential exit rates between winners and runners-up. The direction of possible bias in our estimate of the winner's premium will depend on the sign of the selection term.

PROPOSITION 1. If wealth shocks are independent and identically distributed (i.i.d.) across candidates and independent of D_i and $\mathbf{x}_i$ and $R_{\mathcal{W}} > R_{\mathcal{L}}$, then $\hat{\beta} < R_{\mathcal{W}} - R_{\mathcal{L}}$. That is, our estimate of the private returns to public office is biased downward.

Please refer to the Appendix for the proof. The intuition for this bias is as follows: Since a greater proportion of runners-up will exit because of negative wealth shocks, had we observed these exiting candidates as well, our estimate of the average returns to office would have been larger. So, the selection bias driven by differential exit rates is negative.

Our parsimonious model ignores alternative sources of exit. For example, in addition to wealth shocks, one could augment the model to allow for variation in candidates' outside options at the reelection date $t = 1$ so that $R_{ij,t=1} = R_{ij,t=0} + \eta_i$. Thus, a sufficiently large positive shock to outside opportunities would convince any candidate—winner or loser—to opt out of standing for election. If these shocks affect both winners and runners-up symmetrically, they will not generate any differential exit and hence will not create bias. An upward bias in our estimate results only if such shocks have a disproportionately positive impact on runners-up.

V. Results

We present our results using three separate approaches. First, we provide a graphical depiction of candidates' net asset growth. We then present

[21] For ease of exposition, in the following expressions, $\mathbf{x}_i$ includes all variables other than the election winner indicator, D_i.

estimates of the winner's premium and its correlates using regression analyses, followed by a presentation of the results using an RD design. After presenting our main results, we turn to a pair of alternative approaches to estimating the winner's premium based on "seasoned candidates" and a quasi experiment resulting from Bihar's hung assembly in 2005.

A. *Graphical Presentation of Results*

We begin by presenting a series of figures that provide a visual description of our results. In figure 1 we plot the Epanechnikov kernel densities of the residuals obtained from regressing log(Final Net Assets) on candidate observables, including log(Initial Net Assets). Panel *A* uses the entire sample of constituency-matched candidates, and panel *B* uses only candidates who were within a margin of 5 percentage points. In both cases, the Kolmogorov-Smirnov test for equality of the distribution function of winner and runner-up residuals is rejected at the 1 percent level. These figures thus suggest a differential effect of election outcomes on net asset growth between the treatment and control groups. Panel *C* limits the sample to candidates with constituencies in BIMARU states, and panel *D* shows only candidates from non-BIMARU constituencies. Panel *C* shows a clear rightward shift for winners relative to runners-up, and we reject the equality of the distribution functions at the 1 percent level. By contrast, in panel *D*, only a very small shift appears, and we cannot reject the test for equality of distributions (p-value = .215). Thus, the existence of a winner's premium is driven largely by candidates in high-corruption states.

In panel *E*, we disaggregate winners into ministers and nonministers and plot kernel densities of these two groups alongside the full sample of runners-up. The kernel density plots indicate a higher rate of asset growth for ministers and also suggest a long right tail for ministers, implying that a relatively small number of these high-level politicians generate very high asset growth.

Finally, panels *F* and *G* disaggregate the sample on the basis of whether an incumbent is standing for reelection in the constituency. Panel *F* shows winner and runner-up densities for the sample of constituencies in which an incumbent was standing for reelection. The winner distribution is clearly shifted to the right, implying a greater winner's premium in races involving incumbents (a test for equality of the distribution functions is rejected at the 1 percent level). Panel *G* shows densities for the subsample of nonincumbent constituencies: the winner distribution is now slightly shifted to the left, but a test for equality of the distribution functions cannot be rejected (p-value = .622).

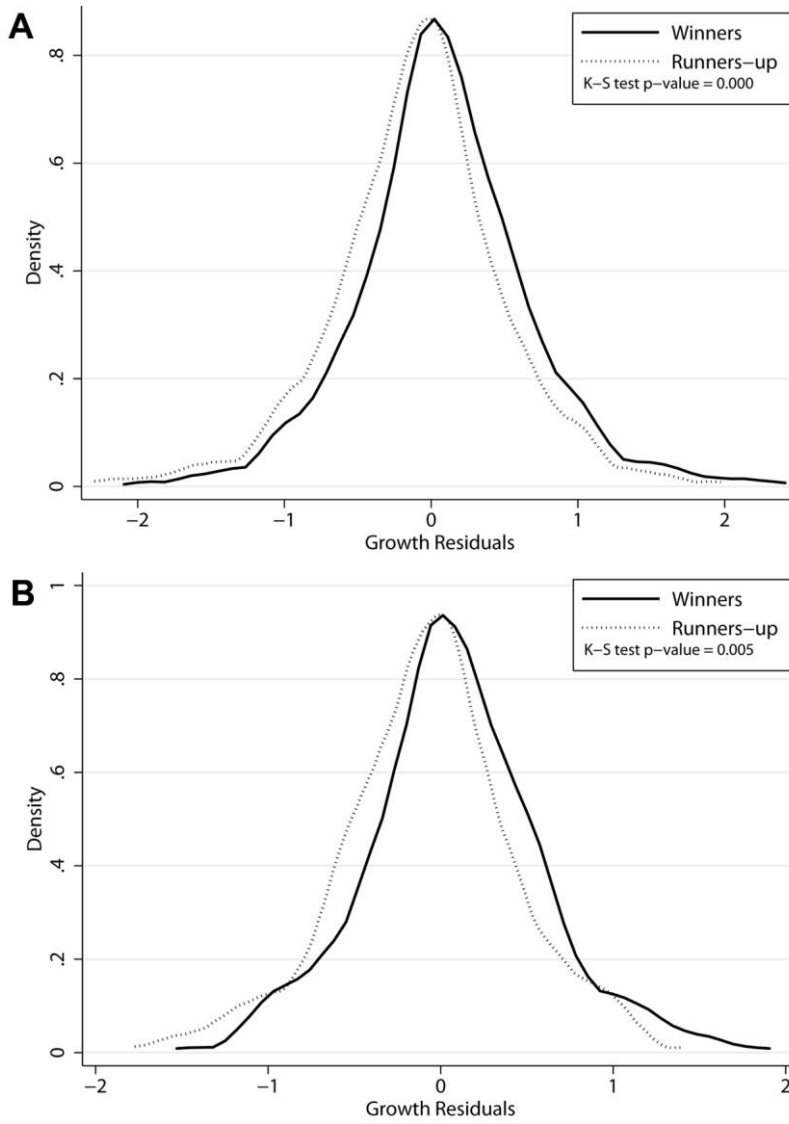

FIG. 1.—Kernel densities of asset growth residuals. This figure plots Epanechnikov kernel densities of residuals obtained from regressing log(Final Net Assets) on log(Initial Net Assets) and candidate observables (characteristics such as net assets, gender, and age but excluding winner dummy and margin) for the sample of constituency-matched candidates. Panel *A* uses the entire sample of constituency-matched candidates while panel *B* uses only candidates who were within a margin of 5 percentage points ("close elections"). In panels *C* and *D*, we divide the sample on the basis of whether their constituencies are located in BIMARU states. In panel *E*, we further disaggregate winners into ministers and nonministers and plot kernel densities of these two groups as well as the runners-up. Finally, in panels *F* and *G*, we disaggregate the sample on the basis of whether an incumbent is standing for reelection in the constituency.

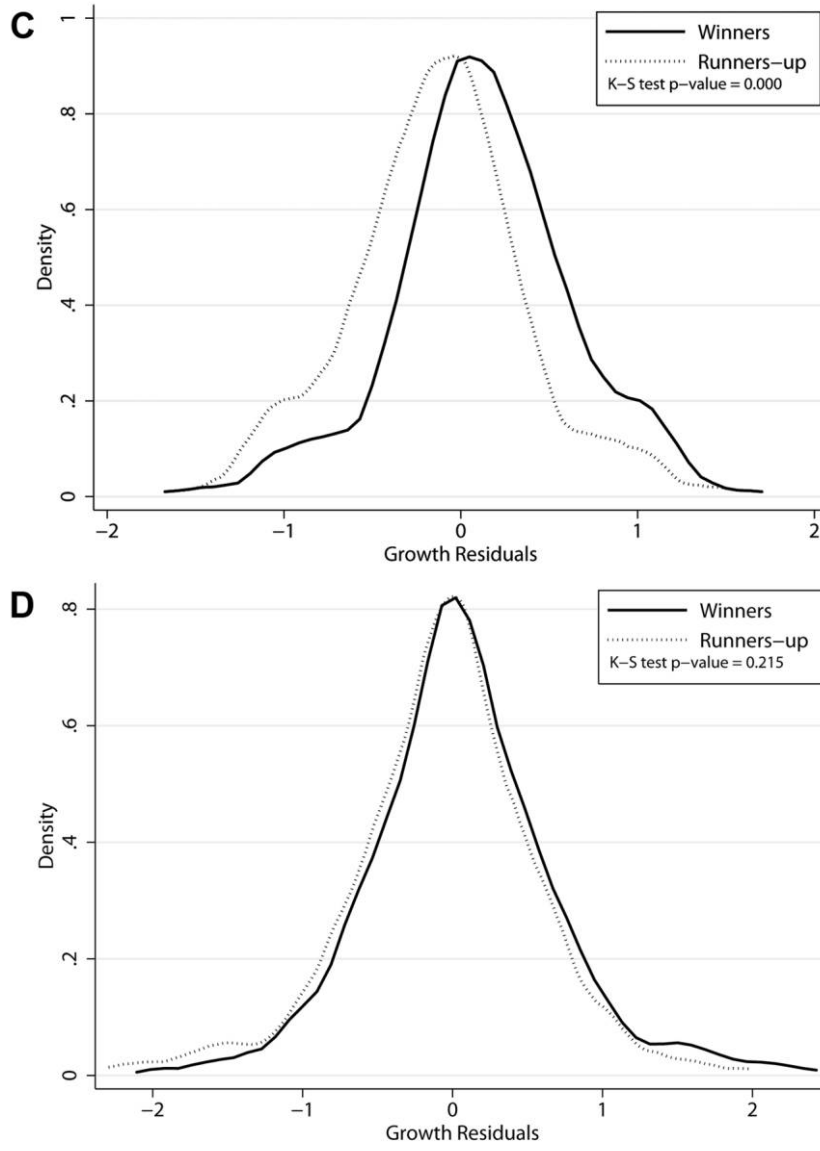

FIG. 1 (*Continued*).—Panel *F* shows winner and runner-up densities for the sample of constituencies in which an incumbent was standing for reelection. Panel *G* shows densities for the subsample of nonincumbent constituencies. K-S = Kolmogorov-Smirnov test for equality of distributions. The chosen bandwidth is the width that would minimize the mean integrated squared error if the data were Gaussian and a Gaussian kernel were used.

