



Is it Greener on the Right Side?

The Relationship between Political Preferences and Environmental Behavior in Hungary

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Environmentalism and pro-environmental behavior are widely thought to correlate with political attitudes. In particular, both empirical and anecdotal evidence suggests that left-leaning individuals have more favorable dispositions toward environmentalism and practices that are regarded as environmentally friendly. We test this hypothesis using election data from Hungary. The main novelty of our result is that we study revealed, not stated, preferences. We concentrate on one particular environmental practice: waste separation. Surprisingly, we find that districts with a higher left-wing vote share engage less in waste separation on average. This result, although surprising, is consistent with previous survey-based evidence. We provide suggestions on how to interpret and explain our findings.

Keywords: *environmentalism; political attitudes; waste separation; social environment*

Introduction

Environmental issues are at the forefront of public discourse throughout the world, especially in developed countries. Climate change and other environmental problems often dominate discussions in international organizations, but there is also increasing demand for „sustainable living” at the individual level. Like other countries and organizations, the European Union (EU) has set out a list of ambitious environmental goals. The EU’s goal is to become fully climate neutral, that is, to ensure that its economic activities do not generate greenhouse gas emissions, by 2050. This is part of the European Green Deal, whose objectives include decarbonizing the energy sector, making buildings more sustainable and energy efficient, introducing cleaner, cheaper, and healthier forms of transport, “greening” agriculture and industrial production, and increasing the share of recycled materials.

Achieving such goals, however, may be difficult. Pro-environmental behavior can be regarded as a luxury good. There are therefore differences across income groups in attitudes toward environmental issues.¹ That is because the poor have much more pressing concerns than worrying about sustainability, a phenomenon scholars often refer to as “too poor to be green.”² As income increases quality of life considerations come to the fore, and the relative value of clean water, air and natural treasures (parks, canyons, coral reefs, wildlife, etc.) increases. Higher income also creates the opportunity to offset and correct the negative environmental impacts of production.

Attitudes and behavior toward the environment are often divided across political lines. Typically, left-wing individuals and parties are thought to favor environmental protection more and to engage in a greater level of (allegedly) environmentally friendly practices. Much of the empirical literature corroborates this view, with one notable exception.³ McCright, Dunlap and Marquart-Pyatt find that the left-right division on environmentalism applies to a lesser degree in Central and Eastern Europe, where right-leaning individuals have a more favorable attitude to environmentalism, as evidenced by a greater willingness to pay to fight climate change.⁴ This evidence is based on survey data.

The present article, in contrast, contributes to the literature by examining revealed preferences, through observation of actual behavior. In particular, we connect the vote shares of left- and right-wing politicians in Budapest districts with a particular environmentally friendly practice: waste separation. Waste separation is the most common action at the household level that Europeans undertake to address climate change, according to the Eurobarometer surveys. Furthermore, waste generation habits strongly indicate environmental attitudes. The literature suggests that the amount of waste collected separately is a good measure of pro-environmental attitudes.⁵ Consistent with the findings of McCright, Dunlap and Marquart-Pyatt⁶ and contrary to widespread beliefs, we do not find a positive link between left-wing politics and pro-environmental behavior. In fact, we find just the opposite. In the following, we first review the relevant literature. Next, in Section 3, we present our methodology and data. Then, in Section 4, we present our results, and in Section 5, discuss the findings. Finally, in the last section, we draw some conclusions.

Literature Review

A great number of studies have attempted to identify the sociocultural and demographic drivers of waste generation, and many studies have examined factors influencing the success of waste separation programs.⁷ Moreover, a few studies have analyzed the interaction between the two.⁸ Several studies have aimed at identifying the drivers of waste generation. According to Saphores, Nixon,

Ogunseitan, and Shapiro the most commonly studied sociodemographic variables that play a role in waste generation are gender, age, education, and income.⁹ However, apart from the latter, there is no consensus on the effects of these variables. Numerous studies have come to completely opposite conclusions regarding the relationship between waste generation and age, gender, or education.¹⁰ It appears that in the case of waste generation one of the most important and repeatedly identified drivers is the income level.¹¹

The phenomenon of “too poor to be green” provides a good starting point for analyzing pro-environmental behavior. Direct and indirect evidence for it can be found in several studies on waste separation and waste management. Results indicate that households with considerable extra space (larger dwellings, backyards, gardens) are more willing to collect waste separately even without additional rewards.¹² These households tend to be more affluent.¹³ It seems logical to assume that environmental awareness becomes a concern for people only beyond a certain income level, and that this level has a sociocultural aspect.¹⁴ It is, however, important to emphasize again that high-income is not necessarily associated with a lower environmental footprint; therefore, the relationship between income and environmentalism is ambiguous.¹⁵

