

**REPORT**

**AN EXAMINATION OF BALLOT REJECTION IN THE SCOTTISH  
PARLIAMENTARY ELECTION OF 2007**

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## **EXECUTIVE SUMMARY**

**The total number of rejected ballot papers in constituency contests in 1999 was 7,839 and 7,268 in list contests. In 2007, the comparable figures were 85,643 rejected constituency ballots and 60,454 rejected list ballots.**

**It took five days to collect the data on the number of rejected ballots for each constituency in Scotland.**

**There was a large number of rejected constituency and region ballots across Scotland. No constituency was immune from the rejected ballot problem – it was pervasive and infected all Scottish constituencies**

**There is a strong relationship between constituency social context and the relative level of rejected ballots generated across constituencies. The greater the degree of social deprivation in a constituency, the higher the rate of ballot rejections.**

**Rejected ballots were unrelated to ballot rejections from the previous election.**

**There is distinct statistical evidence that the number of parties on the regional list is a significant predictor of rejected constituency and regional ballots. The problems associated with rejected ballots increased with the number of parties on the regional lists. The strongest predictor in the model explaining rejected constituency ballots is the number of parties on the regional list.**

**The different ‘rules’ (or ballot design) used in different regions in Scotland had a very clear and distinct influence on the number of constituency ballots rejected.**

**Further research is required to examine:**

- **the administration of elections**
- **the actual rejected ballots**
- **disaggregated data**
- **ballot images**
- **count centre training regimes**
- **public evaluations of the 2007 election.**

## INTRODUCTION

The third Scottish Parliamentary elections were marred by an exceptionally high level of rejected ballot papers. In 1999, Scottish voters' first experience with the 'additional member' electoral system, the total number of rejected ballot papers in constituency contests was 7,839 and 7,268 of list rejected ballots. In 2007, the comparable figures were 85,643 rejected constituency ballots and 60,454 rejected list ballots.<sup>1</sup>

This paper has three main objectives:

1. to describe the distribution of constituency and regional (list) rejected ballots across the Scottish Parliamentary constituencies;
2. to explain the patterns of rejected ballots across the Scottish constituencies; and
3. to identify areas for further research to develop a fuller understanding of problems with election administration in Scotland.

The paper has the following sections:

- i. Methodology
- ii. General Patterns of Rejected Ballots
- iii. Explaining Patterns of Rejected Ballots: Sociodemographic and Institutional Explanations
- iv. Models Seeking to Explain Rejected Ballots
- v. Unanswered Questions and Future Research

## I. METHODOLOGY

Data collection for this analysis began on the evening of the election count. Over the next several weeks data were collected from several sources, among them: BBC Scotland, returning officer's web pages and the Scottish Parliament. All data used in this analysis have subsequently been checked and confirmed against those reported directly by returning officers and those used by the Scottish Parliament and those reported by the Electoral Commission.<sup>2</sup> Data on previous rejected ballot levels were obtained from the Electoral Commission website and SPICe researchers at the Scottish Parliament.

All data used in our analysis were collected and analysed at the constituency level.

We have also collected contextual information on the Scottish Parliament constituencies from the Scottish Executive and the Public Health Observatory Division of the Directorate of Public Health Science, NHS Scotland.

**One fact that must be highlighted is the length of time that it took to collect the data on the number of rejected ballots for each constituency in Scotland.** Despite working in collaboration with both Scottish Parliament researchers and BBC Newsnight Scotland researchers, a complete list of rejected constituency ballots was not available for five days following the election. A complete list of rejected regional ballots was finalised several days later.

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<sup>1</sup> See Electoral Commission, "Rejected ballots at the 3 May Scottish Parliamentary Elections." (13 June 2007) available online at <http://www.electoralcommission.org.uk/templates/search/document.cfm/19604>.

<sup>2</sup> Ibid.

## II. GENERAL PATTERNS OF REJECTED BALLOTS

As soon as we had access to a complete set of **constituency** rejected ballots we were able to identify several important facts:

- The range of rejected constituency ballots across all Scottish constituencies was 1.90% (Stirling with 633 rejected ballots) to 12.09% (Glasgow Shettleston with 2035 rejected ballots)
- On average, 4.28% of constituency ballots were rejected within all constituencies<sup>3</sup> (standard deviation = 2.01, indicating that 68% of constituencies fall between 2.27% and 6.29% rejected constituency ballots)
- There were 16 constituencies where the number of rejected ballots exceeded the winning candidate's majority (see Appendix 1 for list)
- Glasgow constituencies accounted for 8 of the 10 constituencies with the highest percent of rejected constituency ballots
- The constituencies in the Glasgow and Lothians regions had statistically significant higher levels of rejected ballots than other constituencies.

Looking at rejected **regional** (list) ballots across the Scottish Parliament's constituencies:

- The range of rejected regional (list) ballots across all Scottish constituencies was 1.65% (Gordon with 598 rejected regional ballots) and 5.89% (Glasgow Shettleston with 992 rejected regional ballots)
- On average, 3.00% of regional ballots were rejected within all constituencies<sup>4</sup> (standard deviation = .86)
- Glasgow constituencies also accounted for 8 of the 10 constituencies with the highest percent of rejected regional ballots
- In all but 10 constituencies, the percentage of rejected constituency ballots exceeded the percentage of rejected regional ballots (see Figure 1, below).

