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Environmental Awareness and Occupational Choices of Adolescents*

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Abstract

This paper analyzes the impact of environmental awareness on the occupational choices of adolescents. To do so, we exploit the apprenticeship system in Switzerland, where about two-thirds of adolescents choose an apprenticeship in their preferred occupation at around age 15. We consider two dimensions of environmental awareness as potential drivers of their occupational choice. First, we consider time-persistent regional social norms, which we proxy by regional differences in popular votes on environmental issues. Second, we investigate short-term shocks in environmental awareness, which we proxy by the occurrence of Fridays for Future strikes in different locations at different points in time. To measure whether adolescents choose occupations that have the potential to serve environmental protection, we estimate an occupational greenness score based on Swiss job-ad texts as data. Combining this occupational greenness score with detailed process-generated data on adolescents' applications from Yousty, Switzerland's largest online job board for apprenticeship positions, we find that environmental awareness is positively related to the greenness of adolescents' occupational choices. However, this finding applies only to short-term shocks in environmental awareness and not to time-persistent pro-environmental norms. We interpret this result as evidence for a social-movement effect on norms and values that significantly alter adolescents' occupational choices.

Keywords: Vocational education and training, apprenticeships, occupational choice, environmental awareness, climate strikes, social norms

JEL Classification Numbers: D91, J13, J24

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1. Introduction

One of the most important decisions of adolescents is which occupational career to follow after compulsory school. These decisions not only shape labor-market careers already early in life but also, over cohorts of adolescents, determine the overall supply of skills in the labor market and thus the economic development of countries. In recent years and in the wake of expanding policies to fight climate change, skills that serve environmental protection (i.e., "green" skills) are particularly high in demand (Lobsiger and Rutzer, 2021; Vona et al., 2018). Thus both firms and policymakers have a strong interest in understanding the driving forces behind occupational choices of young labor-market entrants.

This paper tackles this question by analyzing the link between the (changing) environmental awareness and the occupational choices of adolescents. Based on the theoretical framework of Akerlof and Kranton (2000, 2005), who establish the role of identity in individual economic decisions, we expect that an increase in environmental awareness increases the likelihood of young school graduates to enroll in an apprenticeship training program that leads to a green occupation.

While many studies emphasize the role of social norms in adolescents' occupational choices (e.g., for gender norms, Kuhn and Wolter, 2023; Palffy et al., 2023; Wicht and Siembab, 2022), little is known about the role of environmental norms and values. Although some studies show that environmental awareness affects other behaviors of adolescents, such as consumption or travel (Gomes et al., 2023; Ribeiro et al., 2023), its influence on occupational choice has so far been neglected. This lack of evidence seems surprising given that the awareness of environmental issues, such as climate change and biodiversity, is an increasingly important social norm that varies by region or sociodemographic characteristics (Bernstein, 2013). Particularly for the current generation of adolescents, environmental issues have become a major concern for their future (e.g., Poortinga et al., 2023; Swim et al., 2022). This development manifests in adolescents' increasing participation in climate activism, such as Fridays for Future (FFF) strikes (Brügger et al., 2020; de Moor et al., 2021). Thus our paper fills an important research gap by analyzing

how changes in the environmental awareness of adolescents' affect their occupational choices.

To answer our research question, we exploit the unique setting of the dual vocational education and training (VET) system in Switzerland, which offers several advantages for our analyses. The majority of adolescents in Switzerland (about two-thirds) choose to pursue the vocational education track after compulsory school at around age 15. In this track, they undergo an apprenticeship training program in an occupation of their choice. These programs follow clearly defined and nationally binding curricula and consist of both workplace learning at a training firm (about three-quarters of the training time) and education at a vocational school (about one-quarter of the training time).[1] To obtain an apprenticeship position, adolescents have to apply for training positions in firms in a way that is similar to applications for regular jobs.

