


UNIVERSITY OF CAMBRIDGE

# Does a change in electoral system lead to an increase in voting? Evidence from Italy, 1970-2024.

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# Introduction

Democracy is a core belief of the University of Cambridge and the Laidlaw foundation. The accountability of leaders to the people in their organisations, local areas or nations is vital to keep systems from the grips of tyranny. Yet, the nature of democracy, from how votes translate to who is elected, is often a topic of debate or referendum. This phenomenon is easily demonstrated in national elections, where systems such as the Electoral College in the USA can lead to the winner of the election gaining less votes than their opponent, such as in 2000 (George W. Bush 50,456,002 vs Al Gore 50,999,897) (Federal Election Commission, 2001) or 2016 ( Donald Trump 62,984,828 vs Hilary Clinton 65,853,514), (Federal Election Commission, 2017).

In the UK, the First-Past-the-Post system has led to many parties, namely UKIP in 2015, Reform UK in 2024, and the Green Party in both, receiving consistently lower Parliamentary representation than their total support at election, by voter share (House of Commons Library, 2015) (House of Commons Library, 2024). These both serve as familiar examples for a wider issue, that there are many electoral systems that come under the banner of democracy. Because of this, potential changes in electoral system are often discussed, and at times put to national vote. One such proposed change was voted against by the British public in 2011, with the Liberal Democrats' Alternative Vote system voted against by a margin of almost 7 million people (House of Commons Library, 2011).

It is often argued by proposers of changes to electoral system that a more proportional system, which sees more voters have their vote be essential for a party to win, will see more people vote due to a variety of factors (Liberal Democrats, 2024).

First, on the personal voting level, the time and sometimes monetary costs associated with voting (registering to vote, applying for a postal ballot or going to a voting station, conducting this voting process) may not be seen as worth it for many people, especially those whose First-Past-the-Post constituency is not tightly contested between parties.

Take a Freakonomics-inspired ( Levitt & Dubner, 2005) example. Suppose a person sees a change in government from party A to party B to be worth £10,000 to them, and the costs of voting, including their time spent on voting rather than doing something else, is £10. This person must believe that their vote has a $\frac{1}{1000}$ or better chance of changing government from party A to party B, else their vote is not entirely rational. Of course, people gain some value in voting, and other factors are at play, but there is undoubtedly some point at which voters do not feel their vote does anything, thus the costs of voting outweigh the benefits.

Thus, if a change in electoral systems gives people the belief that their vote is going to count for more, on an individual level this should increase their chances of voting. On a wider scale, this should lead to a greater level of participation in election.

There are many ways to conduct such a change. A system where constituencies contain more than one seat, such as the Regional seats of the Scottish MSP election system, can create greater incentive, as a smaller percentage of votes for one candidate or party can still lead to an elected representative (Electoral Reform Society, 2024). This means that potential voters who support these smaller groups have greater incentive to vote, as they perceive chance of desired change as higher. This does assume pure rationality of voters, but studies such as Blais and Carty (1990) appears to show this behaviour holds to some extent in large samples.

Taking a multi-member constituency to its extreme would be a true Proportional Representation (PR) system, where the entire country acts as one constituency of the entire represented body. While a simple “more proportional = higher incentive” system seems attractive, it is important to be cautious about this. Voters in tightly contested constituencies in a less proportional system may see their vote as more valuable than average. Take the recent United Kingdom General Election, where MP Sam Carling won by a margin of 39 votes (House of Commons Library, 2024). In this Constituency, the margin for one extra seat was only 40 votes, whereas in a full PR system it would most likely be in the thousands. Thus, voters in *some* areas gain incentive to vote under First-Past-the-Post, but the majority, who reside in constituencies where the results feels decided, lose incentive. Of course, again, this assumes knowledge of how close a constituency is from a voter, and perfectly rational actors, but this is nonetheless the theory.

It is thus the aim of this research to analyse if a change in electoral system will lead to a noticeable change in voter turnout. By the theory outlined above, a change to a more proportional system should lead to a higher level of turnout, once controls for time and

other effects take place. This is demonstrated in prior literature, namely Jackman (1987) and the aforementioned Blais and Carty (1990).