In addition, several studies have demonstrated the relevance of political attitudes for pro-environmental behavior. The majority of these studies investigated Western European or North American countries. In a comprehensive study, Sánchez, López-Mosquera and Lera-López investigated the attitudinal, sociodemographic, and political factors that affect the environmental practices of Spanish households.¹⁶ The authors analyzed the relationship between age, gender, education and political affiliation, on the one hand, and environmentally conscious behavior, such as waste separation, water saving, and the purchase of environmentally friendly products, on the other hand. The authors found that left-wing attitudes have a positive influence on both environmentally conscious consumption and environmentally conscious purchasing behavior. This is in line with other results, such as those by Witzke and Urfei for Germany, and Torgler and Garcia-Valiñas and Vera-Toscano, Gómez-Limón, Moyano and Garrido, both for Spain, who also concluded that people with a left-wing or liberal orientation are more sensitive to environmental issues.¹⁷ Using data from Italian voters, Caprara, Schwartz, Capanna Vecchione and Barbaranelli argued that conservatives place more importance on stability and maintaining the status quo, while people with more liberal ideologies place more importance on civil rights and social issues.¹⁸

North American and Australian studies show similar findings. Gromet, Kunreuther and Larrick investigated the impact of political preferences on attitudes toward energy efficiency and energy-saving behavior.¹⁹ They conducted two studies in the United States. In the first study, the authors examined whether attitudes toward energy efficiency are polarized according to political ideology. They demonstrated that people with a more conservative or right-wing political ideology were less supportive of the development of more energy-efficient technologies. In the second study, they examined in a real-choice context how this polarization influences

demand for energy-efficient products. They showed that conservative individuals were willing to buy energy-efficient products (in this case, a more expensive light bulb) on financial grounds but when energy efficiency was framed in a pro-environmental context (as indicated by a label), their willingness to buy was significantly reduced. In other words, more conservative consumers were less likely to buy the same energy-efficient light bulb at the same price if it had a label saying that the light bulb is environmentally friendly. Similar results were found for the United States and Canada.²⁰ This suggests that the shift to sustainability is more unpopular among conservatives because it threatens the functioning of the existing system.²¹ In turn, Morrison and Miller suggested that liberals and left-leaning individuals in the United States prioritize issues related to the environment and sustainability, whereas Janoff-Bulman, Sheikh and Hepp, and Kellstedt, Zahran and Vedlitz claimed that such individuals also place greater importance on solving environmental problems that will seriously affect future generations.²²

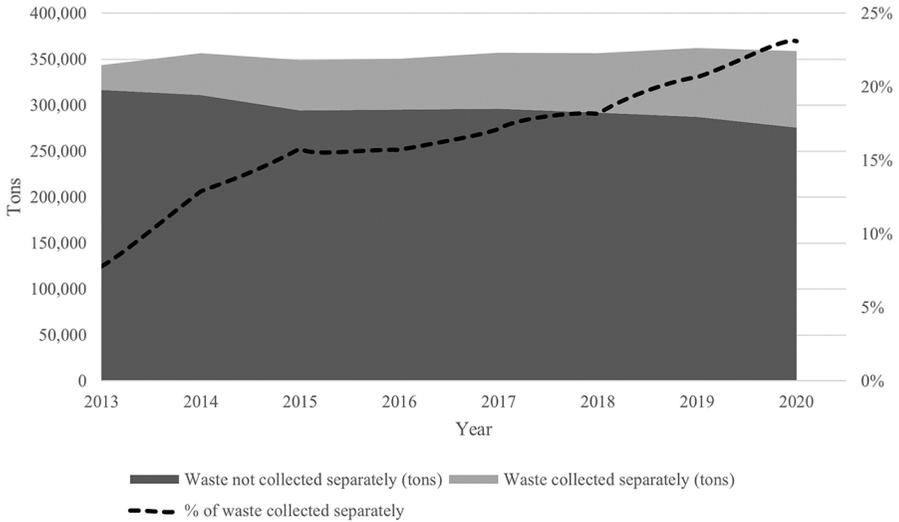
Political attitudes were also found to be important in a comprehensive European study. McCright, Dunlap and Marquart-Pyatt analyzed survey data from 14 Western European and 11 former communist Central and Eastern European countries and concluded that there is much greater support for fighting climate change among individuals with left-wing ideologies in Western Europe.²³ However, the same is not true for post-communist countries in Central and Eastern Europe, where right-wing individuals reported a high willingness to pay to combat climate change. One reason for this, the authors speculated, is that the definitions of political left and right in post-communist countries differ in the two halves of Europe, and that climate change is not a pivotal issue in the former Eastern bloc.

