

# The Spatial Roots of Voting Behavior and Spatial Regimes: The Turkish General Elections (2018) Case

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The existing literature on voting behavior mainly refers to the Economic Voting Theorem (EVT) which explains the relationship between the ruling party and voters based on a reward-punishment mechanism. This approach fails to explain ongoing electoral support for the political parties under poor economic conditions. Although ongoing support in question mostly referred to political polarization, there is very less explanation about the spatial patterns of this polarization in the literature. However, political polarization mostly has spatial components, and it should be visualized and analyzed by using spatial statistics and spatial regression analysis. In this paper, Turkey has been selected to study of spatial components of the voting behavior due to the successive electoral victories of the incumbent Justice and Development Party (Adalet ve Kalkınma Partisi, the AKP) even under poor economic performance. To do that, a unique data set has been created at the province level to analyze various socio-economic factors that may carry on spatial characteristics. Spatial results imply that support for the AKP has different spatial regimes based on k-means algorithms and there are no spatial spillovers between regimes in terms of voting behavior.

**Keywords:** General Elections, Economic Voting Theorem, LISA, k-means, Spatial Regimes

## 1 Introduction

Turkey has undergone a new phase in its political history in the past two decades. Justice and Development Party (Adalet ve Kalkınma Partisi, the AKP)'s came to power in 2002 general elections. The AKP's first term ruling (2002-2007) has started right after the two crippling financial crises (November 2000, February 2001) that resulted in 133% currency rate devaluation and -6% negative economic growth in 2001 (Cizre and Yeldan 2005; Kadri Ekinci and Alp Ertürk 2007). Although the AKP has taken over bad economic conditions, then the economic growth rate was averagely 7.3% in the first term of its ruling (2002-2007), which was higher than the 4.9% average long run (1924-2001) national growth rate in Turkey. Hence, many researchers referred to the economic success of the AKP in order to explain the AKP's political dominance and mass support (Kalaycıoğlu 2007; Kumbaracıbaşı 2016). Since 2001, there have been five general elections and the AKP has won all of them as the first party (46% in 2007, 49% in 2011, 41% in 2015 June, 49% in 2015 November, and 42.6% in 2018). However, the AKP failed to maintain the same economic success during its following incumbency terms. The average national growth rates were 2.5%, 4.5%, and 4.4% respectively in its second (2007-2011), third (2011-2015), and fourth (2015-2018) terms. Although this economic backsliding has been used as a counterargument quite often by the opposition, they did not achieve to replace the AKP via elections. However, the opposition could only win in very specific regions of Turkey in general elections. How did that happen? How could the AKP maintain its public support nationwide although economic and political circumstances were unstable?

According to the Tobler's First Law of Geography (1970), "everything is related to everything else, but near things are more related than distant things". Within this framework, it could easily be considered that

“locations and spaces” could have impact on voting behavior. For instance, the spatial distribution of turnover rate might reflect the level of political interest in a society. In the literature, many studies stresses that turnover rates have strong spatial pattern for various countries such as US, Russia, Italia, Portugal, etc. (Coleman 2010, 2014; Shin and Agnew 2016; Manoel, Costa, and Cabral 2022). Also, Darmofal (2006) refers that certain topics in political science, such as political communication, democratization, policy diffusion or party mobilization, all exhibit similar behaviors in spatially proximate units (Darmofal 2006). In some cases, spatial interdependencies exist for taxation decisions between local governments and directly impacts voting behavior (Franzese and Hays 2008; Geys 2006). One of the important contributions to this view comes from Elhorst and Freret (2009). They investigate whether political yardstick competition can explain expenditure interaction among the local governments in France with different spatial weight matrixes. The results show that all local government policies reflects strong spatial interdependencies (Elhorst and Fréret 2009). Similarly, Brunette and Lacombe (2012) show that neglecting spatial impacts create biased results for the electoral studies in U.S. presidential election outcomes.

## 2 Study Area

This paper investigates the rationale behind voting behavior in order to understand mass support for the AKP. Elections are still one of the most effective tools to evaluate Turkey's political context. That is, focusing on voting behavior in Turkey might be very impactful in understanding spatial and nationwide political alignments. Thus, this study strives to enable researchers to analyze political motivations such as religious conservatism, ethnic identity, education, and economic conditions at the province-level unique data with the help of spatial data analysis. Also, this study measures the explanatory power of various voting theories that lean on different concepts and reveal the impact mechanism between the AKP and the voters.