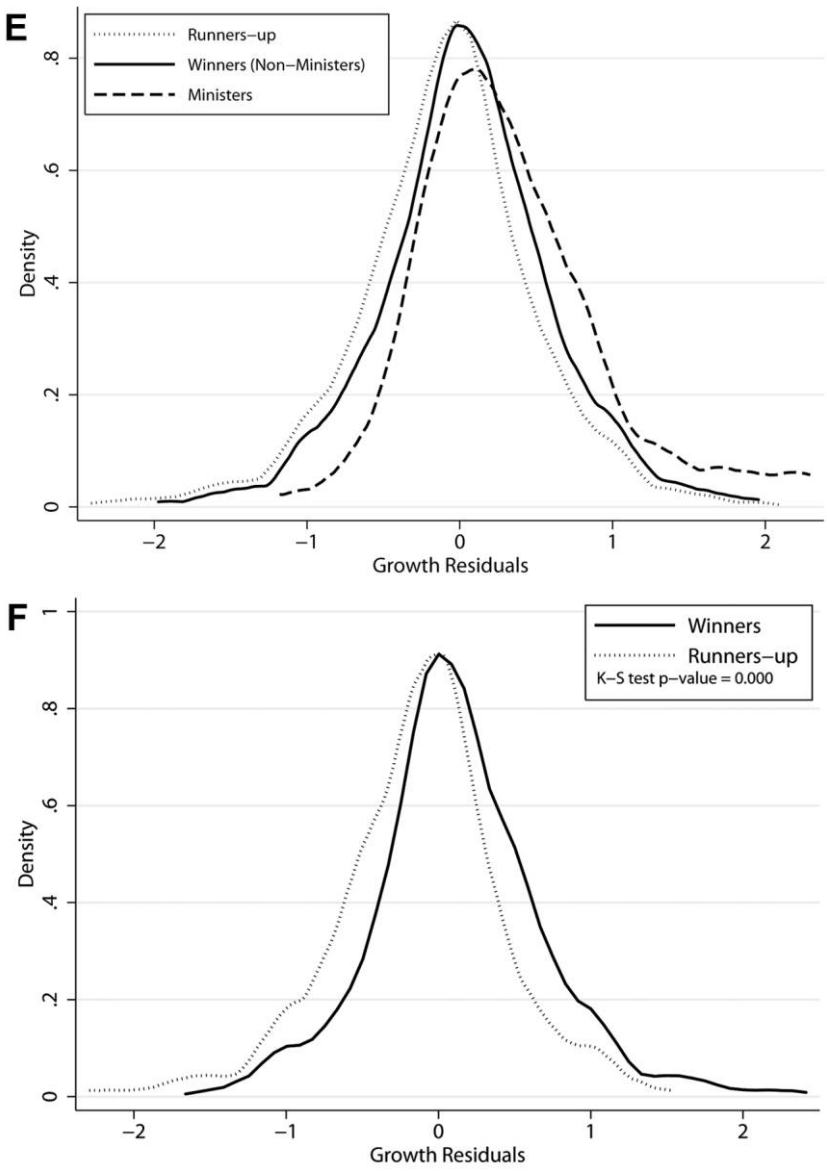

FIG. 1 (*Continued*)

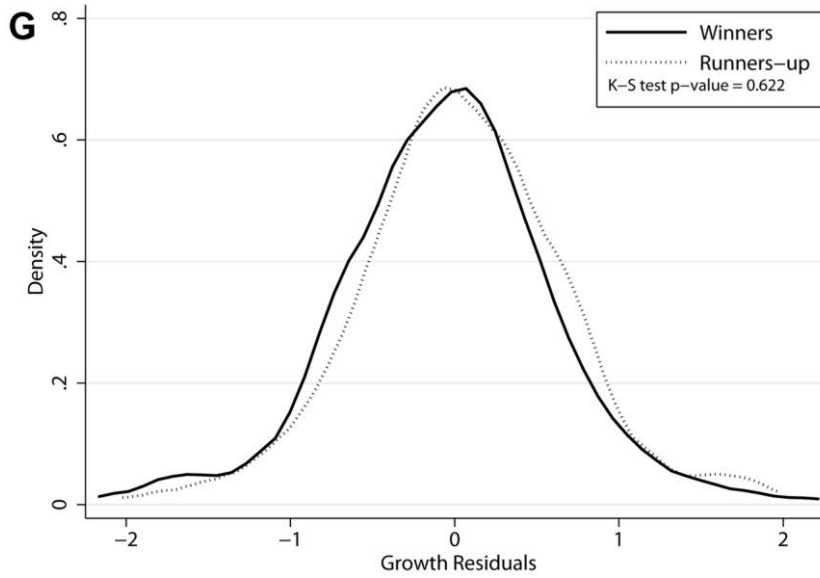

FIG. 1 (*Continued*)

B. Regression Analyses

We now turn to analyze the patterns illustrated in figure 1 on the basis of the regression framework we developed in Section IV. The basic estimating equation is given by[22]

$$\log(\text{Final Net Assets}_{ic}) = \alpha_c + \beta \text{Winner}_{ic} + \delta_1 \log(\text{Initial Net Assets}_{ic}) + \delta_2' \text{Controls}_{ic} + \epsilon_{ic}. \quad (6)$$

These within-constituency estimates of the winner's premium are presented in table 4. In column 1, we show the binary within-constituency correlation between the indicator variable winner and log(Final Net Assets), including log(Initial Net Assets) as a control. The coefficient of 0.167 (significant at the 1 percent level) implies that, after initial net assets are accounted for, winners finish a 5-year electoral cycle with 16.7 percent higher assets than runners-up. This is equivalent to an annual asset growth premium of 3.4 percent.[23] Column 2 adds controls for gender, incumbency, having a criminal record, the logarithm of years of education, and quadratic controls for age; the point estimate is virtually un-

[22] Results are essentially unchanged when using Net Asset Growth as the dependent variable. (This is shown in the online appendix, tables B.30–B.36.)

[23] The premium is 16.7/4.9 years; the average legislature period in our sample is 4.9 years.

TABLE 4
WITHIN-CONSTITUENCY EFFECTS OF WINNING THE ELECTION

	Log(Final Net Assets)				
Variable	(1)	(2)	Margin ≤ 10 (3)	Margin ≤ 5 (4)	Margin ≤ 3 (5)
Winner	.167***	.164***	.187***	.160**	.209**
	(.049)	(.052)	(.056)	(.067)	(.085)
Log(Initial Net Assets)	.722***	.710***	.715***	.693***	.674***
	(.031)	(.034)	(.038)	(.047)	(.058)
Log(Years of Education)		−.057			
		(.117)			
Criminal Record		.061			
		(.089)			
Female		−.293			
		(.181)			
Age		−.012			
		(.028)			
Age^2		1.07E−04			
		(.000)			
Incumbent		.081			
		(.062)			
Constant	5.021***	5.651***	5.108***	5.432***	5.704***
	(.469)	(.894)	(.569)	(.704)	(.873)
Observations	1,140	1,099	768	450	274
R^2	.833	.841	.848	.861	.868
Annual growth premium (%):					
Winner	3.40	3.35	3.81	3.27	4.26

NOTE.—The regression equation estimated is

$$\log(\text{Final Net Assets}_{ic}) = \alpha_c + \beta\text{Winner}_{ic} + \delta_1\log(\text{Initial Net Assets}_{ic}) + \delta_2'\text{Controls}_{ic} + \epsilon_{ic}.$$

The dependent variable, $\log(\text{Final Net Assets}_{ic})$, is the logarithm of net wealth at the end of the legislative period. The term α_c is a constituency fixed effect; Winner_{ic} is the dummy for winning the initial election ($t = 0$); $\log(\text{Initial Net Assets}_{ic})$ is the logarithm of the initial net assets of the politician; and Controls_{ic} include the logarithm of years of education, criminal record (dummy if a criminal record was present as of the first election), gender, age, and incumbency. The regression is also run for close elections (cols. 3–5), where the vote share gap between the winner and the incumbent was less than 10, 5, and 3 percentage points. Robust standard errors are given in parentheses. The reported constant is the average value of the fixed effects. Finally, we convert our point estimates into annual asset growth premiums (point estimate divided by 4.9; the average legislative period in our sample is 4.9 years).

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.

changed at 0.164 (significant at the 1 percent level). In columns 3–5, we examine the winner's premium in close elections, defined by those in which the vote share gap between winner and runner-up was less than 10, 5, and 3 percentage points. In each case, we find that winners' assets are 16–21 percent higher than those of runners-up at the end of an electoral cycle, representing a 3–4 percent annual growth premium (significant

at least at the 5 percent level). In appendix table B.29, we show that the interaction of Winner_{ic} and $\log(\text{Initial Net Assets}_{ic})$ is negative but not significant, consistent with public office generating rents that are unrelated to politicians' initial wealth.

We next explore heterogeneity in the winner's premium, motivated by the background discussion in Section III. Specifically, we will examine heterogeneity by state-level measures of corruption and level of position in government, both of which are associated, at least anecdotally, with scope for rent extraction.

If the higher asset accumulation of winners versus runners-up may be attributed to rent-seeking behavior, then we expect to see a greater impact of electoral success on asset growth in high-corruption constituencies. We present in table 5 results based on several measures of state-level corruption. Given that our variation in corruption is at the state level, standard errors are clustered by state throughout the table. To account for the small number of clusters, we use the wild cluster bootstrap t method as suggested by Cameron, Gelbach, and Miller (2008). We begin, in columns 1 and 2, with the sample split on the basis of whether a constituency is located in a BIMARU state. The coefficient on Winner is twice as large for BIMARU relative to non-BIMARU states. In column 3, we use the full sample and include the interaction term Winner × BIMARU. The coefficient implies a winner's premium that is 0.136 higher in BIMARU-based constituencies, and the interaction term is significant at the 5 percent level.

In columns 4 and 5, we present results employing two alternative state-level measures of corruption, BIMAROU and TI Corruption. The point estimate for Winner × BIMAROU is 0.156 and is significant at the 1 percent level.[24] The direct effect of Winner is reduced to 0.104. In column 5, we find that the interaction term Winner × TI Corruption is positive and significant at the 5 percent level; its magnitude implies that a one standard deviation increase in corruption is associated with an incremental 1.3 percent (0.063/4.9) higher annual asset growth rate for election winners. In appendix table B.3 we include state per capita income interacted with Winner as a control in all regressions. This has a minimal effect on the magnitudes of the corruption-winner interactions. The estimates remain significant at conventional levels apart from the TI Corruption × Winner term, where the standard error increases threefold.

To the extent that the higher asset growth of election winners is the result of the advantage of office holding itself—rather than unobserved differences between candidates that are correlated with holding office—

[24] Given the larger point estimate using BIMAROU, it is not surprising that when we estimate (6) for Orissa alone, we obtain a relatively high estimate of the winner's premium of 0.28.

TABLE 5
WINNER PREMIUM AND STATE-LEVEL CORRUPTION

	Log(Final Net Assets)				
Variable	BIMARU (1)	Non-BIMARU (2)	(3)	(4)	(5)
Winner	.257***	.122**	.121**	.104*	.188***
	(.026)	(.051)	(.051)	(.054)	(.045)
Log(Initial Net Assets)	.681***	.743***	.721***	.720***	.718***
	(.022)	(.040)	(.029)	(.030)	(.031)
Winner × BIMARU			.136**		
Winner × BIMAROU				.156***	
				(.059)	
Winner × TI Corruption					.063**
					(.027)
Constant	5.697***	4.672***	5.033***	5.051***	5.080***
	(.324)	(.612)	(.450)	(.454)	(.471)
Observations	386	754	1,140	1,140	998
R^2	.842	.83	.833	.834	.833
Annual growth premium (%):					
Winner	5.24	2.49	2.4	2.12	3.82
Winner × BIMARU			2.77		
Winner × BIMAROU				3.17	
Winner × TI Corruption					1.28

NOTE.—This table presents results based on several measures of state-level corruption. In cols. 1 and 2, the sample is split on the basis of whether a constituency is located in a BIMARU state, and the regression equation estimated is

$$\log(\text{Final Net Assets}_{ic}) = \alpha_c + \beta \times \text{Winner}_{ic} + \delta \times \log(\text{Initial Net Assets}_{ic}) + \epsilon_{ic}.$$

The dependent variable, log(Final Net Assets$_{ic}$), is the logarithm of net wealth at the end of the legislative period. The term α_c is a constituency fixed effect, Winner$_{ic}$ is the dummy for winning the initial election ($t = 0$), and log(Initial Net Assets$_{ic}$) is the logarithm of the initial net assets of the politician. In col. 3, we use the full sample and include an interaction term Winner × BIMARU. In cols. 4 and 5, we present results employing two alternative state-level measures of corruption, BIMAROU and TI Corruption. Bootstrapped standard errors clustered at the state level are given in parentheses (Cameron et al. 2008). The reported constant is the average value of the fixed effects. Finally, we convert our point estimates into annual asset growth premiums (point estimate divided by 4.9; the average legislative period in our sample is 4.9 years).