Sustainability and the fight against climate change are important to Hungarian voters, according to the Eurobarometer. According to the Manifesto Project data, right-wing parties in Hungary do not address this issue, while left-wing parties show only limited interest in environmental protection.²⁴ It is therefore worth re-examining the relevance of political ideology for environmental attitudes in Central and Eastern Europe, and in Hungary in particular.

Data and Methodology

We examine the relationship between political preferences and sustainability-related behavior. To operationalize these concepts, one could conduct a survey and employ regression analysis as an analytical tool.²⁵ However, surveys connected to political preferences are often not sufficiently accurate, most likely due to non-response bias and reporting of false preferences.²⁶ Similar problems might arise with sustainability-related questions where social desirability bias may be present.²⁷ To avoid these biases, we follow a revealed preference-based approach combined with administrative data.

Figure 1
Amount of waste generated and collected separately in Budapest



Source: Hungarian Central Statistical Office.

We measure political preferences using vote shares from elections for the European Parliament (EP) and municipal bodies in Budapest. More specifically, we use the vote distributions of the parties in EP elections and vote distributions of the mayoral candidates in municipal elections in 2014 and 2019. EP elections provide a suitable setting for the analysis because voters cast their vote for party lists and results are available for every district of Budapest. This was our primary data source. Mayoral election data are also utilized for a robustness check.²⁸

Pro-environmental attitudes can be measured by involvement in different activities. One possible such activity that can be measured at the district level to reveal environmental preferences is waste separation. Aphale, Thyberg and Tonjes, and Grazhdani suggested that environmentally conscious individuals are more likely to engage in waste separation.²⁹ The amount of waste collected separately and the recycling rate (the proportion of the separated waste within the total amount of waste) can serve as appropriate indicators of waste separation. Naturally, an increase in the volume of selective waste could reflect a general increase in waste production. Since the volume of communal waste did not increase in the period under analysis (2013-2020), while the waste collected separately increased substantially (Figure 1), in our analysis we use the amount of waste collected separately as a proxy for pro-environmental behavior.

EP and municipal elections are held every five years. The election-related data were obtained from the National Election Office. We used data only for the 2014 and 2019 EP and municipal elections since curbside waste separation has been available for all Budapest districts only since 2013. See the Table A1 in appendix for the left-wing and right-wing classification of parties and mayoral candidates.

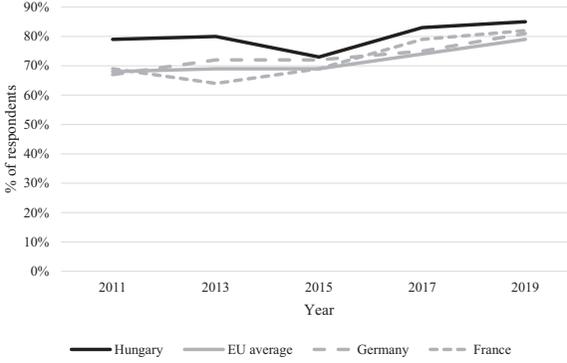
Data on separated waste was provided by the waste management company owned by the municipality of Budapest. The dataset includes the monthly amount of paper and plastic/metal waste at the district level. These data became available at the city level in April 2013; we included all data until August 2020. Each household was provided with at least one free bin for paper and another bin for plastic and metal waste. With the launch of curbside collection, it became mandatory to use these bins for recyclable waste and it has been prohibited to dispose of paper, plastic, or metal waste in regular bins. However, enforcing waste separation regulations is challenging and often non-existent in practice. Therefore, it can be argued that personal attitudes, rather than the law, drive involvement in waste separation. Once the curbside waste collection system was deployed, waste separation “islands” were removed for paper and plastic/metal.³⁰ Note that data on voting aggregate individual choices, while data on waste generation aggregate household-level behavior. However, it is well established in the political science literature that political preferences within households tend to be relatively homogeneous.³¹ To make the waste generation data proportional to the population of the district, we calculated per capita values based on population data published by the Hungarian Central Statistical Office.

