Annals of Public and Cooperative Economics
Annales de l'économie publique, sociale et coopérative

Annals of Public and Cooperative Economics 00:0 2019 *pp. 1–25*

INFRASTRUCTURE PROVISION, POLITICS AND RELIGION: INSIGHTS FROM TUNISIA'S NEW DEMOCRACY

by

Maleke FOURATI *

Faculty of History, Economics and Society, University of Geneva

and

Antonio ESTACHE

Université Libre de Bruxelles, Belgium

ABSTRACT: *This paper analyzes the relationship between access to infrastructure services and support for religious parties based on the evidence produced by a recent democratic experience in Tunisia in which a religious political party, Ennahdha, governed from 2011 to 2014. The experience points to a complex relationship. In the 2011 election, areas with higher access are associated with higher support for Ennahdha than areas with lower access. In the 2014 election, however, infrastructure access is positively correlated with support for the party in areas where access had improved but negatively correlated with support for the party in areas that already had high access. A possible pragmatic general implication is that, to be politically competitive, religious parties, cannot bet solely on their religious commitment to provide basic services, including infrastructure, to the poor. They need to recognize the multiplicity of voter's concerns and their evolving agenda.*

Keywords: Infrastructures, government policy, religion and institutions

JEL classification: H54, L98, Z12, D02

1 Introduction

This paper analyzes the relationship between infrastructure access rates and support for religious parties. The assumption is that the less access people have to sanitation, water, and electricity, the stronger their support for these parties, as these parties tend

* We thank the editors (E. Auriol and M. Marini) and two anonymous referees for valuable feedback. We are grateful for discussions and comments on earlier versions with G. Aldashev, L. Bagnoli, D. Camos, M. Dewatripont, P. Francotte, N. Shafik, R. Schlirf, and B. Rijkers. Any mistake or misinterpretation is our responsibility. E-mail: Maleke.Fourati@unige.ch

to emphasize a faith-based commitment to the poor. A related question of interest is the extent to which changes in support for these parties evolve with changes in access rates.

The analysis focuses on Tunisia, where the stylized facts are well aligned with the general question of interest. In 2011, when the country held its first democratic election after 24 years of the Ben Ali dictatorship, rates of infrastructure access differed widely across regions. A religious party, Ennahdha, won the election, capturing by far the largest number of seats in the legislature.[1] After forming a coalition with two other parties (CPR and Ettakatol) Ennahdha dominated Tunisian politics and governed with a religious and conservative ideology.[2] In the 2014 election, Ennahdha lost its dominant electoral position, slipping to number two behind a newly formed political party, Nidaa Tounes.[3]

Some of Ennahdha's characteristics are relevant for this analysis. First, the party began its formal political life without any prior experience with governing. The 2011 election was the first democratic election ever held in the country. This helps a clean identification of the role played by the perceived image of parties, including Ennahdha's. The 2014 election was the first election in which voters could deliver their assessment of the ability of Ennahdha in power to deliver on its promises. Second, the 2011 electoral program is particularly relevant for this paper because Ennahdha focused on improving services for the poorest Tunisians. The party explicitly emphasized on 'implementing an urgent local development program starting in 2012 to improve the living conditions of citizens in deprived regions by improving infrastructure, public amenities and health care' (Ennahdha Electoral Programme 2011, principle 123, p. 38).[4] As argued by Cammett and Luong (2014), Ennahdha's commitment to provide better public services for the most deprived regions is consistent with the widespread sense in the Middle East that Islamist organizations have a solid ability to deliver public and social services in a more effective and less corrupt way than do non-religious parties. Islamist movements, such as Hamas, Hezbollah, and Egypt's Muslim Brotherhood have been considerably more active in areas 'where state-run services were absent or deficient' than in other areas (Wickham 2002, p. 104).[5]

---

1 Ennahdha won 37.04%, CPR won 8.71%, Aridha won 6.74%, Ettakatol won 7.03% and PDP won 3.94%. The remaining parties won a marginal number of seats.

2 Ennahdha is the matured version of the 1970s Islamic Tendency Movement (MTI, Mouvement de Tendance Islamique). Ennahda's legalization as a political party on 1 March 2011 took place shortly after one of its founders, R. Ghannouchi, returned to Tunisia from exile. Ghannouchi had been jailed and then pardoned by Bourguiba in the late 1980s but retained a strong reputation in the minds of many Tunisians (El-Khawas, 1996; Rogers, 2007).

3 '[Béji Caid Essebsi] [. . .] founded Nidaa Tounes in 2012, positioning the party as a big tent to rally diverse opponents of political Islam, and of the Nahda-led Troika government in particular. He campaigned in 2014 on improving the economy and countering terrorism, but has provided few detailed policy proposals.' Arieff and Humud (2014).

4 For more details of the program see: http://kurzman.unc.edu/files/2011/06/Nahda_2011_summary_in_English.pdf

5 Importantly, in Tunisia and in the region, religious (Islamic) parties originate from religious (Islamic) charities, such as the Muslim Brotherhood and the Freedom and Justice Party in Egypt, or Hamas and Hezbollah, which operate both as charities and as political parties (Fourati et al. 2016; Berman 2009). Hence, the distinction between a religious party and a religious organization is often difficult to make.

Our analysis of the data confirms the complex relationship between religious parties and public service delivery in the case of Tunisia. We find statistical evidence of a correlation between access to infrastructure services, water in particular, and support for Ennahdha. We find that the direction of the relationship fluctuates. In 2011, areas with higher access are associated with higher support for Ennahdha than areas with lower access, appearing, at least initially, to contradict Cammett and Luong (2014). The apparent contradiction disappears with the election of December 2014; despite the election loss, improvements in access to water between the two elections are (partially) associated with stronger support for Ennahdha (that is, in areas where improvements took place). The results do not hold as strongly for networked sanitation and disappear for access to networked electricity. The last result may be due to the fact that access to electricity in Tunisia was already nearly universal in 2011. Overall, we interpret these results as follows. Religious parties may initially benefit from being perceived as more intrinsically committed to infrastructure delivery, but this advantage is much more limited than previously thought. Indeed, once elected, they appear to be assessed on their effectiveness in delivering on their electoral promises but they are also expected to cater to a much broader agenda. In a nutshell, religious parties seem to end up being seen by voters as any other party when they function in a democracy, however new this democracy may be.

The rest of the paper is organized as follows. Section 2 surveys the literature on the interactions between politics, religion, and public services. Section 3 discusses the data used to conduct the analysis. Section 4 presents the methodological approach. Section 5 explains the results. Section 6 concludes with policy implications.

2 Survey of the literature on the relevance of religion for infrastructure policy

The recognition of a link between religion, economics, and politics is not new, as acknowledged by Iyer (2016) and Aldashev and Platteau (2014) in their surveys. In the Tunisian context, Fourati et al. (2016) established a link but focused on middle-class support for the religious party based on its adoption of neo-liberal economic policies rather than policies designed to improve public services. Our paper differs from Fourati et al. (2016)'s in focusing on the extent to which public service provision is associated with political outcomes, especially support for Islamist parties, which have gained a reputation for prioritizing access to public services (as with Lebanon's Hezbollah or Egypt's Muslim Brotherhood). The reputed commitment to public services may reflect more than Islamist activism in the region; it may also reflect the traditional concern of the Muslim faith to meet the needs of the poor (Iyer 2016; Kochuyt 2009).

