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Homeownership, social capital and parental voice in schooling

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Homeownership, Social Capital and Parental Voice in Schooling

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ABSTRACT

Homeownership, Social Capital and Parental Voice in Schooling*

We use New Zealand school board of trustees data to examine whether schools where parents have high rates of homeownership experience high parental voting turnout in elections. We also investigate whether homeownership influences the probability that a school board proceeds to election, indicating parental willingness to serve as a school trustee. Similarly, we examine whether state-owned social housing rates affect these outcomes. We compile results initially without controlling for other factors, and then controlling for a wide range of other characteristics, to test the robustness of simple observed associations between homeownership and state-ownership rates and outcome variables. Our findings show no discernible effect of homeownership on parental voting turnout in school elections after controls are added (contrary to the simple positive association), but a (robust) positive impact of both homeownership and state-ownership rates on the probability that a school holds an election.

JEL Classification: I28, R23, Z13

Keywords: homeownership, school elections, parental voice, social capital

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1. Introduction

The effects of homeownership on social and economic outcomes are widely discussed. Studies have noted benefits of homeownership on outcomes such as: wealth; labour force participation; urban structure; health; demographics; self-esteem; child outcomes; and social capital outcomes such as involvement in political and social activities (Dietz and Haurin, 2003).

In this paper, we focus on one specific social capital (child-related) outcome that is potentially affected by homeownership: parental voting turnout in local school board of trustees elections.[1] Reflecting common perceptions of homeownership effects, we hypothesise that schools in areas with higher rates of homeownership will experience a higher parental voting turnout in board of trustees elections (relative to a null of no effect). A school is a form of local amenity and the quality of amenities affects the values of properties surrounding them. Homeowning parents have a greater incentive than renters to vote in board of trustees elections, as the board is responsible for the operation and performance of the school. If a school underperforms, this can generate an unfavourable externality on local house prices which directly affects homeowners, but not renters (indeed, rents may decline). In addition, homeowners are less mobile than renters so there is a greater cost to them if they were to shift in response to school quality, again incentivising homeowners to act (more than renters) to raise school quality.

Studies of the impact of homeownership on local outcomes have to account for the impacts of covariates that are correlated with homeownership and that themselves may impact on outcomes of interest. This is particularly important given that homeownership is commonly associated with other markers of socio-economic status such as education and

[1] The concept of social capital was initially formulated with reference to the role of schools in the local community (Hanifan, 1916).

income. We pay particular attention to controlling for other factors and demonstrate the importance of doing so relative to an approach that relies on simple correlations between homeownership and outcome variables. Our results indicate that there is a positive association between homeownership and parental voting turnout in school elections. However, once school and local characteristics are controlled for, there is no discernible effect of homeownership on voter turnout.

In addition to investigating the effect of homeownership on voting rates, we analyse whether homeownership rates affect the probability of a school proceeding to an election. In 2007, only around half of primary and intermediate schools proceeded to an election, whereas 75% of secondary schools held an election. Schools proceed to an election where there are more candidates than available board positions; thus having an election is a marker of parental willingness to actively serve the school in the role of (unpaid) trustee. We find that high homeownership does increase the chance of a primary school proceeding to election. Similarly, the probability of an election increases with a higher proportion of state-owned houses, consistent with the theory that housing stability (through either homeownership or state tenancy) leads to a greater sense of community relative to other forms of tenure.

The paper is structured as follows: Section 2 presents a brief review of previous literature; Section 3 gives a background to the New Zealand schooling system; our methodology is outlined in Section 4; data used in the study is described in Section 5; Section 6 provides results of estimation; and conclusions are provided in Section 7.

2. Prior Literature

Governments in many countries formulate policies and strategies to encourage higher homeownership rates as evidence suggests that there are positive externalities associated with homeownership. In the U.S., Government policy (using tax breaks and subsidies) has consistently been directed toward encouraging citizens to become homeowners (Haurin et al.,

2002; Green and White, 1997). In New Zealand, imputed rents for owner-occupiers remain tax-free (Tax Working Group, 2010).

One fundamental difference between homeownership and renting is the transaction cost associated with securing and vacating a dwelling (Dietz and Haurin, 2003). Transaction costs are significantly greater for homeowners than for renters and, as a result, homeowners are likely to be less mobile, or more geographically stable, than renters. Also, the decision to own or to rent is a matter of choice that is heavily constrained and dependent on the type of dwelling a household desires to reside in (Rossi and Weber, 1996). For example, in the U.S., if a household wants to live in a single-family detached house, they are largely confined to the ownership market as few such units are available for rent.

The benefits of owning a home can be categorised into three main types of personal and/or neighbourhood benefit (Boehm and Schlottmann, 1999). First, for many families, homeownership is the largest investment they will ever make. Therefore, the home is an asset which will provide future financial security for those families who can afford to purchase. Second, homeowners are able to gain a higher level of personal esteem and life satisfaction, which develops them and their children into more productive members of society. Third, reduced mobility of homeowners helps improve neighbourhood quality and stability. Reduced mobility may incentivise homeowners to be more socio-politically active than renters in order to improve the neighbourhood environment, which is then capitalised into property values.

Koff and Sen (2005) observed the effects of homeownership on civic effort. They argue that sustained civic efforts lead to improvements in the local environment, which are then capitalised in property values. Civic efforts, however, are not contractible, so there needs to be some incentive for households to exert more effort. As homeowners gain from increases in property values, homeownership creates an incentive for homeowners to exert greater civic

effort (which includes voting in local elections) to improve the quality of their properties and community in order to raise local property values.

There are very few studies that investigate the specific relationship between school voting turnout and homeownership. However, studies have investigated the homeownership impacts on local body elections and political activity, civic effort and neighbourhood participation.

Homeowners are more incentivised than renters to be politically and socially involved in local affairs. Homeownership influences social behaviour through two channels first, homeownership is an investment that alters the financial stake of households. Local affairs can influence house prices and, subsequently, the value of the investment. Homeowners therefore have an added incentive to be active in local affairs (Dietz and Haurin, 2003; Manturuk et al, 2010). Second, homeownership reduces the mobility of households, while renting households are relatively mobile. The reduced mobility incentivises homeowners to maintain and improve the neighbourhood's quality-of-life, as this is directly related to their own quality-of-life and is also capitalised into the value of properties within that neighbourhood. Hence, homeowners are more likely to participate in political and community activities, and increase civic efforts, to ensure any negative externalities to their neighbourhood image are minimised (Rossi and Weber, 1996; Dipasquale and Glaeser, 1999; Dietz and Haurin, 2003; Koff and Sen, 2005; Manturuk et al, 2010).

Homeowners are consistently found to vote at greater rates than renters; however the effect of homeownership on political interest is negligible (Rossi and Weber, 1996; Dietz and Haurin, 2003). Dipasquale and Glaeser (1999) find that homeowners in the United States are 15% more likely to vote in local elections than renters and that 77% of owners had said they voted in local elections, compared with only 52% of renters. When repeating the analysis using German data, the authors found much the same behaviours, with homeownership

increasing the probability of voting for low-income individuals by 4.3%, and high-income individuals by 29.1%. Recent evidence on the impact of homeownership on voting rates is, however, less clear-cut. While Manturuk et al (2010) find that homeownership rates have a significant positive effect on local political participation, Engelhardt et al (2010) find no evidence that such a relationship exists.

This lack of certainty means that the impact of homeownership on electoral participation remains an open question. We examine this issue using a tightly defined form of electoral involvement: voting in one's own child's school board of trustees election. Compared with other forms of voting, the school election is closely tied to an outcome of direct personal interest and so provides a sharper test of homeownership versus renter propensity to be politically involved than prior studies where benefits of voting are more diffused.

3. New Zealand Schools Background

3.1. School Governance and Structure

The governance of New Zealand schools can be broadly categorised into State, State-Integrated and 'Other'. State schools receive government funding (that can be supplemented by voluntary donations). They are generally co-educational2 and all are required to teach the New Zealand curriculum. State-integrated schools were previously private schools, but are now part of the state system. They incorporate their own special character (usually a philosophical or religious belief) into the New Zealand curriculum that they teach. Their buildings and property are privately owned, but they receive the same funding per student as state schools. In addition, they may charge compulsory fees to meet their property costs.

