Islamic Rule and the Emancipation of the Poor and Pious

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Abstract

I estimate the impact of Islamic rule on secular education in a regression discontinuity design, comparing elections where an Islamic party barely won or lost municipal mayor seats in Turkey. I find that municipalities that randomly received an Islamic mayor in 1994 had higher high school attainment in 2000 than secular-run municipalities. Not only is this impact larger for women than for men. It is also larger when the opposing candidate is from a secular *left-wing*, rather than a *right-wing*, party. Examining heterogenous treatment effects reveals that the impact is larger both in poorer and more pious areas. Part of this increased participation may come through increased investment in education by religious foundations, by providing education facilities more tailored to religious conservatives. The participation impact of the Islamic party also extends to the labor market. Women are less likely to be classified as housewives, more likely to be employed as wage-earners as opposed to non-salaried family workers. Altogether these findings stand in contrast to the stylized view that more Islamic influence is associated with adverse development outcomes, especially for women. One interpretation is that existing restrictions on religious expression, such as the headscarf ban in public schools, excludes certain groups from participating. Islamic parties may be more effective at mobilizing these groups by accommodating religious conservatives in secular institutions such as high school.

1. Introduction

Does Islamic rule prevent or facilitate development? On one hand, research in both economics and political science has documented a negative association between more Islamic influence and various development outcomes, including education (see for example Barro and McCleary, [5]; and Kuran, [27]). Women are often singled out as particularly vulnerable to Islamic rule (Fish, [19]; and Donno and Russett, [14]), raising the question whether they are specifically constrained from taking part in education and other institutions. Indeed, many Muslim countries who rank poorly in gender equality comparisons do so because of limited participation in especially secondary education, as well as the labor force.[1] In addition, the pressure of democratization in a mainly autocratic Muslim world, has raised the issue of whether political manifestations of Islam may be undesirable. Political Islamic organizations' provision of public goods may be used as leverage for recruitment into undemocratic and violent activities (see Berman and Laitin [8], and Masoud [32]).

On the other hand, there is also a branch of research documenting Islamic organizations' effectiveness in mobilizing and improving access for underrepresented groups (see for example Arat [2], Hefner [23], Yavuz [46] and White [42]). This may occur especially in environments where a larger group's preferences for retaining a socially and religiously conservative lifestyle serve to exclude them from participation in public institutions and the labor market, often due to outright restrictions on religious expression.[2] In these circumstances, religious movements and politicians may have a distinct advantage in capability over secular alternatives, through preexisting connections with grassroots organizations and networks.

Turkey is a particularly good testing ground to evaluate these contradicting views. It is one of the few countries that has experienced Islamic party participation in the democratic process for a long period. Founded as a secular republic, the country has recently seen rapid migration from rural and socially conservative areas into the cities making the representative voter both poorer and more pious (Rabasa et. al. [37]). In the 1994 local elections, Turkey experienced a seismic political change when an Islamic party became the second largest, and won the metropolitan mayor offices in Istanbul and Ankara. This gave political Islam unprecedented representation in the democratic system and accelerated a debate on religious expression in public spaces, which has continued until

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[1] Women's Empowerment: Measuring the Global Gender Gap, World Economic Forum, www.weforum.org/pdf/Global_Competitiveness_Reports/Reports/gender_gap.pdf

[2] Such restrictions include the ban on wearing headscarves for women in Turkey and other European countries like France (Saul, [39]). But they may also include restrictions as to what extent Islamic organizations can participate in the political process. In both Algeria and Turkey electorally successful Islamic parties have been banned for being too religious (Roy, [38]).

today.

Naturally, it is difficult to isolate the causal effect on education, of having an Islamic mayor. Constituencies that elect Islamic politicians differ from those who do not, and these differences may be important both for election- as well as education outcomes. Therefore observed differences in outcomes conditional on having an Islamic mayor may not reflect its causal impact.

However, as many local elections are determined with a thin margin for the winning party, a regression discontinuity (RD) design can be implemented. This allows me to estimate a meaningful causal treatment effect by comparing outcomes of elections where an Islamic mayor barely won or barely lost. As I can confidently rule out manipulation of the municipal vote around the threshold for winning, treatment assignment can be considered "as good as random" (Lee and Lemieux [29]).

I use a new and unique dataset of Turkish municipal elections in 1994 and outcomes from the 2000 Population Census. My results support the view that Islamic parties in Turkey have raised participation rates in education substantially, and in particular for women. A municipality that received a randomly-assigned Islamic mayor experienced high school attainment rates 23 percent relatively higher for women, and 13 percent relatively higher for men, than secular-run municipalities. I find similar impacts on aggregate enrollment as well as for the age cohorts whose voluntary education could have been affected during the election period. In contrast, I find no evidence of any causal effect on religious education, which exists as an alternative to secular secondary education in Turkey.

I argue that this impact comes through the Islamic parties' advantage in mobilizing and increasing access to education for the poor and pious. Education in Turkey is highly correlated with economic status, where children from poorer households face higher opportunity costs of attending education as well as higher barriers to attend better schools.[3] Estimating RD quantile treatment effects I show that the relative impact of having an Islamic mayor was larger in the lower education quantiles. For the cohort that had just passed high school-eligible age in 2000, the relative impact of having an Islamic mayor was 30 percent higher high school attainment in the 25th quantile, and 14 percent higher in the 75th quantile.

In addition, the ban on the headscarf in educational institutions make it particularly costly for religiously conservative women to invest in education. Several surveys reveal that a majority of women in Turkey do cover their heads in public and may experience substantial negative pressure from families if they attend school uncovered, especially in poorer and more pious neighborhoods.

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[3] Admission to both high school and university education is partly determined by national exams. Performing well in such exams often require private tuition, which not all students can afford (OECD, [35])

Using neighborhood-level data I rank neighborhoods by their relative electoral support for the Islamic party within a municipality. I show that the impact of having an Islamic mayor was larger in more Islamic neighborhoods, and that this holds for women but not for men. This is consistent with women being more constrained by the headscarf ban, and the Islamic party being more capable in improving their access to education.

While it is difficult to isolate precisely how the Islamic party is able to increase participation in education, an examination of urban planning policies suggests a plausible explanation. Local governments have relatively little official responsibility for education policy and thus face a challenge of meeting local demands for this type of public goods. In this situation, economically powerful religious foundations, *vakıf*s, have become important allies to the Islamic party by for example building schools, dormitories and in general targeting their activities to municipalities ruled by the Islamic party. Such infrastructure has often been seen with suspicion by secularists in Turkey.

I show that municipalities with an Islamic mayor did not necessarily shift the allocation of urban space towards education buildings. But they did experience a shift in the composition of education building ownership toward increased *vakıf* ownership. *Vakıf*-owned student dormitories, exempt from public monitoring by the Ministry of Education, often house prayer rooms and facilitate extra-curricular religious courses. Such private "add-on" features to the centrally-governed education system in Turkey may have had an important role in convincing relatively moderate Muslims to overcome the cost of sending their uncovered daughters to secular high school.

Interestingly, an analysis of age cohorts reveals that the impact on education attainment for the whole population may come through more than one channel. On one hand, Islamic mayors increase participation in voluntary education, such as high school and university, for those cohorts where education choices are most likely to have been affected during the tenure of the Islamic mayor. On the other hand, they also raise the share of inhabitants with higher education degrees among older cohorts where education choices are unlikely to have been affected. The latter result suggests not only potential effects of Islamic mayors on labor market opportunities, but also the existence of winners and losers. Examining economic activity, forms of income, and sector employment in Turkish cities, I find broad evidence of shifts in the labor force towards more salaried versus non-salaried employment, and sectoral shifts away from agriculture (for women) and construction (for men).

While there exists a substantial literature on the effects of political parties (Ferreira and Gyorko, [18], Lee et. al., [30], Pettersson-Lidbom, [36]), previous research on the consequence of Islamic

rule is scarce. An exception is Henderson and Kuncoro ([22]). Focusing on Indonesia, after the introduction of local democracy, they find that corruption decreased faster between 2001 and 2004 in districts with more Islamic party representatives. The findings in this paper also resonate with recent research on local democracy in Muslim countries (see Cheema, Khwaja, and Qadir,[11]; and Myerson, [34]).

This paper is organized as follows. Section 2 of the paper describes the institutional framework, section 3 describes the RD design I use to estimate the effect of Islamic mayors, and section 4 the data used in the analysis. Section 5 presents the main empirical results on education attainment and enrollment, and examines the validity of the RD design. Section 6 extends the analysis to heterogenous effects to examine whether impacts were different for the poor and pious. Section 7 presents evidence on the consequences of the Islamic party in the labor market, and Section 8 concludes.

2. Institutional Framework

2.1. Political Islam

While Islamic parties have existed in Turkey since the 1970s, it is really after 1980 that the distinction between "Secularists" and "Islamists" have become the dominant political cleavage. After a period of economic liberalization policies and rapid migration from the poor rural areas to the urban slums and middle-class neighborhoods, the link tightened between religious values and economic status. Figure 1a, adapted from a recent survey (Çarkoğlu and Toprak [10]) shows that this cleavage, as well as general measures of religiosity, is to a large extent correlated with economic status.

Migrants retained their social norms and customs, and religious organizations were occasionally more accessible than the state-sponsored poverty-alleviating programs (Rabasa et al [37], and Yavuz, [46]). Nevertheless, the demographic change came to tilt political power in favor of the poor and pious. The 1994 local election for the first time saw an Islamic party, *Refah Partisi* (eng. "Welfare Party", henceforth RP), receive nation-wide prominence as Islamic candidates were elected in numerous municipalities, including Ankara and Istanbul.

The RP distinguished itself from other parties in its pro-Islamic agenda as well as its ability to harness a network made up of pious entrepreneurs, religious foundations (*vakıflar*) and brotherhoods (*tarikatlar*). The party was part of a broader Islamic movement, which revived religious expression

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through mosque construction (Simsek [40]), participation in religious schools, and veiled women in public spaces.[4] Alienated secular elites came to see the actions of the RP as a move to turn Turkey into an Islamic state, and this led to the party being banned in 1998. The ban was later upheld by the European Court of Human Rights, cementing the labeling of the RP as an "Islamist" party[5]. While several top political leaders were as a result banned form politics, the movement remained intact locally.[6]

2.2. Education in Turkey

Both elementary school and middle school (as of 1998), enrolling students aged 6-14, are mandatory in Turkey.[7] General secondary education, enrolling students aged 14-18, as well as higher forms of education, are voluntary. At the same time, *imam-hatip* schools offer a religious alternative to the secular high school as a form of vocational secondary education.

One of the main reforms imposed by Atatürk after the foundation of the modern state of Turkey was extending education to include women (Mango [31]). Yet more than eighty years onward, there remains a large education gender gap. The World Economic Forum, in their recent Gender Gap Report, ranked Turkey 121th out of 128 countries included.[8] A significant part of this abysmal score was driven by Turkey's low rates of secondary female education (World Bank, [44]). Therefore, the main focus in this paper will be on Turkey's general secondary education, i.e. secular high school.

Turkey's interpretation of secularism, often referred to as laicism, includes a ban on religious symbols in public spaces, such as educational institutions. Women are not allowed to wear the headscarf in any type of schools, neither as students or as teachers, except religious high schools. Men also face restrictions, such as the ban on facial hair in high school. These restrictions present a challenge to reforms improving access to the less privileged, since religious practice, such as wearing the headscarf, is highly correlated with income, as can be seen in Figure 1b. In a TESEV survey, more than 60 percent of respondents wore some form of headcover. For low income groups the

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[4] Female Islamic activists have been an important tool in campaigning for the Islamic parties, not only as a symbol at political rallies. In socially conservative neighborhoods, veiled female activitsts access to married women and housewife voters in ways that a male activist would not be able to (White [42]).

[5] "Turkey Islamists shocked by party ban," BBC News, July 31st 2001, http://news.bbc.co.uk/2/hi/europe/1467665.stm

[6] A part-reincarnation of the RP was again banned in 2001, and split the political Islamic movement into the Felicity Party (SP), continuing to subscribe to the policies of the previous Islamic parties, and the Justice and Development Party (AKP), which came to adopt a less pronounced Islamic profile. Several key members of the earlier Islamic parties are today prominent members of the AKP. This includes both the current Prime Minister, as well as the current President, of Turkey.

[7] "Turkey in 2007", Office of the Prime Minister, Directorate of General Press and Information, http://www.byegm.gov.tr/yayinlarimiz/kitaplar/turkiye2007/english/index.htm

[8] The Gender Gap, World Economic Forum, http://www.weforum.org/en/initiatives/gcp/Gender%20Gap/index.htm

corresponding share was almost 90 percent.

However, the restrictions may serve to guarantee the equality of religious affiliation and gender, as well as prevent pressure on students. Figure 1c shows that a quarter of the respondents in the survey would disapprove if their daughter removed the headscarf in order to attend education. Again the correlation between income and the disapproval suggests where peer pressure could be most intense. In short, existing rules of participation make access to voluntary education for women from religiously conservative and low-income families particularly difficult.

2.3. Local Governments and Elections

The main form of local government in Turkey is the municipality (*belediye)*, of which there are circa 3,000 in total. Municipalities are grouped into 923 districts (*ilçe*) which themselves are grouped into 81 provinces (*il*). The most common are the township (*belde*) municipalities, essentially settlements with more than 2,000 inhabitants in the latest population census. Other types of municipalities act as the center of either a district or a province. Moreover the 16 largest cities in Turkey have metropolitan (*büyükşehir*) municipalities governing the larger urban region, and sub-metropolitan municipalities nested within the metropolitan municipality.

The official responsibilities of municipal governments are smaller than local governments in many Western European countries. The largest share of revenues are transfers from the central government, while property taxes is one of few locally determined sources of revenue. Transfers are largely determined by population and whether a municipality is a district- or province center (World Bank, [43]). Provision of education and health services are in the hands of the central government, leaving local public services and urban development (building permits) as the main formal responsibility of municipal mayors.

However, nothing prevents municipalities from engaging in education or health policy, either directly or indirectly, and in reality municipal mayors have considerable influence over their constituencies, even in areas such as education, partly due to urban planning policies (World Bank [43]).

Local elections are held every fifth year, with each municipality electing a mayor (*belediye başkanlığı*) as well as a council (*belediye meclisi*). The mayor chairs the municipal council and all other committees, sets the agenda for council meetings, and approves permits. For this reason, I will focus exclusively on the municipal mayor, leaving council composition for future research. Independent candidates are allowed to run for office although the candidates nominated by the

large national parties regularly enjoy larger electoral success.

Obviously, analyzing local governments allows more variation and easier comparison of party identities than national elections. National elections are proportional and also include restrictions on minority party representation[9]. Local mayoral elections are determined by single-round plurality elections, which allows me to use an RD design, described in more detail in the next section.