The conceptual importance of the interactions between the political relevance of religiosity and the quality of social and public services has been a recurring theme in the literature concerned with the relevance of religious norms in policy designs. For instance, in local communities, religious homogeneity may facilitate the collective action needed to deliver and maintain public goods because it ensures a fairer distribution of their benefits (Khwaja 2009) or makes it possible to rely on social sanctions to elicit contributions to the public good (Bowles and Gintis 2004; Miguel and Gugerty 2005; Iyer 2016). Moreover, religion offers an element of continuity that can be important for

activities requiring long-term commitments, such as infrastructure maintenance (Guiso et al. 2006).[6]

Some formal quantitative evidence has begun to emerge on the impact on infrastructure performance of the intensity of religious commitment of the population. For instance, in recent research on Indonesia, religious intensity was correlated with investment and maintenance levels in Pal (2009) and Pal and Wahhaj (2017). These analyses of Indonesia's experience show how differences in religious intensity can explain heterogeneity in preferences for public goods across communities. They find lower spending on roads, public transport, and communication in communities that observe traditional adat laws (which promote an ethic of mutual cooperation). But they also find better maintenance of existing assets. The authors explain this by a community concern with the risks of deterioration in intra-community cooperation. Similar conclusions are reached by Balasubramaniam et al. (2014), who show that Indian communities that are fragmented across religions have higher access to tap water than do religiously homogeneous communities. In both case studies, religion has an impact on infrastructure policy outcomes.

Most of this research has focused on the degree to which differences in the religious practices of the population drive public service performance, but it has ignored the relevance of those practices to political outcomes. Yet, as argued for India by Banerjee and Somanathan (2007), differences in access gaps and in religious homogeneity can indeed influence those outcomes. There may be an underestimated reverse causality between public service performance and political outcomes. Infrastructure performance may explain political preferences, which could explain why some parties tend to emphasize their intrinsic commitment to public service.

Religious organizations in the Middle East, whether charities or parties, have tended to be effective at signalling this commitment, causing them to stand out, particularly in regions with poor public services. For instance, they have been quite visible in dealing with major infrastructure failures following from natural disasters such as earthquakes (in Algeria), floods (in Sudan), or tsunamis (in Indonesia), where governments have been slow to take on the challenges imposed by these disasters. In Tunisia, recognition of the potential role of religious parties in improving public services was implicit in the analysis by Gana et al. (2012) of the role of regional disparities in determining Ennahdha's success in the first election.

Despite the growing evidence of the role of religious parties, there is little formal evidence on the correlation between the presence of religious parties in the political spectrum and the extent to which access to infrastructure services improves. In most cases, this is easy to explain: the amount of statistical information available to conduct a precise test of causality has been very limited. In the Tunisian case, however, there is enough evidence to establish a robust correlation. The approach we follow to assess the relationship between infrastructure and the support of the religious party is anchored in the usual theories of political agency reviewed by Besley (2007) suggesting that

6 To some extent, the focus on the religious commitment of a politician in highly religious countries can be seen as an illustration of the relevance of signals on the quality of politicians for electoral outcomes and from there on the policy outcomes (e.g. Banerjee et al. 2011; Ferraz and Finan 2011; Casey 2015).

politicians prioritize policies that voters are most likely to reward in an election. Various versions of the political agency vision have been tested for infrastructure (e.g. Keefer and Khemani 2005, Martinez-Bravo et al. 2011, or Marx 2017) and they all show that voters reward the provision of infrastructure when it is in short supply. However, none deals explicitly with religious parties.

3 The data

Tunisia is divided into 6 regions, 24 governorates, and 264 delegations. We conduct our empirical analysis at the governorate and the delegation levels. The governorate-level data are available for the years 2011 and 2014. As such, they match the dates of the Ennahdha-led government, and so any improvement in infrastructure access is associated with Ennahdha's administration. The number of observations at the governorate level is low (24), so empirical results must be interpreted with caution. The delegation-level data are available for the years 2004 and 2014. The advantage of this data set is that the number of observations is considerably higher (259).[7] The problem is that the 2004 census data antedate Ennahdha's rise to power by seven years. Nothing that happened before 2011 can be attributed to Ennahdha's administration. In this case, too, we must interpret empirical results with caution.

3.1 Election data

Tunisian voting data for 2011 and 2014 were obtained from the *Instance Superieure Independante pour les Elections* (ISIE) and used to produce our dependent variables (i.e. Ennahdha's share of votes and the change in that share). ISIE's data provide information on the 2011 election for the National Constituent Assembly and the 2014 legislative election at the delegation level. In both cases, there is one electoral district per delegation, except in highly populated governorates (Tunis, Nabeul, and Sfax), which have two electoral districts each. The data reveal that the voting turnout was 51.7 per cent of registered voters in 2011 and 66 per cent in 2014.

3.2 Infrastructure and control data

National censuses were conducted in 2004 and 2014 by the Tunisian National Institute of Statistics (NIS). Census data at the delegation level were used to produce the infrastructure and control variables. The 2011 governorate data were drawn from the *Rapport Annuel sur les Indicateurs d'Infrastructure* made publicly available by NIS and available only at the regional and governorate levels.

3.3 Other data

We attempt to capture political instability and the occurrence of general violence in the country observed during Ennahdha's tenure in power, including the assassination

7 Six observations have been dropped in order to reach a balanced sample.

of two secular left-wing politicians in 2013–14 with proxies controlling for the number of violent events and fatalities that occurred during the period considered. These variables come from the Armed Conflict Location and Event Data (ACLED). Finally, we attempt to capture religiosity with the Arab Barometer survey, a nationally representative survey of 1,199 Tunisian conducted in 2013. We select two proxies for religiosity, one asking whether the respondent considers him/herself as religious, and the other asking how often he/she listens to the Quran. The governorate level is the most disaggregated level available in the survey that we can match with the census data. We thus compute the weighted average at the governorate level.

Table 1 reports the summary statistics at the governorate level, and Table 2 at the delegation level. Summary statistics at both administrative levels consistently show the drop in the share of votes for Ennahdha, and conversely the average improvements in access to networked water and sanitation. There is no change in the average improvements in access to networked electricity at either administrative level.

Additional data limitations are worth mentioning. First, because we do not have data on social transfers, which may be correlated with infrastructure access and vote for the religious party, we cannot be sure that our results are due solely to patronage politics. Second, the dataset further omits variables that are likely to also affect infrastructure access and the propensity to vote for Ennahdha such as attitude towards corruption. Attitude towards corruption has been found to be a driving factor of support for religious parties as voters expect religious parties to be tougher on corruption (Henderson and Kuncoro 2011).[8] Finally, some variables such as the level of religiosity are likely to directly affect the propensity to vote for Ennahdha. For instance, some voters are more religious than others, and the more religious voters may be concentrated in certain regions. There is no official measure available to account for this variable. While we attempt to account for religiosity with the Arab Barometer survey data, we interpret these results with caution. First, because of the limited sample size of the governorate level, and because the survey is representative at the national level and not at the governorate level. Therefore, even if we computed the weighted average at the governorate level when using these proxies, they may not be accurately estimated.

4 Methodology

Formally, we estimate the following expression:

$$Ennahdha_d = \beta_0 + \beta_1 Sanitation_d + \beta_2 Water_d + \beta_3 Electricty_{dt} + \beta_4 X_d + \beta_5 Z_r + \epsilon_d \quad (1)$$

where $Ennahdha_d$ is the vote share for Ennahdha at the governorate or delegation level d. $Sanitation_d$, $Water_d$, and $Electricity_d$ are the infrastructure variables expressed in terms of the share of the population having access at the governorate level d. X_d is a control vector encompassing education (primary, secondary, and tertiary, with none as the omitted category), unemployment dummy, and the means of total violent events or fatalities at the governorate at delegation level d. Z_r is a vector of regional fixed effects.

