Voter Turnout and Intergenerational Redistribution

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Abstract

Voter turnout declines observed in most democracies over-represent certain groups in the electorate, such as the elderly or the better off. Panel data on Austrian municipalities support that, when turnout decline mainly over-represents the elderly, it reduces public education spending, especially beneficial to the young. However, when it over-represents more the better off than the elderly, turnout decline is found to increase education spending. To identify the causal effect of turnout, we exploit a unique natural experiment provided by the repeal of mandatory voting for parliamentary elections in some Austrian states as a result of a constitutional decision in 1992.

Keywords: Voter turnout, Mandatory voting, Intergenerational conflict, Education spending.

JEL: I2, J1, D72

1 Introduction

The elderly's preferences appear to differ from those of the young as exemplified by two recent major political events: the Brexit and the election of the U.S. President Donald Trump. In both cases, the elderly's specific preferences had a disproportionate influence on the election outcome because of their massive turnout compared to the young.[1] In the aftermath of the UK referendum, the young – overwhelmingly to remain – were severely blamed in the press for having brought Brexit on themselves with their low turnout. The political consequences of this age gap in turnout appears to be a real public concern[2] and have led governments to promote the young's political clout, for instance by reducing the voting age from 18 to 16, such as in Austria in 2007.

Prior research studying the economic consequences of voter turnout has extensively focused on the income-based voting gap and its consequences on the redistribution between classes. However the consequences of the generational gap in turnout on the intergenerational redistribution remain unexplored. This is surprising because age-specific interests are known to potentially lead to intergenerational conflicts over redistribution[3] and the generational gap in turnout is well-known in political science the 1930s (Bhatti et al 2012). Understanding the mechanisms behind the intergenerational redistribution is crucial as social protection systems in the OECD redistribute more resources across age groups than across income groups.[4]

This paper investigates the effect of turnout decline on the intergenerational

[1] Trump attracted 49% of those aged 65+ with a 88% turnout and only 29% of those aged 40- but with a 70% turnout (Source: Polling by Washington Post-ABC News). A similar pattern can be observed for the UK referendum with a 64% turnout for 18-24 year olds - who voted overwhelmingly to remain - against a 90% turnout of those aged 65+ (Source: data compiled by the London School of Economics).

[2] According to the World Values Survey (2010-2014), almost one in two people think that "Old people have too much political influence" and around 30% that "Older people get more than their fair share from the government". In a telephone survey performed by Shea and Green (2004), 88% of 805 local party leaders in the U.S. agreed with the statement "The lack of political engagement by young people is a serious problem."

[3] The literature on the intergenerational conflict over the provision of public education provides consistent evidence of a negative association between the fraction of the elderly and the level of public education provided at the local level (Poterba 1996; Hoxby 1998; Harris et al 2001).

[4] Across 25 OECD countries, per capita public spending towards the elderly exceeds spending on the non-elderly by a factor of between 3 and 6 (OECD 2005).

redistribution through public education spending, the typical item subject to intergenerational conflict: more beneficial to young households than the elderly.[5] We first provide a theoretical framework based on the Austrian municipal setting used in the empirical analysis to illustrate how turnout decline can work on public education. Individuals differ in both their age and their income and vote on one dimension, i.e. the relative share of public education and transfers in the budget.[6] In line with a probabilistic voting model allowing the groups to differ in their political clout (Strömberg 2004) and with observed voting patterns, the old (rich and poor) and the young rich are assumed to have a high turnout while the young poor have a low turnout. Given the structure of the preferences, a decline in the overall turnout works on public education through two opposite forces: the electoral over-representation of the anti-education old and of the pro-education young rich. We predict that when population is ageing, an overall turnout decline reinforces especially the over-representation of the old and thus lowers public education.

We empirically test our prediction for a legislative change that significantly reduced voter turnout: the repeal of Mandatory Voting (MV) in Austria. We thereby exploit a unique natural experiment provided by the repeal of MV for parliamentary elections in four out of nine Austrian states as a result of a constitutional decision in 1992. Austria provides an attractive setting for the empirical analysis for two additional reasons: First, the disproportionate political influence of the elderly has become a major issue in the Austrian politics.[7] Second, the Austrian municipal setting allows to focus on the only dimension relevant for our analysis, i.e. the education share of the budget, as Austrian municipalities benefit from a high autonomy in their budget composition but not regarding tax setting.

The empirical analysis uses panel data on more than 2000 Austrian municipalities

[5] Analyzing the individual support for each public spending item in 18 OECD countries, Armingeon and Bonoli (2007) show that the strongest generational divide is on education and pensions.

[6] This setting is consistent with the models of Levy (2005) and Epple et al (2012) with the exception that the tax rate is fixed in our framework.

[7] In addition to the reduction of the voting age, a recent controversy related to the 2013 referendum on ending conscription also exemplifies the disproportionate political influence of the elderly. Conscription was maintained with the strong support of the elderly in spite of the opposition of the more numerous young voters.

for the 1990-2010 period, including from 5 to 6 municipal elections per state. We find that in the youngest municipalities of our sample (elderly share of 6%), the repeal of MV increases the education share of the budget by 19%, holding the need in education constant. Conversely, in the oldest municipalities (elderly share of 43%), the repeal of MV reduces the education share by 29%. The effect of the MV repeal on education turns negative when the elderly exceeds 20% of the municipal population, which is slightly above the mean of our sample (18%). This is consistent with our theoretical framework predicting that above a certain threshold of elderly, overall turnout decline over-represents more the elderly than the young rich.

Our identification assumption is that the heterogeneous effect of the repeal of MV with respect to the elderly share on education spending is only due to the electoral over-representation of the elderly. We provide a series of robustness checks considering the possibility that the repeal can have different compositional effects on the electorate and can affect public education through alternative mechanisms. As suggestive evidence of our identification assumption, we also use repeated cross-sections of individual level data and show that the elderly (1) turnout more, (2) are more involved in politics and (3) less affected by the repeal of CV than the rest of the electorate. Finally, as a complement to our main panel analysis, we provide more direct evidence of the negative impact of the age gap in turnout on education spending. Based on individual level data, we construct a state-level measure of sensitivity of turnout to age and show that an increasing sensitivity is associated with a reduction of municipal education spending over time.

This paper contributes mainly to two different strands of the political economy literature. First, it bridges a gap in the literature analyzing the effect of voter turnout on public policies. Most of this literature is based on the seminal model of Meltzer and Richard (1981) predicting that a stronger representation of low-skilled (poor) voters in the political process leads to more redistribution. Our paper suggests that this effect may not necessarily materializes especially if the generational bias in turnout outweighs the class bias. This can explain the mixed empirical evidence for the Meltzer-Richard hypothesis (reviewed in Hodler et al (2014)). Our paper

also complements an innovative literature explaining child health policies by the enfranchisement of women in the U.S. (Miller 2008) or of less educated citizens through electronic voting in Brazil (Fujiwara 2015) as well as the teacher-black child ratio by the disenfranchisement of black citizens in the U.S. (Naidu 2012). However prior to our paper the consequences of the over-representation of the elderly on intergenerational redistribution have not been analyzed.[8]

Second, changes in MV laws in Austria have already been analyzed.[9] The only paper studying the effects of MV laws on fiscal outcomes is Hoffman, León and Lombardi (2017) (HLL henceforth). Interestingly, they find that MV laws did not affect government spending patterns (in levels or composition) nor electoral outcomes at the state level. They provide evidence suggesting that this occurs because voters responsive to changes in MV laws do not have specific preferences.[10] Our finding of an effect of MV repeal on public education spending is in contraction but can be reconciled with HLL in three different ways. First, our empirical analysis focuses on municipal spending while HLL study state spending. Second, in line with HLL we find that the main effect of MV repeal on education spending is quantitatively negligible for the average elderly share, which is very close to the cutoff where the generational bias and the class bias in turnout offset each other. Third, building on HLL' s investigation on whether the voters responsive to the MV laws have specific preferences, we provide evidence that the MV repeal over-represents the elderly, well-known to have specific interests.

[8]For completeness, we should still mention an old literature studying the effect of voter turnout on the specific voting on school bond approval. Piele and Hall (1973) argue that, in school bond elections, individuals mostly likely to turnout are those with vested interests in the provision of public education, such as parents and teachers. However, as turnout increases, the voting power of these likely supporters is reduced because of the increased representation from other groups likely to oppose school taxations (old, childless families). Conversely, Hamilton and Cohen (1974) document a positive association between turnout and school bound approval. They argue that when turnout is high, voters' preferences are heterogeneous and no strong voting groups can emerge.

[9]Shineman (2012) use individual-level data to show that exposure to mandatory voting laws had not a clear impact on citizens' political sophistication. It increases the citizens' political interest, attention to political news, level of information about party platforms on EU integration but not their ability to identify the left-right ideological position of the major political parties. Using municipal level data for parliamentary elections, Ferwerda (2014) shows that turnout decline subsequent to the 1992 constitutional change is associated with a modest redistribution of votes between parties but with a clearer shift in votes from minor to mainstream parties.

[10]They show that responsive voters are mainly non-partisan, have low interest in politics and are uninformed.

The paper is structured as follows. Section 2 provides a simple theoretical framework to analyze the effect of voter turnout on education spending. Section 3 presents the Austrian institutional framework and the data. Section 4 presents the empirical strategy before providing the results. Section 6 concludes.

2 Theoretical Framework

Preferences and feasible policies. In line with the Austrian framework presented in the next section, we consider a fiscal system without fiscal autonomy for tax setting at the municipal level. The municipality' s exogenous revenues finance an income transfer and public education within the municipality. Given the municipal budget constraint, the agents vote on a single issue that is the relative share of municipal expenditures allocated to public education and transfers. Income transfers are essentially a redistribution from the rich to the poor and to a lesser extent to the elderly who can benefit, in Austrian municipalities, from retirement homes and (health) care facilities at the local level. Public education spending can be interpreted as a redistribution from the old to the young, since the latter are those who consume education.