**The clear pattern is that there was a large number of rejected constituency and region ballots across Scotland.** Even those constituencies that fared well far exceeded their percentage of rejected ballots in the 2003 Scottish Parliament election. The Stirling constituency, for example, while carrying the distinction of having the lowest percentage of rejected ballots in 2007, dwarfed its spoiled ballot rate from the 2003 election. In 2003 Stirling had .55% of its constituency ballots rejected, or just 163 ballots rejected. So even in the constituency that, in terms of percentages, performed best in 2007, the number of rejected 2007 ballots was more than three times greater than the number of rejected ballots in 2003. Thus **it is clear that no constituency was immune from the rejected ballot problem – it was pervasive and infected all Scottish constituencies.** Yet it remains to explain why some constituencies suffered the rejected ballot problem effects to a greater degree than others. This may also hold the key to explaining the Scottish-wide phenomenon of rejected ballots.

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<sup>3</sup> Mean percent of rejected constituency ballots in the constituencies.

<sup>4</sup> Mean percent of rejected regional ballots in the constituencies.

### III. EXPLAINING THE PATTERNS OF REJECTED BALLOTS

#### IIIa. Social Context:

One possible set of explanations for the pattern of rejected ballots is that the social and demographic context of a constituency will serve as a strong predictor of the relative rate of rejected ballots in that constituency. It would be reasonable to expect that in constituencies with higher levels of social deprivation and lower average levels of educational qualifications that we would find higher relative rates of ballot rejection.

Simply looking at a basic measure of association, the correlation coefficient, we find evidence of a positive and significant relationship between the percentage of adults with no academic qualifications within a constituency, as well as other measures of social deprivation, and that constituency's percentage of rejected constituency and regional ballots. Table 1 displays the relationships between indicators of social context and the percent of rejected ballots across constituencies.

	% Rejected Ballots	
	Constituency	Region
% of Adults without Academic Qualifications	.54	.57
% of Public that are Unemployed Claimants	.49	.41
% of Public Reporting Not in Good Health	.78	.68
* all coefficients significant at $p < .001$		

**There is a strong relationship between constituency social context and the relative level of rejected ballots generated across constituencies.**

#### IIIb. Institutional Factors

In addition to the social context influences on rejected ballots, institutional factors might also come into play in predicting the number of rejected ballots across constituencies. By institutional factors, we mean those factors related to the rules that govern the way elections are conducted and votes are tallied. A long tradition of research in political science has found that 'rules matter' in determining the outcomes of political processes. This, we have found, is certainly the case of the Scottish Parliament elections of 2007.

First, it is possible that some constituencies have a tradition of having higher levels of rejected ballots. These reasons could be idiosyncratic and dependent upon the particular characteristics of that constituency (that are unrelated to social context). Given the geographic patterns in a constituency, for example, we might find higher rates of ballot spoilage. Or it is possible that persistent patterns in the manner that the count is run in different areas might influence the levels of rejected ballots. Whatever the idiosyncratic reason, if there are persistent trends, we should find a significant relationship between the relative rates of ballots rejected in previous elections with the relative rate of ballots rejected in 2007. However, comparing the percentage of rejected ballots in 2007 with those in the

Scottish Parliament elections of 2003, we find no such relationship.<sup>5</sup> **It seems that the phenomenon of rejected ballots across the Scottish parliament constituencies is unrelated to ballot rejections from the previous election.** The 2007 ‘problem’ of rejected constituency ballots is a new phenomenon.

Another possibility that we have identified is that of ballot design and structure. The elections of 2007 saw a new single-paper ballot design introduced for the Scottish parliamentary elections that included both the (closed) regional party list vote and the first-past-the-post constituency vote on the same sheet of paper. In addition, several other changes to the electoral system were introduced as well: electronic ballot counting, different terminology (changing the previous ‘first’ vote to a ‘second’ vote in 2007), party names (“Alex Salmond for First Minister”) and the single transferable vote for local council elections. It is possible that some of these changes led, either directly or indirectly, to an increase in the percentage of ballots rejected at the count centres.

While it would be extremely difficult to isolate statistically the effects of any one of these changes from the others, there is one change to the electoral system that we are able to approximate statistically. The further we examined the predictors of rejected ballots across constituencies we found persistent differences across the electoral regions. It appears that as the number of parties on the regional lists increased, the ballot papers became pressed for space as they were limited to one side of a single sheet of paper for both the list and constituency votes. Given the practical limit on the size of the ballot papers in those regions with a large number of parties on the regional list, the instruction format on the ballots was altered. As the image we have of one ballot reveals,<sup>6</sup> the instructions on the ballot were truncated, removing the arrows designed to identify the two different ‘votes’ that each elector could cast (see Figure 2). We compare this ballot paper to the ‘sample’ ballot images released by Vote Scotland (funded by the Scottish Executive and in cooperation with the Electoral Commission) and used in many constituencies and regions across Scotland (see Figure 3 for the Ayrshire sample ballot). The sample ballots clearly use a different ballot design. Here arrows are used to distinguish the two columns – one for the regional party vote and one for the constituency vote. Of course, the Ayrshire sample ballot only lists 9 parties on the party list, while no less than 15 parties ran on the lists in the regions. Glasgow and Lothians had 23 parties on their regional lists. Table 2 lists the number of parties by region.