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.

there are two further predictions that suggest themselves. First, elected officials who are members of the ruling party or coalition should be better placed to benefit from holding office. Second, higher-level offices, where the potential for rent seeking is greatest, should also be associated with particularly high asset growth. It is of particular note, in considering these two further hypotheses, that state-level legislators' official salaries do not depend at all on affiliation with the ruling coalition and that ministers' official salaries are only slightly higher than those of

rank-and-file politicians, while the time commitment required of minister positions is much greater.

We begin in table 6 by comparing the returns of ruling party politicians to the returns of those who were elected but were not part of the majority party or coalition. We denote ruling party or coalition members by the indicator variable Government and include it as well as the interaction term Government × Winner as covariates in equation (6). The coefficient on the interaction term is 0.606, significant at the 10 percent level, while the direct effect of government is negative and large in magnitude (−0.217), though not significant (p-value = .207). The direct effect of Winner is negative, though not significant. Overall, our estimates indicate that the benefits of winning public office, relative to outside options, accrue exclusively to those who are part of the ruling government.

We next explore the effect of membership in the Council of Ministers on asset accumulation. Column 2 presents the results of our basic specification in equation (6), augmented by the inclusion of Minister, an indicator variable denoting membership on the council. The coefficient on Minister is 0.602, significant at the 1 percent level, implying a more than 12 percent higher asset growth rate, relative to nonminister winners.[25] The winner's premium is reduced to 0.083, implying that a significant fraction of the overall winner's premium is the result of very high asset growth rates for high-level politicians.[26] In column 3, we include both Minister and Government × Winner as covariates. The coefficient on Minister falls modestly, to 0.534, while the coefficient on Government × Winner falls by about a third and is no longer significant at conventional levels (p-value = .172). This indicates that a large fraction of the benefits to being a member of the governing party are the result of control over the Council of Ministers.

The primary concern in interpreting our results on the asset growth of ministers is that it could reflect the higher outside earnings of those with the skills and experience to obtain ministerial positions. To account for the unobserved attributes of "minister quality" candidates, we compare the returns of politicians who served as ministers during 2003–12 to those of elected politicians who did not hold ministerial posts during 2003–12 but had served as a minister in a prior period. We argue that these former ministers—who were no longer in the cabinet primarily

[25] Note that since all ministers are also election winners, it is not appropriate to include a Winner × Minister term.

[26] When we limit the sample to close elections, decided by margins of 10, 5, and 3 percent, respectively, the point estimates for Minister—particularly for the 5 percent threshold—are marginally smaller than for the full sample. However, in all cases, they are significant at least at the 5 percent level. (This is shown in app. table B.37.)

TABLE 6
THE EFFECT OF POTENTIAL INFLUENCE IN GOVERNMENT ON THE RETURNS TO OFFICE

	Log(Final Net Assets)		
VARIABLE	(1)	(2)	(3)
Winner	−.121	.083	−.096
	(.142)	(.051)	(.139)
Log(Initial Net Assets)	.729***	.715***	.721***
	(.031)	(.031)	(.031)
Government	−.217		−.181
	(.172)		(.167)
Government × Winner	.606*		.416
	(.316)		(.304)
Minister		.602***	.534***
		(.152)	(.159)
Constant	4.986***	5.125***	5.097***
	(.469)	(.467)	(.468)
Observations	1,140	1,140	1,140
R^2	.835	.838	.839
Annual growth premium (%):			
Winner	−2.47	1.70	−1.96
Government	−4.43		−3.69
Winner × Government	12.36		8.48
Minister		12.27	10.88

NOTE.—This table compares the returns of ruling party politicians to those who were elected but were not part of the majority party or coalition. We denote ruling party or coalition members by the indicator variable Government and include it as well as the interaction term Government × Winner in eq. (6). Minister denotes whether the constituency winner was appointed to the state's Council of Ministers. Robust standard errors are given in parentheses. The reported constant is the average value of the fixed effects. Finally, we convert our point estimates into annual asset growth premiums (point estimate divided by 4.9; the average legislative period in our sample is 4.9 years).

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.

because their party was thrown out of office—serve as a plausible comparison group to control for the unobserved abilities of sitting ministers.

Since only a small subset of politicians ever hold ministerial posts, we cannot perform this analysis for our constituency-matched sample. We therefore return to our original set of 2,810 recontesting candidates with usable affidavits and wealth greater than Rs. 100,000 (see Secs. II and III) and utilize all candidates who held a ministerial post during 2003–12 or the preceding legislative period. For this sample of present and past ministers, we show the results of a modified version of equation (6), including Minister as the main covariate of interest, in table 7. We include state fixed effects to account for unobserved differences in earnings opportunities across states. In our baseline results in column 1,

TABLE 7
RETURNS OF PAST AND PRESENT MINISTERS AND ASSET GROWTH DECOMPOSITION

	Log(Final Net Assets)				Log(Final Movable Assets)	Log(Final Immovable Assets)
Variable	(1)	(2)	(3)	Minister Quality (4)	(5)	(6)
Winner	.057	.060	−.117		.305***	.070
	(.099)	(.099)	(.172)		(.063)	(.065)
Minister	.312***	.343***	.439**	.236***	.311*	.372**
	(.083)	(.088)	(.176)	(.090)	(.165)	(.162)
Incumbent		.085	.058	.068		
		(.079)	(.151)	(.075)		
Log(Initial Net Assets)	.694***	.692***	.736***	.659***		
	(.027)	(.027)	(.051)	(.030)		
Log(Initial Movable Assets)					.629***	
					(.034)	
Log(Initial Immovable Assets)						.645***
						(.039)
Constant	5.461***	5.407***	4.818***	6.057***	5.929***	6.127***
	(.429)	(.436)	(.804)	(.497)	(.452)	(.576)
Observations	514	514	514	378	1,114	1,070
Fixed effects	State	State	District	State	Constituency	Constituency
R^2	.731	.732	.887	.785	.799	.792
Annual growth premium (%):						
Winner	1.16	1.22	−2.38		6.21	1.42
Minister	6.36	6.99	8.96	4.82	6.34	7.59
Incumbent		1.73	1.19	1.39		

NOTE.—The dependent variable in cols. 1–4 is the log of the politician's final net worth. The sample in cols. 1–3 consists of all recontesting candidates who held a ministerial post during either the current or the preceding legislative period, or both. In col 4, the sample is further refined to include only current ministers as well as past ministers who won the current election but whose party was not a member of the ruling state government ("minister quality" sample). In cols. 5 and 6, the dependent variable is the log of the politician's final movable and immovable assets, respectively, and the sample consists of the constituency-matched pairs. Robust standard errors are given in parentheses. The reported constant is the average value of the fixed effects. Finally, we convert our point estimates into annual asset growth premiums (point estimate divided by 4.9; the average legislative period in our sample is 4.9 years).

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.

the coefficient of 0.312 (significant at the 1 percent level) indicates that current ministers generate asset growth that is 6.4 percent (0.312/4.9) higher than that of politicians who previously served as ministers but do not in the 2003–12 electoral cycle. In column 2, we include Incumbent as a control to account for the possibility that current minister

status is simply picking up the effects of multiple terms in office, and we find that our point estimate increases marginally to 0.343. In column 3, we include fixed effects for India's districts, representing a much finer set of controls for unobserved differences across candidates. Our point estimate on Minister increases to 0.439. Finally, in column 4, we further refine the sample to include only (i) current ministers and (ii) past ministers who won the current election but whose party was not a member of the ruling state government. This subsample allows us to tease out another "government effect": politicians of both groups won the current election and held a ministerial post at least once but differ in that only one group's party was part of the government. Put differently, while the groups are very comparable in many dimensions, only the current ministers exercise control over large budgets during the period we study. The point estimate of Minister for this subsample is 0.236, significant at the 1 percent level. While not dispositive, this evidence strongly suggests that at least some component of the high asset growth for state ministers is likely the result of minister status itself rather than unobserved characteristics correlated with holding that office.

In the remaining two columns in table 7, we disaggregate assets into *Movable Assets*, holdings such as cash, bank deposits, and jewelry, and *Immovable Assets*, such as land and buildings (see the full definition in Sec. II). As noted in Section III, land acquisition is one channel through which politicians have been caught misusing their public offices. We find that, on the basis of public asset disclosures, this is likely to be more prevalent among high-level politicians. The coefficient on Winner is a highly significant predictor of growth in movable assets, implying a winner's premium of 6.22 percent annually. The magnitude of the coefficient on Minister in column 5 implies a further premium in movable asset growth of 6.35 percent annually, significant at the 10 percent level. For immovable assets, the minister growth premium is 7.59 percent and is significant at the 5 percent level, while the winner's premium is small in magnitude and statistically insignificant. Note that immovable assets constitute, on average, about three-quarters of a candidate's total assets, so this difference in form of asset accumulation helps to accentuate the differential rate of asset growth for ministers versus rank-and-file MLAs.

We next turn to examine the effect of incumbency and, more generally, the impact of having more prior experience in government on asset accumulation. In table 8 we include the interaction term Incumbent × Winner as a covariate. In column 1, we observe that its coefficient is very large in magnitude, 0.75, and significant at the 1 percent level. The point estimate on the direct effect of Incumbent is −0.29, implying that at least part of the reason for the larger winner's premium among incumbents is the low earnings of incumbents who fail to be reelected. This indicates

TABLE 8
INCUMBENCY

	Log(Final Net Assets)		
VARIABLE	(1)	(2)	(3)
Winner	−.106	−.145	−.136
	(.105)	(.104)	(.106)
Log(Initial Net Assets)	.709***	.707***	.711***
	(.032)	(.031)	(.032)
Incumbent	−.288**	−.276**	−.275**
	(.127)	(.126)	(.131)
Incumbent × Winner	.751***	.651***	.685***
	(.238)	(.236)	(.247)
Minister		.537***	.564***
		(.156)	(.158)
Prior Member			−.036
			(.115)
Prior Member × Winner			−.126
			(.204)
Constant	5.340***	5.356***	5.314***
	(.477)	(.474)	(.477)
Observations	1,140	1,140	1,140
R^2	.837	.841	.841
Annual growth premium (%):			
Winner	−2.15	−2.97	−2.77
Incumbent	−5.88	−5.62	−5.60
Incumbent × Winner	15.31	13.28	13.97
Minister		10.94	11.49

NOTE.—The table shows results for the constituency fixed-effects regression model and investigates the effects of incumbency. The log of politicians' Final Net Assets is the dependent variable. Winner = 1 if the politician won the initial election ($t = 0$) and 0 if the politician did not win. Incumbent is the dummy for incumbency. We also include an interaction term between Incumbent and Winner. Minister indicates whether the constituency winner was appointed to the state's Council of Ministers. In col. 3, we also include a dummy variable, Prior Member, which indicates whether the candidate won the constituency election at $t = -2$, as well as its interaction with Winner. Robust standard errors are given in parentheses. The reported constant is the average value of the fixed effects. Finally, we convert our point estimates into annual asset growth premiums (point estimate divided by 4.9; the average legislative period in our sample is 4.9 years).

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.

that incumbent politicians may have weak private-sector employment opportunities after spending a term in office. In column 2, we include Minister as a control since attainment of high-level positions is correlated with tenure in state politics (the correlation between Minister and Incumbent for members of the ruling party is .21). The inclusion of this control reduces the coefficient on Incumbent × Winner marginally, to 0.65 (significant at the 1 percent level), and has little effect on other coefficients. Finally, in column 3, we control for whether a candidate was

elected to the assembly at $t = -2$ (i.e., the election that precedes the pair of elections we study here by two periods), denoted by the indicator variable *Prior Member*. The inclusion of Prior Member and its interaction with Winner has no effect on the measured effects of incumbency.

To recap our results thus far, we observe higher asset growth for politicians relative to runners-up, particularly in more corrupt states and for politicians who are incumbents or ministers.[27] These results fit with a model of politician rent seeking in which opportunities for rents grow with experience and progression through the political hierarchy.

