Members of the Same Club? Subnational Variations in Electoral Returns to Public Goods

Tugba Bozcaga

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Tugba Bozcaga†

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†Assistant Professor in Politics (Political Methodology), King's College London. Email: tugba.bozcaga@kcl.ac.uk, URL: tugbabozcaga.com

Abstract

Theories of democratic governance assume that citizens reward or punish politicians for their performance in providing public services. This study expands the existing debate by shifting the focus to subnational heterogeneities in electoral returns to government performance. I introduce a theory suggesting that electoral returns to local public goods will increase with their excludability, i.e., the degree to which they are used only by the local population, as, due to their excludability, the local population will see them as 'club goods' and a signal of favoritism. However, this perception of favoritism and club good effect is less likely to be seen when political, ethnic, or religious cleavages between the government and the local electorate exist. Using a comprehensive panel dataset containing information on all public education and health investments in Turkey since the 1990s and geocoded mobile call data showing residents' mobility patterns, this study finds that electoral returns to health and education investments are higher when public goods have a club good nature. However, excludability does not translate to higher reciprocity in secular districts, where a perception of favoritism is less likely to develop due to the cleavages with the Islamist incumbent party, AKP. By revealing that electoral returns to government investments are conditional on characteristics of community structure and composition of beneficiaries, this paper advances the literatures on local public services and electoral accountability.

1 Introduction

Elections are key to holding politicians accountable and rewarding or punishing them for their performance (Key 1966; Barro 1973; Ferejohn 1986; Fearon 1999). An extensive literature of democratic governance supports the view that electoral accountability has a positive influence on government performance (Lake and Baum 2001; Besley and Burgess 2002; Stasavage 2005). But to what extent do citizens really reward politicians for the services they provide?[1] What local characteristics condition electoral returns to goods and services provided by the state? This paper intends to answer these questions with a focus on health and education services, two key service areas with direct implications for social welfare.

Recent scholarship on the question of whether public goods provision, in line with retrospective voting theories, increases incumbent support has found mixed results (Harding and Stasavage 2014; Harding 2015; Kadt and Lieberman 2020). This paper expands upon existing research by arguing that electoral returns to public goods are not uniform across a country; rather, they depend on political geography and the ethnic or religious composition of the local electorate. Drawing on insights from instrumental voting theories (Chandra 2007*b*), I propose that electoral returns to local public goods will increase with their *excludability*, i.e., the degree to which they are used only by the local population, because when public goods are excludable, the local population will see them as 'club goods' and as a signal of favoritism. However, this club good effect, i.e., the perception of favoritism and higher electoral returns among the local electorate, is less likely to occur in districts with political, ethnic, or religious cleavages between the incumbent government and local electorate, as in these districts a perception of favoritism is less likely to develop.

To test this argument, I use a comprehensive panel dataset that includes information on all infrastructural education and health investments made by the central government in Turkey since the 1990s, using a difference-in-differences specification. The study focuses on the health and education sectors, the two most salient public services provided by the central government in the Turkish context. To measure the excludability of a district where a given public health or education investment is made, I draw on geocoded mobile call detail records (CDRs) and compute the percentage of visitors in a district over a year. These CDRs contain information on over 108,000,000 mobile phone calls between

[1] In this paper, the term incumbent government refers to the central government in unitary systems and federal government in countries with a decentralized system. Also, the terms "public investments," "public services," and "public goods" will be used interchangeably to refer to the goods provided by the central government at the local level.

roughly 2,700,000 randomly sampled individual users, showing the geolocation of each call (through the geolocation of antennas). Using these records, I determine each user's home antenna, their mobility, and, thereby, the percentage of users in a given district who are visitors. This continuous mobility measure, i.e., the share of residents among all visitors in a district, serves as a proxy for the excludability of local public investments in the district, where a high resident percentage indicates high excludability.

The findings show that electoral returns to public goods increase with the excludability of investments. However, this increase is lower, or sometimes statistically insignificant, in secular districts, where residents are unlikely to view local public investments made by the Islamist incumbent party, AKP, as a signal of favoritism. Looking at the marginal effects, health investments, when compared to education investments, have a particularly substantive impact on the vote share of the incumbent party if they are excludable. The study also assesses the robustness of the findings and potential alternative explanations as to why there might be higher electoral returns in districts with high excludability, such as better access to public services, preexisting supply of public goods, targeting, visibility, and partisanship. Using individual-level survey data, I provide suggestive evidence that accessibility to public services does not differ between high- and low-excludability areas. Second, if the supply of public goods is relatively low in high-excludability districts such as rural areas(Bates 1981), citizens in those districts may be more in need and may reward the incumbent more for a given amount of public investment. Nevertheless, I do not find supportive evidence for this relationship between preexisting supply and electoral returns. Nor do partisanship or visibility appear to have a significant effect on the electoral returns to these public investments. Additionally, I examine whether there is any potential reverse causality and targeting to districts where the incumbent government can better mobilize voters but find no evidence for this explanation. Finally, I examine the trends of within-district changes in Islamic or incumbent vote shares between high- and low-investment, as well as high- and low-excludability districts, with a focus on the pre-treatment period (i.e., pre-2002—the year in which the current incumbent party, Erdogan's AKP, came to power). I find no evidence for the violation of the parallel trends assumption.

A crucial theoretical contribution of this study is that electoral accountability is not a uniform feature of democratic politics, but rather it is conditioned by the composition of its beneficiaries, which is itself shaped by the political geography and the ethnic and religious composition. By revealing the systematic relationships between these factors and electoral rewards, this study reveals an alternative source of heterogeneity in citizens' evaluations of government performance, in addition to informational asymmetries

(Ferraz and Finan 2008), personal partisan biases (Evans and Pickup 2010; Bartels 2002), and personal ethnic biases (Adida et al. 2017; Carlson 2015). The findings of this study are especially important for understanding null findings in cases in which conditioning factors may mask electoral rewarding. To my knowledge, this is also the first study that focuses on systematic subnational heterogeneities in electoral returns to local public services. By focusing on the question of *in which settings* citizens reward local public services instead of *whether*, it extends the existing literature on service delivery and electoral accountability (Harding 2015; Harding and Stasavage 2014; Kadt and Lieberman 2020).

The findings also suggest that electoral districts where public goods have a club good nature, such as rural areas, may reward the incumbent more for local public investments. Thus, building upon existing studies of distributive politics, this study confirms that electorates may respond to incumbents' geographical targeting (Magaloni, Diaz-Cayeros and Estévez 2007) but extends this view by showing that voters do not reward the investments made by incumbents in all local contexts. In cases where incumbent governments are aware of this reward gap between low- and high-excludability services, their political monopoly over public resources can provide them with a considerable advantage in preserving their power (Medina and Stokes 2007).

The next section surveys the literature and theory on public goods provision and electoral behavior. The following sections discuss the empirical strategy, data, results, and robustness checks, respectively. Then, I provide additional analyses on alternative explanations. I conclude with a brief discussion of the findings.

2 Background and Theory

The relationship between elections and public services is an extensively studied area. Seeing electoral competition as a mechanism "to hold incumbents accountable to the public" or "make policies [...] responsive to public wishes" (Ferejohn 1986), these accounts arrive at the conclusion that electoral competition increases incumbent performance in public services. These studies cover a wide range of contexts and empirical approaches, from studies of the role of democracy in the emergence of welfare states (Lindert 2004), to cross-country correlations between democracy and service provision (Gerring, Thacker and Alfaro 2012; Lake and Baum 2001). Studies centered on the developing world also point out the positive consequences of democracy and electoral competition with respect to public services (Cruz, Labonne and Querubin 2020; Huber, Mustillo and Stephens 2008; Stasavage 2005; Besley and Burgess 2002; Brown 1999),

although some argue that democracy is not a necessary condition for positive social welfare outcomes (Haggard, Kaufman et al. 2008). Overall, scholars highlight the positive effects of perceived electoral pressure on development and service provision.

The question of whether voters indeed reward incumbents for public services is of fundamental importance for democracy to generate the political accountability mechanisms that underpin public services and developmental outcomes. Classical treatments suggest that voters will respond to incumbents by evaluating their past performance and policies (Fiorina 1981; Key 1966; Ferejohn 1986). A number of studies lend support to this argument, showing that incumbents' economic and disaster relief performance can affect electoral outcomes (Bechtel and Hainmueller 2011; Cole, Healy and Werker 2009; Healy and Malhotra 2013).

Surprisingly few studies assess whether government performance at the local level, particularly in service provision, translates to electoral returns (Harding 2015; Harding and Stasavage 2014; Kadt and Lieberman 2020). Exploiting the reduction in school fees in Kenya, Harding and Stasavage (2014) find that citizens indeed shape their voting behavior based on politicians' performance with the condition that they know who they should hold accountable. In a similar vein, using a macro-level empirical analysis, Harding (2015) reports that road provision positively affects the incumbent party's vote share in contemporary Ghana. Survey data investigating this relationship at the individual level also finds evidence for a relation between perceptions of service provision and voting intentions (Dowding and John 2008). Studies that question the premises of retrospective voting and investigate the conditions under which it operates mostly focus on sociotrophic factors, legislative performance, disaster relief, or corruption. These studies demonstrate that informational asymmetries (Lupia et al. 1998; Ferraz and Finan 2008), including those causing attributability problems (Duch and Stevenson 2008); cognitive fallacies (Achen and Bartels 2004; Huber, Hill and Lenz 2012); personal partisan biases (Evans and Pickup 2010; Bartels 2002; Healy, Kuo and Malhotra 2014); and ethnic biases (Adida et al. 2017; Carlson 2015) prevent voters from making correct assessments of past performance. Some scholars even find a negative relationship between improvements in service provision and support for incumbent parties (Kadt and Lieberman 2020).[2]

This study argues that there is no reason to expect uniformity in electoral returns to public goods investments, even if informational and cognitive barriers and biases are kept constant, because voting behavior is a function of not only outcomes but also perceptions of favoritism and expectations of future benefits. The argument in this study

[2]For a comprehensive review of retrospective voting and electoral accountability theories, see Healy, Kuo and Malhotra (2014) and Ashworth (2012).

draws on instrumental ethnic voting theories in two respects (Carlson 2015; Chandra 2007*a*; Conroy-Krutz 2012; Ichino and Nathan 2013): in assuming that severe information constraints force voters to use their cues to decide who to vote for, and that voters' choices will depend on how much they believe a certain party will favor them based on these cues.

The focus of instrumental voting theories is on ethnic cues. Theories of instrumental ethnic voting contend that voters prefer ethnic voting because they tend to see coethnicity as a cue instrumental in maximizing benefits (Chandra 2007*a*,*b*). Therefore, when voters presume that a party or politician delivers benefits primarily to in-group members, they vote for the party or politician from their own ethnic group (Chandra 2007*a*; Ferree 2010). Using ethnicity as a cue is efficient for both sides because it is a cheap source of political information, without which it would be challenging to secure such a mutual relationship. However, the instrumental ethnic voting literature assumes that, while ethnic identity is a costless source of information and gives a signal of favoritism to voters, "costless data about non-ethnic identities are not typically available." (Chandra 2007*b*, p.37).

Just as ethnicity can be used as costless data by voters, I argue that *local public investments made by an incumbent party are another source of costless data that can signal favoritism from the party to the local population*. This reasoning is simple: when a party makes an investment at the local level, voters in places with high excludability are likely to believe that elected officials allocate these services to constituencies they favor, particularly in countries and contexts where incumbent parties and politicians can use discretion to allocate services (Chandra 2007*b*, p.44). This increase in perceived favoritism in the allocation of services increases the likelihood of the local constituency (where the investments are made and services are allocated) to vote for the incumbent, in expectation of future benefits. However, in order for these locally allocated goods and services to be perceived as a favor to their community, they need to have high excludability, i.e., used mostly or only by the local population. This is simply because if an investment or service is made for a wider population by nature, such as an airport, or due to the location, such as a hospital in downtown Ankara or Boston, there is no reason for the population residing there to develop any perception of favoritism, as it is obvious that the incumbent party or politician does not see the local population as the sole or primary beneficiary of the service. On the other hand, if public goods are only or mostly utilized by local residents, it is very likely that the local electorate will believe that the party favors them. Due to the perceived favoritism from the incumbent party, voters are incentivized to vote for the incumbent, leading to higher electoral returns to local public services in electoral districts with high excludability. This argument leads to the following hypothesis:

Hypothesis 1: Electoral returns to local public goods increase with the excludability of the electoral district.

While my argument draws on existing instrumental voting theories in their emphasis on perceived favoritism, it does not contradict it. Just as voters need costless data to understand whether an incumbent party favors them and "ethnicity serves as a cue of favoritism in information-poor environments," club goods can increase perceived favoritism by citizens. [3] On the other hand, because identity-based considerations—including but not limited to ethnicity—can also influence the constituency's perceptions of favoritism(Carlson 2015), voters are less likely to develop this perception in electoral districts where there are ethnic, religious, or other identity-related cleavages between the incumbent government and local electorate. In other words, the effect of excludability on vote share is unlikely to hold in electoral districts where identity-related cleavages exist between the incumbent and local constituency, leading to my second hypothesis.

Hypothesis 2: Excludability is less likely to increase electoral returns to local public goods when there are ethnic, religious, or other identity-related cleavages between the incumbent government and local electorate.