3. Identification Strategy

A key contribution of this paper is the identification of the causal impact of Islamic parties. The main problem with comparing outcomes of municipalities by whether an Islamic or secular mayor was elected is that the assignment process of mayor type is not random. As noted earlier, the municipalities most likely to vote for an Islamic party may also be the ones where female participation in education is more constrained, either financially or religiously. These and other unobserved factors could potentially lead to less investment in education *as well as* an elected Islamic politician, and thus traditional regression analysis might not be informative of the causal impact of having an Islamic mayor.

As an illustration to the RD design, suppose we compare two municipalities where the Islamic party, in a race of two parties, received 70 and 30 percent of the vote shares respectively. In the first municipality the win margin was 40 percent and in the second it was -40 percent, which are very unlikely to be random outcomes. Comparing outcomes based on party identity will thus not tell us the causal effect of having an Islamic mayor. However, suppose the Islamic party instead had received 51 and 49 percent of the vote shares in two other municipalities. In the first, the win margin was 2 percent and in the second -2 percent. It's less clear why these two should be systematically different except for which party won the mayor seat. As long as it is not possible to manipulate the election outcome in detail, whether the Islamic party won or lost should be essentially random. Thus for close elections treatment is as good as randomly assigned, and the average outcome difference between Islamic and secular municipalities measures the local average treatment effect (LATE) of Islamic rule in close elections.

The sharp RD design (Hahn and Van der Klauw [20], Imbens and Lemieux [24]) exploits a discontinuity in the treatment assignment to identify a causal effect. It can be used when treatment assignment, m_i, is determined solely on the basis of a *cutoff score, c,* on an observed *forcing variable,*

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[9] For a party to receive any representation in partliament it needs to have recieved at least ten percent of the national vote.

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x_i. The forcing variable in this design is the winning margin for the Islamic party and the cutoff is therefore $c = 0$. Those municipalities that fall below the cutoff are placed in the control group ($m_i = 0$), and receive a secular mayor, whereas those above are placed in the treatment group ($m_i = 1$), and receive an Islamic mayor. Thus the assignment follows a known deterministic rule: $m_i = 1\{x_i \geq c\}$, where $1\{\cdot\}$ is the indicator function. The forcing variable itself may be correlated with the outcome variable, and so the value of the forcing variable is not random.

Still, when there is reason to believe that municipalities close to the threshold, with very similar values of x_i, are comparable, then the design can be viewed as "as good as randomly assigned" near c. The causal impact of treatment can then be evaluated by comparing average outcomes with scores of x_i just above c with those just below. Consequently, the RD design identifies the average treatment effect for municipalities close to the cutoff point. This assumes not only that municipalities are comparable on each side of the threshold in the neighborhood around it, but also that municipalities (and its politicians and voters) are unable to completely manipulate the forcing variable. These assumptions and the validity of the RD design will be investigated in more detail in Section 5.

Previous research has used different approaches to RD estimation. One common strategy has been to adopt a parametric *control function approach* (Heckman and Robb [21]),

$$y_i = f(x_i) + \beta m_i + \varepsilon_i \tag{3.1}$$

where y_i is the outcome in question (for example high school attainment for women). Under valid assumptions $f(x_i)$ will be a continuous function of x_i at the cutoff point and measures the average treatment effect at c. Consequently, as long as $f(x_i)$ is known and included in the regression, equation (3.1) can be consistently estimated.

An alternative approach is to only include data in a 'discontinuity sample' (Angrist and Lavy [1]), a neighborhood around the cutoff value. This is tantamount to estimating

$$\begin{aligned} y_i &= \alpha + \beta m_i + \varepsilon_i \\ \forall x_i &\in (c - \delta, c + \delta) \end{aligned} \tag{3.2}$$

for an arbitrarily small neighborhood of δ around c. In other words, comparisons of average outcomes to the left and right of c should provide an estimate of the treatment effect that does not depend on the correct specification of the control function. Using this kind of "discontinuity sample" means disregarding a substantial amount of the data. In this paper I use both a polynomial

specification (hereby called the *RD Control*) method and a discontinuity sample (hereby called the *RD Sample*) method as complements.

4. Main Data Description

Data for local mayoral elections come from the Turkish Statistical Institute (henceforth TurkStat) and is reported by municipality. In 1994, elections were held in 2,710 municipalities. These include township, district center, province center, metropolitan, and sub-metropolitan mayors. Fourteen parties received votes and numerous independent candidates also ran for election[10]. Islamic parties, mainly the RP and one fringe party, received circa 21 percent of the total vote share and won 340 mayoral seats. Since all mayoral elections are determined by plurality, the main explanatory variable, Islamic mayor in 1994, is an indicator variable, which is one if an Islamic party had the largest amount of votes and zero otherwise. An analogous definition is used to denote elections won by left-wing parties.

The forcing variable used in the RD design is defined as the *difference in vote share between the largest Islamic party and the largest secular party* with a cutoff point of zero.[11] Consequently, the Islamic mayor indicator is one when this measure, hereby known as the *Islamic win margin*, is positive and zero when the Islamic win margin is negative. Thus each municipality will have a score of the Islamic win margin anywhere between -1 and 1, as can be seen in the histogram in Figure 2.

The main dependent and control variables come from TurkStat's Population Census of 2000. Data on educational achievement (primary, secondary, tertiary, and vocational) and demographics like population, age, gender, and economic activity (including individuals classified as students) are reported by neighborhood (*mahalle*) for cities (*şehir*), and by individual villages (*köy*) outside of cities. One candidate measure of the municipality size is population reported in the 2000 Census. Another is population reported in the 1994 election data. The results in this paper hold for both measures, but I use the latter because it relies on more accurate municipal boundaries. For most of the analysis, the census data is aggregated to the municipal level. For the 1990 Population Census the lowest level of aggregation is the municipality.

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[10] TurkStat reports vote totals for all independent candidates combined. For this reason the elections where the total vote share of the independents is either the highest, or the second highest, are removed. None of the results are affected by this procedure.

[11] More formally $x_i \equiv \max\left\{v_i^{I_1}, ..., v_i^{I_K}\right\} - \max\left\{v_i^{S_1}, ..., v_i^{S_M}\right\} \in [-1, 1]$ for the set of K Islamic parties and M secular parties with $v_i^{I_k} \geq 0, v_i^{I_m} \geq 0, k \in K, m \in M$.

Matching municipalities across time periods is somewhat involved. As cities have grown, new provinces and districts have been created, with the result that municipalities change names and associated districts and provinces. Metropolitan municipalities, have grown to incorporate an increasing amount of smaller (i.e. district center- and township) municipalities. For this reason, when data from the 2000 Population Census is aggregated to metropolitan levels, I use 1994 metropolitan borders. The matched dataset of municipalities with mayoral elections in 1994 and census data for 2000 has 2,661 observations.

The main focus of the paper is on high school education attainment, namely the share of the population, male or female, that in 2000 report highest education level attained as either a high school or a university degree. As can be seen from column 1 in Table 1, average high school attainment is 15.3 and 8.7 percent for men and women respectively. The table also reports demographic and administrative variables. Columns 2 and 3 show group means for municipalities with Islamic and secular mayors, and column 4 differences between columns 2 and 3. On average, Islamic municipalities have 1.2 percentage units lower female attainment rates than secular municipalities and effectively no difference for men. A naive conclusion would be that the cause of the lower education is Islamic rule. Yet Table 1 also shows that Islamic areas differ from secular ones in several other ways. On average, municipalities that elected Islamic mayors in 1994 are larger, younger, more population dense, and more likely to be large cities. The following section therefore employs the RD design to estimate the causal impact of local Islamic rule

5. Main Results

5.1. Graphical Analysis

Figure 3 shows a graphical illustration of the RD design, where local averages of high school attainment for men and women are plotted against the Islamic win margin in bins of one percent, with a vertical line showing the cutoff at zero. A parametric fourth-order polynomial is fitted to the data on each side of the cutoff. The relation between the outcome and the forcing variable is clearly nonlinear and overall there is a negative association between education and the forcing variable especially for women. The most striking feature of this graph, however, is the clear positive jump in high school attainment at the cutoff. While there seems to be a fair amount of sampling variability (i.e. the band of dots around the fitted lines are relatively wide) the size of the jump is quite large, around 2 percentage points for both men and women. To check that there is no

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obvious sorting on each side of the cutoff, the lower part of the graph includes a histogram of the forcing variable, also in bins of one percent. It is comforting to note that the density of the forcing variable itself appears to be smooth around the cutoff point. (A more formal test is conducted in section 5.3). The rest of this section will mostly serve to estimate more precisely, and robustly, the size of the jump shown in this graph.

5.2. Estimation

To refine the analysis, Table 2 reports high school attainment results in 2000 for females in panel A, males in panel B, and the ratio of female-to-male attainment in panel C. In each panel, the first two rows show the mean and standard deviation for the relevant sample. Odd columns show results without controls and even columns with controls; log population, share of population below 19, share of population above 65, gender ratio as well as dummies for type of municipality. Columns 1 and 2 report OLS regressions of each outcome on the indicator of whether the municipality received an Islamic mayor or not in 1994. For women, the correlation is significantly negative at -1.2 percentage points. Since the sample average is 8.7 percent this means that Islamic-governed municipalities had about 14 percent relatively lower attainment rates than secular-run municipalities. Adding covariates in column 2 leaves the estimates largely unaffected.

Columns 3 and 4 show results using the RD Sample method, i.e. the same as in columns 1 and 2 but now only including those observations where the absolute value of the Islamic win margin was below 2 percent. In column 3 the coefficient of female high school attainment is positive at 1.8 percent and marginally statistically significant. This confirms the finding from Figure 3 of a large but imprecise difference around the cutoff. Adding the covariates in column 4 increases the precision (to significant at 1 percent), but does not change the magnitude, of the point estimate.

For the RD Control method the following regression is estimated

$$y_i = \alpha + \beta m_i + f(x_i) + \mathbf{w}'_i \gamma + \varepsilon_i \tag{5.1}$$

where

$$f(x_i) = \sum_{s=1}^{4} \lambda_s^0 x_i^s + m_i \sum_{s=1}^{4} \lambda_s^1 x_i^s$$

is the control function, and λ_s^0 and λ_s^1 are estimated parameters. Using this method in columns 5 and 6 yields almost exactly the same coefficients, statistically significant at five and one percent respectively.

For males, the OLS estimates in columns 1 and 2 are close to, and not statistically different from, zero. Still, both the RD Sample and RD Control methods yield sizeable positive and statistically significant estimates, also slightly below 2 percent.

Even though the point estimates are almost the same for men and women, recall that the sample mean for men is almost twice that of women. Compared to the sample means the relative impact of having an Islamic party on attainment rates is 23 percent for women and 13 percent for men. The results in panel C illustrates more clearly this gender difference. In the OLS regressions, the coefficients are unsurprisingly negative as in panel A. What is noteworthy is the large positive and statistically significant effects on the education (female-to-male) gender ratio. Thus, not only does the Islamic party have positive effects on attainment rates for both men and women, but *the effect is relatively larger for women.*

Table 3 shows results for other types of education including primary, university, and vocational education. For university education, which is voluntary, the results give a similar picture to those for high school education; negative OLS estimates, especially for women, but positive RD estimates for both men and women. These estimates are also sizeable and statistically significant. In contrast, when primary education, which is mandatory, is the outcome variable both OLS and RD estimates are close to and statistically insignificant from zero. This suggests that only voluntary education is affected by Islamic rule. The final type of education investigated is vocational high school. This includes certain job-specific educations and technical high schools, but also religious education. It is therefore noteworthy that having an Islamic mayor doesn't matter for vocational education, as both OLS and RD estimates are essentially zero.

That Islamic mayors have a positive impact on attainment of higher education is somewhat striking. So is the finding that the impact is relatively larger for women than for men. Moreover this phenomenon seems to occur predominantly in voluntary forms of education, with the exception that religious education is unaffected. Before exploring this finding further, however, the next subsection examines the validity of the RD design.

5.3. Validity and Robustness Checks

In the previous section, estimates by the RD Sample and the RD control method yielded almost identical estimates. This is reassuring as each of the two methods has its own strengths and weaknesses. So is the result that adding covariates to the estimation only makes the estimates more precise without affecting the magnitude of the point estimate. Yet these estimates can be

interpreted as causal effects only as long as the assumption of random assignment of party identity around the threshold is upheld. If elections could be perfectly manipulated around the threshold, the assumption is violated, although the mere existence of election fraud is not enough to invalidate the RD design (Imbens and Lemieux [24], and Lee and Lemieux [29]). As long as politicians, municipalities or voters don't have *complete* control over the forcing variable, random assignment is still valid.

One of the testable hypotheses underlying the RD design is local continuity in the density of the forcing variable at the threshold. If the forcing variable can be manipulated there could be sorting around the threshold. The histogram in figure 3 shows no visible evidence of sorting. McCrary [33] proposes a two-step procedure for explicitly testing for a discontinuity in the density of the forcing variable. In the first step, the forcing variable is partitioned into equally spaced bins and frequencies are computed within those bins. The second step treats the frequency counts as a dependent variable in a local linear regression. This is shown graphically in figure 5. This test also rejects any discontinuity in the density at the threshold with a large margin.[12]

An alternative and commonly used validity check is to examine whether baseline covariates are continuous around the threshold. Figure 4 shows that there are no clear and statistically significant jumps at the threshold of the control variables.

A more subtle issue is distinguishing an "Islamic-party" effect from a "Right-wing-party" effect. The Islamic parties examined in this paper are all right-wing parties, and thus the estimate potentially confounds the impact of an Islamic, with that of a right-wing, mayor. The first three columns in Table 4, which has female high school attainment as the dependent variable, investigates this possibility with the two different RD methods. Column 1 shows results from the regression

$$y_i = \alpha + \beta_1 m_i + \beta_2 L_i + \beta_3 m_i L_i + f(x_i, L_i) + \mathbf{w}_i' \boldsymbol{\gamma}_0 + L_i \mathbf{w}_i' \boldsymbol{\gamma}_1 + \varepsilon_i \qquad (5.2)$$

where L_i is a dummy for whether the two adjacent parties on each side of the cutoff is an Islamic and a left-wing secular party. Consequently, this dummy variable is interacted with the indicator for Islamic mayor, the control function and all covariates.[13] The coefficient β_1 reflects the effect of an Islamic mayor when the close contest is between an Islamic and right-wing candidate. The effect of an Islamic mayor in a close contest with a left-wing secular candidate is captured by $\beta_1 + \beta_3$. The β_1 coefficient can thus be interpreted as the "Islamic party" effect and β_3 as the "right-wing party" effect. The effect of an Islamic party, in column 1 of Table 4, in a contest with a right-wing

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[12] See McCrary [33] for more details on the test.
[13] The control function is $f(x_i, L_i) = \sum_{s=1}^4 \lambda_s^0 x_i^s + m_i \sum_{s=1}^4 \lambda_s^1 x_i^s + L_i \sum_{s=1}^4 \Lambda_s^0 x_i^s + m_i L_i \sum_{s=1}^4 \Lambda_s^1 x_i^s$

secular party is just slightly lower (1.3 percentage points) than the results in Table 2. But the effect of an Islamic party winning against a left-wing party is larger, with an estimate of 5.2 percentage points. Columns 2 and 3 verify that the positive effect of Islamic parties are more pronounced when competing against a left-wing party (1.4 percentage points against right-wing parties, and 3.3 percentage points against left-wing parties respectively), although it should be noted that the number of close elections between Islamic and left-wing secular parties are just a small fraction of the total number of close elections. Consequently, independent of the right-left divide in Turkish politics, there is a clear positive effect on female education of having an Islamic party. (The issue of why the effect is larger vis-a-vis left-wing parties will be discussed more in section 6).