8 Overall, we agree that the omission of these variables may affect noise, but also the precision and consistency of the estimate of the infrastructure access variables.

Table 1 – Summary statistics at the governorate level

	Year	*N.*	Mean	Std. Dev.	Min	Max
			dependent variables			
Ennahdha	2011	24	36.78	7.18	26.65	53.19
Ennahdha	2014	24	29.11	11.81	16.55	61.79
Evolution, Ennahdha (per year)	2011–2014	24	−0.23	0.16	−0.45	0.19
			infrastructure variables			
Sanitation access	2011	24	83.48	15.05	54.40	99.80
Water access	2011	24	81.64	17.27	27.10	98.90
Electricity access	2011	24	99.46	0.32	98.80	99.90
Sanitation access	2014	24	84.72	14.41	58.60	99.90
Water access	2014	24	83.34	16.35	30.80	99.10
Electricity access	2014	24	99.71	0.21	99.30	99.90
Evolution, sanitation (per year)	2011–2014	24	0.02	0.02	0.00	0.08
Evolution, water (per year)	2011–2014	24	0.03	0.03	0.00	0.14
Evolution, electricity (per year)	2011–2014	24	0.00	0.00	0.00	0.01
			control variables			
Primary education	2011	24	37.48	3.10	30.11	42.18
Secondary education	2011	24	30.45	5.00	20.88	41.56
Tertiary education	2011	24	6.08	3.12	3.68	15.80
Unemployment	2011	24	15.55	3.90	7.95	24.50
Primary education	2014	24	32.90	3.02	25.64	37.00
Secondary education	2014	24	34.56	4.79	25.08	44.18
Tertiary education	2014	24	10.04	3.94	5.24	20.64
Unemployment	2014	24	17.05	5.19	9.04	30.01
Evolution, population with primary education (per year)	2011–2014	24	-0.12	0.03	−0.16	−0.05
Evolution, secondary education (per year)	2011–2014	24	0.14	0.07	−0.02	0.28
Evolution, tertiary education(per year)	2011–2014	24	0.74	0.39	−0.16	1.90
Evolution, unemployment (per year)	2011–2014	24	0.11	0.26	−0.23	0.80
Total violent events	2011	24	2.10	2.28	0.00	10.25
Total fatalities	2011	24	1.21	1.26	0.00	5.31
Total violent events	2014	24	0.79	1.02	0.00	3.54
Total fatalities	2014	24	0.41	0.87	0.00	3.85
Mean, total violent events	2011–2014	24	1.92	1.62	0.33	7.63
Mean, total fatalities	2011–2014	24	0.57	0.68	0.00	2.97
Religiosity (being religious)	2013	24	1.77	0.19	1.41	2.11
Religiosity (listening to the Quran)	2013	21	1.70	0.21	1.31	2.07
			additional variables			
CPR	2011	24	7.26	4.89	1.45	26.85
Ettakatol	2011	24	3.77	1.69	0.14	8.11
PDP	2011	24	4.51	4.02	0.00	15.82
CPR	2014	24	2.43	3.39	0.69	17.51
Ettakatol	2014	21	0.85	0.45	0.48	2.27
PDP	2014	24	1.73	1.11	0.50	6.11
Evolution, CPR (per year)	2011–2014	24	−0.66	0.26	−0.91	0.07
Evolution, Ettakatol (per year)	2011–2014	24	−0.13	3.24	−1.00	15.05
Evolution, PDP (per year)	2011–2014	22	−0.43	0.48	−0.89	0.72

Notes: Except for evolution variables, all variables are expressed in percentages. The dependent variables are the number of votes for Ennahdha divided by the number of validated (counted) votes at the delegation level. The infrastructure and control variables are directly available in percentages from the censuses. The evolution variables are the difference between the 2014 and 2011 values divided by the 2011 value.

Table 2 – Summary statistics at the delegation level

	Year	*N.*	Mean	Std. Dev.	Min	Max
			dependent variables			
Ennahdha	2011	259	35.53	10.85	9.44	67.77
Ennahdha	2014	259	28.01	12.18	8.86	67.78
Evolution, Ennahdha (per year)	2011–2014	259	−0.21	0.21	−0.53	0.56
			infrastructure variables			
Sanitation access	2011	259	43.04	34.68	0.20	99.40
Water access	2011	259	72.14	25.14	9.30	98.70
Electricity access	2011	259	98.48	2.21	75.40	100.00
Sanitation access	2014	259	49.70	34.36	0.00	98.93
Water access	2014	259	79.83	18.84	23.94	97.74
Electricity access	2014	259	95.58	3.12	82.25	99.87
Evolution, sanitation (per year)	2004–2014	259	1.36	5.09	−1.00	47.65
Evolution, water (per year)	2004–2014	259	0.21	0.40	−0.26	3.41
Evolution, electricity (per year)	2004–2014	259	−0.03	0.03	−0.17	0.28
			control variables			
Primary education	2011	259	37.33	5.39	14.30	48.70
Secondary education	2011	259	30.74	7.49	10.30	48.00
Tertiary education	2011	259	6.52	5.49	1.40	45.00
Unemployment	2011	259	15.32	6.26	4.50	39.00
Primary education	2014	259	32.71	5.06	12.99	45.44
Secondary education	2014	259	34.80	6.67	15.78	48.71
Tertiary education	2014	259	10.40	6.44	2.52	49.17
Unemployment	2014	259	16.39	6.72	5.81	42.40
Evolution, primary education (per year)	2004–2014	259	−0.12	0.06	−0.34	0.17
Evolution, secondary education (per year)	2004–2014	259	0.15	0.13	−0.27	0.90
Evolution, tertiary education(per year)	2004–2014	259	0.78	0.44	−0.33	2.91
Evolution, unemployment (per year)	2004–2014	259	0.13	0.43	−0.65	3.06
Total violent events	2011	259	2.39	10.45	0.00	150.00
Total fatalities	2011	259	0.89	4.00	0.00	43.00
Total violent events	2014	259	1.25	4.63	0.00	58.00
Total fatalities	2014	259	0.40	2.20	0.00	27.00
Mean, total violent events	2011–2014	259	2.10	7.53	0.00	111.25
Mean, total fatalities	2011–2014	259	0.59	1.95	0.00	18.50
			additional variables			
CPR	2011	259	7.15	5.51	0.67	44.62
Ettakatol	2011	259	4.96	5.24	0.00	24.40
PDP	2011	259	3.65	2.34	0.00	14.66
CPR	2014	259	2.06	3.18	0.29	33.95
Ettakatol	2014	259	0.76	1.31	0.00	15.26
PDP	2014	259	1.75	1.94	0.06	17.11
Evolution, CPR (per year)	2011–2014	259	−0.01	0.01	−0.04	0.04
Evolution, Ettakatol (per year)	2011–2014	234	−0.60	1.23	−1.00	14.34
Evolution, PDP (per year)	2011–2014	247	−0.48	0.44	−0.94	2.21

Notes: Except for evolution variables, all variables are expressed in percentages. The dependent variables are the number of votes for Ennahdha divided by the number of validated (counted) votes at the delegation level. The infrastructure and control variables are directly available in percentages from the censuses. The evolution variables are the difference between the 2014 and 2004 values divided by the 2004 value.

Regional fixed effects allow us to account for unobservable heterogeneity in political choice and for socioeconomic structures across regions.