[2] Some secondary schools offer single-sex education. Of the state secondary schools 13.5% are boys only, 16.7% are girls only, and 69.8% are co-educational. Of the number of students attending state schools 14.4% attend boys only schools, 15.1% attend girls only schools and 70.5% attend co-educational schools.

Private, or independent, schools still receive some funding from the Government, but the majority of their funding is received from the fees they charge. They have their own independent boards which govern them and must meet certain standards to be registered with the Ministry of Education. While they are free to teach their own curriculum, it must follow a learning program similar to that of the New Zealand curriculum. There is also a range of other types of schools that cater for the specific needs of their students (Ministry of Education, 2009a). Table 1 provides the number of schools and pupils by school governance and type. Table 1 shows that a large majority (85%) of students in New Zealand attend state schools.

The structures of schools in New Zealand are determined by the age of students they enrol. Primary school is generally considered to encompass students in Year 1 to Year 8, while secondary schools encompass students in Year 9 to Year 13. The two main types of primary schools operating in New Zealand are contributing primary and full primary schools. Full primary schools enrol students from Year 1 through to Year 8, while contributing primary schools only enrol students from Year 1 through to Year 6. Intermediate schools complement contributing schools by teaching only students in Year 7 and Year 8. Generally, secondary schools in New Zealand enrol students from Year 9 through to Year 13, however other secondary school structures exist.[3] There are also a number of other less common school age structures that operate (Ministry of Education, 2009b).[4]

3.2. "Tomorrow's Schools" Reforms and Boards of Trustees

The "Tomorrow's Schools" reform process, implemented in 1989, comprised a number of structural changes in the New Zealand state education system that altered the way New

[3] Some secondary schools also include the intermediate years (i.e. Year 7 through to Year 13).
[4] Other school structures include: Area/composite schools (Year 1 – 13); Middle schools or junior high schools (Years 7 – 10); senior high schools (Years 11 – 13); and another type of composite school (Years 1 – 10).

Zealand state schools were administered (Fiske and Ladd, 2000; Ministry of Education, 2009c). The dominant feature of the reforms was the transfer of the responsibility for running a school from the Department of Education to a locally elected board of trustees (BOT). The purpose of the BOT was to oversee the governance of a school. Its major responsibilities included: the management of finances; establishment and monitoring of the school's strategic objectives; maintenance of physical property; and employment of staff including the principal. The Government also required assurance from the BOTs that students would receive a high quality standard of education and that resources made available to schools would be used efficiently and effectively (Ministry of Education, 2009d).

Each New Zealand state and state-integrated school is required to have a BOT (Education Act, 1989). Elections for BOT representatives are held triennially, with the first election held in 1989.[5] The standard constitution of a board is three to seven parent-elected representatives,[6,7] the principal, one staff-elected representative, a student-elected representative[8], co-opted trustees, and up to four proprietors' representatives[9]. There is a degree of flexibility within the composition of the board; however before changes can be made, the current board must give the parent community reasonable notice of its intentions (Ministry of Education, 2009e). Parent representatives are elected by the parent community and/or adult students of the school. The staff representative is elected by staff members. Students are able to vote if the school qualifies for a student representative. Elections for student representatives must be held annually in September. The board itself can also co-opt additional trustees; however, the number of co-opted trustees cannot exceed the number of

[5] Elections are usually held on the second Tuesday in May of the election year, unless the school is a correspondence school or the board, before February 1, has fixed an earlier date for the election.
[6] A parent refers to a person who is the child's father, mother, guardian, or immediate caregiver.
[7] Originally, these seats were reserved for parent only, but, as part of the Education Amendment Act 1992, a provision was made that gave people without children attending a given school the right to put themselves forward for election.
[8] A student representative is elected only in schools with Year 9 students or above.
[9] Proprietor's representatives are only appointed in integrated schools. They are usually elected to assure that the philosophical or religious belief of the integrated school is upheld in BOT decision making.

parent trustees. In the case where a vacancy for a trustee arises, the board is able to hold a by-election to fill the vacancy; however, a co-opted trustee can only be appointed if another co-opted position becomes available (Education Act, 1989). A mid-term, or staggered, election cycle can also be adopted by the board, where half of the parent representatives are elected halfway into the current board's term. These elections are held midway between triennial elections (18 months after triennial election).

Another feature of the reforms was the abolition of geographical school enrolment zones to enable parents to choose which school their children would attend. This created competition between schools to attract the better students. Schools that attracted an over-abundance of applications were required to employ their own enrolment scheme to avoid overcrowding within the school. In 2000, an amendment to the Education Act 1989 included the requirement that a school's enrolment scheme could not act to exclude any student resident within the zone covered by its enrolment scheme.

3.3. The School Decile System

In 1995, the Ministry of Education introduced a system of classifying schools into deciles based on the socio-economic background of the school's student communities, to help the Ministry determine which schools required more funding (Fiske and Ladd, 2000). The additional funding assists schools to overcome barriers to learning that students in low socio-economic communities may face. Decile 1 schools represent the 10% of schools that have the highest proportion of students from low socio-economic communities, while decile 10 schools are the 10% of schools with the lowest proportion of students drawn from low socio-economic communities (Ministry of Education, 2009f). Accordingly, lower decile schools receive larger amounts of funding.

There are five key factors that are used to measure a school's decile: household income[10], occupation[11], household crowding[12], educational qualification[13], and income support[14] (Ministry of Education, 2009f). Information collected from the Census is used to calculate these factors for each meshblock[15] that a student of a particular school resides in. These five factors are then weighted by the number of students from each meshblock. Each school is ranked in relation to all other schools for each of the five factors and receives a score for the percentile they fall into. The unweighted total of these five scores is then used to produce the overall ranking of the school, in relation to all others in New Zealand. The schools are then allocated into one of ten deciles (Ministry of Education, 2009f).

School deciles are automatically recalculated every five years, following a new census. However, schools are able to apply for a review through two criteria. The first is a change in the physical catchment area of the school. The second is when a school feels strongly that the socio-economic status of the students within the school's catchment area has changed (Ministry of Education, 2009g).

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[10] Household income is the percentage of households with equivalent income (income adjusted for the number of adults and children in the household and the age of the children, but excludes any household that receives a benefit) in the lowest 20% nationally.

[11] Occupation is the percentage of employed parents working in an occupation of skill levels 4 or 5 of the Australia and New Zealand Standard Classification of Occupations (ANZSCO). These generally comprise labourers, machine operators and assemblers, and other lower skilled occupations irrespective of the sector involved.

[12] Household crowding is the percentage of households with an equivalised crowding index greater than one. This index measures the proportion of household members per bedroom adjusted for the number of children under 10 years of age (every two are assumed to share one bedroom). Couples, and others, are each assigned one bedroom.

[13] Educational qualification measures the percentage of parents with no tertiary or school qualifications.

[14] Income support is the proportion of parents who directly received an income benefit (Domestic Purposes, Unemployment, or Sickness and Invalid's benefit) in the previous year, but does not include parents who receive Family Support.

[15] A meshblock is the smallest spatial unit used by Statistics New Zealand. In urban areas it is approximately the size of a city block; in rural areas it is similar in population size but larger in area.

4. Methodology

4.1. Parental Voting Turnout in School BOT Elections

We begin our analysis with a simple weighted[16] OLS regression of the parental voting rate regressed on the (private) homeownership rate and the state-owned housing rate,[17] with no additional control variables. This provides us with a 'simplistic' estimate of the relationship between private (and state) homeownership and voting participation, as may be referred to by commentators discussing simple bivariate associations between homeownership and other outcomes. We progressively introduce additional control variables to deduce whether the simplistic relationships (if they exist) are accounted for by other covariates, rather than homeownership (or state-owned housing) per se.

The first (simple) specification is presented below:

$$VotingTurnout_i = \alpha + \beta HO_i + \gamma SO_i + \varepsilon_i \qquad (1)$$

where $VotingTurnout_i$ represents the parental voting participation rate in school i's BOT election; HO_i is the homeownership rate in the Census area unit (CAU)[18] that school i is located; SO_i is the state-owned housing rate in the CAU that school i is located; β and γ represent the coefficients on HO and SO respectively; α is a constant; and ε_i is the error term.