3 Setting

Turkey provides a suitable testing ground for examining the impact of local public good provision on incumbent support for three reasons. The use of a multi-member district electoral system in Turkey makes it hard for the incumbent government to choose where to target public goods for electoral gains and alleviates reverse causality concerns. In addition, due to its centralized governance structure and the provision of education and health services by the central government, performance in these two public services can directly be credited to the central government.[4] Third, because these key welfare services, education and health care, are provided by the central government and its local administrators, Turkey is a setting in which the central government's performance mat-

[3] An implication of my argument is that when selective targeting is possible due to the nature of the public service or location(Chandra 2007*b*, p.95), improvements or investments in public services can act as direct signals of favoritism and voters do not have to rely on the co-ethnicity cue to instrumentalize their vote.

[4] Turkey is subdivided into 81 provinces, each of which corresponds to one multi-member district. Below these 81 provinces sit around 970 districts. Province and district governorships involve the directorates of ministries, such as the Ministry of Health and the Ministry of Education, and are headed by province governors and district governors, who, like other local bureaucrats, are regularly appointed by the central government on the basis of organizational rules and formula. Each district governorship can thus be described as a micro model of the central government. Local bureaucrats fulfill the orders of the central government but it is illegal for them to be party-affiliated. The public services of the central government are channeled through this strict hierarchy.

ters most for the short- and long-term welfare of citizens. Therefore, similarly to other centralized countries (Scheiner 2005), national election results are very much shaped by Ankara's performance in providing local public goods and services.

Turkey provides an empirical setting ruled by a single-party government headed by Erdogan's Justice and Development Party (AKP) between 2002-2018, despite its electoral institutions based on a PR system. AKP was founded in 2001 and won its first elections in 2002 in a country that had not witnessed a single-party government since the 50s[5]. AKP's enduring majority, despite the absence of preexisting partisan attachments or complete control over the bureaucratic machine, points out that changes in voters' individual conditions such as public services may have reinforced voters' support for the incumbent party. In line with this expectation, public opinion results emphasize the importance of public services in AKP's electoral success: 41% of AKP supporters think that satisfaction with public services is the primary reason that people vote for AKP (KONDA, 2014). Statistics concerning local public investments demonstrate that, as reflected in the party's program and rhetoric, public service provision was indeed high on AKP's agenda from the outset of its single-party government. This resulted in an enormous rise in the amount of public goods investment (Figure 3) and citizens' satisfaction with public services (Figure 1). The enormous emphasis on public service in AKP's discourses and its organizational capacity linked with Islamist grassroots affiliations (Meyersson 2014) has further reinforced the party's reputation in public goods provision.

4 Research Design

4.1 Empirical Strategy

This paper uses a triple differences design, which can also be considered a difference-in-difference (DID) design with an interaction term, examining the effect of public goods investments with different levels of excludability on electoral behavior in order to minimize potential unobserved heterogeneity among districts in a certain time period, or among time periods in a certain district. Unlike the typical DID designs, the group or treatment dummy is replaced by a continuous variable—the amount of public goods investment by year t—and interacted with a second level of treatment—the excludability measure. Intuitively, the model differences out dissimilarities between high-

[5]Since the Democrat Party's victory in Turkey in the 1950s, no other party had won three subsequent elections and the majority of the parliament.

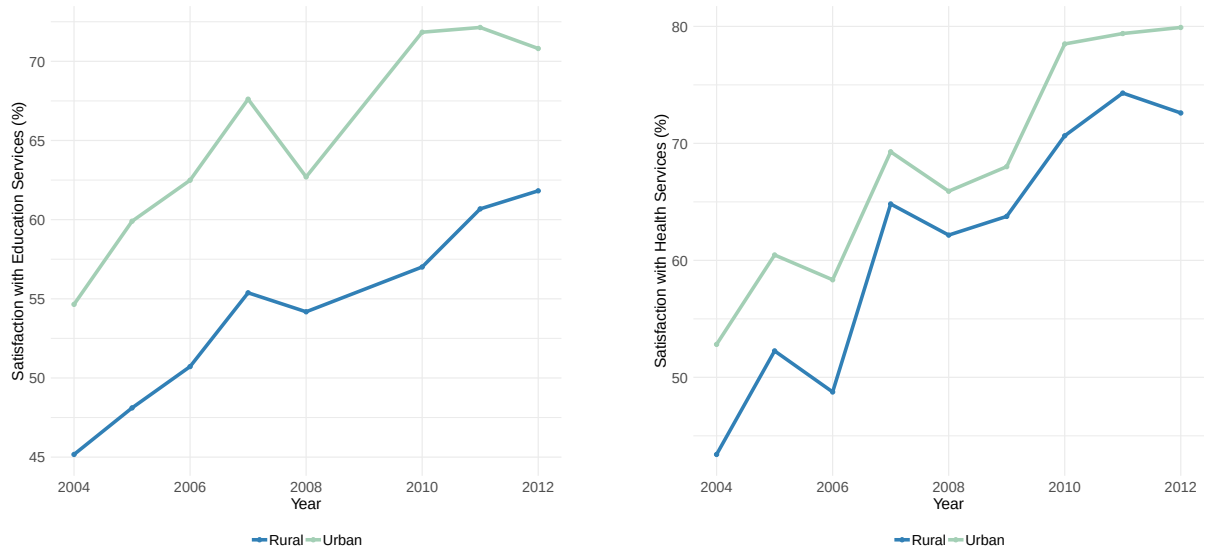

Figure 1: Satisfaction with Public Education and Health Services over Time

excludability and low-excludability districts that received public education and health investments of different amounts.

Although AKP, the incumbent party of Turkey, was founded in 2001 as a new party, it won all the elections between 2002 and 2015 as a single party government. 2007 was an important turning point for the party, because unlike the elections in 2002, in 2007 and subsequent elections, AKP competed as the incumbent government. In other words, while in the 2002 general elections, AKP competed as a new party with no preexisting government experience and partisan ties, in and after the 2007 elections, its performance in public services (and other areas) was voted as well. Because all public goods investments in the post-2002 period were made by, and can be attributed to, the single government headed by AKP, I define 2002 as the pretreatment (pre-incumbency) election and the 2007, 2011, and 2015 elections as the posttreatment (post-incumbency) elections. Using the amount of public goods investment between 2002 and the election year as the continuous treatment variable, and interacting it with the continuous excludability measure, I construct the following triple differences model with multiple treatment periods:

$$y_{it} = \delta_i + \eta_t + \beta Inv_{it} + \psi Inv_{it} \times Club_i + \gamma x'_{it} + \epsilon_{it} \tag{1}$$

Here, y_{it} is the vote share of AKP vote share in district i in election t. Inv_{it} is the number of all the public education or health investments in district i made from 2002 until election t. In the alternative model where a binary treatment is used instead, Inv_{it}

shows whether AKP made *any* investment to district i by election t. The investment variable is interacted with a cross-sectional variable, $Club_i$. The interaction enables us to see how the effect of investments varies at different levels of excludability. The parameter of interest is ψ, the coefficient on the interaction term. δ_i is a district-level fixed effect, and η_t is a period fixed effect to control for common trends. x_i' is a set of time-varying district-level characteristics. Finally, ϵ_{it} is an idiosyncratic error term. This model accounts for time-invariant district characteristics that might influence AKP's vote share, such as the ethnic composition or religiosity of a district. The reason all investments between 2002 and election t are pooled is the cyclical pattern of public goods investments and the fact even if district i does not receive any investments in election term t, its investments in election term $t-1$ continue to bring electoral returns in election term t. Therefore, including only the investments in a single election period would lead to omitted variable bias.

If excludability shapes electoral returns, as stated in Hypothesis 1, I expect a one unit increase in $Club_i$ to result in an increase in y_{it}, implying a positive ψ coefficient. In other words, if public goods have a heterogeneous impact on party vote share and bring higher electoral returns in districts with higher excludability, the sign of the putative relationship between the interaction term and dependent variable should be positive. The model also imposes a linear relationship between the treatment and dependent variables. Nevertheless, an initial look at the relationship between investments and the first difference of the dependent variable raises confidence in this specification (Figure 2). In addition, since the error term is probably systematically correlated within a unit, the analysis needs to take into account the clustering among standard errors. Therefore, the standard errors are clustered by district.

4.2 Identification Issues

Table 1: Pre- and Post- Election Investment Flows

Type	Pre-2007	Post-2007	Pre-2011	Post-2011	Pre-2015	Post-2015
Education	12.33	27.50	47.08	37.67	56.33	60.50
Health	2.83	5.17	6.08	5.75	8.25	8.00

Note: The monthly average of the number of investments made in the 6 months preceding or following the elections.

The identification strategy of the empirical design relies on the interaction effect, $(Inv_{it} \times Club_i)$, being exogenous with respect to the party's vote share. There are two main challenges to making such an assumption. First, if there are district characteristics

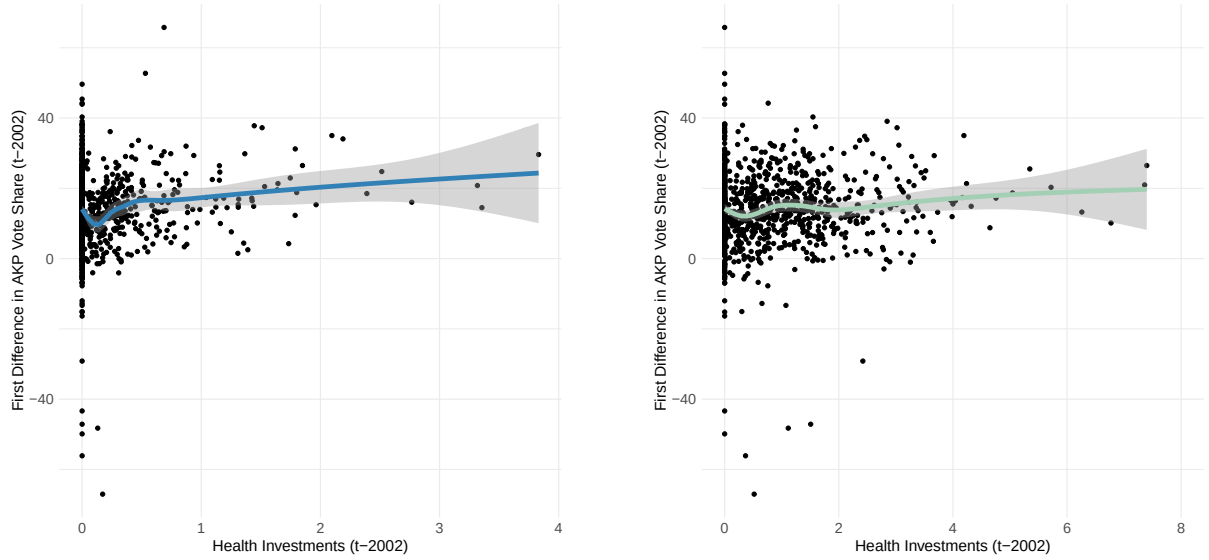

Figure 2: First Differences in Education and Health Investments and Vote Share

that influence the location of investments or their excludability while also shaping the change in the party's vote share, then this would violate the exogeneity assumption. Second, high-investment or high-excludability areas might be on a different trend in terms of their vote shares for the incumbent party prior to 2002.

To address the first challenge, I include time-varying variables for several district characteristics that might correlate with the amount of investment and also directly impact the increase in AKP vote share. These variables are represented by the term $x_i't$ in equation (1). I address the second challenge by examining whether districts with different levels of investment or excludability were trending differently in terms of their Islamic vote shares prior to 2002 (see Section 6.3).

Besides these additional checks and controls, the exogeneity of public goods investments to previous trends in vote shares is plausible for several reasons. First of all, it is simply hard for a party to determine *a priori*where electoral rewards will be greater and target investments accordingly. Second, Turkey uses a multi-member district electoral system, and conventional core-swing hypotheses cannot be applied to explain distributive politics in Turkey, making it hard for the incumbent governments to choose where to invest. Third, given the large scale of investments used in the analysis, education and health buildings; the limited amount of resources; and uncertainties about the timing of the completion of projects due to complex and long-term planning processes, constructing new education and health buildings is not the most efficient and feasible way of voter-targeting for politicians.[6] Finally, if AKP targeted investments to districts that are

[6]Interview conducted by the author, Ministry of Development, 01/17/2015.