As waste generation is largely determined by income and population density, it is necessary to control for these factors.³² Since waste generation is influenced by household income, district-level average income might not capture all the relevant information. Hence, we included data for average taxable income, calculated at 2013 constant prices using the Hungarian consumer price index published by the Hungarian Central Statistical Office. We also included the percentage (in terms of the total resident population) of jobseekers registered for more than 180 days, the percentage of residents aged above 65, and the percentage of people eligible for public healthcare subsidy in order to capture the bottom of the income distribution that is often less engaged with waste separation.³³ Population density was captured by the number of people per dwelling. All district-level data were obtained from the regional database of the Hungarian Central Statistical Office and from the National Regional Development and Spatial Planning Information System.

The time horizon of our analysis spans 2013 to 2020. This time window is particularly relevant because sustainability as an issue became significantly more important to Hungarian citizens after 2015 as indicated by the Eurobarometer climate change surveys (Figure 2). The descriptive statistics of the dataset used in this study are shown in Table 1.

Since in our panel dataset political attitudes are measured only twice (2014 and 2019), waste separation data and the control variables are also aggregated to

Figure 2
Share of respondents indicating climate change as a serious problem



Source: Eurobarometer surveys on climate change. (<https://europa.eu/eurobarometer>).

district-level averages for 2013-2014 and 2018-2019. We use two-year intervals instead of one month data, as the latter might be affected by one-time events. As a robustness check, we performed the same analysis using data only for 2014 and 2019.

The estimated equation is as follows:

$$Left_{it} = \beta_0 + \beta_1 Waste_{it} + \beta_2 X_{it} + 2019_t + c_i + u_{it}$$

where $Left_{it}$ refers to the vote share of the left-wing candidates in election t in district i , $Waste_{it}$ is the per capita waste collected separately in district i around election t , X_{it} contains the control variables described above for district i around election t , 2019_t is a dummy variable for the election of 2019 that is included to control for the overall changes in political preferences from 2014 to 2019, c_i is the district fixed effect for district i , and u_{it} is the idiosyncratic error term. The equation is estimated using fixed effects or random effects regression method depending on the results of the Hausman test. Finally, standard errors are clustered by district.

Results

When we compare the results of the 2014 and the 2019 elections, it is evident that the left-wing parties have gained ground. While a left-leaning mayoral candidate won in only five districts (out of 23) in 2014, left-wing candidates won in 14 districts in 2019. At the same time, the issue of sustainability has become more important to citizens (Figure 2).

Table 1
Descriptive Statistics of the Variables (Annual District-Level Data)

Variable	Obs.	Mean	SD	Median	Min	Max
Vote share of the right-wing parties in the EP elections (%)	46	50.9	5.5	51.1	36.2	60.5
Vote share of the left-wing parties in the EP elections (%)	46	47.0	4.3	46.9	39.1	59.6
Vote share of the right-wing parties in the municipal elections (%)	46	50.2	10.4	51.4	18.1	71.0
Vote share of the left-wing parties in the municipal elections (%)	46	46.0	11.7	46.3	6.6	81.9
Waste collected separately (kg/capita)	183	19.0	8.1	19.7	0.5	38.4
Average taxable income (2013 prices, million HUF/local resident)	184	1.47	0.35	1.43	0.83	2.50
Jobseekers registered for more than 180 days (% of total population)	184	0.68	0.41	0.58	0.17	2.60
Population aged above 65 (% of total population)	184	20.5	2.9	20.0	15.4	26.8
Eligible for public healthcare subsidy (% of total population)	184	1.59	0.47	1.59	0.58	3.00
Number of people per dwelling (capita)	184	1.94	0.39	2.00	1.27	2.72

Note: EP = European Parliament; HUF = Hungarian Forint; SD = standard deviation.

Table 2
Regression Results (Dependent Variable: Vote Share of Left-Wing Parties)