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<sup>5</sup> Correlation = .18 (p=.12). We do, however, note that there seems to be some initial evidence that there is a bivariate relationship with the 1999 rates of ballot spoilage across the constituencies. The correlation of 1999 rejected constituency ballots with 2007 rejected constituency ballots is a moderate .32 (p<.01) while the 1999 and 2007 correlation of regional rejected ballots is .52 (p<.01). These relationships, however, do not hold up to multivariate testing and are therefore likely derived from shared relationships with other factors such as persistent levels of social deprivation and are not, in themselves, causal.

<sup>6</sup> We are indebted to Ken MacDonald of Newsnight Scotland for sharing this image with us.

Table 2: Number of Parties on the Region Lists by Region	
Region	Number of Parties on Region List
Central Scotland	16
Glasgow	23
Highlands and Islands	16
Lothians	23
Mid Scotland and Fife	16
North East Scotland	15
South of Scotland	15
West of Scotland	18

**We found distinct statistical evidence that the number of parties on the regional list is a significant predictor of rejected constituency and regional ballots across the Scottish constituencies.** Figure 4 plots the relationship between the percentage of rejected constituency ballots and the number of parties on the regional lists. As the number of parties on the list increases, so does the percentage of rejected ballots in constituencies. The (linear) correlation between the percentage of rejected constituency ballots and the number of parties on the list is a staggering .72 ( $p < .001$ ). Similarly Figure 5 displays a plot of the percentage of rejected regional ballots against the number of parties on the regional lists (correlation = .52). However it is unclear whether this is due to the increased number of candidates or truncation of instructions on the ballot paper as a consequence of the increased number of candidates.

**The problems associated with rejected ballots increased with the number of parties on the regional lists.** We take this as evidence that changes to the ballots made to accommodate the large number of parties registered for the regional list in certain regions had a strong and significant relationship with the percentage of rejected ballots. It will come as no surprise to people familiar with election administration and ballot design that altering a ballot and, more specifically, altering the instructions to voters on the ballot would cause problems in election returns and ballot spoilage. This has been well established in the literature for quite some time.<sup>7</sup> That said, we might wonder whether the ballot design, and the number of parties on the region lists, had an independent effect on ballot rejection rates or whether social context will account for the problems associated with the public understanding the various electoral reforms that were simultaneously introduced across Scotland.

#### IV. MODELS SEEKING TO EXPLAIN REJECTED BALLOTS

Using straightforward statistical procedures we are able to estimate the *relative* influences of social context, ballot design, previous spoilage rates and other factors on the percentages of rejected constituency and regional list ballots. This procedure attempts to explain the percentage of rejected ballots using the other variables in the model. In short, regression analysis holds all other variables in the model constant while examining the influence of any

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<sup>7</sup> Indeed, in preparing our research, we found an article published in the *American Political Science Review* in 1965 that documents the problems in the 1961 German elections and the rise in spoiled ballots with Germany's adoption of the single-paper ballot for its regional and constituency votes. See, Stiefbold, Rodney P. "The Significance of Voided Ballots in West German Elections," *American Political Science Review*, vol. 59, no. 2 (June 1965), pp. 391-407.

one predictor on the percentage of rejected ballots.<sup>8</sup> Using regression analysis we are able to determine:

- (1) how strong a predictor variable's relationship is with the variable we are seeking to explain once we hold all other factors equal; and
- (2) if that relationship is 'statistically significant' (i.e., how sure we are that the relationships we find are due to some systematic influence and are not the work of chance alone).

Given the relatively limited number of constituencies we have to work with, we need to be careful of the predictor variables we use to explain the percentage of rejected constituency and regional ballots. That said, we have adequate information to build relatively strong and robust models.

Our first statistical model assesses the predictors of the percentages of rejected **constituency** ballots across the Scottish Parliamentary constituencies. For this model we combined the indicators of social deprivation into one variable.<sup>9</sup> We include the number of parties on the regional lists as a variable.<sup>10</sup> We also include the percentage of rejected 2003 ballots, the constituency turnout rate in 2007, the winning candidate's majority in the constituency (also for 2007) and the number of constituencies counted at the centre that counted each constituency.<sup>11</sup>

Overall the model performed better than anticipated, 'explaining' approximately 85% of the variance in constituency ballot rejections. Our regression model (shown in Table 4) produces the following findings:

- Once we account for the other variables in the model, neither the ballot spoilage rate from 2003 nor the winning candidate's majority in 2007 have a significant influence on the percentage of ballots rejected in 2007.
- The higher the turnout in a constituency in 2007, the *fewer* rejected ballots there were in that constituency. Though we can't say for certain why we find this inverse relationship, we suspect that constituencies that tend to have higher turnout *may* have experienced greater campaign activity and thereby more voter education and *may*

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<sup>8</sup> We recognise that, given that the dependent variable is a percentage and therefore is 'bottom censored' (at 0), these models suffer from specification error. We have conducted more extensive analyses that use the raw count of rejected constituency and regional ballots as dependent variables and estimate similar equations (with a few minor adjustments) using a negative binomial distribution (with the nbreg procedure in Stata 9.2). All substantive findings remain the same. For purposes of presentation and interpretation we retain and present the OLS regression models here. The nbreg analysis is available from the authors and will be published at a later date in greater detail.