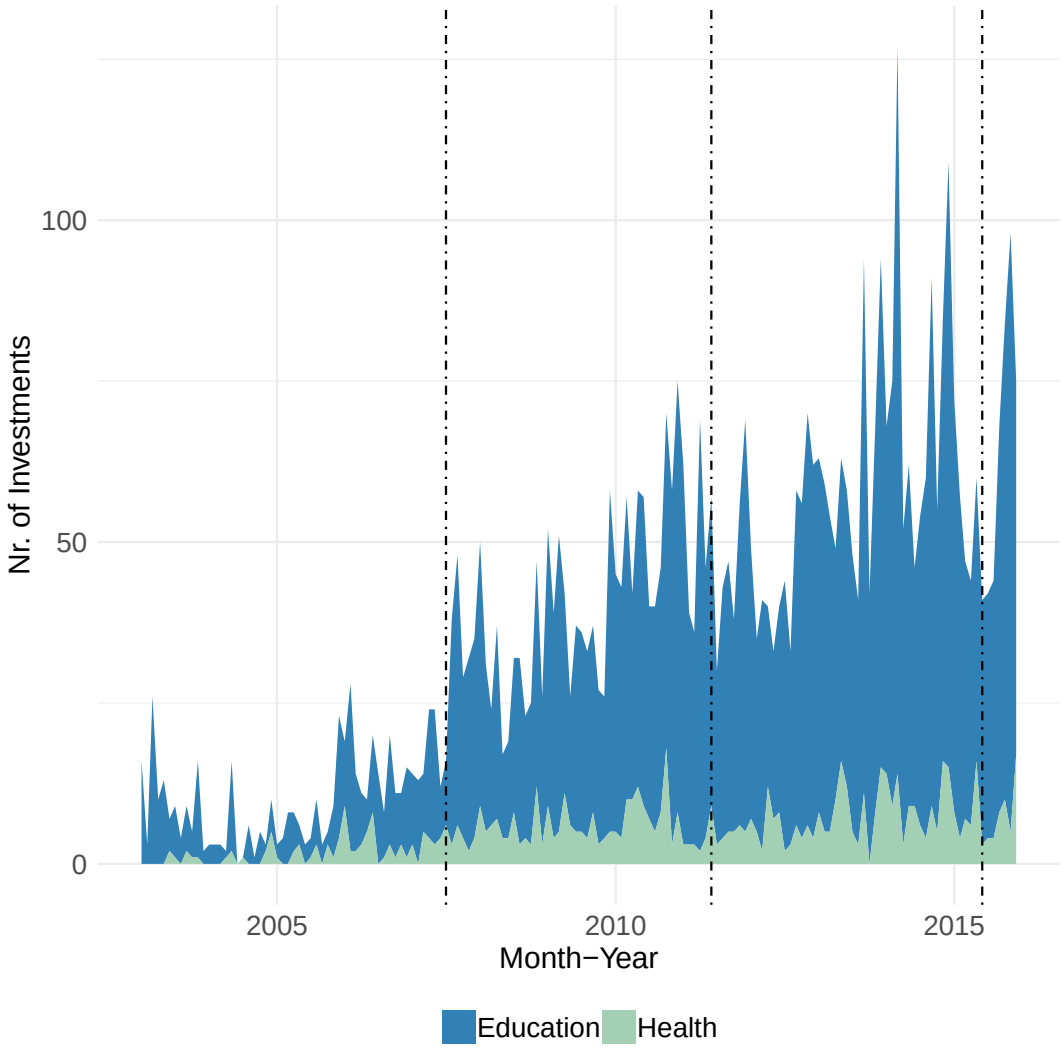

Figure 3: Monthly Trend of public goods investments

more likely to increase their votes, we would expect to observe an electoral cycle in the investment amounts. Nevertheless, a look at the monthly trend of investments (Figure 3) and comparison between pre- and post-election (i.e., the year preceding and following the elections) amounts at the national level do not indicate any electoral cycles (Table 1).

5 Data

5.1 Unit of Analysis

The main unit of analysis for this empirical study is districts. Districts are the most micro-level unit in Turkey that allow for the mapping of general elections and public goods investment data onto administrative boundaries. Districts mostly matter for administrative matters in the Turkish context, and they are nested within larger multi-member electoral districts, i.e., provinces. Districts present wide variations in terms of their demographic, economic, and social indicators (Table 2), and their population varies roughly from 2,500 to 850,000.[7] Despite this significant variation, districts are all subject to the same administrative structure headed by the central government. The earliest year included in the main data is 2002. Although the district boundaries in Turkey have experienced a few changes since 2002, leading to an increase in the number of districts from 923 to 957 in 2008 and then to 970 in 2012, they have, for the most part, remained the same. In the few cases where boundaries were redistricted, redistricting was mostly done to divide several large-population districts into smaller units. I reconstructed the panel by assigning values of each parent district to its child districts (or vice versa, if needed).

5.2 Measuring Local Public Goods

Given the broad definition of public goods, it is possible to include various types of public services in an analysis that looks at the impact of public goods provision on electoral outcomes. This paper focuses on two key public services, education and health, as one of the two independent variables of interest, although it incorporates other types of public goods into the analysis as time-varying covariates. By focusing on two public goods that are most crucial for the majority of the population[8] and that have always

[7] Due to some very large districts in Istanbul and Ankara, the distribution of district populations is very skewed, which is why I log-transform the population variable.

[8] To be certain, other public goods, such as piped water, sewage, and roads, are also crucial for citizens' wellbeing, but in the Turkish context, access to these services shows variation only in rural areas (villages),

been provided by Turkey's central government, the project seeks to circumvent potential problems that might result from attributability, i.e., citizens being unaware of whether a service comes from the central or local government (Przeworski, Stokes and Manin 1999; Harding 2015). I measure local public goods investments made by the state by newly constructed education and health buildings in a district. Instead of focusing on the existing supply of public goods, I focus on new investments to make sure that the provision of goods can be directly attributed to the actions of the incumbent government. Another advantage of this measure is that a new health and education building is a very strong treatment recognizable by the whole district population, contrary to other indicators, such as staff or inventory records. My measure is the total number of investments; the intensity of the treatment is important because, with each new investment, the incumbent sends a new signal and assumingly strengthens the perception of favoritism by the local population. I also check the robustness of the findings by using an alternative measure for investments, which is a binary variable that shows whether the district received any education or health investment during the AKP incumbency.

Data on public goods come from the Building Permits Statistics of Turkey. Because each building must obtain an occupancy permit after the construction is completed and before it opens, occupancy permits provide information about when a health or education infrastructure project is completed and put into service. The information that the dataset provides includes the number of occupancy permits, the type of investor, and the purpose of the building. Table 2 lists summary statistics on public education and health investments between 2002, the year AKP came to power, and 2015, demonstrating that the distributions of public goods investments, particularly in health and education, are not uniform. It is also possible to observe a few extreme amounts of investment due to exceptionally large-scale projects.

5.3 Measuring Excludability

To measure the excludability of public goods, I compute the percentage of visitors in a district over a year using geocoded and timestamped mobile call detail records (CDRs), which contain information on over 108,000,000 mobile phone calls between roughly 2,700,000 randomly sampled individual users (each individual is recorded for a two-week period, after which a new sample is drawn) and show the geolocation of each call (through the geolocation of antennas). Using the information on each user's mobility, I first compute the home antenna of each individual: I compute the top modal antenna by

which host only a small minority of district populations in the Turkish context.

Table 2: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Max
AKP vote share	3,769	45.308	17.775	1.228	94.196
Population (log)	3,769	10.430	1.236	7.418	13.828
Avg. nightlights density	3,769	5.031	11.184	0.000	138.556
Literacy rate (%)	3,767	88.945	7.383	39.621	99.585
Agricultural land (pc)	3,769	8.316	10.175	0.000	93.308
Education inv.	3,769	1.877	4.789	0	70
Health inv.	3,769	0.312	0.872	0	11
Resident share (%)	3,718	25.942	13.196	0.000	85.628

calculating the most commonly used antenna in all incoming and outgoing calls outside of business hours over a day, and then record the frequency with which each antenna appears as the mode for the user. The location of the top modal antenna is assigned as the home location of the user. After gathering information on users' home locations, I look at the information of all the users found in a given district throughout a day and then compute what percent of those users are visitors residents. The average resident share of all antennas over a year constitutes my district-level measure. This continuous mobility measure is used as a proxy for the excludability of local public investments in the district, where a low visitor share (high resident share) indicates high excludability.

5.4 Control Variables

The empirical model will include several other public goods investments as time-varying covariates. These other investments—commercial, religious, recreational, sports, etc.—only serve a subset of people and are not critical to the population's well-being by nature; it is less clear to voters who provides these goods. However, the variation in the other public goods investments made by the central government and local administrators might correlate both with education and health investments and with the electoral outcomes in general elections. Therefore, excluding other types of public goods investments may lead to omitted variable bias (Kramon and Posner 2013). I only include buildings that are constructed by the central government and adjust the total number of buildings by population.

To control for other potential confounding variables, I collected data on three additional time-varying district-level characteristics that may correlate with both the amount of investments made and AKP vote share: rurality, economic development level, and education level. I measure rurality by the per capita amount of agricultural land in the

district. To account for the possible impact of short-term changes in economic development, and given that there is no systematic data on per capita income or other economic indicators at the district level, I construct a measure using NOAA satellite images and night light luminosity: the average night light density in the district.[9] Finally, I use literacy rate to control for the district's education level. Table 2 presents summary statistics for the entire set of control variables.

The ethnic and religious composition of the district may also be important determinants of investments and electoral performance, but the DID models by construction account for such unit-level time-invariant characteristics. Thus, the model accounts for the size of the Kurdish population—the major ethnic minority group in Turkey—and the Alevi population—the major religious minority group in Turkey. In a similar vein, religiosity, i.e., to what extent a district is secular or Islamist, is an important determinant of electoral behavior in Turkey, particularly due to AKP's Islamist background.

5.5 Dependent Variable

The empirical model uses Turkey's electoral panel data to measure the outcome of interest: the incumbent party's vote share before and after the incumbency. AKP has been the incumbent party in Turkey since 2002, one year after the party was established and came to power. Therefore, the dependent variable is simply the percentage of AKP votes over all valid votes for each district. The period covered in the analysis includes four general elections (2002, 2007, 2011, 2015), so the main empirical specification of this paper, a multi-period triple differences model, uses data from four elections. The distributions of the district-level vote share of AKP show significant variation but follow a similar distribution pattern over time, with mean values ranging from 47.9 to 55.7 (Figure 4).

6 Results

6.1 Main Results

Table 4 presents the coefficients and associated standard errors from the specification in equation (1). The standard errors are clustered by district for arbitrary serial correlation and heteroskedasticity. The coefficient on the interaction term shows whether electoral returns to public goods investments increase with excludability. The interaction term

[9]Specifically, I used the Average Visible, Stable Lights, and Cloud Free Coverages from the DMSP-OLS Nighttime Lights Time Series.

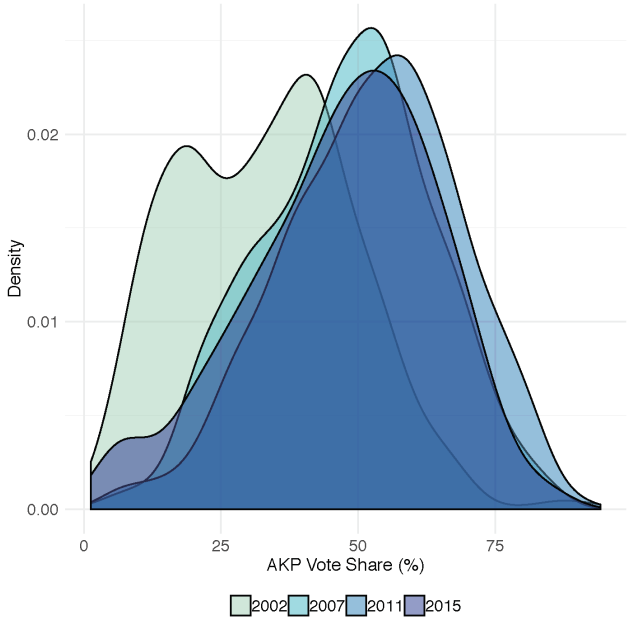

Figure 4: Distribution of AKP Vote Share in General Elections

relates the investment variable to the excludability measure, which is defined as the percentage of residents found in a district over an average day, or in short, the resident share, relying on mobile call data for a given population. This measure exploits the fact that the excludability of public goods and amenities is higher in districts with high resident shares. Columns 1–3 report the effect of education investments on party vote share at different levels of excludability, while Columns 4–6 report the same effect for health investments. Columns 1 and 4 report the estimates from the models without the time-varying covariates. Columns 2 and 5 add the time-varying covariates—rurality rate, average night time luminosity, literacy rate, and population (log)—to the model. Finally, Columns 3 and 6 simultaneously control for the effect of all types of investments (health, education, commercial, religious, recreational, sports, etc.) to avoid any potential omitted variable bias. Figure 5 maps out the marginal effect of education and health investments on vote share across different levels of excludability based on Models 3 and 6 in Table 4. The confidence intervals are presented at 95% levels using clustered robust standard errors.

I find that the coefficient of the interaction term, indicated as $(Inv_{it} \times Club_i)$ in equation (1), is statistically significant and consistently positive for both education and health investments, suggesting that education and health investments have a more positive effect on vote share in districts with high excludability compared to districts with low excludability. The coefficient on the interaction term, i.e., the conditioning effect of excludability, is much smaller in education investments (0.01) than in health investments

(0.085), leading to a small marginal effect for education investments even at high values of excludability. Specifically, health investments have a statistically significant and positive effect on AKP votes in districts where resident share is above 25%. Moving from the 25th percentile to the 75th percentile of the resident share leads to an increase of 2.3 percentage points in AKP vote share per investment. This increase corresponds to a 5 percent increase compared to the mean value of AKP vote share. The effect is much lower in education investments, where moving from the 25th percentile to the 75th percentile of the resident share leads to an increase of 0.27 percentage points, or a 0.6 percent of the mean-level AKP vote share.

Overall, these findings support the excludability hypothesis. In line with theoretical expectations, the effect of health and education investments is more positive in districts with high excludability. While the marginal effect of health investments on vote share is statistically insignificant in districts with low excludability, it is significant and positive in the 75% of the districts with the highest excludability rates. In the case of education investments, the marginal effect of each investment exceeds the significance threshold in 56% of the districts with the highest excludability rates. These results imply that neglecting the excludability dimension of public goods can mask the degree to which public goods investments translate to electoral returns.