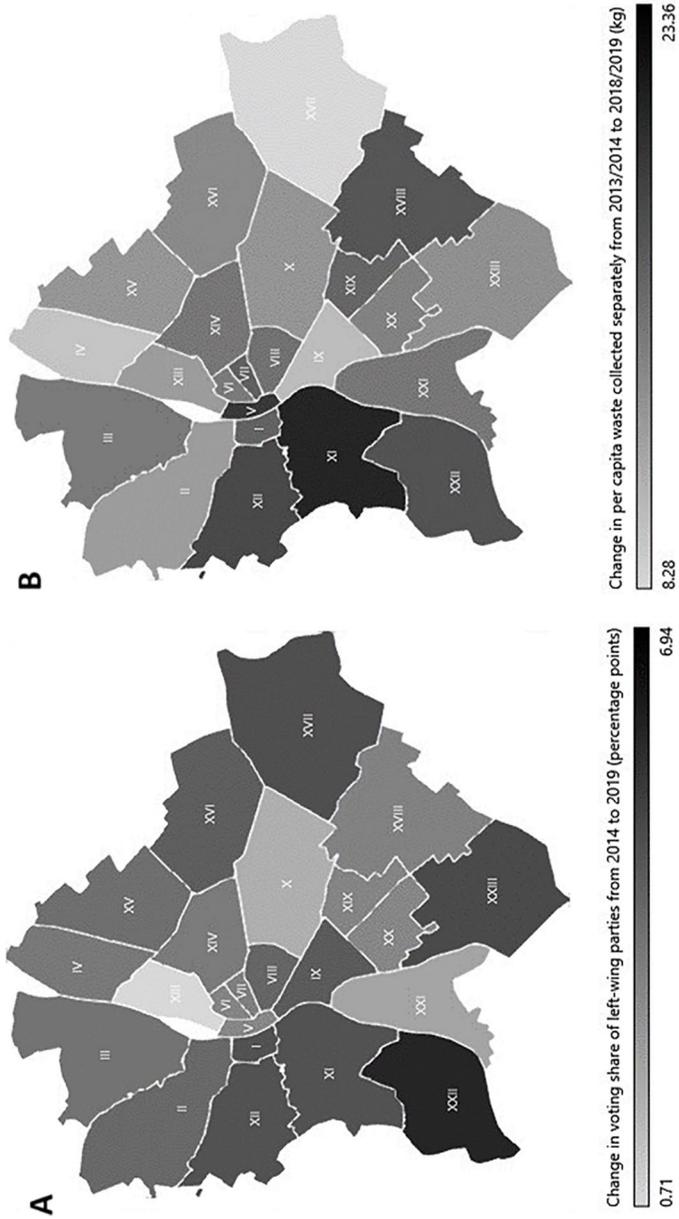
Variables	European parliamentary elections		Municipal elections	
	Two-year data	One-year data	Two-year data	One-year data
Waste collected separately	-0.107* (0.051)	-0.091** (0.035)	-0.661. (0.353)	-0.424. (0.230)
Average taxable income	3.318 (2.250)	3.681. (1.986)	-11.594 (37.976)	3.478 (23.523)
Jobseekers registered for more than 180 days	2.065. (1.174)	1.553 (1.050)	-4.367. (2.322)	-7.517 (6.223)
Population aged above 65	-0.313* (0.151)	-0.406** (0.141)	0.068 (0.946)	-0.098 (1.325)
Eligible for public healthcare subsidy	-1.925** (0.741)	-1.290* (0.646)	-4.181 (3.438)	-3.430. (1.672)
Number of people per dwelling	-4.072** (1.495)	-4.361** (1.586)	221.373* (87.850)	140.107* (55.634)
Year 2019	5.987*** (1.838)	4.593** (1.579)	27.040 (27.563)	10.778 (15.486)
N	46	46	46	46
Number of districts	23	23	23	23
Adjusted R ²	0.502	0.463	0.792	0.738

Note: Random effects models for the European Parliamentary elections and fixed effects models for the municipal elections data based on the Hausman test. Standard errors (in parentheses) are clustered by district. † $p < 0.1$. * $p < .05$. ** $p < .01$. *** $p < .001$.

This might suggest that pro-environmental behavior and political preferences are connected to each other, as observed in most Western countries. However, regression results (Table 2) indicate a different picture. Since the amount of per capita waste collected separately has a negative coefficient, it indicates that left-wing parties in Budapest generally won a lower percentage of votes in districts where waste separation gained momentum, and their support increased more in districts where waste separation did not increase that much (Figure 3).

All four regressions suggest similar main effects, namely, that a positive shift in pro-environmental behavior seems to have favored right-wing parties. The estimated waste separation parameter is negative and statistically significant; that is, in districts where waste separation increased more substantially, the increase in the vote share of left-wing parties was lower for both the EP and the municipal elections. However, the effect size seems to be much greater for municipal elections (with lower significance) indicating that citizens may vote differently in a local election than in a European one. According to Table 1, there are much larger differences in the results for municipal elections than for EP elections. This suggests that party-list based voting shares, with

Figure 3
Change in voting share of left-wing parties (panel A) and per capita waste collected separately (panel B) from 2014 to 2019 in the districts of Budapest



the majority of the parties running independently, are more stable, yet even in these cases, right-wing parties performed better in districts where waste separation is more important for the citizens.