<sup>9</sup> We created an index variable that was computed as  $\text{Social Deprivation} = ((\% \text{Adults without Qualifications}) + (\% \text{Public that are Unemployment Claimants}) + (\% \text{Public Reporting Not in Good Health}))/3$ . Note that the substantive findings reported do not change if a factor scored index is used instead of the averaged index variable.

<sup>10</sup> To account for the curvilinear relationship identified in Figures 4 and 5, we actually include the number of parties in the regional list squared. This slightly improves overall model fit. The substantive findings are not dramatically influenced (i.e., the model performs acceptably well when the non-squared variable is included in the model).

<sup>11</sup> The constituency turnout rate in 2007 is included to test for possible effects due to high demand in constituencies (where high demand constituencies could see higher rates of ballot spoilage). The winning candidate's majority is included to test for possible high scrutiny effects (where 'closer' races may attract more attention by election agents and observers during the count). The number of constituencies counted at the count centre that counted the constituency is included to test for possible count centre effects (where high demand count centres may have been prone to greater error rates).

have planned better and allocated polling station resources to help administer the voting process.

- **Constituencies counted at the larger count centres tended to have higher rates of ballot rejection.** However, we are cautious not to make too much of this finding. Whilst the trend was for constituencies counted at the large count centres to have a higher rate of ballot rejections, much of this is driven by rejection rates associated with the Glasgow and Edinburgh count centres.

Count Centre	No. of Counts	No. of Parties
Glasgow	10	23
Aberdeen	7	15
Edinburgh	7	23
Glenrothes	6	16
Wishaw	6	16
Inverness	4	16
Paisley	4	18

- **The greater the degree of social deprivation in a constituency, the higher the rate of ballot rejections.** This finding may highlight the fact that a greater degree of educational targeting should occur prior to the implementation of large scale changes in the voting system to ensure that *all* voters understand the changes fully and how to cast their ballots properly.
- **The strongest predictor in the model is the number of parties on the regional list.** As the number of parties increases, so did the ballot rejection rate. As we have indicated, we use the number of parties as an indicator of changes to the ballots that altered the instructions voters received. In effect, voters in regions that had a large number of parties on the regional list received fewer and less clear instructions on how to vote properly in the regional and constituency elections. Given that extant research definitively shows that the rules matter and ballot design influences voting behaviour, *our research indicates that the different ‘rules’ (or ballot design) used in different regions in Scotland had a very clear and distinct influence on the number of constituency ballots rejected.*

	b	r.s.e <sup>△</sup>	β
Percent Ballots Rejected 2003	-.21	.46	
Percent Turnout 2007	-.08*	.02	-.23
Winning Majority 2007	.00	.00	
Social Deprivation Index	.23*	.04	.38
Constituencies in Count Centre	.09*	.04	.14
(Number Parties on List) <sup>2</sup>	.01*	.00	.50
Constant	1.64	1.65	
N = 73			
R <sup>2</sup> adj. = .85			
*p<.05    △robust standard errors			
Note: unit of analysis Scottish Parliament constituencies			

Our second regression model, predicting the number of rejected **regional** ballots across the constituencies, is presented in Table 5. We include the same set of predictor variables in this model as we did in the first, except that ‘winning majority of the constituency candidates in the constituency’ is not included.<sup>12</sup> The difference is that in this instance we are examining regional rejected ballots. While this model is not as strong as the constituency model, it still can be said to ‘explain’ about 59% of the variance in rejected regional ballots.<sup>13</sup>

Our regional ballot model produces the following findings:

- Just as with constituency ballots, the ballot spoilage rate from 2003 is not a statistically significant predictor of rejected regional ballots in 2007
- The turnout rate in 2007 is also not a significant predictor of rejected regional ballots. We should note, however, that the coefficient is positively signed indicating that the general trend is for there to be a greater percentage of rejected regional ballots in constituencies with higher rates of voting.
- In the regional ballot rejection model, the number of constituencies counted at a constituency’s count centre is not a significant predictor of rejected ballots. The phenomenon is limited to influencing the relative percentage of rejected constituency ballots.
- **The social deprivation index is a very strong and significant predictor of rejected regional ballots.** As relative social deprivation in a constituency increases so does the relative rate of rejected regional ballots.
- **The number of parties on the regional list is again a significant predictor of rejected regional ballots in constituencies.**

Table 5: OLS Regression of Percent of Regional Rejected Ballots on Explanatory Variables			
	b	r.s.e <sup>△</sup>	β
Percent Ballots Rejected 2003	.26	.26	
Percent Turnout 2007	.03	.02	
Social Deprivation Index	.17*	.02	.67
Constituencies in Count Centre	.04	.03	
(Number Parties on List) <sup>2</sup>	.01*	.00	.41
Constant	-2.99*	1.31	
N = 73			
R <sup>2</sup> adj. = .56			
*p<.05    △robust standard errors			
Note: unit of analysis Scottish Parliament constituencies			

The two models predicting the percentage of rejected ballots in the 2007 election have two common features. Controlling for other factors in the model (and for each other) both

<sup>12</sup> Supposing that tighter scrutiny would not be limited to constituency ‘ballots’ on the same page and considered at the same time as regional ‘ballots’ and could influence rejection rates for regional ballots, we did include winning 2007 majority in one run of these models. It was not a significant predictor of regional rejected ballots and is excluded from the models presented here.