Column 4 adds a set of controls for various outcomes from the 1990 Census. These include respectively the female shares of the population with high school attainment, the share that are employed, and the share that are married. The education in 1990 variable is useful as it is likely to be a good proxy for income. These controls may also be helpful proxies for how socially conservative a municipality is. The resulting estimate of having an Islamic mayor in 1994 when controlling for pre-treatment education is positive and significant, yet somewhat smaller. Column 5 is a differenced equation in the outcome variable and the controls, measuring the impact of Islamic mayor on *changes* in the share of women with high school attainment between 1990 and 2000.[14] The resulting estimate is very close to that of the baseline specification.

The rest of Table 4 adds additional controls: 1990 levels of log population density, total building space (in log square meters) as well as the education share of all building spaces in column 6; province fixed effects in column 7; an indicator for whether the municipality received an Islamic mayor in the mayoral election of 1989 in column 8; and a polynomial fourth-order function in all the continuous covariates in column 9. Columns 10 and 11 show RD Sample regressions where the sample are those observations with the absolute value of the forcing variable less than 4 and 1 percent (rather than 2 percent). The RD Sample method thus converges to the OLS estimate as the interval of the forcing variable included grows.

Finally, column 12 shows a placebo check where the outcome variable is female high school attainment in 1990. Since the random assignment of Islamic mayor in 1994 occurred after the realization of 1990s outcomes, it is comforting that the resulting estimate is close to zero.

An additional issue specific to the RD Control method is what order of the polynomial to use.

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[14] The equation is $\Delta y_i = \alpha_0 + \beta_1 m + f(x_i) + \Delta \mathbf{w}' \gamma + \varepsilon_i$, where Δ is the difference operator between 1990 and 2000, and $f(x_i)$ is defined as in equation (5.1).

Figure 6 shows that for small orders of the polynomial, the point estimates vary somewhat, but as the order grows the estimates converge. Moreover, functions with fourth-order polynomials are very close to estimates with higher orders and more precisely estimated. The higher-order functional form estimates are also close to the 2-percent threshold RD Sample estimate plotted as the red dashed line.

A concern could also be the existence of additional discontinuities in the forcing variable at values other than zero which, although not invalidating the RD design, are usually considered unwanted. For example, the wide band of plots in Figure 3 could potentially hide other discontinuities. Although not a formal test, Figures A2 and A3 plot the conditioned male and female high school attainment against the forcing variable. This improves the fit along the polynomial conditional expectation functions and also shows that there are no other discontinuities that stand out in addition to the one at zero.

5.4. Affecting education choice or attracting the educated

So far the results are consistent with two possible explanations. One is that Islamic rule affects the choice of getting voluntary education; i.e. the eligible portion of the population is incentivized towards enrolling in, and finishing, high school. Another is that Islamic rule provides better opportunities for the already-educated, i.e. it attracts existing human capital rather than inducing it accumulation. To differentiate between these two explanations the education variables are reconstructed for four age cohorts in the 2000 Population Census: high school attainment in the age groups 15-20, 21-25, 26-30, and 31-64. Since high school education is officially a four-year education between the ages of 14-18, the first two cohorts may have had their education choice affected by the identity of the mayor. For example, the first cohort were between 9-14 in 1994, the second cohort were between 15-19 etc. I also calculate the share of the 15-30 population classified as students. Thus, any effects found for these age groups are most likely to come through acquiring education. For older cohorts, these individuals are most likely to have already made their educational choices, and so any effects on these are more likely to come through selective migration, i.e. attracting higher educated individuals. This could happen through several channels, one being better opportunities in the labor market (this is covered in more detail in section 7).[15]

Table 5 shows cohort results for high school and university education using the RD Control specification. Each regression is the same as in equation (5.1) with the exception that the dependent

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[15] Another channel could be improved marriage prospects, although this is not covered in this paper.

variable is high school education for the relevant age cohort. As can be seen, the cohort shares whose educational choice were potentially affected are quite large; the cohorts 15-20 and 21-25 together on average comprise around a quarter of the municipal population for both men (Panel B) and women (Panel A). These cohorts also have higher average attainment rates. For women, Panel A reveals large and statistically significant positive effects of Islamic rule on the two younger cohorts (columns 2 and 3). Although not statistically different from the estimate on the entire population, these point estimates are larger. For the two older cohorts (columns 4 and 5) the estimates are also positive and significant - for example, the estimate in cohort 31-64 in column 5 is 0.9 percent. This suggests that Islamic rule both induces and attracts education. For university education, the results are similar with the exception that the youngest cohort shows close to zero effect, which is not so strange given that individuals in this cohort were probably enrolled in lower education types at the time. Still, for the two university-student cohorts, 21-25 and 26-30, the estimates are positive and significant, as is the estimate on the oldest cohort in column 10. Finally, column 11 shows a large positive and significant impact on the female share of students in the 15-30 population. This includes any form of education but will be dominated by high school and university students.

Panel B of Table 5 shows a slightly different picture for men. For male high school attainment estimates for younger cohorts are smaller and statistically insignificant from zero, while the estimate for the older cohort is highly significant and close to the estimate for the entire male population. Likewise for university education, the estimates are larger and more precise in the older cohorts than for women. The effect on enrollment is still positive although statistically insignificant. Thus for men, the main impact seems to be to attract the higher-educated, rather than inducing education per se.

The results in Table 5 are interesting for several reasons. That Islamic rule has effects on the student cohorts, and that this is more pronounced for women than for men, cements the result from the previous section. The results also hint at which individuals are affected. Among women, individuals from all cohorts are affected in the same direction although in potentially different ways. That Islamic rule attracts a higher educated workforce, by migration, is no less striking a result than that it induces education. Migration into Islamic municipalities and neighborhoods is often associated with families and individuals from Turkey's predominantly poorer regions in central Anatolia and the eastern provinces (Yavuz, [46]). The reasons for the positive impact on the share of the educated old could partly be through better labor market opportunities in general (something which will be covered in more detail in Section 7). One possibility is also that the

increased competition from a large share of the better-educated in younger cohorts reduces labor market opportunities for the less-educated in older cohorts. Consequently the impacts on older cohorts could be the result of both a push- and a pull-mechanism.

6. The Emancipation of the Poor and Pious

How can a religiously conservative mayor from the Islamic RP lead to an improvement in female participation in secular education? I argue that the mechanism comes through Islamic parties being more effective in mobilizing those groups where the barriers to entry in education are higher, namely the poor and pious. From the perspective of the household, these barriers may include lacking sufficient financial resources to send all or any eligible household members to high school (or university). Equally important, other barriers may be a lacking willingness by pious parents to send daughters to school without headcover. When social norms and religious practice at the local level conflict with centrally decided rules of secularism, these groups may be the most vulnerable.

The result from column 1 in Table 4 is that the effect of the Islamic party is larger when the contestant to the Islamic party is a left-wing, rather than a right-wing, party. This is surprising since many left-wing parties have women's rights among their top platform issues.[16] Yet the left-wing parties, are also more likely to adhere to Kemalist principles of bundling social and economic reform, thereby raising the barrier to educational participation. In contrast, the Islamic parties' advantage in harnessing local culture and social norms is well documented in Turkey (Yavuz [46], and White [42]) and in other countries (Hefner [23]). If this is the case, then the groups most restrained under the current education system, the poor and pious, should be the ones who benefit the most from having an Islamic mayor. This is investigated in the next two sub-sections

A related question is how Islamic parties are capable to affect education with limited formal resources. Part of the answer may come from the RP's close connection with other religious organizations, especially religious foundations who provide an important source of investment in Islamic-ruled regions. This is investigated in the third sub-subsection.

6.1. Who gets mobilized?

The Poor So far the analysis has mostly centered on the *average* treatment effect of Islamic rule, but one may also wonder whether the impact varies along the distribution of education; i.e.

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[16] See the latest party program of the largest secular left-wing party, the CHP available at
http://www.chp.org.tr/index.php?module=museum&page=show&entry_id=1659

is the impact different in relatively uneducated versus relatively well-educated areas? Educational attainment is also the main credible proxy for income available, and for this purpose I use quantile regressions (Koenker and Bassett, [26]) to estimate the quantile RD (QRD) effects of having an Islamic mayor. This means estimating the same equation as in equation (5.1), but instead of using least squares to minimize the sum of squared residuals, I minimize a sum of asymmetrically weighted absolute residuals giving differing weights to positive and negative residuals. This allows me to estimate impacts of local Islamic rule at different percentiles, rather than just the average.

Figure 8 illustrates the results for women in the cohort groups used in Table 5, namely individuals in the age groups 15-20, 21-25, 26-30, 31-64, as well as students aged 15-30. As the figure reveals there seems to be a different distribution of quantile coefficients for those cohorts whose education choices could have be influenced, than for those cohorts whose choices could not. For the 15-20, and 21-25 cohorts, the estimates are essentially flat, and seem to track the RD-OLS estimate well, with the exception that estimates become increasingly imprecise at the highest quantiles. Also, standard errors are somewhat larger in the second cohort. As in section 5, the similar magnitude of the quantile coefficients hide the fact that the quantile means vary along the distribution. For example, the QRD estimates for 15-20 year-olds in the 25th and median quantiles are almost identical at 0.027 (both statistically significant). Yet the quantile means are 0.082 and 0.156 respectively. Consequently the proportionate increase is almost twice as large in the lower quantile. This is also the case in the last figure, for total share of 15-30 year-olds classified as students. In all the graphs the estimates are much less precise in the highest quantiles.

For the age cohorts that are too old to have their education choices affected all show higher estimates in the higher quantiles. To the extent that Islamic mayors improve opportunities for its higher-educated inhabitants, this effect may be more pronounced in the more developed municipalities, such as the metropolitan and province center municipalities.

The above analysis shows that the impact of the Islamic parties on educational choices have been largest in the lower education quantiles, i.e. the relatively poorer municipalities.

The Pious If Islamic parties help to mobilize women in religiously conservative regions, this would suggest that the effect of having an Islamic mayor should be relatively larger in those areas *within* the municipality that are more religiously conservative. The detail of the 2000 Census is helpful in this respect as it has data on educational attainment and demographics by neighborhood for the 923 city municipalities. The neighborhood, circa 10,000 in total, is the administrative unit

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below the municipality. While the local election of 1994 only comes at the municipal level, the 1995 parliamentary elections has data by neighborhoods, and the major Islamic party was the same in both elections. Therefore, in order to examine whether the Islamic party effect varies by neighborhood-level support of the party, I specify the following regression model

$$y_{ij} = \alpha + \beta_0 m_i + \beta_1 m_i s_{ij} + \delta s_{ij} + f(x_i, s_{ij}) + \mathbf{w}'_{ij}\boldsymbol{\gamma}_0 + s_{ij}\mathbf{w}'_{ij}\boldsymbol{\gamma}_1 + \varepsilon_{ij} \qquad (6.1)$$

which is similar to equation (5.2) with the exception that the measure of religiosity is defined as $s_{ij} = v_{ij}^{RP}/v_i^{RP}$, the ratio of the vote share for the Islamic party in neighborhood j in municipality i and that of the entire municipality i. Scaling the religiosity variable by the aggregate municipal value makes it easier to distinguish variation within municipalities from variation across municipalities.[17] Moreover, introducing an extra margin at the neighborhood-level also allows the testing of whether Islamic mayors have adverse effects in more secular neighborhoods.

Even though the RP represented the main political party of religious conservatives, the neighborhood level RP vote share is an imperfect measure of religiosity - other parties such as the ANAP and various regional Kurdish parties may also have received support from such groups. However, I would argue that this measure is still very informative. First, surveys show that voting for the Islamic party is highly correlated with religious intensity (Esmer, [16]). Second, the hypothesis is that the effect should be relatively larger for women than for men. If the variable s_{ij} is solely a measure of relative electoral support than there should be no difference between men and women in this direction. Thus evidence of a relatively larger effect in neighborhoods with higher values of s_{ij} for women but not for men would be hard to explain by patronage.[18]

One potential issue is that while in equation (5.2) each municipality received equal weight in the regression, estimating equation (6.1) unweighted instead gives each neighborhood equal weight and thus puts more emphasis on larger municipalities (which have more neighborhoods). For this purpose the regression is weighted by the inverse of the number of neighborhoods within each municipality. Moreover, standard errors are clustered by municipality to allow for correlation of standard errors within municipalities.

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[17] Allowing the effect of the Islamic party to vary by religosity at the municipal level would be less informative about this issue since any resulting heterogeneity could just as easily be interpreted as varying the type of competitive elections between a close election in a concentrated (e.g. only two parties and close to 50 percent vote share for the Islamic party) race versus a close election in a less concentrated race (e.g. four parties with around a quarter of the vote share each).

[18] If parties rewarded different neighborhoods more or less depending on whether they voted more or less for the party, one would expect the effect in more supportive neighborhoods to be equal for men and women. This is because votes are secret and the party should have no good way of determining whether men or women voted in one way or the other, only the neighborhood total.

In contrast to the interaction model in equation (5.2) the religiosity measure is not a binary but a continuous variable, and so it is more informative to graph the partial derivative $\beta_0 + \beta_1 s_{ij}$ for relevant values of s_{ij} rather than just report the individual coefficients. This is done in Figure 7 through three graphs representing the heterogenous effect on the share of the population with high school degrees, university degrees, as well as the share of the population classified as students. In each graph, the uppermost panel show results for females, the upper-middle for males, and the lower-middle the ratio of female-to-male outcomes. The bottom panel shows the histogram of the religiosity variable. The value on the y-axis at $s_{ij} = 1$ denotes the average effect of the Islamic party $(\beta_0 + \beta_1)$ which is positive for both men and women. For high school attainment, what is striking is how the effect of the Islamic party is clearly larger in neighborhoods with higher religiosity for women but not for men. For the latter, the line is almost completely flat. Moreover, while the effect for women in more religious neighborhoods is clearly positive, the corresponding effect for the more secular neighborhoods is not significantly negative. This relatively larger impact in more Islamic neighborhoods is also present when the outcome is the ratio of female-to-male high school attainment.