We conclude this section by looking at the effect of a number of other personal and constituency attributes on candidates' asset growth. A measure of market earnings potential often employed in the labor literature is education. In column 1 of table 9, we include log(Years of Education) as a control and also its interaction with Winner. In keeping with prior evidence on the returns to education, the coefficient on the direct effect of log(Years of Education)—reflecting earnings for nonwinners—is positive though not significant at conventional levels (p-value = .11). Its interaction with Winner is negative, and its coefficient, −0.585, indicates a relatively modest return to public office for politicians with higher levels of education, who are likely to have relatively lucrative options in the private labor market.

In column 2, we include a measure of per capita income, approximated by the average state-level per capita net domestic product between 2004 and 2009, log(Income per Capita), taken from the Reserve Bank of India. The coefficient on the interaction of income and Winner is negative, though small in magnitude and not statistically significant.[28]

In column 3, we consider the set of constituencies reserved for members of disadvantaged groups, so-called Scheduled Tribes and Castes (SC/ST). The interaction term SC/ST_Quota × Winner is significant at the 5 percent level (p-value = .016) and implies a winner's premium in asset growth of about 6–7 percent for constituencies reserved for SC/ST candidates. There are two primary explanations for the relatively high winner's premium for SC/ST-designated constituencies. First, since these seats are reserved for a limited set of potential candidates, this may slacken electoral competition, allowing candidates to extract greater rents without fear of losing their positions. Alternatively, SC/ST politicians may have

[27] While we report these results in separate tables for ease of exposition, when we include interactions of Winner with both BIMARU and Incumbent as well as the direct effect of Minister in the same specification, our results are virtually unchanged. We have limited ability to examine heterogeneity in the effect of minister status, given the small number of ministers in our sample. Neither Incumbent × Minister nor Minister × BIMARU approaches significance in analyses that include these interaction terms. (This is shown in app. table B.38.)

[28] Results are nearly identical when using a district-level measure of household income for 2008 instead. (This is shown in app. table B.39.)

TABLE 9
OTHER CANDIDATE CHARACTERISTICS

	Log(Final Net Assets)					
VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)
Winner	1.722**	.852	.108**	.110**	.135***	−.175
	(.677)	(.922)	(.053)	(.052)	(.051)	(.508)
Log(Initial Net Assets)	.714***	.720***	.723***	.725***	.726***	.714***
	(.033)	(.032)	(.031)	(.024)	(.030)	(.034)
Log(Years of Education)	.291					
	(.184)					
Log(Years of Education) × Winner	−.585**					
	(.254)					
Winner × log(Income per Capita)		−.067				
		(.091)				
SC/ST–Quota × Winner			.321**	.330***		
			(.132)	(.127)		
SC/ST–Quota				−.311**		
				(.128)		
Female					−.549**	
					(.225)	
Winner × Female					.566*	
					(.307)	
Winner × log(Base Salary)						.034
						(.055)
Constant	4.359***	5.054***	5.001***	5.024***	4.998***	5.146***
	(.657)	(.475)	(.460)	(.363)	(.458)	(.502)
Observations	1,100	1,140	1,140	1,140	1,140	1,035
R^2	.84	.833	.835	.766	.835	.841

NOTE.—Other characteristics analyzed include education, average income per capita, constituencies reserved for SC/ST candidates, gender, MLA base salaries, and their interactions with winner. Log(Years of Education) is the logarithm of 1 plus years of education the candidate has received. Income per Capita measures average state-level per capita net domestic product between 2004 and 2009. SC/ST–quota is a dummy for whether or not the constituency of the candidate is that of a disadvantaged group, so-called Scheduled Tribes and Castes (SC/ST). Female is the dummy for the gender of the candidate. Robust standard errors are given in parentheses. The reported constant is the average value of the fixed effects.

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.

less lucrative private-sector options as a result of discrimination, lower unobserved skill levels, or weaker labor market opportunities in SC/ST-dominated areas. While we cannot include both the direct effect of SC/ST_Quota and constituency fixed effects in a single specification, column 4 shows the direct effect of SC/ST quotas with a coarser set of fixed effects at the district level. There are approximately half as

many districts as constituencies in our main sample. We find a very similar coefficient on the interaction term SC/ST_Quota × Winner in this specification—approximately 0.33—while the direct effect of SC/ST_Quota is −0.31. These estimates suggest that among runners-up, SC/ST politicians fare significantly worse than other candidates, consistent with the high winner's premium in SC/ST constituencies resulting in large part from different private-sector opportunities.

We show the interaction of Female and Winner in column 5. The coefficient is positive and marginally significant. Finally, in column 6, we interact Winner with log(Base Salary). We find no evidence that the winner's premium is higher in states with more generous official salaries for legislators, implying that it is unlikely that official salaries play a major role in the differential asset accumulation of elected officials.

C. Regression Discontinuity Design

An alternative identification strategy is based on an RD design, with the winner's premium identified from the winner-loser differential in close elections. In this subsection, we explicitly model the value of winning using RD methods. We show a series of figures that depict our tests for discontinuities around the winning threshold, followed by estimates of winner-loser discontinuities.

We calculate the discontinuity using a local linear regression approach as suggested by Imbens and Lemieux (2008) and employed by Querubin and Snyder (2011) in a context similar to our own. Specifically, we augment (6) by the variable Margin_{ic} and use the subsample of elections that were decided by margins of 5 percent or less.[29] As shown in table 3, covariates for winners and runners-up are fairly balanced for this set of close elections.[30]

The scatterplots and lines of best fit we show alongside our estimates of the winner's discontinuity are produced using common methods developed in the RD literature (e.g., DiNardo and Lee 2004; Imbens and

[29] This is comparable to the regression analyses above, limiting the sample to elections decided by margins of 5 percent or less. In app. tables B.40–B.44, we repeat all our regression analyses using this subsample and find that the results are almost always very similar in terms of both magnitudes and statistical significance. There are two differences worth noting. First, the minister premium based on the set of close races is lower than for the full sample and is closer to the figure we obtain with our analysis that exploits ex-ministers as the counterfactual. Interestingly, when the minister premium is measured on the basis of the ex-minister counterfactual, our estimates are almost the same whether we use the full sample or the subsample of close elections. Second, the difference in movable vs. immovable asset growth for rank-and-file MLAs vs. ministers is even sharper for the close election subsample, where we find no effect of minister status on movable assets (and no effect of winner status on immovable assets).

[30] For robustness, we also repeat the analysis for different subsamples and including higher-order polynomials in Margin.

Lemieux 2008; Angrist and Pischke 2009). First, we generate residuals by regressing log(Final Net Assets) on candidate observables, including log(Initial Net Assets), gender, incumbency, and age, but excluding Winner and Margin. We next collapse and plot the residuals on margin intervals of size 1 percentage point (margins ranging from −25 to +25) and also plot estimates of the following specification:

$$\bar{R}_i = \alpha + \tau \cdot D_i + \beta \cdot f(\text{Margin}(i)) + \eta \cdot D_i \cdot f(\text{Margin}(i)) + \epsilon_i, \quad (7)$$

where $\bar{R}_i$ is the average residual value within each margin bin i, Margin(i) is the midpoint of margin bin i, D_i is an indicator that takes a value of one if the midpoint of margin bin i is positive and a value of zero if it is negative, and ϵ_i is the error term;[31] $f(\text{Margin}(i))$ and $D_i \cdot f(\text{Margin}(i))$ are flexible fourth-order polynomials.

In columns 1–7 of table 10, panel A, we show discontinuity estimates of (6) using local linear regressions as described above, while in figure 2, panels *A*–*G*, we present accompanying graphs to illustrate visually our discontinuity estimates.[32] We additionally present our discontinuity estimates based on the procedure employed in our graphs in panel B of table 10 to allow for a comparison of discontinuity estimates illustrated in the graphs and those obtained from local linear regressions.[33]

For the full constituency-matched sample, the discontinuity estimate indicates a jump in the residual values around the threshold. The point estimate of τ is 0.236 and is statistically significant at the 10 percent level, as shown in column 1 of table 10, panel A. (In app. fig. 5 we show an analogous figure for log(Initial New Assets); for initial wealth, we observe no discontinuity at the victory threshold.) The estimate employing residual data generates a similar though slightly smaller discontinuity, 0.207. Next, in columns 2 and 3, we partition the sample into BIMARU and non-BIMARU constituencies (the corresponding graphs are shown in fig. 2, panels *B* and *C*). We observe a winner's premium of 0.493 in BIMARU constituencies, significant at the 1 percent level (the residual data used to generate the figures produce a coefficient of 0.624). Our estimates for non-BIMARU constituencies indicate no difference in returns

[31] To address heterogeneity in the number of candidates and residual variance within each bin, we weight observations by the number of candidates and, alternatively, by the inverse of within-bin variance. Results are similar in both specifications.

[32] Note that the symmetries in the RD plots are the result of constituency fixed effects. Including constituency fixed effects allows us to control for observable and unobservable constituency-level heterogeneity such as differences in local labor markets or SC/ST–Quota.

[33] Note that while the scatterplots we show are generated via collapsed data, the results reported in panel B of table 10 use raw (i.e., uncollapsed) residuals. As can be seen, the estimates of discontinuities using this two-step approach are quantitatively and qualitatively very similar to those of the local linear regressions that we employ as the benchmark specification.

TABLE 10
REGRESSION DISCONTINUITY DESIGN

	Constituency Sample						
	All Winners (1)	BIMARU (2)	Non-BIMARU (3)	Ministers (4)	Nonministers (5)	Incumbent (6)	Nonincumbent (7)
	A. Estimation Using Local Linear Regressions						
Winner	.236*	.493***	.115	.773***	.168	.310*	−.168
	(.138)	(.180)	(.188)	(.252)	(.155)	(.160)	(.259)
p-value		.0297		.0005		.0167	
Observations	440	162	278	50	390	325	115
R^2	.871	.889	.869	.932	.869	.87	.91
	B. RD Design Using Residuals						
Winner	.207*	.624***	−.034	.627***	.125	.286**	−.056
	(.115)	(.149)	(.154)	(.184)	(.127)	(.131)	(.231)
p-value		.002		.0213		.1921	
Observations	1,102	380	722	150	952	818	284
R^2	.021	.09	.015	.229	.01	.05	.041

NOTE.—In this table, we report results from RD specifications. In panel A, we present discontinuity estimates using local linear regressions for the subsample of elections that were decided by margins of 5 percent or less. In col. 1, we report results using the entire sample of constituency-matched winners and runners-up. In cols. 2 and 3, we partition the sample into BIMARU and non-BIMARU constituencies. Column 4 includes only ministers with corresponding runners-up, and col. 5 includes only winners not appointed to the Council of Ministers and corresponding runners-up. Finally, in cols. 6 and 7, we disaggregate the sample on the basis of whether an incumbent is standing for reelection in the constituency. Column 6 shows results for the sample of constituencies in which an incumbent was standing for reelection; col. 7 uses the sample of nonincumbent constituencies. In panel B, we present discontinuity estimates in residuals at the winning threshold according to eq. (7) and corresponding to the plots shown in fig. 2. Specifically, in a first step, we generate residuals by regressing log(Final Net Assets) on candidate observables, including log(Initial Net Assets), gender, incumbency, and age and a constituency fixed effect but excluding the winner dummy and margin. In a second step we run the following regression:

$$\text{res}_{ic} = \alpha + \tau \cdot D_{ic} + \beta \cdot f(\text{Margin}_{ic}) + \eta \cdot D_{ic} \cdot f(\text{Margin}_{ic}) + \epsilon_{ic},$$

where res_{ic} is the residual obtained in the first-step regression, D_{ic} is the dummy for winning, and $f(\text{Margin}_{ic})$ are flexible fourth-order polynomials. The goal of these functions is to fit smoothed curves on either side of the suspected discontinuity. The magnitude of the discontinuity, τ, is estimated by the difference in the values of the two smoothed functions evaluated at zero. Coefficients with robust standard errors are given in parentheses. *P*-values for tests of differences between estimated coefficients are reported for all contrasts.