We consider that a municipality is composed of four groups of agents, who differ in their age and their income. We use the labels 'young' and 'old' to distinguish between those who like education and those who have less affinity for education. As underlined by Levy (2005), education is traditionally seen as a spending in favor of the young, due to its positive effect on future income or social capital, which the old cannot capture.[11] Both aggregated and individual data indicates that old voters are less supportive of education spending than young voters.[12] Agents are also differentiated according to their income. There are two levels of income so that agents can be divided into the rich and the poor. Thus, the four groups are the

[11]The young/old distinction can also be correlated with whether voters have school age children or not and how much they care for their children's education or future income.

[12]See Brunner and Balsdon (2004) and Cattaneo and Wolter (2009) for the scarce evidence with individual data. See also the above mentioned study by Armingeon and Bonoli (2007) finding that the preference for education spending is decreasing with age, in 18 OECD countries, and especially in Austria.

old rich, the young rich, the old poor and the young poor. We use the following notations to represent the share of each group in the eligible electorate: α for old, (1-α) for the young, (1-α)β for young rich and (1-α)(1-β) for the young poor, with $0<\alpha<1$ and $0<\beta<1$.

We now characterize the ideal policies of the different groups regarding the share of public education in the municipal budget. As they benefit from transfers but not from public education, the old, whether poor or rich, prefer a low share of education in the budget. However, the preferences of the young are not homogeneous and depend on their wealth. Being young, the young rich benefit plenty from public education but, being rich, they do not benefit from transfers. Thus, the ideal policy of the young rich is a high share of education.[13] On the other hand, the young poor benefit both from education, as young, and transfers, as poor. Thus they prefer an intermediate share of education above the share preferred by the old and below the share preferred by the young rich. In short, the voters of each municipality can be divided into three homogeneous groups concerning their preferences for the education share of the budget: the old, both rich and poor, preferring a low education share, the young rich preferring a high education share and the young poor preferring an intermediate share of education.

Electoral turnout. The municipal average turnout, $\bar{T}$, is exogenously determined by idiosyncratic municipal features such as the citizens' sense of civic obligation or institutional factors (e.g. mandatory voting laws). Individuals differ in their turnout. We assume two levels of turnout: a high turnout (T_H) and a low one (T_L) such that T_H=aT_L with a>1. We assume that the old and the young rich have a

[13]The conclusion regarding the preferred policies of the young rich is unchanged when considering the possibility to consume private education. In Epple and Romano (1996) and Levy (2005), young voters may supplement public education by buying private education when the quantity or quality of public education is too low. In our framework, as the young rich do not benefit from transfers that could allow them finance private education and as the tax rate is fixed, it is in their interest to have the highest share of public education as possible. In line with the fact that private education is not a favoured option in Austria, note that the private school enrollment in Austria is one of the lowest in the OECD. According to the 2012 Pisa Study, 91% of the students attend government or public schools in Austria (against 82% for the average OECD) and only 1% of them attend government independent private schools.

high turnout (T_H) while the young poor have low turnout (T_L). As a result any decline in the overall turnout (i.e. $\bar{T}<1$) over-represents the old and the young rich in the actual electorate while it under-represents the young poor.

The assumption of the over-representation of the old is based on the well-documented positive relationship between age and turnout (Powell 1986; Button 1992; Blais 2000). However the impact of age on participation has recently been found to be nonlinear; the relationship describing a gradually growing mobilization and a soft decline with old age (Blais 2000). Using data on Finland, Denmark and Texas, Bhatti et al (2012) shows that the decline is estimated to occur between 65 and 70, but the turnout of the elderly is on average still higher than for the rest of the population. In this line, Bhatti and Hansen (2012) provide evidence of the sizable difference in turnout to the European Parliament between pre- and post-baby-boomer generations in 9 European countries.

This assumption can also be motivated for the Austrian case used in the empirical analysis. Unfortunately, on the municipal level, it is not possible to obtain data on the actual voter turnout by age group. However, a post-electoral survey conducted at the national level by the European Commission (2009) provides useful information on the turnout by age group in Austria for the European parliament elections in 2009 and for the national (parliamentary) elections in 2008. The results of this survey, exhibited in Table 1, reveal that the turnout of the oldest group (above 55) is significantly higher than the national average turnout.[14] In the following sections, we provide evidence in support of this assumption with individual data on Austrian voters.

Insert Table 1 here

On the other hand the turnout of the young varies according to their income levels. Indeed, a standard assumption in the literature is that abstention is concentrated among lower-class voters. Evidence of the unequal political participation across social status is extensively reviewed by Lijphart (1997). Therefore, being

[14]This pattern is consistent with the 2013 referendum on ending conscription (SORA 2013).

both young and low-class voters, the young poor can reasonably be assumed to have a low turnout. Conversely, as the propensity to turnout is increasing in income, the young rich are assumed to have a high turnout.

Political process. A probabilistic voting model allowing the voting groups to differ in their political participation (Strömberg 2004) provides useful information concerning the equilibrium policy platform concerning the education share in the budget. A basic prediction is that the equilibrium policy gives more weight to the preferences of the group j as its share in the effective electorate increases. Thus the effect of an overall turnout decline on the share of education effectively provided is undetermined as turnout decline works on the equilibrium policy through two opposite forces. On the one hand, it over-represents the old group, opposed to public education. On the other hand, it over-represents the young rich, favorable to education.

However, candidates give more weight to the old's preferences and thus reduce the share of education spending if the overall turnout decline over-represents more the old than the young rich in the effective electorate. The difference in the share of the old and the young rich in the effective electorate is D = αa-(1-α)βa, which amounts to D = a[α (β+1)-1].

Two remarks are in order. First, D is increasing in α, the share of the old in the eligible electorate. Thus, an overall turnout decline gives more weight to the old's preferences as the share of the old in the eligible electorate is increasing. Hence, we deduce:

Proposition 1. *An overall turnout decline results in a lower education share of the budget when the share of the elderly in the eligible electorate is increasing.*

Second, D is positive only if α is superior to 1/(β+1). Thus a turnout decline gives more weight to the old's preferences than the young rich's preferences and thus reduces the education share of the budget only if the share of the elderly in the eligible electorate exceeds a certain threshold. Below this threshold a turnout decline over-represents more the young rich than the old, which results in an increase in education spending. Hence:

Proposition 2. *An overall turnout decline reduces the education share of the budget only if the share of the elderly in the eligible electorate exceeds a certain threshold.*

3 Background and Data

3.1 Institutional Background

Responsibilities of Austrian Municipalities

There are two levels of sub-national government in Austria below the federal State. The nine states, where Vienna is a single municipality city-state, are the intermediate tier of government and the municipalities form the lower tier. In 2010 there were 2,357 municipalities with an average population of 3,520 inhabitants (Statistik Austria 2011a). In 2010, municipal public expenditure in Austria represented more than 10% of total public spending and around 30% of total public education spending in primary, secondary education and kindergarden.

Austrian municipalities are responsible for the provision of a variety of basic public goods and services (General, Education, Social welfare and housing, Streets and traffic, Public and services, Public order and safety, Art and culture, Health, Economic affairs, Financial affairs). Second only to local services (water, sanitation, waste), education expenditures account for roughly 15% of municipal spending in 2010. This comprises spending on primary, secondary, vocational and nursery schools for children below school age. A large part of these expenditures are operating as well as capital expenditures for investment and maintenance of school facilities. The uses range from the maintenance of school buildings and replacing furniture to heating and canteens. Teachers' salaries are not paid by the municipalities but by the states. Similarly, intermediate and higher education is not within the jurisdiction of municipal governments but borne by states and the federal government.

As outlined above, private education at all levels of education has no tradition in Austria and remains of little importance. As a result, municipalities have a quasi

monopoly in providing infant education in Austria and enjoy significant discretionary leeway in provisioning education expenditures. Indeed, the autonomy of local authorities to formulate the school budget is assessed to be very high in Austria, with an index of autonomy of 70 against 28 for the average OECD, according to the 2012 Pisa study. The monopoly of Austrian municipalities, along with the strong autonomy of schools, allow for substantial heterogeneity in education spending across municipalities, as described below.

Pensions in Austria are paid by social security and subsidies from the federal government.[15] However the elderly might benefit directly from a number of policies at the local level such as retirement homes and (health) care facilities. Although a large part of these services are not under the control of a single municipality - e.g. hospitals and care facilities are organized collectively in a region and with the support of the state government - municipalities are free to spend additional resources and initiate complementary programs. For instance municipalities frequently operate smaller health facilities run by doctors in the employment of the municipality or support elderly care at home.

The Funding of Austrian Municipalities

On the financing side, fiscal autonomy in terms of own taxes and independent tax setting is generally low on the municipal level in Austria. The most important sources of finance to Austrian municipalities are shares from the fiscal equalization scheme (33%), local taxes, e.g. on business and property (16.7%) and tariffs for public services (17.4%) in 2010 (Statistik Austria 2011b). Austrian municipalities have little to no influence over grants, which are calculated on the basis of a fiscal equalization scheme and are therefore by and large a function of population and own tax revenues. It is also important to notice that contrary to other countries such as Germany, the equalization scheme does not depend on the number of schools or children in the municipality.

[15] Despite some changes since 2000 towards a hybrid funding system, the pension system in Austria is still largely a Pay-as-you-go system.

Regarding financing, own tax revenues are not easily alterable by local governments. The tax power and tax mix of Austrian municipalities are almost nil and thus one of the very lowest in the OECD. Autonomous taxes as share of GDP and autonomous taxes as share of total tax revenue are 0.3 and 0.8, respectively, according to OECD Fiscal Decentralisation Database. As a consequence, the associated tax rates are either uniform for all municipalities - as is the case for the local share of the payroll tax, the most important source of tax revenues for local governments - or all municipalities are themselves choosing the same tax rate. The latter case applies to the land tax, where 2335 out of 2357 municipalities have adopted the maximum rate. In addition, local governments are quite constrained in setting tax rates, with limiting rules for instance on property tax.