We estimate equation (1) with an adjusted ordinary least squares specification. Since spillovers are likely to occur across neighboring districts, and therefore to influence both voting preferences and access to infrastructure, we follow the estimation method developed by Conley (1999, 2010) and by Hsiang (2010) to account for potential correlation in the error term of equation (1). Amara and El Lahgha (2016) have shown that geographical proximity mattered in voting behavior in the 2011 elections for the National Constituent Assembly. To account for this effect, standard errors were adjusted for spatial correlation within a 100 km radius at the governorate level and a 50 km radius at the delegation level.

5 Results

Table 3 reports the estimation results of equation (1) at the governorate level (columns 1–4) and at the delegation level (columns 5–8). In column 1, we estimate equation (1) for the year 2011 for the variables on both sides of the equation. In column 2, we estimate equation (1) for the year 2014 for the variables on the left-hand side and for the year 2011 for the variables on the right-hand side. In column 3, we estimate equation (1) for the year 2014 for the variables on both sides. In column 4, we look at the correlation of the evolution for the years 2011 and 2014 for the variables on the left-hand side and those on the right-hand side. In column 5, we estimate equation (1) for the year 2011 for the variables on the left-hand side and for the year 2004 for the variables on the right-hand side. In column 6, we estimate equation (1) for the year 2014 for the variables on the left-hand side and for the year 2004 for the variables on the right-hand side. Column 7 replicates the same specifications as column 3. Finally, in column 8, we look at the correlation of the evolution for the years 2004 and 2014 with the evolution in support for Ennahdha for the years 2011 and 2014.

Columns 1–3 and 5–7 offer a static view of the voting. They reflect the simple direct association between voting preferences and access to infrastructure in a given year. Column 4 and column 8 offer a more dynamic perspective. They reflect the evolving relationship between changes in the level of infrastructure access and changes in the share of votes for Ennahdha. It is useful to compare the sets of columns presenting the governorate and delegation data. When they both lead to the same conclusion, they increase the robustness of the results. When they differ, there may be good reasons to be cautious. The reason is twofold. First, since the delegation-level data are available for 2004, whereas the governorate level data are available for 2011 (the year Ennahdha was elected), the differing results may be ascribable to the time discrepancy across these datasets. Second, highly aggregated data at the governorate level may fail to reflect the heterogeneity of possible situations existing at the disaggregated delegation level.

5.1 Static view of the votes

Column 1 and column 5 show that, ex ante, a higher access to networked water is positively and significantly associated with support for Ennahdha in the 2011 elections,

Table 3 – Access to infrastructure and propensity to vote for Ennahdha

	(1) Ennahdha 2011	(2) Ennahdha 2014	(3) Ennahdha 2014	(4) Evolution Ennahdha 2011–2014	(5) Ennahdha 2011	(6) Ennahdha 2014	(7) Ennahdha 2014	(8) Evolution Ennahdha 2011–2014
Sample	governorate level					delegation level		
Sanitation access	−0.02**	−0.16***	−0.21***		0.12***	0.02	0.01	
	(0.01)	(0.04)	(0.02)		(0.04)	(0.04)	(0.04)	
Water access	0.35***	0.43*	0.72***		0.18***	0.05	0.04	
	(0.08)	(0.20)	(0.18)		(0.06)	(0.05)	(0.06)	
Electricity access	−0.16	−0.04	0.41		0.21*	0.16*	0.13	
	(0.16)	(0.29)	(0.26)		(0.11)	(0.10)	(0.10)	
Primary education	0.27	0.19	−1.10*		0.11	0.23	0.24	
	(0.26)	(0.55)	(0.50)		(0.15)	(0.15)	(0.19)	
Secondary education	−0.08	−0.48	−0.56		−0.26	−0.11	0.06	
	(0.21)	(0.51)	(0.33)		(0.34)	(0.27)	(0.22)	
Tertiary education	0.66***	0.56	−0.91*		−0.53**	−0.18	−0.22	
	(0.17)	(0.54)	(0.42)		(0.22)	(0.26)	(0.17)	
Unemployment	0.66***	0.57	0.32		0.11	0.05	0.12	
	(0.19)	(0.38)	(0.25)		(0.11)	(0.11)	(0.11)	
Total violent events	−0.55***	−0.38	−0.92		0.04*	0.05**	0.05	
	(0.15)	(0.38)	(0.82)		(0.02)	(0.02)	(0.05)	
Total fatalities	−0.14	0.29	1.35		−0.11	−0.12	−0.05	
	(0.48)	(1.16)	(0.92)		(0.11)	(0.08)	(0.15)	
Evolution, access to sanitation				0.21				0.01**
				(0.71)				(0.00)
Evolution, access to water				0.50				0.11***
				(1.11)				(0.04)
Evolution, access to electricity				−20.42				0.90
				(13.79)				(0.66)
Evolution, primary education				0.58				0.91***
				(0.68)				(0.30)

(*Continued*)

Table 3 – Continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Ennahdha 2011	Ennahdha 2014	Ennahdha 2014	Evolution Ennahdha 2011–2014	Ennahdha 2011	Ennahdha 2014	Ennahdha 2014	Evolution Ennahdha 2011–2014
Sample	governorate level					delegation level		
Evolution, secondary education				0.16				0.01
				(0.11)				(0.14)
Evolution, tertiary education				−0.19***				−0.02
				(0.06)				(0.05)
Evolution, unemployment				0.29***				0.03
				(0.02)				(0.03)
Mean, total violent events (2011–2014)				−0.01				−0.00
				(0.01)				(0.00)
Mean, total fatalities (2011–2014)				0.08*				−0.01
				(0.04)				(0.01)
N.	24	24	24	24	259	259	259	259
Pseudo *R*-squared	0.9983	0.9905	0.9932	0.9635	0.9620	0.9486	0.9476	0.6564
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year census RHS variable	2011	2011	2014	2011-2014	2004	2004	2014	2004-2014
Std. errors spatial correlation	100 km radius					50 km radius		

Notes: Except for evolution variables, all variables are expressed in percentages. The dependent variables are the number of votes for Ennahdha divided by the number of validated (counted) votes at the delegation level. The infrastructure and control variables are available in percentages from the censuses. The evolution variables are the difference between the 2014 and 2011 values divided by the 2011 value. Total violent events and fatalities are constructed by taking the total of violent events and fatalities in a given year. The means of total violent events and fatalities (2011–2014) are constructed by computing the yearly average of total violent events and fatalities between 2011 and 2014. Standard errors in parentheses ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

based on both 2011 governorate-level data and 2004 delegation-level data. However, access to networked sanitation is negatively associated with support for Ennahdha at the governorate level and reversely at the delegation level. Electricity is not precisely estimated. Column 2 and column 6 show that access to networked water is also positive and significantly associated with support for Ennahdha in the 2014 election at the governorate level; it remains positive but loses its significance at the delegation level. Regarding sanitation, the coefficient is negative and significantly associated at the governorate level, although it is not significant at the delegation level. Column 3 shows that access to networked water is positive and significantly associated with support for Ennahdha in the 2014 elections, while access to networked sanitation is negative and significantly associated with support for Ennahdha the 2014 elections. Column 7 shows that none of the infrastructure variables is precisely estimated based on the delegation-level data.

5.2 Dynamic view of the votes

Column 4 shows that the annual evolution of access to infrastructure variables between 2011 and 2014 is uncorrelated with the evolution of support for Ennahdha over the same period at the governorate level. However, column 8 shows that the annual evolution of access to sanitation and especially water are positive and significantly correlated between 2004 and 2014 with the evolution of support for Ennahdha between 2011 and 2014. In no case are results significant regarding the association between evolution of access to electricity and evolution of support for Ennahdha at the governorate and delegation level.

