Pork Barrel Politics in Postwar Italy, 1953 - 1994

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December 2007

CWPE 0767

Paper presented at the conference on "Institutions, Public Policy and Economic Outcomes" held in August 2007 and sponsored by the Economic and Social Research Council (grant no.RES 000-22-1743).

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September 24, 2007— Version 5
Forthcoming, *American Journal of Political Science*

Key words: pork barrel, distributive politics, electoral systems, Italy, public spending, infrastructure

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Abstract

This paper analyzes the political determinants of the distribution of infrastructure expenditures by the Italian government to the country's 92 provinces between 1953 and 1994. Extending implications of theories of legislative behavior to the context of open-list proportional representation, we examine whether individually powerful legislators and ruling parties direct spending to core or marginal electoral districts, and whether opposition parties share resources via a norm of universalism. We show that when districts elect politically more powerful deputies from the governing parties, they receive more investments. We interpret this as indicating that legislators with political resources reward their core voters by investing in public works in their districts. The governing parties, by contrast, are not able to discipline their own members of parliament sufficiently to target the parties' areas of core electoral strength. Finally, we find no evidence that a norm of universalism operates to steer resources to areas when the main opposition party gains more votes.

Acknowledgments

Earlier versions of this work were presented at the 2005 Annual Meeting of the American Political Science Association, at a meeting on Poverty, Democracy and Clientelism: The Political Economy of Vote Buying held at the Rockefeller Foundation's Study and Conference Center, Bellagio, Nov. 28–Dec. 2, 2005, at the Association of Southern European Economic Theorists (ASSET) Annual Meeting, Lisbon, Nov. 2–4, 2006, at the Second Italian Congress of Econometrics and Empirical Economics, Rimini, Jan. 25–26, 2007, at the First World Meeting of the Public Choice Society, Amsterdam, March 29–April 1, 2007, at a conference on Institutions, Public Policy and Economic Outcomes, Jesus College, University of Cambridge, Aug. 6–8, 2007, and at the University of California at Los Angeles, Stanford University, Columbia University, McGill University, and Princeton University. We received additional helpful suggestions from John Agnew, Steven Ansolabehere, Gary Cox, Yusaku Horiuchi, Jennifer Hunt, Jeffrey Lewis, Karoly Mike, and Frances Rosenbluth. For research assistance, we thank Elizabeth Carlson, Seth Hill, Jonathan Slapin and Matthew Spence. Miriam Golden acknowledges the financial support of the National Science Foundation (SES–0074860) and the Academic Senate of the University of California Los Angeles. We are grateful to Luca Verzichelli for his dataset on the Chamber of Deputies, to Massimo Guagninini for his series on provincial output, and to Fabio Bacchini for making ISTAT's infrastructure data available to us.

1 Introduction

More than three decades of research document that federal monies are distributed in the US not only in response to social welfare or economic efficiency considerations but also on the basis of political and partisan criteria. Advances in data availability now permit extension of this line of research to other countries. Results identify patterns of partisan-political distributive politics in nations as diverse as Albania (Case 2001), Argentina (Calvo and Murillo 2004; Porto and Sanguinetti 2001), Australia (Denemark 2000; Worthington and Dollery 1998), Brazil (Ames 2001), Canada (Kneebone and McKenzie 2001), Colombia (Crisp and Ingall 2002) England (Ward and John 1999; John and Ward 2001), France (Cadot, Röller, and Stephan 2006), Germany (Stratmann and Baur 2002), India (Rao and Singh 2005), Japan (Horiuchi and Saito 2003), Mexico (Magaloni 2006, ch. 4), Peru (Schady 2000), Russia (Treisman 1996), South Korea (Kwon 2005), and Sweden (Dahlberg and Johansson 2002), as well as across Africa (Kasara 2007).

This study extends this line of research to the open-list proportional representation (PR) context of Italy between 1953 and 1994. We examine the geographic distribution of expenditures on infrastructure investments. Our theoretical underpinnings draw on formal models of distributive politics. This literature currently produces multiple equilibria and indeterminate empirical predictions for settings characterized by open-list proportional representation and weak political parties. We formulate more precise hypotheses for this setting than have been developed thus far, and we test them using an unusually rich panel dataset.

We extend (McGillivray 2004) and hypothesize that in open-list PR, legislators affiliated with governing parties target their home districts in order to prevent core voters from switching support to another local candidate on the same party list. The ability of legislators to do so will vary with their degree of influence in parliament. Governing parties (as opposed to individual legislators) in

open-list PR should also attempt to target their areas of core electoral strength in order to prevent the emergence of new parties in a setting characterized by low barriers to party entry. The ability of existing parties to do so will be affected by how internally cohesive they are.

Parties in open-list PR settings vary in their degree of centralization and cohesion, typically reflected by the extent of control they exercise over candidate selection (Samuels 1999). Italy's main party of government in the period we study, Christian Democracy (DC), was factionalized and fragmented. As a result, we expect the struggle for resources between powerful politicians and this party to advantage the former. In postwar Italy the most powerful legislators affiliated with the DC were elected from southern electoral districts whereas the party's core strength historically lay in the religiously observant North-East. This difference provides empirical leverage to assess whether government resources were steered to areas that elected individually powerful politicians (South) or areas of core party strength (North-East). In addition, our data permit assessment of the extent to which opposition parties secured resources.

Our work has implications for the world's democratic political systems that use proportional representation with open lists, a fairly common arrangement. About a third of democratic countries with PR use open lists.[1] In these settings, unless there is a substantial geographic overlap in their core areas of support, the reelection incentives of powerful legislators compete with the collective interests of their own parties. We discuss the potential generalizability of our Italian results in the concluding section of this paper.

Our study differs from existing Italian-specific as well as other comparative and US-oriented literature in at least four ways. First, we use data covering the full forty-odd years of the postwar era (a period known as the "First Republic," i.e. until the collapse of the postwar party system and the 1993–94 modification of Italy's electoral system), which is a longer period than any other

study of distributive politics of which we are aware. Second, we include the entire array of public infrastructure investment spending over this period. Other studies of which we are aware either use some subset of spending, such as a specific category of federal grants, or use very broad allocations of spending, such as all federal monies going to electoral districts, making it difficult to distinguish politically manipulatable spending. Third, because we study an electoral system characterized by district magnitudes greater than one, we confront the aggregation issue. Studies set in single-member district (SMD) electoral systems do not distinguish the strength of the incumbent political party from the influence of the individual legislative representative, because the two are identical. Under SMD, characteristics of the individual legislator — such as his tenure in office, his party affiliation, and his committee appointments — are naturally incorporated into models of the partisan bases of the distribution of resources. Our study, by contrast, is set in an electoral system with an average district magnitude of 20. We therefore necessarily must aggregate the characteristics of 20 legislators — or at least that subset of legislators affiliated with the parties of government — into district-level characteristics. Finally, we exploit Italy's multimember setting, in which characteristics of individual legislators potentially aggregate differently than those of political parties, to examine whether goods flow to areas of legislator or party strength. This distinction, too, occurs only in multimember settings.

Our results show that when districts elect individually more powerful politicians affiliated with governing parties, these districts secure more infrastructure investments. The parties of government are not more successful in extracting resources for districts when their vote share increases. Finally, when opposition parties gain votes, they are less successful in securing resources. Our interpretation of these results is that they broadly corroborate the view that in open-list PR powerful politicians extract resources for their balliwicks at the expense of the core areas of ruling party

strength as well as at the expense of opposition parties.

In what follows, we first provide some background to our case. We next review the relevant theoretical literature and derive testable hypotheses. Section 4 lays out the empirical model we use, and details key variables and our dataset. Econometric results follow. In our conclusions, we discuss the external validity of our results and note some ideas for future work.

2 The Italian Context

Governed by the DC for the entire period after World War II until the collapse of the postwar party system in 1993–94, Italy is a country for which the standard expectation is that the DC, having constructed mass political machines in the Italian South in the 1950s, subsequently uses these along with its traditional Catholic subcultural networks in the North-East, to distribute benefits solely or principally to core supporters. Given the apparently reasonable expectation that it would continue to rule indefinitely, the DC is usually portrayed as distributing goods to the four (later five) parties of the governing coalition. More recently, however, some have contended that, despite the appearance of intense partisanship and polarization, a form of "consociationalism" in practice arose allowing the country's major opposition, the Italian Communist Party (PCI), to share the spoils (Pizzorno 1992). This view builds on earlier research documenting that local communist politicians were often very able in extracting resources from central government (Tarrow 1977), and is also consistent with the norm of universalism that is reported to have prevailed in the Italian legislature in the passage of pork-barrel bills (Predieri 1963; Di Palma 1977).

Distributive politics in postwar Italy were centrally controlled in a unitary political structure.[2] Government expenditures and transfers almost all originate at the central level, although they may be disbursed by subnational units. Despite Italy's opaque budgetary process, it is reasonable to

assume that the allocation of distributive goods is under the control of national legislators.

Public investments were an important component of total public expenditures during the period we study, comprising as much as 21 percent of total public outlays in 1961 and falling below 10 percent only in the last two years of our study. Over the period as a whole, public works on average absorbed 15 percent of total public expenditures, corresponding to 2.5 percent of national net product.[3] Hence, the discretionary expenditures that we analyze were substantively large.