6.2 Heterogeneous Impact

While initial public goods investments by a party can act as a cue for how much the incumbent favors the constituency, such perceptions of favoritism are less likely to arise among some constituency groups. In contexts where there are identity-based cleavages between the government and the local constituency, it is unlikely that the local population will develop any feelings of reciprocity toward the government. In Muslim contexts, the most salient cleavage is oftentimes between religious and secular groups. Therefore, how much the party and district population align along the secularism–religiosity dimension can influence voters' assessments of how much a party will favor them.

Given that the incumbent party represents the Islamist ideology, perceptions of favoritism are more likely to develop in religious communities and less likely to do so in secular communities. To see if this hypothesis holds, I now test whether the conditioning effect of excludability holds up in secular districts when the sample is divided into religious and secular regions. I split the sample into two groups by the median level of religiosity. Splitting the sample by religiosity is also a stringent test, as restricting the analysis to districts within similar religiosity levels can help to control for a variety

Table 3: Excludability and Electoral Returns of public goods investments

	Dependent variable:					
	AKP vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Education inv.×Resident share (%)	0.010**	0.010**	0.010**			
	(0.004)	(0.004)	(0.004)			
Education inv.	−0.256***	−0.262***	−0.201***			
	(0.078)	(0.079)	(0.074)			
Other inv. (excl. educ)			−0.011**			
			(0.005)			
Health inv.×Resident share (%)				0.092***	0.085***	0.080***
				(0.022)	(0.022)	(0.022)
Health inv.				−1.983***	−1.834***	−1.552***
				(0.427)	(0.439)	(0.437)
Other inv. (excl. health)						−0.012**
						(0.005)
Population (log)		−2.818***	−2.667***		−2.819***	−2.567***
		(0.888)	(0.869)		(0.891)	(0.861)
Avg. nightlights density		−0.140***	−0.139***		−0.133***	−0.137***
		(0.033)	(0.034)		(0.033)	(0.034)
Literacy rate (%)		−0.204**	−0.213**		−0.196**	−0.211**
		(0.083)	(0.083)		(0.083)	(0.084)
Agricultural land (pc)		−0.010	−0.009		−0.006	−0.005
		(0.038)	(0.038)		(0.038)	(0.038)
Observations	3,718	3,718	3,718	3,718	3,718	3,718
R^2	0.003	0.022	0.024	0.005	0.023	0.026

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table 4: Excludability and Electoral Returns of public goods investments

	Dependent variable:					
	AKP vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Education inv.×Resident share (%)	0.010**	0.010**	0.010**			
	(0.004)	(0.004)	(0.004)			
Education inv.	−0.256***	−0.262***	−0.201***			
	(0.078)	(0.079)	(0.074)			
Other inv. (excl. educ)			−0.011**			
			(0.005)			
Health inv.×Resident share (%)				0.092***	0.085***	0.080***
				(0.022)	(0.022)	(0.022)
Health inv.				−1.983***	−1.834***	−1.552***
				(0.427)	(0.439)	(0.437)
Other inv. (excl. health)						−0.012**
						(0.005)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,718	3,718	3,718	3,718	3,718	3,718
R^2	0.003	0.022	0.024	0.005	0.023	0.026

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

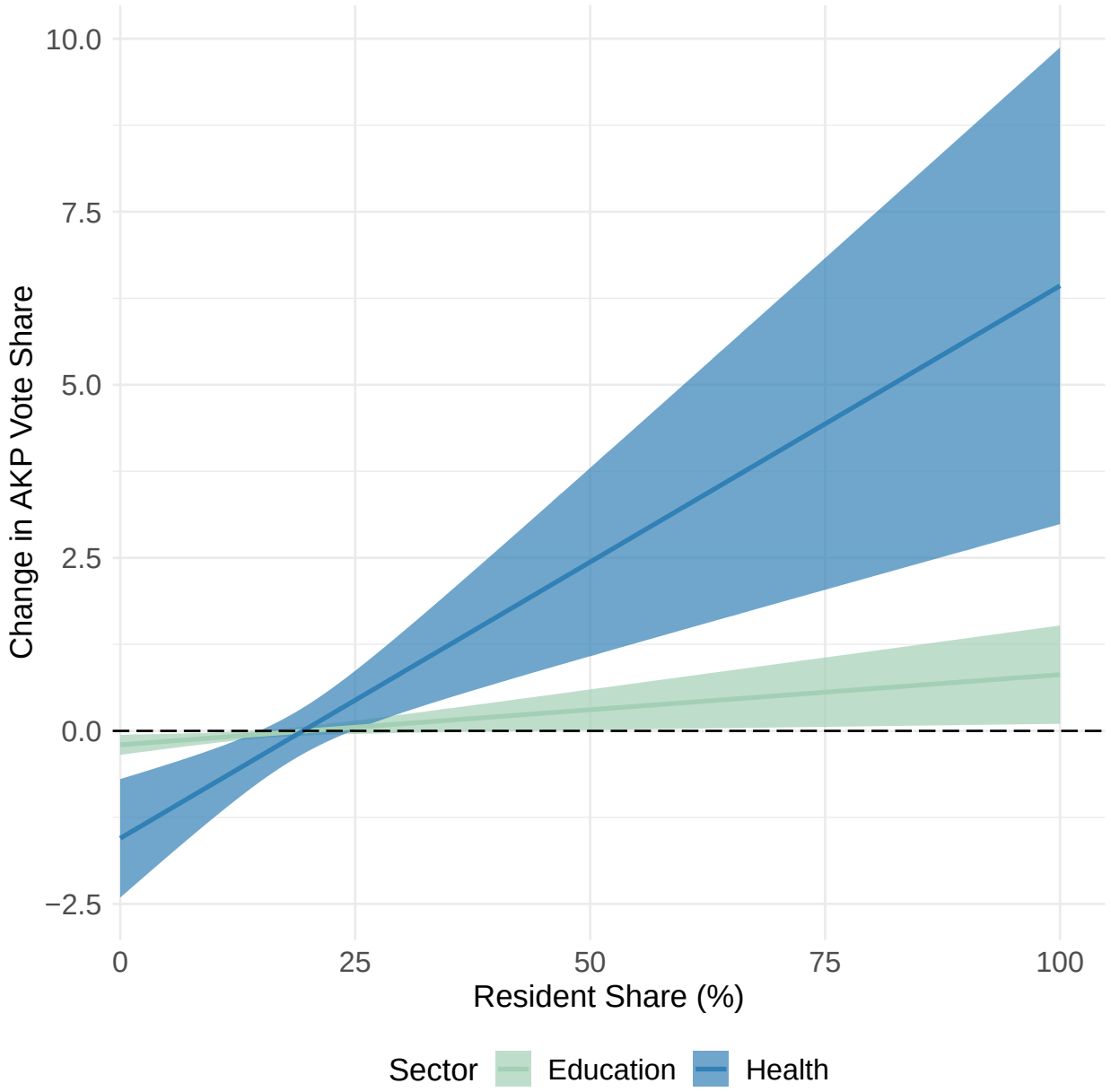

Figure 5: Marginal Effect of Health and Education Investments (one unit per 10k) on Vote Share

of omitted attributes that may not have been adequately captured in the pooled sample. I reestimate the specification in equation (1) on the two subsamples and present the coefficients of the interaction term ($Inv_{it} \times Club_i$) in Table 6. As Hypothesis 2 states, I expect the conditioning effect of excludability in secular constituencies to be substantively and/or statistically less significant than in religious ones.

I use three alternative measures for religiosity, and thus, three subsampling strategies. The first measure is simply the number of mosques in the district per capita. For the

second and third measures, I rely on Livny's datasets (Livny 2020), compiled from the monthly surveys conducted by KONDA. KONDA has included questions on religiosity and veil-practices in its monthly barometer, a nationally representative face-to-face survey, since March 2010. The barometers include data on religiosity and veil practices for a total of 117,815 respondents in 4264 neighborhoods and villages in 570 districts across all of Turkey's geographical regions (Livny 2015). Because the relevant questions used in the KONDA barometer were the same throughout all the barometers, it is possible to combine 45 surveys into a single dataset. Specifically, the second religiosity measure I use is the percentage of respondents in a given district who self-identify themselves as "pious" or "devout". The third one shows the percentage of respondents in the district who/whose wives wear a "headscarf", "turban", or "jilbab".

Table 5: Heterogeneity in Electoral Returns of Public Goods Investments, by Religiosity

	Dependent variable:											
	AKP vote share											
	Education Investments						Health Investments					
	Islamist			Secular			Islamist			Secular		
Religiosity Measure	Mosque	SI	Cover	Mosque	SI	Cover	Mosque	SI	Cover	Mosque	SI	Cover
Education inv.×Resident share (%)	0.012**	0.014**	0.015**	0.004	0.007	0.008						
	(0.005)	(0.006)	(0.007)	(0.008)	(0.007)	(0.006)						
Education inv.	−0.364***	−0.376**	−0.369**	−0.036	−0.165	−0.188*						
	(0.099)	(0.147)	(0.148)	(0.141)	(0.113)	(0.101)						
Health inv.×Resident share (%)							0.090***	0.111***	0.125***	0.065**	0.073**	0.072**
							(0.031)	(0.035)	(0.037)	(0.028)	(0.032)	(0.030)
Health inv.							−1.979***	−2.304***	−2.620***	−1.304**	−1.598***	−1.579***
							(0.636)	(0.837)	(0.887)	(0.578)	(0.591)	(0.571)
Agricultural land (pc)	−0.035	−0.014	0.033	0.058	0.092	0.047	−0.026	−0.018	0.019	0.048	0.093	0.057
	(0.042)	(0.087)	(0.073)	(0.081)	(0.087)	(0.124)	(0.043)	(0.088)	(0.074)	(0.081)	(0.087)	(0.122)
Literacy rate (%)	−0.087	−0.204	−0.129	−0.288**	−0.171	−0.250	−0.055	−0.184	−0.107	−0.300***	−0.170	−0.250
	(0.104)	(0.168)	(0.143)	(0.115)	(0.186)	(0.242)	(0.105)	(0.169)	(0.144)	(0.115)	(0.186)	(0.242)
Population (log)	−2.968**	−0.896	−1.324	−2.420*	−1.676	−0.621	−3.397***	−1.162	−1.712	−2.142	−1.534	−0.513
	(1.267)	(1.107)	(1.358)	(1.354)	(1.587)	(1.050)	(1.302)	(1.160)	(1.377)	(1.305)	(1.590)	(1.039)
Avg. nightlights density	−0.060	−0.137***	−0.166	−0.187***	−0.048*	−0.054***	−0.043	−0.130***	−0.166	−0.193***	−0.041	−0.049**
	(0.063)	(0.038)	(0.131)	(0.033)	(0.027)	(0.021)	(0.057)	(0.038)	(0.130)	(0.034)	(0.026)	(0.020)
Observations	1,855	1,131	1,141	1,863	1,120	1,110	1,855	1,131	1,141	1,863	1,120	1,110
R^2	0.024	0.016	0.012	0.029	0.014	0.017	0.019	0.017	0.015	0.031	0.018	0.020

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table 6: Heterogeneity in Electoral Returns of Public Goods Investments, by Religiosity

	Dependent variable:											
	AKP vote share											
	Education Investments						Health Investments					
	Islamist			Secular			Islamist			Secular		
Religiosity Measure	Mosque	SI	Cover	Mosque	SI	Cover	Mosque	SI	Cover	Mosque	SI	Cover
Education inv.×Resident share (%)	0.012**	0.014**	0.015**	0.004	0.007	0.008						
	(0.005)	(0.006)	(0.007)	(0.008)	(0.007)	(0.006)						
Education inv.	−0.364***	−0.376**	−0.369**	−0.036	−0.165	−0.188*						
	(0.099)	(0.147)	(0.148)	(0.141)	(0.113)	(0.101)						
Health inv.×Resident share (%)							0.090***	0.111***	0.125***	0.065**	0.073**	0.072**
							(0.031)	(0.035)	(0.037)	(0.028)	(0.032)	(0.030)
Health inv.							−1.979***	−2.304***	−2.620***	−1.304**	−1.598***	−1.579***
							(0.636)	(0.837)	(0.887)	(0.578)	(0.591)	(0.571)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,855	1,131	1,141	1,863	1,120	1,110	1,855	1,131	1,141	1,863	1,120	1,110
R^2	0.024	0.016	0.012	0.029	0.014	0.017	0.019	0.017	0.015	0.031	0.018	0.020

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table 6 presents the findings. In every three columns, the first column represents a subsample divided by the number of mosques, the second column by the percentage of respondents who self-identify themselves as religious, and the third column, by the percentage of respondents who wear a cover (if male, whose wives wear a cover). As shown in the table, when the analysis is restricted to a comparison within the two subsamples, the conditioning effect of excludability is either weaker in size or statistically insignificant in secular districts. The size of the coefficient on the interaction term between excludability and education investments rises from 0.01, the estimate in the pooled sample, to 0.012–0.018 in religious districts, and the estimate is statistically significant ($p < 0.05$). The effect is statistically insignificant in secular districts. The coefficient on the interaction term between excludability and health investments almost doubles in religious districts, compared to the estimate in the pooled sample, and is consistently significant ($p < 0.01$). In secular districts, the estimate is either statistically insignificant or relatively much lower in size when compared to religious districts, depending on the choice of religiosity measure. Concisely, it is mostly or only in religious districts that excludability increases the electoral returns of education and health investments. Overall, the results are consistent with Hypothesis 2 and suggest that the club good effect is less likely to hold in secular districts, where the absence of a group identity marker makes it less likely that the local constituency will develop perceptions of favoritism toward the Islamist incumbent, AKP.

