"Voter Turnout in Flemish Municipal Elections"

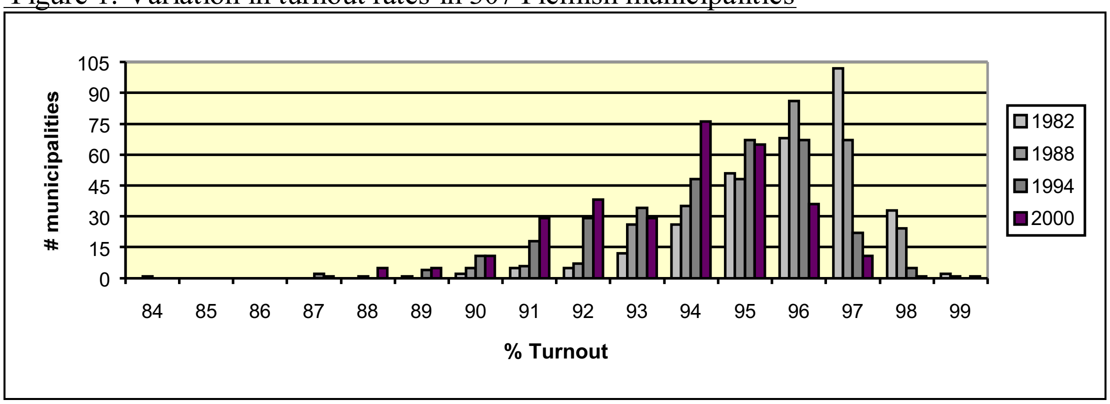
Kris Boschmans
Benny Geys
Rachel Okonkwo

1. Introduction

Turnout rates tend to show considerable levels of variation over different geographical areas (over countries as well as states and municipalities within these countries). This has led to a vast amount of research effort in explaining these variations. Most of the literature concerning turnout and its determinants is concentrated in the United Kingdom and the United States. In this paper, we will investigate turnout variation among the Flemish municipalities and try to infer whether the same elements influence turnout in the same way under compulsory voting than when voting is not compulsory.

Figure 1 shows the turnout percentages for the 307 of the 308 Flemish municipalities studied for the municipal elections of 1982, 1988, 1994 and 2000 [1]. On the horizontal axis are the turnout percentages, while on the vertical axis we represent the number of municipalities with a certain percentage turnout. It can be easily seen that there was a reasonable amount of variation between the turnout rates of the Flemish municipalities in all of the years under investigation – even though voting is compulsory in all municipalities.

Figure 1: Variation in turnout rates in 307 Flemish municipalities



Our dependent variable – percentage turnout in the municipality – is measured as the total number of votes cast (valid as well as invalid and blank) divided by the number of registered voters. Following Eagles and Erfle (1989) and Shachar and Nalebuff (1999), we use a logistic transformation of our dependent variable: Logistic Turnout = log (Turnout/(1-Turnout)). This is necessary as the range of turnout is limited to the 0 to 100 percent interval.

[1] Herstappe was the sole Flemish municipality left out of the analysis as it had no municipal election in 1982.

It is important to realise that in our analysis we focus on the Flemish municipalities themselves. In other words, the empirical analysis provided in this work is not based on individuals, but on socio-spatial units (municipalities) using aggregate data. This holds as a direct consequence that we do not mean to answer the question 'why some *people* are more likely to turn out than others (individual-level analysis)'. Instead, we will try to infer 'why turnout rates are higher in some *municipalities* compared to others (aggregate-level analysis)'.

2. Theory

The basic positive model of voter turnout is the "expected utility model" of Downs (1957). He argues that the voter will, in deciding whether to vote or abstain, calculate the expected utility from either possible action. The rational individual will thereby vote only if the benefits of doing so outweigh the costs. Using the notation introduced by Riker and Ordeshook (1968, 25), this can be represented as follows

$$R = BP - C + D > 0 \quad (1)$$

The instrumental benefits (BP) from voting consist of the difference in expected utilities from the policies of the two candidates (B)[2]. This has to be weighed with the probability (P) that one's vote will influence the outcome and bring about the victory of the desired candidate. C stands for the different costs of voting. Finally, the D-term refers to Riker and Ordeshook's (1968) "civic duty" concept. It is the benefit the voter receives from the act of voting itself, from compliance with the ethics of voting.