Mandatory voting in Austria

Austria possesses two main types of national elections (presidential and parliamentary) as well as two main types of local/regional elections (state parliament elections and municipal elections). Mandatory voting (MV) was established and subsequently abolished several times since 1929 for the presidential, parliamentary and state parliament elections (hereafter state elections). By levying financial or administrative penalties, MV laws encouraged most of the citizens to go to the polls. While turnout was traditionally high in Austria, the law was mainly implemented to increase democratic legitimacy and to increase female turnout in the wake of the female enfranchisement in 1918. The three types of elections have utilized MV enforced by financial sanctions at different periods. Unlike other cases of MV law in other countries, jurisdiction over voting law has shifted several times between the states and the national level in Austria. This provides significant sub-national variation in the MV laws between the nine states (Upper Austria, Lower Austria, Burgenland, Salzburg, Vienna, Carinthia, Styria, Vorarlberg and Tyrol); some MV laws (either on adoption or abolition) were imposed on the nine Austrian states while others allowed each state to decide. The process is illustrated in Figure A.1 in Appendix.

In 1929 a constitutional amendment gave each state the prerogative to adopt MV for parliamentary and state elections (adopted by Tyrol and Vorarlberg) while it imposed MV to all of the 9 states for presidential elections. In 1934, the fascist party in power abolished the constitution (and its 1929 amendment), which was reinstalled after WWII. As a consequence, MV for presidential elections for the nine states as well as the prerogative of each state to have MV for parliamentary and state elections were restored in 1945. Although parliamentary elections are national elections, the constitution (Article 26/1) granted states from the outset the authority to determine whether to implement MV for national parliamentary elections. As a result, three states (Tyrol, Vorarlberg and Styria) decided in 1949 to implement MV for parliamentary and state elections. A fourth state, Carinthia, joined them in 1986. In 1992, the constitutional court ruled that Article 26/1 was invalid and states no longer had the authority to enforce MV for national parliamentary elections. As a consequence, the four states abruptly ended MV starting with the 1994 parliamentary elections.

Regarding presidential elections, Austria maintained MV for the nine states during a big part of the post-war period. This rule finally phased out in a series of legal steps between 1982 and 2004. MV was imposed to the nine states until 1982, when the decision was devolved to the state level. Although four states (Tyrol, Vorarlberg, Styria and Carinthia) decided to continue to practice MV, the law was eventually abolished in all states by 2004. Regarding state elections, states were still allowed to enforce MV after 1992. However, between 1993 and 2007, these states decided on their own to abolish MV in state elections.

3.2 Data

Our empirical analysis uses data on 2357 Austrian municipalities for the 1990-2010 period. Our dataset combines data from government accounts, population censuses as well as election results. Regarding the municipal expenditure data, it is gathered from government accounts as published by the national Austrian statistics office (Statistik Austria 2011b). Demographic data are obtained from the censuses of

1991, 2001 and 2011 published by the national Austrian statistics office (Statistik Austria 2011b). We interpolate the values between the census dates. Concerning the political variables, the data come from published election results for municipalities, provided by the Austrian states.

The dependent variable in our empirical analysis is public education expenditure (on primary, secondary, vocational and nursery schools) as a share of total expenditure in the municipality. Table 2 gives descriptive statistics for the main variables of our analysis for the 1990-2010 period and for additional political variables for the 1996-2010 period. Average education share of the municipal budget in our main sample is 15% ranging from less than 1% to 86%. A key advantage of our sample is that the education share of the budget varies across municipalities (across-municipality standard deviation of 4.8%) as well as across time (within-municipality standard deviation of 6.4%). Table A.1 in Appendix also shows that despite the common institutional and fiscal setting to each state, there is substantial variation in the education share of the municipal budget within states.

Insert Table 2 here

A variable of main interest in the share of the people aged over 65 in the municipality's eligible electorate, defined as the population aged above 15. The mean value for this variable is 18%, ranging from 6% to 43%. The standard deviation of 3.6% is mainly due to the across-municipality heterogeneity (across-municipality standard deviation of 3.2%) as the elderly are geographically concentrated in the center and the east of Austria and more generally in rural areas (OECD 2009), as shown by the spatial distribution in Figure 1 based on the 2011 census. Due to the ageing process over 20 years, there is also exploitable (albeit to a lesser extent) within-municipality variation (within-municipality standard deviation of 1.7%).

Insert Fig. 1 here

Another important variable is the municipal abstention rate for municipal elections, defined as one minus the participation rate, which is the number of actual

votes divided by the number of eligible voters. The data are available since 1996 for some states (Lower Austria, Stryria and Vorarlberg) and since 1998 for all states, up until the most recent municipal elections held at different dates according to the states. During the period 1996-2010 there are from 2 to 3 municipal elections depending on the state, which provides exploitable variation both between and within municipalities (across-municipality and within-municipality standard deviations of 6.1% and 3.6% respectively). Average abstention rate is rather low (17.45%) with a strong heterogeneity ranging from 1.3% to 55%. The spatial distribution of abstention for the last municipal elections reveals that electoral participation spreads out geographically (see Figure 2). Furthermore abstention is not restricted to differences across states. For instance, it varies from 3.8% to 55% in Lower Austria and from 1.3% to 50.5% in Tyrol, as shown by Table 2.

Insert Fig. 2 here

The analysis also uses demographic variables to control for important supply- and demand-side factors driving the share of education in the budget. Importantly we include the share of the non-working population below age 15, as a proxy for the need in education (Poterba 1996).[16] We also control for the total number of municipality inhabitants as well as the population density. In some specifications we also include fiscal variables measuring the structure of municipality's revenues, likely to affect the budget composition (Fletcher and Kenny 2008). We use data for the receipts from unconditional government grants, tax revenues, debt and revenues from fees and charges. We use also political variables, available only since 1996, such as a dummy variable for left wing municipal councils, the number of political parties in the city council as a proxy for the government political fragmentation and the difference in votes share between the largest party and its closest challenger as a measure of political competition.

As a complement, we also use individual-level data from two waves (1986 and 2003) of the Austrian Social Survey (ASS), a nationally representative survey. This

[16]Our results are not affected if we take another definition such as the share of the population below age 19.

enables us to examine whether abstention and mandatory voting laws over-represent the elderly in the actual electorate. The survey asks respondents questions on demographics (and importantly age and pensioner status), socioeconomic status, education and voting behavior as well as interest in politics. We use especially information on turnout in parliamentary elections (1983 and 2002).[17] Our individual-level analysis also uses information on the individual's interest and involvement in politics with data on party membership, reading newspapers or having a preference or not for a party.

Finally, as our argument is on the age gap in turnout, we use individual data from the ASS to produce a direct measure of the sensitivity of voter turnout to age. The respondents reporting only their states of residence, we can produce such a measure only on the state level and not on the municipal level. Thus we calculate for each state and each wave (1986 and 2003) the correlation between turnout (a dummy for whether the individual turnout at the latest parliamentary election) and the individual age. Table 3 presents this measure of age gap in turnout for each state-wave. First of all, this measure is systematically positive, suggesting that turnout is consistently increasing with voter age. Second, this age gap in turnout substantially increased between 1986 and 2002 in the states that experienced the repeal of MV (Carinthia, Styria, Tyrol and Vorarlberg) while it was rather steady in the other states (except Salzburg that experienced a sharp increase). This is in support of our assumption that the repeal of MV over-represents the elderly in the actual electorate.

Insert Table 3 here

4 Empirical Strategy and Results

The focal point of our analysis is whether a decline in the overall turnout over-represents the elderly and thus reduces education spending. This leads us to test

[17] Note that the type of elections considered here differs from our panel analysis focusing on municipal elections but in the absence of appropriate data on the municipal level, this is a valuable complement to our panel analysis.

proposition 1 predicting that as a municipality is ageing, a turnout decline over-represents more and more the elderly compared to the young rich, and thus reduces education spending. In other words, we expect an heterogenous effect of a turnout decline on education spending with respect to the elderly share of the electorate. To estimate the causal effect of turnout, we exploit the abolition of MV for parliamentary elections as a means to introduce exogenous variation in turnout for local elections. Our strategy is to compare in a difference-in-difference design the share of education spending in municipalities within states with MV and in municipalities within states without MV. We use the fact that four states (Styria, Tyrol, Vorarlberg and Carinthia) were forced by constitutional decision to end MV for parliamentary elections in 1992 while the other four states (Vienna being excluded from our sample) never practiced MV at parliamentary elections and serve as a control group.

Therefore we test the assumption that MV abolition is associated with a lower share of education spending in the municipal budget when the elderly increase as a share of electorate. This relies on the assumption that the MV abolition over-represents the elderly in the electorate as they are less likely to abstain than the rest of the electorate when MV is abolished. In the next section, we provide evidence in this sense.

While presidential and state elections also provide sub-national variation in MV laws, we focus on parliamentary elections for two reasons. First, we assume that MV laws at the most consequential election, i.e. parliamentary election, influence voter turnout at other elections (including municipal elections) through the moral cost associated with law-breaking rather than through financial penalties. Indeed MV laws were mostly non-binding because of different legal means to derogate from the obligation.