The second specification adds controls for population characteristics in order to ascertain whether the (simple) relationships between homeownership and election participation hold up after controlling for the nature of the local population. Variables included in this set are: an urban indicator variable (equal to 1 if school is located in an urban area, zero otherwise); log of CAU population per hectare (i.e. population density); log of total CAU population; proportion of households with school-aged students; population age-band

[16] Weighted by school size.
[17] The state, through Housing New Zealand Corporation, owns approximately 5% of houses in New Zealand. As shown in Table 4, the state-owned proportion is higher than 5% for households with school-aged children.
[18] A CAU is an aggregation of meshblocks that, in urban areas, typically corresponds to a 'suburb'.

proportions[19]; and BOT region dummies[20] (equal to 1 if school *i* falls in that particular board region, zero otherwise).The second OLS specification can be represented as:

$$VotingTurnout_i = \alpha + \beta HO_i + \gamma SO_i + \sum_{p=1}^{P} \delta_p POP_i^p + \varepsilon_i \qquad (2)$$

where POP_i^p represents the pth population characteristic (listed above) for school *i*; and the δ_p represent the corresponding coefficients.

School characteristics are added in the third specification as a further robustness check on the homeownership/voting relationship. School characteristics include: decile dummies (equal to 1 if a school is classed in that decile, zero otherwise), school roll numbers, and the number of neighbouring schools within the same CAU (a marker of school competition). Equation 3 represents the third specification:

$$VotingTurnout_i = \alpha + \beta HO_i + \gamma SO_i + \sum_{p=1}^{P} \delta_p POP_i^p + \sum_{s=1}^{S} \varphi_s SCHAR_i^s + \varepsilon_i \qquad (3)$$

where $SCHAR_i^s$ represents the sth school characteristic of school *i* from those listed above; and the φ_s represent the corresponding coefficients.

The final specification adds controls for local area characteristics. Local area (CAU) characteristics include: the proportion of residents new to the community within the last five years (from within New Zealand and overseas); the proportion of migrants; the proportion of residents who have participated in volunteer work within the last four weeks (as a measure of community social capital); the distribution of ethnicities; the proportions of structures of households (i.e. whether they are couple-parents, single-parent or other); proportion of highest qualification attained by adults; proportion of income beneficiaries; proportion employed and unemployed; log mean income and log standard deviation of income for

[19] Age-bands were defined as: 17 years or younger, 18 – 24 years, 25 – 64 years, and 65 year or older. Age-band 17 years or younger is omitted as the base group.

[20] BOT regions include: Northland, Auckland, Waikato, Bay of Plenty, Central East, Central West, Wellington and Wairarapa, Marlborough (including Nelson and West Coast), and Southern (combined Canterbury, Otago, and Southland).

households with school-aged children; the log mean income and log standard deviation of income for all households in the area; and the log of the median capital value of residential properties in the CAU. Equation 4 presents the fourth specification:

$$VotingTurnout_i = \alpha + \beta HO_i + \gamma SO_i + \sum_{p=1}^{P} \delta_p POP_i^p + \sum_{s=1}^{S} \varphi_s SCHAR_i^s + \sum_{l=1}^{L} \lambda_l LACHAR_i^l + \varepsilon_i \quad (4)$$

where $LACHAR_i^l$ represents the lth local area characteristic listed above for school i; and the λ_l represent the corresponding coefficients.

4.2. School BOT Election

To investigate the impact of homeownership on the probability that a school will proceed to a BOT election, we adopt a similar methodology to the analysis on the parental participation rate in elections, but we use a weighted probit model instead of a weighted OLS regression in estimation. This allows us to obtain the marginal impacts of homeownership on the probability of a school proceeding to a BOT election.

The resulting equations are similar to equations (1) to (4) above, with replacement of dependent variable $VotingTurnout_i$ with $Vote_i$ (a binary variable equal to 1 if school i held a BOT election in 2007, or zero otherwise). The four equations are represented as:

$$P(Vote_i = 1) = \Phi(\alpha + \beta HO_i + \gamma SO_i + \varepsilon_i) \quad (5)$$

$$P(Vote_i = 1) = \Phi(\alpha + \beta HO_i + \gamma SO_i + \sum_{p=1}^{P} \delta_p POP_i^p + \varepsilon_i) \quad (6)$$

$$P(Vote_i = 1) = \Phi(\alpha + \beta HO_i + \gamma SO_i + \sum_{p=1}^{P} \delta_p POP_i^p + \sum_{s=1}^{S} \phi_s SCHAR_i^s + \varepsilon_i) \quad (7)$$

$$P(Vote_i = 1) = \Phi(\alpha + \beta HO_i + \gamma SO_i + \sum_{p=1}^{P} \delta_p POP_i^p + \sum_{s=1}^{S} \phi_s SCHAR_i^s + \sum_{l=1}^{L} \lambda_l LACHAR_i^l + \varepsilon_i) \quad (8)$$

5. Data Description

Data were obtained from two main sources: the Ministry of Education (MoE) and Statistics New Zealand (SNZ). The school voting and school characteristics data were sourced from MoE, while population and local area characteristics were sourced from SNZ. Additionally, we obtained the median capital values of properties in local areas from Quotable Value New Zealand (QVNZ). The data are explained in more detail below.

5.1. School Board of Trustees Election Data

MoE took over the collection and reporting of BOT elections in 2004. It stores records on parents' voting paper return rates, i.e. the number of voting papers sent out to parents in a BOT election, along with the number of voting papers returned. These voting paper return rates represent our dependent variable (parental voting turnout in school BOT elections (*VoteTurnout*)). MoE were only able to provide data on parent voting paper return rates from the 2007 triennial elections.[21] Many schools were missing voting results, due to those schools not proceeding to election. The latter data were used to construct our binary $Vote_i$ variable.

5.2. School Characteristics Data

MoE supplied school roll numbers from the July 2007 school roll returns. The data detail the total number of students enrolled in each school. School decile ratings for 2007 are also provided by MoE, as are data for the attainment level of secondary school leavers for each school. The latter data detail the proportion of students who gain university entrance (UE) or better, NCEA level 2 or better, NCEA level 1 or better, and little or no formal attainment. We create two attainment variables, high qualifications and no qualifications. High qualifications represents the proportion of school leavers with UE or better qualifications; no qualifications

[21] Voting data are available for mid-term elections (held in 2005 and 2008), but because not all schools are required to hold mid-term elections, we did not utilise these mid-term results.

represents the proportion of students who leave school with no formal school qualification, i.e. those below NCEA level 1.

5.3. Population and Local Area Characteristics Data

We use 2006 individual unit record data from SNZ's Census of Population and Dwellings to compile demographic and economic characteristics of households with school-aged children.[22] Individual unit record data is only available in the SNZ data laboratory. Given its high confidentiality, the individual unit record data obtained from SNZ are subject to SNZ's confidentiality rules.[23]

The census variables compiled are: an urban/rural dummy, population density, proportion of one-family households, proportion of people new to a community, proportion of foreign-born residents, ethnicity proportions, household structure, highest qualifications, proportion of income beneficiaries, employment status, proportion participating in volunteer work, mean dwelling income.

5.4. Data Samples for Analysis

We analyse four different samples of data, determined by the school type (full primary, contributing primary, intermediate, and secondary school). The age brackets of students enrolled differ across school types. Only parents of students enrolled at a particular school are able to vote in the BOT election of that school. Therefore, we restrict each school type's data to measure only households with students in the appropriate age brackets. For each sample, we only consider state and state-integrated schools, as these are the only schools required to hold BOT elections.

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[22] For a few variables (e.g. population density), the variables pertain to the full CAU population. The notes to Tables 3 and 4 detail which choice of aggregation is relevant for each variable.
[23] These require that any data are to be randomly rounded to base 3, and small values (less than 3) are omitted.