6.3 Pre-2002 Trends

The identification strategy relies on the assumption that districts with different levels of investment and excludability were trending similarly in terms of the outcome variable of interest in the period before and including 2002. Because AKP was founded in 2001, their vote share is not available for years prior to 2002. Therefore, for the pre-2002 period, I compare the trends of the vote shares of preceding Islamist parties. Several insights emerge from this exercise. First, as Figure 6 shows, there are no systematic differences in Islamist vote share between high- and low-investment districts prior to the incumbency. Noticeably, in line with the suggestions of recent studies, the treatment and control groups are not only similar in trends but also in levels (the average Islamist vote shares of the two groups are almost equal), increasing the plausibility of this assumption (Kahn-Lang and Lang 2019). Second, pre-2002 Islamist vote shares in high-excludability and low-excludability districts also follow a parallel trend (Figure 7). Similarly to high- and low- investment districts, these two groups not only follow parallel trends, but also

start and end election terms at almost the same level of Islamist vote share.

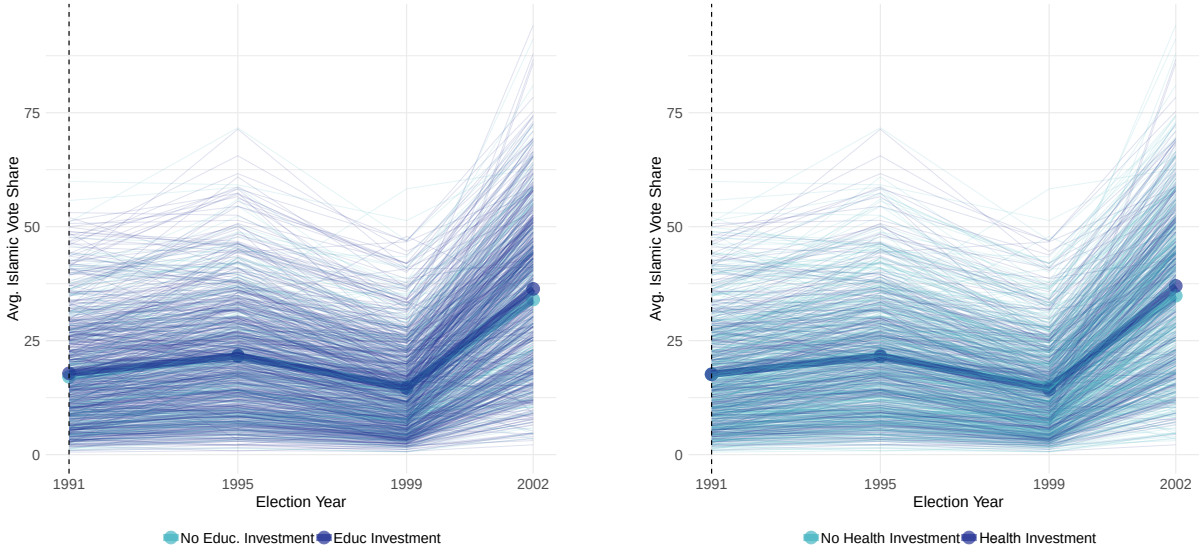

Figure 6: Pre-2002 Islamic Vote Shares in High- and Low-Investment Districts

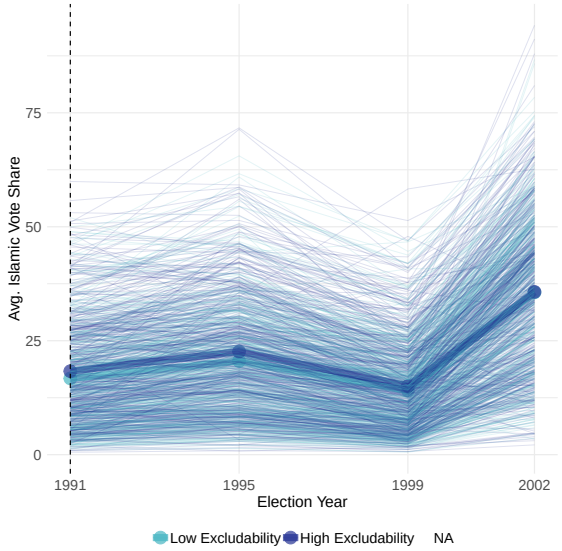

Figure 7: Pre-2002 Islamic Vote Shares in High- and Low-Excludability (Left) and High- and Low-Religiosity Districts

Pre-AKP differences in incumbent vote share. Despite there being no systematic differences in Islamic vote share between high- and low-investment or high- and low-excludability districts prior to 2002, it could still be the case that they were different along other dimensions that mattered for Islamist vote share. Particularly important

might be the vote shares of previous incumbent parties. To compare the trends in different subsamples, I code parties that served in coalition governments between 1991 and 2002, and compute the total incumbent vote shares for each election term.[10] The results are reported in Appendix Figures A1 and A2. I find that high- and low-investment districts not only follow similar trends of incumbent vote share; the percentage of incumbent vote share is also almost equal. Similarly, there is no difference between the trends and vote share levels of high- and low-excludability districts. The results are reassuring in that high-investment or high-excludability districts did not trend differently in terms of Islamist or incumbent vote share.

7 Alternative Explanations and Robustness Checks

7.1 Robustness

My results stand up to a battery of robustness tests. First, parsing the samples into high and low-religiosity districts and restricting the analysis to districts within somewhat similar religiosity levels can assist in controlling a variety of omitted variables that our analysis may not have adequately captured. Second, I check whether the findings are consistent when a matched sample instead of the full sample is used, where high- and low-investment (Diamond and Sekhon 2013) districts are matched with one another. I match the districts on the full list of pretreatment covariates, including population, literacy rate, average nightlights density, and rurality. Columns 1–6 of Appendix Table A4 show that the coefficient on the excludability-investment interaction remains virtually unchanged when high-investment units are matched with low-investment units.

The findings are subject to another strict test, whereby I successively drop districts at the top and bottom 2.5 percent of excludability. Dropping districts at the bottom or top percentiles preserves my findings (Appendix Table A5). Results get even stronger in terms of effect size. Next, I drop the top 5 percent of observations that received the highest greatest level of investment. This yields a very similar set of findings to the full sample (Appendix Table A6). Finally, I use an alternative measure for education and health investments—a binary variable that takes 1 if AKP has made any investment to the district, and 0 otherwise. The results in Appendix Table A7 show that my results are not sensitive to the use of an alternative specification for investments. Overall, these robustness tests provide reassuring evidence of the empirical patterns highlighted in our

[10] For instance, for 2002, the incumbent vote share is calculated as the vote share of parties in the coalition government preceding the AKP government.

baseline results.

7.2 Alternative Explanations

7.2.1 Lower Access to Health Care

In this section, I assess a variety of alternative explanations. First, more visitors (low excludability) may mean a lower effective amount of money spent for services, or put differently, overburdened public services, for those living in the district. Specifically, because the public good will be used by a larger population in a low-excludability district compared to a high-excludability district, residents living in the low-excludability district may benefit less from the same amount of public goods investment than residents in the high-excludability district, leading to an overall decrease in satisfaction and access to health services. To explore this alternative mechanism, I use a multilinear regression model that tests whether district-level excludability is associated with the i) *level of satisfaction* with and ii) *higher access* to healthcare services, relying on individual-level survey data. If high excludability results in a higher effective amount of money per capita and less overburdened public services, I should find higher satisfaction with and higher access to healthcare in districts with high excludability, controlling for the level of health services in the district.

The individual-level data comes from a nationally representative survey administered by KONDA in October, 2016. A total of 2532 face-to-face interviews were conducted in 146 neighborhoods and villages across 113 districts in 30 provinces.[11] I measure general satisfaction with healthcare services by a discrete variable that shows how much the respondent agrees with the following statement on a scale of 1 to 6: *"Generally, I am satisfied with the healthcare services I receive."* I measure access to healthcare services by how much the respondent agrees with the following statement on a scale of 1 to 6:*"Doctors spend sufficient time with patients."*

For the main independent variable measure, I use the district-level excludability measure, the percentage of residents found in a district over an average day for a given population, as in the main analysis. I control for the supply of public services by adding the per capita number of public health buildings in the district to the model. Other district-level controls include the literacy rate, rurality, population (log), and average nightlights density of the district. Individual-level control variables include the age, gender, education level, religiosity, and ethnicity of the respondent. I add an additional control variable about whether the respondent supports AKP or not to account for potential

[11] See the Appendix for the details.

partisan biases in the opinions and answers of respondents. For a full set of descriptive statistics and the list of survey questions, see Appendix Tables A1 and A2. To account for potential correlations within districts, standard errors are clustered at the district level.

Table 7 presents the findings. In Columns 1 and 2, the outcome variable is general satisfaction with health services, while in Columns 3 and 4, it is access to healthcare. Contradicting the materialistic explanation, even after controlling for the per capita number of health buildings in the district, the coefficient on excludability indicates a statistically insignificant relationship between excludability and satisfaction with health services (Column 1). The relationship between excludability and access to health services (Column 3) is also statistically insignificant. In an alternative model in which the excludability measure is interacted with health investments, the coefficients on the interaction term or excludability variable are also statistically indistinguishable from zero. These findings offer suggestive evidence that it is not overburden that drives the results in low-excludability districts.

7.2.2 Need Hypothesis

The second test questions the possibility that inhabitants in certain districts value a given amount of public investment more than inhabitants in other districts simply because they are needier. For instance, if districts with high excludability are more likely to be in rural and remote places, differences between the electoral returns of low- and high-excludability districts may simply result from the lower supply of public services and thus a higher need. Or, put differently, if citizens' utility driven from public goods increases with a diminishing marginal utility (Cornes and Sandler 1996), the incumbent may earn higher electoral returns at lower levels of supply. If this is the case, high need may cause voters in high-excludability districts to reward the incumbent more than voters in low-excludability districts for the same amount of investment.

To investigate this question, I test whether the preexisting supply of health and education services condition the effect of excludability on AKP vote share. I measure the district-level supply of public goods by the total number of public health and education buildings per ten thousand persons with data from the building census conducted in 2000. The building census provides detailed information on the purpose and owners of buildings throughout Turkey. Due to changes in district boundaries over time, I assigned the census values of parent districts to child districts.

Models in Table 8 are the same as the model in equation (1) but have an additional interaction term that interacts the investment variable with the preexisting supply variable. If a low initial supply of public goods is what derives the significant findings in the

Table 7: Satisfaction with and Access to Health Services, by Excludability

	Dependent variable:			
	Satisfaction		Access	
	(1)	(2)	(3)	(4)
Health inf. ×Resident share (%)		−0.011		−0.009
		(0.023)		(0.024)
Health inf. (Total)	−0.028	0.172	−0.014	0.141
	(0.065)	(0.413)	(0.407)	(0.407)
Resident share (%)	−0.003	0.009	−0.010	−0.001
	(0.012)	(0.024)	(0.023)	(0.023)
Agricultural land (pc)	0.021	0.022	0.015	0.016
	(0.015)	(0.017)	(0.017)	(0.017)
Literacy rate (%)	0.026	0.027	0.012	0.013
	(0.022)	(0.022)	(0.038)	(0.038)
Population (log)	0.202**	0.191**	0.087	0.079
	(0.089)	(0.077)	(0.101)	(0.101)
Avg. nightlights density	−0.002	−0.002	−0.004	−0.004
	(0.002)	(0.002)	(0.002)	(0.002)
Female	−0.160**	−0.156**	−0.078	−0.075
	(0.063)	(0.062)	(0.083)	(0.083)
Age	−0.0001	0.0001	0.007**	0.007**
	(0.002)	(0.002)	(0.003)	(0.003)
Education	−0.058*	−0.053*	−0.083**	−0.079**
	(0.032)	(0.029)	(0.034)	(0.034)
Religious	0.224***	0.226***	0.233***	0.235***
	(0.056)	(0.055)	(0.057)	(0.057)
Kurdish	−0.648***	−0.642***	−0.397**	−0.392**
	(0.145)	(0.145)	(0.172)	(0.172)
Supports AKP	0.557***	0.554***	0.420***	0.418***
	(0.065)	(0.066)	(0.082)	(0.082)
Constant	−0.914	−1.081	1.038	0.908
	(2.336)	(2.481)	(3.728)	(3.728)
Controls	Yes	Yes	Yes	Yes
Observations	2,271	2,271	2,266	2,266
R^2	0.104	0.105	0.063	0.064
Residual Std. Error	1.473 (df = 2258)	1.473 (df = 2257)	1.739 (df = 2253)	1.739 (df = 2252)

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

original analysis, one should expect the significance of the estimates in Table 4 to disappear in this new model. Nevertheless, the estimates in Table 8 show virtually no change in the statistical or substantive significance of the interaction effect $(Inv_{it} \times Club_i)$. There is only a slight upward change in the effect size for education investments and a slight downward change in the effect size for health investments. Perhaps more importantly, the coefficient on the interaction term between investments and preexisting supply has a positive sign and is statistically significant, suggesting that electoral returns to public health and education investments are, if anything, higher in districts with greater preexisting supply of public service infrastructure. This finding infers that the interactive effect of excludability is not driven by the initial supply of public goods, ruling out the need hypothesis.

