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Comparative election forecasting: Further insights from synthetic models

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ABSTRACT

As an enterprise, election forecasting has spread and grown. Initial work began in the 1980s in the United States, eventually traveling to Western Europe, where it finds a current outlet in the most of the region's democracies. However, that work has been confined to traditional approaches – statistical modeling or poll-watching. We import a new approach, which we call synthetic modeling. These forecasts come from hybrid models blending structural knowledge with contemporary public opinion, to generate ongoing nowcasts of Western European national contests, from six months prior to Election Day itself. These test results, based on election pools from Germany, the United Kingdom, and France, encourage similar research on other European electorates.

1. Introduction

Election forecasting models are generally applicable and should therefore be implemented in a variety of democracies. For developing comparative election forecasting models, we build on leading scientific approaches in the field. [For general reviews, see Lewis-Beck and Tien (2012), Stegmaier and Norpoth (2013)]. Recent applications come from the United States, where the 2012 US presidential election was subject to an unprecedented amount of systematic forecasting work. [See Campbell (2012), who offered a pre-election review of presidential forecasts; also, see Lewis-Beck and Stegmaier (2014a), and their edited symposium of pedagogical forecasting papers on that contest; further, see Linzer and Lewis-Beck (2015), and their edited collection of high-tech articles on the dynamics of forecasting that race.] The dominant scientific approaches for that election were executed by three groups of forecasters: structuralists, aggregators, and synthesizers (Lewis-Beck and Stegmaier, 2014a).

These approaches can be delineated by their application of theory, data, and time. Below, we outline each, and then consider their application to elections in other democratic nations, namely those of Western Europe. After reviewing the relevant work to date, we pursue the development of synthetic models for forecasting national elections in Germany, the United Kingdom, and France. In the comparative spirit, we impose one overarching theoretical structure – a political economy one – across these three systems. As we shall see, the innovation of synthetic models, which combine key elements of the structuralist and aggregator methods, provides a promising development in election prediction on that side of the Atlantic.

2. Ways of election forecasting: structuralists, aggregators, synthesizers

The front-running scientific approach to election forecasting has been structural modeling, a method fully advanced in the United States case. For the 2012 presidential race, examples appear in Abramowitz (2012), Campbell (2012) and Holbrook (2012). Such efforts offer a theoretical model of the election outcome, usually beginning with a

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core political economy explanation, e.g., vote = f (presidential popularity, economic growth). [For a current review of vote and popularity functions, see Lewis-Beck and Stegmaier (2013).] In this work, the unit of analysis tends to be the nation, the estimation ordinary least squares (OLS) on single equations. Further, estimation is static, rather than dynamic, resulting in a unique final forecast.

An emergent rival approach to structural modeling, which draws on the public opinion polling tradition, is aggregation. For the 2012 presidential race, see the examples and discussions by Blumenthal (2014), Jackman (2014), and Traugott (2014). Such analysts aggregate vote intention in opinion polls, combining voter preferences (in percentages) over a number of multiple polls. Distinct from the structuralists, the aggregators offer no theory of the vote. Moreover, the unit of analysis is usually the nation. Finally, forecasting is dynamic, with repeated estimates across the campaign.

Synthesizers, in contrast to the foregoing methodologies, offer something new. For examples, see the work of Erikson and Wlezien (2014), Linzer (2013) or Silver (2012). These modelers borrow from the structuralists and the aggregators. They start with a political economy theory of the vote, and add to it aggregated and updated polling preferences. The data are analyzed at the national level or the state level. Further, the analysis of synthesizers may include multiple equations, and may be Bayesian. Finally, their forecasts are updated, with multiple estimates over the campaign. Such models join election theory with the strengths of aggregation and dynamic updating, and are the emphasis of our European efforts (see also Lewis-Beck and Dassonneville (2015)).

The forecasting art in Europe is expanding rapidly. And overall, we can say that structural models dominate the scene. For example, see Dassonneville and Hooghe (2012) on Belgium; Magalhães et al. (2012) on Spain; Nadeau et al. (2010) on France; Whiteley (2005) on the United Kingdom; Norpoth and Gschwend (2010, 2013) on Germany. These efforts tend to be based on a political economic theory of voting. Also, the modeling is single-country, single-equation OLS work. Estimation is static, with one unique forecast issued. The unit of analysis is usually, but not always, the nation.

Aggregation, where polls are combined, and systematically used to forecast, is almost non-existent in Europe. For a useful exception, see Jennings and Wlezien (2015), who amass over 23,000 polls from 41 countries, and examine how well they predict vote outcome. Additionally, using individual house polls on vote intention to forecast elections represents a long-standing tradition, especially within the media. [In particular see the plentiful work on the United Kingdom, dating back to the 1980s e.g., Sanders et al. (1987).] The situation worsens with regard to the synthesizers. We know of no examples of synthetic models on a general national election in Europe, with the exception of our own work (Lewis-Beck and Dassonneville, 2015), on which we build further here.

3. Building synthetic models for elections in Europe

For building a synthetic model, we combine a sound structural model with a sound polling model. Combined, they form a hybrid that can forecast national election outcomes accurately across a sample of European democracies. That hybrid will contain an explicitly theoretical and an explicitly nontheoretical component; therefore, we label it a "synthetic" model. First, the proposed structural model, with its political economy core, we write as follows:

$$\text{Vote}_t = f(\text{Economy}, \text{Government Support}).$$

Second, the polling model, which predicts the incumbent vote share as a function of vote intention, we write as follows:

$$\text{Vote}_t = f(\text{Polls}_{t-x}).$$

The synthetic model combines into one these two models. It begins with the long-term fixed effects from electoral theory, as captured in the structural model. Then, it adds to that the short-term effects induced by other forces, as represented by the polling model, using the latest available information on Vote Intention (VI_{t-x}) to predict the vote. The addition of this VI_{t-x} term to the specification can be justified as a solution to a missing variables problem. That is, other variables that help predict the vote may occur after the structural forecast; or, they may simply not be measurable directly at any time point. To the extent VI_{t-x} helps reducing error, this should become evident over time.

The synthetic model thus makes a blend of theory and empirics. And, it takes a dynamic form, with progressive re-estimations as the election becomes closer. With reference to the 2012 US presidential election forecasting work, then, it is most similar to the superlative efforts of Erikson and Wlezien (2013). We follow a similar estimation strategy, i.e., a non-Bayesian one. For the best in Bayesian models, applied to US presidential election forecasting, see Linzer's (2013) paper on the 2008 election, and his VOTAMATIC blog for the 2012 election.

The basic idea behind the synthetic model is that it operates like contemporary weather forecasting models (see Lewis-Beck and Stegmaier (2014b). The fundamental variables governing the atmosphere first generate an event forecast, for example a rainstorm. Then that forecast is checked against additional, incoming information, as the storm pattern is tracked. The initial forecast – based on long-term theories – is hence updated, and modified regularly by ever more current forecasts. The process thereby becomes dynamic and these dynamic forecasts become more accurate as the range is shorter. In terms of election forecasting, the fundamentals determining the behavior of the electorate are analyzed to predict an election first. But as Election Day draws near, more information on vote intentions becomes available, and this information is subsequently used to update the initial event forecast.

4. Synthetic model forecasts in practice

On each of the European countries under study, we first estimate the structural model (at t-6). Then, we estimate the polling model by simply taking the latest single poll that is published. If there is more than one poll at the same time point, we simply average them. Finally, we make a combined, single equation synthetic model forecast, with