Based on the results of Table 3, none of the control variables offers a clear picture as to their association with the propensity to vote for Ennahdha. That said, interestingly, the annual evolution of primary education between 2004 and 2014 (column 8) seems to be associated with greater change in support for Ennahdha between 2011 and 2014. Given the data limitation, whether the investment in primary education came from Ben Ali's administration or Ennahdha's administration is hard to say. However, what is clear is that education has been a priority of successive governments, which have continuously emphasized human capital development since Tunisia's independence from France in 1956. As for the variable capturing violence, we find no clear association between violence and support for Ennahdha when the two elections are considered separately at the governorate and delegation levels. Focusing on the evolution of violence instead, we find a negative impact on the likelihood of voting for Ennahdha.

5.3 Robustness

We conducted several tests to check the robustness of our results. These tests are reported in the appendix. Table A1 replicates the models of columns 1–4 and columns 5–8 of Table 3 without the variables capturing violence. This is to ensure that results are not driven by violence, which may have affected political stability and therefore election results. Results regarding the infrastructure variables do not change, with the exception of the variable assessing the effect of access to networked sanitation on support for

Ennahdha in 2011 at the governorate level (column 1). Table A2 reports the results using a 150 km radius at the governorate level and a 100 km radius at the delegation level. This is to ensure that results are not driven by the sensitivity of the radius. Again, results related to the infrastructure variables remain stable. Table A3 replicates the models of columns 1–4 of Table 3 with variables capturing religiosity. For the reasons presented in Section 3, we interpret the results with caution. The inclusion of the religiosity variables does not affect the signs nor the significance of the correlations between the infrastructure variables and support for Ennahdha regarding the static and the dynamic views. There are only two exceptions, water access in columns 2 and 6, which loses its significance, and the evolution of access to sanitation in column 5, which becomes significant at the 10 per cent level. We only have the year 2013 of observation for the survey, hence before and after the elections. While we believe it is plausible to assume that religiosity remains constant over the period, support for Ennahdha for religious reason may vary. Indeed, religiosity is negatively and significantly associated with support for Ennahdha in 2014 and with the evolution of support for Ennahdha between 2011 and 2014. However, surprisingly, while we would expect a positive and significant relationship between religiosity and support for Ennahdha in 2011, the relationship is not significant. Finally, Tables A4 and A5 report the results for the propensity to vote for other political parties (CPR, Ettakatol, and PDP) that fielded candidates in both elections. It could be that access to infrastructure is associated with the propensity to vote for another given party rather than voting for Ennahdha in particular. Results in both tables show that the relationship between access to infrastructure and voting for another party is substantially more blurry than the relationship between access and voting for Ennahdha specifically. Almost none of the infrastructure variables are significant, with the exception of access to sanitation in some specifications – specifically, when support is for the CPR party at the delegation level where access to sanitation turns out to be negative (columns 1, 4, and 7 in Table A4).

6 Concluding remarks

The clearest conclusion is that access to water may be associated with support for Ennahdha, especially at the beginning of the period, but that access to sanitation is less strongly correlated (although it is correlated in some instances). Once a certain level of access is reached, dimensions other than access may be just as important to some voters. This may be true even for voters without access; as voters' preferences change, those preferences affect religious parties just as they would any party in a democracy. Despite data limitations and related technical concerns, our results offer possible policy insights. First, the votes suggest that the demand for water is stronger that the demand for other public services. This is not surprising with respect to electricity, since access rates are quite high already. It is more puzzling for sanitation, since access rates here are even lower than for water. Second, a more cynical interpretation of the same observation is that water stands a better chance than other services of attracting party support since it is the service most significantly linked to political support. Third, the changes that Ennahdha made to maintain its political advantage reveal a degree of pragmatism with respect to the religious commitment to public service delivery, changes that were likely shaped by the competition from other parties participating in Tunisia's democratic process. Fourth, the results also show a certain degree of pragmatism by voters, since

those who supported Ennahdha to get improved access to services were also willing to drop their support once they had achieved the service levels they were interested in and moved on to other topics, such as the level of violence in society. Ultimately, these last two observations suggest that religious parties, when operating in environments in which political competition is solid, behave like any other party – offering enough differentiation to signal their difference, while also responding to pressure to embrace an agenda shared by all. For the region, this shows that political competition may be a useful safeguard, as it minimizes the risks of political monopolies. That Tunisians have been able to choose among parties appears to have helped ensure a level of accountability that other countries in the region have not yet been able to achieve.

REFERENCES

ALDASHEV G. and PLATTEAU J. P., 2014, Religion, culture, and development. In *Handbook of the Economics of Art and Culture. Vol.* 2, Amsterdam: Elsevier, pp. 587–631.

AMARA M. and EL LAHGA A., 2016, 'Tunisian constituent assembly elections: How does spatial proximity matter?' *Quality & Quantity*, 50, 65–88.

ARIEFF A. and HUMUD C., 2014, 'Political transition in Tunisia', *Current Politics and Economics of Africa*, 7, 497–521.

BALASUBRAMANIAM D., CHATTERJEE S. and MUSTARD D. B., 2014, 'Got water? Social divisions and access to public goods in rural India', *Economica*, 81, 140–160.

BANERJEE A. and SOMANATHAN R., 2007, 'The political economy of public goods: Some evidence from India', *Journal of Development Economics*, 82, 287–314.

BANERJEE A., KUMAR S., PANDE R. and SU F., 2011, 'Do informed voters make better choices? Experimental evidence from urban India', *Unpublished manuscript*.

BESLEY T., 2007, *Political Agency and Accountability*, New York: Oxford University Press.

BOWLES S. and GINTIS H., 2004, 'Persistent parochialism: trust and exclusion in ethnic networks', *Journal of Economic Behavior & Organization*, 55, 1–23.

BERMAN E., 2009, *Radical, Religious, and Violent: The New Economics of Terrorism*. Cambridge, MA: MIT Press.

CAMMETT M. and LUONG P. J., 2014, 'Is there an Islamist political advantage?' *Annual Review of Political Science*, 17, 187–206.

CASEY K., 2015, 'Crossing party lines: The effects of information on redistributive politics', *American Economic Review*, 105, 2410–2448.

CONLEY T. G., 1999, 'GMM estimation with cross sectional dependence', *Journal of Econometrics*, 92, 1–45.

CONLEY T. G., 2010, 'Spatial econometrics', in *Microeconometrics*, London: Palgrave Macmillan, pp. 303–313.

EL-KHAWAS M. A., 1996, 'Revolutionary Islam in North Africa: Challenges and responses', *Africa Today*, 43, 385–404.

FERRAZ C. and FINAN F., 2011, 'Electoral accountability and corruption: Evidence from the audits of local governments', *American Economic Review*, 101, 1274–1311

FOURATI M., GRATTON G. and GROSJEAN P. A., 2016, 'Render unto Caesar: Taxes, charity, and political Islam', University of New South Wales Business School Research Paper.

GANA A., HAMME G. V. and REBAH M. B., 2012, 'Géographie électorale et disparités socio-territoriales: Les enseignements des élections pour l'assemblée constituante en Tunisie", *L'Espace Politique. Revue en ligne de géographie politique et de géopolitique*, 18.

GUISO L., SAPIENZA P. and ZINGALES L., 2006, 'Does culture affect economic outcomes?' *Journal of Economic Perspectives*, 20, 23–48.