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.

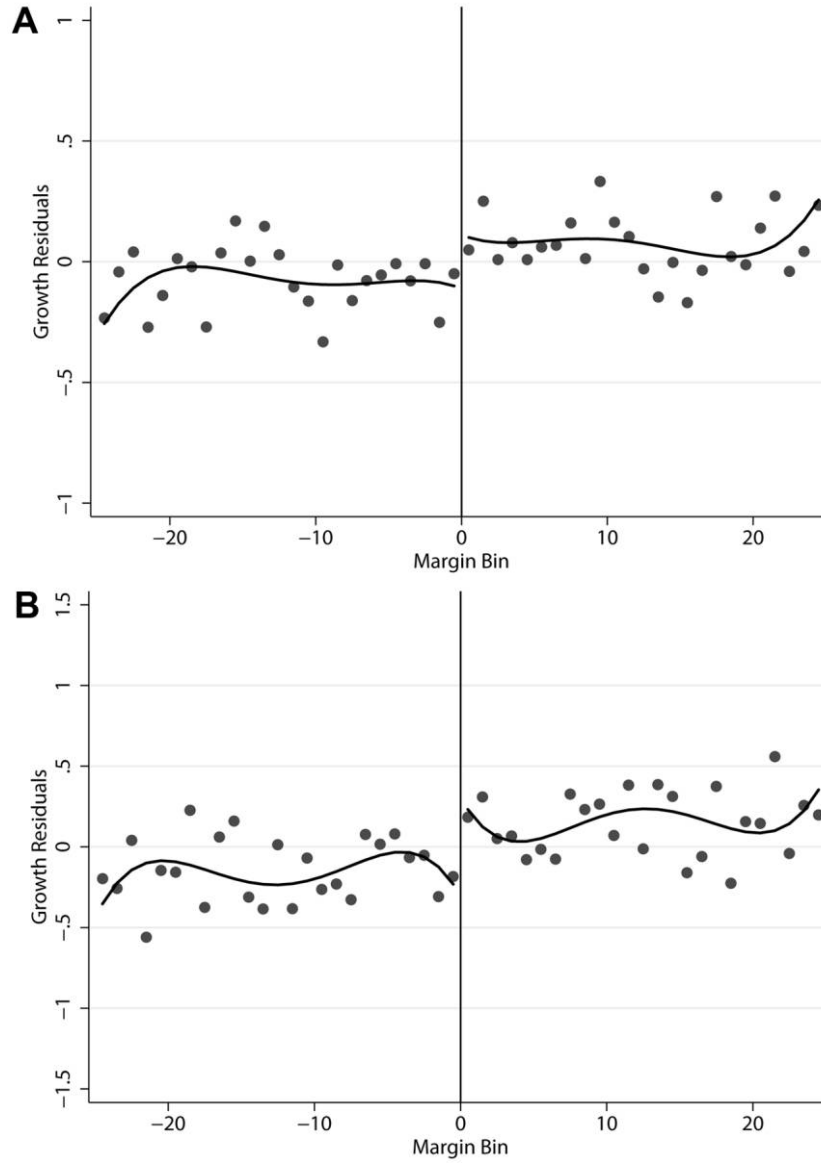

FIG. 2.—Regression discontinuity design. This figure investigates residuals obtained by regressing log(Final Net Assets) on candidate observables, including log(Initial Net Assets), gender, incumbency, and age but excluding winner dummy and margin as a function of winning margin for the sample of constituency-matched candidates. We first collapse residuals on margin intervals of size 1 percentage point (margins ranging from −25 to +25) and then estimate the following equation: $\bar{R}_i = \alpha + \tau \cdot D_i + \beta \cdot f(\text{Margin}(i)) + \eta \cdot D_i \cdot f(\text{Margin}(i)) + \epsilon_i$, where $\bar{R}_i$ is the average residual value within each margin bin i, Margin(i) is the midpoint of the margin bin i, D_i is an indicator that takes a value of one if the midpoint of margin bin i is positive and a value of zero if it is negative, and ϵ_i is the error term. The terms $f(\text{Margin}(i))$ and $D_i \cdot f(\text{Margin}(i))$ are flexible fourth-order polynomials. Panel *A* shows results using the sample of all winners and runners-up. In panels *B* and *C* we partition the sample on the basis of whether a constituency was located in a BIMARU state.

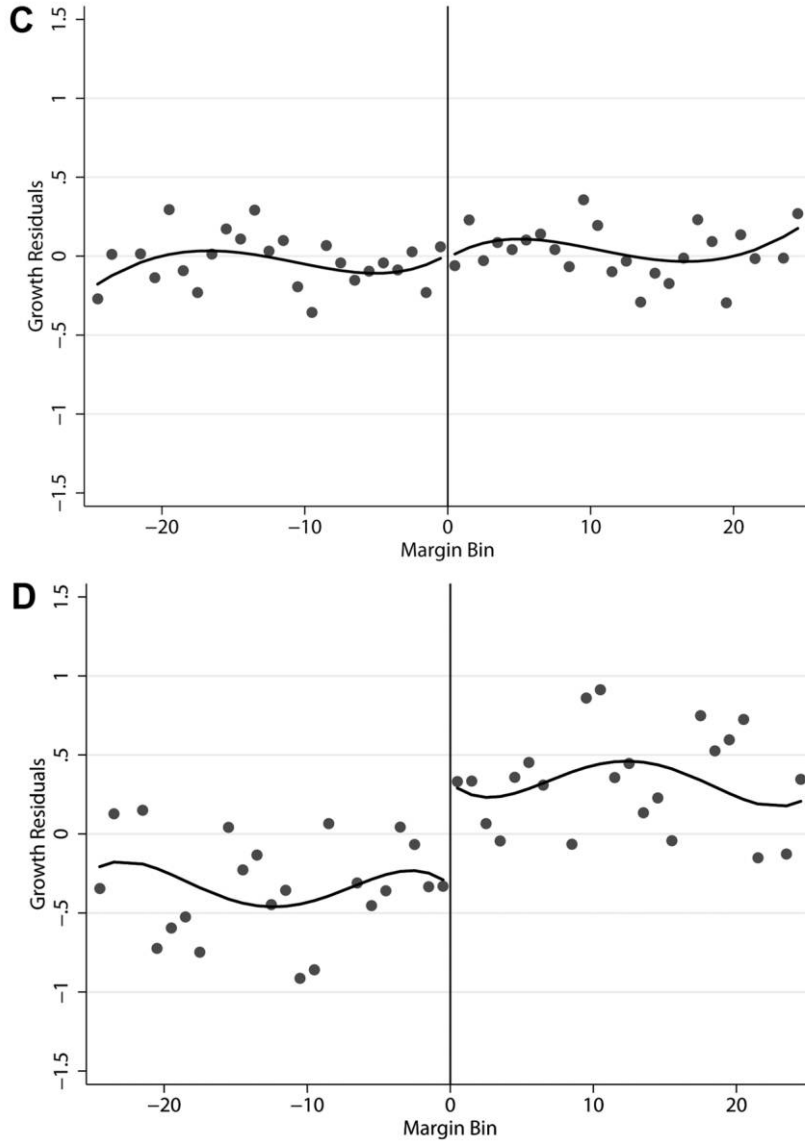

FIG. 2 (*Continued*).—Panel *D* includes only ministers with corresponding runners-up; panel *E* includes only winners who were not appointed to the Council of Ministers with corresponding runners-up. Finally, in panels *F* and *G*, we disaggregate the sample on the basis of whether an incumbent is standing for reelection in the constituency. Panel *F* shows results for the sample of constituencies in which an incumbent was standing for reelection; panel *G* shows the subsample of nonincumbent constituencies.

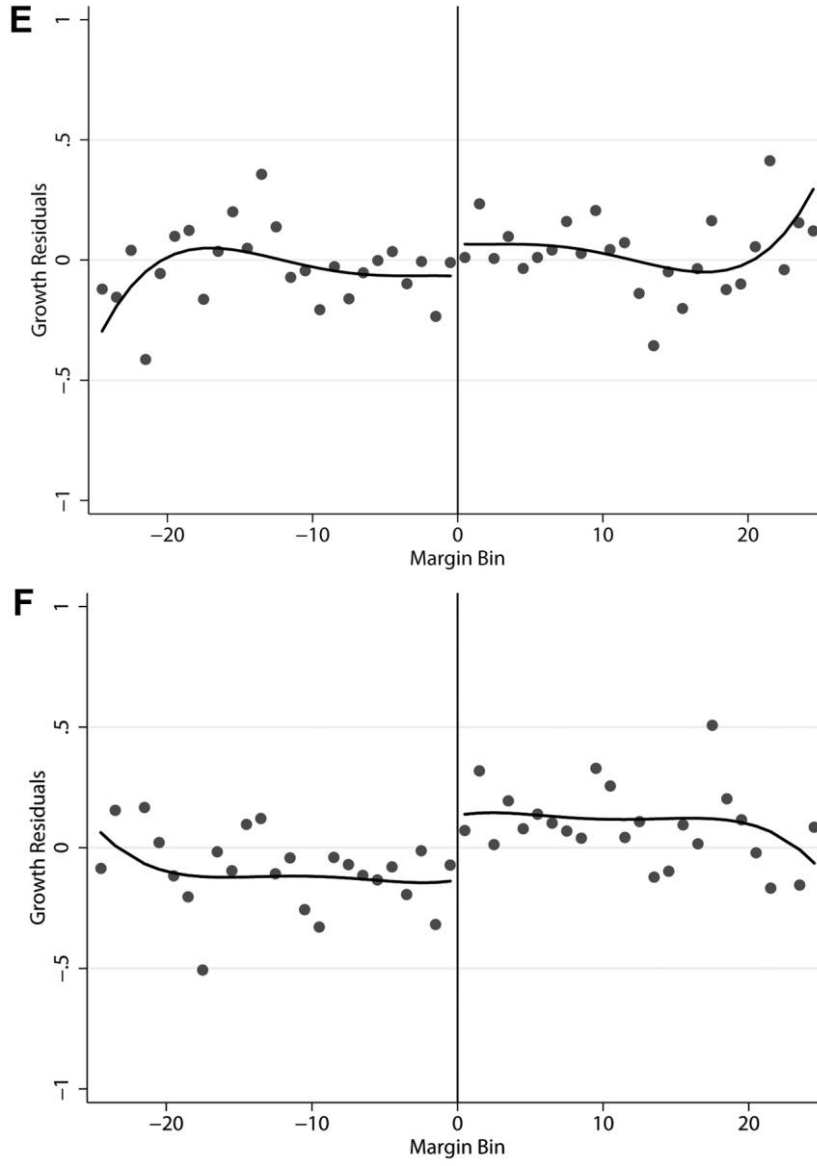

FIG. 2 (*Continued*)

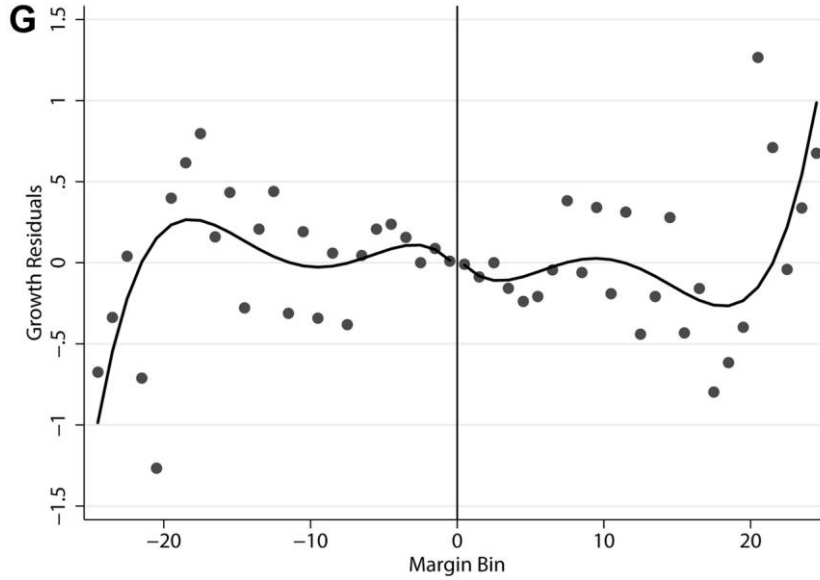

FIG. 2 (*Continued*)

for winners versus runners-up. Overall, these results are in line with those obtained from standard regression analyses.