Distributive politics in postwar Italy have rarely been investigated with systematic analytic tools. Exceptions are (Marzotto and Schachter 1983) and (Sapienza 2004). Using a modified random sample of 534 southern Italian communes, Marzotto and Schachter study whether electoral competition between the DC and the PCI influenced the distribution of investments by the Cassa per il Mezzogiorno between 1950 and 1970.[4] In an argument close to the one explored here, Marzotto and Schachter also investigate "the widely held belief that DC strongholds (cities returning over 50% of the vote to the DC) also received token funds — more as political payoffs to party notables than for their economic potential" (p. 69n4). They contend that their data does not corroborate the "party stronghold" hypothesis, and interpret this as supporting the view, which resurfaces in more recent literature (Stokes 2005), that "there is no political reason to waste scarce resources on cities where the party in power is clearly and undeniably in command" (p. 72). However, Marzotto and Schachter's analysis relies on bilateral correlations rather than multiple regression analysis and their data is less complete than that used here.

Using more sophisticated statistical methods, (Sapienza 2004) studies loans made by state-owned banks in Italy. She finds that banks offer lower interest rates to firms in areas where the political party controlling the bank is strong. Her study, in contrast to that by (Marzotto and Schachter 1983), finds that parties use their control over public banks to direct resources to

party strongholds. Hence, existing quantitative literature is divided in its findings on how politics influences distributive goods in Italy.

For the period under consideration, most votes in the Chamber of Deputies were secret, making it impossible to undertake direct analysis of the partisan bases of legislative decisions. Bills involving distributive benefits (*"leggine"*) were normally voted in committee, where they frequently received universal endorsement (Predieri 1963; Di Palma 1977), just as in the United States. Distributive policy was politically highly salient, as the DC and its allies are believed to have used their control over public resources to distribute patronage.

Finally, students of the Italian party system have long stressed the factional nature of DC party organization (Zuckerman 1979). Ministerial positions were apparently allocated to Christian Democrats in function of their strength within the party's ruling executive body (Mershon 2001). Factions, in turn, drew strength from preference votes. This gave DC legislators incentives to cultivate personal votes. We should therefore observe DC legislators amassing unusually large numbers of preference votes, many more than those amassed by deputies affiliated with other parties (even relatively speaking). Preference votes may prove powerful weapons in resource allocation.

In short, the established literature tells us that postwar Italy provides a rich, interesting and theoretically appropriate environment in which to examine the determinants of distributive politics.

3 Formal Theories of Distributive Politics

The current literature offers competing formal models of distributive politics, generating different expectations about where politicians will direct local public goods ("pork") as well as geographically targetable private goods ("patronage")[5] (a useful summary is (Drazen 2000, ch. 8)). Cox and McCubbins (1986) study whether politicians direct goods to their core support groups, to opposition

groups, or to swing groups, and find that risk-averse politicians will invest relatively more in support groups and secondarily in swing groups. They will not invest at all in opposition voters.

An alternative is due to (Lindbeck and Weibull 1987) and (Dixit and Londregan 1996), who contend that vote-maximizing redistribution will target two classes of voters: those ideologically indifferent between the two parties ("swing voters") and low-income voters. The underlying rationale is the same in both cases. These are groups who are likely to be more responsive than others to distributive benefits, the former because they care less than other groups of voters about ideology relative to material benefits, the latter because their low income makes them cheaper to attract.

These two sets of models lay out competing expectations about distributive politics. The Cox-McCubbins model predicts that we should see distributive benefits going to the government's core supporters, whereas the Lindbeck-Weibull/Dixit-Londregan model predicts that we should see benefits going disproportionately to swing voters. Given this theoretical controversy, it is not surprising that the empirical literature has generated a confusing array of findings.[6]

Recent work by (McGillivray 2004) reconciles these two competing models with a theory that specifies the institutional conditions under which each obtains. Two variables are used to capture the incentives facing politicians deciding the allocation of distributive goods: the type of electoral system and the strength of national political parties.[7] The electoral rule generates expectations about the types of votes those seeking national public office will cultivate. In an SMD system, winning a legislative seat requires a plurality of votes in an electoral district, so votes in contested districts matter more to politicians than votes in safe districts. If parties are strong, they will therefore target marginal districts with local public goods, confirming the logic of the Lindbeck-Weibull/Dixit-Londregan model. In PR systems, all votes matter equally regardless of district location, because every vote contributes to the allocation of legislative seats among

parties. Therefore, nationally disciplined parties staffed by risk-averse legislators will target their strongholds in order to hold core voters and prevent the emergence of new parties, corroborating Cox-McCubbins. All else equal, the theory generates the expectation that politicians will target resources to marginal districts under SMD and to party strongholds under PR.

Building on earlier work on party strength by (Levitt and Snyder 1995), McGillivray next complicates this formulation by varying party strength, conceptualized as the degree of personalism in electoral contests. (Operationally, party strength may be thought of as the degree of central party control over candidate selection.) In SMD settings, weak parties cannot discipline their legislators successfully. This compromises central control over targeting goods to specific electoral districts. Because party discipline is low, many coalitions can be formed in the legislature, allowing idiosyncratic rules and procedures of the legislative body to thereby affect coalition formation. In the United States, for instance — McGillivray's example of a SMD system with weak parties, and certainly the most extensively studied case in the literature — pork barrel projects are typically incorporated into omnibus legislation, receiving unanimous support from both sides of the aisle (Weingast, Shepsle, and Johnsen 1981). Unanimity is driven by the chronic uncertainty surrounding the composition of minimum winning coalitions (Collie 1988). In this model of legislative policy-making, government and opposition share in the distribution of public goods, and distributive politics are not ideologically or programmatically divisive politics, although in some cases they may underpin the formation of programmatic coalitions (Evans 2004). Legislators with greater seniority, greater influence in their party, and appropriate committee appointments are typically more successfully in targeting their home districts with higher levels of expenditures. Hence, McGillivray hypothesizes that in weak-party majoritarian systems, redistributive policy is targeted to safe districts, because these districts by definition elect more senior and more powerful

legislators.

McGillivray's study does not extend to the fourth logically possible case, that of weak parties in PR settings. We observe weak parties under PR where open lists are used; that is, where candidate selection is not under central party control. We extend to that setting in the next section, where we spell out the incentives underlying the vote-getting behavior of legislators and parties in open-list PR. We build on these assumptions to derive testable hypotheses about where parties and legislators direct quasi-public goods.

4 Hypotheses on Distributive Politics under Open-List PR

A macro-level literature argues that proportional representation and majoritarian electoral systems offer different incentives to parties regarding redistribution. Systems operating under PR tend to distribute benefits via large scale transfers whereas majoritarian systems tend to distribute goods that are geographically targetable, i.e. "pork-barrel" projects (Lizzeri and Persico 2001; Milesi-Ferretti, Perotti, and Rostagno 2002). By implication, not only is the overall level of geographically-targetable projects relatively low in a PR context, but pork barrel projects and patronage are relatively unimportant politically because the individual identities of legislators are unimportant where they are elected off party lists (Cain, Ferejohn, and Fiorina 1987).

Open-list PR, however, is similar to a majoritarian electoral system in that it pits contenders from the same party against each other in the search for individual votes. In the case of SMD, these contests occur as primaries, whereas in open-list PR, they occur among candidates on the party list. This is because candidates are seated in function of the number of individual preference votes received. So, if party list votes are sufficient for party A to win three seats in multimember district y, the winning candidates are the three on that party's list receiving the most individual preference

votes.[8] In a closed-list setting, by contrast, they are the three candidates the party leadership has placed at the top of its list.

Open-list PR reduces party control over candidate selection and generates factionalism and intraparty competition in the search for preference votes (Katz 1986; Pasquino 1972). Despite district magnitudes greater than 1, individual candidates must seek personal identities in their campaigns, and incumbents must "credit-claim" for district-specific policy outputs (Carey and Shugart 1995).[9] Although studies of credit-claiming focus almost exclusively on single-member districts, it seems likely that the mechanisms are similar in multimember settings — except that the locus is the representative's bailiwick rather than the district as a whole.[10]

Under PR, we thus expect two possible influences on discretionary allocations, one coming from individually powerful deputies and a second from the strength of governing political parties. In multimember settings, the incentives facing individual legislators are distinct from those facing the political parties with which they are affiliated. Individual legislators seeking reelection cultivate votes in their bailiwicks (often their home towns). Parties seeking more votes cultivate areas of core support, where it will be less expensive to attract the marginal supporter and where it is critical to fend off the formation of new parties. The former is likely to be more important in a weak party context, such as most situations of open lists; the latter where parties are powerful and able to discipline their legislators.

In Figure 1, we summarize our theory of how electoral and party systems combine to produce differences in the patterns of the distribution of geographically targetable goods. The typology identifies how institutional conditions structure the incentives facing political actors whose decisions allocate goods.

Figure 1 about here

Our study provides systematic empirical assessment of whether infrastructure investments in postwar Italy went to areas of core governing party strength, as Cox and McCubbins would contend, or instead to the bailiwicks of powerful individual legislators, which is what we expect based on extending McGillivray's theory. The main party of government, Italian Christian Democracy, was strongest in the North-East, whereas its most powerful individual legislators were elected from southern districts.

Hence, we examine the following two propositions:

- Individual legislators who have greater institutional influence in the parliamentary arena will direct higher levels of expenditures or more benefits to their home districts;
- Governing parties will direct higher levels of expenditures or more benefits to areas of greater electoral strength for the party(-ies).

A way to represent this empirically is:

$$INV_{it} = f(INFL_{it}, GOV_{it}, PROV_{it}) \tag{1}$$

where **INV** is the amount of money spent on new public works construction in province (or electoral district) i at time t (year or legislative period), **INFL** is a composite measure (detailed shortly) of the political influence exercised by individual deputies, **GOV** is the strength of the governing party(-ies), and **PROV** are socio-economic characteristics of the province or electoral district.