A similar result is found for university education, with the exception that here the heterogenous effect of Islamic mayor is also larger for men in more Islamic neighborhoods. Still, the effect on the gender ratio (the bottom part of the graph) shows that the effects are relatively larger for women in more such neighborhoods. For students, the result for female is less pronounced positive, which is not surprising given that this also includes students in mandatory and vocational education. Nonetheless, the impact is clearly larger in more Islamic neighborhoods on the student gender ratio.

Altogether this shows that neighborhoods within the municipality that can be considered more religiously conservative benefited the most from having an elected Islamic mayor.

6.2. Education, Islamic Networks and the *Vakıf*

So far the analysis has focused solely on educational attainment and enrollment, with less time spent on what actual policy might have triggered these changes. The results are not only striking because of their sign and magnitude but also because local governments in Turkey have little or no official responsibility for education policy. Education spending is almost entirely within the realm of the central government. Yet even though municipalities official responsibilities do not include education, they are not prohibited to engage in this policy area. In fact, municipalities do build schools and

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cater to their constituencies demands for better schools etc. in several ways. Municipalities affect education indirectly through urban planning policies, including building permits. Any construction or large repair of buildings needs to receive approval from the municipal mayor, and this includes education-related buildings.

Focusing on urban planning policies, i.e. buildings constructed and permits given, also allows me to examine the role of the Islamic party's link with other religious organizations, in particular the *vakıf*.[19] The *vakıf*, a common form of organization in the Muslim world with roots in Islamic Law (Kuran [28]) is a religious foundation that is legally distinct from other civil society organizations, and has larger economic freedoms (White [42]). The *vakıf* also achieves its preferred legal status versus general associations (*dernekler*) once it is endowed with property as collateral. A *vakıf* may engage in a wide number of charitable activities including education (Yavuz, [47]). Granting scholarships, selling subsidized school supplies at school starts, as well as building student dormitories and schools are a few examples. When a *vakıf* builds a school, either religious or secular ones, it will be subject to monitoring by the state through the Ministry of Education, and will consequently also have to adhere to a centrally determined curriculum. But a substantial amount of activity also goes into building student dormitories. Such dormitories may house students attending religious as well as secular schools, and do not fall under the umbrella of state monitoring. Being able to wear the headscarf, prayer rooms, and the offering of religious courses outside the main education curriculum, may increase participation among religious segments of the population. At times it has also led to suspicion of unmonitored spread of religious education (Arat, [3], Balli [4], and Kinzer [25]).[20] Nonetheless, the legal and economic strength of such private civil organizations, in a country where associational freedoms is largely restricted, is an important source of social aid and local public service delivery.[21] Even though the link between the Islamic party and the *vakıf* is largely implicit, anecdotal evidence provides numerous examples of the connection between the two. Indeed, "a strong selling point for the Welfare Party – at least among many parents – has been its readiness to provide dormitories for women who as students are coming to the big cities for the first time. In return for political support, the party promises cheap housing and protection." (Cowell [13]). Also, White [42] notes that officially independent vakiflar often received offices in

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[19] Building permits are an important and common form of local policy area. (See for example Bertrand and Kramarz [9])

[20] In addition, the existence of dormitories, in conjunction with boarding schools, may be particularly beneficial for poorer households through lowering direct costs of education. This comes as children in such facilities often receive free school uniforms, textbooks, and free meals, as well as certain stipends which can be shared with their families (World Bank, [45]).

[21] For an extensive source of indices of associational freedoms, see the World Freedom Atlas (http://freedom.indiemaps.com/)

RP-controlled municipal buildings.

Against this background, the aim of this section is to determine whether Islamic mayors shift allocation of the urban space towards education, and to assess the role of *vakıf* physical investment in education. For these purposes, two datasets were collected. The first is completed buildings between 1990-2000 by type, financier and owner from the 2000 Building Census. The second is building permits for the years 1991-2008 by type and financier. Both datasets come from TurkStat.

Panel A of table 6 reports the effect of an Islamic mayor on buildings completed 1990-2000 as estimated by the RD Control method set up in equation (5.1). Row 1 reports averages of the share of all building space (in square meters) that comprise education buildings (schools, dormitories etc.). On average, circa 4 percent of construction between 1990 and 2000 were made up by such buildings. Out of all the education buildings constructed during the period, a fifth of them were privately financed, regardless of who eventually became the owner of the building. Most education buildings, i.e. 58 percent, are owned by state-controlled organizations (mostly the Ministry of Education). Also shown are the average ownership share of municipalities, (2.3 percent) and private *vakıf* ownership share (1.6 percent). Column 2 and 3 reports OLS and RD Control estimates the effect on these shares according to equation (5.1).

Panel B of the table shows results for building permits given 1991-2008 in panel regressions specified as

$$y_{it} = \alpha + \beta m_{it} + f(x_{it}) + \mathbf{w}'_{it}\boldsymbol{\gamma} + \mu_t + \varepsilon_{it} \tag{6.2}$$

$$f(x_{it}) = \sum_{s=1}^{4} \lambda_s^0 x_{it}^s + m_{it} \sum_{s=1}^{4} \lambda_s^1 x_{it}^s$$

where variables are defined as before except for the dependent variables and an additional time-specific effect μ_t.[22] The data is averaged over election periods, so the effect of the 1989 election will have one effect on the years 1990 through 1994, and so on. The first column in panel B shows an average floorspace share of permits given to schools at 3 percent, while the share of this 3 percent allocated to privately-financed schools is around 50 percent. Neither the OLS specification in column 2 nor the RD specifications in columns 3 show any clear effect on the school share of building permits. By contrast, the effect of an Islamic mayor on the private share of school permits is both large and significant, with the RD specification in column 3 showing estimates around 10 percent.

These result suggest that Islamic mayors do not necessarily increase the share of schools and

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[22] Adding fixed effects to the equation does not change the results.

other education buildings. But they do affect who finances, and who owns, the schools. More specifically, having an Islamic mayor means that new education buildings constructed are more likely to be financed by private organizations, and more likely to be owned by religious foundations. As such one mechanism for how the Islamic party manages to increase participation is to affect policy in an intensive manner, rather than just an extensive manner, for example by tilting building permits of schools to private financiers of school facilities. This emphasizes the link between the Islamic politician and the various connected organizations and institutions.

7. Labor Market Outcomes

In Section 5, Islamic mayors were found to not only induce investments in education in younger cohorts, but also to attract immigration of higher educated people in the older cohorts. This section focuses on the latter mechanism by examining labor market outcomes. Unfortunately, detailed labor market data exists for cities only. For the 923 city municipalities the Population Census reports neighborhood-level data on several measures of labor market activity, forms of income and sector employment. Since the number of municipality observations is on the low side, and more disaggregated data by neighborhood is available I focus on RD Control regressions at the neighborhood level. Regressions are weighted (as in Section 6) by the inverse number of neighborhoods within a municipality and standard errors are clustered by municipality.

Table 7 shows results on economic activity, form of income and sector employment. The columns show sample means and standard deviations, as well as specifications for OLS, RD Sample, and RD Control, while the final column reports an unweighted RD Control specification.

For labor supply, i.e. the share of the population classified as participating in the labor force, the average female labor market participation is a paltry 8.5 percent compared to 46 percent for men. A substantial share, on average 70 percent, of women are classified as housewives (*ev kadın*). The OLS results in column 2 show negative correlations for both female employment and the share classified as housewives, consistent with Islamic municipalities being potentially more socially conservative and poorer. The RD estimates on the other hand, show no significant effects on female employment (with some specifications having positive coefficients) and a reduction in the share classified as housewives. This is consistent with the result obtained earlier of increased participation in education, although not necessarily increased participation in the labor market per se. On the other hand, if Islamic parties increase educational attainment for the purpose of later labor force participation, this may not show up as early as 2000. A successful high school

graduate could just as well continue university education as taking a job. It may therefore be more informative to look at measures of the quality of employment among the employed.

As for the form of income in Panel B, a substantial amount of women in the labor market are family-employed and non-salaried (almost 20 percent) as opposed to being wage-earners, a much larger number than for men (8 percent). As column 1 shows, Islamic municipalities have larger proportions of family-employed, and correspondingly fewer wage-earners among working women. The RD estimate however, show the opposite effect, consistent with the findings in preceding sections, namely that the share of wage-earners is actually higher at the expense of the proportion family-employed.

Finally, as can be seen in Panel C for sector employment, a substantial share of the labor force is employed in agriculture. The largest employer for women is the service sector. The results show a shift of employed women from the agriculture sector (and partly the manufacturing sector, although the estimates are statistically insignificant) to the service sector. For men, there is also a shift to the service sector, in particular from the construction sector.[23]

Altogether, these results confirm the view that Islamic rule have improved the situation for a large group of people not only with regards to getting an education but also in terms of labor market prospects. While no aggregate labor force participation effects were found, having an Islamic mayor is conducive to a lower share of women classified as housewives, consistent with the finding of increased participation in education. Whether such participation will ultimately lead to subsequent participation in the labor force is too early to tell (although if this is the case the next 2010 Population Census should reveal more evidence on this).

8. Conclusion

The institutional setting of education and local elections in Turkey provide a powerful test of the consequences of Islamic rule on education. Since women are often proclaimed to be most vulnerable in an occurrence of Islamic rule, a particular focus is on this group.

My findings show that, despite its pro-Islamic and often socially conservative characteristics, the causal impact of having a mayor from an Islamic party on education is positive. An "as good as" randomly-assigned Islamic mayor in a close election increases education attainment, and relatively more so for women than for men. This finding is robust to other voluntary forms of education

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[23] The construction sector in Turkey is the sector where occupational accidents end with the highest mortality rates among all sectors. (See for example Colak et al, [12])

as well as enrollment, and an examination of direct impacts on labor market outcomes provide further evidence of a remarkable phenomenon. A religiously conservative Islamic party can be more effective in educating, and providing better jobs for, women than secular parties, despite the latter parties often having women's rights as a key policy issue.

This points to the delicate interplay between restrictions on religious expression and the constraints to participation this implies for religious conservatives. The ban on wearing the headscarf in public schools in Turkey, a country where an overwhelming majority of women wear some form of headcover, makes barriers to entry highest for those who need it the most, since the poorer are also more likely to be more pious. Policymakers thus face a double challenge of not only alleviating the economic constraints, but also the social constraints, of parents and students.

One key mechanism through which this emanates is increased investment in education in Islamic-controlled municipalities by private religious charities, an Islamic organizational form called *vakıf*. An often-noted type of facility is the *vakıf* student dormitory, a gender-seggregated hostel which houses students under more accommodating forms than secular-run facilities. These facilities are examples of providing a different type of public goods with less focus on the exclusion of religious expression in public spaces. A more generalized way of expressing this is the unbundling of social and economic reforms. While the secular, especially left-wing, parties will often have a two-fold agenda of economic as well as social modernization, the Islamic party in contrast seems to focus more on economic reforms, in most cases harnessing rather than attempting to change existing social norms and customs.

Noteworthy is that the impact of the Islamic party is positive on *secular* education, and insignificant from zero for *religious* education. This to some extent excludes the mechanism where religious leaders increase human capital solely through instruction in religious texts (Becker and Woessman, [6] and [7]). Instead, the finding that Islamic politicians increase participation in secular education as well as lower the share of women classified as housewives, suggest a role for religious politics in achieving secular goals. Observers have noted that the main party program brought forth by the RP, *Adil Duzen* (Just Order), was "seen as away, not of bringing about an Islamic political system, but of addressing Turkey's immediate social and economic problems" (Yavuz [46]).

My results stand in stark contrast to cross-country evidence documenting the negative correlation between Islamic influence and development, as well as gender-related outcomes. To be fair, the approach here differs in several aspects from previous research. As the RD design only provides for a local average treatment effect in close elections, it is not informative about the impact of

Islamic rule far away from the threshold, i.e. for uncompetitive elections. Would the Islamic party act in the same way if it was not facing stiff political competition? Also, the impact of the Islamic party, or rather parties, may or may not have changed character over time, as politicians from the Islamic parties increasingly came to gain control over national institutions and subsequently (in 2002) the parliament. As such, would the transition from an outsider- to an insider party change its actions? The focus on local democratic politics also excludes evaluating the impact of Islamic rule on *national* policies and outcomes, or the actions of Islamic political organizations in autocracies.

Finally, much of the discussion about cross-country-level findings and discussions of allowing Islamic parties or not are inherently tied to institutions. The approach here has been to evaluate the treatment of local Islamic rule, holding institutions fixed. It is therefore important to point out that the results in the paper do not imply a judgment on secular institutions or regulations per se. Perhaps it is precisely the strong secular nature of Turkey's institutions that have led Islamic parties to participate in democratic politics as opposed to engaging in violent struggle.

Even though it may be tempting to dismiss the results found here as a particular trait of Turkey's Islam or its institutions, I argue that this is a unique situation where a meaningful causal treatment effect of Islamic rule can actually be identified. The initial negative association between Islamic influence and development found by a simple group of means analysis holds in many other settings around the world. It is the identification of the causal impact, not the initial setting, that makes the difference. Moreover, regarding the nature of Islam, even though Turkey never experienced the kind of Salafist and Deobandi influence that became prevalent in other Muslim countries (Rabasa et al, [37]), the influence of the Sufi brotherhoods like the Nakshibendi, Nurcu, and Suleymanlı movements which make up the backbone of the *vakıf* in Turkey are shared across most of Central Asia (Yavuz, [47]).

The irony in the positive impact of Islamic parties on participation in education may not have been completely lost on secular, and especially left-wing parties in Turkey.[24] Nonetheless, the headscarf as well as a more general debate on religious expression in public spaces remain contentious. In this regard, Turkey is not the only country with such restrictions, nor is it the only country where the manifestation of political Islam in democratic politics is highly divisive. The school ban on headscarf exists in Singapore, Tunisia, Malaysia, as well as France and some states

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[24] There is some evidence that secular parties may be trying to soften their secular stance in a attempts to broader their appeal to a wider public. For example, the party leader of the CHP recently made headlines appearing on stage at a campaign rally together with women wearing the chador. "Chador not political symbol, opposition leader Baykal says," *Today's Zaman,* November 28, 2008, http://www.todayszaman.com/tz-web/detaylar.do?load=detay&link=159821

in Germany (Saul, [39]). Recent immigration into urban areas is also changing the demographics of European cities. Even though Muslims make up less than four percent of the EU's population, the majority of those is concentrated in urban or sub-urban areas.[25] Poor integration policies have made participation in labor markets as well as higher education difficult for many of these immigrants. So far Islamic parties in Western Europe have not yet become a significant political force, partly because Muslims still only constitute a minority of the population. This, however, is likely to change in the future.