The central observation of the calculus of voting model is that single votes do not really matter (P very close to 0). When the electorate reaches a certain size, it is unlikely that one single vote will either break or make a tie in favour of ones preferred candidate. The obvious conclusion then is that one should not 'rationally' vote to affect the outcome. The discrepancy between this conclusion and the observation of high turnout rates has been labelled "the paradox of not voting".[3]

One caveat has to be mentioned: Whereas this theory refers to the choice of *individuals* to vote or abstain, our empirical analysis has reference to a more aggregated level. It is beforehand not obvious whether this model also holds at the municipal level, so ideally we should adapt the theory to better suit our data. However, to the best of our knowledge, there does not exist a likewise model at the aggregate level. Constructing a model ourselves lies beyond the scope of this study. Anyway, all aggregate-level empirical work we know of makes abstract of this problem and assumes the inference to be the same at the aggregate and the individual level (cfr. Filer, 1977; Foster, 1984; Davis, 1991).

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[2] The model was developed only for two candidate plurality elections. Hence, it does not take into account the possible effects from coalition formations that frequently arise in multi-candidate elections.

[3] Several possible solutions to this paradox have been proposed in the literature. However, a review of these lies beyond the scope of this text. An excellent review can be found in Mueller (1989).

3. Empirical Analysis

3.1. Explanatory Variables

Concerning the explanatory variables of our model, we look at a number of socio-economic and other variables that are most frequently used in the literature or that can be expected to have a significant influence in our setting.[4] This holds that we analyse the effects of Income per capita, % Unemployment, % older than 65, Total population, Mobility of the population, Municipal taxes, Number of pre-1976 municipalities, Electronic voting and Geographical location. The exact "definition" of these variables will be explained below. We will thereby also group the different variables according to the element of equation (1) they refer to. Some variables may refer to several elements in equation (1), which will then be mentioned.

a) Benefits (B)
We took up two variables that relate to the benefits an individual has of turning out, the first being taxation levels in the community. Higher taxation means that the municipal government will have more financial resources, which increases the stakes of the election. "Taxation" here consists of two distinct variables referring to the two main elements in the municipal taxation structure: 'opcentiemen op de onroerende voorheffing' (Tax_A) and 'aanvullende personenbelasting' (Tax_B). Both are expected to be positively correlated with turnout.

Unemployment (Unem) is measured by the number of unemployed in the community divided by the population of working age (18-65). This is also expected to be positively correlated with turnout. The general level of satisfaction with the policy of the current government is likely to be lower in times of economic distress in general and unemployment in particular (Durden and Gaynor, 1987, 234). People have a higher benefit of voting when unemployment is high – in order to protect their employment.

b) Probability (P)
The probability of casting the decisive vote is proxied in our model by the number of inhabitants of the municipality (Pop). A larger population should normally be negatively correlated with turnout as the size of the population influences (i.e. lowers) ones probability of casting the decisive vote. This can also be shown by making reference to the formula of P (Mueller, 1989, 350*n*):

$$\mathrm{P} = \frac{3e^{-2n(p-1/2)^2}}{2\sqrt{2\pi n)}} \qquad (2)$$

with n being the size of the electorate and p denoting the expectation a voter has about the percentage of the vote his preferred candidate will receive.

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4 Ideally, at least two more variables should have been included in our regression equation, namely campaign expenditures and homeownership. However, due to a lack of data, we were not able to do so.

c) Costs (C)

Several measures in our model tap into the cost-element of the turnout-model.

Income (Inc) is defined in our model as the average income per capita in the municipality. The sign of income is a priori ambiguous. On the one hand, we can expect a negative sign as people with high income are associated with higher opportunity costs of their time (Frey, 1971, 102). On the other hand, high income people tend to be better educated (thus having lower information costs) and are more sensitive to social pressure and the associated costs of not-voting (Fraser, 1972, 117). Though the major effects of income can be seen to be cost effects, the latter element in the reasoning indicates there might also be an effect of increases feelings of 'duty' (D) associated with higher income.

