Piecing it all together and forecasting who governs: The 2015 British general election

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ABSTRACT

This paper discusses a new probabilistic forecasting method that was designed for the 2015 British general election. It proceeds in a series of steps from opinion poll averaging, forecasting national-level vote shares and uncertainty estimates, and subsequent simulation of hypothetical election results, through modelling of constituency polls and survey data to identify and adjust for patterns in the constituency-level variation in party performance, and finally to probabilistic forecasting of seat outcomes and of different combinations of parties commanding relevant governing majorities in parliament.

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1. Introduction

This paper describes the method for the final of a 20 month series of forecasts that were published at ElectionsEtc.com.

The methodology for this forecast is based on a series of steps that pieces together information from various sources and combines different estimates. The paper is structured as a step-by-step sequence, with the forecasts for various aspects presented in the appropriate locations.

2. Calculate averages of recent Britain-wide and Scotland-only vote intention polls

For GB polls I use an average of various different methods of averaging. The idea is to look for consistency and robustness across different methods. This includes checking how things change after excluding outliers, excluding particular pollsters one-by-one, weighting for past performance or not, and varying how far back and how many polls per pollster were used. The aim was to get a polling average that treats the pollsters as relatively but not completely equal and averages over enough polls that sampling variation can be assumed to cancel out. For much of the time this also has the effect of smoothing over small short-lived blips.

The polling average at midnight before the election was Conservative 34%, Labour 33%, Liberal Democrat 9% and the UK Independence Party (UKIP) 13%.

Scottish polls are fewer and further between so I use the whatscotlandthinks.org method of taking the average of the last four polls. This polling average at midnight before the election was Conservative 15%, Labour 25%, Liberal Democrat 5%, Scottish National Party 50%, and UKIP 2%.

The choice of these more informal methods stands in marked contrast to the use of house-effects or state-space models (Jackman, 2005; Fisher et al., 2011). These models are clearly appropriate and have many advantages for the analysis of the dynamics of public opinion. But they are risky in the contest of forecasting. They essentially assume that house effects are relatively or totally stable without announced changes in methodology. But there have been instances of dramatic changes in house effects shortly before elections, such as during the Scottish independence referendum campaign. Many pollsters use slightly different adjustments for their final pre-election polls, and concerns have been raised that the choice of these special adjustments might be influenced by polls published by other pollsters (herding). Under these circumstances it seems safest to assume that house effects are not stable and apply an average of the most recent or most recent two polls, perhaps with reputation weighting. All these lead to similar estimates.

3. Use regression analysis of historical votes and polls to forecast how GB vote intention will change from a given number of days before the election, and to estimate prediction intervals for those changes

For 20 months before the election I applied the method

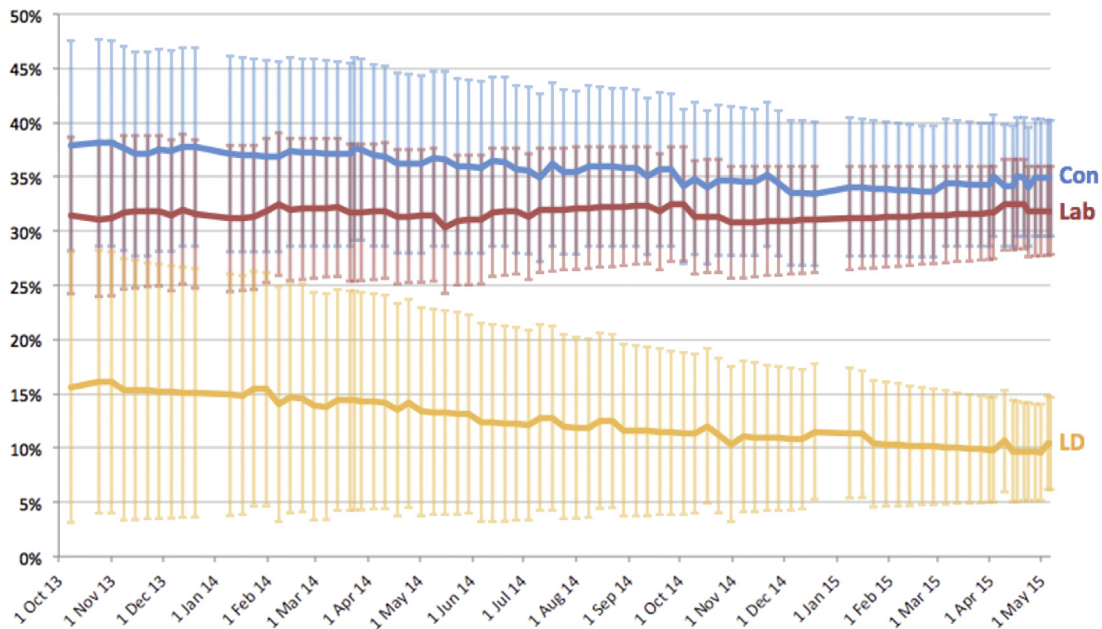*E-mail address:* stephen.fisher@trinity.ox.ac.uk.