Several variables potentially capture the political influence (INFL) exercised by individual legislative representatives over public works expenditures. These include **PREF**, the deputy's national rank within his party in the number of individual votes received (where the deputy with the most preference votes receives a rank of 1), **SEN**, a measure of seniority (the number of previous

terms in the Chamber of Deputies the deputy has held), **EDUC**, a measure of education (a dummy variable for whether the deputy has completed higher education), **SEX**, a dummy variable coding whether the deputy is male or female, **PARTYOFF**, a measure of influence within the party hierarchy (a dummy variable coding whether the deputy has ever held a higher office within his party), and **MINUNDER**, a dummy variable coding whether the deputy serves in government as a minister or undersecretary.[11] We expect all of these measures of individual political influence to contribute to a deputy's ability to steer resources to his home district.

Our measures of the strength of the governing party(-ies) (GOV) in a given legislature and district use two indicators. **GOVDEPS** is the raw number of governing parties' deputies in an electoral district and **SHARE** is the vote share received in the electoral district by all parties of government in the most recent legislative election. We include GOVDEPS because research shows that the size of the legislative delegation may be important in securing resources (Ansolabehere, Gerber, and Snyder 2003). We include SHARE since we seek to estimate the importance of the extent of electoral support for the parties of government in discretionary allocations to electoral districts. Finally, in estimations designed to capture whether opposition parties receive infrastructure investments, we include a measures of district magnitude, **DM** and, on occasion, the number of deputies elected to the Italian Communist Party, **PCIDEPS**, the country's major opposition party.

We control for various socioeconomic characteristics of the provinces in which investments are made. For reasons that will become clear once the estimating strategy is laid out, we include only district specific characteristics that change over time. These are **GDP**, a measure of provincial wealth and **POP**, the number of provincial residents. Our expectations about the effect of preexisting level of output are indeterminate. On the one hand, demand for infrastructure is arguably

greater where output is higher. On the other hand, governments may reasonably decide to allocate infrastructure investments to areas where output is lower in order to encourage economic growth.[12] Our expectations are that areas with more people are likely to receive more investments. Table 1 presents our independent variables and expected signs.

Table 1 about here

As will be clear later on, our estimating technique of choice, fixed effects panel data estimation, effectively eliminates (or controls for) geographic characteristics that are fixed in time. This removes the need to explicitly include such variables in the regression models.

5 Data, Measures and Descriptive Statistics

During the period considered, Italy's Chamber of Deputies was elected on the basis of 32 electoral districts, with an average district magnitude of 20.[13] Between 1948 and 1994, eleven legislatures were elected, most of which seated 630 deputies.[14]

For most of the years we study, Italy had 92 provinces.[15] We gain the largest number of observations by arranging the data according to province-year where possible because the data for our dependent variable — public infrastructure investments — are available at this level. To match data available only at larger levels of aggregation, we propagate the values of variables available in larger units (legislative periods, for instance, or electoral districts) across the smaller subunits. For instance, we propagate the characteristics of deputies, whom we observe only at the level of the electoral districts that elected them, across the provinces that form the districts. This preserves maximum information.

Our dependent variable is public works expenditures, which are classic instances of geographically-targetable and divisible goods. We work with computerized files of official data collected by Italy's

national statistics office, the Istituto Nazionale di Statistica (ISTAT), on flows of monies for capital investments by province and year.[16] (Note that because this series begins in 1954, we lose information on the First Legislature, which sat from 1948 to 1953.) The data refer to capital improvements only, such as new construction in roads, airports, ports, and public buildings, and exclude ordinary maintenance expenses. We examine aggregate expenditures and also roads and airports, because the latter is especially suseptible to politicization.[17]

Our main independent variables involve elected members to the Chamber of Deputies. The standard source of data on the members of the Italian lower house during the first eleven legislative periods (1948–94) is known as the Verzichelli-Cotta dataset, after the original compilation of the first nine legislatures (reported in (Cotta 1979)) and subsequently extended. We use a version into which we merged additional political characteristics of deputies.[18] The resulting dataset contains approximately $7,000$ records of seated deputies (11 legislatures x 32 electoral districts x 20 deputies per district (average district magnitude)).

In each Italian electoral district in the period we study there are a variable number of elected members of the Chamber of Deputies, running from a minimum of one to a maximum of 54. The collective action of these deputies allocates public investments across districts, since spending bills require majority approval (either in committee or on the floor). Theoretically, we thus expect that deputies will necessarily coordinate on legislation allocating goods to districts, and we study the characteristics of deputies that make them more or less successful in securing such goods for their home districts. We necessarily aggregate the characteristics of deputies to the electoral district level, in order to examine the influence of deputies on spending where the spending is observed only geographically.

Our electoral district aggregation procedures are of three types. We aggregate PREF as a

weighted average of the national preference vote rankings of deputies belonging to the governing coalition, where the weights are equal to the relative importance, at the national level, of their party within the governing coalition. The intuition behind this measure is that nationally more powerful politicians within each party — where power is assessed by the relative number of preference votes received in the most recent election — will secure more resources for their districts. (In section 7.2, we present results using three alternate aggregation procedures.) We aggregate SEN as the average seniority of governing party deputies in the district, where seniority is defined as the number of prior terms in the Chamber. Finally, we use ratios to aggregate dummy variables (EDUC, SEX, PARTYOFF, MPPROF, and MINUNDER) to the level of electoral districts.[19] For instance, the measure of SEX that we use is the ratio of male to female deputies in the parties of government in the district in each legislature. We use the prefix AGG to indicate that a given characteristic is aggregated to the level of electoral districts rather than describing individual deputies.

For all variables, we confront operationalizing the concept of "governing party." In parliamentary systems, multiple government coalitions may be formed during a single legislative session without new elections being called. In Italy, the average life of a coalition over the ten legislative periods that we study is 10 months. We could define legislators as belonging to the governing coalition if their party were a coalition partner at any point during the life of the legislature. But some parties held portfolios for only very short periods — a few months, for instance. It seems unlikely that access to government power for only a few months would significantly improve the ability of that party's deputies to secure resources for their districts. We have therefore chosen to define governing parties as parties in government at least half of the life of the legislative period. Note that because Italy's electoral system was pure PR, vote and seat shares are almost identical.

Table 2 illustrates pairwise correlations between variables. Each reported value summarizes

a set of ten correlations, one for each legislature. Each has been computed as follows: for each of the ten legislatures, pairwise correlations have been computed. Each value in the table reports the median of those correlations. If a value is positive, it means that more than half the correlations were positive. If the number is starred, at least nine correlations had the same sign.

Table 2 about here

Table 2 is instructive in several ways. We see that AGGPREF is negatively correlated with AGGMINUNDER, indicating that districts with deputies who receive more preference votes are also likely to have more ministerial positions. We interpret this to mean that elevation to government office hinges on the display of a large clientele. This is widely reported in the literature, and provides one obvious incentive for deputies to make efforts to amass as many preference votes as possible. Note too that districts with more senior deputies are also those with deputies who are more educated, have held high party office, send more deputies into government as ministers and undersecretaries, and elect deputies who receive more preference votes compared with others in their party. Seniority thus coincides with other markers of political influence.

6 The Estimation Strategy

The data form a panel comprising 90 of Italy's provinces (excluding the provinces that make up the electoral districts of the Val d'Aosta and Trieste) and 10 legislative periods (excluding, that is, the First Legislature, for which investment data are not available). Hence, we work with 900 observations. However, because we include a lagged dependent variable in the regressions, as we explain below, the number of observations drops to 810.

Panels of data are characterized by a richness of information when compared to simple time series or cross-sectional data. Such richness offers more than one potential estimation strategy,

given that the parameters of interest can be identified using the variability of the data in the time series dimension, in the cross-sectional dimension, or both. A fixed effects estimator, based on variation in the data "within" each statistical unit (in this context, provinces), is based entirely on the time-series variation of the data. On the other hand, several estimators are available to exploit cross-sectional variation of the data, from separate regressions on different cross-sections to the "between" estimator. A random effects estimator, finally, captures variation of the data on both dimensions, and is a weighted average of the "within" and "between" estimators (Baltagi 2005).

We use a fixed effects estimator, which has the advantage of effectively capturing (or controlling for) all relevant variables that are idiosyncratic to the statistical units (in this context, provinces or electoral districts) that are fixed in time. We do not use estimators that exploit the cross-sectional variation of the data, such as the "between" estimator or OLS on individual cross-sections, because of the difficulty of correctly identifying and measuring some factors that are fixed in time. For instance, we would need a measure of the infrastructure stock at the beginning of the period since public investment decisions are plausibly influenced by the preexisting level of capital stock. However, a measure of public capital stock is unavailable. In results not displayed here, we find that the data exhibits enough variation in the temporal dimension to employ the "within" estimator that we use.

A final issue regards the inclusion of a lagged dependent variable as a regressor; that is, the adoption of a dynamic model. A dynamic model implies the presence of a gradual adjustment mechanism of public investments to changes in the independent variables. As we report below, a lagged dependent variable is significant in the regressions, although the magnitude of the estimated coefficient is modest. This implies that investments are persistent over time, which accords with the fact that many projects are likely to take years to construct. The fact that our data are aggregated

within legislative periods *a priori* dampens the effect.

If we call x_{it}^{j} the j^{th} regressor in the model, then the equation to be estimated is:

$$INV_{it} = \beta_0 + \beta_1 INV_{it-1} + \sum_{j=2}^{k} \beta_j x_{it}^{j} + \varepsilon_{it} \tag{2}$$

where the error term is equal to a provincial fixed effect plus a truly idiosyncratic term:

$$\varepsilon_{it} = \mu_i + \omega_{it} \tag{3}$$

The fixed effect μ_i absorbs all variables that are fixed in time, such as the size of the geographic unit, the preexisting level of public capital, and the strength of the local political subculture. The present model also naturally incorporates time-specific effects that may represent common shocks that are national in character. These might occur due to changes in the international economy or changes in the overall political environment, for instance.