Each school is mapped to the SNZ Census area unit (CAU) that it is located within to capture local community effects. The BOT election voting data is available for 2007, while the individual unit record Census data is collected in 2006. To account for the one year difference, we adjust the age brackets of students back one year and select only those households with appropriately aged children from the 2006 census of population and dwellings. Table 2 presents the appropriate age brackets of children in 2006 attending each school type in 2007. 2006 individual unit record Census data of suitable households are then aggregated to CAU level and matched to schools located within that CAU. We then combine the Census data with the schooling data to form the sample datasets.[24]

6. Results

6.1. Descriptive Statistics

Before presenting estimation results, we provide descriptive statistics of all variables. Table 3 presents the proportion of schools that held a BOT election in 2007, along with the distribution of the key variables of interest: election participation, homeownership rate, and the proportion of state-owned houses for households with school-aged children in the local area of each school. The weighted mean[25], standard deviation, and percentiles of each variable are reported for each sample. Observations on the participation rate in BOT elections and homeownership rates are evenly distributed across all samples with the mean and median values very similar for these two variables in each case. The distributions of the proportion of homes that are state-owned are skewed to the left for all samples, with the mean approximately equal to the 75th percentile.

[24] In combining the Census and schooling data, six state full primary schools and three state contributing primary schools were removed due to having inconsistent census data. The total number of schools used in each sample is provided in Table 2.

[25] Means were weighted by school size (total roll in 2007) so data represent the average pupil.

Table 4 presents the weighted means of covariates for each of the four samples.[26] The variables represent weighted mean proportions of the sample populations, except where geometric means are used because of the nature of the data, as indicated in the table. Some interesting points emerge. The parental voting turnout in BOT elections is the highest for the full primary school sample, nearly double the rate in intermediate and secondary schools. Full primary schools are the most rurally located of the four samples (having the lowest proportion located in urban areas and population per hectare is significantly lower that other school types) and they have the highest proportion of state-integrated schools. Homeownership rates are broadly similar across school type, as is the prevalence of state-owned houses. Proportions of ethnic groups are relatively constant across the samples, except that fewer Asian households locate in areas near a full primary school, i.e. Asian households are more concentrated in urban areas than are other ethnicities.

6.2. Parental Voting Turnout in School BOT Elections

One of our two key objectives is to investigate whether a school located in an area of high homeownership rates (for households with school-aged children) experiences a higher rate of parental voting turnout in school BOT elections relative to its corresponding school sample. Table 5 reports the weighted OLS regression results of the relationship between homeownership and state-owned housing variables, and parental voting turnout. Specifically, we attempt to identify whether homeownership has any effect on parents' voting habits.

Panel A in Table 5 reports the results from the simple regression of parental voting turnout on the homeownership rate and state-owned housing rate with no additional control variables (equation (1)), to observe whether homeownership or state-owned housing rates

[26] For secondary schools, we separately mapped the data to the local CAU and to the local school zone (only for those schools that had a school zone). We then obtained both CAU-based estimates and zone-based estimates for *VotingTurnout* and *Vote*. Results were similar, and the much larger sample size for the CAU-based estimates led us to favour this approach over the zone-based approach.

have a significant association with voting rates. Panels B through to D represent results from estimating equations (2) – (4), where we progressively introduce additional control variables. These extensions enable us to infer whether the simple associations are accounted for by other covariates that are themselves correlated with homeownership or state-owned housing.

From Table 5 Panel A, the homeownership rate has a positive association with the parental voting turnout for all schools, and is significant at the 5% level for full primary, contributing primary and intermediate schools. Thus, schools located in areas with higher rates of homeownership are observed to have higher rates of parental voting turnout in school BOT elections. The effect of state-owned housing is negative for all but intermediate schools, and is significant for full and contributing primary schools. Thus (apart from the intermediate school sample), schools located in areas with a higher prevalence of state-owned housing are observed to have a lower parental voting turnout.

The addition of controls for population composition, density and urbanisation in Panel B substantially improves the explanatory power of the equations. Similar effects of homeownership on parental voting turnout are observed, with significant positive effects remaining for full primary, contributing primary and intermediate schools. The proportion of state-owned homes now has a positive coefficient for each sample, but none is significant. We include school characteristics in Panel C. The magnitudes of all homeownership rate coefficients are now reduced, with the secondary school coefficient now marginally negative, and all coefficients lose their significance. Similarly, none of the state-owned housing coefficients is significant.

Panel D includes the full range of covariates. Three of the four homeownership coefficients are now negative and none is significant. Three of the state-owned housing rate coefficients are negative, with the coefficient for contributing primary schools being negative and significant at the 5% level. Thus, we observe that a higher prevalence of state-owned

housing in a local area lowers the turnout of parental voting in a contributing primary school BOT vote.

The results presented in Table 5 indicate that while the rate of homeownership is positively associated with parental voting turnout in school elections, once controls for population, school and local area characteristics are added, we find no impact of the homeownership rate on voter turnout. For the state-owned housing rate, we find a significant (negative) effect only for contributing schools once all covariates are added. These results provide a useful caution regarding use of simple associations between homeownership and outcome variables that may not be robust to controls for other (correlated) variables.

The full estimation results from Panel D are provided in Table 6. For full primary and secondary schools, we observe that a higher proportion of dwellings with eligible children decreases parental voting turnout, and the size of the school roll is negatively related to voting turnout. These results are consistent with a hypothesis that parents are less likely to vote if there are more potential voters present. In these circumstances, parents may consider that their own vote will not influence the overall result of the outcome, and they therefore abstain from voting. The decile indicators imply that voting turnout is positively related to affluence. Schools with a larger proportion of students from more (less) socio-economically deprived communities receive lower (higher) rates of voting from parents of those students. The trend is most apparent in primary schools, although the secondary schools results suggest that high decile communities participate more strongly in school elections than low or middle decile communities.

For secondary schools, a high proportion of households that are new to the community has a significant negative effect on the voting rate. Newly resided parents may have a less well-developed sense of the local community or know fewer candidates, resulting in a lower likelihood of voting in BOT elections. In primary schools, single-parent

households are less likely to vote, while a higher proportion of Maori households reduces voter turnout for full primary schools. A high proportion of people who volunteer within the community is associated with a higher rate of voting in full primary BOT elections. This variable may be proxying for people with an inherently high level of social capital and community involvement, with these same traits carrying through to election participation.

6.3. Probit Analysis of the Likelihood of BOT Elections

While the homeownership rate is found to have no effect on the parental voting participation rate in school BOT elections once other characteristics are controlled for, it may affect whether a school proceeds to a BOT election. The main reason for a school not proceeding to election is that it receives no more candidates than there are positions available, and the school therefore does not require an election.[27]

From Table 3, approximately half of each primary school type and three-quarters of secondary schools proceeded to a BOT election in 2007. We use probit regressions to investigate the possible homeownership and other influences on the probability that a school proceeded to a BOT election (as outlined in section 4). Table 7 presents the results from this analysis, highlighting the marginal effects of the homeownership rate and state-owned housing rate on the likelihood that a school will proceed to a BOT election.

When there are no additional covariates (Panel A), we observe that the homeownership rate is associated with an increased probability of a BOT election being held for all school types, with significant effects for both full primary and contributing primary schools. The state-owned housing rate increases the probability of a BOT election for most schools, but only significantly for full primary schools. Adding controls for population

[27] An alternative (but rare) reason is that a commissioner has been appointed by the Secretary for Education to govern the school in place of the BOT, when the BOT has failed to fulfil its responsibilities. All BOT responsibilities are then transferred to the commissioner. (Education Act, 1989).

composition, density and urbanisation (Panel B), we observe similar results to the previous model: a significant positive effect from homeownership on the probability of holding a BOT election in full primary and contributing primary schools, and no significant effect of the state-owned housing rate on the probability of a BOT election. Panel C adds controls for school characteristics. The effect of homeownership is now no longer significant for any school type (with the exception of a weakly significant result for contributing primary schools). State-owned housing rates significantly increase the probability of a BOT election within intermediate schools (with a weak effect also for full primary schools).

Panel D adds controls for local area characteristics. This full model, with all covariates included, indicates that homeownership significantly increases the chance that a full primary or contributing primary school will hold a BOT election. Similarly, a high prevalence of state-owned housing significantly increases the chance of a BOT election for full primary and intermediate schools (with a weak effect also for secondary schools).[28]

Thus, we observe that the probability of a BOT election being held in (full and contributing) primary schools is significantly and positively affected by homeownership rates, but the same effect is not observed for schools catering just to older age groups (intermediate and secondary schools). The estimated coefficients imply that full (contributing) primary schools with a 10 percentage point higher local area homeownership rate are 5.5 (7.9) percentage points more likely to hold a BOT election. Given that only around 50% of primary schools hold a BOT election these are fairly large effect sizes.[29]

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[28] We are wary, however, about the estimated size of the marginal effects relating to the intermediate school sample since that sample is small (N=121) and we have 40 explanatory variables in the equation.