Second, as opposed to the parliamentary elections for which abolition was imposed by a constitutional decision, MV abolition in presidential and state elections was decided by each state from 1982 onwards and, thus, was not a random process. It is also important to note that when the constitutional court ruled out the article that abolished MV in 1992, no other concurrent reforms were implemented. As our

empirical strategy comes to estimating the reduced-form effect of MV abolition on the education share of the budget through turnout, this reduces the risk that the decision of the constitutional court could affect the budget composition through other channels than the turnout decline resulting from MV abolition.[18]

Our panel analysis exploits both across- and the within-municipality variation from 1990 to 2010. This leads us to consider from 5 to 6 elections per state, depending on the date of the first municipal election after 1990 and their frequency, both of them varying across states. We estimate a fixed effects model with an interaction between the elderly share of the electorate and a measure of MV abolition using annual data:

$$Y_{i,t} = \beta_0 + \beta_1 OLD_{i,t} + \beta_2 MVA_{s,t} + \beta_3 OLD_{i,t} * MVA_{s,t} + \beta_K X_{i,t} + \beta_4 T_s + \psi_i + \zeta_t + \epsilon_{i,t} \quad (1)$$

with $Y_{i,t}$ the share of education spending in the budget of municipality i in year t, $OLD_{i,t}$ the share of the people over 65 in the electorate, $MVA_{s,t}$ a dummy capturing the abolition of MV for parliamentary elections in state s in year t. More precisely it is coded 1 from the second year of the municipal electoral term following compulsory voting abolition for parliamentary elections in 1992.[19] As the new municipal governments were elected in the course of a given year, we consider that they could start to implement their platforms from the second year of their term. $X_{i,t}$ is a vector of time-varying controls at the municipal level, measured either in the last election year or interpolated between censuses. This vector includes demographic variables such as the share of the population below age 15, the total number of inhabitants, population density, and in some specifications a set of fiscal controls including the log of government grants, the log of tax revenues, the log of revenues from the fees and charge and the log of debt. ψ_i and ζ_t are municipality and year fixed effects, respectively. T_s is a state specific linear time trend, approximating

[18] Note that we can only estimate the reduced form effect of MV abolition on education through abstention and not the two stages as abstention data are available only after all states abolished MV.

[19] The first municipal election after MV abolition in 1992 was held in 1992 in Tyrol, in 1995 in Styria and Vorarlberg and in 1997 in Carinthia.

state-specific evolutions and thus ensuring that the common trend assumption is fulfilled. Regressions are estimated using robust standard errors clustered at the state level. The main parameter of interest is the coefficient on the interaction term, β_3, which is predicted to be negative as the turnout decline subsequent to MV abolition is supposed to result in a lower education share of the budget when the elderly increases as a share of electorate.[20]

In addition, we provide more direct evidence of the impact of the age gap in turnout on education spending. For that, we use the above mentioned measure of sensitivity of turnout to age, aggregated on the state level for the two waves of the ASS, 1986 and 2003. We test the assumption that municipalities in states with an increasing sensitivity of turnout to age (i.e. higher age gap in turnout) experience a decrease in the education share of the municipal budget. This lead us to estimate the first-difference model:

$$\Delta Y_{i,s} = \beta_1 \Delta AG_s + \beta_K \Delta X_{i,s} + \epsilon_{i,s} \tag{2}$$

with $\Delta Y_{i,s}$ is the 1990-2002 change in the share of education spending in the budget of municipality i in state s, ΔAG_s the 1986-2002 change in the age gap in voter turnout in state s and $\Delta X_{i,s}$ the 1990-2002 change in a vector of controls at the municipal level (including demographic and fiscal variables described above). The error terms, $\epsilon_{i,s}$, are clustered at the state level. Because we estimate Eq. (2) in first differences, time-invariant variables such as geographic characteristics of municipalities that affect both the age gap in turnout and education spending are differenced out. Stated in another way, Eq. (2) has an analogous level-form representation that includes municipality fixed effects.

[20]We consider the elderly share as exogenous but we may have a problem of endogeneity if the elderly move to municipalities providing low education, in accord with their preferences. However, the elderly's mobility is very limited in Austria. For instance, in 2013, overhaul relocations across municipality borders amounted to 3.9 % of Austria's population (Statistik Austria 2014). Among these 3.9 %, the age group over 55, which represents 30 % in the overall population, only accounted for 9.6% of the total mobile population.

4.1 Main Results

Table 4 shows the effects of CV abolition and the elderly share of the population on the education share of the budget within and across Austrian municipalities in the 1990-2010 period. Column (1) reports the specification where municipal education expenditure as a share of total expenditure is regressed on MV abolition, the elderly share of the eligible electorate, state fixed effects, year fixed effects, and state-specific linear trends and demographic controls. The estimated coefficient of MVA is positive and reaches the 5% significance level, as opposed to HLL who found no significant effect of MV laws for Parliamentary elections on education expenditure at the state level for the 1980-2012 period.[21]

Quantitatively the effect is not sizable. Abolishing MV is estimated to result in an eventual increase in the share of education spending by around 3.6% of the municipal budget. This positive impact of MVA for the average elderly share (18%) suggests, according to our theoretical framework, that for that particular demographic composition, MVA over-represents more the young rich than the old in the effective electorate, which translates into more education spending. Note also that an increase in the elderly share is estimated to decrease the education share of the municipal budget, although the coefficient is significant at only 10%.

Insert Table 4 here

Then we estimate equation (1) to examine the heterogenous effect of MV abolition depending on the elderly share of the municipality. Column (2) presents the model including the interaction between MV abolition and the elderly share along with the demographic controls. As predicted by proposition 1, we find a significant and negative coefficient on the interaction term. This heterogenous effect is robust when controlling for the structure of the municipality's budget, as shown in column (3) and which is our baseline specification. Using the coefficient estimates of column

[21] Our specification differs from HLL (Table A.5, Panel C) in that we look at a shorter time period focusing on the only change in CV law unrelated to any state specific characteristics (the 1992 repeal) and more importantly in that we look at municipalities instead of states. However unlike HLL we do not control for the unemployment rate not available at the municipal level for our observation period.

(3), in municipalities with the minimum elderly share of our sample (6%), MVA increases the education share of the budget by 19%. Conversely, in municipalities with the maximum elderly share (43%), MVA reduces the education share by 29%.

This supports proposition 2 predicting that a turnout decline reduces the education share only if the share of the elderly exceeds a certain threshold. Our result supports that the turnout decline subsequent to MVA reduces the education share only when the elderly exceeds the threshold of 20%, according to the coefficients of column (3). This explains why we found that the effect of MVA is quantitatively marginal for the average elderly share (18%), very close to this threshold. This can also reconcile our results with HLL who did not find any fiscal effect of MVA in spite of significant effects on the composition of the electorate.

Our main result of a heterogeneous effect of MVA is robust to alternative specifications, such as averaging the annual data at the electoral term level (column 4), averaging the municipal data at the state level (column 5) or an alternative dependent variable: the log of municipal education expenditure per pupil (column 6). Regarding the point estimates of column (6), the heterogeneous effect is quantitatively very close to the one observed with our main dependent variable. For the average, minimum and maximum values of the elderly share, the estimated effects of MVA are respectively 5%, 17% and -0.22% and the threshold of elderly share above which the effect of MVA turns negative is estimated at 22%.

Our main result is also robust when using alternative definitions of MVA, as shown in Appendix Table A.2. In column (1), we replicate our baseline specification by considering that MVA for parliamentary election in 1992 influenced turnout in the municipal elections of 1998 in Tyrol and not immediately that of 1992 (as defined in our main MVA variable). In column (2), we consider that MV has never been effective for the state of Carinthia as MV was implemented only in 1981 in this state (as opposed to 1949 for Styria, Vorarlberg and Tyrol) and may have had a negligible impact on turnout at local elections. We also consider MV laws for the other types of election. We replicate our baseline estimation but considering MVA for Presidential elections (column 3) and for State elections (column 4) instead of

Parliamentary elections. It turns out that MVA for these other elections are not related to municipal education spending, which is consistent with our assumption that it is MV laws for the most important elections, i.e. parliamentary elections, that influence turnout at local elections.

4.2 Mechanisms: Panel Data

Our empirical strategy comes to estimate the reduced form (heterogeneous) effect of MVA on education spending through voter turnout. We cannot estimate the two stages in 2SLS because of the limited availability of the abstention data. However we can still estimate the relationship between abstention and education spending on a reduced period, 1996-2010, instead of 1990-2010, but without instrumenting abstention. This provides a more direct test of proposition 1 but which is also more subject to endogeneity concerns. Thus, we estimate a model with an interaction term between the elderly share of the electorate and the municipal abstention rate for the latest municipal elections using annual data between 1996 and 2010.[22] The specification includes demographic, fiscal controls, an election years dummy, municipality and year fixed effects, and a state specific time trend.

Insert Table 5 here

Column (1) of Table 5 first shows that for the average elderly share, the estimated coefficient of abstention is positive, as for the main impact of MVA, but not statistically significant. The estimation with the interaction term displayed in column (2) shows that the interaction is negative as predicted by proposition 1. If interpreted as a causal mechanism, then this suggests that for the minimum elderly share for the 1996-2010 sample (8%), a one percentage point increase in abstention results in an 0.7% increase in the education share, while for the maximum elderly share (43%), a one percentage point increase in abstention results in an 1% reduction of the education share. The threshold above which the the impact of abstention be-

[22] By including both the elderly share and the abstention rate, a problem of multicollinearity may arise. A closer look at the data shows that the correlation between these two variables is positive but reasonably low.

comes negative is reached when the elderly represent 21% of the eligible electorate, which is very consistent with the one found in previous estimations. If we take these coefficient estimates at face value, this means that MVA should have decreased the overall turnout by around 27-28 percentage points so that MVA produced the observed effects on education spending. Albeit not totally inconsistent, this is a bit high compared to HLL who found that CV (introduction) increased turnout for local elections by 17.2 percentage points.

We should also keep in mind that a turnout decline is also known to over-represent the rich in the electorate. Therefore, If a higher share of elderly in the municipality is correlated with higher municipal income levels, the observed heterogeneous effect of MVA according to the elderly share could merely reflect an heterogeneous effect of MVA according to income. We explore this possibility. In the absence of time-varying income data all along the 1990-2010 period, we use the (time-invariant) average municipal income in 2010. First of all, the elderly share and the average income in 2010 are not correlated (-0.04). This is in support that the observed heterogeneous effect according to the elderly share is indeed due to the over-representation of the elderly.