HENDERSON J. V. and KUNCORO A., 2011, 'Corruption and local democratization in Indonesia: The role of Islamic parties', *Journal of Development Economics*, 94, 164–180.

HSIANG S. M., 2010, 'Temperatures and cyclones strongly associated with economic production in the Caribbean and Central America', *Proceedings of the National Academy of Sciences*, 201009510.

IYER S., 2016, 'The new economics of religion', *Journal of Economic Literature*, 54(2), 395–441.

KEEFER P. and KHEMANI S., 2005, 'Democracy, public expenditures, and the poor', *World Bank Research Observer*, 20, 1–28.

KHWAJA A. I., 2009, 'Can good projects succeed in bad communities?' *Journal of Public Economics*, 93, 899–916.

KOCHUYT T., 2009, 'God, gifts and poor people: On charity in Islam', *Social Compass*, 56, 98–116.

MARTINEZ-BRAVO M., PADRÓ I MIQUEL G., QIAN N. and YAO Y., 2011, 'Do Local Elections in Non-Democracies Increase Accountability? Evidence from Rural China', NBER Working Paper No. 16948.

MARX B., 2017, 'Elections as Incentives: Project Completion and Visibility in African Politics', MIT Working Paper.

MIGUEL E. and GUGERTY M. K., 2005, 'Ethnic diversity, social sanctions, and public goods in Kenya', *Journal of Public Economics*, 89, 2325–2368.

PAL S., 2009, 'Norms, culture and local infrastructure: Evidence from Indonesia', Centre for Economic Development and Institutions (CEDI), Brunel University.

PAL S. and WAHHAJ Z., 2017, 'Fiscal decentralisation, local institutions and public good provision: evidence from Indonesia', *Journal of Comparative Economics*, 45, 383–409.

ROGERS J. S., 2007, 'There is no room for a religious party: Negotiating the Islamist challenge to state legitimacy in Tunisia, 1987–1991', *Staatliche Religions politik*, German Institute for Global and Area Studies.

WICKHAM C. R., 2002, *Mobilizing Islam: Religion, Activism, and Political Change in Egypt*, New York: Columbia University Press.

Appendix

Table A1 – Access to infrastructure and propensity to vote for Ennahdha without violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Ennahdha 2011	Ennahdha 2014	Ennahdha 2014	Evolution Ennahdha 2011–2014	Ennahdha 2011	Ennahdha 2014	Ennahdha 2014	Evolution Ennahdha 2011–2014
Sample	governorate level					delegation level		
Sanitation access	−0.01	−0.15***	−0.19***		0.12***	0.02	0.02	
	(0.02)	(0.04)	(0.02)		(0.04)	(0.04)	(0.04)	
Water access	0.34***	0.42*	0.69***		0.18***	0.05	0.04	
	(0.10)	(0.20)	(0.19)		(0.06)	(0.05)	(0.06)	
Electricity access	−0.10	0.01	0.32*		0.22**	0.17*	0.13	
	(0.17)	(0.26)	(0.15)		(0.11)	(0.09)	(0.10)	
Primary education	0.24	0.14	−1.02**		0.10	0.22	0.22	
	(0.31)	(0.54)	(0.43)		(0.15)	(0.15)	(0.19)	
Secondary education	−0.17	−0.47	−0.35		−0.26	−0.11	0.07	
	(0.28)	(0.42)	(0.38)		(0.34)	(0.27)	(0.22)	
Tertiary education	0.45**	0.36	−1.05*		−0.56**	−0.20	−0.23	
	(0.20)	(0.40)	(0.49)		(0.22)	(0.26)	(0.16)	
Unemployment	0.54**	0.46	0.38		0.11	0.05	0.11	
	(0.18)	(0.30)	(0.22)		(0.11)	(0.11)	(0.11)	
Evolution, sanitation access				0.17				0.01**
				(0.79)				(0.00)

(*Continued*)

Table A1 – Continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Ennahdha 2011	Ennahdha 2014	Ennahdha 2014	Evolution Ennahdha 2011–2014	Ennahdha 2011	Ennahdha 2014	Ennahdha 2014	Evolution Ennahdha 2011–2014
Sample	governorate level					delegation level		
Evolution, water access				−0.51				0.12***
				(0.99)				(0.04)
Evolution, electricity access				−7.52				0.85
				(6.26)				(0.64)
Evolution, primary education				1.02*				0.95***
				(0.48)				(0.32)
Evolution, secondary education				0.08				0.01
				(0.07)				(0.14)
Evolution, tertiary education				−0.13**				−0.02
				(0.04)				(0.05)
Evolution. unemployment				0.34***				0.03
				(0.01)				(0.03)
N.	24	24	24	24	259	259	259	259
Pseudo *R*-squared	0.9976	0.9902	0.9930	0.9560	0.9619	0.9483	0.9476	0.6539
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year census RHS variable	2011	2011	2014	2011-2014	2004	2004	2014	2004-2014
Std. errors spatial correlation			100 km radius				50 km radius	

Note: See Table 3.

Table A2 – Access to infrastructure and propensity to vote for Ennahdha – sensitive to standard error analysis

	(1) Ennahdha 2011	(2) Ennahdha 2014	(3) Ennahdha 2014	(4) Evolution Ennahdha 2011–2014	(5) Ennahdha 2011	(6) Ennahdha 2014	(7) Ennahdha 2014	(8) Evolution Ennahdha 2011–2014
Sample	governorate level					delegation level		
Sanitation access	−0.02	−0.16**	−0.21***		0.12***	0.02	0.01	
	(0.01)	(0.06)	(0.04)		(0.04)	(0.03)	(0.04)	
Water access	0.35***	0.43***	0.72***		0.18***	0.05	0.04	
	(0.04)	(0.14)	(0.02)		(0.07)	(0.06)	(0.06)	
Electricity access	−0.16	−0.04	0.41		0.21	0.16	0.13	
	(0.16)	(0.25)	(0.25)		(0.14)	(0.12)	(0.13)	
Primary education	0.27	0.19	−1.10*		0.11	0.23	0.24	
	(0.17)	(0.38)	(0.52)		(0.19)	(0.18)	(0.21)	
Secondary education	−0.08	−0.48	−0.56		−0.26	−-0.11	0.06	
	(0.14)	(0.32)	(0.56)		(0.43)	(0.34)	(0.28)	
Tertiary education	0.66***	0.56	−0.91		−0.53**	−0.18	−0.22	
	(0.12)	(0.62)	(0.72)		(0.23)	(0.27)	(0.19)	
Unemployment	0.66**	0.57	0.32		0.11	0.05	0.12	
	(0.23)	(0.39)	(0.31)		(0.12)	(0.12)	(0.11)	
Total violent events	−0.55	−0.38	−0.92		0.04***	0.05**	0.05	
	(.)	(0.24)	(1.29)		(0.01)	(0.02)	(0.06)	
Total fatalities	−0.14	0.29	1.35		−0.11	−0.12	−0.05	
	(.)	(0.85)	(1.27)		(0.09)	(0.08)	(0.07)	
Evolution, sanitation access				0.21				0.01**
				(0.72)				(0.00)
Evolution, water access				0.50				0.11***
				(1.04)				(0.04)
Evolution, electricity access				−20.42				0.90
				(13.71)				(0.66)
Evolution, primary education				0.58				0.91***
				(0.56)				(0.30)

(*Continued*)

Table A2 – Continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Ennahdha 2011	Ennahdha 2014	Ennahdha 2014	Evolution Ennahdha 2011–2014	Ennahdha 2011	Ennahdha 2014	Ennahdha 2014	Evolution Ennahdha 2011–2014
Sample	governorate level					delegation level		
Evolution, secondary education				0.16				0.01
				(0.11)				(0.14)
Evolution, tertiary education				−0.19**				−0.02
				(0.06)				(0.05)
Evolution, unemployment				0.29				0.03
				(.)				(0.03)
Mean, total violent events (2011–2014)				−0.01				−0.00
				(0.01)				(0.00)
Mean, total violent events (2011–2014)				0.08*				−0.01
				(0.04)				(0.01)
N.	24	24	24	24	259	259	259	259
Pseudo *R*-squared	0.9983	0.9905	0.9932	0.9635	0.9620	0.9486	0.9476	0.6564
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year census RHS variable	2011	2011	2014	2011-2014	2004	2004	2014	2004-2014
Std. errors spatial correlation		150 km radius				100 km radius		

Note: See Table 3.