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Table 1. Descriptive statistics: Census 2000 outcomes and 1994 Local election

	(1)	(2)	(3)	(4)
	All	Islamic	Secular	Diff
Variable	(N=2661)	(N=328)	(N=2333)	(2)-(3)
Dependent Variables				
(1) Female High School	0.087	0.075	0.089	-0.012***
	(0.066)	(0.054)	(0.067)	[0.004]
(2) Male High School	0.153	0.154	0.153	0.003
	(0.073)	(0.068)	(0.074)	[0.004]
(3) Female/Male High School Ratio	0.524	0.445	0.535	-0.087***
	(0.206)	(0.194)	(0.205)	[0.012]
Main explanatory variable				
(4) Islamic mayor 1994	0.122	1.000	0.000	1.000
	(0.327)	(0.000)	(0.000)	[0.000]
Covariates				
(5) Log Population	7.836	8.300	7.772	0.595***
	(1.158)	(1.665)	(1.054)	[0.071]
(6) Share below 19	0.405	0.445	0.399	0.046***
	(0.083)	(0.075)	(0.082)	[0.005]
(7) Share between 20-59	0.503	0.482	0.506	-0.023***
	(0.062)	(0.060)	(0.061)	[0.004]
(8) Share above 60	0.092	0.072	0.095	-0.023***
	(0.040)	(0.031)	(0.040)	[0.002]
(9) Gender ratio	1.073	1.077	1.073	0.003
	(0.252)	(0.116)	(0.266)	[0.015]
(10) Log Population Density	-3.576	-3.476	-3.590	0.114***
	(0.417)	(0.487)	(0.405)	[0.025]
(11) District center	0.337	0.366	0.333	0.042
	(0.473)	(0.483)	(0.472)	[0.028]
(12) Province center	0.022	0.065	0.016	0.047***
	(0.148)	(0.247)	(0.127)	[0.009]
(13) Metropolitan	0.006	0.018	0.004	0.014***
	(0.075)	(0.134)	(0.062)	[0.004]
(14) Sub-metropolitan	0.030	0.102	0.020	0.081***
	(0.170)	(0.304)	(0.139)	[0.010]

Standard deviations in paranthesis, standard errors in square brackets. *** p<0.01, ** p<0.05, * p<0.1

Table 2. Share of Population with High School Education

	OLS		RD Sample		RD Control	
	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A. Females			
Sample mean	0.087		0.074		0.087	
(s.d.)	(0.07)		(0.05)		(0.07)	
Islamic mayor 1994	-0.012**	-0.011***	0.018*	0.019***	0.020**	0.017***
	(0.005)	(0.004)	(0.009)	(0.005)	(0.008)	(0.006)
Adjusted R-squared	0.00	0.53	0.02	0.71	0.02	0.54
			Panel B. Males			
Sample mean	0.153		0.154		0.153	
(s.d.)	(0.07)		(0.07)		(0.07)	
Islamic mayor 1994	0.003	0.002	0.019	0.019**	0.020*	0.017**
	(0.005)	(0.005)	(0.012)	(0.009)	(0.010)	(0.008)
Adjusted R-squared	0.00	0.45	0.01	0.58	0.01	0.45
			Panel C. Female-to-Male High School Ratio			
Sample mean	0.524		0.436		0.524	
(s.d.)	(0.21)		(0.18)		(0.21)	
Islamic mayor 1994	-0.087***	-0.061***	0.053	0.063**	0.055**	0.044**
	(0.023)	(0.013)	(0.035)	(0.026)	(0.025)	(0.021)
Adjusted R-squared	0.02	0.48	0.01	0.56	0.07	0.50
Observations	2661	2661	103	103	2661	2661
Covariates	N	Y	N	Y	N	Y

All regressions are estimated using OLS. The first two rows within each panel shows the mean and standard deviation for the relevant sample. Columns 1 and 2 include the full sample with the latter also controlling for share of people under 19 years, share of people above 60, gender ratio, log total population and dummies for municipality types. Columns 3 and 4 report estimates for a reduced sample regression where only observations where the Islamic win margin, the distance between the largest Islamic and the largest secular party, was less than 2 percentage units, with the latter column including the set of controls. Columns 5 and 6 are full sample regressions including a fourth-order polynomial in the Islamic win margin, with the latter column including controls. Robust standard errors clustered by province in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 3. Alternative Education Types

	OLS (1)	RD Sample (2)	RD Control (3)	OLS (4)	RD Sample (5)	RD Control (6)
Panel A. Share of Population with University Education						
	Females			*Males*		
Sample mean	0.023	0.018	0.023	0.046	0.043	0.046
(s.d.)	0.025	0.018	0.025	0.031	0.024	0.031
Islamic mayor 1994	-0.005***	0.005***	0.005**	-0.002	0.006**	0.007**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
Adjusted R-squared	0.47	0.70	0.47	0.48	0.64	0.48
Panel B. Share of Population with Primary Education						
	Females			*Males*		
Sample mean	0.562	0.533	0.562	0.685	0.660	0.685
(s.d.)	0.114	0.123	0.114	0.073	0.075	0.073
Islamic mayor 1994	0.006	-0.008	-0.006	0.005	-0.004	-0.003
	(0.006)	(0.015)	(0.012)	(0.003)	(0.008)	(0.007)
Adjusted R-squared	0.62	0.72	0.63	0.71	0.76	0.71
Panel C. Share of Population with Vocational Secondary Education						
	Females			*Males*		
Sample mean	0.017	0.013	0.017	0.040	0.035	0.040
(s.d.)	(0.015)	(0.013)	(0.015)	(0.027)	(0.022)	(0.027)
Islamic mayor 1994	-0.001**	0.000	0.000	0.002	-0.002	-0.003
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.003)
Adjusted R-squared	0.49	0.57	0.49	0.04	0.04	0.04
Observations	2661	103	2661	2661	103	2661
Covariates	Y	Y	Y	Y	Y	Y

Table 4. Robustness Checks for Female High School Attained in 2000

Robustness Check	Islamic-Left vs. Islamic-Right			Pre-treatment outcome	Long-Difference 1990-2000	Building Census controls	Fixed Effects Province	Incumbent Islamic Mayor	Covariate Polynomial	Margin <.04	Margin < .01	Placebo 1990 Outcome
	All	Isl./Left	Isl./Right									
	RD Control (1)	RD Sample (2)	RD Sample (3)	RD Control (4)	RD Control (5)	RD Control (6)	RD Control (7)	RD Control (8)	RD Control (9)	RD Sample (10)	RD Sample (11)	RD Control (12)
Islamic mayor in 1994	0.013** (0.006)	0.033* (0.016)	0.014** (0.006)	0.011** (0.005)	0.013** (0.006)	0.013** (0.006)	0.013** (0.005)	0.014* (0.008)	0.012** (0.006)	0.007 (0.004)	0.022** (0.008)	0.003 (0.006)
Islamic-Left Contest	0.096** (0.047)											
Islamic mayor and I-L interaction	0.039** (0.019)											
High School 1990				1.403*** (0.060)								
Observations	2661	23	80	1857	1857	2643	2661	1915	2661	213	56	1869
Adjusted R-squared	0.55	0.76	0.71	0.82	0.11	0.55	0.61	0.52	0.60	0.64	0.76	0.02
Covariates	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N

All regressions are estimated using OLS. Column 1 includes an interaction of the Islamic mayor dummy with a dummy denoting whether the contest was between an Islamic party and a left-wing secular party. Columns 2 and 3 show reduced sample regressions with the samples of Islamic versus left-wing and right-wing respectively Column 4 adds female population with high school education in 1990 as a control to the RD Control specification from Table 2. Column 5 is a (long) difference equation of changes between 1990 and 2000. Column 6 includes log population density, log total floor space of all buildings and the share of building space made up by education buildings, all measured in 1990. Column 7 includes (80) province dummies. Column 8 adds an indicator for whether an Islamic mayor was elected in 1989. Column 9 includes fourth-order polynomials in log population, age share below 19, age share above 60, and gender ratio. Columns 10 and 11 are RD Sample regressions including observations not further than 4 and 1 percent respectively. Column 12 runs an RD Control regression of 1990 female high school attainment on the Islamic party dummy in 1994. Robust standard errors clustered by province in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5. Results by Age Cohorts

Age Cohort	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Panel A. Females										
	High School Education					*University Education*					*Students*
Age Cohort	*All*	*15-20*	*21-25*	*26-30*	*31-64*	*All*	*15-20*	*21-25*	*26-30*	*31-64*	*15-30*
Cohort share	*100.0%*	*14.7%*	*10.0%*	*9.6%*	*37.5%*	*100.0%*	*14.7%*	*10.0%*	*9.6%*	*37.5%*	*34.3%*
Outcome mean	0.09	0.16	0.17	0.09	0.04	0.02	0.01	0.07	0.06	0.02	*0.13*
(sd)	0.07	0.10	0.10	0.07	0.04	0.03	0.01	0.05	0.05	0.03	*0.06*
Islamic mayor 1994	0.017***	0.026**	0.028***	0.024***	0.009***	0.005**	0.001	0.010**	0.013**	0.007**	0.018**
	(0.006)	(0.010)	(0.010)	(0.008)	(0.003)	(0.002)	(0.001)	(0.005)	(0.006)	(0.003)	*(0.008)*
Observations	2633	2633	2633	2633	2633	2633	2633	2633	2633	2633	2633
Adjusted R-squared	0.54	0.43	0.39	0.41	0.47	0.47	0.21	0.46	0.43	0.43	0.19
	Panel B. Males										
	High School Education					*University Education*					*Students*
Age Cohort	*All*	*15-20*	*21-25*	*26-30*	*31-64*	*All*	*15-20*	*21-25*	*26-30*	*31-64*	*15-30*
Cohort share	*100.0%*	*15.0%*	*10.4%*	*9.6%*	*37.3%*	*100.0%*	*15.0%*	*10.4%*	*9.6%*	*37.3%*	*35.0%*
Outcome mean	0.154	0.19	0.26	0.17	0.09	0.05	0.01	0.08	0.10	0.07	0.19
(sd)	0.0733	0.08	0.11	0.09	0.05	0.03	0.01	0.04	0.05	0.05	0.08
Islamic mayor 1994	0.017**	0.014	0.012	0.013	0.018***	0.007**	0.001	0.006	0.022***	0.010**	0.011
	(0.008)	(0.011)	(0.016)	(0.012)	(0.006)	(0.003)	(0.001)	(0.005)	(0.007)	(0.005)	(0.011)
Observations	2633	2633	2633	2633	2633	2633	2633	2633	2633	2633	2633
Adjusted R-squared	0.45	0.14	0.13	0.21	0.35	0.48	0.05	0.24	0.32	0.46	0.15

Column 1 shows results for the total population, columns 2-5 and 6-10 show results for the age cohorts 15-20, 21-25, 26-30, and 31-64. Column 11 shows results for the total share of the population in between 15-30 classified as students. The Cohort share is the total share of the relevant cohort out of the entire population (male or female). The Outcome mean is the mean of the dependent variable for the specified cohort. Specification is RD Control (4th order polynomial) including controls described in the text. Robust standard errors clustered by province in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 6. Effect of Islamic mayor on Education Buildings Constructed and Municipal Building Permits

Dependent Variable	(1) Mean	(2) OLS	(3) RDC	(4) Obs (Clust.)
Panel A. Building Space Constructed between 1990-2000				
(1) Education Share of All Bldgs	0.037	-0.002 (0.003)	0.000 (0.007)	2644
(2) Privately-financed share of Education Bldgs	0.202	0.045** (0.018)	0.085* (0.048)	2012
(3) *Vakıf*-owned share of Education Bldgs	0.016	0.016** (0.008)	0.073** (0.028)	2012
(4) Municipal-owned share of Education Bldgs	0.023	-0.003 (0.007)	-0.017 (0.014)	2012
(5) Government-owned share of Education Bldgs	0.579	-0.017 (0.030)	-0.010 (0.055)	2012
Panel B. Municipal Building Permits for Educational Buildings 1991-2008				
(6) Education Share of All Bldg. Permits	0.032	0.000 (0.003)	0.005 (0.010)	8472 (2890)
(7) Private Share of All Education Bldg. Permits	0.492	0.019 (0.018)	0.105** (0.053)	3113 (1546)

All regressions are estimated with OLS and include controls for log population, age below 19, age below 60, gender ratio, and municipality types. Panel A shows results from the Building Census of 2001; row 1 shows the education share of all building space (in square meters) constructed between 1990 and 2000. Rows 2 through 5 show, for the same period, shares of education building spaces financed privately (row 2), owner by religious foundations (vakiflar, row 3), owned by municipalities (row 4), and owned by the central government (row 5). Panel B shows panel regressions of the election period average of Education Share of Building Permits (in row 6) and Private Share of School Permits (row 7) on Islamic mayor at the start of the election period (either of 1989, 1994, 1999, or 2004). The panel regressions include election period-specific effects and have standard errors clustered by municipality.

Table 7. Labor Market Outcomes in City Neighborhoods

		Mean (sd) (1)	OLS (2)	RD Sample (3)	RD Control (4)	RD Control (unw.) (5)
Panel A. Economic Activity (shares of male/female population)						
(1) Employment	Male	0.460 (0.143)	0.002 (0.008)	-0.006 (0.024)	-0.013 (0.025)	-0.018 (0.030)
	Female	0.085 (0.071)	-0.014*** (0.004)	0.008 (0.011)	-0.008 (0.011)	0.001 (0.010)
(2) Housewives	Female	0.704 (0.104)	0.034*** (0.005)	-0.046*** (0.017)	-0.025 (0.017)	-0.033** (0.015)
Panel B. Form of Income (shares of male/female employed)						
(3) Wage-taker	Male	0.660 (0.152)	0.039*** (0.009)	0.034 (0.027)	0.012 (0.026)	-0.029 (0.026)
	Female	0.767 (0.248)	0.038*** (0.014)	0.105* (0.054)	0.086* (0.046)	0.04 (0.040)
(4) Family-employed	Male	0.080 (0.072)	-0.008* (0.004)	-0.018 (0.012)	-0.009 (0.010)	-0.004 (0.011)
	Female	0.182 (0.233)	-0.033** (0.013)	-0.088* (0.050)	-0.081* (0.043)	-0.04 (0.038)
Panel C. Sector Employment (shares of male/female employed)						
(5) Agriculture	Male	0.154 (0.169)	-0.047*** (0.010)	-0.055* (0.029)	-0.046* (0.026)	-0.033 (0.027)
	Female	0.211 (0.273)	-0.054*** (0.016)	-0.112** (0.055)	-0.081 (0.049)	-0.047 (0.043)
(6) Industry	Male	0.163 (0.126)	0.032*** (0.009)	-0.002 (0.028)	-0.023 (0.027)	-0.048 (0.044)
	Female	0.148 (0.182)	0.033** (0.014)	0.014 (0.042)	(0.038)	(0.060)
(7) Construction	Male	0.100 (0.081)	0.002 (0.004)	-0.035** (0.014)	-0.046*** (0.013)	-0.028** (0.011)
	Female	0.006 (0.026)	0 (0.001)	-0.001 (0.001)	-0.004*** (0.002)	-0.002 (0.002)
(8) Services	Male	0.580 (0.167)	0.014 (0.012)	0.091*** (0.031)	0.113*** (0.034)	0.108*** (0.036)
	Female	0.632 (0.276)	0.02 (0.018)	0.1 (0.065)	0.122** (0.060)	0.109* (0.060)
Observations		9,998	9,998	653	9,998	9,998
Covariates		-	Y	Y	Y	Y
Weighted		Y	Y	Y	Y	N