It is well known that a fixed effects OLS estimator of a dynamic model is biased. However, the size of the bias, being of order $1/T$, diminishes quickly as T increases (Arellano 2003, p. 85). In the choice of estimators, we thus face the typical trade-off between using a biased OLS estimator and using an unbiased instrumental variable whose characteristics depend on several factors including the quality of the instruments available. In the present context, it is not clear whether our T is "big enough" to warrant the use of the OLS fixed effects estimator. In Section 7.2, we show that the qualitative results that we obtain are remarkably persistent to changes in the estimation technique employed. For this reason, we first present results obtained using the simplest possible estimator — OLS with fixed effects — and later consider the main available alternatives.

Fixed effects OLS estimation easily allows for testing. In particular, an F test can be used to

test the joint significance of the fixed effects or of the idiosyncratic time effects. If the null hypothesis that the fixed effects are irrelevant is not rejected, then although the fixed effects estimator retains consistency, a simple pooled OLS estimator would be more efficient. The same applies to the time fixed effects when these are included among the regressors.[20]

The nature of our data makes it likely that they possess spatial dependence. Formal tests of this yielded results that would suggest this might be the case.[21] The presence of spatial dependence does not affect the consistency of the fixed effects estimator. However, spatial correlation of the errors may yield inconsistent estimates of the standard errors of the parameters. This problem is particularly serious because positive correlations of external shocks across temporal units results in an underestimation of the standard errors, which may lead to the erroneous conclusion that the coefficients they refer to are significantly different from zero. In other words, if our data are characterized by spatial correlation, we may end up with results that appear to be statistically "significant" when in fact they are not.

We address this problem using the method introduced by (Driscoll and Kraay 1998), who provide a simple non-parametric estimator for the variance-covariance matrix. Such a method has several advantages. First, its usefulness is documented by Monte Carlo simulations provided by the authors; second, it exhibits computational ease; and finally, since it is non-parametric, it bypasses the curse of dimensionality that is intrinsic to parametric variance-covariance estimates. We report Driscoll-Kraay standard errors for our estimates.[22]

7 Results

We first present results of two fixed effects regressions, one with annual average infrastructure investments (in millions of *lire* at constant 1990 prices) over each legislative period as the dependent

variable and a second with average spending on roads and airports over each legislative period as the dependent variable. Because they are more discretionary than, say, railroads or ports — ports, after all, cannot be distributed to landlocked provinces, and railway infrastructure is largely complete by the second half of the twentieth century — roads and airports are likely to be especially susceptible to politicization. The data analyzed run from Legislature II to XI (spanning election years beginning with 1953 and ending with that of 1992), with fixed effects for provinces and legislative periods included in the regressions, the latter meant to capture any shocks that affect all provinces similarly. (The coefficients for fixed effects are not reported, but most are significant.) The First Legislature is omitted due to lack of data on the dependent variable. Because of the inclusion of a lagged dependent variable among the regressors, we also lose the Second Legislature in the analysis. Our dependent variables have been transformed by natural logarithms.

The main independent variables of theoretical interest are those measuring the aggregate political influence of deputies affiliated with the governing parties in each district — AGGPREF, AGGSEX, AGGEDUC, AGGSEN, AGGPARTYOFF, AGGPROF, and AGGMINUNDER — and the measures of the strength of the governing parties in the district, GOVDEPS and SHARE.

As control variables, we include a measure of per capita value added at factor cost and at constant prices in the province lagged to the previous electoral period (we use the final year of the previous legislative period), LGDP, and a similarly lagged measure of provincial population, LPOP. (Measures of per capita income and population have been transformed by natural logarithms.) We also include among the regressors the lagged dependent variable, so that our T is reduced to nine.

Because of how the variable was constructed, we expect the sign on the coefficient measuring the ability of government deputies to amass preference votes to be negative.[23] We expect the signs on the other variables measuring the influence of governing party deputies to be positive, as

presented earlier in Table 1. We expect the sign on the size of the legislative coalition of deputies from parties of government (GOVDEPS) to be positive, since more representatives should be able to extract more resources. Our theory leads us to expect, finally, that the sign on the coefficient measuring the vote share received by the governing parties (SHARE) will be negative, indicating that the parties of government are less able than their powerful incumbents to steer resources to their core electoral strongholds in a weak party system.

Before turning to our results, two brief remarks are in order. First, as we have already emphasized, fixed effects estimates only use the variation of the data "within" — in the time series dimension — making no use of variation "between" — in the cross-section. As a result, variation over time within each province and electoral district drives our results. Second, the standard errors reported are Driscoll-Kraay non-parametric standard errors, which are robust to spatial errors.

Results appear as Models 1 and Models 2 in Table 3, with logged total public investments and logged public investments in roads and airports as the dependent variables of the two models. Results show that positive variations in lagged income and population result in more infrastructure investments overall. Results of both models corroborate that districts receive more investments when governing party deputies are on average more senior and have held higher party office, as the signs on the coefficients for AGGSEN and AGGPARTYOFF show. When governing party deputies are more frequently male, districts appear to receive more investments but the effect is imprecisely estimated. Provinces receive greater investments when their electoral districts elect deputies who are appointed to government positions. For every additional member of government, an electoral district receives about one fifth of a percentage point additional public investments, all else equal. Finally, when districts elect more deputies to the governing parties, they also receive more investments overall, although this is not true for roads and airports alone.[24]

Tables 3 about here

Results are somewhat unexpected for two variables in the models we estimate. First, we find that deputies in the governing parties who are not professional politicians — that is, who held other jobs prior to entering parliament — are more successful on average in securing benefits for their districts. This is reflected in the negative coefficient on the variable AGGPROF. This is surprising since we expect professional politicians to have greater incentives to retain public office, and we believe spending is directed at that end. But in Italy, the large number of elected offices may explain this otherwise counterintuitive results. With approximately three million (*sic*) elected political positions open at local, provincial, and regional levels of government between 1984 and 2001 (Parigi and Bearman 2006), professional politicians may have been circulated to subnational levels of government by their parties. This may have given backbenchers who were professional politicians fewer incentives than non-professionals to retain national legislative office.

Second, the rankings of districts in preference votes of deputies affiliated with the governing parties does not significantly affect public investments, and is also incorrectly signed (we expect a negative sign on AGGPREF, since higher rankings are indicated with lower numbers). This is probably due to collinearity. The variable AGGMINUNDER (representing the number of ministerial positions in a district) enters significantly in Model 1. AGGMINUNDER is negatively and significantly correlated with AGGPREF, as we have seen in Table 2. There is clear multicollinearity between the two variables, reflecting the fact that a good way to improve one's chances of obtaining a ministerial position is by amassing preference votes. While AGGMINUNDER is not statistically significant in Model 2, results that we report in Table 6 indicate that if we purge undersecretaries from the measure of ministerial influence, spending on roads and airports is also significantly influenced by the proportion of deputies serving as ministers. For each additional minister, an electoral

district receives up to seven-tenths of a percentage point of additional infrastructure investments, all else equal.

Finally, both models confirm that when a district gives a lower vote share to the governing parties, it receives more goods. Fewer investments are directed to districts when the DC and its allies receive more votes. In both Model 1 and Model 2, the variable SHARE is negatively signed and statistically significant. It takes an increase of around 6 percent of votes to the parties of government in a given district to see a decrease of around one percentage point in public investments.

7.1 Universalism and Consociationalism

We now consider the role of the opposition in securing resources for infrastructure investments. Our strategy for doing so is simple. We add to our earlier model a measure of the total number of legislative seats in the district (DM). Our rationale is twofold. First, the overall size of the legislative delegation — that is, the number of deputies elected from the district, or what is called district magnitude — has been found to be a significant predictor of the resources going to electoral districts in the US (Ansolabehere, Gerber, and Snyder 2003). If deputies of government and opposition are working together to secure resources, reflecting a norm of universalism, we would expect that as there are more deputies, the district's legislative delegation successfully extracts more resources from Rome. Second, by including both DM and GOVDEPS in the same model, we effectively estimate the impact of the opposition on the delivery of investments to the district. The difference between the total number of seats in the district and the number of deputies affiliated with the governing parties is, of course, the number of deputies affiliated with opposition parties. By adding district magnitude to our initial model, we thus capture the legislative influence of the opposition. We report results for both total investments and for roads and airports alone in Models 3, 4, 5, and 6 in Table 4.

Table 4 about here

Results fail to corroborate the hypothesis that a norm of universalism prevailed in the Italian legislature for infrastructure investments. The total size of the legislative delegation fails to achieve conventionally accepted levels of statistical significance and even exhibits a negative sign in some cases, meaning that more representatives actually secure fewer resources. At the same time, in the models that include GOVDEPS, the number of deputies affiliated with the governing parties is positively and, in the case of overall investments, significantly associated with investments. For instance, results in Model 3 can be interpreted as showing that for every 10 additional deputies elected to the governing parties, an electoral district receives four-tenths of a percentage point more in monies for total investments. This suggests that the opposition was punished by governing parties in the amounts of overall investments directed at districts when opposition parties are strongest.

In postwar Italy, opposition parties were of two sorts: the communist and, prior to 1963, socialist left and the small monarchist and nationalist extreme right. These are quite different types of parties, and it makes sense to examine the PCI separately. In Model 7 and Model 8, we report results similar to those just reported except that we isolate the opposition to the Communist Party (PCIDEPS). Whether analyzing total infrastructure investments or roads and airports alone, results show that when the number of deputies elected to the PCI increases, districts receive smaller amounts of investment monies. This result is highly statistically significant for total investments. For every ten additional Communist deputies elected, a district receives close to one half of a percentage point less in total infrastructure investments, all else equal. The other coefficients in the model remain substantially unaltered. These results fail to support the argument that the Italian Communist Party successfully extracted resources to its areas of core strength, or that a "consociational" political solution prevailed in the postwar Italian political regime.