Table A3 – Access to infrastructure and propensity to vote for Ennahdha – controlling for religiosity

	(1) Ennadha 2011	(2) Ennadha 2014	(3) Ennadha 2014	(4) Evolution Ennahdha 2011–2014	(5) Ennadha 2011	(6) Ennadha 2014	(7) Ennadha 2014	(8) Evolution Ennahdha 2011–2014
Sample				governorate level				
Religiosity	−0.53	−12.98***	−11.93***	−0.23***	0.08	−9.72**	−7.44**	−0.11***
	(1.81)	(2.98)	(2.16)	(0.05)	(2.13)	(3.43)	(2.41)	(0.03)
Sanitation access	−0.02*	−0.16***	−0.19***		−0.02*	−0.16***	−0.22***	
	(0.01)	(0.04)	(0.05)		(0.01)	(0.04)	(0.05)	
Water access	0.34***	0.20	0.41**		0.35***	0.26	0.56***	
	(0.08)	(0.14)	(0.15)		(0.09)	(0.19)	(0.15)	
Electricty access	−0.14	0.31	0.64**		−0.16	0.27	0.74*	
	(0.14)	(0.22)	(0.23)		(0.15)	(0.22)	(0.36)	
Primary education	0.27	0.24	−0.77		0.27	0.08	−1.22	
	(0.26)	(0.35)	(0.66)		(0.25)	(0.51)	(0.71)	
Secondary education	−0.07	−0.21	−0.33		−0.08	−0.22	−0.57	
	(0.23)	(0.39)	(.)		(0.24)	(0.53)	(0.32)	
Tertiary education	0.67***	0.77**	−0.32		0.66***	0.64	−0.62	
	(0.17)	(0.31)	(0.57)		(0.17)	(0.42)	(0.57)	
Unemployment	0.66***	0.49	0.33		0.66***	0.47	0.14	
	(0.19)	(0.32)	(0.19)		(0.19)	(0.35)	(0.23)	
Total violent events	−0.54***	−0.20	−0.89*		−0.55***	−0.31	−1.36*	
	(0.17)	(0.36)	(0.41)		(0.16)	(0.32)	(0.61)	
Total fatalities	−0.16	−0.18	−0.12		−0.14	−0.24	1.30**	
	(0.53)	(0.77)	(0.41)		(0.54)	(0.95)	(0.56)	
Evolution, access to sanitation				0.98*				0.58
				(0.49)				(0.68)

(*Continued*)

Table A3 – Continued

	(1) Ennadha 2011	(2) Ennadha 2014	(3) Ennadha 2014	(4) Evolution Ennahdha 2011–2014	(5) Ennadha 2011	(6) Ennadha 2014	(7) Ennadha 2014	(8) Evolution Ennahdha 2011–2014
Sample	governorate level							
Evolution, access to water				1.13				0.46
				(0.80)				(1.05)
Evolution, access to electricity				−17.66*				−15.89
				(9.12)				(13.30)
Evolution, primary education				−1.70**				−0.48
				(0.70)				(0.62)
Evolution, secondary education				0.17*				0.08
				(0.09)				(0.19)
Evolution, tertiary education				−0.05				−0.11
				(0.05)				(0.06)
Evolution, unemployment				0.14**				0.19***
				(0.04)				(0.02)
Mean, total violent events (2011–2014)				0.00				−0.01
				(0.01)				(0.01)
Mean, total fatalities (2011–2014)				0.01				0.04
				(0.03)				(0.04)
N.	24	24	24	24	24	24	24	24
Pseudo *R*-squared	0.9983	0.9937	0.9950	0.9837	0.9983	0.9927	0.9941	0.9681
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year census RHS variable	2011	2011	2014	2011-2014	2011	2011	2014	2011-2014
SE spatial correlation	100 km radius							

Notes: See Table 3. Religiosity variable refers to q609 of the Arab Barometer Wave 3 in Column 1 to 4: Generally speaking, would you describe yourself as religious, somewhat religious and not religious (we omit participants who refused to answer). Religiosity variable refers to q6106 of the Arab Barometer Wave 3 in columns 5 to 8: Do you listen to or read the Quran?: always, most of the time, sometimes, rarely (we omit participants who don't know and refused to answer). For both variables we compute the weighted average at the governorate level.

Table A4 – Access to infrastructure and propensity to vote for other parties at the governorate level

	(1) CPR 2011	(2) Ettakatol 2011	(3) PDP 2011	(4) CPR 2014	(5) Ettakatol 2014	(6) PDP 2014	(7) CPR 2014	(8) vote Ettakatol	(9) PDP 2014	(10) Evolution CPR 2011–2014	(11) Evolution Ettakatol 2011–2014	(12) Evolution PDP 2011–2014
Sanitation access	−0.07	0.01	−0.02	−0.04	0.02**	0.03**	−0.08	0.01	0.01			
	(0.07)	(0.02)	(0.03)	(0.04)	(0.01)	(0.01)	(0.07)	(0.01)	(0.01)			
Water	−0.01	−0.05	0.06	−0.04	−0.04**	−0.11**	0.18	−0.00	−0.00			
	(0.12)	(0.03)	(0.06)	(0.04)	(0.01)	(0.04)	(0.16)	(0.01)	(0.01)			
Electricity	0.54	0.24***	0.15	0.39	−0.09**	−0.10***	0.20*	0.05	0.05			
	(0.51)	(0.05)	(0.20)	(0.32)	(0.03)	(0.02)	(0.09)	(0.04)	(0.04)			
Primary education	−0.66	−0.30***	−0.38	−0.53	0.23***	0.39***	−0.90	−0.12	−0.12			
	(0.89)	(0.09)	(0.42)	(0.57)	(0.04)	(0.11)	(0.64)	(0.10)	(0.10)			
Secondary education	0.04	−0.09**	−0.12	0.05	0.02	0.03	0.45	0.03	0.03			
	(0.35)	(0.04)	(0.19)	(0.13)	(0.03)	(0.08)	(0.39)	(0.04)	(0.04)			
Tertiary education	−0.71	−0.07	0.45	−0.62	0.22**	0.57**	−1.28	−0.13	−0.13			
	(0.81)	(0.07)	(0.43)	(0.58)	(0.07)	(0.23)	(1.01)	(0.08)	(0.08)			
Unemployment	−0.98*	−0.10	−0.05	−0.59	0.04	−0.04	−0.10	−0.04	−0.04			
	(0.52)	(0.06)	(0.15)	(0.43)	(0.04)	(0.05)	(0.07)	(0.04)	(0.04)			
Total violent events	0.88	−0.12*	0.18	0.55	−0.06	−0.20	1.87	0.07	0.07			
	(0.58)	(0.06)	(0.18)	(0.44)	(0.04)	(0.12)	(1.57)	(0.08)	(0.08)			
Total fatalities	−1.38	−0.13	−0.01	−0.98	0.27*	0.09	−1.60	0.16	0.16			
	(1.69)	(0.14)	(0.59)	(0.97)	(0.14)	(0.22)	(1.68)	(0.11)	(0.11)			
Evolution, access to sanitation										0.44	−18.00	−3.52
										(1.44)	(12.97)	(2.06)
Evolution, access to water										0.31	8.80	1.71
										(1.37)	(13.22)	(2.55)
Evolution, access to electricity										69.30	−196.57	106.80*
										(44.96)	(221.08)	(46.91)