Age is defined as the percentage of the population over 65. We assume a negative relation with turnout based on the so-called "life cycle model". This model asserts that there is a non-linear relation between age and turnout. First, turnout increases with age as people become more experienced in voting and acquiring information and as they become more socially integrated (Strate *et al*, 1989, 447-453). However, when one reaches a certain age, one's social involvement tends to decrease and one is confronted with the disabilities and health problems often accompanying old age (Hout and Knoke, 1975, 53) increasing the costs of voting. Although the average age (and its square) may well be better to gauge this relationship, these figures were unavailable to us.

Electronic voting is a dummy variable with a value equal to one when electronic voting is possible and zero otherwise. The possibility of voting electronically is likely to reduce the costs of voting and thus increase turnout. However, it may also be the case that people unfamiliar with modern technologies are not at ease with or may distrust computers such that they will prefer not to vote. This could then lower turnout. The effect of this variable thus is a priori ambiguous.

d) Duty (D)

The 'civic duty' element of the rational voter model can in aggregate-level models be approximated by measures of social cohesion. Indeed, if a community is more socially integrated, an individual in that community is more likely to feel socially and morally obliged to vote. The reason is that he does not want be known as someone that does not care about the 'common good' (Overbye, 1995, 376). In this case, voting can be seen as an act of strategic reputation building. Three measures in our analysis look at the effect of social cohesion.

Mobility (Mob) is defined as the number of immigrants and emigrants at the municipal level divided by the total population of the municipality (lagged by one year). Increased mobility of the population is supposed to depress turnout. Firstly, municipalities with a high turnover in the population tend to show weaker group connections (Hoffman-Martinot, 1994,14). This leads to lower social pressures to turn out reducing the cost of not voting (Schram, 1991, Ch. 8).

Number of pre-1976 municipalities is used as a second (admittedly imperfect) proxy for social cohesion within the municipality (Sub). In 1976, the Belgian municipal landscape was drastically reformed in that on average every four municipalities were merged into a single "new" one. It is assumed that a higher number of pre-1976 communities reduces the level of social cohesion in this "new" municipality. This should then lead to lower levels of social pressure, decreasing turnout.

Finally, Geographical location is a set of dummy variables representing the five Flemish provinces. This may be seen as a test of whether civic duty is stronger or weaker in certain areas of the country, as we hold constant all other elements we believe to influence turnout. Of course, this is certainly not a perfect measure of the possible geographical influence on voting behaviour. There is little reason to assume that the areas where civic duty is significantly larger (or smaller) coincide perfectly with provincial boundaries. However, the use of a more suited variable to measure spatial correlation would greatly complicate our model and time restraints prevented the use of them.

3.2. Analysis

Before we start with the actual analysis of the data through panel data estimation, we first wish to infer whether there may be problems of multicollinearity in our dataset. The presence of this could be problematic for the preciseness of our estimates and would thus possibly seriously inhibit analysis. As exact multicollinearity is very unlikely to occur, we will only have to check for the degree of multicollinearity between our explanatory variables. We do so via two tests. The first is simply to look at the bivariate coefficients between the various explanatory variables. Following Davis (1991, 83), we employed a cut-off point of 0.80 to eliminate variables from the model. The results are presented in Table 1. It is clear that none of the variables in the model reaches the cut-off point. In fact, the highest correlation in our dataset is 0.5253 between income and electronic voting. As also mentioned in Tolbert *et al* (2001, 631), correlations of 0.5 are usually seen as evidence for no more than "moderate correlation" between two variables. Hence, none of the variables proposed earlier needs to be eliminated on the ground of multicollinearity.