Column 4 includes only ministers with corresponding runners-up. The point estimate of the discontinuity is 0.773, significant at the 1 percent level, a result qualitatively similar to that obtained through the regression analysis in the previous section. The premium is somewhat smaller in magnitude, 0.627, when estimated using the residual data, as indicated in figure 2, panel *D*. On the other hand, the subsample of nonminister winners and their corresponding runners-up does not indicate a statistically distinguishable jump: the estimate of the discontinuity is 0.168 with a standard error of 0.155 (see also fig. 2, panel *E*). In columns 6 and 7, we disaggregate the sample on the basis of whether an incumbent is standing for reelection in the constituency (see also fig. 2, panels *F* and *G*). The coefficient estimate of the discontinuity for the incumbent subsample is 0.310, significant at the 10 percent level (0.286 and significant at the 5 percent level for the residual data). By contrast, for the sample of nonincumbent constituencies, we observe no jump at the threshold (the point estimate is −0.168 with a standard error of 0.259).[34]

[34] As an alternative approach to generating this table, we employed the procedure of Imbens and Kalyanaraman (2012) to calculate optimal bandwidths for each of our main analyses. These bandwidths average 4.94 percent, ranging from 4.23 percent to 6.36 percent

Finally, in figure 3 we plot kernel densities of log(Initial Net Assets) and age for the sample of constituency-matched candidates who were within a Margin of 5 percentage points ("close elections"). Panel *A* plots log(Initial Net Assets) densities for winners and runners-up, and panel *B* plots densities for Age. For both initial wealth and age, the Kolmogorov-Smirnov test for equality of the distribution function of winners and runners-up cannot be rejected at the 5 percent level (p-values of .979 and .099, respectively), providing some validation of our RD design.[35]

On the basis of these discontinuities, we can perform a simple back-of-the-envelope calculation to approximate the winner's premium in monetary terms. We do this by first calculating how winners' average wealth would have grown had they not won the election using the net asset growth rate of all constituency-matched runners-up and then comparing this average to the level of wealth accumulation using the discontinuity estimates from the RD design. Overall, for winners as a group, the estimated annual premium is approximately Rs. 1 million (US$20,000). However, for Ministers the winner premium is significantly larger, about Rs. 3.7 million per year ($74,000). These estimated premiums are much larger than the average salary of a state-level legislator, which is under Rs. 100,000, with very little variation as a function of seniority. They are also substantial as a fraction of candidates' initial assets, which are, on average, only about Rs. 10 million ($200,000)—implying a large impact in percentage terms.

D. Evidence from Seasoned Candidates

We analyze a restricted sample of constituencies in which both winner and runner-up are seasoned politicians, in the sense of both competing

depending on the subsample under consideration. The results using this approach, shown in app. table B.4, are broadly consistent with the findings we report in the tables below. One notable exception is that our basic result on the winner's premium is not statistically significant, though its point estimate is similar to that obtained with a 5 percent bandwidth. Despite this, the estimates using this approach do show a sharp difference in the winner's premium for BIMARU vs. non-BIMARU, with the BIMARU winner's premium significant at the 1 percent level.

[35] As a final note, our RD approach assumes that winners in close elections are broadly representative of the politicians who obtain public office and further that a close election is not a treatment in itself. For example, an MLA who wins by a narrow margin may be more focused on private-sector activities during his term in the expectation that he will soon be out of office. We cannot rule out such concerns. However, there are several patterns in the data that limit the extent to which this is likely to explain our results. First, election margin at $t = 0$ does not predict whether a winner chooses to stand for reelection; this is true for the full sample and also the subset of reasonably close (Margin ≤ 10) elections. For winners from $t = 0$ who do choose to stand for reelection, margin at $t = 0$ does strongly predict victory at $t = 1$; however, when we limit the sample to those candidates who won by a margin of 10 percentage points or less, this relationship disappears. The limited relationship between election margins and future electoral prospects suggests that the treatment effect of close elections themselves is likely to be relatively modest.

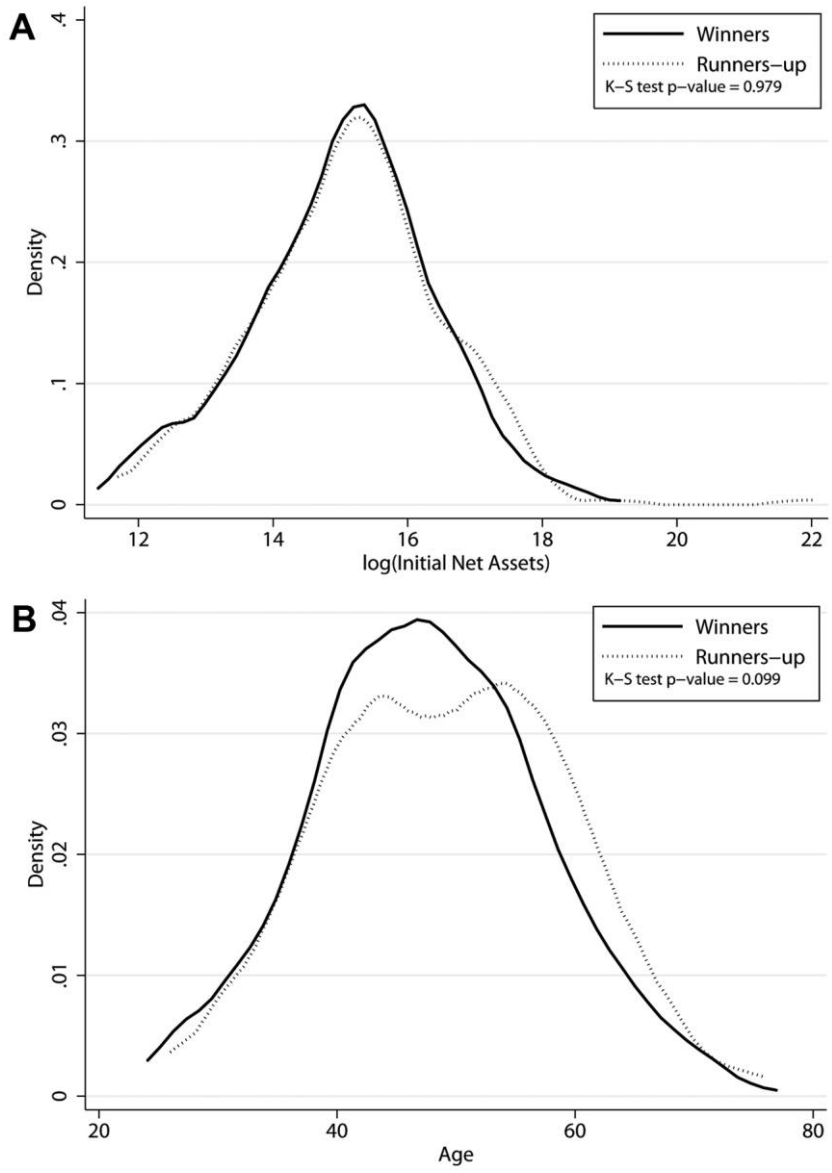

FIG. 3.—Kernel densities of observable characteristics in close elections. This figure plots Epanechnikov kernel densities of log(Initial Net Assets) and Age for the sample of constituency-matched candidates who were within a margin of 5 percentage points ("close elections"). Panel *A* plots log(Initial Net Assets) densities for winners and runners-up, and panel *B* plots densities for Age. K-S = Kolmogorov-Smirnov test for equality of distributions. The chosen bandwidth is the width that would minimize the mean integrated squared error if the data were Gaussian and a Gaussian kernel were used.

TABLE 11
BISWANATH ASSEMBLY CONSTITUENCY (Assam)

Year	Winner	Percent	Party	Runner-Up	Percent	Party
2011	Prabin Hazarika	45.51	AGP	Nurjamal Sarkar	44.09	INC
2006	Nurjamal Sarkar	41.76	INC	Prabin Hazarika	39.46	AGP
2001	Nurjamal Sarkar	48.55	INC	Prabin Hazarika	44.3	AGP
1996	Prabin Hazarika	42.62	AGP	Nurjamal Sarkar	31.76	INC
1991	Nurjamal Sarkar	46.49	INC	Prabin Hazarika	17.39	AGP

in at least two elections prior to the elections we consider in our analysis and in which both were either winner or runner-up in these earlier elections. Repeated contests of this sort between seasoned politicians are surprisingly common in our data: our restricted sample contains 100 candidates from 50 constituencies. We provide one illustrative example in table 11 for the Biswanath Assembly Constituency in the state of Assam. In this case, both candidates, Prabin Hazarika and Nurjamal Sarkar, have contested all elections since 1991 and have been either a winner or a runner-up in each instance. We argue that such career politicians are less likely to exit because of party decisions or a reevaluation of prospects for future electoral success since, by construction, we include only politicians who have performed well as candidates in the recent past. This subset of active seasoned politicians arguably represents more comparable treatment and control candidates than the full sample of recontesting politicians.[36]

We focus our analysis on this set of active seasoned candidates in figure 4, employing the same RD design as in Section V.C above. Figure 4 shows residuals from the regression of log(Final Net Assets) on candidate observables, excluding Winner and Margin, as well as the RD design estimated polynomial (see Sec. V.C for details), and indicates a clear discontinuity around the winning threshold. The point estimate of the discontinuity is 0.52—somewhat larger than the RD design estimated winner's premium using the full sample—and is significant at the 10 percent level.

E. Evidence from Bihar's Hung Assembly

We conclude this section by presenting some results from a quasi experiment. In Bihar's legislative assembly election in February 2005, no indi-

[36] At the same time, it is important to note that these politician-pairs are those who may have relatively limited outside options (hence their repeated election bids). So while we argue that our seasoned politician comparison represents a legitimate causal estimate, it is one that may have limited external validity.

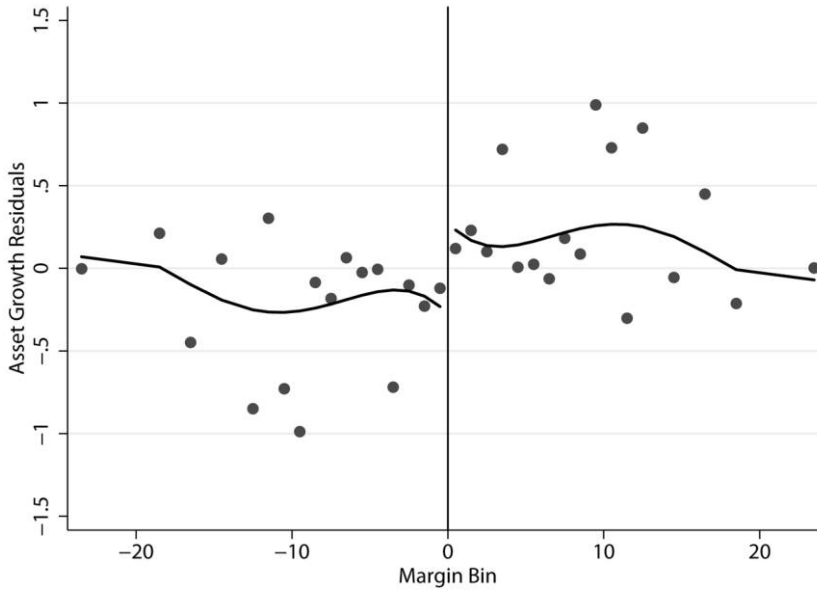

FIG. 4.—Seasoned candidates. We investigate the winner's premium for the subsample of seasoned politicians. The point estimate of the discontinuity is 0.521 and is significant at the 10 percent level (t-statistic = 1.84).

vidual party gained a majority of seats, and attempts at forming a coalition reached an impasse. As a result of this hung assembly, new elections were held in October/November of the same year.[37] In a significant fraction of these contests, repeated within less than a year of one another, the initial winner was defeated in the follow-up election. For these constituencies, we come as close as possible to observing the counterfactual of winners reassigned to runner-up, and vice versa.