## 3 Methodology

In this paper, the impact of space on voting behavior is analyzed as a case study. To do that, the last general election results that held been in 2018 in Turkey is used. The data collected from the Supreme Electoral Board and Turkstat at the province level. In order to understand spatial roots of the voting behavior, first existence of spatial patterns will be detected by Moran's I and LISA maps, and then non-spatial and spatial regime regression will be analyzed to detect spatial component of voting patterns for the AKP.

## 4 Results

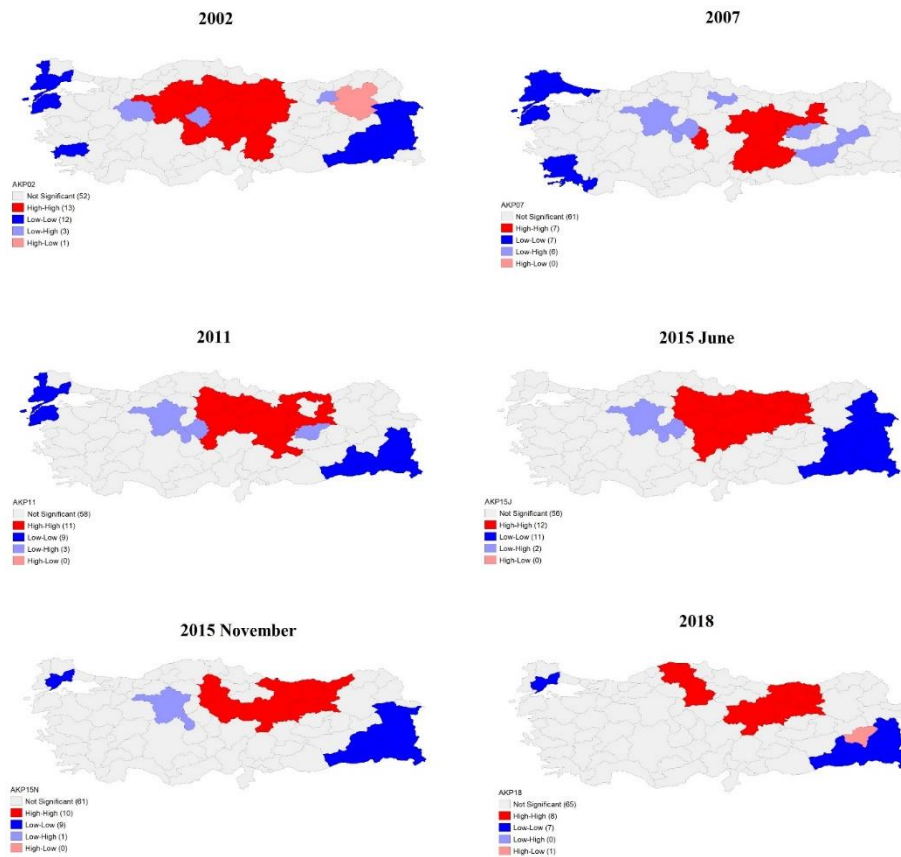
### 4.1 Moran's I and LISA Maps

It makes sense to check the Moran's I results not only for the AKP's but also for the other political parties that are surpassed 10% national election threshold to approve the existence of spatial dependencies among the political parties.

**Table 1: Moran's I values**

Variable	Moran's I	P-value
AKP18	0.405409	0.001
CHP18	0.599813	0.001
MHP18	0.460054	0.001
HDP18	0.813010	0.001
IYI18	0.724440	0.001

According to Moran's I values, all political parties have statistically significant spatial dependence. Since this paper focuses on the evaluation of the EVT for the incumbent AKP in terms of space, it makes sense to check Anselin's LISA (Local Indicator of Spatial Association) maps for all general elections that the AKP won. Hence, it is easy to understand the structure of the spatial clusters of the AKP with time. Figure 2 presents LISA maps for the AKP.



**Figure 2: LISA Maps in general elections between 2002-2018 for the AKP**

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According to the maps, the AKP's high-high regions cluster around central and central-east Anatolia and the northeast Blacksea. On the other hand, blue regions show low-low clusters for AKP. Both Moran's I statistics for the political parties and the LISA maps for the AKP show how impactful the space is on the voting behavior. For that reason, the studies for the voting behavior should consider the impact of the space using spatial statistics and regressions. This paper will attempt to show the spatial impacts on voting behavior in terms of the incumbent party, the AKP using spatial regime regressions. To do that first, the basic OLS model that neglects the impact of space is created as a starting point and then spatial regime regressions will be analyzed.