<sup>13</sup> We find the difference in adjusted R<sup>2</sup> statistics (or ‘explained variance’) to be quite interesting. Using the same set of variables, we are able to account for a substantially greater degree of variation in constituency rejected ballots than regional rejected ballots. While a great deal of caution should be used in making inferences, one possibility here is that there is a much greater degree of random ‘noise’ (or error variance) in the regional rejection rate than in the constituency rejection rate.

constituency social deprivation and the number of parties on the regional list are highly significant (both statistically and substantively) predictors of relative ballot rejection rates in constituencies.

What if we just compare the constituencies affected by the altering of ballot instructions to all the other constituencies (that were presented with the full set of instructions)? Tables 6 and 7 re-estimate the models above changing the indicator of the number of parties on the regional list to a simple dichotomous variable that allows for the direct comparison between the constituencies with 23 regional parties on the list (and, therefore, truncated ballot instructions) and all other constituencies. While there are no significant changes to the other variables in the models, we find highly significant differences between constituencies based on ballot design. Those constituencies that voted using ballots altered to remove the full set of instructions tended to have a 2.35% higher rate of constituency ballot rejection and a .78% higher rate of regional ballot rejection.

	b	r.s.e <sup>△</sup>	β
Percent Ballots Rejected 2003	-.05	.47	
Percent Turnout 2007	-.06*	.02	-.18
Winning Majority 2007	.00	.00	
Social Deprivation Index	.25*	.04	.41
Constituencies in Count Centre	.09*	.04	.13
Ballot with Altered Instructions?	2.35*	.00	.51
Constant	2.47	1.59	
N = 73			
R <sup>2</sup> adj. = .85			
*p<.05    △robust standard errors			
Note: unit of analysis Scottish Parliament constituencies			

	b	r.s.e <sup>△</sup>	β
Percent Ballots Rejected 2003	.26	.26	
Percent Turnout 2007	.03	.02	
Social Deprivation Index	.18*	.02	.69
Constituencies in Count Centre	.04	.04	
Ballot with Altered Instructions?	.78*	.18	.40
Constant	-2.05*	1.21	
N = 73			
R <sup>2</sup> adj. = .58			
*p<.05    △robust standard errors			
Note: unit of analysis Scottish Parliament constituencies			

There are two very clear findings from these analyses. First, there is a glaring and distinct relationship between the relative level of social deprivation in a constituency and that constituency's relative level of rejected ballots. Given past research this is to be expected (though perhaps not to the degree that we find in Scotland in 2007). Second, there is a clear difference in the relative rates of ballot rejection that is related to the ballots given to voters in different regions. Voters in the Glasgow and Lothians regions were given ballots that

engendered higher rates of ballot rejection. This second finding is more troubling as it represents a systemic failure in the design of the ballots used in Scotland in 2007.

## V. UNANSWERED QUESTIONS AND FUTURE RESEARCH

The third objective of this brief report is to identify areas that we believe deserve further research and investigation. While our research has provided distinct and disturbing evidence that there were systematic reasons why the relative rate of rejected ballots varied across the Scottish constituencies in the 2007 election, we believe that a great deal of work still needs to be done to identify as many of the causes and effects of ballot rejection as possible. The main goal here is to try to ensure that these problems do not occur again and, most importantly, that public confidence in the Scottish electoral system is restored.

The areas for further work that we have identified are:

- **An examination of the administration of elections:** At this stage the administration procedures remain, at best, unclear. How were the decisions taken to adjust and change the instructions on ballots? What procedures were used to authorize these changes? What consideration was given to the potential impact of altering the ballot instructions in some electoral regions but not others? We believe that a thorough deconstruction of the election administrative and implementation process is required to assess fully the impact these changes had on the 2007 election.
- **An examination of ballots:** We believe that the only way to develop a fuller understanding of the problems associated with the extremely high rate of ballot rejections across Scotland would be to examine the completed and counted ballot papers themselves. One method to carry out this examination would be to randomly sample constituencies from different strata of those constituencies with high, moderate and (relatively) low rates of ballot rejection. A much clearer ‘data picture’ of the errors in completing ballots should be one of the main goals of a full examination of all ballots of randomly selected constituencies. A coding scheme should be developed for the different sets of marks possible. This would allow for a fuller assessment of the sorts of errors made. One possibility is that all of the educational focus on STV served to confuse voters. Certainly anecdotal evidence from the count centres indicates that many voters used numbers in voting for both regional and constituency candidates. If this turns out to be the case, these findings could inform educational initiatives in the next round of Scottish elections and suggest that local and Scottish Parliamentary elections should not be held on the same day. Further, an examination of the ballots would allow us to disaggregate the data that currently exists on rejected ballots. At this time we know the raw number of rejected ballots in constituencies but we do not know why these ballots were rejected. Again, a clearer understanding of this would allow for better targeting of educational efforts in the next round of elections.
- **An examination of disaggregated data:** During ballot adjudication at the count centres, election officials were given the choice (by the DRS vote adjudicating software) of rejecting ballots as ‘overvotes’ (i.e., more than one tick box marked for either the regional list or the constituency list) or ‘blank/uncertain’ (a category that seems to combine both ‘uncertain’ marks and ‘undervotes’). A proper examination of these data could further shed light on not only the causes of ballot rejection, but also reliability of the adjudication procedure itself.