However, these analyses are cross-sectional, looking at 19 and 20 countries respectively, and making conclusions once controls for GDP, culture and others are made. I wish to take a different approach, by looking at an actual change that has occurred, namely the changes made to the Italian lower house elections, from the 1994 election onwards.

I will thus analyse if this change has made a difference to the voter turnout in Italy, by comparing it to other elections that have not had their system change, namely Upper House, European, and Local elections. My analysis aims to contribute to the literature by testing its hypotheses with a change in one of the countries they examine, and previously needed controls are now unnecessary, as there is only one nation being tested.

The nature of the change to Italy's lower house elections must therefore be discussed. Prior to 1994, Italy operated on a PR system, where the individual candidates for each party were chosen by a preference system given to voters. This represents a purely Proportional system, but does add some layer of complexity for a voter, being able to choose between certain candidates on one party list. This changed to a Mixed-Member Majoritarian system (MMM), where 75% of seats were now allocated by single-member districts, and 25% proportionally in multi-member districts across Italy's 26 regions. For the sake of our testing, this can be seen to be a decrease in proportionality.

# The case of Italy – Data collected

The Data collected comes primarily from L'Archivo Eligengo, the Italian Election Archives, with supplementary data for local elections in some regions, such as Sardegna, South Tyrol, and Fruili-Venezia Guilia. All of this supplementary data came from local government election archives. The data that I have chosen to collect is the total number of registered voters, the total number of votes cast, and the votes that were discounted as blanks. The latter allows me to separate voting rates into two categories, Blanks Included (BI), where a Blank vote counts the same as any other, and Blanks Excluded (BE), where blanks are perceived as a protest vote, with voters saying that they are willing to go out and vote, but do not believe that their vote counts for anything, so choose to not vote for a party. In reality, the testing process showed no significantly different results between the two types, thus BI has been shown in every case.

Data is taken for elections from the lower house (Camera dei Deputati), upper house (Senato della Republica), and local elections, from all of Italy's 20 regions. I have also accumulated these into Italy's 5 European election constituencies, with the following regions being in each constituency.

| Constituency | Regions |
|---|---|
| North-West | Aosta Valley, Liguria, Lombardia, Piemonte |
| North-East | Emilia-Romagna, Fruili-Venezia Guilia, South Tyrol, Veneto |
| Central | Lazio, Marche, Toscana, Umbria |
| Southern | Abruzzo, Basilicata, Calabria, Campania, Molise, Puglia |
| Islands | Sardegna, Sicilia |

With these added together, I then added European election results for each of these constituencies. This did create imbalance, as in some cases I had 6 sets of results for a national election but one for European elections for one region. However, the datasets on European elections by region were inconsistent, so this choice had to be made.

Finally, all of these results were made into one national results table (with 802 sets of data) that gave me a larger set of results to work with first, to establish national trends. I would then analyse how these trends varied from EU constituency to constituency, and from region to region.

# Methodology – Simple Multivariate Regression

For methodology, my analysis focuses on a simple regression, attempting to estimate Voting Percentage (Blanks Included), noted as %BI, as a product of the year, and what type of election is occurring. The year is denoted simply as the year (Common Era) in which the election occurred, and the election type uses Dummy Variables, where if a value is "1", that is the type of election, and if it is "0" it is not.

For the actual test, I will be using a similar Dummy variable for the change in electoral system, known as the Change Dummy (CD). It is important to note that this change only occurred to Camera dei Deputati elections.

In our model we must also have a base case to compare analysis from, that will not have an attached $\beta_n$. For this I have chosen Camera dei Deputati elections, as they have the most reliable data meaning that a good base case should be easier for the model to create.