7.2 Robustness Analysis

Two main issues may affect our results. First, the results that have been reported could hinge on the choice of proxy variables substituting for the theoretical variables discussed in Section 4. Secondly, as already mentioned, the results that we have illustrated so far are obtained using an OLS fixed effects estimator, and it could be argued that T is not big enough to warrant such a choice. In this section we consider each issue in turn. We begin by specifically considering alternative proxies for the measure of individual preference votes (PREF) and the measure of ministerial position (MINUNDER) and then report results using a variety of alternative estimation techniques.

The aggregation to the electoral district level of the measure PREF depends in part on a collective decision problem. The chosen variable, AGGPREF, is constructed as a weighted average of the national ranking of deputies from governing parties within a district. However, aggregating individual deputies' rankings by averaging them is just one possible strategy. It might be the case that not all deputies matter equally and that the political influence of an electoral district is better captured by the national rankings of its most prominent deputies. Moreover, AGGPREF is computed as a weighted average of the corresponding average rankings of the parties that, in a given legislature, are in power for at least half of the period. The weights obviously give paramount importance to Christian Democracy, given its sheer size and the fact that it participated in every government during the entire period studied. Nonetheless, it is possible that only the Christian Democrats really matter for the allocation of resources and that minor coalition partners were ineffective in steering investments to districts they represent.

As alternative measures, we consider an aggregate index equal, for each district, to the (weighted) national rankings of the single deputy receiving the most preference votes in each electoral district. The weights represent the vote shares of each party within the governing coalition.

We also consider the possibility that Christian Democracy is the only party that matters for allocating resources.

The resulting measures are AGGMAXPREF (a weighted index of each district's top ranking deputy), AGGRANKPCDC (the average ranking of only DC deputies within electoral districts), and AGGMAXRANKPCDC (the national ranking of the DC deputy with the most preference votes within an electoral district). With respect to the measure of ministerial position, we also consider ministerial and undersecretarial positions separately, as AGGMIN and AGGUNDER respectively, in place of the combined variable used in Models 1 and 2.

Table 5 shows the medians of the pairwise correlations, by district, of the various proxies, constructed using the same procedure described earlier for Table 2. Our interpretation of this table is similar to that for Table 2. Correlations of AGGRPREF with its alternatives is close to 1. Ministerial and undersecretarial positions are slightly negatively correlated, meaning that when a district is allocated many ministerial posts it does not also obtain many undersecretaries.

Table 5 here

We report results using the alternative measures of preference votes in Models 9, 10 and 11 in Table 6 and using the decomposed ministerial measures in Models 12, 13, 14 and 15. Results using the alternative measures of preference votes are very stable, indicating that the choice of proxy does not affect the interpretation of the data. When deputies receive more preference votes, however measured, their districts are not allocated significantly more investments.

Table 6 about here

When we break down government portfolios into ministerial positions and undersecretaries, we find that when districts elect more ministers, they are allocated more overall investments. Undersecretarial posts are less advantageous for electoral districts.

We now consider the robustness of our results when we change estimation strategy, and reestimate all the models using three alternative techniques. First, we use the Arellano-Bond GMM estimator, as reported in (Arellano and Bond 1991), both one step and two step. Because their two-step estimator is known to underestimate the standard errors, we use the correction proposed by (Windmeijer 2005).[25] We report results of the Arellano-Bond GMM one-step estimator in Table 7. For reasons of space, we do not report the results of the two-step estimator (available by request from the authors), but these were almost always essentially the same.

Table 7 about here

As a third estimation method we employ an altogether different strategy.[26] All the economic variables we use are annual, for a total of 41 observations covering 1954 through 1994. For the preceeding analysis we averaged annual data within legislative periods to obtain 10 observations to coincide with the availability of political data. Here we keep the economic variables at their original annual frequency. We annualize the political variables by propagating them within each legislative period so that, for each district, they have the same values for all the years in each legislature. This produces a much larger T, making it safer to use the fixed effects OLS estimator. More attention can be dedicated to the dynamic specification of the model in a context where the asymptotes are of the "big T" type (see (Attanasio, Picci, and Scorcu 2000)). In Table 8 we report the fixed effects OLS estimation of the dynamic model based on annual data. For reasons of space, we report estimates only for total spending.[27]

Table 8 about here

Results that are reported in both tables corroborate that all estimation techniques give qualitative results that are similar to the fixed effects results that we presented earlier. Using an instrumental variables estimator only marginally modifies the results obtained using a fixed effects

OLS estimator. Our choice of the latter as our preferred alternative is also justified by the fact that a dynamic model using annual data provides by and large the same qualitative results. Finally, note that the overall estimation strategy employed allows us to explore different dimensions of possible heteroscedasticity of the errors. The Arellano-Bond GMM estimators are robust to heteroscedasticity within each province. The Driskoll-Kraay estimator, on the other hand, allows us to control for spatial serial correlation.

8 Conclusions

We have studied the geographic distribution of resources to electoral districts in Italy over four decades. Our results document that when districts elect more powerful individuals off the lists of governing parties, they secure more infrastructure investments. The parties of government are not more successful in securing resources for districts when they receive larger vote shares. Finally, when the opposition parties are stronger, they are less successful in securing resources.

The first result documents that in the open-list electoral environment that prevailed in postwar Italy, individually powerful deputies secure resources at the expense of the governing parties themselves. By the early 1990s, voters in the DC's historically core North-East electoral districts are precisely those who defect to newly-formed parties, including the Northern League (Agnew 2002; Golden 2004b). The second result documents that, rather than sharing in the spoils, the PCI is punished in investment allocation. This finding fails to corroborate the hypothesis that a norm of universalism prevails in the postwar Italian legislature. Even if it is true, as the literature reports, that communist deputies vote with the parties of government on most bills allocating geographically-targeted goods, the outcome punishes Communist electoral strongholds.

Our findings introduce new questions that our data do not currently permit us to answer.

First, how general are these results? Only studies that assemble parallel data on other countries using open-list proportional representation can answer this. We suspect that where governing parties are factionalized and lack central control, the patterns we report here are likely to obtain elsewhere. Brazil is a country especially likely to reveal patterns similar to those identified here, Others that use open-list PR and may be worth exploring include Panama, Sri Lanka, and many of the eastern European transition nations. Second, why did the Italian Communist Party apparently fail to secure significant investments in its strongholds, despite the apparent norm of universalism that prevailed in voting the relevant bills? We can only speculate how much greater the penalty would have been in the communist heartland had Communist deputies voted against the governing parties on particularistic spending bills. Third, our modeling strategy allows us to assess change over time but not across space. This leaves open intriguing questions about which Italian provinces and electoral districts received higher allocations of investments.

Finally, how do our results speak to the "core" versus "swing" debate that we discussed in the opening pages of our study? This debate currently animates much literature on distributive politics. Unlike previous studies, our work underscores the importance of distinguishing parties from individual legislators. In the context of SMD, these are easily assumed to be identical, but under PR, they may well not be. The debate on the type of voter targeted is often vague about precisely which type of political actor is doing the targeting. This problem deserves theoretical consideration not previously received. Substantively, our results suggest that when their control over legislative resources permit, individual legislators target their core constituents, who are typically localized in balliwicks. That said, it is difficult to know how to operationalize the concept of "swing" when data are available only at the level of electoral districts. Thus, our interpretation awaits corroboration with appropriate individual-level data.

Notes

[1]Of the world's 40-odd democratic nations that use proportional representation, the Database of Political Institutions (Beck, Clarke, Groff, Keefer, and Walsh 2001) classifies 14 as open-list (see (Chang and Golden 2007, table A.3)).

[2]Since 1970, regions enjoy limited autonomy but do not have independent taxation authority.

[3]Authors' computations, based on data from (Rossi, Sorgato, and Toniolo 1993).

[4]During this period the Cassa was the national government's main instrument for directing investments to the South, with the purported aim of promoting development there.

[5]We make no special theoretical distinction between these two classes of goods.

[6]Some US studies support the Lindbeck-Weibull/Dixit-Londregan thesis that material benefits are disproportionately directed to "swing" voters (Wright 1974; Stein and Bickers 1994; Bickers and Stein 1996; Herron and Theodos 2004), as does some research in other national settings (Bruhn 1996; Denemark 2000; Case 2001; Dahlberg and Johansson 2002). The Cox-McCubbins hypothesis that expenditures are instead concentrated in majority party strongholds, thereby benefiting core voters, has received empirical support in some US studies (Levitt and Snyder 1995; Balla, Lawrence, Maltzman, and Sigelman 2002; Ansolabehere, Gerber, and Snyder 2003), as well as a number of those conducted elsewhere (Diaz-Cayeros, Magaloni, and Weingast 2000; Crisp and Ingall 2002).

[7]We simplify McGillivray's model, omitting, among other things, any discussion of voters.

[8]In a standard open-list PR setting, such as the Italian in the period we study, electors select candidates off the list of the party they vote for; i.e. split ticket voting is not possible.

[9]Even in a multimember setting, credit can be assigned to the individual representative. (Tarrow 1967, p. 331) gives the example of ministerial telegrams routinely publicizing the contributions of specific deputies in securing public works projects in the Italian South. For a contrary view, see

(Kunicovà and Rose-Ackerman 2005).

[10]Studies documenting the importance of bailiwicks in multimember settings include (Ames 2001) on Brazil and (Hirano 2005) on Japan.