With its dual VET system, Switzerland provides an ideal setting for answering our research question for five reasons. First, with two-thirds of the workforce entering the labor market through an apprenticeship training, the occupational choices we study are highly important decisions for individuals, firms, and the economy as a whole. Second, adolescents typically choose their VET occupation at age 15, that is, at an age when they are forming their own political opinions, including on environmental issues (e.g., Eckstein et al., 2012; Stevenson et al., 2019). Third, because apprenticeship applicants of this age usually search for positions near their parental home, we are able to precisely determine the environmental norms in the region where they grew up. Fourth, the application process for apprenticeship positions allows us to study occupational choices that are unconfounded by firms' hiring decisions. Fifth, as all apprenticeship programs follow clearly defined and nationally binding curricula, we can measure the greenness of the acquired skills at the occupational level.

In our analyses, we consider two dimensions of environmental awareness. First, to measure time-persistent social norms on environmental issues, we follow prior research on gender norms (e.g., Janssen et al., 2016; Kuhn and Wolter, 2023; Lalive and Stutzer,

[1]Furthermore, as part of the VET curricula apprentices also participate in intercompany training courses that focus on particular skills for a small portion of the total training time.

2010) and use the regional outcomes of popular votes on environmental issues as a proxy for these norms. As they have real legal consequences, these voting outcomes reflect the true opinions of the population and do not suffer from a social-desirability bias, which might be inherent in survey data (Lalive and Stutzer, 2010). The social norms measured through voting outcomes are thus the norms that adolescents face when growing up and that influential people such as family and teachers transmit. Second, following Fabel et al. (2022), we utilize the regional and temporal variation in the occurrence of FFF strikes as a measure for short-term shocks in environmental awareness. We argue that these strikes raise the environmental awareness of adolescents who live in regions close to a strike location around the time of the strike. This awareness shock can happen not only through adolescents' own strike participation but also through interactions with partcipating peers or reports in the (local) media. The two measures thus provide regionally disaggregated information on environmental awareness that we can link to adolescents' occupational choices.

To determine whether adolescents who are exposed to higher levels of environmental awareness choose greener occupations, we proceed in two steps. First, we calculate an occupational greenness score for each VET occupation. To do so, we use job-ad texts from the Swiss Job Market Monitor (SJMM) (Buchmann et al., 2022) as data. We apply a keyword-based decision algorithm to each job-ad text in the data to classify it as describing a green job or not. We then define the occupational greenness score as the average classification of all job ads belonging to an occupation. Second, we match this greenness score to process-generated data from Yousty, Switzerland's largest online job board for apprenticeship position. These data have been successfully applied in prior research on occupational choices (Oswald-Egg, 2021; Palffy et al., 2023). They allow us to observe (a) for which VET occupations an adolescent applies and thus the greenness of these applications, (b) the adolescent's municipality of residence and thus the prevailing regional environmental norms, and (c) the exact date of the application and thus whether it was created around an FFF strike.

We employ two empirical strategies to determine the association between environmental

awareness and occupational choices. First, to study time-persistent environmental norms, we aggregate our data to an adolescent-level cross section and perform OLS estimations by regressing the average occupational greenness score of adolescents' applications on the regional percentage of voters in favor of environmental protection. Second, to analyze the impact of short-term shocks in environmental awareness, we exploit the longitudinal structure of our data in a difference-in-differences approach and perform estimations at the adolescent-day level. In so doing, we assign adolescents who (a) live within the catchment area of an FFF strike and (b) were actively applying for apprenticeship positions both before and after the strike to the treatment group. The remaining adolescents constitute the control group. The two empirical strategies allow us to investigate the impacts of both time-persistent environmental norms and short-term shocks in environmental awareness on adolescents' choices of green occupations.

Our results suggest that environmental awareness is positively related to green occupational choices. In our longitudinal analysis, we find that adolescents who experienced an FFF strike during their application period apply to greener occupations after the strike. Thus we find support for the hypothesis that short-term shocks in environmental awareness affect occupational choices of adolescents. However, we do not find a significant association between pro-environmental voting behavior and adolescents' occupational choices. In light of the theoretical work by Akerlof and Kranton (2000) and Kranton (2016), we interpret these results as evidence for a social-movement effect on norms and values that significantly alter adolescents' occupational choices.