[29] These results suggest that, if anything, our prior estimates for the impact of homeownership on BOT election turnout (Table 5) could be biased upwards as we may expect homeownership to have a larger impact on BOT election turnout in schools where high homeownership has increased the likelihood of having elections in the first place. These findings therefore reinforce our prior conclusion that homeownership, per se, has no impact on voter turnout in a BOT election.

One explanation for these results may be that homeownership increases people's sense of community, since it has been shown to increase their enthusiasm towards being involved in local community affairs (Roskruge et al, 2011). A higher rate of homeownership may therefore lead to more parents standing for the board, increasing the probability of a school holding an election. The spatial catchment of primary schools is generally more focused on a local community than are those for intermediate and secondary schools. Homeowners may be less enthusiastic in standing for these larger schools that service multiple communities, as they do not feel as great an affinity or affiliation with those outside their immediate local community.

The significant (positive) coefficient on the state-owned housing rate accords with the finding in Roskruge et al (2011) that state tenants have a statistically similar sense of community to homeowners, with each having a significantly greater sense of community than private renters. The estimated coefficients imply that full primary schools with a 1 percentage point higher local area state-owned housing rate are 1 percentage point more likely to hold a BOT election. The mean school only has 6 percent of the local housing being state-owned so effect sizes are similar to those for homeownership. These results suggest that the security of the long-term tenancies available to state tenants (relative to private tenants) has positive social capital spin-offs for the local community.

The full set of results of the probit regression with all covariates included is presented in Table 8. The size of a school has a significant and positive effect on the probability of a school holding an election; this applies to all school types analysed. Larger schools will have a greater pool of parents from which potential candidates for the board may arise and, therefore, less chance that the school will have a lack of candidates to force an election. A consistent finding with the *VoteTurnout* results is that a school is more (less) likely to hold an election if it is high (low) decile. High (low) socio-economic parents may have more (less)

self-esteem, or available time, than other parents and therefore be more willing to put themselves forward as a candidate.

7. Conclusions

Many countries have implemented policies to boost homeownership rates with the aim of improving household and community outcomes. Prior evidence indicates that homeowners are more politically active than renters and have higher voting rates in political elections. Homeowners are also less mobile and have invested a large financial stake in their own property, and are therefore more incentivised to improve the quality of their neighbourhood.

We have analysed one aspect of political participation and civic effort, investigating the effect of homeownership rates on parental voting turnout and parental participation in school board of trustees elections. All state and state-integrated schools in New Zealand are required to hold a board of trustees election triennially, and parents are able to stand for, and elect, parental representatives to the board. Parental voting is not compulsory, and schools receive widely varying rates of parental voting.

We utilise data on the 2007 school board of trustees elections to estimate the effect of homeownership on parental voting turnout in schools. Four samples of data were analysed, one for each of the school types: full primary, contributing primary, intermediate, and secondary school. Simple weighted OLS regressions, where only the homeownership rate and the rate of state-owned housing were controlled for, found a positive association between homeownership and parental voting turnout in all school types. There was a negative association between the state-owned housing rate and the parental voting turnout. The effects on voter turnout of homeownership and of state-owned housing rates fall away once additional controls are included for population, school and local area characteristics. The implications of these estimates are that homeownership has no discernible effect on the parental voting turnout once other factors, such as school size and decile ratings are

controlled for. State-ownership rates are found to have a negative impact on voting turnout only for contributing primary schools once other factors are controlled for.

Homeownership, however, consistently affects the chance that a primary school proceeds to a school BOT election. Based on prior literature, we conjecture that homeownership increases owners' sense of community and, therefore, increases their willingness to stand as a candidate for the board. However, this behaviour does not carry through to intermediate and secondary schools, which generally service larger communities. As the community size increases, the affinity and enthusiasm for homeowners to stand for a board decreases, hence decreasing the probability that these schools proceed to a BOT election. As the state-housing rate increases, the probability of proceeding to an election again rises (for three of the four school types).

The results for the probability of holding an election are consistent with the theory that housing stability (either through owner-occupation or through a state tenancy) leads to a greater sense of community and civic involvement for those in such forms of tenure. However, this effect seems limited to direct personal participation in school affairs. We find no broader benefits of homeownership or of state-ownership in enhancing parents' involvement in participatory democracy in the form of 'school voice'.

8. References

Boehm, Thomas P. and Alan M. Schlottmann. 1999. "Does Home Ownership by Parents Have an Economic Impact on Their Children?" *Journal of Housing Economics*, 8, pp. 217-232.

Dietz, Robert D. and Donald R. Haurin. 2003. "The social and private micro-level consequences of homeownership," *Journal of Urban Economics*, 54, pp 401-450.

Dipasquale, Denise and Edward L. Glaeser. 1999. "Incentives and Social Capital: Are Homeowners Better Citizens?" *Journal of Urban Economics*, 45, pp. 345-384.

Education Act, 1989. *Education Act 1989.* Available online at http://www.legislation.govt.nz/act/public/1989/0080/latest/DLM175959.html?search=ts_act_education_resel&p=1&sr=1. Last accessed 11 December 2009.

Engelhardt, Gary V., Michael D. Eriksen, William G. Gale, and Gregory B. Mills. 2010. "What are the social benefits of homeownership? Experimental evidence for low-income households," *Journal of Urban Economics*, 67, pp. 249-258.

Fiske, Edward. and Helen Ladd, 2000. *When Schools Compete: A Cautionary Tale*, 1st ed., Washington D.C.: Brookings Institutional Press.

Green, Richard K. and Michelle J. White. 1997. "Measuring the Benefits of Homeowning: Effects on Children," *Journal of Urban Economics*, 41, pp. 441-461.

Hanifan, L.J.. 1916. "The Rural School Community Center," *Annals of the American Academy of Political and Social Sciences*, 67, pp. 130-138.

Haurin, Donald R., Toby L. Parcel and R. Jean Haurin. 2002. "Does Homeownership Affect Child Outcomes?" *Real Estate Economics*, 30:4, pp. 635-666.

Koff, Karla and Arijit Sen. 2005. "Homeownership, Community Interactions, and Segregation," *The American Economic Review*, 95:4, pp. 1167-1189.

Manturuk, Kim, Mark Lindblad, and Roberto G. Quercia. 2009. "Homeownership and Local Voting in Disadvantaged Urban Neighbourhoods," *Cityscape: A Journal of Policy Development and Research*, 11:3, pp. 213-230.

Ministry of Education, 2009a. *Types of schools.* Available online at http://www.minedu.govt.nz/Parents/AllAges/EducationInNZ/SchoolsInNewZealand/SchoolTypes.aspx. Last accessed 11 December 2009.

Ministry of Education, 2009b. *Schooling Structures and Governance Options.* Available online at http://www.minedu.govt.nz/Boards/EffectiveGovernance/FlexibilityBoardStructures/SchoolingStructuresAndGovernanceOptions.aspx. Last accessed 11 December 2009.

Ministry of Education, 2009c. *Constitutions for boards of trustees.* Available online at http://www.minedu.govt.nz/Boards/EffectiveGovernance/FlexibilityBoardStructures/ConstitutionsForBOTs.aspx. Last accessed 11 December 2009.

Ministry of Education, 2009d. *Overview.* Available online at http://www.minedu.govt.nz/Boards/EffectiveGovernance/Overview.aspx. Last accessed 11 December 2009.

Ministry of Education, 2009e. *School Board of Trustees Elections, Co-options and Selection to a casual vacancy.* Available online at http://www.minedu.govt.nz/Boards/EffectiveGovernance/BoardElections.aspx. Last accessed 11 December 2009.

Ministry of Education, 2009f. *How the decile is calculated.* Available online at http://www.minedu.govt.nz/NZEducation/EducationPolicies/Schools/SchoolOperations/Resourcing/OperationalFunding/Deciles/HowTheDecileIsCalculated.aspx. Last accessed 11 December 2009.