The model is thus as follows:

$$\%BI_i = \beta_1 Year_i + \beta_2 CD_i + \beta_3 Senato_i + \beta_4 European_i + \beta_5 Local_i + \varepsilon_i$$

To give an example of what this would look like, the 1996 Camera dei Duputati election has the following value:

Year: 1996

Camera: 1

Change Dummy: 1

Senato: 0

European: 0

Local: 0

The model then attempts to estimate the %BI to be a combination of these factors. This model makes a number of assumptions, some of which I will list below, and explain how this model may be ineffective due to them. A full list of assumptions on this type of model can be found in Hill, Griffiths, and Judge (2001)

1. Assumption of Linearity

The model assumes firstly that the time effect is linear, and that the % of registered voters who do vote either falls or rises at a constant rate. This may be inaccurate as a shock such as the change in voting system could lead to the higher growth rate of voting participation. However, from analysis of the dataset, it appears that voting rates fell steadily over the entire sample, so the main issue of a reversing of trend has not

occurred. Thus, the exact result for yearly trend may not apply perfectly, but this should not make a major difference.

2. Missing variables

Variables that are common in this type of analysis, such as GDP, inequality, and measures of social unrest, do not feature in my regression. This is for the simple fact that they do not change significantly from point to point in the sample, especially when broken down by region, and should be correlated in some way with the time effect. Therefore I feel no need to account for many of the variables that cross-country analysis, some as that in Blais and Carty (1990).

3. Single shock for election changes

This model also, in a similar way to assuming linear time effects, assumes a single effect for each dummy variable, which may not be the case across the timespan of the sample. It could be the case that a modern day Italian sees the European elections as less impactful, when compared to an Italian of the 1980s. However, as this analysis is secondary to my main question, and these elections are mainly serving as useful dummies, therefore fixing this issue is not paramount.

# Data and Results

For the results section, I will begin with national data, work my way through European constituencies, then discuss important outliers instead of discussing all 20 regions.

Results will be presented as they are calculated using R studio. This means that there will be estimates for each of the $\beta_n$ parameters listed in the model, with some notable changes in certain cases. These parameters will be estimated to be positive or negative by a certain significance level, or probability that this parameters is in fact *not* as estimated, and is in fact 0 or in the other direction. This value will appear in the column Pr(>|t|). If this value, which I will refer to as the p value, is below 0.05, then there is a less than 5% chance that the direction of the parameter estimate is incorrect. This value or lower, I will consider a good enough result to make conclusions. This can also be seen by the stars to the right of the aforementioned column, if there is at least one star, I will consider a result significant.

National Results:

```
Call:
lm(formula = `%BI` ~ Year + `Change Dummy` + Senato + European +
    Local, data = All_National)

Residuals:
      Min        1Q    Median        3Q       Max
-0.270412 -0.039447  0.009417  0.048125  0.129708

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)    13.500937   0.340847  39.610  < 2e-16 ***
Year           -0.006360   0.000172 -36.977  < 2e-16 ***
`Change Dummy`  0.045749   0.008987   5.090 4.46e-07 ***
Senato          0.023557   0.007505   3.139  0.00176 **
European       -0.085341   0.011713  -7.286 7.70e-13 ***
Local          -0.045265   0.007875  -5.748 1.29e-08 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.06476 on 796 degrees of freedom
Multiple R-squared:  0.7012,    Adjusted R-squared:  0.6994
F-statistic: 373.7 on 5 and 796 DF,  p-value: < 2.2e-16
```

One important and great result is that all election types appear to be significantly different from each other, with European elections being estimated to be voted in 10.8% less than a Senato election. This shows clear differentiation between election types, with elections in national government being valued higher than local or European. This is to be expected.

Time effect is also interesting, with the model believing that each year that passes leads to a 0.6% fall in voting rates from the registered Italian population.

However, the major issue is that the coefficient for "Change Dummy" is positive, instead of the negative I had originally hypothesised. The reasons for this I will discuss later, but first I will discuss other results.