7.2.3 Targeted Distribution

In a third test, I examine the likelihood that investments are targeted towards districts that support the incumbent more. As discussed in Section 4.2, in an electoral system with multi-member districts, tactical distribution strategies are not as clear-cut as in majoritarian systems. AKP must have some constituency base in each of these multi-member electoral districts (which correspond to provinces in Turkey) and preserve this base in order to continue its majority in the government. As such, targeting local public investments only to certain districts is not as advantageous as in countries with single-member districts Magaloni, Diaz-Cayeros and Estévez (2007). The monthly trends of investments shown in Section 4.2, which do not follow any electoral cycles, further void this concern. In addition, there is *a priori* no reason to expect that AKP can predict districts that would bring higher electoral returns. Yet, I also explore whether there is any targeting using a panel data regression.

The two columns of Table 9 present the findings for education and health investments, respectively. In the estimation model, the investments made during election term t are regressed on the vote share of AKP in the previous election term, $t-1$. The investments made during the election term $t-1$ are also added as a covariate. I do not find any statistically significant relationship between AKP vote share in the previous election and the amount of public goods investment. The findings underline another crucial point: districts that receive investments during a given term are less likely to receive investments the following term. Put differently, an investment made in election term $t-1$ decreases the likelihood of receiving both health and education investments in election term t. This finding, which might also be interpreted as a regression toward the mean, overlaps with the assumption that investments do not consistently and strategically flow

Table 8: Preexisting Supply of Public Service Infrastructure and Electoral Returns to Future Investments

	Dependent variable:					
	AKP vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Education inv.×Resident share (%)	0.012***	0.012***	0.011***			
	(0.004)	(0.004)	(0.004)			
Education inv. × Preexisting ESI (pc)	0.017***	0.015**	0.014**			
	(0.006)	(0.006)	(0.006)			
Education inv.	−0.366***	−0.359***	−0.293***			
	(0.089)	(0.089)	(0.088)			
Other inv. (excl. educ)			−0.011**			
			(0.005)			
Health inv.				−2.634***	−2.407***	−2.095***
				(0.489)	(0.502)	(0.503)
Health inv.×Resident share (%)				0.086***	0.081***	0.076***
				(0.021)	(0.022)	(0.021)
Health inv. × Preexisting HSI (pc)				0.905***	0.774***	0.710***
				(0.237)	(0.238)	(0.240)
Other inv. (excl. health)						−0.011**
						(0.005)
Population (log)		−2.829***	−2.678***		−2.692***	−2.463***
		(0.877)	(0.858)		(0.891)	(0.861)
Avg. nightlights density		−0.137***	−0.136***		−0.133***	−0.136***
		(0.033)	(0.034)		(0.033)	(0.034)
Literacy rate (%)		−0.203**	−0.212**		−0.194**	−0.208**
		(0.083)	(0.084)		(0.083)	(0.084)
Agricultural land (pc)		−0.011	−0.010		−0.006	−0.005
		(0.038)	(0.038)		(0.038)	(0.038)
Observations	3,714	3,714	3,714	3,714	3,714	3,714
R^2	0.004	0.023	0.024	0.008	0.025	0.027

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table 9: Reverse Causality Check

	Dependent variable:	
	Educ inv.	Health inv.
	(1)	(2)
Educ inv. $(t-1)$	-0.519^{***}	-0.029^{***}
	(0.042)	(0.009)
Health inv. $(t-1)$	0.210	-0.387^{***}
	(0.159)	(0.027)
Other inv. $(t-1)$	0.005^{***}	-0.0002
	(0.001)	(0.0002)
AKP vote share	-0.009	-0.0005
	(0.005)	(0.002)
Population (log)	0.472	0.315^{**}
	(0.441)	(0.123)
Avg. nightlights density	0.074^{***}	0.009^{**}
	(0.019)	(0.004)
Literacy rate (%)	0.015	0.017^{***}
	(0.024)	(0.006)
Agricultural land (pc)	0.030^{***}	-0.0003
	(0.011)	(0.003)
Observations	2,845	2,845
R^2	0.276	0.177

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

to the same districts, but follow a cyclical pattern.

Another strategy that the incumbent government may use is targeting municipalities headed by AKP mayors so that mayors can mobilize the local constituency and bring more electoral returns to public goods investments. As discussed in Section 3, in a centralized, closed-list system like Turkey, this type of pork-barrel politics is less likely to take place than in decentralized countries with an open-list system. Yet, to ascertain that co-partisan municipalities, the only elected local authorities in Turkey, do not receive more public investments, it is worth examining this alternative explanation. A regression discontinuity (RD) design is ideal for such an analysis because it can be used in cases where the treatment assignment, whether AKP won the municipality or not, is determined on the basis of a cutoff score, the AKP win-loss margin. The forcing variable in this design is the winning or losing margin of AKP relative to the rival party with the highest vote share. The cutoff is zero because the treatment is assigned solely to the units for which the win margin is above zero. The municipalities that fall below the cutoff have a non-AKP mayor. The outcome variable in the analysis is education and health investments at the municipal level. Since the estimation strategy rests on the analysis of the units right below or above the cutoff point, the bandwidth that determines the scope of the analysis is of crucial importance. I use Imbens and Kalyanaraman's algorithm (Imbens and Kalyanaraman 2012) to determine the optimal bandwidth.[12] The overwhelming majority of elected local governments are very small in population and therefore only few receive public goods investments during a single election term. As such, the outcome variable of the majority of observations is simply zero.

The data used for the RD design covers these municipalities, and the estimation is done for three local elections (2004, 2009, and 2014). The optimal bandwidth determined through Imbens and Kalyanaraman's algorithm is 0.077 for health investments and 0.11 for education investments, which is reasonable considering that the former has a lower mean and standard deviation than the latter (see Table 2). In addition to the treatment variable, the forcing variable, and the interaction term between the two, the model also includes the turnout rate and the population over the age of 18 (log) (based on the number of all voters in the district) as control variables.

If AKP-governed district and town municipalities attract more public goods investments, one should observe a systematic and positive relationship between the party of the municipal mayor, i.e., the binary treatment variable, and the public goods invest-

[12]Municipalities geographically sit below or at the same level as districts. Within district boundaries, the centers are served by district (*ilçe*) municipalities, and settlements with more than 2000 inhabitants are served by township (*belde*) municipalities. For the time period analyzed in this study, there were around 920 district and 2000 township municipalities in Turkey.

ments made subsequent to local elections. Nevertheless, an analysis of the municipal level observations above and below the qualifying threshold detects no treatment effect (Figure 8). Alternative estimates with variations in the bandwidths do not alter the significance of estimates either. Overall, the RD design lends evidence to the claim that whether a municipality is won or lost by AKP does not affect the subsequent flow of public goods investments.

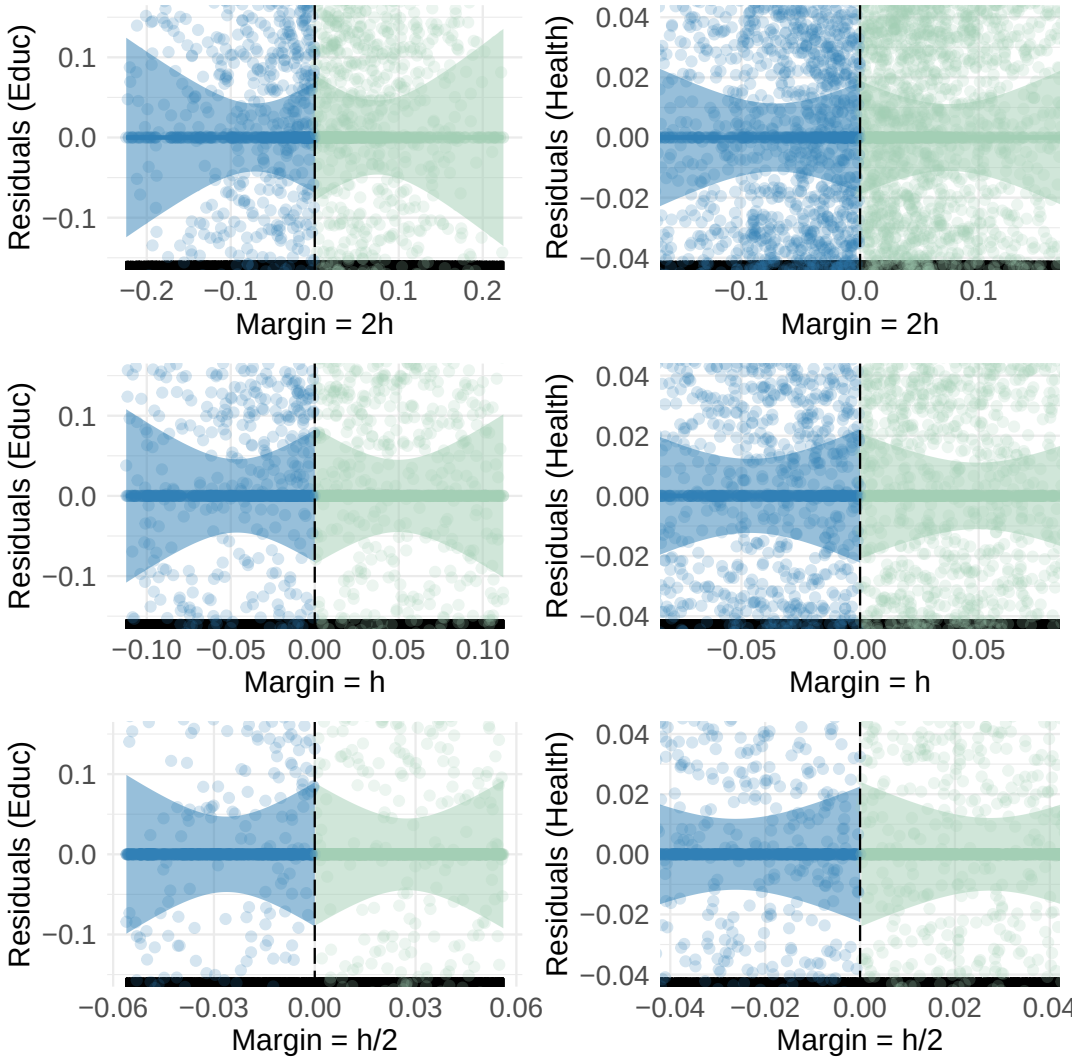

Figure 8: AKP Mayors and Public Education and Health Investments. Local average treatment effect shown at the threshold.

7.2.4 Visibility and Partisan Biases

Other alternative explanations might be that the visibility of the service provision infrastructure in a district or its partisan attachments might correlate with the excludability

variable.

The higher visibility of public investments in certain districts does not necessarily contradict the mechanism proposed in this study, as it presumably furnishes voters with the information necessary to develop perceptions of favoritism and reciprocity. Yet, an examination of the differential impact of excludability within secular districts demonstrates that a simple visibility story fails to explain the impact of public investments on AKP vote share. If the visibility of public goods in districts with high excludability were what created the heterogeneity in the effect of public goods, one would observe the same heterogeneity in overwhelmingly secular districts as well. On the other hand, a finding such that excludability does not have a conditioning effect in secular districts would overlap with the theoretical mechanisms suggested in this paper because identity plays a crucial role in determining whether the local population can develop any feelings of reciprocity toward the incumbent party. As shown in Section 6.2, the conditioning effect of excludability is much weaker, and in some cases even insignificant, in secular districts.

Finally, existing literature on partisan biases in retrospective voting (Evans and Pickup 2010; Bartels 2002) suggests that personal partisan biases may inform voters' evaluations. If partisan attachments to AKP are stronger in high-excludability districts, my results may be driven by partisan attachments instead of excludability. Nevertheless, when I interact the investment variable with a binary variable that takes a value of 1 for districts where AKP's vote share (2002) is above the median level, and 0 otherwise, I find that the interaction term is insignificant for health investments, and negative and statistically significant for education investments (see Appendix Table A9). This means that education investments, if anything, were rewarded less in AKP strongholds, while electoral returns to health investments do not show any heterogeneity between AKP strongholds and other districts. These additional analyses demonstrate that visibility or partisan biases are unlikely to derive the main results in this study.

8 Discussion

The study's findings lend robust and systematic evidence to the empirical relation between local public services provided by a party and its vote share, documenting that the positive effect of the former on the latter is higher in districts where public goods become club goods. It also presents evidence that several alternative explanations fail to explain the same outcome. Yet, the empirical findings also point out new questions that need to be further explored regarding the electoral returns of public goods. The models presented in this paper suggest that returns to education investments are in gen-

eral lower and therefore show less heterogeneity across different levels of excludability and religiosity. Several reasons may underpin such a differential effect across the two investment types. First, in reference to the literature on egocentric voting (Krause 1997), it can be argued that, unlike health services, payoffs to education are not immediately observable over one's life cycle. This disparity in the characters of these two services might reduce the extent to which citizens value and reward education investments. A second reason might pertain to citizens' expectations of the government. In Turkey, the primacy of public education services in the government's agenda dates back to its founding as a secular republic, as it was seen as a fundamental step toward nation-building and modernization (Meyersson 2014). Given Turkey's long history of public education services and the fact that citizens have rarely opted for private education, it is likely that citizens see additional investments in education as a duty of the government rather than as a performance outcome to be rewarded. A third reason for the difference in electoral returns could simply be the gap between the numbers of beneficiaries. Whereas virtually the whole population benefits from health services, education services appeal primarily to voters with school-age children. Admittedly, for a complete explanation regarding the difference in electoral returns of these two key services, further research needs to be done.