Second, we estimate a model including, along with our main interaction between MVA and the elderly share, an interaction between MVA and the municipal income level as of 2010. This model takes into account the possibility that the impact of MVA can differ not only according to the elderly share but also to the municipal income level. Table 6 shows that the interaction between MVA and the average municipal income is positive and significant at 10%, which is satisfactory if we keep in mind that we use a time-invariant income measure. This suggests that the positive impact of a turnout decline on the education share of the budget magnifies when the municipality gets richer. This provides further support to our theoretical framework predicting that when the young rich increases as the share of the electorate, a turnout decline will over-represent more the pro-education young rich than the anti-education elderly, resulting in a higher education share of the budget. Importantly, the main interaction between MVA and the elderly share survives the inclusion of

this alternative interaction. The fact that the interactions work in opposite directions support the general hypothesis of this paper that turnout decline works on two opposite channels on education spending, the class bias and the generational bais in turnout.

Insert Table 6 here

4.3 Mechanisms: Individual Level Data

Both our theoretical and empirical analyses rely on the central assumption that on average the elderly turnout more than the rest of the electorate and are thus over-represented when the overall turnout rate declines. While the positive relationship between age and turnout is documented in the literature, the relationship is sometimes considered as non-linear, first increasing and then decreasing with old age. In this perspective, we provide evidence showing that the elderly turnout more and are in general more involved in politics than the rest of the electorate in spite of the decline in turnout in old age. As in HLL, we use individual data from the ASS on political involvement as dependent variables. Results are presented in Table 7. They show that turnout and interest in politics measured as party membership, reading newspapers and having a preference for a party do increase with voter age. In addition the probability of turnout and of being member of a party is higher for pensioners. Quantitatively, pensioners are 7.3 percentage points more likely to turnout that the rest of the electorate.

Insert Table 7 here

Our difference-in-difference strategy relies on the central assumption that the elderly are less sensitive to CV abolition than the rest of the electorate and are thus over-represented when CV is abolished. Ferwerda (1994) provides evidence in this sense showing that municipalities with greater numbers of retired voters are the least likely to experience large turnout declines in parliamentary elections after MV abolition in 1992. We provide further evidence in support of this assumption.

HLL use individual data from two rounds of the ASS (1986 and 2003) to examine which type of voters are more affected by a change in CV laws. They show that the impacts of CV are larger among females, those with low education, low income, people who are not interested in politics. We use HLL's empirical design to examine whether the elderly are less affected by CVA than younger voters. We have information on turnout in the previous parliamentary election (1983 and 2002), and exploit within and between state variation in CV introduced by the federal abolition of CV between the surveys (in 1992). While no states had CV in the 2002 parliamentary election, 3 states (Styria, Tyrol, and Vorarlberg) had it in the 1983 elections. Our dependent variable is whether an individual voted in the previous parliamentary election, and our main regressor is a dummy for whether compulsory voting was abolished in that election in the state where the respondent lives. We use HLL's specification controlling for a set of individual covariates, as well as state and survey year fixed effects. To examine whether old voters are less likely to respond to CV than younger voters, we interact CVA with two kinds of variables related to the individual's age.

Table 8 shows separate regressions. Column (1) first replicates HLL's estimation (Table 6 Panel 1) showing that on average CVA decreases turnout by 5.5 percentage points. Column (2) shows that while CVA has no significant effect on pensioner, non-pensioners are 8 percentage points less likely to vote when facing MVA. Column (3) shows more specifically that this age gap in turnout is due to voters in the lowest age quartile (i.e. below 32 years old) who are the only age group to respond to CVA. Those in the lowest age quartile are 13.7 percentage points less likely to turnout when facing MVA. Note that regressions in column (2) and (3) do not include controls for the individual's interest in politics as it is supposed to be the channel through which age affects turnout. This set of estimates provide suggestive evidence that the repeal of CV over-represents the elderly, a group with specific interests, likely tot influence policy outcomes.

Insert Table 8 here

4.4 Exclusion Restriction

Our exclusion restriction assumption is that MVA has an heterogeneous effect on education spending only through the over-representation of the elderly associated with the turnout decline subsequent to MVA. Here we provide a series of tests suggesting that this channel does explain the observed heterogeneous effect while other concurrent explanations do not.

So far we have provided evidence supporting the hypothesis that reduced form effect of MVA on education spending is indeed mediated by a decline in the overall turnout. However, the turnout decline subsequent to MVA can have other compositional effects on the electorate, likely to impact education spending. For instance, if those who abstain because of MVA are on average more leftwing, as shown by Lijphart (1997), there will be a reduction in leftwing votes, which can affect the composition of the municipal budget. On the other hand, if abstainers because of MVA would have voted for the leading parties and candidates, their absence at the pols can reduce the margin of victory of the winners, thus increasing party competition. Increased competition can in turn affect the budget for instance by fostering public goods at the expenses of the rent. The preferences of abstainers for the favorite can also decrease the electoral success of other parties, thus reducing the number of (especially minor) parties in city councils. This can impact the provision of public education as the government fragmentation is known to affect the budget.

HLL test the impact of MV laws on these different outcomes. They find that changes in MV laws did influence turnout in the Austrian States but not the left/right votes share, the number of parties in the government and the party competition. Conversely Ferwerda (2014) find that MV laws modestly affect the votes share for each party for parliamentary elections. This leads us to ask whether the observed heterogenous effect of MVA on education is not channeled by these alternative mechanisms.

As political variables are available only from 1996 onwards, we are not able to examine the effect of MVA on these variables. However we can still analyze the (het-

erogenous) effect of abstention on these variables for the 1996-2010 period. However we should be cautious in interpreting the estimated coefficients as causal effects as both the abstention measure and the political variables are election outcomes. We replicate our specification including the interaction between abstention and the elderly share but with alternative dependent variables: a dummy for leftwing city council, the number of parties in the city council, the margin of victory of the first party.

Results are presented in Table 9. As expected increased abstention is associated with less leftwing councils, less parties in the municipal government but surprisingly with higher margin of victory, i.e. less party competition. Note that the latter relationship is probably due to reverse causality as voter turnout is known to increase with electoral stakes (perceived as high by voters when party competition is high). More importantly, we observe no evidence of an heterogenous effect of abstention with respect to the elderly share on these political outcomes. This challenges the hypothesis that our main result is due the effect of turnout on other channels than the over-representation of the elderly.

Insert Table 9 here

Our argument focuses on the provision of public education. However MVA and the elderly can actually affect other fiscal outcomes and thus incidentally the education share of the budget. Indeed, a turnout decline (subsequent to MVA) as well the dependency ratio are known to possibly affect fiscal outcomes such as the tax rate or the size of total expenditure. In such a case, the heterogenous effect of MVA on education could merely result from the heterogenous effect of MVA on other fiscal outcomes. This concern is mitigated by the fact that Austrian municipalities have a low autonomy regarding taxation and other receipts while they do have room regarding their budget composition. In addition, we remind that our baseline specification controls for the composition of the municipality revenue.

Nevertheless, we still address this issue in Table 10. We reproduce our baseline specification by replacing the education share by other fiscal outcomes as dependent

variables: total municipal expenditures per capita, total municipal tax revenues per capita, total municipal revenues (including taxes and other revenues) per capita. While CVA seems to have positively affected these outcomes, there is no evidence of a heterogeneous effect with respect to the elderly as the interaction term never reaches statistical significance. In Table A.3 in Appendix, we replicate this exercice but with an interaction between the abstention rate and the elderly share. This provides the same conclusion. Therefore, the electoral over-representation of the elderly does decrease education spending but not the size of public expenditure or receipts in general.

Insert Table 10 here

4.5 Parallel Trend Assumption

Our difference-in-difference strategy relies on the assumption that, conditional on the set of observables and fixed effects, the trends in turnout and education expenditures in municipalities within CV states were the same until abolition as in municipalities within voluntary voting states, i.e. they have parallel trends in the pre-treatment period. We recall that we focus on a change in MV laws issued at the federal and not the state level, which mitigates the risk that CVA is correlated with unobserved state characteristics and that the parallel trend assumption is violated. However, the adoption of MV for parliamentary elections by four states between 1949 and 1983 was certainly not a random process. One concern would be that some specific factors to these four states may have led them to adopt MV and could incidentally also explain the heterogeneity in the observed relationship between MVA and the education share of the budget.

If such were the case, as these specific factors should pre-date the abolition of MV in 1992, we should observe an heterogeneous effect of MVA not only at the date of abolition but also in the following years or electoral periods. This pattern could also be observed if the authorities anticipate the repeal of CV and alter the level or composition of public spending before the law change.

To alleviate this concern, we estimate a model where in addition to the interaction term between the elderly share and our main MVA variable considering that MVA is effective from the first municipal election after 1992, we include another interaction between the elderly share and an MVA variable considering that MVA is effective from the second municipal election after 1992. The estimation results are presented in Table 11. The interaction with MVA for the first election is significant while the interaction with MVA for the second election does not reach statistical significance. Thus the heterogenous effect of the elderly can be observed only when MV has been abolished and not in the pre-treatment period.

Insert Table 11 here

4.6 First Difference Estimations

As a complement of our main strategy, we provide more direct evidence of the negative effect of the age gap in turnout on the education share of the budget. We estimate equation (2) testing the assumption that an increasing sensitivity of turnout to age (i.e. higher age gap in turnout) reduces the education share of the municipal budget. Results are reported in Table 12.

Insert Table 12 here

We first estimate the first difference model between 1990 and 2010 without controls. Column (1) shows that estimated coefficient of the variation in the age gap in turnout is negative and significant at 1%. This is more than satisfactory given that we use a crude measure of the age gap in turnout aggregated at the state level and based on a limited sample of individuals in each state. When including demographic and fiscal controls varying at the municipal level, we observe that the magnitude of the coefficient is slightly reduced but still significant at 10%. The impact seems to be quantitatively sizable, even though it cannot be taken at face value because of the crudeness of our measure of age gap in turnout. For instance, the estimated coefficients of column (2) suggests that the highest increase in the age turnout gap

between 1990 and 2010 of our sample (i.e. a increase by 24 percentage points in Tyrol) is associated with a sharp decrease in the education share of the budget which is divided by five. This provides further support to the hypothesis that a turnout decline decreases education spending through the over-representation of the elderly in the electorate.