Discussion

Our results can be interpreted in various ways. First, it could be that certain “environmentally conscious” practices are so uncontroversial in Budapest (or generally in Hungary) that it is hard to create political divisions along them. This in itself does not explain why right-leaning voters appear to be more environmentally conscious. Another possible explanation might be that Hungarians care *less* about the environment than citizens in Western Europe, and hence neither political side leverages the issue, making the traditional left-right divide over this issue irrelevant. However, according to the Eurobarometer surveys, Hungarians seem to care *more* about the environment than Western Europeans (Figure 2). Furthermore, even if this argument holds, it still does not explain the difference that we find in our analysis.

Apart from environmental attitudes, other factors might drive our results. First, as research suggests, it is possible that right-leaning individuals are more obedient toward authority, and since waste separation is compulsory by law they comply with it as much as possible.³⁴ Another possible explanation could be that peer pressure that might incentivize waste separation is stronger in low-density neighborhoods, which happen to be the more right-leaning areas in Budapest.³⁵ Among others, Ari and Yilmaz, Videras, Owen, Conover and Wu and Welsch and Kühling provide evidence on social interaction effects in pro-environmental behavior.³⁶ Individuals are more likely to collect waste separately or engage in other behavior that is regarded as environmentally friendly when their friends or neighbors do so. Likewise, individuals are less likely to display pro-social attitudes, including environmental consciousness, when others are less pro-social, or when others do not monitor their behavior. Thus, any initial difference in environmental attitudes between individuals of different political persuasions is likely to be magnified by social multiplier effects.³⁷ Even if left- and right-leaning voters are equally environmentally conscious, greater peer pressure in one group can lead to observed differences in pro-environmental behavior and attitudes. This interpretation is supported by the inclusion of the interaction term of waste collection and the number of people per dwelling in the regression model, which yields positive coefficients. However, these are only significant for the EP elections using two-year data. This indicates that in districts where houses and flats are more crowded (i.e., monitoring the behavior of others may be more challenging), there is a weaker correlation between pro-environmental behavior and support for right-wing parties. The detailed results are presented in Table A2 in the appendix.

A higher level of human capital, such as greater educational attainment, could also contribute to pro-environmental behavior. Although this could be due to selection effects, several studies found that there is likely a causal relationship: more education increases environmental consciousness.³⁸ This could be simply due to more information being available to more highly educated individuals but also due to an attitude change in response to education. However, more highly educated individuals are more likely to be wealthier and live in wealthier neighborhoods. By controlling for taxable income, we partially captured this effect.

Perhaps the most promising explanation for our results is that in post-communist countries, being environmentally friendly is less connected, if at all, to left-wing politics. First, socialist regimes built up many “dirty industries.”³⁹ This may have limited the extent to which the connotations of left-wing politics and environmentalism could align. Yet, as Gille or Pál argues socialist regimes also heavily promoted recycling which adds nuance to this reasoning.⁴⁰ Second, according to the 2019 special Eurobarometer report on climate change, climate change is viewed as a more serious problem by younger respondents than by older respondents. The left-wing social environment, consisting of older left-wing voters and politicians socialized in the communist regime, has not constituted fertile ground for environmentalist ideas. This reasoning is supported by the European Social Survey Round 9 data according to which there is a significant correlation between age and political attitudes. However, the sign of the correlation is different for Western and Eastern Europe, with a coefficient of 0.085 for Western Europe and -0.078 for the post-communist bloc, where the negative value indicates a more left-leaning orientation. That is, while younger people are more likely to have a left-leaning orientation in Western Europe, this age cohort is more likely to be right-leaning in Eastern Europe. At the same time, right-wing political narratives, defined primarily by cultural identities, often harkened back to the period before the Second World War, where a reverence for nature was often a key element of right-wing community organization.⁴¹ This reasoning is consistent with the findings of McCright, Dunlap and Marquart-Pyatt, which suggest that left and right have different meanings in Western Europe and Eastern Europe.⁴²

Our main contribution to the literature on political preferences and environmental attitudes is that we do not use survey data, unlike most studies in literature. Answers to survey questions might not reflect actual behavior; hence, we have chosen to rely not on stated but on revealed preferences. Note, however, that the simple observation that an individual collects waste separately does not necessarily mean that she is more environmentally conscious *in general*. It does mean, however, that it is important enough for her to act in a pro-environmental manner, at least in the case of waste collection. This may be due to internal motivation, social pressure, or both. Whatever may be the explanation, pro-environmental attitudes are seemingly associated less with left-wing politics in Hungary than in most Western countries.