To my knowledge, literature on electoral accountability has thus far not provided systematic evidence on the question of how the local social context can condition electoral returns to local public services. Using an original panel dataset that brings together detailed information on education and health investments, human mobility, and electoral outcomes in Turkey, this study demonstrates that the effect of investments is highly dependent on the composition of local-level beneficiaries. While improving service provision infrastructure has a positive effect on incumbent vote share, this positive effect is limited to districts with high excludability and decreases in districts in which the local population does not align with the incumbent along the religious (and, putatively, ethnic) dimension. The findings from this study also contribute to the literature of retrospective voting. By revealing that the relationship between local government performance and vote share is more complex than what canonical models suggest, the findings demonstrate that putting more emphasis on the local context and the identity of beneficiaries may clarify puzzling electoral outcomes. The findings also have implications for scholarship on distributive politics because they underscore that geographical targeting, especially the targeting of resources by incumbent parties to more rural or in-group populations, may bring higher electoral returns to the incumbent.

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Appendix

Excludability and Electoral Returns of public goods investments

Table of Contents

A1.1 Pre-2002 Trends of Incumbent Vote Share

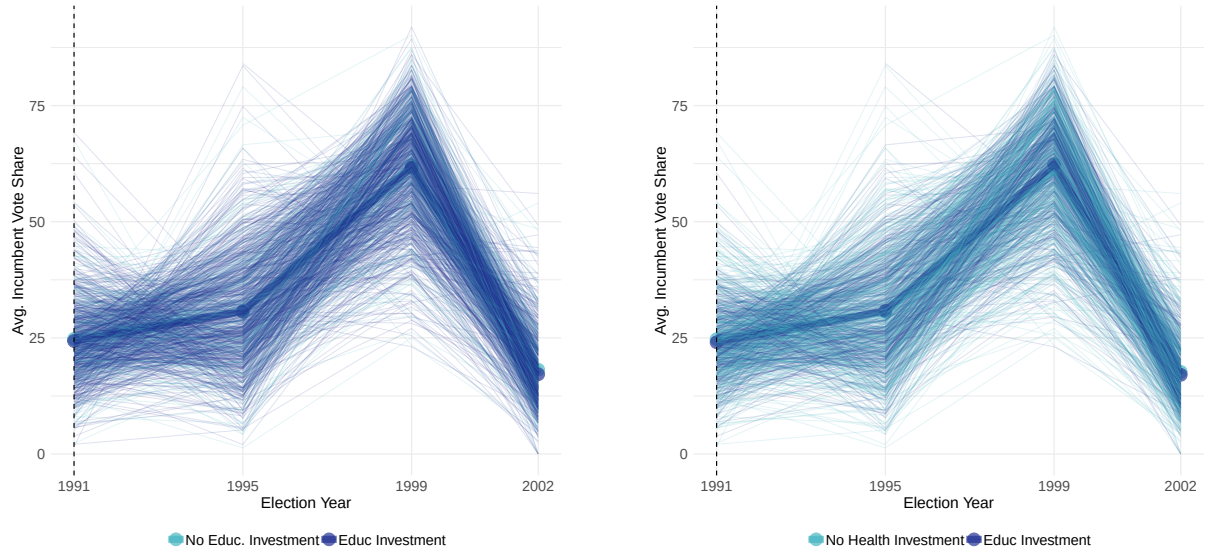

Figure A1: Pre-2002 Incumbent Vote Shares in High- and Low-Investment Districts

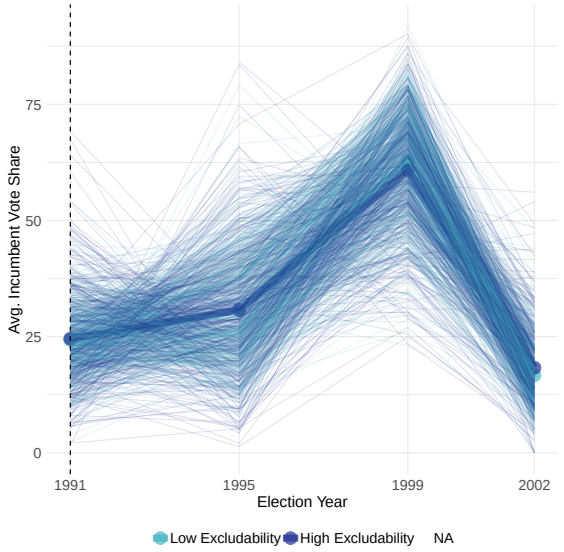

Figure A2: Pre-2002 Incumbent Vote Shares in High- and Low-Excludability Districts

A1.2 Survey Details

Sampling was based on both neighborhood/village population and educational attainment, as defined by the Address Based Population System, as well the outcome of general elections. Furthermore, age and gender quotas were applied to the 18 surveys conducted within each neighborhood/village.

Table A1: Summary Statistics for the Survey Analysis

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Satisfaction	2,504	4.498	1.554	1.000	4.000	6.000	6.000
Access	2,502	3.771	1.801	1.000	2.000	5.000	6.000
Improvement	2,421	2.644	0.659	1.000	2.000	3.000	3.000
Health inf. (Total)	1,886	0.731	0.639	0.000	0.338	0.914	4.064
Resident share (%)	2,532	20.202	5.567	7.885	16.110	22.889	40.932
Agricultural land (pc)	2,532	2.675	5.433	0.000	0.046	2.954	39.318
Literacy rate (%)	2,532	4.143	3.014	0.803	2.347	4.879	18.306
Population (log)	2,532	12.222	1.048	9.378	11.509	13.043	13.725
Female	2,513	0.483	0.500	0.000	0.000	1.000	1.000
Age	2,526	41.708	15.802	16.000	29.000	53.000	90.000
Education	2,520	3.983	1.432	1.000	3.000	5.000	7.000
Religious	2,496	2.832	0.685	1.000	2.000	3.000	4.000
Kurdish	2,483	0.134	0.341	0.000	0.000	0.000	1.000
Supports AKP	2,386	0.431	0.495	0.000	0.000	1.000	1.000

Table A2: List of Survey Questions

Question Code	Question Text
ID	id
MK	Neighborhood code
Kırkent	Residence code
Bölge	Survey location
İlAdı	Province
İlçeAdı	District
MahalleAdı	Neighborhood/village
Question1	01 Gender
Question2	02 Age (Open-ended)
Question2.2	02 Aged (Grouped)
Question3	03 Education level
Question3.1	03 Education level (Grouped)
Question4	04 Number of household members
Question4.1	04 Number of household members

Table A2: List of Survey Questions

Question Code	Question Text
Question5	05 Marital status
Question6	06 Where did you grow up?
Question7	07 Life style group
Question8	08 Employment status
Question9	09 If there were an election today, which party would you have voted for?
Questions11-21	11-21 Questions about the practice and eating habits of the household and respondent
Question22	22 Which sources do you use to get information about health?
Question23	23 Questions about the health conditions of the household members and the respondent
Question24.1	24.1 In the last year, how often have you been to a hospital/ clinic/family health center for your own? (Open-ended)
Question24.2	24.2 In the last year, how often have you been to a hospital/ clinic/family health center for your own? (Grouped)
Question25	25 Have you been to any dietitian/healer/bonesetter/psychologist/psychiatrist/alternative medicine center in the last one year for any health problem?
Question26	26 Has there been a case where you couldn't get the examination or treatment you need in the last one year? If yes, why?
Question27	27 In which cases do you usually visit a doctor (When you have a concern/feel sick/have a severe pain/or cannot get better on your own)?
Question28	28 Which health institution do you visit most frequently?
Question29	29 Why this particular institution? (Grouped)
Question30	30 How long does it take to go to the nearest health center?(Open-ended)
Question31	31 Is there any household member in need for care? Elderly/disabled/sick/noone.
Question32	32.1 Generally, I am satisfied with the health condition.
Question32.2	32.2 Generally, I am satisfied with the healthcare services I receive.
Question32.3	32.3 I wouldn't feel comfortable a doctor from the opposite sex examining me.
Question32.4	32.4 Syrians affected the health of people in Turkey negatively by bringing new diseases with them.
Question32.5	32.5 Schools should teach sexual health education.
Question33.1	33.1 Doctors make sufficient explanation to their patients about their health conditions.
Question33.2	33.2 Doctors allocate sufficient time to their patients.
Question33.3	33.3 Doctors treat all patients the same way.

Table A2: List of Survey Questions

Question Code	Question Text
Question33.4	33.4 Doctors discriminate people based on sex/class/language spoken or accent/political view/sexual orientation/ethnicity/education/profession/no discrimination.
Question33.5	33.5 Nurses discriminate people based on sex/class/language spoken or accent/political view/sexual orientation/ethnicity/education/profession/general appearance/where the patient lives/no discrimination.
Question35	35 If a doctor or nurse discriminated you, have you done anything about this?
Question36	36 In your opinion, have healthcare services got better or worse in the AKP period?
Question39	39 Do you expect any economic crisis in Turkey in the coming months?
Question40	40 Which party did you vote for in November 1 elections?
Question42	42 Which TV news do you follow?
Question43	43 Which social security institution are you affiliated with?
Question44	44 Does this household own any cars?
Question45	45 Covering
Question46	46 Ethnicity
Question47	47 Religion/sect
Question48	48 Religiosity
Question49	49 Monthly household income (Open-ended)
Question49.1	49 Monthly household income (Grouped)
Question52	52 Time of the survey
Question53	53 House type
kisibasigelir	Per capita income
gelirdilimleri	Economic classes

A1.3 Additional Results for Robustness Checks

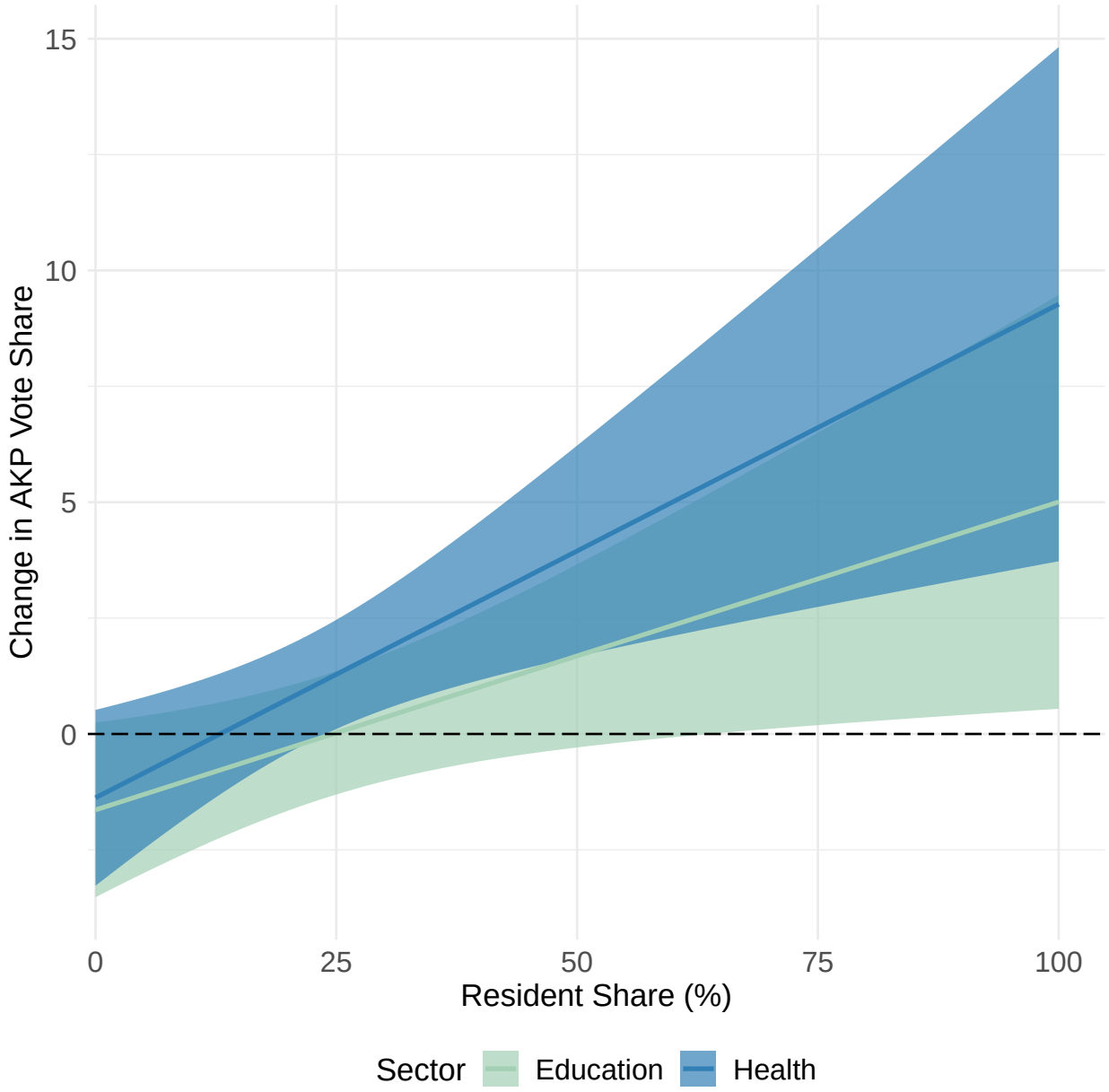

Figure A3: Marginal Effect of Health and Education Investments (one unit per 10k) on Vote Share