Table 1: Correlation matrix

	Turnout	Pop	Migr	Age	Inc	Unem	Tax_A	Tax_B
Turnout	1							
Pop	-0.2839	1						
Migr	-0.5438	-0.0107	1					
Age	-0.1896	0.0313	0.1269	1				
Inc	-0.5895	0.0520	0.3527	0.1229	1			
Unem	0.1240	0.0155	-0.0536	0.3232	-0.2038	1		
Tax_A	-0.0314	0.1491	-0.2166	.03569	0.1353	-0.0564	1	
Tax_B	0.1537	0.0831	-0.2339	0.0300	-0.0511	0.0435	0.3330	1
Sub	0.0488	0.3504	-0.2312	0.0469	-0.0219	-0.0262	0.2207	0.1933
Elec	-0.3903	0.0462	0.1755	0.0471	0.5253	-0.0934	0.0002	-0.0622
Antw	-0.1352	0.0705	0.0671	-0.1250	0.0609	0.0136	-0.1954	-0.0802
Brab	-0.1977	-0.0633	0.3520	0.0507	0.1803	-0.0649	-0.2514	-0.0717
West	0.0288	-0.0250	-0.1040	0.1850	-0.1543	-0.0566	0.4377	-0.0254
Oost	0.0687	0.0297	-0.1789	0.1199	-0.0010	0.0255	0.0426	0.1411
	Sub	Elec	Antw	Brab	West	Oost		
Sub	1							
Elec	-0.1244	1						
Antw	-0.2386	0.3020	1					
Brab	0.0328	-0.0084	-0.2817	1				
West	-0.0021	-0.1821	-0.2789	-0.2660	1			
Oost	0.1835	0.1049	-0.2817	-0.2686	-0.2660	1		

The second test is to regress each independent variable on all other and see whether the explanatory value of the regression (R^2) is high. The latter would mean that there is a strong linear relation between that variables and the other explanatory variables in the model. Again following Davis (1991, 84), we exclude those variables for which the R^2 was close to unity. As for the previous test, none of the variables need be excluded from the model. The highest R^2 (i.e. 0.51) is found when regressing Tax_A (i.e. “OOV”) on the other variables. We thus conclude that there are unlikely to occur problems due to multicollinearity.

We first estimate the data by random effects estimation. The reason we prefer to use this approach over the use of fixed effects is that the former yields more efficient results. It does not require the estimation of a fixed effect for each municipality, which – in our sample – means, more than 300 degrees of freedom can be saved. Moreover, the fixed effects model precludes estimation of coefficients for individual-specific, time-invariant variables. The geographical dummies can therefore only be included in the analysis when applying random effects. The last and most important reason for preferring random effects lies in the nature of our dataset. For most variables, the variation between municipalities is far greater than the variation in time. Population size, income and – to a somewhat lesser extent – variables such as unemployment, migration and age show little variation across time. Fixed effects can be interpreted as a simple OLS-regression of means-differenced variables, and thus only captures the variation across time, which in this case can be too small to get meaningful results[5] (Johnston and DiNardo, 1997).

The results of our random effects estimation are presented in Table 2. Before discussing the results, it needs to be mentioned that we included the logarithm of population instead of the actual population in our estimations. The *relative* population size seemed a more appropriate variable to us than the absolute size in population. This is however not crucial for our results. Indeed, running the model with population figures as such does not have any effect on the results of the other variables. Population itself is moderately negatively significant and the general fit of the model is somewhat worse (R^2 just below 0.50). Especially the improved fit of the model with the natural logarithm of population convinced us to use this specification.

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[5] It is also quite possible for our explanatory variables to be measured imprecisely, i.e. with an error. To give an example: the sociographic variables (i.e. population, age and migration) are measured via a wide-scale survey once every ten years. For the other years, only approximations based on birth, death and migration numbers are available. This is particularly grave with the fixed effects estimator, as the measured variation is then for a large extent due to this measurement error and not to real changes in variables (Johnston and DiNardo, 1997).

Table 2: Random effects estimation results for municipal Turnout 1982-2000

Variable	β	Stand. error	P-value
Population (ln)	-0.288	0.0224	0.000
Migration	-4.566	0.5664	0.000
Age	-0.324	0.2096	0.122
"Subcommunities"	0.026	0.0081	0.001
Av. Income	-0.0018	0.00023	0.000
Interquartile Income Difference	0.00012	0.00016	0.442
Unemployment	0.090	0.0851	0.288
Electronic voting	-0.036	0.0244	0.136
Antwerpen	-0.325	0.0502	0.000
Vlaams-Brabant	-0.339	0.0534	0.000
West-Vlaanderen	-0.399	0.0522	0.000
Oost-Vlaanderen	-0.299	0.0509	0.000
OOV-rate	3.38E-5	4.81E-5	0.482
APB-rate	-4.4E-5	0.0092	0.996

R^2 within = 0.6026 Chi² (14) = 1852.22
R^2 between = 0.6107
R^2 overall = 0.6074 N = 307 , T = 4