From the 243 constituencies contested in the February election, we sample those in which both the winner and runner-up competed again in the October election of the same year and emerged as winner/runner-up or runner-up/winner in this later election. This leaves a sample of 260 candidates (130 constituencies) for which we analyze the probabilities of winning the October election as a function of the winning margin in the February election. Overall, winners in the February 2005 election won in the later contest only 66.2 percent of the time. Further, as one narrows the February 2005 margin, this advantage decreases monotonically, as shown in table 12. At the 5 percent threshold, the probability that the initial winner also won the second election is only 52.2 percent and is statistically indistinguishable from 50 percent. This suggests a

[37] Bihar was under the direct rule of India's federal government during this period.

TABLE 12
EVIDENCE FROM BIHAR'S HUNG ASSEMBLY (FEBRUARY 2005): RANDOMNESS OF CLOSE ELECTIONS

	PROBABILITY OF WINNING OCTOBER 2005 ELECTION (%)					
	(1)	(2)	(3)	(4)	(5)	(6)
Winner	66.2	63.2	60.9	58.6	52.2	50.0
Runner-up	33.8	36.8	39.1	41.4	47.8	50.0
Margin (February 2005)		< 20%	< 15%	< 10%	< 5%	< 1%
Elections	130	117	110	87	46	10

NOTE.—We present results from a quasi experiment using Bihar's hung legislative assembly. From the 243 constituencies contested in the February election, we sample those in which both the winner and runner-up competed again in the October election of the same year and emerged as winner/runner-up or runner-up/winner in this later election. We list the probabilities of winning the October election as a function of the winning margin in the February election. Standard errors of differences are reported in parentheses.

significant element of randomness for close elections in this sample of 46 constituencies.[38]

We compare the net asset growth of a treatment group and a control group. The treatment group consists of candidates who were runners-up in the February 2005 election but won in the October 2005 contest, while the control group comprises candidates who were winners in February 2005 but runners-up in the October election. These cases in which winners and losers were switched as a result of the hung assembly provide a measure of the returns to public office with a straightforward causal interpretation. We look at all such candidates whose winner status shifted between these two 2005 elections and also chose to run again in 2010, so we can calculate their asset growth rates. The resulting set of candidates is relatively small—25 winners and 26 runners-up—which limits our statistical power.

We present this comparison in table 13, where we observe that the annual net asset growth of the treatment group is, on average, 12.76 percent higher than that of the control group (28.88 vs. 16.12 percent), a difference that is significant at the 5 percent level. In column 2, we limit the sample to the constituency-matched samples in which winner and runner-up status switched and both candidates ran in the 2010 election. This reduces the sample to 11 constituencies—22 candidates—and we

[38] Recent papers by Snyder (2005), Caughey and Sekhon (2010), Carpenter et al. (2011), and Folke, Hirano, and Snyder (2011) critically assess RD studies that rely on close elections. There remains an active debate on whether close elections can really be considered a matter of random assignment. If sorting around the winning threshold is not random but close winners have systematic advantages, then the RD design may fail to provide valid estimates of the returns to office. The Bihar example provides at least suggestive evidence that close elections are relatively random in the context we consider in this paper.

TABLE 13
EVIDENCE FROM BIHAR'S HUNG ASSEMBLY (February 2005): ANNUAL NET ASSET GROWTH OF "SWITCHERS"

	(1)	(2)
Winner	.289	.195
Runner-up	.161	.137
Difference	.128**	.058
	(.064)	(.073)

NOTE.—In this table, we show the annual net asset growth of candidates whose status as winner/runner-up switched as a result of the hung assembly (Winner indicates election winners in the October election). In col. 1, we include all such candidates whose winner status shifted between these two 2005 elections, and in col. 2, we limit our analysis to the constituency-matched sample. Standard errors of differences are reported in parentheses.

** Statistically significant at the 5 percent level.

find a difference in the net asset growth between winners and runners-up of approximately 6 percent, roughly similar to the magnitudes we observe with the full sample. Given the small sample size, the difference in asset growth for the sample of 22 candidates is not statistically significant.

VI. Discussion of Results

The results documented above show a significant return to public office, which increases as legislators progress through the political hierarchy. Our focus on constituency-matched candidates in which the election was decided by a narrow margin ensures that these returns are benchmarked to similar "quality" individuals; yet the issue naturally arises whether these results generalize to the broader set of state assembly candidates. We assess this question, and consider possible alternative explanations for our results, in the discussion that follows. We conclude this section with a brief discussion of the implications of electoral accountability for our winner's premium estimates.

A. Selection Concerns

As we observed in our descriptive statistics, there exist several modest differences in predetermined characteristics between winners and runners-up. To examine the possible bias that could result from these different attributes of winners versus runners-up, we construct a predicted value of log(Final Net Assets) based on the observable characteristics log(Initial Net Assets), log(Years of Education), Criminal Record, Age and Age^2, Female, and Incumbent. We then examine whether Winner status is correlated with this predicted value. We find that Winner is negatively related to predicted log(Final Net Assets), though with a large standard error.

This is shown in table 14. This suggests that, if anything, selection based on these observables creates a downward bias in our estimates.

To assess empirically whether winners and runners-up select differently into the decision to rerun for office, we include in appendix table B.5 a probit analysis of whether predetermined attributes affect the proba-

TABLE 14
PREDICTED VALUES OF FINAL WEALTH AND WINNER

	Log(Final Net Assets)					
				Close Elections: |Margin| ≤ 5		
VARIABLE	Observed (1)	Predicted (2)	Predicted (3)	Observed (4)	Predicted (5)	Predicted (6)
Winner		−.021	−.078		−.069	−.159
		(.079)	(.105)		(.121)	(.163)
Winner × BIMARU			.0802			.182
			(.158)			(.241)
Minister			.231			.169
			(.163)			(.228)
Log(Initial Net Assets)	.712***			.665***		
	(.034)			(.054)		
Log(Years of Education)	−.097			−.217		
	(.121)			(.199)		
Criminal Record	.049			.108		
	(.090)			(.119)		
Female	−.288			−.13		
	(.188)			(.293)		
Age	−.012			.004		
	(.028)			(.042)		
Age^2	9.18E−05			−6.8E−05		
	(.000)			(.000)		
Incumbent	.068			.198**		
	(.063)			(.091)		
Constant	6.400***	16.06***	16.00***	6.045***	16.00***	15.88***
	(.858)	(.057)	(.074)	(1.140)	(.088)	(.115)
BIMARU			.178			.344*
			(.111)			(.178)
Observations	1,099	1,099	1,099	440	440	440
R^2	.837	0	.008	.867	.001	.03

NOTE.—In a first stage, we regress log(Final Net Assets) on candidate characteristics. In a second stage, we regress the predicted values of log(Final Net Assets) on the dummy for winning the election, Winner (col. 2). Column 3 further includes Minister and BIMARU interactions. *P*-values of a test of equality of the "placebo" coefficient (with predicted final wealth) and the "real" coefficient (with actual final wealth) are .000 for Winner, .0701 for Winner × BIMARU, and .003 for Minister. The regression is also run for close elections (cols. 4–6), where the vote share gap between the winner and runner-up was less than 5 percentage points (corresponding *p*-values are .0004, .1357, and .1244). Robust standard errors are given in parentheses. The reported constant is the average value of the fixed effects in cols. 1 and 4.

* Statistically significant at the 10 percent level.
** Statistically significant at the 5 percent level.
*** Statistically significant at the 1 percent level.

bility of standing for reelection and, more importantly, whether they differentially affect the probability of running again for winners versus runners-up. While many attributes affect the probability of standing for rerunning, there is little evidence of any differential selection of winners versus runners-up: For the full sample, only Age × Winner is significant (at the 10 percent level) in predicting the decision to rerun.

Finally, we note that a number of observed patterns in candidate attributes further reinforce the view that our estimates of β are, if anything, biased toward zero. First, consistent with the model, we observe a significantly higher exit rate among candidates, particularly runners-up, with low initial wealth. While these candidates were able to finance an initial campaign, they are most affected by negative shocks to wealth. Second, the data do not support the view that runners-up who choose not to run again for office have higher outside earnings options than those runners-up who stand for reelection (and hence remain in the sample). Indeed, we find the opposite to be true: Taking years of education as a proxy for outside earnings opportunities, we find that runners-up who opt to run for election again have 13.76 years of education on average, compared with 13.09 for those who do not stand for election the following time. This runs counter to the spare model outlined above but also suggests an additional selection on runners-up that may bias our results toward zero, assuming that education is positively correlated with private labor market outcomes. (While beyond the focus of this paper, the high education of candidates who choose to run despite an initial loss could plausibly result from more educated candidates placing a higher value on the nonpecuniary benefits of holding public office. If the ego benefits of public office are correlated with human capital—as suggested by, e.g., Besley [2004]—then high-education runners-up [who value the office for its own sake] will be more likely to run for office than low-education runners-up, all else equal.)

B. Alternate Explanations for the Winner's Premium

Our estimates of asset growth are based on disclosed wealth. If standing politicians face higher disclosure standards, this could plausibly generate a pure reporting-based winner's premium in observed asset growth. We note, however, that the most straightforward versions of this hypothesis would generate the opposite pattern for incumbents versus nonincumbents than what we observe: Nonincumbents at $t = 0$ would disclose few assets and, conditional on winning, would provide fuller disclosure at $t = 1$. Incumbents, by contrast, would provide relatively full disclosure for both elections conditional on winning, and hence observed asset growth of incumbents would be lower. Further, to the extent that standing politicians are better monitored in low-corruption states, the dis-

closure bias would predict a higher winner's premium in low-corruption states, again the opposite of the patterns observed in the data.

These arguments are not dispositive—more complicated models of disclosure bias can generate at least some of our findings—but the most straightforward cases of asset underreporting are biased against our findings on the cross-sectional correlates of the winner's premium.

Other alternate explanations for the winner's premium may relate to the differential consumption of winners and runners-up. For example, if winners substitute government perquisites for consumption while in office or shy away from conspicuous consumption that might offend voters, differential spending patterns between the two groups of candidates may generate higher asset growth among winners. We investigate this concern using data on durable goods consumption, such as motor vehicles and jewelry, and find that it is in fact higher for winners than for runners-up, particularly among those appointed to the Council of Ministers, which is at odds with the differential consumption hypothesis. Further, to the extent that conspicuous consumption would elicit greater voter backlash in low-corruption states, the differential consumption hypothesis would predict a greater winner's premium in low-corruption states, the opposite of the pattern we observe in the data.

Finally, we consider the possibility that election costs may be lower for incumbent politicians owing, for example, to their greater visibility and support of their parties.[39] As noted in our background discussion, there is no evidence of this based on formal campaign finance disclosures. It is still possible that politicians may underreport their true campaign expenditures or that differences in required campaign effort may lead to differences in winner and runner-up earnings. To examine this possibility, we look again at Bihar's hung parliament in 2005. As we describe above, Bihar held two elections in 2005. The first, in February, did not lead to the formation of a government, and a second election was held in October/November. This generates an interesting scenario for assessing the role of campaign finance in generating the winner's premium. First, since no government was formed, opportunities for rent extraction by winners were likely limited. Second, since this was a time of relatively intense electioneering, if the higher rate of asset accumulation of winners were the result of differential campaigning costs, we would expect any

[39] Note that we include these campaign costs in our asset growth calculations for both winners and runners-up. This is partly born of necessity, as we observe only candidates who rerun. However, we argue that if our interest is in estimating the benefits that politicians extract while in office, this is an appropriate control, as standing politicians must themselves incur the time and financial cost of running. Hence, if we wish to estimate the increment to assets that result from holding office, we should subtract these campaign expenses from both winners and their comparison group.

difference in asset growth due to campaign finance or effort to be particularly large during this period. We thus look at the asset disclosures of winner and runner-up candidates from the February election who chose to stand for election again in October/November (disclosures were required immediately prior to both elections).