Table A3: Excludability and Electoral Returns of public goods investments

	Dependent variable:					
	AKP vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Education inv.	-0.256^{***}	-0.262^{***}	-0.201^{***}			
	(0.078)	(0.079)	(0.074)			
Other inv. (excl. educ)			-0.011^{**}			
			(0.005)			
Population (log)		-2.818^{***}	-2.667^{***}		-2.819^{***}	-2.567^{***}
		(0.888)	(0.869)		(0.891)	(0.861)
Avg. nightlights density		-0.140^{***}	-0.139^{***}		-0.133^{***}	-0.137^{***}
		(0.033)	(0.034)		(0.033)	(0.034)
Literacy rate (%)		-0.204^{**}	-0.213^{**}		-0.196^{**}	-0.211^{**}
		(0.083)	(0.083)		(0.083)	(0.084)
Agricultural land (pc)		-0.010	-0.009		-0.006	-0.005
		(0.038)	(0.038)		(0.038)	(0.038)
Education inv.$\times$Resident share (%)	0.010^{**}	0.010^{**}	0.010^{**}			
	(0.004)	(0.004)	(0.004)			
Health inv.				-1.983^{***}	-1.834^{***}	-1.552^{***}
				(0.427)	(0.439)	(0.437)
Other inv. (excl. health)						-0.012^{**}
						(0.005)
Health inv.$\times$Resident share (%)				0.092^{***}	0.085^{***}	0.080^{***}
				(0.022)	(0.022)	(0.022)
Observations	3,718	3,718	3,718	3,718	3,718	3,718
R^2	0.003	0.022	0.024	0.005	0.023	0.026

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table A4: Excludability and Electoral Returns of Public Goods Investments, Matched Sample (Genetic)

	Dependent variable:					
	AKP vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Education inv.	−0.262***	−0.240***	−0.175**			
	(0.080)	(0.078)	(0.073)			
Other inv. (excl. educ)			−0.011**			
			(0.006)			
Population (log)		−2.793***	−2.638***		−3.179***	−2.882***
		(0.890)	(0.867)		(1.126)	(1.067)
Avg. nightlights density		−0.111***	−0.109***		−0.083***	−0.087***
		(0.032)	(0.032)		(0.031)	(0.033)
Literacy rate (%)		−0.109	−0.119		−0.046	−0.065
		(0.085)	(0.086)		(0.135)	(0.136)
Agricultural land (pc)		0.012	0.014		−0.013	−0.011
		(0.040)	(0.040)		(0.048)	(0.048)
Education inv.×Resident share (%)	0.009**	0.008*	0.008*			
	(0.004)	(0.004)	(0.004)			
Health inv.				−2.036***	−1.672***	−1.402***
				(0.441)	(0.459)	(0.453)
Other inv. (excl. health)						−0.012**
						(0.006)
Health inv.×Resident share (%)				0.086***	0.074***	0.069***
				(0.022)	(0.023)	(0.022)
Observations	3,284	3,284	3,284	2,264	2,264	2,264
R^2	0.005	0.018	0.021	0.010	0.023	0.027

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table A5: Excludability and Electoral Returns of Public Goods Investments, Trimmed by Excludability

	Dependent variable:					
	AKP vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Education inv.	−0.265***	−0.219***	−0.154**			
	(0.080)	(0.078)	(0.073)			
Other inv. (excl.educ)			−0.011**			
			(0.006)			
Population (log)		−3.567***	−3.420***		−3.162***	−2.881***
		(1.056)	(1.044)		(1.135)	(1.074)
Avg. nightlights density		−0.101***	−0.100***		−0.085***	−0.085***
		(0.030)	(0.031)		(0.031)	(0.032)
Literacy rate (%)		−0.064	−0.075		−0.014	−0.035
		(0.091)	(0.091)		(0.132)	(0.134)
Agricultural land (pc)		−0.0005	−0.0004		0.002	0.004
		(0.048)	(0.048)		(0.047)	(0.048)
Education inv.×Resident share (%)	0.009**	0.008*	0.008*			
	(0.004)	(0.004)	(0.004)			
Health inv.				−2.035***	−1.643***	−1.408***
				(0.442)	(0.462)	(0.457)
Other inv. (excl.health)						−0.010*
						(0.005)
Health inv.×Resident share (%)				0.085***	0.072***	0.067***
				(0.022)	(0.023)	(0.022)
Observations	3,284	3,284	3,284	2,264	2,264	2,264
R^2	0.897	0.899	0.899	0.899	0.900	0.901

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table A6: Excludability and Electoral Returns of Public Goods Investments, Trimmed by Investments

	Dependent variable:					
	AKP vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Education inv.	−0.545***	−0.521***	−0.431***			
	(0.145)	(0.149)	(0.135)			
Other inv. (excl. educ)			−0.013*			
			(0.007)			
Population (log)		−2.450***	−2.287**		−2.926***	−2.639***
		(0.906)	(0.890)		(0.934)	(0.903)
Avg. nightlights density		−0.143***	−0.139***		−0.133***	−0.135***
		(0.036)	(0.036)		(0.034)	(0.035)
Literacy rate (%)		−0.220***	−0.228***		−0.200**	−0.214**
		(0.084)	(0.084)		(0.084)	(0.084)
Agricultural land (pc)		−0.010	−0.008		−0.008	−0.007
		(0.038)	(0.038)		(0.038)	(0.038)
Education inv.×Resident share (%)	0.019***	0.019***	0.018***			
	(0.006)	(0.006)	(0.006)			
Health inv.				−2.517***	−2.284***	−1.996***
				(0.582)	(0.600)	(0.586)
Other inv. (excl. health)						−0.013*
						(0.007)
Health inv.×Resident share (%)				0.114***	0.105***	0.099***
				(0.026)	(0.026)	(0.026)
Observations	3,660	3,660	3,660	3,663	3,663	3,663
R^2	0.005	0.024	0.026	0.006	0.024	0.027

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table A7: Excludability and Electoral Returns of Public Goods Investments, Binary IV Measure

	Dependent variable:					
	AKP vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Education inv. (dummy)	-3.143^{***}	-2.624^{***}	-1.638^{*}			
	(0.791)	(0.813)	(0.961)			
Other inv. (excl. educ)dummy			-0.762^{*}			
			(0.445)			
Population (log)		-2.562^{***}	-2.507^{***}		-2.887^{***}	-2.755^{***}
		(0.891)	(0.892)		(0.894)	(0.894)
Avg. nightlights density		-0.122^{***}	-0.122^{***}		-0.132^{***}	-0.130^{***}
		(0.032)	(0.032)		(0.033)	(0.032)
Literacy rate (%)		-0.202^{**}	-0.208^{**}		-0.191^{**}	-0.199^{**}
		(0.082)	(0.082)		(0.083)	(0.083)
Agricultural land (pc)		-0.006	-0.007		-0.005	-0.007
		(0.037)	(0.037)		(0.038)	(0.038)
Education inv. (dummy)×Resident share (%)	0.077^{***}	0.068^{**}	0.066^{**}			
	(0.028)	(0.029)	(0.029)			
Health inv. (dummy)				-2.856^{***}	-2.442^{***}	-1.377
				(0.870)	(0.884)	(0.968)
Other inv. (excl. health)dummy						-0.987^{**}
						(0.438)
Health inv. (dummy)×Resident share (%)				0.121^{***}	0.106^{***}	0.106^{***}
				(0.035)	(0.035)	(0.035)
Observations	3,718	3,718	3,718	3,718	3,718	3,718
R^2	0.007	0.023	0.025	0.004	0.022	0.024

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table A8: Excludability and Electoral Returns of Public Goods Investments, by Partisan (AKP) Support

	Dependent variable:					
	AKP vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Education inv.	−0.031	−0.033	0.016			
	(0.033)	(0.034)	(0.039)			
Other inv. (excl. educ)			−0.011**			
			(0.005)			
Population (log)		−2.859***	−2.691***		−3.094***	−2.777***
		(0.856)	(0.837)		(0.884)	(0.850)
Avg. nightlights density		−0.141***	−0.139***		−0.132***	−0.136***
		(0.033)	(0.034)		(0.032)	(0.033)
Literacy rate (%)		−0.197**	−0.206**		−0.184**	−0.201**
		(0.083)	(0.084)		(0.083)	(0.084)
Agricultural land (pc)		−0.008	−0.007		−0.008	−0.007
		(0.038)	(0.038)		(0.038)	(0.038)
Education inv.×Core Dist.	−0.078**	−0.082**	−0.067*			
	(0.040)	(0.040)	(0.039)			
Health inv.				−0.245	−0.147	0.014
				(0.246)	(0.250)	(0.253)
Other inv. (excl. health)						−0.013***
						(0.005)
Health inv.×Core Dist.				−0.020	−0.102	−0.030
				(0.276)	(0.278)	(0.271)
Observations	3,769	3,767	3,767	3,769	3,767	3,767
R^2	0.002	0.021	0.023	0.001	0.019	0.023

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table A9: Excludability and Electoral Returns of Public Goods Investments, by Partisan (AKP) Support

	Dependent variable:					
	AKP vote share					
	(1)	(2)	(3)	(4)	(5)	(6)
Education inv.	−0.031	−0.033	0.016			
	(0.033)	(0.034)	(0.039)			
Other inv. (excl. educ)			−0.011**			
			(0.005)			
Education inv.×Core Dist.	−0.078**	−0.082**	−0.067*			
	(0.040)	(0.040)	(0.039)			
Health inv.				−0.245	−0.147	0.014
				(0.246)	(0.250)	(0.253)
Other inv. (excl. health)						−0.013***
						(0.005)
Health inv.×Core Dist.				−0.020	−0.102	−0.030
				(0.276)	(0.278)	(0.271)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,769	3,767	3,767	3,769	3,767	3,767
R^2	0.002	0.021	0.023	0.001	0.019	0.023

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

A1.4 Regression Discontinuity Design

Table A10: Discontinuity in Public Health and Education Investments Made to Municipalities

	Dependent variable:					
	Education inv. $(t+1)$			Health inv. $(t+1)$		
	(1)	(2)	(3)	(4)	(5)	(6)
Forcing	0.538	1.298	8.633	0.223	0.584	2.157*
	(0.632)	(1.659)	(6.673)	(0.184)	(0.464)	(1.237)
AKP Mayor	−0.054	−0.069	−0.304	−0.025	−0.013	−0.099**
	(0.083)	(0.109)	(0.204)	(0.021)	(0.029)	(0.047)
Turnout	0.017***	0.011*	0.021**	0.001	0.0001	0.001
	(0.004)	(0.006)	(0.010)	(0.001)	(0.002)	(0.002)
Population +18 (log)	0.747***	0.606***	0.713***	0.119***	0.091***	0.132**
	(0.099)	(0.120)	(0.192)	(0.031)	(0.031)	(0.061)
Forcing ×AKP Mayor	−0.784	−1.844	−7.064	−0.241	−1.155*	−1.632
	(1.008)	(2.213)	(7.748)	(0.257)	(0.592)	(1.709)
Observations	6,147	4,715	2,872	6,147	4,715	2,872
R^2	0.080	0.070	0.087	0.029	0.033	0.034

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01

Table A11: Discontinuity in Public Health and Education Investments Made to Municipalities, with Quadratic Terms

	Dependent variable:					
	Education inv. $(t+1)$			Health inv. $(t+1)$		
	(1)	(2)	(3)	(4)	(5)	(6)
Forcing	3.532	6.314	−16.565	0.957	0.960	−3.827***
	(2.553)	(6.845)	(17.519)	(0.705)	(1.779)	(1.237)
AKP Mayor	−0.181	−0.196	−0.116	−0.034	−0.060	−0.073
	(0.121)	(0.167)	(0.297)	(0.031)	(0.045)	(0.047)
Forcing^2	16.104	48.358	−460.599	3.959	3.549	−109.500
	(12.950)	(64.421)	(283.673)	(3.570)	(15.429)	
Turnout	0.017***	0.011*	0.022**	0.001	0.0001	0.001
	(0.004)	(0.006)	(0.010)	(0.001)	(0.002)	(0.002)
Population +18 (log)	0.749***	0.603***	0.720***	0.119***	0.092***	0.135**
	(0.100)	(0.119)	(0.193)	(0.031)	(0.031)	(0.061)
AKP Mayor × Forcing	−2.240	−4.294	22.664	−1.338	0.867	7.365***
	(3.741)	(8.568)	(22.000)	(0.968)	(2.346)	(1.709)
AKP Mayor × Forcing^2	−24.381	−72.540	380.148	−1.989	−26.200	56.085
	(18.262)	(79.037)	(397.349)	(4.958)	(20.020)	
Observations	6,147	4,715	2,872	6,147	4,715	2,872
R^2	0.081	0.070	0.089	0.029	0.035	0.036

Note: Standard errors clustered by district.*p<0.1; **p<0.05; ***p<0.01