The results of our paper contribute to different strands of literature. First, we add to the literature on the labor market effects of the transition towards a greener economy (e.g., Hanson, 2023; Montt et al., 2018). Our results improve the understanding of the mechanisms that drive individuals' selection into green occupations. This literature has identified remaining skill shortages despite employment growth in green occupations (e.g., Horbach and Janser, 2016; Vona et al., 2018). Second, building on the framework of identity economics (Akerlof and Kranton, 2000, 2005), we extend the growing literature on the impact of norms and values on early career choices of adolescents (e.g., Palffy et al.,

2023; Pregaldini et al., 2022) by establishing environmental awareness as an important determinant. Our results therefore contribute to the understanding of the drivers of adolescents' occupational choices. Third, we contribute to the literature that studies how adolescents adjust their behavior to climate change (e.g., Gomes et al., 2023; Ribeiro et al., 2023) by analyzing occupational choices as one of the most important early-life decisions.

In addition to its academic contribution, our paper is important for policymakers and firms alike. Given that environmental awareness is no short-run phenomenon that will disappear over time, climate change and its social and economic consequences will be of increasing importance for youth (Swim et al., 2022). Through extending research knowledge on the impact of environmental awareness on adolescents' occupational choices, our results can guide policymakers who aim at reducing skill shortages in green industries by evaluating whether raising adolescents' environmental awareness can be one channel for stimulating greater interest in green occupations. Moreover, our results yield insights into whether redesigning non-green VET occupations to become greener can further reduce skill shortages in other industries. Finally, our results can help firms which seek to attract young workers for green jobs improve their recruitment practices.

The remainder of this paper is structured as follows. Section 2 provides an overview over relevant literature and derives our main hypotheses. Section 3 describes the data we use for our analyses and Section 4 outlines our methodological approach. We present the empirical results in Section 5 and conclude in Section 6.

2. Related Literature and Hypotheses

The general interest of economists in the occupational choice of youth is evident in early theoretical works (e.g., Carol and Parry, 1968; Freeman, 1971) and a large number of empirical contributions thereafter (e.g., Borghans et al., 1996; Filer, 1986; Zarkin, 1985). Recent studies have also provided results for countries with an extensive apprenticeship training system, such as Switzerland and Germany, in which occupational choice takes place at a relatively early age (e.g., Biewen and Thiele, 2020; Dustmann et al., 2017;

Jaik and Wolter, 2019; Kuhn, 2022; Möser et al., 2019). However, many of the studies analyzing the role of norms and values in occupational choice focus on gender norms (e.g., Kuhn and Wolter, 2023; Palffy et al., 2023; Volodina and Nagy, 2016; Wicht and Siembab, 2022) or diversity (Pregaldini et al., 2022). The main message from these studies is that norms and values are important determinants of the choices adolescents take in their early career.

Empirical studies that analyze the impact of environmental awareness on the economic behavior of individuals and households are rare. However, some studies exist in the areas of travel behavior and consumption. For example, Ribeiro et al. (2023) find that environmental concern leads to pro-environmental travel behavior while Choi and Fielding (2013) use a choice experiment to show that environmental attitudes affect the willingness-to-pay for protecting endangered species. Iosifidi (2016) analyzes the impact of environmental awareness on the household consumption of polluting goods and finds a significant negative effect. However, much more pronounced is the negative effect on labor supply, that is, the hours worked by household members. The author explains this finding by environmentally aware households that relate their work to "environmental degradation and seek to free time to benefit from a clean environment or even promote environmental goals" (p. 10). However, the author also states that those households benefit from a greener job status.

To the best of our knowledge, our paper is the first to explicitly address environmental awareness as a driver of occupational choice. We derive our hypothesis from the influential work of Akerlof and Kranton (2000), who "incorporate the psychology and sociology of identity into an economic model of behaviour" (p. 715). Following their argument, complying with social norms may influence decision-making by yielding a higher individual utility for the decision-maker. In a later contribution, Kranton (2016) argues that social movements may alter norms, as was the case for American gender norms following the women's movement in the late 1970s (Goldin, 2006). We argue that climate activism manifesting in the FFF strikes may also alter norms and therefore occupational choices of adolescents in Switzerland.

Based on this literature, we test the following hypotheses:

1. A higher degree of time-persistent pro-environmental norms as proxied by Swiss popular voting outcomes on environmental issues is associated with adolescents applying to greener apprenticeship occupations.