#### 4.2 Non-spatial and Spatial Regime Regression

$$Party_i = a_i + \beta_2gdppc\$18_i + \beta_4Religion_i + \beta_5KurdPop_i + \beta_6MedianAge_i + \beta_7Hedu_i + u_i$$

The Table 2 below represents the Ordinary Least Squares (OLS) results below.

**Table 2: OLS results for the AKP, 2018**

Variable	Coefficient	Std.Error	t-Statistic	Probability
<b>CONSTANT</b>	<b>56.640</b>	<b>11.480</b>	<b>4.934</b>	<b>0.000</b>
gdppc\$18	0.0004	0.001	-0.606	0.546
<b>Religion</b>	<b>8.398</b>	<b>1.670</b>	<b>5.030</b>	<b>0.000</b>
<b>KurdPop</b>	<b>-0.365</b>	<b>0.065</b>	<b>-5.578</b>	<b>0.000</b>
MedAge	-0.296	0.316	-0.937	0.352
hedu	-0.523	0.584	-0.896	0.373
# of n	81	Adjusted R-squared:		0.474
R-squared:	0.507	F-statistic		15.437

Table 2 shows the OLS results for the AKP, and the yellow colors show statistically significance. According to the OLS results, the gdppc\$18 variable is both very low and statistically insignificant. However, these results neglect the impact of spatial clusters and the coefficients are not trustworthy if there's a spatial impact. That's why the spatial regime regressions should be employed. The spatial regimes model not only allows us to analyze the existence of spatial regimes but also make us enable to test whether the entire model and the coefficients vary across spatial regimes or not via Chow's (1960) structural break test (Chow 1960). Thus, we will be able to detect spatial variants of the clusters. Table 4 represents the results of the spatial regimes.

**Table 4: Spatial Regime Regression Results for the AKP and the Chow Test Results**

	Cluster 0			Cluster 1			Cluster 2			CHOW TEST	
	Coeff.	Std. Error	P-Value	Coeff.	Std. Error	P-Value	Coeff.	Std. Error	P-Value	VALUE	PROB
CONSTANT	46.091	13.031	0.001	82.853	23.698	0.001	24.574	46.110	0.596	2.248	0.325
gdppc\$18	0.0001	0.001	0.915	-0.011	0.004	0.020	0.0081	0.001	0.026	6.588	0.0371
Religion	4.774	2.298	0.042	-1.949	3.168	0.541	15.174	5.080	0.004	8.477	0.0144
KurdPop	0.023	0.085	0.789	-0.307	0.137	0.028	-0.336	0.806	0.678	4.305	0.1162
MedAge	0.045	0.305	0.883	-0.575	1.461	0.695	-0.137	1.156	0.906	0.19	0.9096
hedu	-0.375	0.698	0.593	2.760	2.487	0.271	-0.187	0.737	0.801	1.473	0.4787
								<b>Global Chow</b>	<b>test</b>	<b>69.16</b>	<b>0.0000</b>

In the 3 panel (k=0, k=1, k=2) of Table 4 shows regression results for the k-means clusters, and the last column (Chow Test) shows whether there is a structural break between spatial regimes or not locally and globally. The Global Chow test rejects the null hypothesis that there are no structural differences between the spatial regimes. This finding suggests that separate process drive the spatial structure of the voting behavior between Cluster 1, Cluster 2, and the Cluster 3 regimes. Also, the statistically significant variables at the %95 confidence intervals are colored into the yellow. This helps us to see significant changes between Table 2 and Table 4.

## 5 Discussion

It has been mentioned that the Chow Test results was showing the structural breaks between spatial regimes. This has been confirmed with the Global Chow test result. According to the Global Chow test results, it needs to be highlighted that the voting behavior is different between clusters and there is no spatial spillovers between spatial regimes. Also, Chow test allows us to capture the significant changes of the variables between spatial regimes. The last two column of the Table 4 is showing the significant changes that mentioned for the variables. According to the last two columns of the Table 4, *gdppc\$18* and *Religion* variables are changing among spatial regimes. *gdppc\$18* variable was showing the impact of EVT, and it was found insignificant for the entire provinces.

## 6 Conclusion

In this paper, the impact of spatial analysis has been shown using comparative static method between non-spatial and spatial techniques. After detecting the spatial dependencies for the political parties in Turkey, non-spatial and spatial analysis has been employed and the results are compared and discussed. The spatial regime analysis allowed us to capture the impact of the EVT for various clusters. Also, the clusters have been detected based on the k-means, AHC, and spatially constrained AHC. Thus, this study empirically contributes to the research on voting behavior.

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