Out of Bihar's 243 constituencies, 65 were decided within a margin of 5 percentage points during the February 2005 elections. After omitting candidates with missing affidavits and poor scans, we were able to analyze the asset growth of 82 candidates in these close constituencies, examining their asset accumulation between the two election dates. In appendix table B.6, we show that there is no winner's premium during this period, as might have been expected if campaign costs were a primary contributor to the higher asset growth of public officeholders.

C. Electoral Accountability and the Winner's Premium

The extent to which legislators extract financial returns from their positions may be limited by pressure from the electorate. We emphasize that the asset growth calculations we perform in this paper are based on data easily accessible via the Internet, and their availability has been widely reported in the Indian media. This is of particular concern if politicians rationally anticipate that high rent extraction will drastically reduce their reelection prospects and thus self-select out of rerunning. Then we will be selecting out the politicians with the highest asset growth, thus biasing our results downward. To evaluate the plausibility of this theory, in appendix table B.7, we examine whether there is any effect of high asset growth on election outcomes. While neither Winner nor Net Asset Growth significantly predicts election outcomes, the results point, if anything, in the opposite direction: the coefficient on Net Asset Growth is positive in column 1, and its interaction with Winner, capturing the effect of asset growth among election winners, is positive (col. 2). We also note that the negative coefficient on winner is consistent with a negative incumbency effect in India that was already observed in table 3.[40]

VII. Conclusion

In this paper, we utilize the asset disclosures of candidates for Indian state legislatures, taken at two points across a 5-year election cycle and

[40] In results not reported, we also find that legislators who win by large margins do not earn a higher winner's premium. Such a specification is, however, subject to extreme problems of unobserved heterogeneity: the large margin may result because of a candidate's effort or political skill, confusing the interpretation of the Winner × Margin interaction.

accessed through the country's Right to Information Act. We use these data to compare the asset growth of election winners versus runners-up to estimate the financial returns from holding public office relative to private-sector opportunities available to political candidates.

Our main findings suggest that the annual growth rate of winners' assets is 3–5 percent higher than that of runners-up. This effect is more pronounced among legislators in more corrupt regions of India, implying that the higher returns are likely associated with political rent extraction. We also find that the winner's premium is much higher for senior politicians—ministers and incumbents. This pattern is best explained by a model of rent seeking in which the financial benefits of office increase with experience and progression through the political hierarchy.

These findings have a number of implications for theories of politicians' behavior and the political process. First, to the extent that the winner's premium is driven by private agents "purchasing" influence, our results suggest that the influence of senior legislators is much more valuable than that of rank-and-file state assembly members. They may also imply that, from a financial perspective, the potential for long-term rewards from more senior positions may be more of a motivating factor to run for election than the short-run returns of a rank-and-file position. This is broadly consistent with a tournament model of politics in the spirit of Lazear and Rosen (1981), where participants compete for the high returns that only a small fraction of entry-level politicians will attain.

A few comments and caveats are in order in interpreting our findings. First, our results necessarily account only for publicly disclosed assets and hence may serve as a lower bound on any effect (though we note that nonpoliticians may also engage in hiding assets for tax purposes). This makes it all the more surprising that the data reveal such high returns for state ministers and those holding office in high-corruption regions. Additionally, we measure the returns to holding public office only while a politician is in power. To the extent that politicians profit from activities such as lobbying and consulting after leaving office, our estimates represent a lower bound on the full value of holding public office (Diermeier et al. 2005). Further, even if we assume transparent financial disclosure, the relatively modest returns from winning public office for lower-level or first-time politicians do not imply the near absence of corruption. Given the low salaries of legislators, they may be required to extract extralegal payments merely to keep up with their private-sector counterparts. Finally, our research design does not allow us to distinguish between explanations of the winner's premium based on adverse selection (i.e., the selection of more corrupt politicians in high-corruption regions) versus moral hazard (weaker constraints on rent seeking in high-corruption regions).

Our work also presents several possible directions for future work. Given the high returns we observe among ministers, it may be fruitful, with the benefit of additional data, to examine whether particular positions within the Council of Ministers are associated with high rents. One may also assess whether electoral accountability is affected by voter exposure to asset data, in the spirit of Banerjee et al. (2011). It may be interesting to explore the impact of the Right to Information Act itself: disclosure requirements may induce exit by winners who have extracted high rents in order to avoid possible corruption-related inquiries. Finally, we are unable in this work to uncover the mechanism through which asset accumulation takes place. We leave these and other extensions for future work, which might be enabled either by experimental intervention or by the accumulation of new data via the Right to Information Act.

Appendix

Proof of Proposition 1

We begin by restating the expression for $\hat{\beta}$:

$$\begin{aligned}\hat{\beta} &= \mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 1, z_i = 1] - \mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 0, z_i = 1] \\ &= R_{\mathcal{W}} - R_{\mathcal{L}} + \{\mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 1, z_i = 1] \\ &\quad - \mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 1, z_i = 0]\} \cdot P(z_i = 0|\mathbf{x}_i, D_i = 1) \\ &\quad - \{\mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 0, z_i = 1] - \mathbb{E}[\log W_{ic}^1|\mathbf{x}_i, D_i = 0, z_i = 0]\} \\ &\quad \cdot P(z_i = 0|\mathbf{x}_i, D_i = 0).\end{aligned}$$

Using

$$\log W_{ic}^1 = \log W_{ic}^0 + (R_{\mathcal{W}} - R_{\mathcal{L}}) \cdot D_i + b'\mathbf{x}_i + \alpha_c + \epsilon_i^1$$

and canceling out nonstochastic components, we can write this as

$$\begin{aligned}\hat{\beta} &= R_{\mathcal{W}} - R_{\mathcal{L}} + \{\mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\ D_i = 1,\ z_i = 1] \\ &\quad - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i, D_i = 1, z_i = 0]\} \cdot P(z_i = 0|\mathbf{x}_i, D_i = 1) \\ &\quad - \{\mathbb{E}[\epsilon_i^1|\mathbf{x}_i, D_i = 0, z_i = 1] - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i, D_i = 0, z_i = 0]\} \\ &\quad \cdot P(z_i = 0|\mathbf{x}_i, D_i = 0).\end{aligned} \tag{A1}$$

Next, note that

$$\begin{aligned}\mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i] &= \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i,\, \epsilon_i^1 \le c] \cdot P(\epsilon_i^1 \le c|\mathbf{x}_i,\, D_i) \\ &\quad + \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i,\, \epsilon_i^1 > c] \cdot P(\epsilon_i^1 > c|\mathbf{x}_i,\, D_i) \\ &= \{\mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i,\, \epsilon_i^1 \le c] - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i,\, \epsilon_i^1 > c]\} \\ &\quad \cdot P(\epsilon_i^1 \le c|\mathbf{x}_i,\, D_i) + \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i,\, \epsilon_i^1 > c],\end{aligned}$$

where c is some constant. Rearranging gives

$$\begin{aligned}\mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i,\, \epsilon_i^1 > c] - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i] &= \{\mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i,\, \epsilon_i^1 > c] \\ &\quad - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i,\, \epsilon_i^1 \le c]\} \cdot P(\epsilon_i^1 \le c|\mathbf{x}_i,\, D_i).\end{aligned} \tag{A2}$$

LEMMA 1. $\mathbb{E}[\epsilon_i^1|\epsilon_i^1 > c] - \mathbb{E}[\epsilon_i^1]$ is increasing in c.

The proof of lemma 1 is straightforward. The term $\mathbb{E}[\epsilon_i^1]$ is constant, and the conditional expectation, $\mathbb{E}[\epsilon_i^1|\epsilon_i^1 > c]$, increases in the value of the lower bound, c.

Let

$$\bar{\epsilon}_{ij} = \log M - \log W_{ic}^0 - R_j - b'\mathbf{x}_i - \alpha_c$$

be the cutoff value for recontesting. For shocks $\epsilon_{ij}^1 < \bar{\epsilon}_{ij}$, a candidate i drops out of the sample since he is unable to afford the cost of running an election campaign (i.e., $z_i = 0$). Since $R_{\mathcal{W}} > R_{\mathcal{L}}$, we have $\bar{\epsilon}_{i\mathcal{W}} < \bar{\epsilon}_{i\mathcal{L}}$.[41] Under the assumption of i.i.d. wealth shocks that are independent of $\mathbf{x}_i$ and D_i, we get for winners ($D_i = 1$) and losers ($D_i = 0$), respectively:

$$\begin{aligned}\mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i = 1,\, z_i = 1] - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i = 1] &= \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i = 1,\, \epsilon_i^1 \ge \bar{\epsilon}_{i\mathcal{W}}] - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i = 1] \\ &= \mathbb{E}[\epsilon_i^1|\epsilon_i^1 \ge \bar{\epsilon}_{i\mathcal{W}}] - \mathbb{E}[\epsilon_i^1],\end{aligned} \tag{A3}$$

and

$$\begin{aligned}\mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i = 0,\, z_i = 1] - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i = 0] &= \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i = 0,\, \epsilon_i^1 \ge \bar{\epsilon}_{i\mathcal{L}}] - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\, D_i = 0] \\ &= \mathbb{E}[\epsilon_i^1|\epsilon_i^1 \ge \bar{\epsilon}_{i\mathcal{L}}] - \mathbb{E}[\epsilon_i^1].\end{aligned} \tag{A4}$$

Using (A2) and substituting (A3) and (A4) into (A1) yields the following expression for $\hat{\beta}$:

[41] Note that the discontinuity in recontesting that is observed in the data requires $R_{\mathcal{W}} > R_{\mathcal{L}}$.

$$\begin{aligned}\hat{\beta} &= R_{\mathcal{W}} - R_{\mathcal{L}} \\ &\quad + \{\mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\ D_i = 1,\ z_i = 1] - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\ D_i = 1,\ z_i = 0]\} \\ &\quad \cdot P(z_i = 0|\mathbf{x}_i,\ D_i = 1) - \{\mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\ D_i = 0,\ z_i = 1] \\ &\quad - \mathbb{E}[\epsilon_i^1|\mathbf{x}_i,\ D_i = 0,\ z_i = 0]\} \cdot P(z_i = 0|\mathbf{x}_i,\ D_i = 0) \\ &= R_{\mathcal{W}} - R_{\mathcal{L}} + \{\mathbb{E}[\epsilon_i^1|\epsilon_i^1 \geq \bar{\epsilon}_{i\mathcal{W}}] - \mathbb{E}[\epsilon_i^1]\} - \{\mathbb{E}[\epsilon_i^1|\epsilon_i^1 \geq \bar{\epsilon}_{i\mathcal{L}}] - \mathbb{E}[\epsilon_i]\}.\end{aligned} \tag{A5}$$

By lemma 1 and $\bar{\epsilon}_{i\mathcal{W}} < \bar{\epsilon}_{i\mathcal{L}}$, we have

$$\mathbb{E}[\epsilon_i^1|\epsilon_i^1 \geq \bar{\epsilon}_{i\mathcal{W}}] - \mathbb{E}[\epsilon_i^1] \leq \mathbb{E}[\epsilon_i^1|\epsilon_i^1 \geq \bar{\epsilon}_{i\mathcal{L}}] - \mathbb{E}[\epsilon_i^1],$$

and thus $\hat{\beta} \leq R_{\mathcal{W}} - R_{\mathcal{L}}$. Further, under the assumption of normally distributed wealth shocks, the inequality is strict, $\hat{\beta} < R_{\mathcal{W}} - R_{\mathcal{L}}$, implying that our estimate of the private returns to office is biased downward.

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