2. Short-term shocks in environmental awareness as proxied by the locations and timing of FFF strikes are associated with adolescents applying to greener apprenticeship occupations.

3. Data

To test our hypotheses, we require measures for both environmental awareness and adolescents' choices of green occupations. We describe these measures and their derivations in the following subsections.

3.1. Environmental Awareness

To measure environmental awareness, we draw on two data sources. First, we use the outcomes of Swiss popular votes (obtained from Swissvotes, 2023) on environmental issues as a measure for regional differences in political attitudes towards environmental protection. This approach follows the intuition of prior work in Switzerland (e.g., Janssen et al., 2016; Lalive and Stutzer, 2010), which uses the outcomes of votes on gender issues as a proxy for social gender norms.

Given the stability of regional social norms even over long time series (e.g., Cantoni et al., 2019; Gruneau, 2022; Janssen et al., 2016), we consider the six popular votes on people's initiatives that had environmental issues as their primary focus between 1990 and 2016,[2] the first year in our analyses. We then calculate the average percentage of

[2]These include the votes on the people's initiatives (1) "for saving our water bodies" ("zur Rettung unserer Gewässer), (2) "for a solar cent" ("für einen Solarrappen), (3) "against fighter-jet noise in touristic areas" ("gegen Kampfjetlärm in Tourismusgebieten), (4) "associations' right of appeal: for an end to obstructionist policy – more growth for Switzerland!" ("Verbandsbeschwerderecht: Schluss mit der Verhinderungspolitik – Mehr Wachstum für die Schweiz!") which we consider as anti-environmental,

voters in favor of environmental protection over these six votes at the municipality level, the smallest administrative unit in Switzerland. Similar to prior studies using voting outcomes as a proxy for local gender norms (e.g., Palffy et al., 2023), we consider this percentage a valid proxy for local environmental norms.

Second, while the voting outcomes allow us to observe regional variation in environmental awareness, we follow Fabel et al. (2022) and use the location and timing of FFF strikes as a measure with both regional and temporal variation. We argue that the exposure to these strikes raises the environmental awareness of adolescents living close to the strike location around the time a strike takes place, either through their own participation or through reports of peers or in the media. For example, Andrews et al. (2023) show that local media coverage impacts the environmental awareness of the local residents. We therefore argue that the strikes represent a local shock in environmental awareness that we can exploit in our empirical strategy.

The FFF data contain information that strike participants report on a platform maintained by FFF volunteers.[3] Among other items, these data include information on the exact date, location (city), and number of participants of FFF strikes. The data version that we use includes information on all strikes before April 27, 2023. In our empirical analyses, to exclude minor spontaneous and unorganized strikes that someone might have reported on the platform, we consider only strikes for which the data feature the number of participants as a proxy for reporting quality. Otherwise, we do not use the information on the number of participants because it presumably represents only an informed guess of the participants. The first reported strikes in Switzerland with information on the number of participants took place on March 15, 2019 as part of the global climate strike in 20 Swiss cities. In total, we observe 98 strikes that took place in 35 Swiss cities at 20 distinct dates in the data. The majority of these strikes (84) took place before March 16, 2020, that is, before the Covid lockdowns prohibited public assemblies such as FFF strikes.

(5) "against animal cruelty and for better legal protection of animals ("gegen Tierquälerei und für einen besseren Rechtsschutz der Tiere), and (6) "for a sustainable and resource-efficient economy" ("für eine nachhaltige and ressourceneffiziente Wirtschaft).

[3]We thank the FFF organization for sharing these data with us.

3.2. Occupational Choice

To measure whether adolescents take environmental issues into account when choosing a VET occupation, we proceed in two steps. In the first step, we face the challenge of assessing a VET occupation's potential for serving environmental protection. While prior research assessing this potential uses data on the national universes of occupations (e.g., Dordmond et al., 2021 for Brazil; Janser, 2018 for Germany; Rutzer et al., 2020 for the U.S.), we extend this research to obtain more precise assessments for VET occupations.