All regressions are estimated with OLS and include covariates for population, age, gender ratio and type of municipality. Columns 1 through 4 are weighted by the inverse number of neighborhoods within a municipality. Column 5 is unweighted.
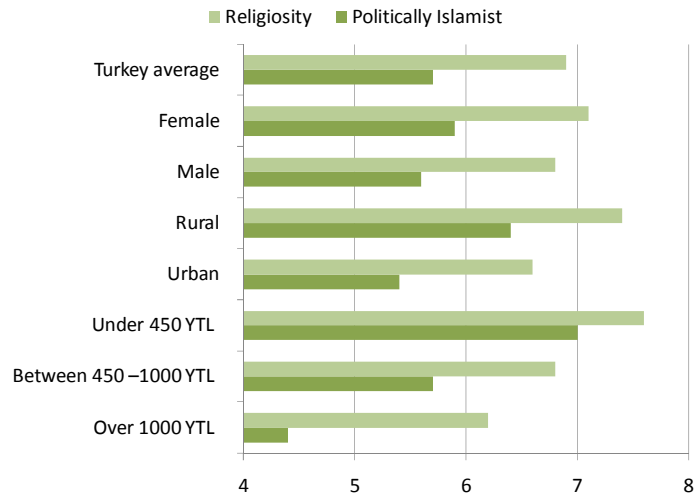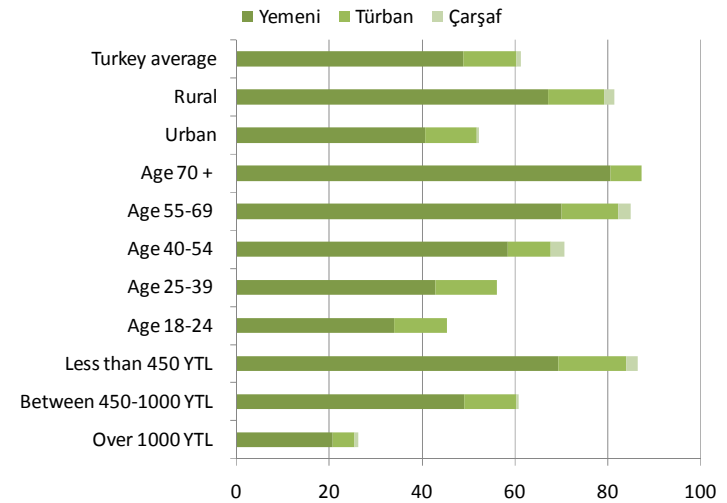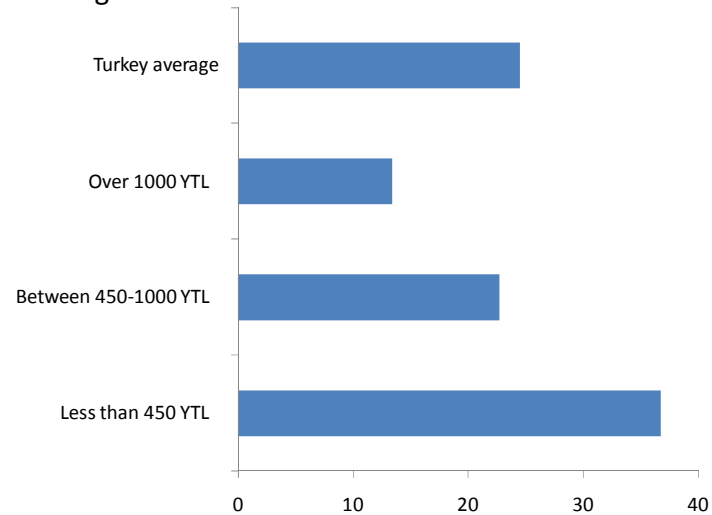
Fig 1a. Religiosity and Islamism

Legend: Religiosity, Politically Islamist

Categories: Turkey average, Female, Male, Rural, Urban, Under 450 YTL, Between 450 –1000 YTL, Over 1000 YTL

Fig 1b. Share of Covered Women

Legend: Yemeni, Türban, Çarşaf

Categories: Turkey average, Rural, Urban, Age 70 +, Age 55-69, Age 40-54, Age 25-39, Age 18-24, Less than 450 YTL, Between 450-1000 YTL, Over 1000 YTL

Fig 1c. Share of Respondents who would disapprove if daughter removed headscarf to attend education

Categories: Turkey average, Over 1000 YTL, Between 450-1000 YTL, Less than 450 YTL

The graphs show results from a survey of 1500 individuals by TESEV in 2006. Fig 1a: Religiosity measures the degree to which respondents defined themselves being religious Muslims. The Islamist index allows respondents to place themselves on a range from 1 to 10, with 1 being "Secularist" and 10 being "Islamist". Fig 1b: Share of female respondents who wear some form of headcover outside. *Yemeni* includes headscarves and similar covers that are used to cover only the head, leaving some hair visible. The *Türban* leaves the face bare but covers all the head including the neck and the shoulders with no hair seen. The *Çarşaf*, covers the entire body from head to toe except for the eyes. Source: Çarkoğlu, Ali and Binnaz Toprak, "Religion, Society and Politics in Changing Turkey," TESEV (2006), http://www.tesev.org.tr/

Figure 2. Histogram of Islamic win margin
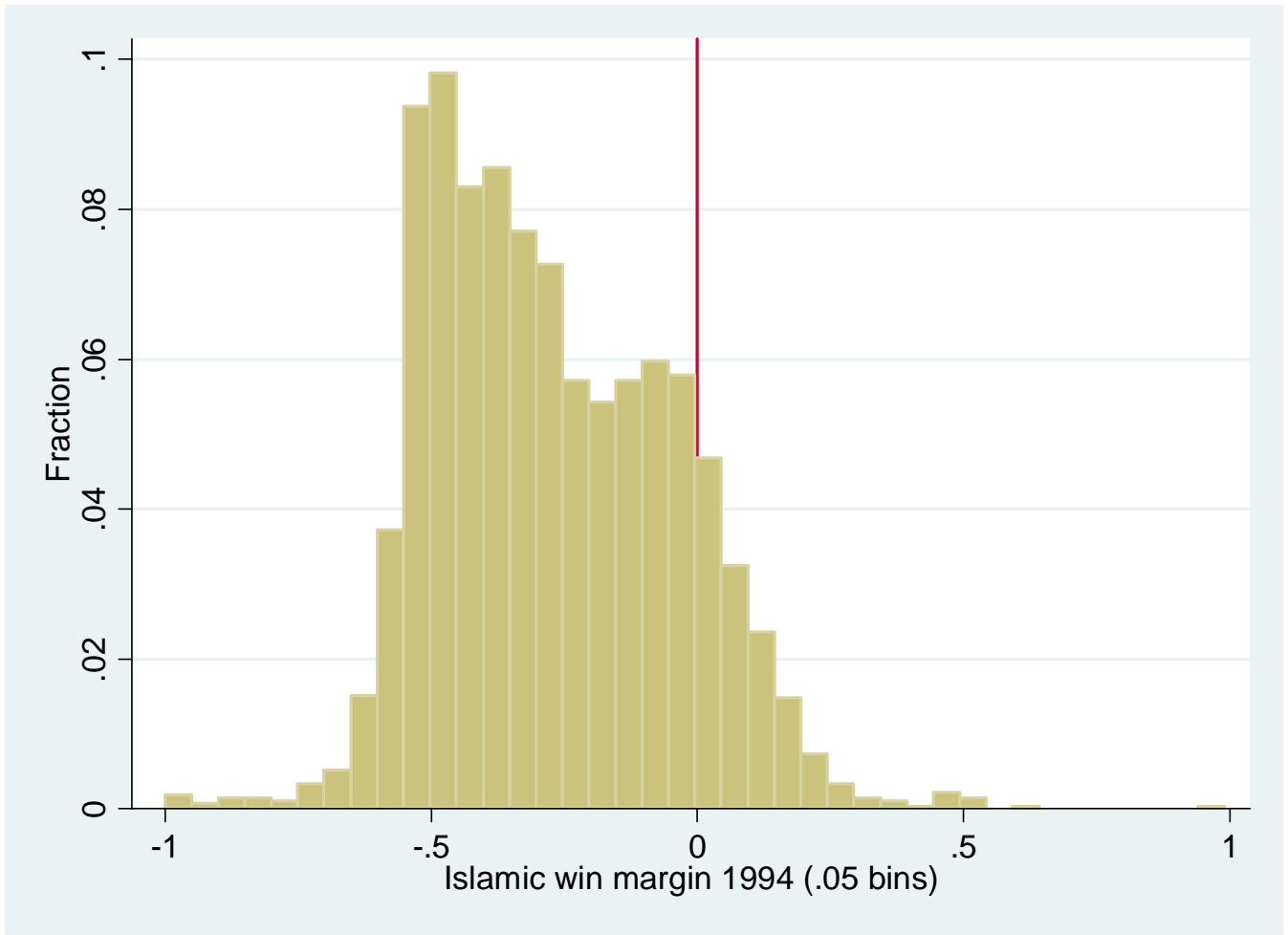
Figure 3. Islamic win margin in 1994 and High School Education in 2000
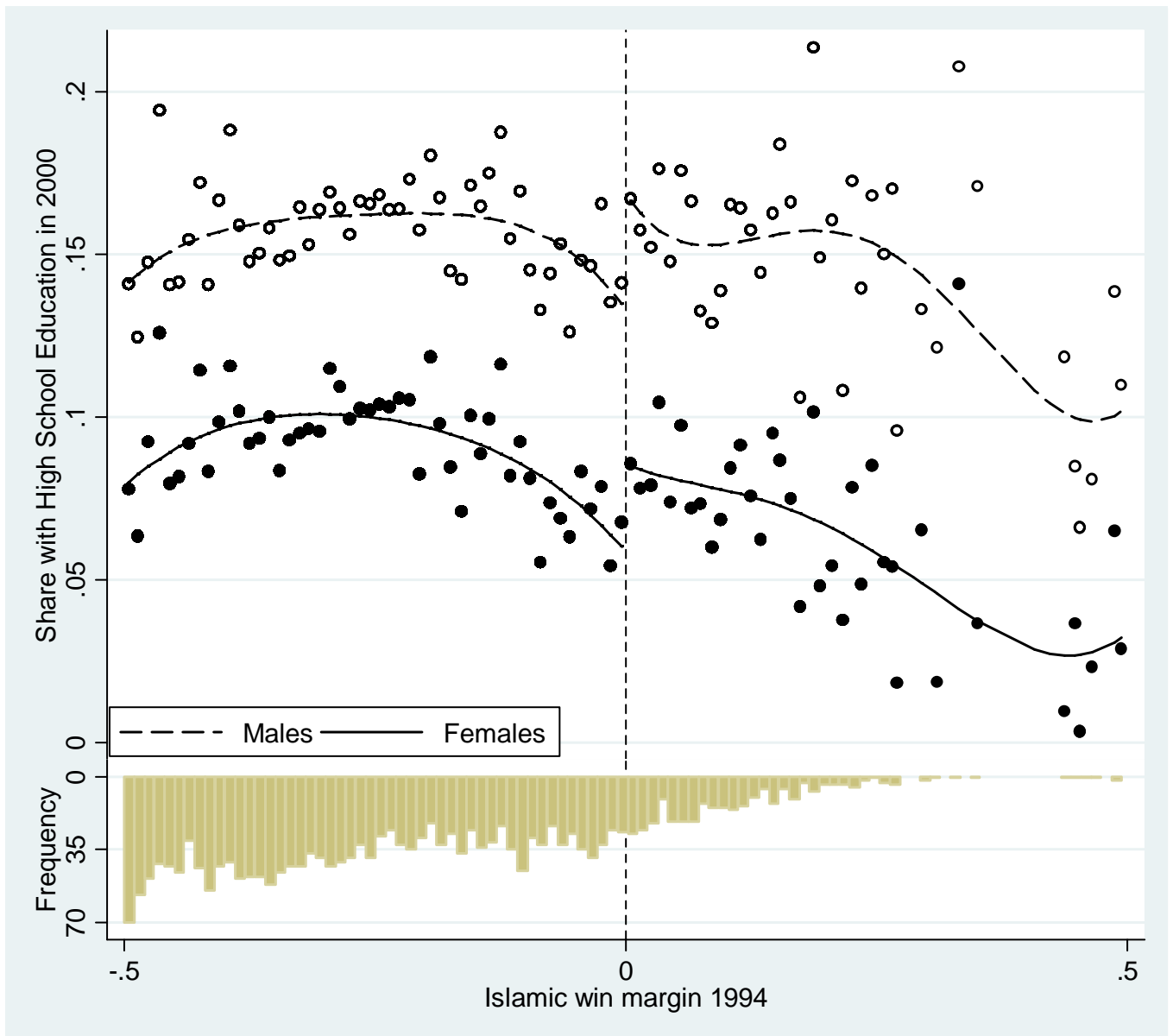
In the upper panel each circle (for males) and dot (for females) corresponds to the unconditional mean of share of population with high school degree in bins of one percent of the Islamic win margin in 1994. The solid line represents the predict values of a fourth-order polynomial fit, one on each side of the threshold at zero. The lower panel is a histogram of the Islamic win margin in bins of one percent.