- **An examination of ballot images:** The ballot images (again see Figure 2), suggest that there were significant adjustments made to the ballots in some regions to accommodate the large number of parties on the lists. Further, it seems very clear that the actual ballots deviated from the sample ballot images released in voter education efforts (through VoteScotland and other organisations). That said, we believe that a fuller examination of ballot images is required to assess the extent of this problem.
- **An examination of count centre training regimes:** Given that we find evidence that the larger count centres had higher rates of ballot rejection, an analysis of ballot rejection should include a full examination of how count centre workers (and election officials) were trained and how this training was carried into practice during the count.
- **An examination of public evaluations of the 2007 election:** Anecdotal evidence gathered through media reports would indicate that the problems associated with the 2007 election negatively influenced public confidence in electoral procedures and practices in Scotland. However, at this stage we do not have empirical confirmation of this evidence. A full assessment of public opinion following the 2007 election would help us to understand how the 2007 election and the associated rejected ballots problem may influence public confidence in elections and institutions more broadly across Scotland.

Appendix 1: List of constituencies where rejected (Constituency) Ballots exceeded winning candidate's majority

Constituency	Rejected Constituency Ballots	Winning Candidate's Majority	Rejected Ballots – Winning Majority
Aberdeen Central	776	382	394
Airdrie & Shotts	1536	1446	90
Argyll & Bute	900	815	85
Central Fife	1256	1166	90
Cunninghame North	1015	48	967
Dumfermline West	757	476	281
Eastwood	990	891	99
Edinburgh Central	1501	1193	308
Edinburgh East and Musselburgh	2521	1382	1139
Falkirk West	1157	776	381
Glasgow Govan	1220	744	476
Linlithgow	1722	1150	572
Livingston	1634	870	764
Ochil	1016	490	526
Stirling	633	620	13
Tweeddale, Ettrick & Lauderdale	814	598	216