North-West Constituency:

```
Call:
lm(formula = `%BI` ~ Year + `Change Dummy` + Senato + European +
    Local, data = North_West)

Residuals:
      Min        1Q    Median        3Q       Max
-0.203852 -0.022175  0.000147  0.025996  0.091283

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)    13.3763919  0.5009622  26.701  < 2e-16 ***
Year           -0.0062852  0.0002528 -24.864  < 2e-16 ***
`Change Dummy`  0.0402218  0.0135971   2.958 0.003562 **
Senato          0.0204186  0.0114093   1.790 0.075390 .
European       -0.0507491  0.0178373  -2.845 0.005017 **
Local          -0.0408406  0.0117816  -3.466 0.000676 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.04421 on 161 degrees of freedom
Multiple R-squared:  0.8353,    Adjusted R-squared:  0.8302
F-statistic: 163.3 on 5 and 161 DF,  p-value: < 2.2e-16
```

As data sets become thinner and thinner, it is not surprising to see lower levels of significance, hence the 3 stars going away for European and Change Dummy, and Senato losing all of its to now have significance too low for my testing.

However, this does present some interesting conclusions on the nature of such a test, where upper and lower house elections are statistically insignificant at this level of data. We must consider that the decision to go out and vote in these elections is the same, as they happen on the same day in the same locations, so it is difficult to say that the decisions behind voting more in a Senato election are the same as the decision to vote less in a European election. It would be interesting to research countries that do not vote for upper and lower house on the same day, but this is outside of the scope of my research.

North-East Constituency:

```
Call:
lm(formula = `%BI` ~ Year + `Change Dummy` + Senato + European +
    Local, data = North_East)

Residuals:
      Min        1Q    Median        3Q       Max
-0.284518 -0.023374  0.006962  0.032541  0.117874

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)    13.3459673  0.6674530  19.995  < 2e-16 ***
Year           -0.0062649  0.0003368 -18.602  < 2e-16 ***
`Change Dummy`  0.0546553  0.0172071   3.176  0.00182 **
Senato          0.0278145  0.0143130   1.943  0.05388 .
European       -0.0490585  0.0223051  -2.199  0.02940 *
Local          -0.0668084  0.0155484  -4.297 3.12e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.05504 on 148 degrees of freedom
Multiple R-squared:  0.7676,    Adjusted R-squared:  0.7597
F-statistic: 97.76 on 5 and 148 DF,  p-value: < 2.2e-16
```

Very similar results are presented in terms of significance, but I wish to turn attention to specific values for the Change Dummy Variable. For some reason, the North-East constituency appears to have reacted much stronger to the change, when compared to their cousins in the North-West.

Central Constituency:

```
Call:
lm(formula = `%BI` ~ Year + `Change Dummy` + Senato + European +
    Local, data = Central)

Residuals:
      Min        1Q    Median        3Q       Max
-0.234853 -0.022848  0.002414  0.030579  0.085766

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)    13.7407983  0.5393152  25.478  < 2e-16 ***
Year           -0.0064659  0.0002721 -23.760  < 2e-16 ***
`Change Dummy`  0.0545517  0.0142898   3.818 0.000193 ***
Senato          0.0290253  0.0119433   2.430 0.016208 *
European       -0.0723572  0.0186451  -3.881 0.000153 ***
Local          -0.0534056  0.0122622  -4.355 2.38e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.04612 on 158 degrees of freedom
Multiple R-squared:  0.828,     Adjusted R-squared:  0.8226
F-statistic: 152.1 on 5 and 158 DF,  p-value: < 2.2e-16
```

Southern Constituency:

```
Call:
lm(formula = `%BI` ~ Year + `Change Dummy` + Senato + European +
    Local, data = Southern)

Residuals:
     Min       1Q   Median       3Q      Max
-0.16997 -0.03899 -0.00038  0.03970  0.13318

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)    13.4114720  0.5553664  24.149  < 2e-16 ***
Year           -0.0063341  0.0002802 -22.603  < 2e-16 ***
`Change Dummy`  0.0429710  0.0149191   2.880 0.004334 **
Senato          0.0227742  0.0124977   1.822 0.069663 .
European       -0.1050548  0.0226101  -4.646 5.58e-06 ***
Local          -0.0438167  0.0128412  -3.412 0.000757 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.05922 on 239 degrees of freedom
Multiple R-squared:  0.7436,    Adjusted R-squared:  0.7382
F-statistic: 138.6 on 5 and 239 DF,  p-value: < 2.2e-16
```