Fig. 1. Forecast GB vote shares by date of forecast, with 95% prediction intervals.
Source: Author's own calculations published at Fisher and Jones (2015a).

described in Fisher (2015) for projecting current public opinion to a forecast election share of the vote at the GB level with prediction standard errors. For the Conservatives and Labour the forecast is based on an average of two elaborations of vote-on-polls type regression models (Wlezien and Erikson, 2002). Since a votes-on-polls model with the addition of a government status dummy and a weighted relative change since the last election model both had similarly good out-of-sample prediction properties, an average of the two is used.

Fig. 1 shows how the forecast progressed over time with 95% prediction interval bars. The Labour forecast stayed steady as they declined in the polls at the rate history would suggest, but the Conservatives and Liberal Democrats did not recover as expected so their forecasts fell.

The final forecast GB shares of the vote with 95% prediction intervals based on pooled standard errors are Con 35% (31%–39%), Lab: 32% (28%–36%), LD: 10% (7%–14%), UKIP: 12% (8%–16%) Others: 11% (9%–12%). Forecast shares for the two main parties in Scotland with similarly constructed 95% prediction intervals are SNP 48% (44%–52%) and Labour 27% (23%–31%).

For Labour and the Conservatives at the national level, the main reason the forecast shares differ from the current polling average is because the polls have tended to overestimate Labour and underestimate the Conservatives, both by about a point and a half (Fisher, 2015). The model also predicts swing back towards 2010 levels for the Liberal Democrats, UKIP, SNP and Scottish Labour.

4. Use the forecast vote shares and uncertainty estimates, and between party correlations in the opinion polls, to simulate hypothetical election results

For this I use a multivariate normal distribution with variances for each party estimated by pooling the forecast standard errors from the previous step. Since parties do not go up or down independently I use the average correlations between changes in party shares in successive polls as estimates of covariance for the simulations. So in a hypothetical election where UKIP does particularly well it is more likely that the Conservatives especially will do badly.

There was also a big negative correlation between Conservative and Labour performance, which widens the range of possible outcomes in the simulations.

5. Use Ashcroft constituency polls and individual-level data kindly provided by YouGov to identify constituencies where parties are doing particularly well or particularly badly, and apply adjustments to the hypothetical results accordingly

The analysis of the Ashcroft and YouGov data is done at the constituency level using simple regressions of party changes in the share of the vote since 2010 with binary predictor variables. This mimics the approach taken for the exit poll prediction (Curtice et al., 2011).

The most important constituency level factors within England and Wales are to do with incumbency.

Those Conservative MPs who took their seat from an MP from another party in 2010 appear to be doing a couple of points better than other Tory candidates. This seems to be an instance of the classic sophomore surge, which is common in the US and also seemed to help many first-term Labour MPs hold on in 2001 despite a swing to the Conservatives.

Also, incumbency effects for Liberal Democrat MPs seem to be strengthening, by about 7 points above and beyond the personal vote bonus they got in 2010. But this is against a backdrop whereby the party is falling more where it started stronger, not least because there are many seats where they are starting with fewer votes than uniform swing suggests they should lose. But these effects depend on the principle challenger. Liberal Democrat MPs appear to be doing worse where Labour came second in 2010 but better where the Tories were second. Correspondingly the Labour share is up more where they are challenging a Lib Dem MP and the Tories seem to be falling a bit more where they are starting second to the Liberal Democrats.

Labour are the chief beneficiaries of the decline in Lib Dem support but this means they seem to be advancing more in places where the Lib Dems did well last time than they are in their target seats. Moreover in Scotland Labour are apparently falling further