Figure 1: Percent Rejected Constituency and Regional Ballots

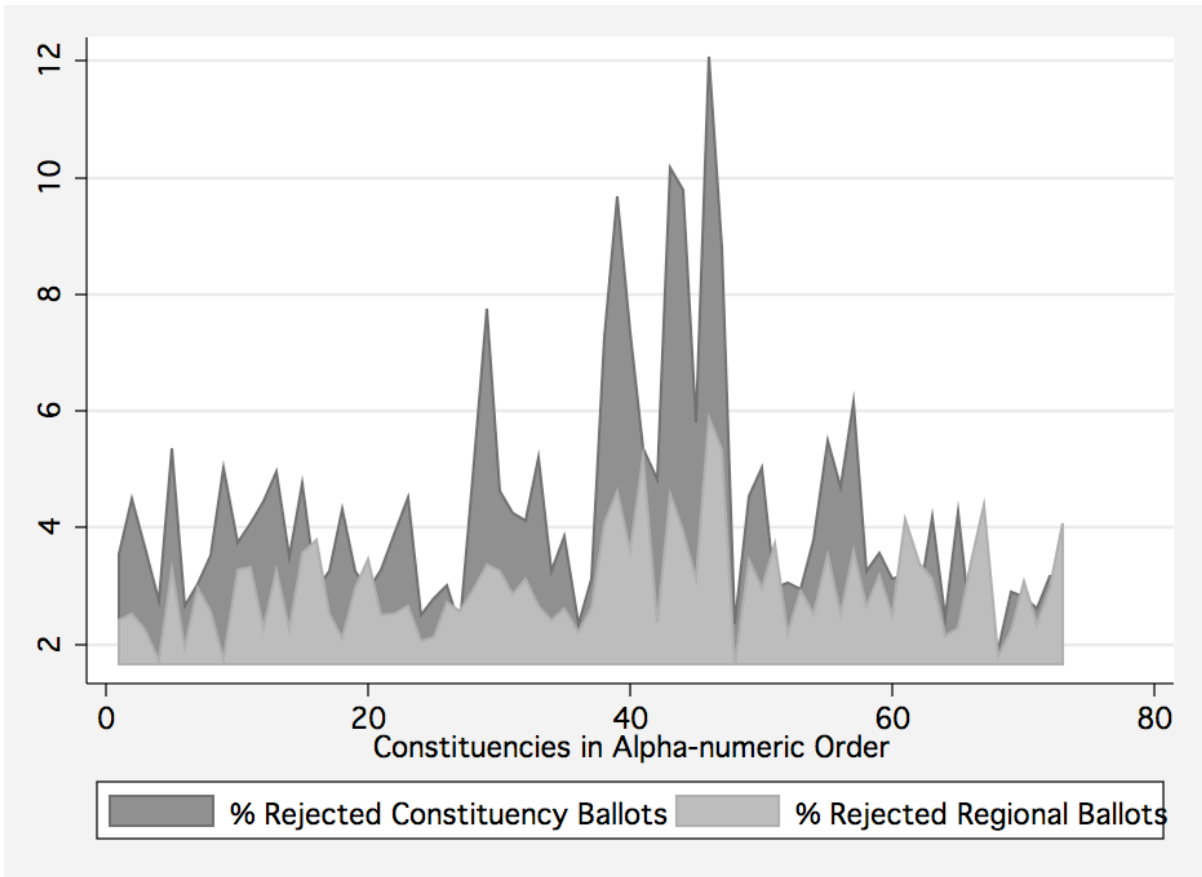


Figure 2: Glasgow Region Ballot Design

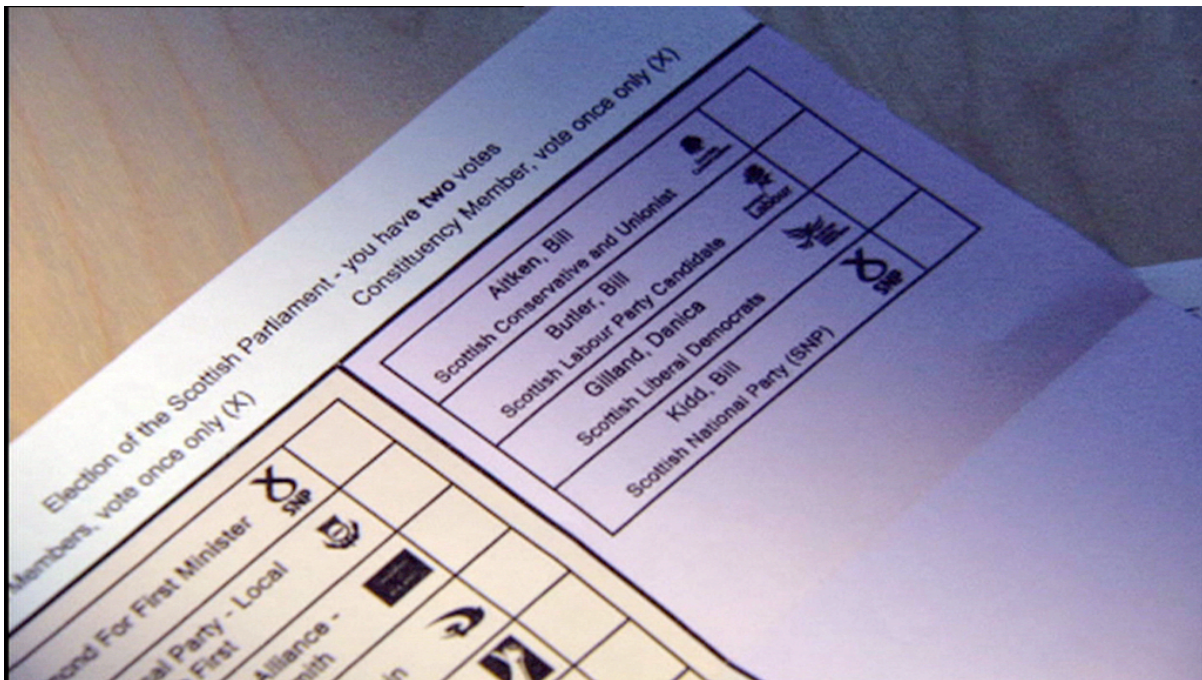


Figure 3: Ayrshire Sample Ballot

# Election of the Scottish Parliament

You have **two** votes












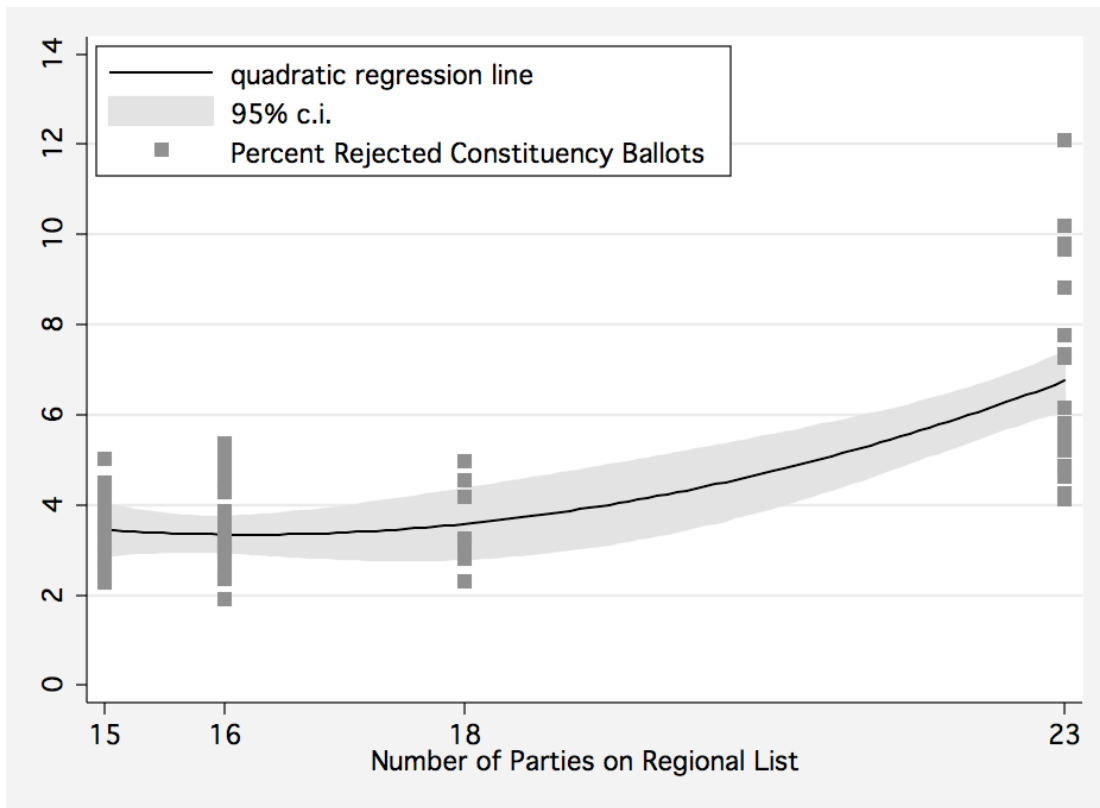
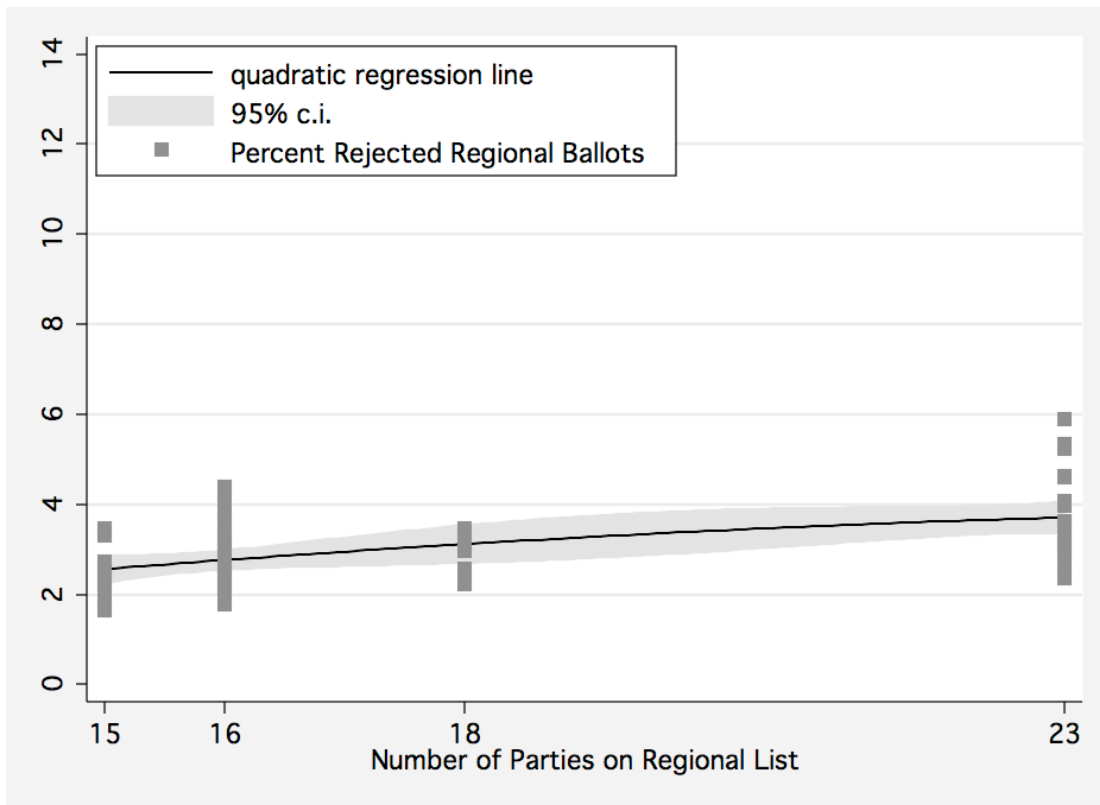
Regional Members	Vote once only (X) ↓	Any Constituency Member	Vote once only (X) ↓
<p><b>SCOTTISH CONSERVATIVE AND UNIONIST PARTY</b></p> 		<p><b>BIRCH</b> James Joseph 26 Cherry Road, Anytown</p> <p><b>The Conservative Party Candidate</b></p> 	
<p><b>SCOTTISH GREEN PARTY</b></p> 		<p><b>ELM</b> Richard 90 High Road, Anytown</p> <p><b>Independent</b></p>	
<p><b>SCOTTISH LABOUR PARTY</b></p> 		<p><b>FIR</b> Helen 5 Main Street, Anytown</p> <p><b>The Labour Party Candidate</b></p> 	
<p><b>SCOTTISH LIBERAL DEMOCRATS</b></p> 		<p><b>OAK</b> Elizabeth 14 Low Road, Anytown</p> <p><b>Scottish Liberal Democrats</b></p> 	
<p><b>SCOTTISH NATIONAL PARTY (SNP)</b></p> 		<p><b>PINE</b> William North West Farm, Anytown</p> <p><b>Scottish National Party (SNP)</b></p> 	
<p><b>SCOTTISH SOCIALIST PARTY</b></p> 			
<p><b>UK INDEPENDENCE PARTY</b></p> 			
<p><b>BLACK</b> Henry <b>Independent</b></p>			
<p><b>WILLIAMSON</b> David <b>Independent</b></p>			

Figure 4: Relationship between the Percent of Rejected Constituency Ballots and the Number of Parties on the Regional Lists



The above figure shows a clear bivariate (quadratic) relationship between the Percentage of Rejected Constituency Ballots and the Number of Parties on the Regional List.

Figure 5: Relationship between the Percent of Rejected Regional Ballots and the Number of Parties on the Regional Lists



The above figure demonstrates only a slight bivariate relationship between the Percentage of Rejected Regional Ballots and the Number of Parties on the Regional list.