Ministry of Education, 2009g. *Review of Deciles – General Information.* Available online at http://www.minedu.govt.nz/NZEducation/EducationPolicies/Schools/SchoolOperatio

ns/Resourcing/OperationalFunding/Deciles/ReviewOfDecilesGeneralInformation.aspx. Last accessed 11 December 2009.

Roskruge, Matthew, Arthur Grimes, Philip McCann & Jacques Poot. 2011. *Homeownership and Social Capital in New Zealand*, Motu Working Paper 11-02, Wellington: Motu.

Rossi, Peter H. and Eleanor Weber. 1996. "The Social Benefits of Homeownership: Empirical Evidence from national Surveys," *Housing Policy Debate*, 7:1, pp. 1-35.

Tax Working Group. 2010. *A Tax System for New Zealand's Future*, Centre for Accounting, Governance and Taxation Research, Wellington: Victoria University of Wellington.

Table 1: 2007 School Numbers and Rolls by Governance and School Type

		Full Primary	Contributing Primary	Intermediate	Secondary	Other	TOTAL
State	Schools	888	744	121	194	203	2,150
	Pupils	136,901	199,495	57,087	194,834	56,149	644,466
State-Integrated	Schools	184	49	0	28	65	326
	Pupils	29,458	9,339	0	11,507	34,158	84,462
Other	Schools	29	0	2	12	64	107
	Pupils	5,380	0	192	4,403	20,802	30,777
TOTAL	Schools	1,101	793	123	234	332	2,583
	Pupils	171,739	208,834	57,279	210,744	111,109	759,705
Proportion in the Analysis Sample*	Schools	0.97	1.00	0.98	0.95	NA	0.85
	Pupils	0.97	1.00	1.00	0.98	NA	0.84

Note: Sourced from the Ministry of Education. The box inside the bold lines constitutes the analysis sample for the remainder of the paper.

* The analysis samples in our study only consider state and state-integrated schools across the school types shown. The proportions do not sum perfectly for full primary and contributing primary schools, due to the loss of six state full primary schools and three contributing primary schools in the formation of our analysis samples.

Table 2: Data Samples used in Analysis

	Full Primary	**Contributing Primary**	**Intermediate**	**Secondary**
Number of Schools	1,066	790	121	222
Years of Students	Year 1 – Year 8	Year 1 – Year 6	Year 7 – Year 8	Year 9 – Year 13
Age of children in households (2006)	4 – 11 years	4 – 9 years	10 – 11 years	12 – 16 years
Aggregation Level	Census Area Unit	Census Area Unit	Census Area Unit	Census Area Unit

Table 3: The Distribution of Election Participation and Homeownership across Students

	Full Primary	Contributing Primary	Intermediate	Secondary
Proportion of Schools with a Board of Trustee Election				
Proportion	0.48	0.55	0.50	0.75
Participation Rate in Board of Trustee Elections for each School with an Election				
Mean	0.38	0.31	0.22	0.22
Std. Dev.	0.16	0.12	0.13	0.14
10th Percentile	0.20	0.17	0.13	0.12
25th Percentile	0.27	0.23	0.15	0.15
50th Percentile	0.36	0.30	0.18	0.19
75th Percentile	0.48	0.37	0.23	0.26
90th Percentile	0.60	0.46	0.28	0.30
Homeownership Rate in the Local Area of each School				
Mean	0.60	0.58	0.56	0.60
Std. Dev.	0.16	0.16	0.15	0.14
10th Percentile	0.38	0.36	0.34	0.41
25th Percentile	0.50	0.47	0.47	0.52
50th Percentile	0.63	0.59	0.58	0.62
75th Percentile	0.72	0.70	0.67	0.69
90th Percentile	0.80	0.77	0.75	0.76
State-ownership Rate in the Local Area of each School				
Mean	0.06	0.07	0.09	0.07
Std. Dev.	0.10	0.11	0.11	0.10
10th Percentile	0.00	0.00	0.00	0.00
25th Percentile	0.00	0.00	0.00	0.01
50th Percentile	0.02	0.03	0.05	0.04
75th Percentile	0.08	0.09	0.11	0.09
90th Percentile	0.17	0.22	0.26	0.19
Number of Schools	1,066	790	121	222

Note: All results except the first panel are weighted by school size so that the data represent the distribution across pupils. Homeownership and state-owned housing rates are calculated for households with school-aged children in the area unit in which the school is located.

Table 4: Mean Characteristics of Students across Schools

	Full Primary	Contributing Primary	Intermediate	Secondary
BoT Election Participation Rate	0.38	0.31	0.22	0.22
State-Integrated School	0.18	0.04	0.00	0.06
School Had a Mid-Term Election	0.06	0.07	0.03	0.02
Mean School Roll (geometric)	228	327	521	1,099
School Leavers with No Qualifications				0.18
School Leavers with High Qualifications				0.26
In an Urban Area	0.78	0.95	1.00	0.99
Mean Population (geometric)	2,623	3,245	3,376	3,191
Mean Pop per Hectare (geometric)	3.19	11.83	19.49	14.05
Population Age <18	0.31	0.31	0.30	0.30
Population Age 18-24	0.09	0.10	0.12	0.12
Population Age 25-64	0.59	0.58	0.57	0.57
Population Age 65+	0.02	0.02	0.01	0.01
Dwellings with Eligible Children	0.23	0.18	0.08	0.17
Homeownership Rate	0.60	0.58	0.56	0.60
State-Owned Housing Rate	0.06	0.07	0.09	0.07
New to Community in Last 5 Years	0.60	0.65	0.59	0.56
Foreign-born	0.20	0.25	0.29	0.29
Volunteered in Last Four Weeks	0.19	0.17	0.16	0.14
Pakeha Ethnicity	0.52	0.47	0.41	0.47
Maori Ethnicity	0.21	0.19	0.20	0.18
Pacific Island Ethnicity	0.07	0.10	0.11	0.09
Asian Ethnicity	0.06	0.11	0.14	0.14
Other Ethnicity	0.14	0.13	0.13	0.13
Couple with Children Household	0.69	0.68	0.64	0.62
Single Parent Households	0.22	0.23	0.27	0.28
Other Households	0.08	0.09	0.09	0.09
No Qualifications	0.22	0.19	0.22	0.24
School Qualifications	0.33	0.33	0.34	0.37
Post-school Qualifications	0.23	0.23	0.21	0.18
University Qualifications	0.13	0.16	0.14	0.12
Employment Rate	0.70	0.68	0.67	0.65
Unemployment Rate	0.04	0.04	0.05	0.06
Receiving Social Benefits	0.14	0.14	0.14	0.11
Mean Dwelling Income (geometric)	45,694	45,783	44,330	46,089
Std Dev Log Dwelling Income	0.68	0.70	0.72	0.74
Mean Dwelling Income in Area (geometric)	40,770	40,891	38,662	39,034
Std Dev Log Dwelling Inc in Area	0.73	0.75	0.77	0.77
Median House Value in Area	255,304	309,976	307,804	306,630
Sample Size	1,066	790	121	222

Note: All results are weighted by school size so that the data represent the average pupil. All variables are calculated for the area unit in which the school is located. All characteristics except school characteristics, population (including components), area incomes and house values are defined over the sample of adults with eligible school-aged children.