One objection to our argument could be that while left-leaning voters engage less in waste separation, they may produce less waste in the first place. For this to be true, a substantial number of households in left-leaning districts would have to produce less waste for the difference to be measurable at the district level, and at the same time, a substantial number of households in right-leaning districts would have to produce more waste, because the total amount of waste has been mostly constant at the city level, as we have already pointed out earlier (Figure 1). This possibility is unlikely, as waste generation is driven mostly by income, and the trends in average taxable income do show similar trends across districts in the period under consideration. Furthermore, and even more importantly, if left-leaning individuals have cut their waste generation, they would have been more likely to decrease their non-recyclable waste, which could have led to an increase in not only the ratio but also the volume of selectively collected waste. Thus, overall, we consider the above scenario implausible.

An important, and perhaps obvious, limitation of our study is that municipal/EP elections are held only every five years; therefore, it is not possible to construct a continuous dataset for political preferences. We could have added polling data to the dataset, but polling data are often not aligned with true preferences. We could also have added the results of national elections from 2014 and 2018, but the constituency boundaries for municipal/EP and national elections do not coincide. Furthermore, we used data only from 2013, as this was the year when curbside waste separation was extended to the whole territory of Budapest. We believe, however, that the revealed lack of connection between environmentalism and left-wing politics in Budapest can be generalized to the wider Hungarian and perhaps Central and Eastern European context, as can also be inferred from McCright, Dunlap and Marquart-Pyatt.⁴³

Another limitation arises from the nature of the data used for this study. Since reliable individual-level election data are not available, we relied on district-level aggregates in our analysis. Therefore, our results reveal patterns of behavior for the majority of individuals within a district, not specific individuals. However, election data are arguably the most reliable measure one can have of political preferences.

Until recently, left-wing parties in Hungary have shown only limited interest in environmental issues based on the Manifesto Project data, despite the relatively favorable conditions for voter interest in environmental sustainability.⁴⁴ However, there are recent signs of change, and Hungarian left-wing parties may also converge to international left-wing trends in this area. Therefore, it is possible that in the future, we will see more stereotypical right-wing and left-wing attitudes toward environmental issues in Hungary, as in other Western countries.

Conclusion

In this article we studied the relationship between political preferences and pro-environmental behavior. Political preferences were measured by vote shares of left-wing and right-wing parties in EP and municipal elections in Budapest, Hungary, while we captured pro-environmentalism by the volume of curbside waste separation. Previous research suggests that the link between political and environmental attitudes in post-communist Central and Eastern Europe might differ from those in other developed nations. Specifically, an analysis based on survey data suggested that environmentalism is less connected to left-wing politics in Central and Eastern Europe.⁴⁵ Our analysis, based on revealed instead of stated preferences, confirms this result. Using a panel dataset and applying fixed and random effects models, we found that waste separation is negatively correlated with the left-wing vote share; that is, in left-leaning districts individuals engage less in waste separation. We proposed several possible explanations to account for our results. As the left-right political landscape is changing across Central and Eastern Europe, the effect of political preferences on pro-environmentalism remains a fertile ground for future research.

Appendix

Table A1
Coding Scheme for the Candidates/Parties to Be Considered Left- or Right-Wing