Specifically, we apply a keyword-based decision algorithm to job-ad texts from the SJMM (Buchmann et al., 2022), a longitudinal sample of job ads in both online and print media that has been successfully applied to studying the labor-market effects of VET (e.g., Salvisberg and Sacchi, 2014; Schultheiss et al., 2023). While the SJMM data go back in time until 1950, we restrict our sample to job ads published in 2001 or later. The reason is that the SJMM team started to include online job ads in 2001, thus leading to a disruption in the time series. Moreover, online job ads are nowadays the most common form of job ads so that including earlier job ads could bias our classification of green occupations. Given that the classification task is based on language and the majority of job ads in Switzerland are German, we also restrict our sample to those German-language job ads. In addition to the job-ad texts, for each job ad the SJMM data contain the five-digit code of the Swiss Standard Classification of Occupations (CH-ISCO-19), a classification that includes specifically VET occupations.

To identify keywords that characterize green occupations, we use another dataset containing two years of recent job-ad texts from umweltprofis.ch, a job platform hosted by OdA Umwelt, the professional organization for environmental occupations.[4] Based on these job-ad texts, we obtain a comprehensive list of keywords that characterize green occupations. In a trial-and-error process, we categorize these keywords into two classes. The first class comprises keywords the occurrence of which is sufficient to characterize a job-ad text as describing a green occupation, for example, "solar energy" (in German: "Solarenergie"). The second class comprises keywords of which at least two must occur in

[4]We thank the OdA Umwelt for granting us access to their job-ad archive.

a job-ad text to characterize the advertised occupation as green, for example, "disposal" and "sustainable" (in German: "Entsorgung" and "nachhaltig"). The underlying logic is that if a job-ad text fulfills the keyword conditions of one of the two classes, it describes a green occupation.

Using this keyword-based algorithmic logic, we classify each job ad text in the SJMM data as describing either a green or non-green job. Then, we take the average of this binary classification within each five-digit CH-ISCO-19 code, that is, the percentage of jobs within an occupation that are green. This percentage indicates the occupational "greenness score" that measures an occupation's potential for serving environmental purposes. Among the VET occupations with the highest greenness scores are, for example, forester ("Forstwart/in"), electrical engineer ("Elektroplaner/in"), and ventilation system engineer ("Lüftungsanlagenbauer/in"). VET occupations with a greenness score of zero include, for example, hairdresser ("Coiffeur/-euse"), dental assistant ("Dentalassistent/in"), and events specialist ("Veranstaltungsfachmann/-frau").

In the second step, we match the greenness score to data on adolescents' applications for apprenticeship positions from Yousty, Switzerland's largest online job board for apprenticeship positions.[5] On Yousty, firms advertise their apprenticeship positions and adolescents can directly apply to these positions. The job board covers about 90 percent of all online job ads for apprenticeship positions in Switzerland, for about 70 percent of which adolescents can apply directly on Yousty through a standardized application form. Yousty's process-generated are thus representative for the market for apprenticeship positions and have been applied successfully in prior research on adolescents' occupational choices (Oswald-Egg, 2021; Palffy et al., 2023).

In combination with the occupational greenness score, the Yousty data allow us to determine the association between environmental awareness and adolescents' occupational choices. In addition to sociodemographic characteristics such as age and gender, for every application by a registered adolescent Yousty's process-generated data include information on the exact application date, occupation, and the adolescent's place of residence. The

[5]We thank the Yousty staff for providing the data to us. For more information on the Yousty data see Palffy et al. (2023).

data cover all applications created on Yousty since January 1, 2016. Thus we are able to determine (a) the greenness scores of the occupations for which an adolescent applies, (b) the environmental norms as proxied by voting outcomes in an adolescent's municipality of residence, (c) the distance of an adolescent's municipality of residence to FFF strike locations,[6] and (d) whether an application was created before or after an FFF strike took place. As they are not confounded by firms' hiring decisions, these data thus allow us to analyze whether adolescents' true interest in green VET occupations depends on local environmental awareness.

4. Method

We apply two empirical strategies to investigate the relationship between local environmental awareness and adolescents' occupational choices. First, to investigate the role of time-persisting environmental norms as proxied by voting outcomes, we perform cross-sectional OLS estimations. Second, we exploit the longitudinal nature of the Yousty data and apply panel-data methods to assess the impact of short-term shocks in environmental awareness as proxied by FFF strikes in a difference-in-differences setting. Thus we consider these strikes as a natural experiment that generates regional and temporal variation in environmental awareness.