Figure 4. Baseline covariates
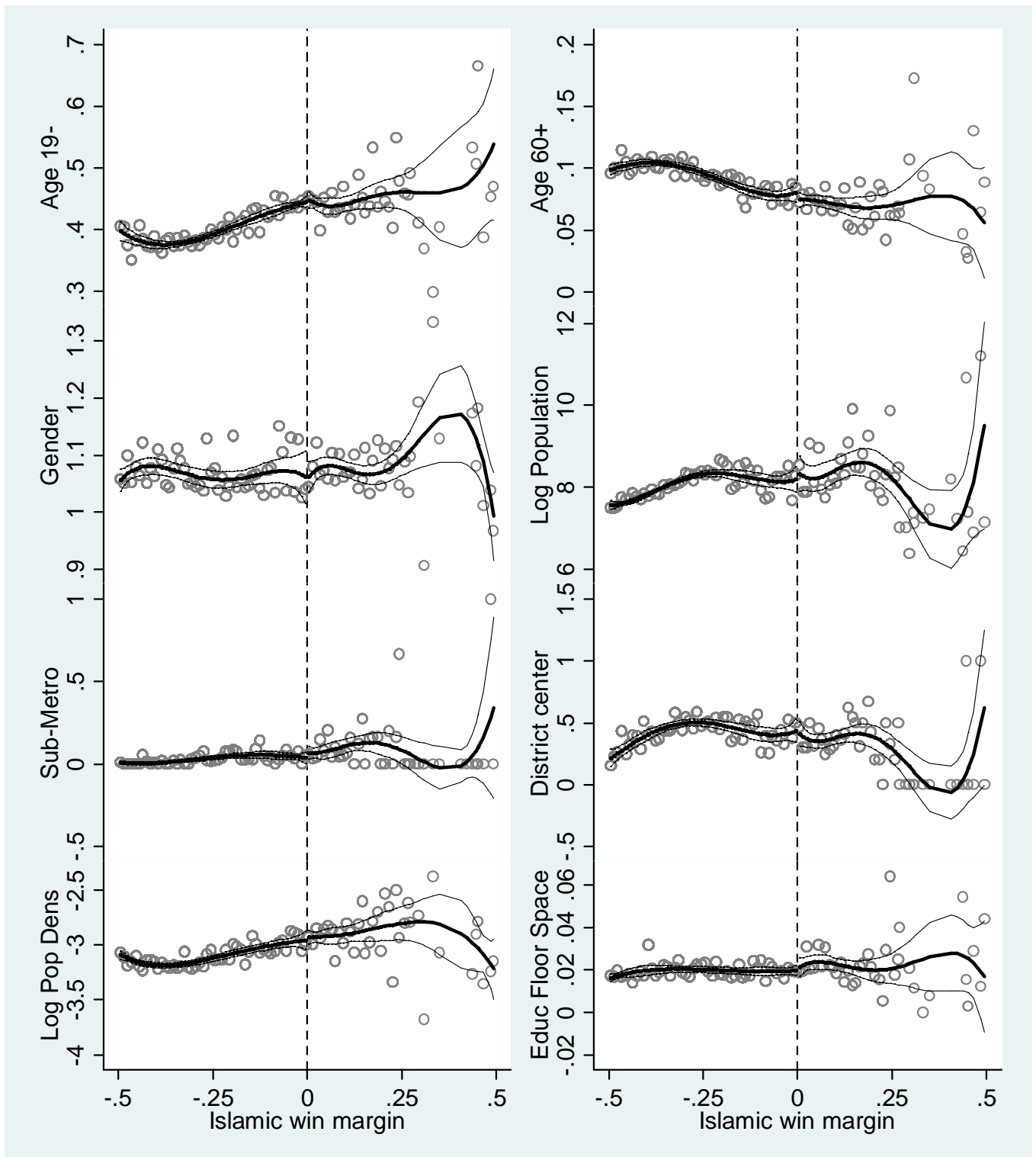
The panels refer to the following municipality characteristics: Share of population aged below 19, share of population aged above 60, gender ratio, log population, sub-metro municipality indicator, district municipality indicator, log population density in 1990, and the education share of building floor space in 1990. Each circle corresponds to the unconditional mean in bins of one percent Islamic win margin in mayoral elections 1994. The solid line represents the predict values of a fourth-order polynomial fit, one on each side of the threshold at zero. Dashed lines indicate 95 percent confidence intervals.

Figure 5. Density test of Islamic win margin
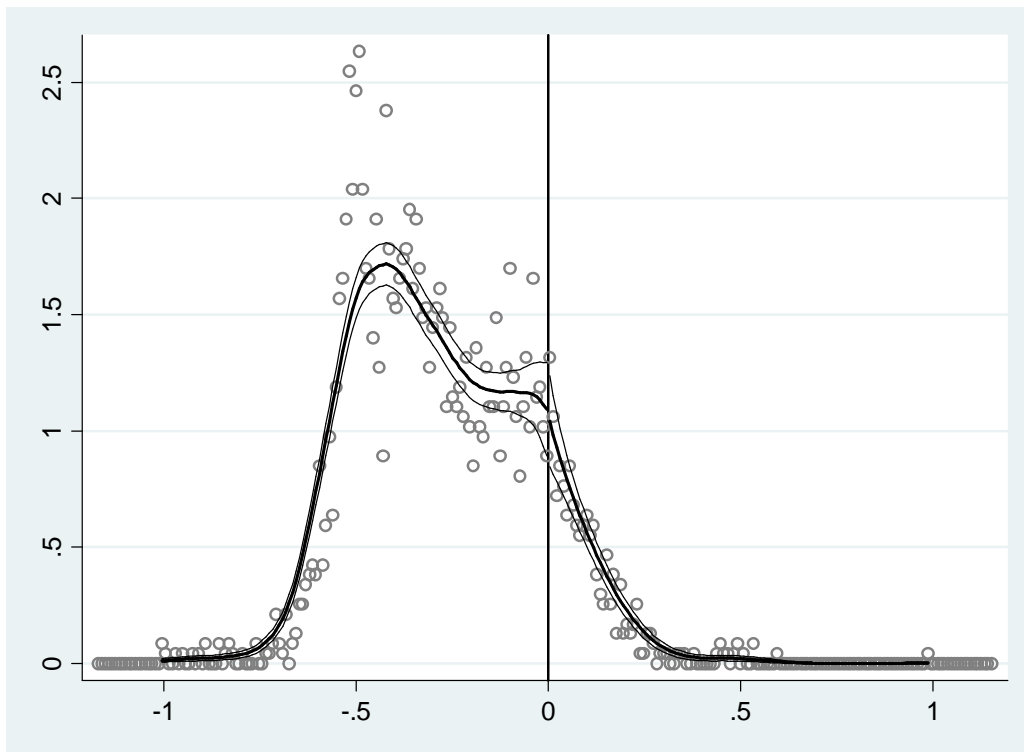
Graph shows the McCrary (2008) test of whether there is a discontinuity in the density of the Islamic win margin. Theta=-0.016, S.E=0.141, bin width=0.009, bandwidth=0.165.

Figure 6. RD Estimates on Female High School Education with different polynomial orders
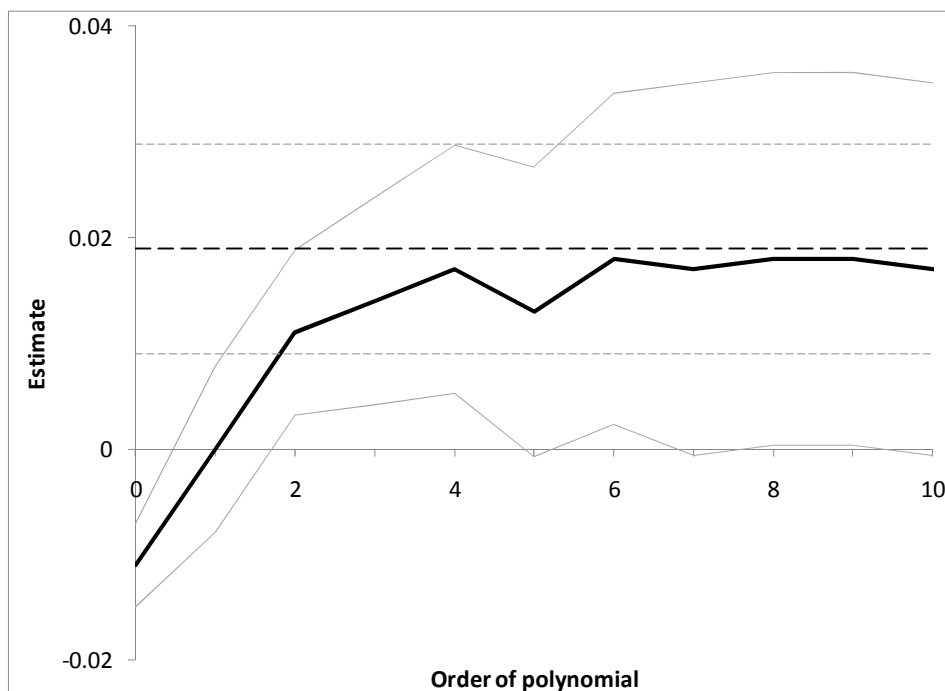
Graph shows the RD estimate of Islamic party on female high school attainment with varying orders of the control function (solid thick line). The thin solid lines indicate 95 confidence intervals. The dashed thick line is the RD Sample estimate only including observations where the absolute Islamic margin was less than 2 percent, and the dashed thin lines indicate 95 confidence intervals.

Figure 7. Neighborhood-effects of Islamic Mayor on Education
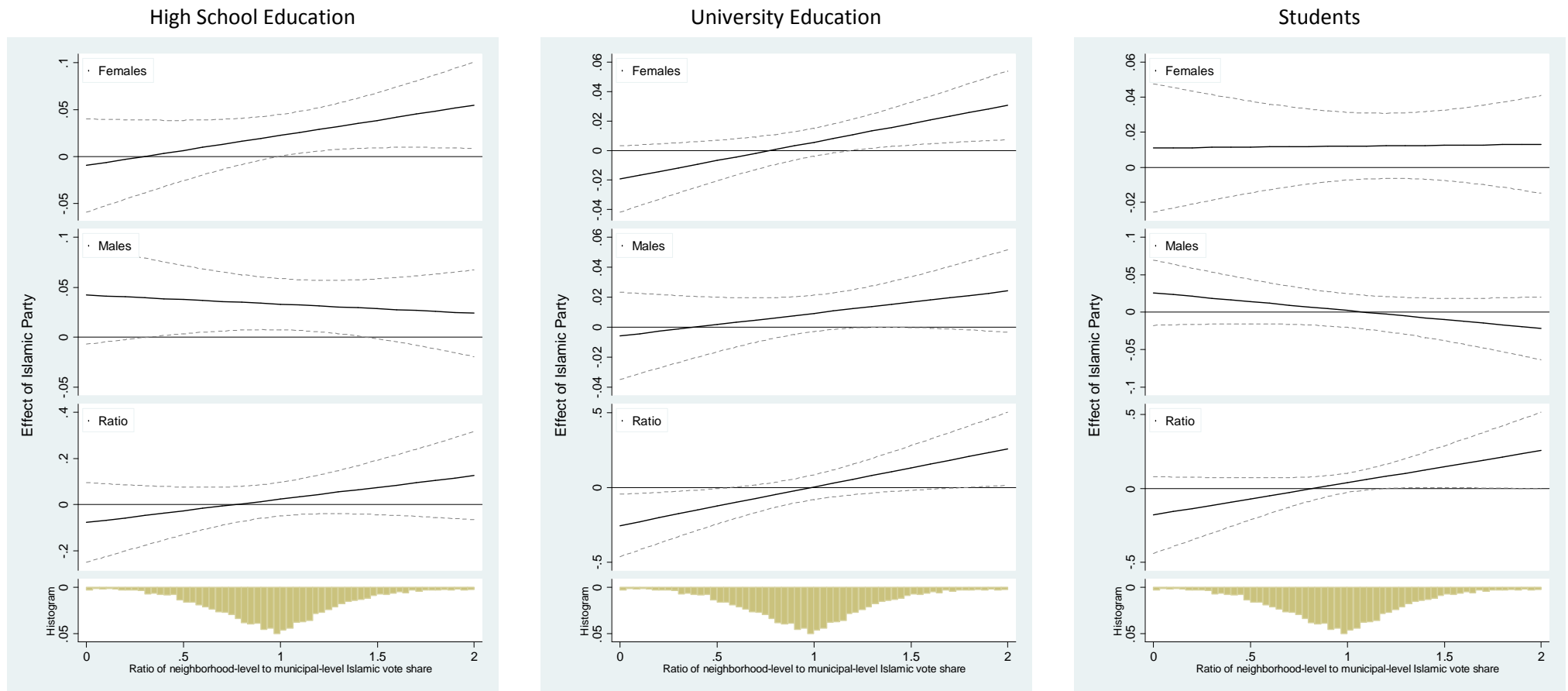
The above graphs show heterogeneous effects of Islamic party on the share of population with high school degree (on the left-hand side), university degree (in the middle) and the share of the population classified as students (on the right-hand side), by the ratio of neighborhood-to-municipal vote share for the Islamic party (*the interacting variable*). The uppermost panels show results for females, the upper-middle for men, and the lower-middle is the ratio of the female-to-male outcome. The bottommost graph is a histogram of the interacting variable. In each regression the neighborhood-level outcome is regressed on the Islamic mayor indicator, a fourth-order polynomial in the Islamic win margin, log population, age below 19, age above 60, gender ratio, type of municipality as well as the interacting variable. The latter is also interacted with each of the variables on the right-hand side of the regression equation including the polynomial in Islamic win margin. The regression is weighted by the inverse of the number of neighborhoods within a municipality and standard errors are clustered by municipality to allow for correlation among neighborhoods within the same municipality. Dashed lines denote 95 % confidence intervals.

Figure 8. Quantile RD Results on High School Education by Age Cohorts
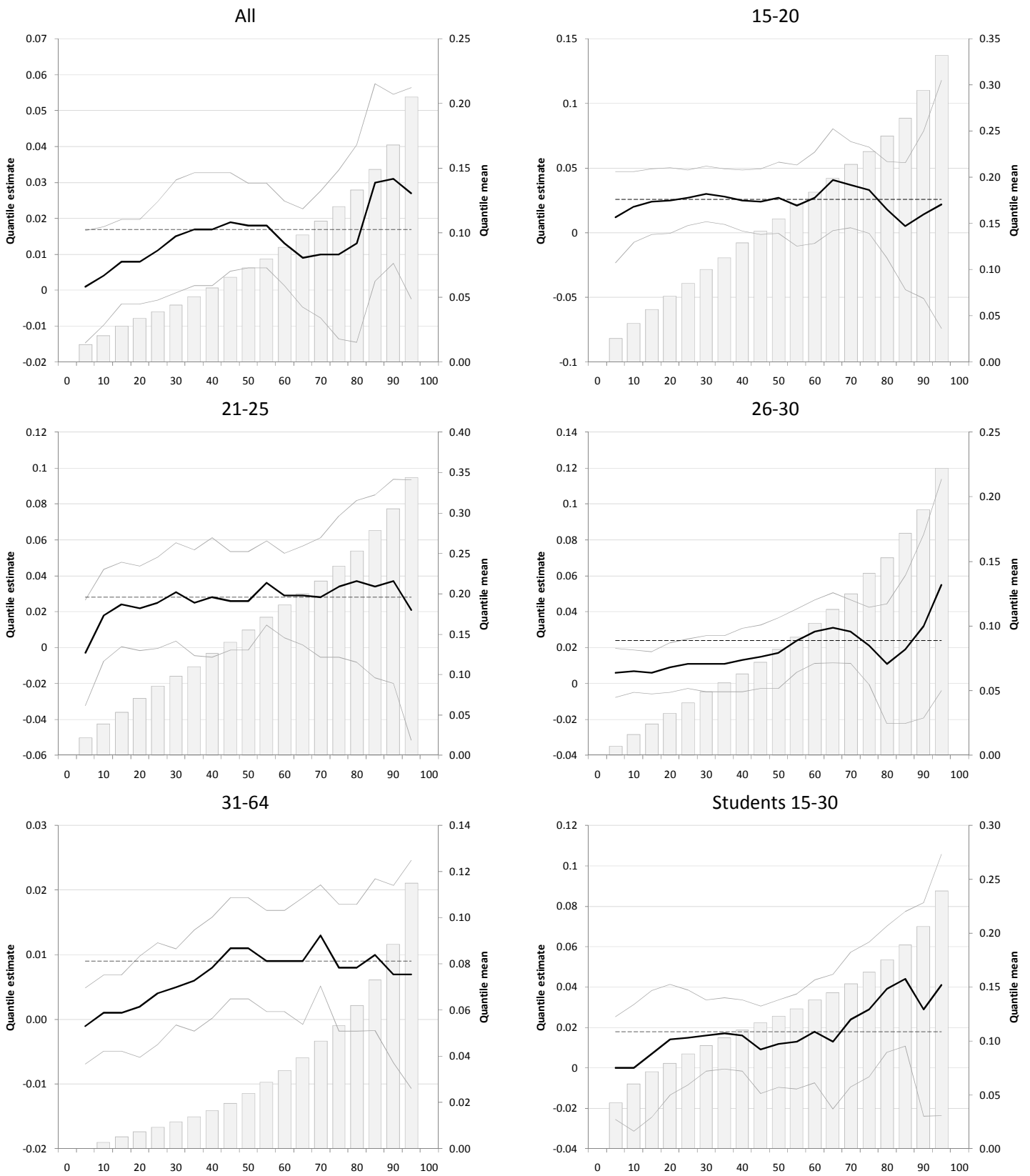
The panels show quantile RD estimates (black line) for total female high school attainment, high school attainment cohorts for ages 15-20, 21-25, 26-30, 31-64 as well as the share of female students aged 15-30. The gray line indicates 95 percent confidence intervals, where standard errors are bootstrapped using 1000 replications. The gray bars show quantile means of the dependent variable. All regressions include controls for log population, age below 19, age above 60, gender ratio, and type of municipality.