Five variables are correlated with turnout in Flanders at a significance level of 1%. The general explanatory power of the regressors (measured by the R-squared) is also quite satisfactory. Moreover, both the population and migration variable have the expected negative sign, corroborating the theory. Average income appears to be strongly negatively correlated with turnout, implying a dominance of the "opportunity cost-argument" (see supra). Other reasons, like the general dissatisfaction with the current regime may also partly explain this strong negative relationship. "Subcommunities" is – to our surprise – positively correlated with turnout. Finally, the province dummies are all strongly significant. Apparently, turnout in the province of Limburg is consistently higher than in the other provinces in Flanders, providing evidence for the importance of regional effects on civic duty.

The results of the random effects estimation thus – in general - nicely fit the theory. However, this method is only correct if the time-invariant (or individual-specific) component of the error term is uncorrelated with all the explanatory variables. To test whether this assumption holds in our analysis, we performed the so-called Wu-Hausman-test. This test essentially verifies whether the differences in coefficients between the fixed and random effects estimation methods are systematic. The results of this test show that the assumptions underlying random effects cannot be maintained in our analysis. More specifically, the test gives us a value of 94.01. Given that the test-statistic is Chi-square distributed under the null hypothesis (with 9 degrees of freedom as our model contains 5 time-invariant variables), the critical value is 21.666 for a 99% confidence level. Hence, it is clear that the random effects method is better not used for our analysis.

Apparently, the unobservable, or non-measurable factors that differentiate cross-section units, are no randomly distributed variables. As such, the use of fixed effects in our estimation seems more suited. The results of the fixed effects estimation are presented in Table 3.

Table 3 : Fixed effects estimation results for municipal Turnout 1982-2000

Variable	β	Stand. error	P-value
Population (ln)	-0.166	0.1957	0.397
Migration	-1.245	0.8187	0.129
Age	-0.036	0.2149	0.865
Av. Income	-0.0018	0.0002	0.000
Interquartile Income Difference	-2.68E-4	1.846E-4	0.147
Unemployment	0.067	0.0865	0.441
Electronic voting	0.0248	0.0248	0.536
OOV-rate	5.62E-5	5.8E-5	0.333
APB-rate	-0.0105	0.0107	0.324

R^2 within = 0.6115 F (9, 912) =159.49
R^2 between = 0.4309
R^2 overall = 0.4718 N = 307 , T = 4

Although the signs of the dependant variables are – in general – the same as in our previous estimation, the significance of almost all variables has dropped dramatically. Only the average income remains significantly correlated with turnout. In a way, this is not surprising. It is, first of all, quite possible for the standard errors to be biased upwards in our previous estimation, given the non-validity of the standard Gauss-Markov assumptions. When using the "right" estimation technique this bias should disappear, yielding less significant estimates. A second reason lies in the loss of degrees of freedom. As pointed out before, this technique entails the estimation of 307 fixed effects, whereas this did not have to be done previously. As Hsiao (1986) explains, the estimates of the fixed and random effects parameters can be surprisingly different when the cross-sectional dimension is large, relative to the time-series dimension. Thirdly, fixed effects only uses the variance within municipalities. Because this variation is small at best compared with the variation between the different cross-section units, less clear-cut results can be expected.

We expect that the results in Table 3 may be somewhat obscured by the existence of heteroskedasticity. The variance of the disturbance terms for municipalities with -for example - a larger average income can well be systematically higher than in other, poorer municipalities. To test for the existence of such heteroskedasticity, we first performed the Breusch-Pagan Lagrange Multiplier test. This test requires that we run an auxiliary regression of the squared residuals of the (fixed effects) regression on a number of variables Z_i of which we suspect that they affect the disturbance variance. If the explanatory variables in this regression are not related to the residuals, we can expect the R^2 of this auxiliary regression to be close to zero (and even very close to zero, given the large sample size). Hence, the test itself requires us to calculate N(T-1) times the R^2 and see whether this value is larger than the critical value. This critical value is obtained from the Chi-square distribution with 7 degrees of freedom[6] and is 18.475 for a 99% confidence level. As the R^2 of the auxiliary regression is 0.0210 and as N(T-1) equals 921, we obtain a value of 19.341 for our test statistic. We thus have to reject the null hypothesis that the disturbances are homoskedastic.