(*Continued*)

Table A4 – Continued

	(1) CPR 2011	(2) Ettakatol 2011	(3) PDP 2011	(4) CPR 2014	(5) Ettakatol 2014	(6) PDP 2014	(7) CPR 2014	(8) vote Ettakatol	(9) PDP 2014	(10) Evolution CPR 2011–2014	(11) Evolution Ettakatol 2011–2014	(12) Evolution PDP 2011–2014
Evolution, primary education										5.20	−26.57**	1.77
										(.)	(9.92)	(1.77)
Evolution, secondary education										−0.38	−1.81	2.48***
										(0.45)	(2.40)	(0.58)
Evolution, tertiary education										−0.19**	−3.41***	−1.25***
										(0.08)	(0.91)	(0.29)
Evolution, unemployment										0.71**	−3.92**	0.53*
										(0.23)	(1.54)	(0.23)
Mean, total violent events (2011–2014)										0.02***	−0.92***	0.03
										(0.01)	(0.24)	(0.03)
Mean, total violent events (2011–2014)										−0.08	5.78***	−0.31**
										(0.07)	(1.12)	(0.10)
N.	24	24	24	24	21	24	24	21	24	24	24	22
R-squared	0.8676	0.9794	0.9523	0.6991	0.9484	0.9147	0.7167	0.9076	0.8426	0.9472	0.8637	0.9278
Data census year	2011	2011	2011	2011	2011	2011	2014	2014	2014	2011–2014	2011–2014	2011–2014
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SE spatial correlation							100 km radius					

Notes: Except for evolution variables, all variables are expressed in percentages. The dependent variables are the number of votes for CPR, Ettakatol, and PDP divided by the number of validated (counted) votes at the delegation level. The infrastructure and control variables are directly available in percentages from the censuses. The evolution variables are the difference between the 2014 and 2011 values divided by the 2011 value. The evolution variables take the difference between the 2014 value and the 2011 value divided by the 2011 value. Standard errors in parentheses $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

Table A5 – Access to infrastructure and propensity to vote for other parties at the delegation level

	(1) CPR 2011	(2) Ettakatol 2011	(3) PDP 2011	(4) CPR 2014	(5) Ettakatol 2014	(6) PDP 2014	(7) CPR 2014	(8) vote Ettakatol	(9) PDP 2014	(10) Evolution CPR 2011–2014	(11) Evolution Ettakatol 2011–2014	(12) Evolution PDP 2011–2014
Sanitation access	−0.06***	−0.01	−0.01	−0.04***	0.00	−0.00	−0.03**	0.00	−0.00			
	(0.02)	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.02)	(0.00)	(0.01)			
Water access	0.07***	0.01	0.00	0.02	0.00	−0.02	0.02	0.00	0.00			
	(0.02)	(0.02)	(0.01)	(0.01)	(0.00)	(0.01)	(0.02)	(0.01)	(0.01)			
Electricity access	0.02	0.03	0.03	0.03	0.02	−0.04*	−0.04	0.02*	−0.01			
	(0.06)	(0.04)	(0.03)	(0.04)	(0.02)	(0.02)	(0.04)	(0.01)	(0.02)			
Primary education	−0.15	−0.12	0.01	−0.09	−0.01	0.13**	−0.02	−0.03	0.07			
	(0.13)	(0.12)	(0.08)	(0.08)	(0.03)	(0.05)	(0.04)	(0.03)	(0.05)			
Secondary education	0.27***	0.06	−0.04	0.09**	−0.02	0.05	0.16*	−0.02	−0.00			
	(0.08)	(0.09)	(0.03)	(0.04)	(0.02)	(0.04)	(0.09)	(0.02)	(0.04)			
Tertiary education	0.02	0.42***	0.12	−0.07	−0.01	0.10**	−0.01	−0.02	0.04			
	(0.12)	(0.10)	(0.08)	(0.08)	(0.03)	(0.05)	(0.03)	(0.02)	(0.03)			
Unemployment	−0.14**	−0.02	−0.00	−0.07	−0.01	−0.00	−0.01	0.01	0.01			
	(0.07)	(0.03)	(0.02)	(0.06)	(0.02)	(0.03)	(0.05)	(0.02)	(0.03)			
Total violent events	−0.01	0.06*	−0.01*	0.00	−0.01	−0.00	−0.00	−0.01	−0.01			
	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)			
Total fatalities	0.06	−0.04	−0.00	0.00	0.07	−0.02	0.03	−0.04**	−0.05			
	(0.09)	(0.12)	(0.03)	(0.02)	(0.08)	(0.02)	(0.03)	(0.02)	(0.04)			
Evolution, access to sanitation										−0.00	0.02	−0.00
										(0.00)	(0.03)	(0.00)
Evolution, access to water										0.00	0.26	0.00
										(0.00)	(0.19)	(0.09)
Evolution, access to electricity										0.03	3.08	0.03
										(0.03)	(2.31)	(1.01)
Evolution, of primary education										−0.00	2.28**	0.11
										(0.01)	(1.13)	(0.78)
Evolution, secondary education										−0.01	0.80	−0.03
										(0.01)	(1.10)	(0.19)
Evolution, tertiary education										−0.00	−0.36**	−0.18**
										(0.00)	(0.17)	(0.09)

(*Continued*)

Table A5 – Continued

	(1) CPR 2011	(2) Ettakatol 2011	(3) PDP 2011	(4) CPR 2014	(5) Ettakatol 2014	(6) PDP 2014	(7) CPR 2014	(8) vote Ettakatol	(9) PDP 2014	(10) Evolution CPR 2011–2014	(11) Evolution Ettakatol 2011–2014	(12) Evolution PDP 2011–2014
Evolution, unemployment										0.00	0.09	0.02
										(0.00)	(0.16)	(0.08)
Mean, total violent events (2011–2014)										−0.00	0.00	−0.00
										(0.00)	(0.01)	(0.00)
Mean, total violent events (2011–2014)										−0.00	−0.06*	−0.02
										(0.00)	(0.03)	(0.02)
N.	259	259	259	259	259	259	259	259	259	259	234	247
R-squared	0.7733	0.8733	0.8211	0.4822	0.3224	0.5146	0.4708	0.3220	0.4993	0.4762	0.2703	0.5780
Data census year	2004	2004	2004	2004	2004	2004	2014	2014	2014	2011–2014	2011–2014	2011–2014
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SE spatial correlation							50km radius					

Notes: Except for evolution variables, all variables are expressed in percentages. The dependent variables are the number of votes for CPR, Ettakatol, and PDP divided by the number of validated (counted) votes at the delegation level. The infrastructure and control variables are directly available in percentages from the censuses. The evolution variables are the difference between the 2014 and 2011 values divided by the 2011 value. The evolution variables take the difference between the 2014 value and the 2011 value divided by the 2011 value. Standard errors in parentheses ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.