Figure A1. Turkish municipalities
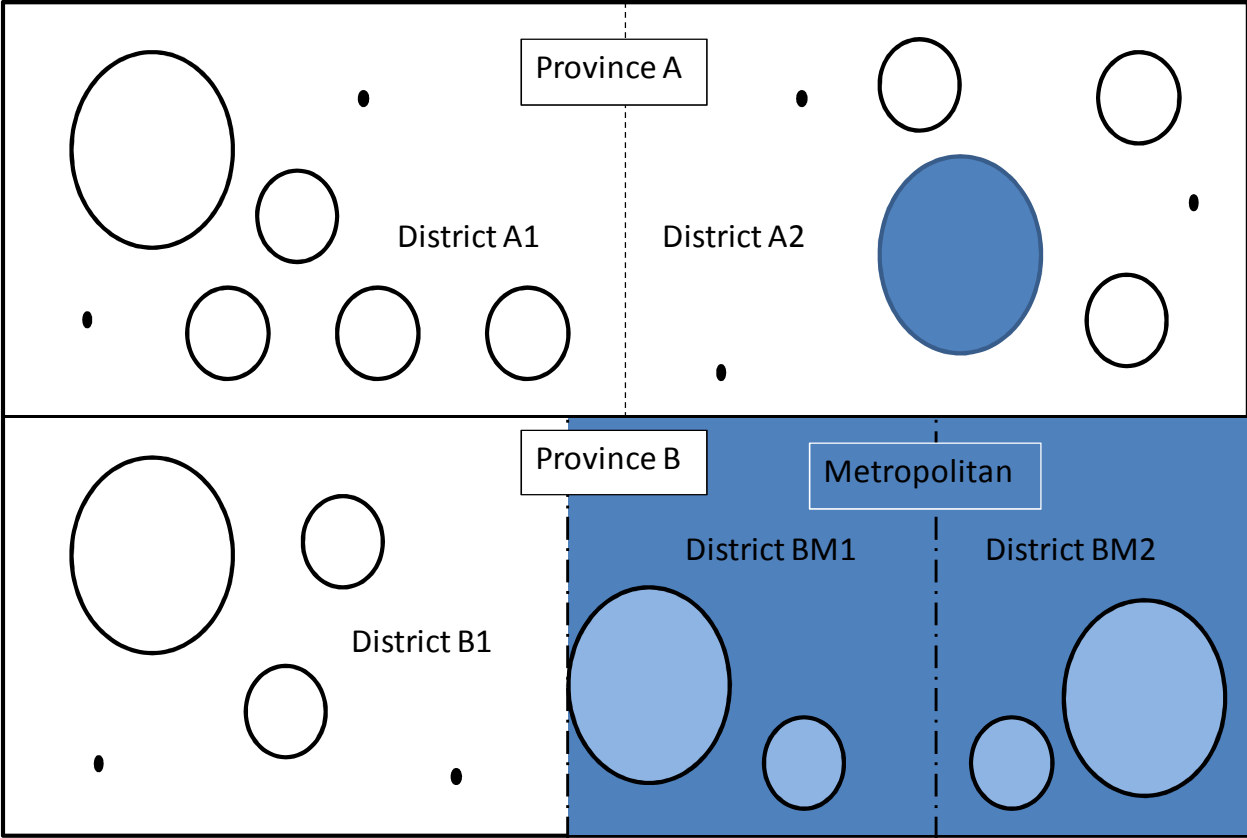
The graph shows two hypothetical provinces. Province A is divided into two *administrative districts*. District A1 includes one *district center municipality* indicated by the large circle and several *township municipalities*. District A2's district center municipality is also the *province center municipality* indicated by the deep shaded large circle. Province B has a *metropolitan municipality* which governs the entire deep shaded rectangular area. This metropolitan municipality nests two administrative districts, BM1 and BM2, with respective *metropolitan district center municipalities* and township municipalities, the two latter indicated by light shaded large and small circles. In both provinces, the black dots indicate administrative *villages* too small to constitute municipalities.

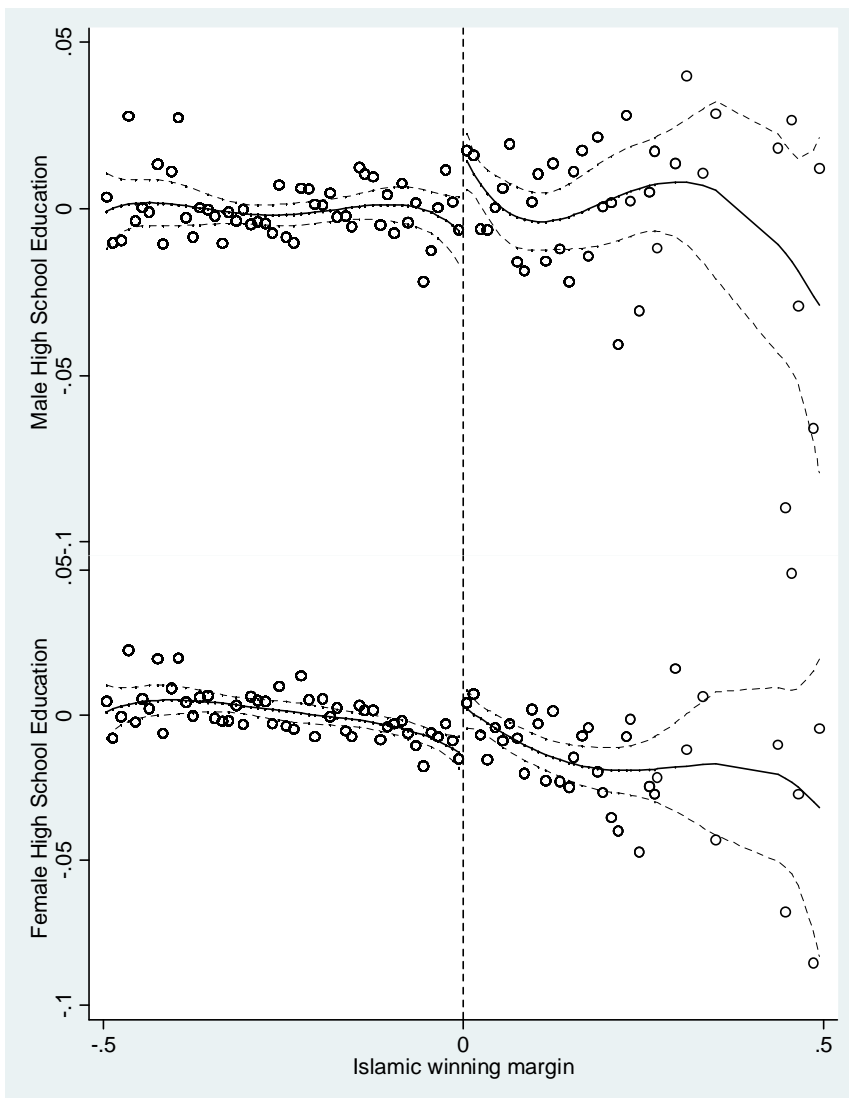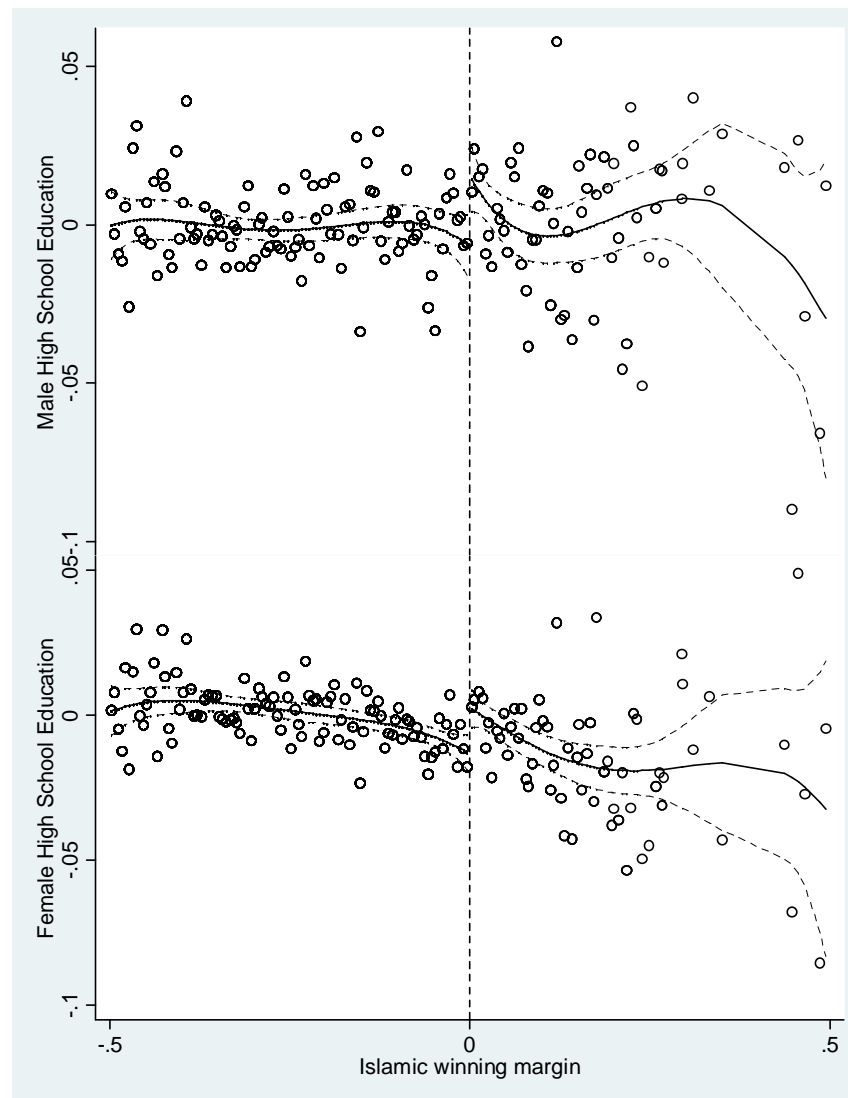Figure A2. Conditional High School Attainment, 1 percent bins

Figure A3. Conditional High School Attainment, 0.5 percent bins

The graphs shows the share of male and female high school education conditional on observables plotted against the Islamic win margin, with bins of one percent in A2 and half a percent in A3. The covariate set includes log population, share of population below 19, share of population above 60, gender ratio, and type of municipalities.

Figure A4. High School Education, frequency-weighted bins
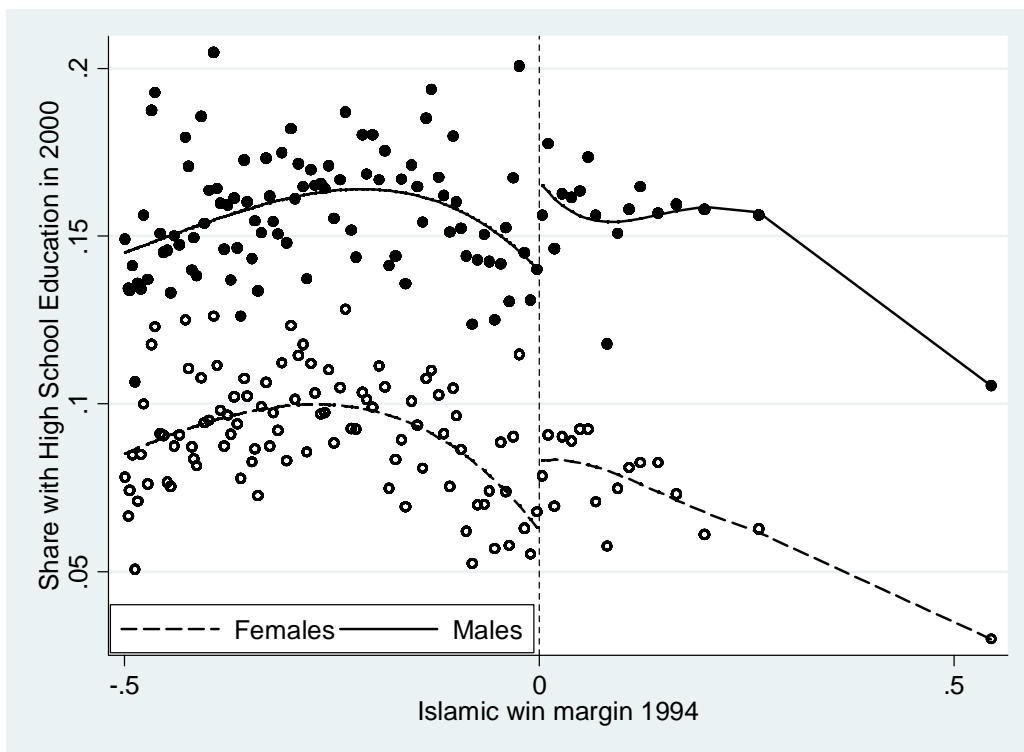
The graphs shows the share of male and female high school education plotted against the Islamic win margin, with each bin including 20 observations.