[11]Formally, members of government need not be drawn from parliament, but in practice, most were. Only in the Eleventh Legislature did the government comprise a large number of non-political persons (so-called "technical" experts). Of the $1,397$ ministerial positions filled during the ten legislatures that we study, 35 were filled by persons drawn from outside parliament and 404 by members of the Senate. Hence, 69 percent were filled by members of the Chamber of Deputies.

[12]We use a reconstructed series developed by Prometeia, a private forecasting company headquartered in Bologna, of provincial level per capita value added at factor cost.

[13]Val d'Aosta elected only a single representative, hence effectively using a plurality electoral rule. For this reason, and also because other types of data are often unavailable for it, it drops out of the analysis. Trieste, which was only created with the Third Legislature, is likewise excluded. This leaves us with 30 districts, corresponding to 90 provinces.

[14]Legislatures I, II and III each elected slightly fewer deputies. Deaths and resignations during the life of the legislature were handled by seating the party's candidate from the district who had received the most preference votes in the prior election but remained unelected. Because of variable numbers of such substitutes, the overall n for each legislature is slightly different.

[15]An additional three provinces were created in 1968 and another five in 1995, so that currently Italy has 103 provinces. We aggregate data to the original 92 provinces that form the bulk of the sample, since we cannot accurately disaggregate prior to 1968 for those provinces later carved into multiple provinces.

[16]The data have been made publicly available for 1954 to 1998 by (Picci 2005).

[17]ISTAT disaggregates expenditures into nine types of goods: land reclamation and irrigation (*bonifiche*); telecommunications (*comunicazione*); public buildings (*edilizia pubblica*); railways (*ferrovie*); water and electricity (*idriche*); public health (*igienico-sanitario*); rivers and ports (*maritime*); roads and airports (*strade*); and other (*altri*). Data are collected using quarterly questionnaires sent by ISTAT's central offices to all government offices responsible for disbursing investment funds. The information in the returns is aggregated annually and to provincial units (ISTAT, various years). These data, which are necessarily incomplete because of unanswered questionnaires sent to subnational government officials asking them to report infrastructure disbursements carried out under their auspices, are then apportioned among the different provinces and categories of goods on the basis of aggregate totals generated out of Italy's national accounts. For a detailed description of the procedures used, see (Bonaglia and Picci 2000) and, in English, (Golden and Picci 2005, Appendix B).

[18]The Verzichelli-Cotta dataset includes information on the sex, educational attainments, and party and professional backgrounds of deputies. We merged the Verzichelli-Cotta dataset with a dataset compiled by (Golden 2004a) containing the number of preference votes received by deputies in the first eleven postwar legislatures. We also coded and merged data on all ministerial and undersecretarial positions held by deputies, using information from *La Navicella*. We exclude ministers and undersecretaries drawn from the Senate or outside parliament (see fn.11).

[19]In fact, given that dummies are coded as either zeros or ones, computing ratios is equivalent to computing means. Ratios have a more natural interpretation.

[20]For details see (Baltagi 2005). In all the results that we present, a Hausman test rejects the null hypothesis that would justify use of a random effects estimator.

[21]We obtained contrasting results using the three tests documented in (De Hoyos and Sarafidis

2006).

[22]In results that we do not report, we also examined OLS standard errors. These usually produced interpretations similar to those for the Driscoll-Kraay standard errors that we report. Results available from the authors upon request.

[23]The politician receiving the most preference votes nationally receives a ranking of 1; hence, lower numbers indicate more influence in party headquarters in Rome.

[24]We also test for the interaction effect of powerful deputies and areas of party strength, to see if powerful deputies from areas where the governing parties are strong are more successful in securing investments. The interaction variable was not significant and even exhibited the "wrong" sign in the model over total investments (results not reported).

[25]For both one and two steps, we use Stata's xtabond2 program documented in (Roodman 2006). In order to limit the number of instruments, instruments have been limited to lagged first differences of order five. Whenever serial correlation of order two was detected, first differences of one lag were not included among the instruments, and all available further lags of the first differences were used as instruments. The dynamic model includes among the regressors first and second order lags of both the dependent variable and of population. In no case were further lags of these variables significant.

[26]In results not reported, we also reestimate our models in first differences, using a strategy suggested in (Baker, Benjamin, and Stanger 1999). With a few exceptions, they remained unaltered. Results available from the authors on request.

[27]Results of estimates for road and airports available upon request from the authors.

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Table 1: Abbreviations and Definitions of Independent Variables, and Expected Signs of Estimated Coefficients

variable label	variable name	expected sign
llinvtot/llinvstr	total investments/investments in roads and airports, previous leg., logged	+
lgdp	value added at factor cost, annual max. in previous leg., constant prices, logged	+/-
lpop	resident population, annual max. in previous leg., logged	+
aggpref	average of national percentile rankings of deputies by number of preference votes, weighted by national share to party	-
aggmaxpref	maximum of national percentile ranking of deputies by number of preference votes	-
aggrankpcdc	average of national percentile rankings of DC deputies by number of preference votes	-
aggmaxrankpcdc	maximum percentile ranking of DC deputies by number of preference votes	-
aggsex	ratio male to female	+
aggeduc	ratio more to less educated	+
aggsen	average seniority	+
aggpartyoff	ratio experienced in higher party office to inexperienced	+
aggprof	ratio professional politicians to others	+
aggminunder	ratio ministers/undersecretaries to backbenchers	+
aggmin	ratio ministers to undersecretaries/backbenchers	+
aggunder	ratio undersecretaries to ministers/backbenchers	+
govdeps	number of deputies	+
share	vote share	+
pcideps	number of deputies elected to Italian Communist Party	-
dm	district magnitude (total number of deputies elected, all parties)	+

Notes: All variables measured at the level of electoral districts by legislative period. Variables regarding legislators refer to deputies or parties affiliated with parties in government for at least half of the life of the legislature, except for *pcideps* and *dm*.

Table 2: Medians of Correlations between Variables, by Legislature

	linvtot	lgdp	lpop	aggpref	aggsex	aggeduc	aggsen	aggpartyoff	aggprof	aggminunder	govdeps	share
linvtot	1*											
lgdp	.605*	1*										
lpop	.748*	.933*	1*									
aggpref	−.214*	.151*	−.160*	1*								
aggsex	.013	−.192*	-.105	-.137	1*							
aggeduc	.178	−.177*	-.041	−.490*	.196	1*						
aggsen	.066	−.215*	−.128*	-.094	-.030	.085	1*					
aggpartyoff	.141	−.191*	−.130*	-.180	.087	.226	.503*	1*				
aggprof	-.048	.0520	.020	.101	.021	−.232*	.236	109	1*			
aggminunder	.180*	-.0623	.047	−.241*	.106	.128	.286	.321	-.058	1*		
govdeps	.238*	.356*	.437*	−.456*	-.150	.044	−.207*	−.252*	.132	.146	1*	
share	-.005	−.045*	.065*	−.281*	-.054	.164	-.114	-.220	-.166	-.046	.315*	1*

Notes: Medians of pairwise correlations over legislatures. If at least nine out of the ten correlations (one for each of the Second to the Eleventh Legislatures) have the same sign, the median of the pairwise correlations is starred.

Table 3: Panel Data Estimations (Fixed Effects) of Investments for Nine Legislative Periods (1957-94)

	Model 1	Model 2
	total invests	roads and airports
llinvtot	0.2660***	
	(0.0616)	
llinvstr		0.2558***
		(0.0512)
lgdp	0.1323	0.4427*
	(0.1655)	(0.2554)
lpop	0.8177***	0.8159**
	(0.2039)	(0.4028)
aggpref	-0.0364	-0.1324
	(0.1051)	(0.1404)
aggsex	0.3122	0.2200
	(0.2321)	(0.2981)
aggeduc	-0.0373	0.0378
	(0.0616)	(0.1317)
aggsen	0.0278	0.0875***
	(0.0267)	(0.0278)
aggpartyoff	0.2681*	0.1791
	(0.1393)	(0.1978)
aggprof	-0.2463***	-0.6084***
	(0.0853)	(0.0949)
aggminunder	0.2038**	0.1485
	(0.0664)	(0.2259)
govdeps	0.0283**	0.0105
	(0.0114)	(0.0189)
share	-0.0186***	-0.0138*
	(0.0047)	(0.0075)
Constant	-2.3700**	-6.8396***
	(1.0537)	(2.4832)
Obs	810	810
N of provs	90	90
R-squared	0.26	0.49

Notes: Driscoll-Kraay standard errors in parentheses. R-squared from OLS estimates. $*$ significant at 10%; $**$ significant at 5%; $***$ significant at 1%. "Total" refers to total infrastructure investments; "roads/airports" to infrastructure investments in roads and airports. "llinvtot" and "llinvstr" are logged versions of spending ("total" and "roads and airports") lagged to the previous legislative period.