Year of election	European parliamentary election			Municipal election		
	Left-wing	Right-wing	Not classified	Left-wing	Right-wing	Not classified
2014	Hungarian Socialist Party (Magyar Szocialista Párt, MSZP) Alliance and Christian Democratic People's Party (Fidesz—Magyar Polgári Szövetség és Kereszténydemokrata Néppárt (Fidesz—KDNP) The Homeland is Not for Sale (A Haza Nem Eladó Mozgalom Párt) Movement for a Better Hungary (Jobbik Magyarországiért Mozgalom, Jobbik) Democratic Coalition (Demokratikus Koalíció, DK)	Fidesz—Hungarian Civic Alliance and Christian Democratic People's Party (Fidesz—Magyar Polgári Szövetség és Kereszténydemokrata Néppárt (Fidesz—KDNP) The Homeland is Not for Sale (A Haza Nem Eladó Mozgalom Párt) Movement for a Better Hungary (Jobbik Magyarországiért Mozgalom, Jobbik) Democratic Coalition (Demokratikus Koalíció, DK)	Allies of Mária Seres (Seres Mária Szövetségei, SMS)	Hungarian Socialist Party (Magyar Szocialista Párt, MSZP) Politics Can Be Different (Lehet Más a Politika, LMP) Together—Party for a New Era and Dialogue for Hungary (Együtt—a Korszakváltók Pártja és Párbeszéd Magyarországiért Párt, Együtt—PM) Democratic Coalition (Demokratikus Koalíció, DK)	Fidesz—Hungarian Civic Alliance and Christian Democratic People's Party (Fidesz—Magyar Polgári Szövetség és Kereszténydemokrata Néppárt (Fidesz—KDNP) Movement for a Better Hungary (Jobbik Magyarországiért Mozgalom, Jobbik)	Independent candidates Hungarian Workers' Party (Magyar Munkáspárt) Prosperity and Freedom (Jólét és Szabadság, JESZ) Community for Social Justice People's Party (Közösség a Társadalmi Igazságosságért Néppárt) Hungarian Liberal Party (Magyar Liberális Párt, MLP) Hungarian Civic Party of Social Democrats (Szociáldemokraták Magyar Polgári Pártja, Szocdemek)
2019	Momentum Movement (Momentum Mozgalom) Politics Can Be Different (Lehet Más a Politika, LMP) Hungarian Socialist Party—Dialogue for Hungary (Magyar Szocialista Párt—Párbeszéd Magyarországiért) Democratic Coalition (Demokratikus Koalíció, DK) Hungarian Workers' Party (Magyar Munkáspárt)	Fidesz—Hungarian Civic Alliance and Christian Democratic People's Party (Fidesz—Magyar Polgári Szövetség és Kereszténydemokrata Néppárt (Fidesz—KDNP) Movement for a Better Hungary (Jobbik Magyarországiért Mozgalom, Jobbik) Our Homeland Movement (Mi Hazánk Mozgalom)	Hungarian Two-Tailed Dog Party (Magyar Kétfarkú Kutyapárt, MKKP)	Momentum Movement (Momentum Mozgalom) Politics Can Be Different (Lehet Más a Politika, LMP) Hungarian Socialist Party (Magyar Szocialista Párt, MSZP) Dialogue for Hungary (Párbeszéd Magyarországiért Párt, Párbeszéd) Democratic Coalition (Demokratikus Koalíció, DK) Hungarian Workers' Party (Magyar Munkáspárt)	Fidesz—Hungarian Civic Alliance and Christian Democratic People's Party (Fidesz—Magyar Polgári Szövetség és Kereszténydemokrata Néppárt (Fidesz—KDNP) Movement for a Better Hungary (Jobbik Magyarországiért Mozgalom, Jobbik) Our Homeland Movement (Mi Hazánk Mozgalom)	Independent candidates Hungarian Workers' Party (Magyar Munkáspárt)

Note: The “Not classified” column is reserved for parties that had negligible support and did not impact the election outcome. In the municipal election of 2019, two independent candidates in the 20th and 23rd districts were supported by Fidesz—KDNP. As the party did not field any other candidate against them, they were classified as right-wing.

Table A2
Regression Results (Dependent Variable: Vote Share of Left-Wing Parties)

Variables	European parliamentary elections		Municipal elections	
	Two-year data	One-year data	Two-year data	One-year data
Waste collected separately	-0.280** (0.092)	-0.188. (0.104)	-1.422 (1.167)	-0.505 (1.013)
Waste collected separately × Number of people per dwelling	0.109* (0.051)	0.065 (0.061)	0.365 (0.478)	0.045 (0.522)
Average taxable income	5.000* (2.238)	3.814. (2.045)	-20.261 (44.429)	2.126 (30.240)
Jobseekers registered for more than 180 days	1.805 (1.104)	1.537 (1.043)	-3.795. (1.986)	-7.426 (5.637)
Population aged above 65	-0.551*** (0.138)	-0.483*** (0.129)	-1.812 (2.626)	-0.252 (2.278)
Eligible for public healthcare subsidy	-1.902** (0.611)	-1.395* (0.627)	-3.896 (3.217)	-3.522 (2.145)
Number of people per dwelling	-6.254** (2.424)	-5.703* (2.699)	203.037** (63.057)	140.036* (56.018)
Year 2019	4.672* (1.882)	4.359** (1.642)	35.885 (35.542)	11.920 (21.231)
N	46	46	46	46
Number of districts	23	23	23	23
Adjusted R ²	0.464	0.428	0.789	0.720

Note: Random effects models for the European Parliamentary elections and fixed effects models for the municipal elections data based on the Hausman test. Standard errors (in parentheses) are clustered by district.

† $p < 0.1$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Funding

The first author gratefully acknowledges financial support from the Hungarian National Research, Development and Innovation Office (K-143276) and from the Hungarian Academy of Sciences (MTA) through the Bolyai János Research Fellowship. The present publication is the outcome of the project and “From Talent to Young Researcher project aimed at activities supporting the research career model in higher education,” identifier EFOP-3.6.3-VEKOP-16-2017-00007 co-supported by the European Union, Hungary and the European Social Fund.

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