Table 5: Weighted OLS Regression of BoT Participation Rates versus Homeownership

	Full Primary	Contributing Primary	Intermediate	Secondary
Panel A: No Additional Control Variables				
Homeownership Rate	0.141*	0.215**	0.392*	0.072
	(0.061)	(0.056)	(0.164)	(0.104)
State-owned Housing Rate	-0.311*	-0.182*	0.120	-0.131
	(0.111)	(0.081)	(0.127)	(0.149)
R-Squared	0.142	0.164	0.148	0.040
Panel B: Adding Controls for Population Composition, Density and Urbanisation to Panel A				
Homeownership Rate	0.155*	0.200**	0.273+	0.065
	(0.057)	(0.058)	(0.150)	(0.140)
State-owned Housing Rate	0.126	0.037	0.061	0.006
	(0.095)	(0.075)	(0.165)	(0.164)
R-Squared	0.545	0.395	0.382	0.184
Panel C: Adding Controls for School Characteristics to Panel B				
Homeownership Rate	0.057	0.052	0.250	-0.077
	(0.052)	(0.060)	(0.203)	(0.176)
State-owned Housing Rate	0.031	-0.022	0.306	0.013
	(0.104)	(0.076)	(0.279)	(0.154)
R-Squared	0.660	0.520	0.526	0.299
Panel D: Adding Controls for Local Area Characteristics to Panel C				
Homeownership Rate	-0.003	-0.016	0.061	-0.643
	(0.067)	(0.097)	(0.540)	(0.401)
State-owned Housing Rate	-0.042	-0.175*	1.091	-0.298
	(0.103)	(0.087)	(0.665)	(0.234)
R-Squared	0.694	0.559	0.825	0.401
Number of Schools	512	437	61	167

Notes: ** indicates significance at 1% level of significance. * indicates significance at the 5% level of significance. + indicates significance at the 10% level of significance. Numbers contained within parentheses represent standard errors. School characteristics added in Panel C include: decile dummy variables (decile 5 omitted as base) and the log of school roll. Local area characteristics added in Panel D include: one-family households, new to community within last five years, foreign-born, ethnicity categories (Pakeha omitted as base), household structure categories (couple households omitted as base), highest qualification categories (no qualifications omitted as base), income beneficiaries, employment statuses, volunteer work within the last four weeks, and log of mean dwelling income.

Table 6: Weighted OLS Regression of BoT Participation Rates – Full Results

	Full Primary		Contributing Primary		Intermediate		Secondary	
	Coef	**S.E.**	**Coef**	**S.E.**	**Coef**	**S.E.**	**Coef**	**S.E.**
Homeownership Rate	-0.003	(0.067)	-0.016	(0.097)	0.061	(0.540)	-0.643	(0.401)
State-owned Housing Rate	-0.042	(0.103)	-0.175*	(0.087)	1.091	(0.665)	-0.298	(0.234)
Urban/Rural	-0.028	(0.020)	-0.040	(0.027)			0.105	(0.072)
Log Population	-0.008	(0.008)	0.025*	(0.013)	-0.069	(0.122)	-0.033	(0.029)
Log Population per Hectare	0.002	(0.005)	-0.009	(0.005)	-0.010	(0.080)	-0.003	(0.024)
Pop Age 18-24 (vs < 18)	-0.306	(0.213)	-0.056	(0.149)	0.371	(1.99)	-1.57*	(0.689)
Pop Age 25-64 (vs < 18)	0.020	(0.169)	-0.028	(0.213)	1.375	(2.09)	-1.65*	(0.497)
Pop 65+ (vs < 18)	-1.83	(1.522)	1.094	(1.46)	28.06	(20.7)	-9.61*	(3.414)
Has Eligible Children	-0.188+	(0.102)	0.157	(0.202)	-1.653	(3.514)	-1.84*	(0.698)
State-Integrated School	0.096**	(0.018)	0.034	(0.025)			-0.020	(0.052)
Had Mid-Term Election	-0.003	(0.016)	-0.006	(0.016)			0.028	(0.046)
Log School Roll	-0.117**	(0.010)	-0.104**	(0.013)	0.044	(0.105)	-0.107*	(0.043)
Boarding Facilities							-0.043	(0.027)
# Neighbouring Schools	-0.002	(0.002)	-0.003**	(0.001)	-0.027	(0.024)	0.001	(0.006)
Leavers w/ No Quals							-0.015	(0.128)
Leavers w/ High Quals							0.085	(0.120)
Decile 1 School (vs 5)	-0.072*	(0.026)	-0.105**	(0.025)	-0.180	(0.257)	-0.076	(0.130)
Decile 2 School (vs 5)	-0.027	(0.024)	-0.064*	(0.020)	-0.133	(0.228)	-0.026	(0.070)
Decile 3 School (vs 5))	0.000	(0.024)	-0.049*	(0.024)	-0.042	(0.159)	-0.009	(0.052)
Decile 4 School (vs 5)	-0.011	(0.021)	-0.033*	(0.017)	-0.111	(0.137)	0.060	(0.054)
Decile 6 School (vs 5)	0.034	(0.021)	0.012	(0.020)	-0.066	(0.170)	0.078	(0.051)
Decile 7 School (vs 5)	0.042*	(0.019)	0.051+	(0.026)	0.040	(0.211)	0.076	(0.056)
Decile 8 School (vs 5)	0.044*	(0.022)	0.037+	(0.019)	0.225	(0.182)	0.130*	(0.065)
Decile 9 School (vs 5)	0.057*	(0.021)	0.042*	(0.020)	-0.177	(0.239)	0.220*	(0.092)
Decile 10 School (vs 5)	0.080**	(0.023)	0.064*	(0.023)	-0.007	(0.221)	0.187*	(0.090)
New to Community	0.013	(0.088)	0.038	(0.101)	-0.831	(0.560)	-0.512+	(0.287)
Foreign-born	-0.109	(0.177)	-0.096	(0.125)	-1.083	(0.777)	-0.649	(0.437)
Volunteered in Last 4 Weeks	0.440*	(0.154)	0.066	(0.156)	-3.011	(2.226)	0.287	(0.627)
Maori (vs Pakeha)	-0.154+	(0.085)	0.000	(0.075)	-0.519	(0.695)	-0.226	(0.320)
Pacific Island (vs Pakeha)	0.032	(0.132)	0.031	(0.094)	-0.411	(0.756)	0.238	(0.425)
Asian (vs Pakeha)	-0.082	(0.122)	-0.152	(0.098)	0.370	(0.692)	0.492	(0.357)
Other (vs Pakeha)	-0.075	(0.178)	0.125	(0.215)	-1.658	(1.066)	-0.103	(0.647)
Single-parent (vs Couples)	-0.369*	(0.129)	-0.359*	(0.156)	-0.073	(0.746)	-0.274	(0.279)
Other-parent (vs Couples)	0.065	(0.178)	-0.061	(0.165)	-0.510	(1.539)	0.076	(0.619)
School Quals (vs No Quals)	-0.054	(0.180)	-0.152	(0.169)	0.990	(1.075)	0.693	(0.626)
Post-school (vs No Quals)	-0.441*	(0.171)	-0.426*	(0.203)	1.072	(1.414)	0.015	(0.788)
University (vs No Quals)	-0.048	(0.185)	-0.005	(0.155)	1.572	(1.196)	0.217	(0.684)
Missing Quals (vs No Quals)	-0.034	(0.250)	-0.467+	(0.274)	2.987	(1.944)	0.145	(0.909)
Receiving Social Benefits	0.077	(0.231)	0.086	(0.206)	-0.833	(1.298)	-0.783	(0.650)
Employed	-0.024	(0.199)	0.013	(0.150)	-1.053	(1.390)	-0.852	(0.677)
Unemployed	0.204	(0.396)	-0.024	(0.330)	0.170	(2.105)	0.329	(1.576)
Mean Log Dwelling Income	-0.136	(0.099)	-0.029	(0.137)	0.646	(0.578)	-0.096	(0.243)
S.D. Log Dwelling Income	-0.040	(0.081)	-0.001	(0.083)	0.125	(0.402)	-0.228	(0.225)
Mean Log Dwell Inc (Pop)	0.067	(0.077)	-0.162	(0.109)	-0.259	(0.360)	0.062	(0.196)
S.D. Log Dwell Inc (Pop)	0.189+	(0.113)	0.097	(0.126)	0.827	(0.776)	-0.259	(0.353)
Log Median House Value	0.006	(0.015)	0.032	(0.021)	0.002	(0.174)	-0.040	(0.058)
R-Squared	0.694		0.559		0.825		0.401	
Sample Size	512		437		61		167	

Notes: + significant at 10%; * significant at 5%; ** significant at 1%. Robust standard errors are in parentheses and all estimates are weighted by school size and hence represent the relationships for the average pupil. Board regions were control for, but are not presented.