[6] Seven degrees of freedom as we include 7 explanatory variables in the auxiliary regression (apart from a constant): Population, migration, age, income, interquartile difference in income and both taxation variables.

To be on the safe side, we also performed a White test. This test is slightly different from the previous one. The dependent variable is still the squared residuals – as before – but now we now include squares and cross-products of the variables of which we expect that they affect the disturbances. To limit the number of variables in this new auxiliary regression, we only look at population, migration, income and interquartile difference in income, four variables for which we can reasonably suspect to show heteroskedasticity. Therefore, the number of regressors becomes 14. Hence, under the null hypotheses, the test statistic [which is $N(T-1)*R^2$] is Chi-squared distributed with 14 degrees of freedom. This leads to a critical value equal to 23.685 with a confidence level of 95% and to a critical value of 21.064 at a 90%. Our test-statistic takes on a value of 22.288. The results of this test thus are rather ambiguous, rejecting the null hypothesis at the 90% level, but not at the 95% level. Nonetheless, we believe it would be prudent to assume the disturbances to be possibly heteroskedastic.

The (likely) presence of heteroskesdaticity adds to our dissatisfaction with the fixed effects estimator. Therefore, we present a final estimation technique: OLS with corrected standard errors, which rids us of the problem of heteroskedasticity, allows for the estimation of the dummy variables and, above all, does not require the estimation of means-differenced variables. The big disadvantage of this method is that we basically ignore the panel structure of our data. Observations of the same municipality are likely to be more “alike”, which was previously captured by the estimation of a dummy variable for each municipality (i.e. we assumed the intercepts to be different for each cross-section). The omittance of this is, as we see it, not too big a problem in our situation, as we are not primarily interested in the *time dynamics* of turnout in Flanders. Intramunicipital dynamics are arguably not as important in explaining turnout rates as intermunicipital differences are, of which the latter will drive our obtained results. These results are presented in Table 4.

It is important to state that the standard errors in Table 4 are so-called Panel-Corrected Standard Errors (PCSE; Beck and Katz, 1995). In this seminal paper, Beck and Katz compare the OLS-technique with their corrected standard errors vis-à-vis the most commonly used feasible GLS approach in political science. An extensive Monte Carlo-analysis shows their method to generally yield better, more accurate results, even in the presence of complicated panel error structures (Beck and Katz, 1995). Their method is since then widely acknowledged and can easily be applied using STATA. The need for correcting standard errors applying OLS is obvious as the true variability will otherwise be underestimated (Beck and Katz, 1995, 637; Tolbert *et al,* 2001). This is especially so in small samples but the underestimation would exists in all finite sample sizes. Our method corrects for this deficiency.

Table 4: FGLS estimation results for municipal Turnout 1982 -2000

Variable	β	Stand. error	P-value
Population (ln)	-0.299	0.0152	0.000
Migration	-6.357	0.4837	0.000
Age	-1.115	0.4259	0.009
"Subcommunities"	0.023	0.0043	0.000
Av. Income	-0.0017	0.00028	0.000
Interquartile Income Difference	3.26E-5	4.69E-5	0.851
Unemployment	0.205	0.1457	0.160
Electronic voting	-0.095	0.0301	0.002
Antwerpen	-0.287	0.0411	0.000
Vlaams-Brabant	-0.292	0.0489	0.000
West-Vlaanderen	-0.358	0.0506	0.000
Oost-Vlaanderen	-0.279	0.0461	0.000
OOV-rate	2.87E-5	4.69E-5	0.541
APB-rate	0.0057	0.0081	0.485

Chi^2 (14) = 2046.20
Log likelihood = 864.00
N = 307 , T = 4

The results of this final regression are very much in line with the results obtained from the random effects estimation. Consequently, we will be very brief in our description of the results. Firstly, it can be seen that the model has a very good fit. The null hypothesis that none of the variables in the model has any explanatory value is rejected very firmly, as can be seen from the Chi-Squared value mentioned at the bottom of Table 4. As in Table 2, population, migration, average income and the province dummies are significantly negatively correlated with municipal turnout. In addition, the parameter for age has become significant as well, with the expected negative sign. The only 'surprise' remains the positive and significant sign for "Subcommunities". This sign is very consistent over the various estimations performed, but we lack an adequate explanation for this.