Islands Constituency:

```
Call:
lm(formula = `%BI` ~ Year + `Change Dummy` + Senato + European +
    Local, data = Islands)

Residuals:
      Min        1Q    Median        3Q       Max
-0.109172 -0.036748  0.003408  0.039650  0.095936

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)    14.0918351  0.9599539  14.680  < 2e-16 ***
Year           -0.0066842  0.0004844 -13.799  < 2e-16 ***
`Change Dummy`  0.0328805  0.0228135   1.441    0.154
Senato          0.0145416  0.0186724   0.779    0.439
European       -0.1386424  0.0236295  -5.867 1.57e-07 ***
Local           0.0042450  0.0240649   0.176    0.861
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.05002 on 66 degrees of freedom
Multiple R-squared:   0.84,     Adjusted R-squared:  0.8279
F-statistic: 69.29 on 5 and 66 DF,  p-value: < 2.2e-16
```

Some interesting things of note in the final 3 constituencies. Firstly, a lack of data in the Islands constituency may the best reason for Senato and Change dummy having such high p values, but it is also of note that residents of Sicilia and Sardegna value their local elections as almost identical to their lower house elections. This may be due to stronger local identity, and their local governments having greater power when compared to a standard region, take Lazio as an example.

It is also of note that it is not just prevalence of data that creates high significance levels. The Central constituency, with only 4 regions, has the highest significance level of any. This adds some weight to an actual effect being present, as opposed to trends being found in masses of data.

Regionally, a very small number of regions had any level of significance, outside of for the time effect, which held at a p value less than 0.1 across every region. I will discuss the most notable regions.

Fruili-Venezia Guilia:

```
Call:
lm(formula = `%BI` ~ Year + `Change Dummy` + Senato + Local,
    data = FVG)

Residuals:
      Min        1Q    Median        3Q       Max
-0.104086 -0.036082 -0.000024  0.044628  0.081072

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)    14.1123253  1.2481953  11.306 4.59e-13 ***
Year           -0.0066680  0.0006298 -10.587 2.65e-12 ***
`Change Dummy`  0.0666999  0.0327227   2.038   0.0494 *
Senato          0.0325312  0.0272997   1.192   0.2417
Local          -0.0807501  0.0286589  -2.818   0.0080 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

Fruili-Venezia Guilia is the first region alphabetically to have significant changes for both the Change Dummy and local elections. However, despite my efforts, I cannot find a correlation between significance of Change Dummy and any other major factors. GDP, HDI, measures of social cohesion or a national identity all do not seem to correlate. In measures of the change in the system, only in one election, 2013, was the voting closer than 5% in the region, thus tighter political pressure do not seem to be at play either.

Other regions with similar conclusions are Liguria and Piemonte, both of which are significant for the Change Dummy at the 5% level. Other than all of the regions being on a border, I see no reason that they stick out and similar regions, Lombardia, Veneto or Emilia-Romagna, do not have this level of significance.

# Conclusions

Unfortunately for me and my research, my hypothesis was the opposite of the truth. In this final section I'll outline why I believe this is the case, and what I've learned for the future from this.

Firstly, I believe that there are some benefits to MMM systems that were not considered in my original research. The existence of battleground constituencies may have meant that certain voters felt stronger incentive to vote, while the representatives elected via a PR system may have been enough to bring those from non-battleground areas, or at least these votes didn't fall enough to drag areas down. The generalisation I have made to entire regions may be too large, as some regions contain over 100 constituencies (Lombardia with 109). This low level of scope, mainly due to the limited research period, may be a reason for this inaccuracy.

The previously outlines issues with the model may also make a difference. A linear scale appears to not be entirely accurate for the data, and it could be the case that small short-term fluctuations in indicators such as GDP growth, unemployment and certain staple good prices may significantly affect voting behaviour.

While I considering this research a success in many ways, taking a first step into a case and type of research that appears to be underdeveloped in academia, many adjustment must be made until the conclusions I have reached can be seen as valid.

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