4.1. Cross-Sectional Analysis of Time-Persistent Environmental Norms

To analyze the role of time-persistent environmental norms, we aggregate the Yousty data at the adolescent level and estimate the following model:

$$Greenness_{i[jt]} = \beta_0 + \beta_1 ProEnvNorms_j + \beta_2 X_i + \beta_3 Canton_j + \beta_4 t + \mu_i, \qquad (1)$$

[6]We compute the travel distances between adolescents' municipalities of residence and FFF strike locations using the Stata package `osrmtime` (Huber and Rust, 2016).

where the dependent variable $Greeness_{i[jt]}$ is the average occupational greenness score of all applications created by an adolescent i who lives in municipality j and looks for apprenticeship positions in year t. $ProEnvNorms_j$ indicates the average percentage of voters in favor of environmental protection in municipality j. The vector X_i includes a set of adolescent-level control variables, namely their age,[7] gender, total number of created applications, and the fraction of applications for trial apprenticeships[8] vs. regular apprenticeships. $Canton_j$ is a vector of canton[9] fixed effects (FE) to control for regional differences in educational legislation. Finally, we include year FE to control for time trends common to all adolescents.[10] μ_i represents the error term.

We apply a couple of sample restrictions to avoid potential biases. First, we drop applications for positions that we cannot unambiguously match to a CH-ISCO-19 code. Second, as we assign the municipalities of residence based on the zip code that adolescents indicate in their applications, we drop adolescents whom we cannot unambiguously assign to a municipality due to conflicting zip code information. Third, corresponding to the typical age range of apprenticeship applicants, we drop applications from adolescents who, at the time of application, were younger than 13 or older than 19. Fourth, we drop applications from adolescents with conflicting birthday or gender information. Fifth, we drop adolescents who apply for a duration of more than two years.[11] To achieve correspondence in the sample composition with the longitudinal analysis described in Section 4.2, we consider all remaining applications created between January 1, 2016 (the first day in the Yousty data) and April 27, 2023 (the last day in the FFF data).

[7] If someone's birthday lies between applications, we use his or her average age.

[8] Trial apprenticeship are short-term internships where adolescents spend a couple of days at a training firm to get acquainted with a VET occupation. They typically take place while adolescents still attend compulsory school.

[9] Cantons are the largest regional administrative unit in Switzerland and function similar to states in the U.S.

[10] If an adolescent applies in more than one year, we use the first year in which he or she applies.

[11] Applying in two consecutive years is normal if adolescents look for trial apprenticeships in the first year and for regular apprenticeships in the second year.

4.2. Panel Analysis of Short-Term Shocks in Environmental Awareness

To investigate the role of short-term shocks in environmental awareness in adolescents' occupational choices, we exploit the longitudinal nature of the Yousty data. For this purpose, as we know the exact application dates and the exact FFF strike dates, we aggregate the Yousty data at the adolescent-day level to retrieve an (imbalanced) panel dataset with one observation per adolescent per day.[12] Because FFF strikes take place at different dates and locations, they constitute a natural experiment that generates short-term temporal and regional variation in environmental awareness. Adolescents can experience this environmental awareness shock either through their own participation in an FFF strike, through reports of peers who participated, or through social and other (local) media.

We assign adolescents to either the treatment or the control group. The treatment group comprises all adolescents exposed to an FFF strike, that is, adolescents who live within a 10-kilometer travel-distance radius[13] from an FFF strike location and for whom we observe applications both before and after a strike took place. We assign all remaining adolescents to the control group. Thus the control group contains both adolescents who live more than 10 kilometers from any FFF strike location and adolescents within this radius but without an FFF strike taking place during their active application period.

Using the adolescent-day level dataset, we thus estimate the following model:

$$Greenness_{i[j]d} = \gamma_0 + \gamma_1 PostFFF_{jd} + \gamma_2 X_{id} + \gamma_3 i + \nu_{id}, \tag{2}$$

where $Greenness_{i[j]d}$ denotes the average occupational greenness score of all applications of adolescent i who lives in municipality j created on day d. $PostFFF_{jd}$ is the binary treatment variable that indicates whether an application was created on a day d after an FFF strike in municipality j for adolescents who also created applications prior to

[12] In constructing the panel dataset, we apply the same sample restrictions as in constructing the cross-sectional dataset (see section 4.1).