4. Conclusion

Turnout rates across the Flemish municipalities show considerable variation, especially in light of the fact that voting is compulsory. This paper attempts to provide an explanation for this variation. More specifically, we use data on 307 Flemish municipalities for 4 consecutive elections (1982-1988-1994-2000), to analyse whether the same elements affect turnout in the same way under compulsory voting than when voting is not compulsory. The main conclusion to be drawn from our analysis is that the effect of most variables is similar under compulsory voting. Population, migration, age and unemployment all have the theoretically expected sign. And in most cases, the effect on turnout is statistically significant at generally accepted levels. The only difference with the literature we obtain is the sign of the income variable. We find this variable to be significantly negative in all regressions, while most of the literature finds a positive sign (though most often this is not significant). We see this as evidence that in Flanders, the opportunity cost argument is the most relevant argument concerning the income effect.

References

- Beck N. and J.N. Katz (1995), "What to do (and not to do) with Time-Series Cross-Section Data", *American Political Science Review*, Vol. 89, nr. 3, p. 634-647

- Davis O. (1991), "A Multivariate Analysis of Voter Turnout in Louisiana Contested Nonpartisan Judicial Elections, 1981-1988", PHD-Dissertation, UMI Dissertation Services, Ann Arbor, Michigan, 172 pp.

- Downs A. (1957), "An Economic Theory of Democracy", Harper and Row, NY, 310 pp.

- Durden G. C. and P. Gaynor (1987), "The Rational Behavior Theory of Voting Participation: Evidence from the 1970 and 1982 Elections", *Public choice*, Vol. 53, p. 231-242

- Eagles M. and S. Erfle (1989), "Community Cohesion and Voter Turnout in English Parliamentary Constituencies", *British Journal of Political Research*, Vol. 19, 115-125

- Filer J.E. (1977), "An Economic Theory of Voter Turnout", PHD-Dissertation, UMI Dissertation Services, Ann Arbor, Michigan, 118 pp.

- Foster C. B. (1984), "The Performance of Rational Voter Models in Recent Presidential Elections", *American Political Science Review*, Vol. 78, p. 678-690

- Fraser J. (1972), "Why do High Income People Participate more in Politics", *Public Choice*, Vol. 13, p. 115-118

- Frey B. S. (1971), "Why do High Income People Participate more in Politics?", *Public choice*, Vol. 11, p. 101-105

- Hoffman-Martinot V. (1994), "Voter Turnout in French Municipal Elections", in *Local Elections in Europe*, L. Lopez-Nieto (ed.), Institut de ciènces politiques I socials, Barcelona, p. 13-42

- Hout M. and D. Knoke (1975), "Change in Voter Turnout, 1952-1972", *Public Opinion Quarterly*, Vol. 39, nr. 1, p. 52-68

- Hsiao C. (1986), "Analysis of panel data", Cambridge University Press, 246 pp.

- Johnston J. and J. DiNardo (1997), "Econometric methods", McGraw-Hill, New York, 531 pp.

- Mueller D. C. (1989), "Public Choice II", Cambridge University Press, 518 pp.

- Overbye E. (1995), "Making a Case for the Rational, Self-Regarding, 'Ethical' Voter… and solving the Paradox of not Voting in the Process", *European Journal of Political Research*, Vol. 27, p. 369-396

- Riker W. H. and P. C. Ordeshook (1968), "A Theory of the Calculus of Voting", *American Political Science Review*, Vol. 62, p. 25-42

- Schram A. (1991), "Voter Behavior in Economic Perspective", Springer-Verlag, Berlin, 274 pp.

- Shachar R. and B. Nalebuff (1999), "Follow the Leader: Theorie and Evidence on Political Participation", *American Economic Review*, Vol. 89, nr. 3, p. 525-547

- Strate J.M., C.J. Parrish and C.D. Elder (1989), "Life Span Civic Development and Voting Participation", *American Political Science Review*, Vol. 83, nr. 2, p. 443-464

- Tolbert C.J., J.A. Grummel and D.A. Smith (2001), "The Effects of Ballot Initiatives on Voter Turnout in the American States", *American Politics Research*, Vol. 29, nr. 6, p. 625-648