5 Conclusion

There is a common concern that turnout declines, being disproportionally concentrated on lower-class citizens, put them off participating in the process of democratic decision-making. This results in a class bias in the redistribution process disadvantaging lower-class citizens. This paper argues that turnout declines, being concentrated on younger voters, can also result in a generational bias in redistribution disadvantaging younger generations. In the specific context of the Austrian municipalities, the class bias and the generational bias in turnout can work on public education spending as two opposite forces. On the one hand, the class bias over-represents the pro-education young rich in the electorate and thus increase education spending. On the other hand, the generational bias over-represents the anti-education elderly and thus reduces education spending. The coexistence of these two forces are relevant policy determinants worth of further exploration. They can explain why electoral variation is voter turnout is often empirically found to be not related with different measures of public spending.

Our empirical work exploits the repeal of mandatory voting for parliamentary election in 1992 in some Austrian states as a exogenous source of variation in voter turnout at local elections. Using panel data on Austrian municipalities for the 1990-2010 period, we find that when the elderly do not exceed 20% of the municipal population, a exogenous decline in overall turnout mainly exacerbates the class bias in turnout and thus increases the education share of municipal budget, holding the need in education constant. Conversely, below this threshold, a turnout decline mainly over-represents the elderly in the actual electorate and thus reduces the edu-

cation share of the budget. During our sample period 1990-2010, only one quarter of the Austrian municipalities were above the threshold, but because of the population ageing, the half of the municipalities exceeded this threshold in 2010. This suggests that, because of population ageing, turnout decline will increasingly over-represent the elderly in the electorate and thus decrease education spending. Moreover, this tendency will be reinforced by the fact that the generational gap in turnout seems to be widening because of the declining turnout of the young. Indeed, according to Eurobarometer, the percentage of Europeans aged 15-30 who voted in an election plummeted from 80% in 2011, to 73% in 2013, and to 63% in 2015.

The empirical evidence can be extended in several directions and the theoretical mechanisms could be investigated more thoroughly. Future empirical research might seek to investigate the role of turnout decline in determining other public policies than public education spending, especially those beneficiary to the elderly. This requires sufficient disaggregated data on the budget composition, which is lacking in our dataset. For instance, our dataset does not allow to distinguish the share of health spending going to the elderly and to the young. Moreover, the fiscal autonomy regarding health spending is limited at the Austrian local level. Other institutional framework with more autonomy in the budget composition are needed for such investigations. Moreover, more accurate information on the sensitivity of turnout to income and to age would enable a better understanding of the relative strength of the class bias and the generational bias of turnout.

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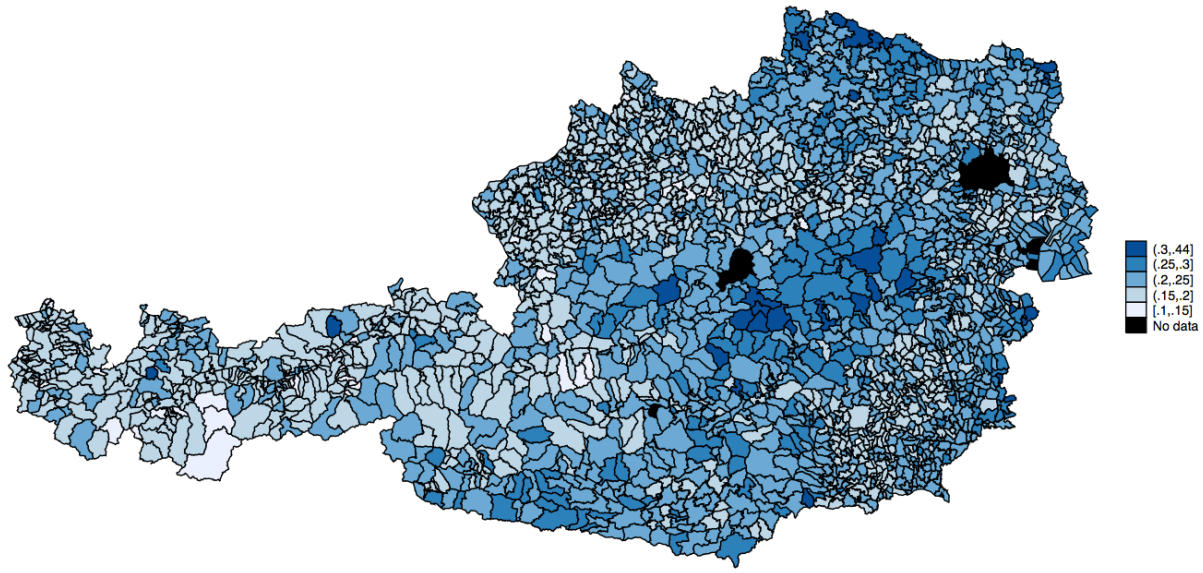

Figure 1. Geographical distribution of the share of population above 65 in total population

Notes: These figures depict the share of the population above 65 as a percentage of the total population in Austrian municipalities in the census year 2011.

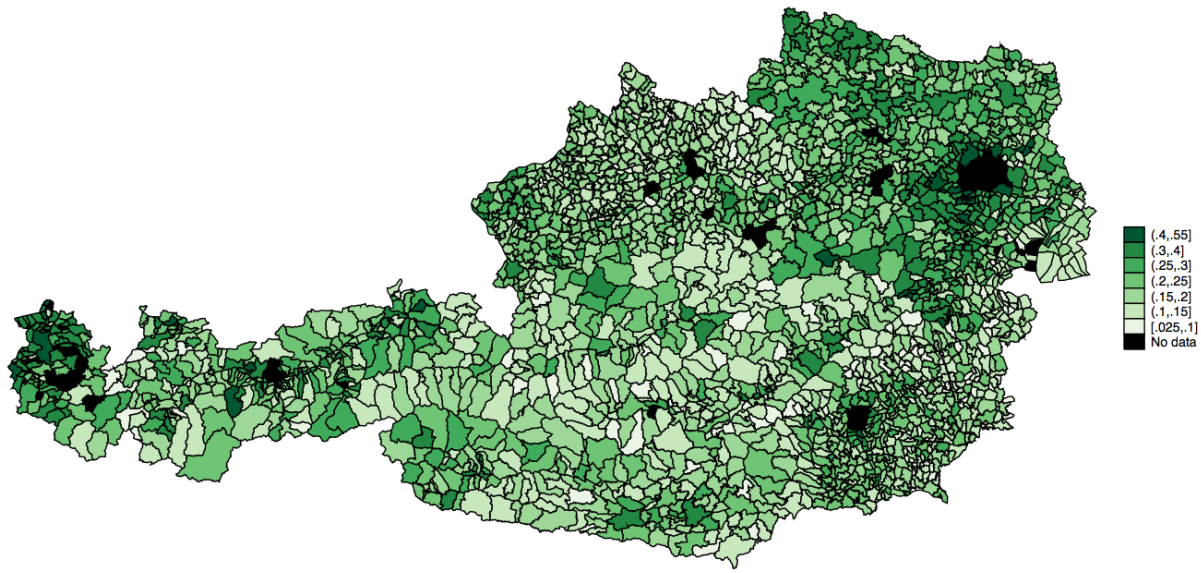

Figure 2. Geographical distribution of the abstention rates in municipal elections

Notes: These figures depict the rate of abstention (defined as one minus the participation rate, i.e. the number of actual votes divided by the number of eligible voters) in municipal elections held in 2004 (Tyrol), 2005 (Lower Austria, Styria, Vorarlberg), 2007 (Burgenland), and 2009 (Carinthia, Upper Austria, Salzburg).

	16 - 24	25 - 39	40 - 54	55+	Total average
European Election (2009)	36%	44%	47%	51%	46%
Last National Election (2008)	53%	66%	72%	84%	72%

Table 1. Voter Turnout by age group EUROSTAT

Notes: Post-electoral surveys conducted by the European Commission (European Commission 2009)

	Obs.	Mean	Min	Max	Std. dev.		
					overall	between	within
Panel A: 1990-2010							
Fiscal variables							
Education share of the budget	49289	0.15	0.00	0.86	0.08	0.05	0.06
Total Expenditure per cap.	49290	1'811	203	26'287	939	674	654
Tax revenues per cap.	49289	254	6	4'896	227	209	87
Total fiscal revenues per cap.	49290	1'837	195	27'972	937	675	649
Demographic variables							
Electorate share aged 65+	49415	0.18	0.06	0.43	0.04	0.03	0.02
Population share aged 15-	49451	0.18	0.06	0.31	0.03	0.02	0.02
Total number of inhabitants	49451	0.27	0.00	25.99	0.83	0.83	0.03
Population density	48569	0.01	0.00	0.49	0.02	0.02	0.00
Political variables							
MV abolition	50077	0.88	0.00	1.00	0.32	0.14	0.29
Panel B: 1996-2010							
Political variables							
Abstention	32178	0.17	0.01	0.55	0.07	0.06	0.04
Leftwing council	32178	0.26	0.00	1.00	0.37	0.27	0.26
Number of parties	32178	3.02	1.00	9.00	0.96	0.87	0.43
Margin of victory	32178	5.97	0.00	24.00	3.94	3.58	1.59

Table 2. Summary Statistics

Year	Burgenland	Carinthia	Lower Austria	Upper Austria	Salzburg	Styria	Tyrol	Vorarlberg
1986	0.15	0.10	0.24	0.07	0.06	0.07	0.06	0.11
2002	0.14	0.31	0.22	0.01	0.25	0.28	0.30	0.17