[13] We consider 10 kilometers an appropriate one-way distance that roughly corresponds to the tolerable way-to-school duration of 40 minutes (Degener et al., 2022) if adolescents use public transportation or ride by bike.

the strike. X_{id} is a vector of time-varying individual and day characteristics, including adolescent i's age on day d, whether their applications on day d were for trial or regular apprenticeships,[14] and dummy variables indicating the day of the week, month, and year of day d. Finally, we include adolescent FE that control for any observable and unobservable time-invariant characteristics of an adolescent (such as gender or innate ability) and his or her municipality of residence (such as time-persistent environmental norms and population density). ν_{id} represents the error term.

5. Results

5.1. Cross-Sectional Results on Time-Persistent Environmental Norms

Table 1 shows the results of our cross-sectional analysis on the role of time-persistent environmental norms as proxied by voting outcomes in determining adolescents' occupational choices. While the association between the strength of pro-environmental norms (i.e., the percentage of voters in favor of environmental protection) is negative and statistically significant in column (1), it turns statistically insignificant in column (2). Moreover, the coefficient sizes indicate that this association is also economically hardly significant, with a one percentage-point increase in votes in favor of environmental protection being associated with, according to column (2), a 0.002 percentage-point increase in the average greenness score of the occupations an adolescents applies for.

The sociodemographic control variables yield further interesting insights. In line with Lobsiger and Rutzer's (2021) results on the composition of the Swiss workforce, women are less likely to apply for apprenticeships in green occupations. This finding could result from many occupations with comparatively high greenness being STEM (science, technology, engineering, and mathematics) and thus typically male occupations. Moreover, adolescents are more likely to apply for green occupations when they are younger and when they are

[14] If an adolescent applied for both trial and regular apprenticeship on the same day, we take the average of the binary indicator.

Table 1: Cross-Sectional Results on the Relationship Between Time-Persistent Environmental Norms and Adolescents' Occupational Choice

Dep. var.: Avg. greenness score	(1)	(2)
Strength of pro-environmental norms	–0.007***	–0.002
	(0.001)	(0.002)
Female		–2.208***
		(0.018)
Age		–0.172***
		(0.008)
Trial apprenticeship		0.396***
		(0.024)
Total number of applications		0.002**
		(0.001)
Canton FE	No	Yes
Year FE	No	Yes
Sample mean of dep. var.	3.563	3.563
Observations	181,624	181,624
Adj. R^2	0.000	0.083

Notes: Results from OLS estimations. The dependent variable is the average occupational greenness score of all applications created by an adolescent. Age and the binary trial apprenticeship indicator are averaged over all applications from an adolescent. All models include constant. Robust standard errors in parentheses. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

looking for trial apprenticeships.

We conclude from the cross-sectional results that, while the relationship between sociodemographic characteristics and choices of green occupations confirms prior findings, time-persistent environmental norms in the region where an adolescent lives do not affect his or her occupational choice. That is, we do not find any support for our hypothesis on the association between pro-environmental voting behavior and adolescents' occupational choice. Rather, adolescents appear to make their occupational choices independent of local environmental norms.

5.2. Longitudinal Results on Short-Term Shocks in Environmental Awareness

While time-persistent environmental norms do not appear to affect adolescents' occupational choice, our longitudinal results in Table 2 show that short-term shocks in environmental awareness increase adolescents' applications to green occupations. Columns (3) and (4) present our FE regression results on the relationship between FFF strikes, which create such a short-term shock, and occupational choice. We find that after experiencing an FFF strike within a travel distance of 10 kilometers, adolescents are more likely to apply for occupations with higher greenness scores. The treatment coefficient in column (3), which does not include any control variables except for adolescent FE, is positive and statistically significant at the ten-percent level. Once we include the full set of time-variant control variables in column (4), the coefficient increases in magnitude and becomes statistically significant at the five-percent level. According to the result in column (4), adolescents who experience an FFF strike during their active application period apply to occupations with a greenness score that is 0.094 percentage points higher than the average greenness score of the occupations to which other adolescents apply, including adolescents who live in the same regions but are not exposed to an FFF strike during their active application period. This association corresponds to a 2.6 percent increase in the occupational greenness score and is thus also economically significant.