Table 4: Panel Data Estimations (Fixed Effects) of Effects of Opposition Parties on Investments for Nine Legislative Periods (1957-94)

	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
	total	roads/airports	total	roads/airports	total	roads/airports	total	roads/airports
llinvtot	0.2665***		0.2670***		0.2608***		0.2628***	
	(0.0619)		(0.0620)		(0.0618)		(0.0625)	
llinvstr		0.2558***		0.2553***		0.2519***		0.2515***
		(0.0517)		(0.0513)		(0.0506)		(0.0508)
lgdp	0.1289	0.4388*	0.1344	0.4428*	0.1541	0.4668*	0.1528	0.4670*
	(0.1628)	(0.2537)	(0.1731)	(0.2592)	(0.1657)	(0.2526)	(0.1733)	(0.2555)
lpop	0.8956***	0.9112**	0.9357***	0.9360**	0.9103***	0.9132**	1.1084***	1.0003**
	(0.2045)	(0.3574)	(0.2037)	(0.3575)	(0.1465)	(0.3489)	(0.1689)	(0.3813)
aggpref	-0.0735	-0.1778*	0.0538	-0.1000	-0.0019	-0.0925	0.0925	-0.0516
	(0.1098)	(0.0990)	(0.0775)	(0.0788)	(0.1113)	(0.1389)	(0.0919)	(0.0862)
aggsex	0.3216	0.2314	0.3235	0.2324	0.3027	0.2091	0.3246	0.2185
	(0.2429)	(0.3190)	(0.2275)	(0.3143)	(0.2110)	(0.2684)	(0.2134)	(0.2648)
aggeduc	-0.0459	0.0273	-0.0142	0.0467	-0.0585	0.0149	-0.0309	0.0270
	(0.0643)	(0.1284)	(0.0587)	(0.1273)	(0.0689)	(0.1322)	(0.0689)	(0.1299)
aggsen	0.0285	0.0885***	0.0267	0.0875***	0.0222	0.0815***	0.0218	0.0815***
	(0.0276)	(0.0288)	(0.0263)	(0.0287)	(0.0256)	(0.0278)	(0.0259)	(0.0280)
aggpartyoff	0.2756*	0.1882	0.2528*	0.1741	0.2764*	0.1874	0.2597	0.1800
	(0.1391)	(0.1884)	(0.1411)	(0.1923)	(0.1521)	(0.2070)	(0.1582)	(0.2035)
aggprof	-0.2643***	-0.6303***	-0.2977***	-0.6510***	-0.2733***	-0.6389***	-0.3508***	-0.6730***
	(0.0925)	(0.0919)	(0.0868)	(0.0888)	(0.0820)	(0.0965)	(0.0771)	(0.1053)
aggminunder	0.1919***	0.1343	0.2090***	0.1449	0.2195***	0.1662	0.2176***	0.1657
	(0.0712)	(0.2246)	(0.0668)	(0.2263)	(0.0745)	(0.2396)	(0.0744)	(0.2404)
govdeps	0.0396***	0.0243***			0.0312***	0.0136		
	(0.0108)	(0.0095)			[0.0099] (0.0097)	(0.0143)		
share	-0.0211***	-0.0168***	-0.0116***	-0.0110**	-0.0215***	-0.0168***	-0.0134***	-0.0133***
	(0.0035)	(0.0025)	(0.0036)	(0.0047)	(0.0033)	(0.0044)	(0.0031)	(0.0031)
dm	-0.0154	-0.0188	0.0072	-0.0050				
	(0.0100)	(0.0282)	(0.0077)	(0.0238)				
pcideps					-0.0417**	-0.0455	-0.0377**	-0.0438
					(0.0191)	(0.0319)	(0.0169)	(0.0302)
Constant	-2.4788**	-6.9740***	-3.3565***	-7.5144***	-2.8368***	-7.3471***	-4.1833***	-7.9388***
	(0.9558)	(2.4228)	(1.0093)	(2.3737)	(0.9686)	(2.4487)	(1.1930)	(2.8585)
Obs	810	810	810	810	810	810	810	810
N of provs	90	90	90	90	90	90	90	90
R-squared	0.27	0.49	0.26	0.49	0.27	0.49	0.26	0.49

Notes: Driscoll-Kraay standard errors in parentheses. R-squared from OLS estimates. $*$ significant at 10%; $**$ significant at 5%; $***$ significant at 1%. "Total" refers to total infrastructure investments; "roads/airports" to infrastructure investments in roads and airports. "llinvtot" and "llinvstr" are logged versions of spending ("total" and "roads and airports") lagged to the previous legislative period.

Table 5: Medians of Correlations of Alternative Measures of Ranks of Deputies and Ministerial Influence

	aggpref	maxpref	rankpcdc	maxrankpcdc	aggmin	aggunder	aggminunder
aggpref	1*						
maxpref	.8885672*	1∗					
rankpcdc	.9651494*	.8422793*	1*				
maxrankpcdc	.8800018*	.9547519*	.8840249*	1*			
aggmin	−.13247474*	-.02853719	−.17462814*	-.02405473	1*		
aggunder	−.18219006*	−.2528457*	−.18198875*	−.23652995*	-.11283772	1*	
aggminunder	−.24335091*	−.2152402*	−.27449027*	−.23713529*	.43253732*	.8271212*	1*

Notes: Medians of pairwise correlations over legislatures. If at least nine out of the ten correlations (one for each of the Second to the Eleventh Legislatures) have the same sign, the median of the pairwise correlations is starred.

Table 6: Robustness Analysis I. Panel Data Estimations (Fixed Effects) of Investments using Alternative Measures of Ranks of Deputies and Ministerial Influence over Nine Legislative Periods (1957-94)

	Model 11	Model 12	Model 13	Model 14	Model 15
	total	total	total	total	roads/airports
llinvtot	0.2679***	0.2657***	0.2675***	0.2601***	
	(0.0618)	(0.0601)	(0.0612)	(0.0617)	
llinvstr					0.2506***
					(0.0492)
lgdp	0.1135	0.1334	0.1163	0.1003	0.3951
	(0.1661)	(0.1617)	(0.1591)	(0.1641)	(0.2538)
lpop	0.8386***	0.8156***	0.8348***	0.8827***	0.9063**
	(0.1809)	(0.1982)	(0.1817)	(0.2180)	(0.4414)
aggpref				0.01	-0.0602
				(0.1068)	(0.1413)
maxpref	0.1335				
	(0.1161)				
rankpcdc		-0.0696			
		(0.0757)			
maxrankpcdc			0.1024		
			(0.1044)		
aggsex	0.3292	0.3057	0.3329	0.3101	0.2162
	(0.2319)	(0.2215)	(0.2287)	(0.2342)	(0.2811)
aggeduc	-0.0347	-0.0387	-0.0380	-0.0639	-0.0014
	(0.0599)	(0.0614)	(0.0631)	(0.0613)	(0.1295)
aggsen	0.0303	0.0278	0.0296	0.0242	0.0823***
	(0.0279)	(0.0264)	(0.0278)	(0.0245)	(0.0275)
aggpartyoff	0.2751*	0.2684*	0.2700*	0.2487*	0.1494
	(0.1444)	(0.1448)	(0.1458)	(0.1407)	(0.2063)
aggprof	-0.2496***	-0.2489***	-0.2466***	–0.2357***	-0.5941***
	(0.0851)	(0.0843)	(0.0861)	(0.0781)	(0.1051)
aggminunder	0.2091***	0.2003***	0.2090***		
	(0.0649)	(0.0689)	(0.0628)		
aggmin				0.5623***	0.6807*
				(0.1325)	(0.3877)
aggunder				0.0898*	-0.0199
				(0.0521)	(0.1562)
govdeps	0.0256**	0.0280***	0.0269**	0.0240**	0.0040
	(0.0114)	(0.0106)	(0.0105)	(0.0118)	(0.0201)
share	-0.0182***	-0.0185***	-0.0184***	-0.0186***	-0.0137*
	(0.0047)	(0.0047)	(0.0047)	(0.0046)	(0.0073)
Constant	-2.4670**	-2.3388**	-2.4595**	-2.3906**	-6.8642**
	(1.1192)	(1.0365)	(1.1063)	(1.0510)	(2.6471)
Obs	810	810	810	810	810
N of provs	90	90	90	90	90
R-squared	0.26	0.26	0.26	0.27	0.49

Notes: Driscoll-Kraay standard errors in parentheses. R-squared from OLS estimates. $*$ significant at 10%; $**$ significant at 5%; $***$ significant at 1%. "Total" refers to total infrastructure investments; "roads/airports" to infrastructure investments in roads and airports."llinvtot" and "llinvstr" are logged versions of spending ("total" and "roads and airports") lagged to the previous legislative period.

Table 7: Robustness Analysis II. Alternate Estimations of Investments for Nine Legislative Periods (1957-1994)