Table 3. Age Gap in Turnout by State

Notes: Own calculation based on individual-level data from the Austrian Social Survey (1986 and 2003)

	Education share of the budget					Education per pupil
	(1)	(2)	(3)	(4)	(5)	(6)
Compulsory voting abolition	0.0361**	0.187***	0.266***	0.174**	1.017***	0.239***
	(0.0171)	(0.0672)	(0.0659)	(0.0835)	(0.259)	(0.0630)
Electorate share aged 65+	-0.616*	0.216	0.334	0.0331	13.52	1.352***
	(0.369)	(0.512)	(0.495)	(0.630)	(7.273)	(0.472)
Interaction		-0.935**	-1.293***	-1.090**	-6.034***	-1.066***
		(0.393)	(0.387)	(0.522)	(1.431)	(0.370)
Demographic controls	X	X	X	X	X	X
Fiscal controls			X			
Municipality FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
State trend	X	X	X	X	X	X
Observation unit	year-municip.	year-municip.	year-municip.	term-municip.	year-state	year-municip.
N	48,414	48,414	46,905	9,697	168	48,414
R^2	0.070	0.070	0.108	0.107	0.759	0.422

Table 4. Compulsory Voting Abolition and Education Spending - Panel 1990-2010

Notes: Observation unit: municipality-year in columns (1), (2), (3), (6) for all the years from 1990-2010; municipality-electoral term in column (4), state-year in in column (5). Dependent variables: Education spending as a percentage of total municipal spending (in logs) in columns (1)-(5) and in per pupil logs in column (6). Independent variables: *Compulsory voting abolition* = dummy coded 1 from the second year of the municipal electoral term following compulsory voting abolition for parliamentary elections; *Electorate share aged 65+* = share of people aged over 65 in municipality's electorate; (unreported) *Demographic controls*: share of population below age 15, total number of inhabitants and population density; (unreported) *Fiscal controls* (in logs)*:* government grants, tax revenues, revenues from the fees and charge and debt. Columns (1), (2), (3), (6) include municipality fixed effects, year fixed effects, and state-specific linear trends (at the year level). Column (4) includes municipality fixed effects, term fixed effects, and state-specific linear trends (at the term level). Column (5) includes state fixed effects, year fixed effects, and state-specific linear trends (at the year level). Standard errors clustered by state in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	Education share of the budget	
	(1)	(2)
Abstention	0.128	1.065**
	(0.123)	(0.478)
Electorate share aged 65+	-1.030**	-0.0728
	(0.462)	(0.669)
Interaction		-4.960**
		(2.526)
Demographic controls	X	X
Fiscal controls	X	X
Municipality FE	X	X
Year FE	X	X
State trend	X	X
N	30,806	30,806
R^2	0.128	0.128

Table 5. Abstention and Education Spending - Panel 1996-2010

Notes: Observation unit: municipality-year for all the years from 1996-2010. Dependent variables: Yearly education spending as a percentage of total municipal spending (in logs). Independent variables: *Abstention* = abstention rate for the latest municipal elections; *Electorate share aged 65+* = share of people aged over 65 in municipality's electorate. All regressions include municipality fixed effects, year fixed effects, state-specific linear trends (at the year level) and unreported demographic and fiscal controls. Standard errors clustered by state in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	Education share of the budget
Compulsory voting abolition	0.0590
	(0.140)
Electorate share aged 65+	0.315
	(0.494)
Compulsory voting abolition* Electorate share aged 65+	-1.256***
	(0.386)
Compulsory voting abolition* Income per cap.	1.06e-05*
	(6.42e-06)
Demographic controls	X
Fiscal controls	X
Municipality FE	X
Year FE	X
State trend	X
N	46,905
R^2	0.108

Table 6. Robustness: Additional Interaction - Panel 1990-2010

Notes: Observation unit: municipality-year for all the years from 1990-2010. Dependent variables: Yearly education spending as a percentage of total municipal spending (in logs). Independent variables: *Compulsory voting abolition* = dummy coded 1 from the second year of the municipal electoral term following compulsory voting abolition for parliamentary elections; *Electorate share aged 65+* = share of people aged over 65 in municipality's electorate; *Income per cap.* = Average municipal income per capita logs in 2010. All regressions include municipality fixed effects, year fixed effects, state-specific linear trends (at the year level), unreported demographic and fiscal controls. Standard errors clustered by state in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	Turnout in Last Parliamentary Elections		
	(1)	(2)	(3)
Compulsory voting abolition	-0.0548*		
	(0.0279)		
Non-pensioner*Compulsory voting abolition		-0.0856*	
		(0.0390)	
Pensioner*Compulsory voting abolition		-0.0627	
		(0.0361)	
Age_Q1*Compulsory voting abolition			-0.137**
			(0.0438)
Age_Q2*Compulsory voting abolition			-0.0544
			(0.0335)
Age_Q3*Compulsory voting abolition			-0.0180
			(0.0280)
Age_Q4*Compulsory voting abolition			-0.0557
			(0.0425)
Controls	X	X	X
N	3,369	3,369	3,369
R^2	0.174	0.043	0.078

Table 7. Individual-level Impact of Compulsory Voting on Turnout: Heterogeneity by Age

Notes: Observation unit: an individual, and the sample includes all individuals in the 1986 and 2003 Austrian Social Survey who reported whether they voted in the last *parliamentary* elections (1983 and 2002) and were of voting age. Except for column (1) replicating HLL, the coefficients shown are interactions of Compulsory voting abolition with individual characteristics. Dependent variable: dummy for whether the individual voted in the previous parliamentary elections. Independent variables: *Compulsory voting abolition* = dummy for whether voting compulsory was abolished for that election in the individual's state of residence; *Pensioner* (*Non-pensioner*) = dummy for whether the individual is (not) pensioner; *Age_Qi* = dummy for whether the individual belongs to the age quartile *i*. All regressions include baseline controls for gender, educational attainment, parents' education, household size, community size, state fixed effects, and survey year fixed effects. In addition, regression 1 controls for age, age squared, working status, self-reported political preference, party membership, being informed, interest in politics. Standard errors clustered by state in parentheses, and cluster-robust wild-bootstrap p-values in square brackets. * significant at 10%; ** significant at 5%; *** significant at 1%

	Turnout in last Parliamentary elections		Party Membership		Reads Newspaper		No Party Preference	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Age	0.00388***		0.00116**		0.00148**		-0.00174**	
	(0.000526)		(0.000461)		(0.000456)		(0.000720)	
Pensioner		0.0732***		0.0408***		0.0101		-0.0496
		(0.0164)		(0.0110)		(0.0242)		(0.0313)
Controls	X	X	X	X	X	X	X	X
N	3,369	3,369	3,369	3,369	3,369	3,369	3,369	3,369
R^2	0.069	0.046	0.087	0.086	0.038	0.036	0.068	0.067

Table 8. Individual-level Impact of Age on Political Involvement

Notes: Observation unit: an individual, and the sample includes all individuals in the 1986 and 2003 Austrian Social Survey who reported whether they voted in the last *parliamentary* elections (1983 and 2002) and were of voting age. Dependent variable: dummy for whether the individual voted in the previous parliamentary elections in column (1); whether the individual is a member of a political party in column (2); whether the individual regularly reads the newspaper in column (3); whether the individual has no party preferences. Independent variables: *Age* = Age of the individual; *Pensioner* = dummy for whether the individual is pensioner. All regressions include baseline controls for gender, educational attainment, parents' education, household size, community size, state fixed effects, and survey year fixed effects. Standard errors clustered by state in parentheses, and cluster-robust wild-bootstrap p-values in square brackets. * significant at 10%; ** significant at 5%; *** significant at 1%

	Leftwing council	Number of parties	Margin of victory
	(1)	(2)	(3)
Abstention	-0.129*	-2.273***	9.599***
	(0.0715)	(0.274)	(1.349)
Electorate share aged 65+	0.0448	-0.873	2.110
	(0.325)	(0.799)	(3.264)
Interaction	-1.146	0.459	-16.74
	(1.430)	(4.969)	(21.53)
Demographic controls	X	X	X
Fiscal controls	X	X	X
Municipality FE	X	X	X
Year FE	X	X	X
State trend	X	X	X
N	30,808	30,808	30,808
R^2	0.012	0.139	0.042

Table 9. Abstention and Political Outcomes - Panel 1996-2010

Notes: Observation unit: municipality-year for all the years from 1996-2010. Dependent variables: *Leftwing council* = Dummy for left-wing (SPÖ, KPÖ) municipal councils; *Number of parties* = Number of parties in the municipal councils; *Margin of victory* = the difference in vote shares between the highest-ranking party and the runner-up for the latest municipal election. Independent variables: *Abstention* = abstention rate for the latest municipal elections; *Electorate share aged 65+* = share of people aged over 65 in municipality's electorate. All regressions include municipality fixed effects, year fixed effects, state-specific linear trends (at the year level), unreported demographic and fiscal controls. Standard errors clustered by state in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	Total expend. per cap.	Taxes per cap.	Total revenues per cap.
	(1)	(2)	(3)
Compulsory voting abolition	0.0259**	0.0857***	0.0351***
	(0.0110)	(0.0133)	(0.0109)
Electorate share aged 65+	1.059***	-0.0516	1.053***
	(0.312)	(0.415)	(0.309)
Interaction	-0.335	-0.330	-0.335
	(0.245)	(0.307)	(0.242)
Demographic controls	X	X	X
Fiscal controls			
Municipality FE	X	X	X
Year FE	X	X	X
State trend	X	X	X
N	48,420	48,419	48,420
R^2	0.440	0.212	0.406