In column (2), to be able to simultaneously analyze time-persistent environmental

Table 2: Longitudinal Results on the Relationship Between Short-Term Shocks in Environmental Awareness and Adolescents' Occupational Choice

Dep. var.: Daily avg. greenness score	(1)	(2)	(3)	(4)
Treatment (post FFF strike)	0.097***	0.226***	0.063*	0.094**
	(0.030)	(0.029)	(0.034)	(0.037)
Treatment group (exposure to FFF strike)	–0.079***	–0.153***		
	(0.024)	(0.024)		
Strength of pro-environmental norms		–0.001		
		(0.001)		
Female		–2.177***		
		(0.011)		
Age		–0.164***		0.022
		(0.004)		(0.029)
Trial apprenticeship		0.353***		0.151***
		(0.014)		(0.022)
Total number of applications		0.002**		
		(0.000)		
Adolescent FE	No	No	Yes	Yes
Canton FE	No	Yes	No	No
Day of the week FE	No	Yes	No	No
Month FE	No	Yes	No	No
Year FE	No	Yes	No	No
Sample mean of dep. var.	3.657	3.657	3.657	3.657
Observations	499,081	499,081	499,081	499,081
Number of adolescents	181,624	181,624	181,624	181,624
Adj. R^2	0.000	0.076		
Within R^2			0.000	0.000
Between R^2			0.000	0.001
Overall R^2			0.000	0.001

Notes: Columns (1) and (2) show results from OLS regressions, columns (3) and (4) from FE regressions. The dependent variable is the average occupational greenness score of all applications created by an adolescent on a given day. The binary trial apprenticeship indicator is averaged over all applications from an adolescent on a given day. All models include constant. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

norms and short-term shocks in environmental awareness, we estimate the same models using OLS, that is, without adolescent FE. While the FFF treatment coefficients are statistically and economically highly significant, the coefficient on the strength of pro-environmental norms remains insignificant and thus confirms our conclusion in Section 5.1. Moreover, the coefficients on gender, age, and trial apprenticeships have similar magnitude and significance.

In sum, the longitudinal results support our hypothesis that short-term shocks in environmental awareness are positively associated with the greenness of adolescents' occupational choices. In light of the results in Section 5.1, we conclude that adolescents are more susceptible to current events and debates than to their everyday surroundings regarding their occupational choice.

6. Conclusion

This paper analyzes the link between environmental awareness, proxied by popular voting outcomes and FFF strikes, and the greenness of occupations that Swiss adolescents choose when applying for apprenticeship positions. With respect to voting outcomes, which measure time-persistent social norms towards environmental issues, we do not find an association with the greenness of adolescents' chosen occupations. However, our results on FFF strikes, which generate a short-term regional shock in environmental awareness, suggest a robust and strong link between environmental awareness and the greenness of adolescents' occupational choice. We interpret our results as evidence for a stronger role of norms and values induced by social movements (e.g., Kranton, 2016), such as FFF and the resulting local media coverage (e.g., Andrews et al., 2023), than intergenerationally transmitted norms.

Our results make both scientific and policy contributions. To the best of our knowledge, we are the first to provide empirical evidence on how environmental awareness affects the occupational choices of adolescents as one of their most important early-life decisions. Thus our results close gaps in the literature on the mechanisms that drive individuals' selection

into green occupations (e.g., Montt et al., 2018; Vona et al., 2018), in the literature an the role of norms and values in early-career choices (e.g., Palffy et al., 2023; Pregaldini et al., 2022), and in the literature on adolescents' behavioral adjustments to climate change (e.g., Gomes et al., 2023; Ribeiro et al., 2023). By providing evidence on the importance of short-term shocks in environmental awareness for adolescents' occupational choice, our findings can guide both policymakers and firms in (re-)designing VET occupations to meet the increasing demand for green skills and thus to reduce skill shortages.

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