Table 7: Marginal Effects of Homeownership on the Probability of BOT Election

	Full Primary	Contributing Primary	Intermediate	Secondary
Panel A: No Additional Control Variables				
Homeownership Rate	0.521*	0.447*	0.299	0.133
	(0.170)	(0.180)	(0.508)	(0.284)
State-owned Housing Rate	0.488*	-0.020	0.630	0.071
	(0.289)	(0.261)	(0.647)	(0.372)
Panel B: Adding Controls for Population Composition, Density and Urbanisation to Panel A				
Homeownership Rate	0.497*	0.752**	0.408	0.438
	(0.193)	(0.208)	(0.569)	(0.308)
State-owned Housing Rate	0.479	0.110	0.875	0.472
	(0.332)	(0.308)	(0.764)	(0.416)
Panel C: Adding Controls for School Characteristics to Panel B				
Homeownership Rate	0.162	0.439+	0.163	0.350
	(0.217)	(0.233)	(0.698)	(0.279)
State-owned Housing Rate	0.681+	0.549	1.959*	0.430
	(0.360)	(0.343)	(0.893)	(0.340)
Panel D: Adding Controls for Local Area Characteristics to Panel C				
Homeownership Rate	0.546*	0.791*	-0.234	-0.031
	(0.262)	(0.340)	(1.449)	(0.296)
State-owned Housing Rate	0.992*	0.277	3.159*	0.494+
	(0.354)	(0.426)	(1.566)	(0.288)
Number of Schools	1,066	790	121	222

Notes: ** indicates significance at 1% level of significance. * indicates significance at the 5% level of significance. + indicates significance at the 10% level of significance. Numbers contained within parentheses represent robust standard errors. School characteristics added in Panel C include: decile dummy variables (decile 5 omitted as base) and the log of school roll. Local area characteristics added in Panel D include: one-family households, new to community within last five years, foreign-born, ethnicity categories (Pakeha omitted as base), household structure categories (couple households omitted as base), highest qualification categories (no qualifications omitted as base), income beneficiaries, employment statuses, volunteer work within the last four weeks, and log of mean dwelling income.

Table 8: Marginal Effects on the Probability of BOT Election – Full Results

	Full Primary		Contributing Primary		Intermediate		Secondary	
	Coef	**S.E.**	**Coef**	**S.E.**	**Coef**	**S.E.**	**Coef**	**S.E.**
Homeownership Rate	0.546*	(0.262)	0.791*	(0.340)	-0.234	(1.449)	-0.031	(0.296)
State-owned Housing Rate	0.992*	(0.354)	0.277	(0.426)	3.159*	(1.566)	0.494+	(0.288)
Urban/Rural	-0.077	(0.074)	-0.139	(0.115)			-0.037	(0.109)
Log Population	-0.036	(0.031)	-0.032	(0.046)	0.002	(0.213)	0.065+	(0.035)
Log Population per Hectare	-0.025	(0.019)	0.005	(0.025)	0.350	(0.233)	-0.041*	(0.017)
Pop Age 18-24 (vs < 18)	-0.200	(0.793)	1.610*	(0.739)	1.875	(3.622)	0.943+	(0.558)
Pop Age 25-64 (vs < 18)	0.475	(0.712)	1.188	(0.877)	3.620	(4.865)	1.368*	(0.604)
Pop 65+ (vs < 18)	-6.372	(5.579)	3.429	(7.123)	74.40*	(34.72)	3.274	(3.639)
Has Eligible Children	0.438	(0.514)	0.661	(0.969)	6.945	(7.736)	0.690	(0.610)
State-Integrated School	-0.016	(0.064)	-0.125	(0.087)			0.042	(0.049)
Had Mid-Term Election	-0.019	(0.090)	-0.133	(0.087)			-0.029	(0.095)
Log School Roll	0.236**	(0.036)	0.277**	(0.048)	0.433+	(0.255)	0.171**	(0.043)
Boarding Facilities							0.039	(0.035)
Neighbouring Schools	0.006	(0.008)	-0.009	(0.006)	0.107*	(0.044)	0.009+	(0.005)
Leavers w/ No Quals							-0.050	(0.149)
Leavers w/ High Quals							-0.104	(0.168)
Decile 1 School (vs 5)	-0.096	(0.117)	-0.194	(0.121)	-2.076*	(0.634)	-0.006	(0.091)
Decile 2 School (vs 5)	-0.282*	(0.105)	-0.182+	(0.100)	-1.113*	(0.490)	0.013	(0.055)
Decile 3 School (vs 5))	-0.194+	(0.106)	-0.067	(0.090)	0.516+	(0.303)	0.013	(0.058)
Decile 4 School (vs 5)	-0.189*	(0.092)	-0.124	(0.093)	-0.108	(0.277)	-0.058	(0.046)
Decile 6 School (vs 5)	0.058	(0.094)	0.021	(0.098)	0.479	(0.303)	0.078	(0.051)
Decile 7 School (vs 5)	-0.074	(0.098)	0.066	(0.091)	1.242*	(0.438)	0.019	(0.051)
Decile 8 School (vs 5)	-0.058	(0.099)	0.048	(0.106)	1.882**	(0.476)	0.004	(0.052)
Decile 9 School (vs 5)	-0.048	(0.098)	-0.007	(0.104)	1.455*	(0.482)	-0.070	(0.059)
Decile 10 School (vs 5)	0.107	(0.106)	0.134	(0.116)	2.843**	(0.698)	0.184*	(0.079)
New to Community	0.218	(0.363)	0.091	(0.393)	0.969	(1.274)	-0.204	(0.270)
Foreign-born	-0.278	(0.745)	-0.157	(0.629)	-6.241*	(2.222)	0.488	(0.427)
Volunteered in Last 4 Weeks	0.362	(0.549)	-0.327	(0.698)	-0.014	(2.949)	0.590	(0.598)
Maori (vs Pakeha)	-0.553+	(0.312)	-0.034	(0.369)	-0.035	(1.323)	-0.503+	(0.268)
Pacific Island (vs Pakeha)	-0.958+	(0.528)	0.102	(0.503)	5.303*	(1.918)	-0.584+	(0.311)
Asian (vs Pakeha)	0.313	(0.662)	0.160	(0.480)	9.685**	(2.937)	-0.333	(0.377)
Other (vs Pakeha)	0.010	(0.649)	1.205+	(0.636)	7.442*	(2.900)	-0.779	(0.549)
Single-parent (vs Couples)	0.887+	(0.528)	-1.271*	(0.628)	-4.679*	(1.492)	0.680+	(0.386)
Other-parent (vs Couples)	1.042	(0.732)	-0.525	(0.848)	5.367*	(2.428)	0.989	(0.661)
School Quals (vs No Quals)	0.328	(0.723)	-0.615	(0.733)	-2.951	(2.550)	-0.667	(0.566)
Post-school (vs No Quals)	-1.082	(0.738)	-1.019	(0.802)	-10.53*	(3.315)	0.543	(0.649)
University (vs No Quals)	-0.514	(0.679)	-0.400	(0.662)	-6.049*	(2.825)	0.307	(0.477)
Missing Quals (vs No Quals)	-0.500	(1.036)	0.143	(1.044)	-8.299*	(3.404)	0.093	(0.842)
Receiving Social Benefits	-0.475	(0.780)	1.833*	(0.912)	2.877	(2.992)	0.262	(0.748)
Employed	-0.277	(0.700)	0.543	(0.736)	9.874**	(2.315)	0.305	(0.550)
Unemployed	-0.012	(1.514)	-0.594	(1.487)	11.66*	(4.995)	-0.972	(1.192)
Mean Log Dwelling Income	-0.538	(0.395)	-0.103	(0.454)	-0.054	(1.176)	0.589*	(0.270)
S.D. Log Dwelling Income	-0.553+	(0.310)	0.600+	(0.331)	0.423	(0.822)	0.245	(0.242)
Mean Log Dwell Inc (Pop)	0.132	(0.330)	-0.313	(0.366)	-1.594	(1.391)	-0.522*	(0.230)
S.D. Log Dwell Inc (Pop)	0.440	(0.573)	-0.245	(0.656)	-3.163	(2.757)	-0.593	(0.411)
Log Median House Value	0.085	(0.060)	0.113	(0.079)	-0.029	(0.358)	-0.123*	(0.053)
Sample Size	1,066		790		121		222	

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. Robust standard errors are in parentheses and all estimates are weighted by school size and hence represent the relationships for the average pupil. Board regions were control for, but are not presented.