Table 10. Compulsory Voting Abolition and Fiscal Outcomes - Panel 1990-2010

Notes: Observation unit: municipality-year for all the years from 1990-2010. Dependent variables: *Total expend. per cap.* = Yearly total municipal spending per capita logs; *Taxes per cap.* = Yearly total municipal taxes per capita logs; *Total revenues per cap.* = Yearly total municipal revenues (from taxes, government grants and fees/charges) per capita logs. Independent variables: *Compulsory voting abolition* = dummy coded 1 from the second year of the municipal electoral term following compulsory voting abolition for parliamentary elections; *Electorate share aged 65+* = share of people aged over 65 in municipality's electorate. All regressions include municipality fixed effects, year fixed effects, state-specific linear trends (at the year level) and unreported demographic controls. Standard errors clustered by state in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	Education share of the budget
Compulsory voting abolition in t * Electorate share aged 65+	-1.267***
	(0.393)
Compulsory voting abolition in t+1 * Electorate share aged 65+	-0.0760
	(0.340)
Demographic controls	X
Fiscal controls	X
Municipality FE	X
Year FE	X
State trend	X
N	46,905
R^2	0.108

Table 11. Placebo test on the date of Abolition of Compulsory Voting - Panel 1990-2010

Notes: Observation unit: municipality-year for all the years from 1990-2010. Dependent variables: Yearly education spending as a percentage of total municipal spending (in logs). The coefficients shown are interactions of the share of people aged over 65 in municipality's electorate with *Compulsory voting abolition in t* = a dummy coded 1 from the first municipal electoral term following compulsory voting abolition for parliamentary elections; *Compulsory voting abolition in t+1* = a dummy coded 1 from the second municipal electoral term following compulsory voting abolition for parliamentary elections. All regressions include municipality fixed effects, year fixed effects, state-specific linear trends (at the year level), unreported demographic and fiscal controls. Standard errors clustered by state in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	Δ(Education share of the budget)	
	(1)	(2)
Δ(Age gap in turnout)	-0.392***	-0.211*
	(0.111)	(0.111)
Demographic controls		X
Fiscal controls		X
N	2,308	2,124
R^2	0.005	0.085

Table 12. Age Gap in Turnout and Education Spending - First difference 1990-2002

Notes: Observation unit: the variation between 1990 and 2002 for each municipality, and the sample is composed of 2,308 municipalities. Dependent variables: Variation in education spending as a percentage of total municipal spending (in logs) between 1990 and 2002. Independent variable: Δ*(Age gap in turnout)* = Variation in the *state-average* sensitivity of turnout for parliamentary elections to voter age between 1986 and 2002, calculated as the state-average of individuals responses to the 1986 and 2003 Austrian Social Survey. Other (unreported) independent variables: *Demographic controls*: share of people aged over 65 in municipality's electorate, share of population below age 15, total number of inhabitants and population density; *Fiscal controls* (in logs)*:* government grants, tax revenues, revenues from the fees and charge and debt. Standard errors clustered by state in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix

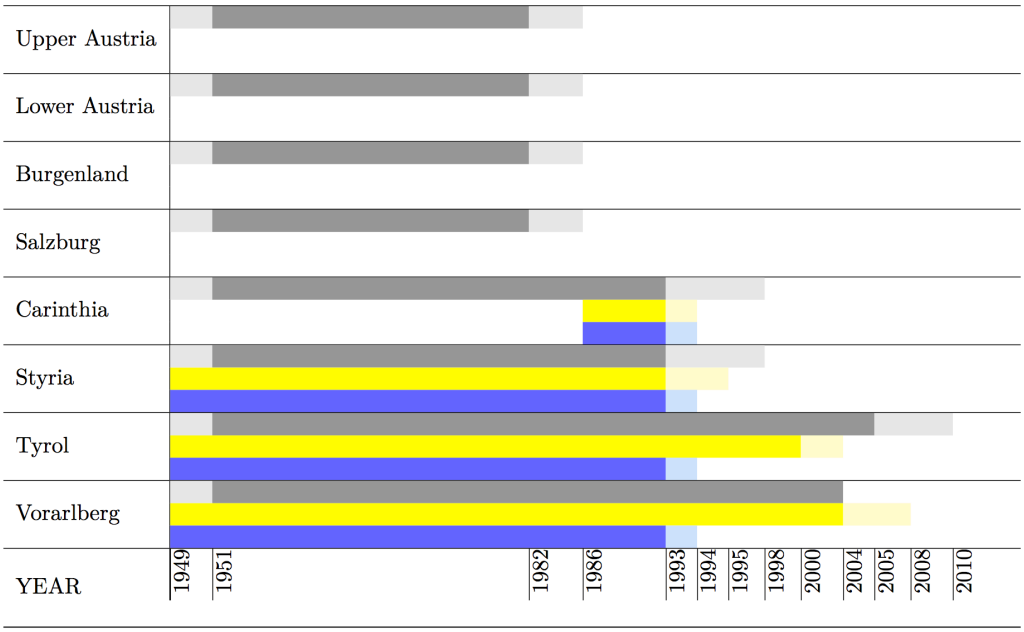

Figure A.1. Austrian Compulsory Voting Laws Over Time, by state and Type of Election

Notes: Gray, yellow, and blue bars indicate presidential, state, and parliamentary elections, respectively. Solid bars mark signify periods in which elections with mandatory voting were held. Shaded bars indicate periods in which the abolition of the mandatory voting law was already in place but no elections were held. The table is based on HLL. Vienna is omitted from the table.

	Obs.	Mean	Std. dev.	Min	Max
Burgenland					
Education share of the budget	3426	0.18	0.08	0.01	0.64
Electorate share aged 65+	3486	0.21	0.03	0.11	0.34
Abstention	2118	0.13	0.05	0.03	0.38
Carinthia					
Education share of the budget	2752	0.14	0.07	0.02	0.65
Electorate share aged 65+	2772	0.20	0.03	0.11	0.29
Abstention	1716	0.17	0.05	0.03	0.37
Lower Austria					
Education share of the budget	12000	0.12	0.07	0.00	0.63
Electorate share aged 65+	12033	0.20	0.03	0.09	0.35
Abstention	8550	0.23	0.07	0.04	0.55
Upper Austria					
Education share of the budget	9341	0.16	0.08	0.02	0.73
Electorate share aged 65+	9346	0.17	0.03	0.06	0.32
Abstention	5748	0.16	0.05	0.04	0.36
Salzburg					
Education share of the budget	2499	0.17	0.09	0.02	0.69
Electorate share aged 65+	2499	0.16	0.03	0.08	0.25
Abstention	1309	0.18	0.06	0.04	0.43
Styria					
Education share of the budget	11398	0.16	0.08	0.01	0.86
Electorate share aged 65+	11404	0.19	0.03	0.08	0.40
Abstention	8115	0.15	0.06	0.03	0.41
Tyrol					
Education share of the budget	5857	0.15	0.08	0.00	0.68
Electorate share aged 65+	5859	0.16	0.03	0.07	0.43
Abstention	3312	0.17	0.08	0.01	0.51
Vorarlberg					
Education share of the budget	2016	0.16	0.09	0.01	0.71
Electorate share aged 65+	2016	0.15	0.03	0.07	0.25
Abstention	1310	0.15	0.11	0.02	0.44

Table A.1. Summary Statistics by State

Election type:	Education share of the budget		
	Parliamentary	Presidential	State
	(1)	(2)	(3)
Compulsory voting abolition	0.187***	-0.0141	-0.0427
	(0.0720)	(0.0797)	(0.0682)
Electorate share aged 65+	0.244	-0.443	-0.498
	(0.545)	(0.498)	(0.482)
Interaction	-0.950**	-0.191	-0.0935
	(0.433)	(0.441)	(0.380)
Demographic controls	X	X	X
Fiscal controls	.	.	.
Municipality FE	X	X	X
Year FE	X	X	X
State trend	X	X	X
N	48,414	48,414	48,414
R^2	0.070	0.070	0.071

Table A.2. Robustness: Alternative measures of Mandatory Voting Abolition

Notes: Observation unit: municipality-year for all the years from 1990-2010. Dependent variables: Yearly education spending as a percentage of total municipal spending (in logs). Independent variables: *Compulsory voting abolition* = dummy coded 1 from the second year of the municipal electoral term following compulsory voting abolition for parliamentary elections in column (1), for Presidential elections in column (2), for State elections in column (3); *Compulsory voting abolition* in column (1) differs from our main variable in that it considers that MV for parliamentary elections has never been effective for the state of Carinthia; *Electorate share aged 65+* = share of people aged over 65 in municipality's electorate. All regressions include municipality fixed effects, year fixed effects, state-specific linear trends (at the year level), unreported demographic controls. Standard errors clustered by state in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	Total exp. per cap.	Taxes per cap.	Total rev. per cap.
	(1)	(2)	(3)
Abstention	-0.00355	0.137*	-0.0413
	(0.0727)	(0.0785)	(0.0710)
Electorate share aged 65+	0.701**	-0.0888	0.800***
	(0.299)	(0.338)	(0.298)
Interaction	-0.0876	-1.645	0.745
	(1.467)	(1.465)	(1.418)
Demographic controls	X	X	X
Fiscal controls			
Municipality FE	X	X	X
Year FE	X	X	X
State trend	X	X	X
N	31,566	31,566	31,566
R^2	0.205	0.089	0.173

Table A.3. Abstention and Fiscal Outcomes - Panel 1996-2010

Notes: Observation unit: municipality-year for all the years from 1990-2010. Dependent variables: *Total expend. per cap.* = Yearly total municipal spending per capita logs; *Taxes per cap.* = Yearly total municipal taxes per capita logs; *Total revenues per cap.* = Yearly total municipal revenues (from taxes, government grants and fees/charges) per capita logs. Independent variables: *Abstention* = abstention rate for the latest municipal elections; *Electorate share aged 65+* = share of people aged over 65 in municipality's electorate. All regressions include municipality fixed effects, year fixed effects, state-specific linear trends (at the year level), unreported demographic controls. Standard errors clustered by state in parentheses. *** p<0.01, ** p<0.05, * p<0.1