	Model 16	Model 17	Model 18	Model 19	Model 20	Model 21	Model 22	Model 23
	total	roads	total	total	total	total	roads	total
llinvtot	0.3598***		0.3625***	0.3616***	0.3620***	0.3530***		0.3612***
	[0.0596]		[0.0579]	[0.0587]	[0.0580]	[0.0592]		[0.0600]
llinvstr		0.3521***					0.2642***	
		[0.0945]					[0.0692]	
	[0.4509]	[0.8644]	[0.4584]	[0.4431]	[0.4562]	[0.4657]	[0.7072]	[0.4397]
lpop	0.3668	0.5752	0.4063	0.4044	0.4217	0.4254	0.5883	0.6322*
	[0.3203]	[0.5144]	[0.3159]	[0.3144]	[0.3133]	[0.3320]	[0.5093]	[0.3467]
aggpref	-0.1372	-0.015				-0.0884	0.1548	-0.118
	[0.2132]	[0.2979]				[0.2078]	[0.3041]	[0.2131]
aggsex	0.2532	-0.3565	0.2562	0.2465	0.26	0.223	-0.4158	0.2327
	[0.2703]	[0.3834]	[0.2715]	[0.2715]	[0.2734]	[0.2692]	[0.3329]	[0.2659]
aggeduc	-0.1115	0.183	-0.0968	-0.0988	-0.0958	-0.1283	0.1148	-0.1206
	[0.1688]	[0.2255]	[0.1680]	[0.1666]	[0.1657]	[0.1679]	[0.2214]	[0.1674]
aggsen	0.0035	0.0211	0.0044	0.0047	0.0052	0.0041	0.0483	0.0031
	[0.0424]	[0.0557]	[0.0421]	[0.0424]	[0.0421]	[0.0424]	[0.0532]	[0.0423]
aggpartyoff	0.5195***	0.3432	0.5224***	0.5218***	0.5182***	0.5321***	0.3651*	0.5255***
	[0.1682]	[0.2117]	[0.1699]	[0.1692]	[0.1709]	[0.1673]	[0.1996]	[0.1680]
aggprof	-0.3799*	-0.5214*	-0.3761*	-0.3793*	-0.3746*	-0.3891*	-0.4891	-0.3966*
	[0.2197]	[0.3140]	[0.2215]	[0.2224]	[0.2212]	[0.2241]	[0.3006]	[0.2195]
aggminunder	0.182	0.0001	0.1845	0.1825	0.1831			0.1747
	[0.1192]	[0.1931]	[0.1192]	[0.1186]	[0.1188]			[0.1201]
govdeps	0.0431***	0.0237	0.0407**	0.0405**	0.0398**	0.0387**	0.008	0.0498***
	[0.0166]	[0.0220]	[0.0174]	[0.0167]	[0.0170]	[0.0172]	[0.0207]	[0.0188]
share	-0.0150**	-0.0194**	-0.0147**	-0.0145**	-0.0146**	-0.0143**	-0.0143*	-0.0164**
	[0.0063]	[0.0090]	[0.0063]	[0.0063]	[0.0063]	[0.0064]	[0.0079]	[0.0066]
pcideps								
dm								-0.0254*
								[0.0140]
aggmin						0.4394*	0.5233	
						[0.2434]	[0.3184]	
aggunder						0.1056	-0.0925	
						[0.1292]	[0.2123]	
maxrankpcdc					0.0302			
					[0.1366]			
rankpcdc				-0.054				
				[0.1995]				
maxpref			-0.0049					
			[0.1539]					
Observations	720	720	720	720	720	720	720	720
Number of provnum	90	90	90	90	90	90	90	90

Notes: Robust standard errors in brackets. $*$ significant at 10%; $**$ significant at 5%; $***$ significant at 1%. "Total" refers to total infrastructure investments; "roads" to infrastructure investments in roads and airports. "llinvtot" and "llinvstr" are logged versions of spending ("total" and "roads and airports") lagged to the previous legislative period.

Table 7: Robustness Analysis II. Alternate Estimations of Investments for Nine Legislative Periods (1957-1994), cont.

	Model 24	Model 25	Model 26	Model 27	Model 28	Model 29	Model 30
	roads	total	roads	total	roads	total	roads
llinvtot		0.3704***		0.3467***		0.3552***	
		[0.0583]		[0.0591]		[0.0576]	
llinvstr	0.3036***		0.2977***		0.2842***		0.2842***
	[0.0945]		[0.0946]		[0.0951]		[0.0952]
	[0.9199]	[0.4257]	[0.9304]	[0.4613]	[0.8952]	[0.4393]	[0.9035]
lpop	0.746	0.8007**	0.7863	0.6802**	0.7251	1.0095***	0.8953*
	[0.5553]	[0.3380]	[0.5464]	[0.3044]	[0.5300]	[0.2828]	[0.5107]
aggpref	-0.0005	0.0924	0.1106	-0.0411	0.0315	0.1572	0.1418
	[0.2940]	[0.2251]	[0.2876]	[0.2106]	[0.2940]	[0.2218]	[0.2909]
aggsex	-0.2919	0.2862	-0.2656	0.2085	-0.2928	0.2417	-0.2768
	[0.3783]	[0.2628]	[0.3728]	[0.2565]	[0.3755]	[0.2520]	[0.3706]
aggeduc	0.1739	-0.0328	0.22	-0.1057	0.1747	-0.0358	0.2046
	[0.2184]	[0.1678]	[0.2173]	[0.1641]	[0.2164]	[0.1636]	[0.2156]
aggsen	0.0325	0.0009	0.0301	-0.0064	0.0335	-0.0092	0.0304
	[0.0548]	[0.0428]	[0.0548]	[0.0427]	[0.0547]	[0.0430]	[0.0551]
aggpartyoff	0.2765	0.4648***	0.256	0.5621***	0.2891	0.5165***	0.273
	[0.2065]	[0.1700]	[0.2086]	[0.1679]	[0.2039]	[0.1695]	[0.2060]
aggprof	-0.5276*	-0.4236**	-0.5514*	-0.3753*	-0.5051*	-0.4102*	-0.5383*
	[0.3020]	[0.2159]	[0.2982]	[0.2200]	[0.3008]	[0.2184]	[0.2984]
aggminunder	-0.0586	0.1849	-0.0463	0.2307*	-0.0298	0.2363**	-0.0247
	[0.1909]	[0.1178]	[0.1892]	[0.1217]	[0.1917]	[0.1198]	[0.1905]
govdeps	0.0282			0.0388**	0.0222		
	[0.0211]			[0.0160]	[0.0209]		
share	-0.0188**	-0.0047	-0.0127*	-0.0149**	-0.0179**	-0.0057	-0.0131*
	[0.0087]	[0.0041]	[0.0067]	[0.0062]	[0.0088]	[0.0043]	[0.0067]
pcideps				-0.0648***	-0.0418*	-0.0690***	-0.0431*
				[0.0155]	[0.0223]	[0.0155]	[0.0227]
dm	-0.0197	-0.0071	-0.007				
	[0.0225]	[0.0124]	[0.0224]				
aggmin							
aggunder							
maxrankpcdc							
rankpcdc							
maxpref							
Observations	720	720	720	720	720	720	720
Number of provnum	90	90	90	90	90	90	90

Notes: Robust standard errors in brackets. $*$ significant at 10%; $**$ significant at 5%; $***$ significant at 1%. "Total" refers to total infrastructure investments; "roads" to infrastructure investments in roads and airports."llinvtot" and "llinvstr" are logged versions of spending ("total" and "roads and airports") lagged to the previous legislative period. Estimation uses Arellano-Bond one-step estimator.

Table 8: Robustness Analysis III. Panel Data Estimations (Fixed Effects) of Total Investments for Nine Legislative Periods, Annual Data (1957-1994)

)	Model 31	Model 32	Model 33	Model 34	Model 35	Model 36	Model 37	Model 38
aggpref	0.0097				0.0197	-0.0092	0.0481	0.0129
	(0.0811)				(0.0823)	(0.0843)	(0.0904)	(0.0820)
maxpref		0.0858						
		(0.0789)						
rankpcdc			-0.0346					
			(0.0863)					
maxrankpcdc				0.0557				
				(0.0828)				
aggsex	0.1725	0.1799	0.1659	0.1803	0.1694	0.1727	0.1742	0.1607
	(0.1305)	(0.1307)	(0.1255)	(0.1293)	(0.1280)	(0.1323)	(0.1300)	(0.1293)
aggeduc	-0.0362	-0.0396	-0.0383	-0.0401	-0.0556	-0.0383	-0.0255	-0.0364
	(0.0580)	(0.0577)	(0.0579)	(0.0591)	(0.0569)	(0.0587)	(0.0574)	(0.0591)
aggsen	0.0081	0.0105	0.0071	0.0097	0.0052	0.0085	0.0071	0.0060
	(0.0175)	(0.0171)	(0.0176)	(0.0168)	(0.0167)	(0.0179)	(0.0166)	(0.0178)
aggpartyoff	0.1440**	0.1458**	0.1425**	0.1431**	0.1394**	0.1442**	0.1363**	0.1416**
	(0.0599)	(0.0593)	(0.0604)	(0.0605)	(0.0582)	(0.0600)	(0.0601)	(0.0628)
aggprof	-0.1157	-0.1152	-0.1179	-0.1141	-0.1047	-0.1231	-0.1288	-0.1190
	(0.0804)	(0.0802)	(0.0816)	(0.0808)	(0.0784)	(0.0818)	(0.0818)	(0.0808)
aggminunder	0.0719	0.0749	0.0691	0.0742		0.0666	0.0773	0.0778
	(0.0523)	(0.0511)	(0.0531)	(0.0504)		(0.0514)	(0.0504)	(0.0535)
aggmin					0.2702***			
					(0.0866)			
aggunder					0.0109			
					(0.0508)			
govdeps	0.0158***	0.0149***	0.0158***	0.0156***	0.0142***	0.0208***		0.0182***
	(0.0049)	(0.0050)	(0.0052)	(0.0050)	(0.0050)	(0.0075)		(0.0046)
share	-0.0103***	-0.0100***	-0.0105***	-0.0101***	-0.0104***	-0.0117***	-0.0062**	-0.0123***
	(0.0028)	(0.0029)	(0.0027)	(0.0029)	(0.0027)	(0.0022)	(0.0026)	(0.0022)
pcideps								-0.0178*
								(0.0093)
dm						-0.0060	0.0070*	
						(0.0066)	(0.0040)	
Constant	0.1673	0.0597	0.2530	0.0785	0.1508	0.1939	-0.3118	0.0848
	(0.8531)	(0.8379)	(0.8519)	(0.8394)	(0.8258)	(0.8352)	(0.9452)	(0.8401)
Obs	3504	3504	3504	3504	3504	3504	3504	3504
N of provs	90	90	90	90	90	90	90	90
R-squared	0.494	0.494	0.494	0.494.	0.495	0.494	0.493	0.495

Notes: Driscoll-Kraay standard errors in parentheses. R-squared from OLS estimates. Lags not reported. $*$ significant at 10%; $**$ significant at 5%; $***$ significant at 1%.

Figure 1: Predictions of Types of Electoral Districts Likely to Receive Most Resources under Alternative Institutional Arrangements

		Governing Parties	
		strong	weak
Electoral System	SMD	marginal districts	safe districts
	PR	party strongholds	party leader bailiwicks