



ELSEVIER

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)



International Journal of Forecasting 24 (2008) 285–300

*international journal  
of forecasting*

[www.elsevier.com/locate/ijforecast](http://www.elsevier.com/locate/ijforecast)

## Prediction market accuracy in the long run

Joyce E. Berg<sup>a,\*</sup>, Forrest D. Nelson<sup>b</sup>, Thomas A. Rietz<sup>c</sup>

<sup>a</sup> Department of Accounting, Henry B. Tippie College of Business, University of Iowa, Iowa City, Iowa 52242, United States

<sup>b</sup> Department of Economics, Henry B. Tippie College of Business, University of Iowa, Iowa City, Iowa 52242, United States

<sup>c</sup> Department of Finance, Henry B. Tippie College of Business, University of Iowa, Iowa City, Iowa 52242, United States

---

### Abstract

“Prediction markets” are designed specifically to forecast events such as elections. Though election prediction markets have been being conducted for almost twenty years, to date nearly all of the evidence on efficiency compares election eve forecasts with final pre-election polls and actual outcomes. Here, we present evidence that prediction markets outperform polls for longer horizons. We gather national polls for the 1988 through 2004 U.S. Presidential elections and ask whether either the poll or a contemporaneous Iowa Electronic Markets vote-share market prediction is closer to the eventual outcome for the two-major-party vote split. We compare market predictions to 964 polls over the five Presidential elections since 1988. The market is closer to the eventual outcome 74% of the time. Further, the market significantly outperforms the polls in every election when forecasting more than 100 days in advance.

© 2008 International Institute of Forecasters. Published by Elsevier B.V. All rights reserved.

*Keywords:* Combining forecasts; Evaluating forecasts; Financial markets; Election forecasting; Polls; Comparative methods; Automatic forecasting; Calibration; Comparative studies; Long-term forecasting; Election market; Political stock market

---

### 1. Introduction

How does one forecast an election outcome? Authors have suggested (1) naive forecasts (Campbell, 2005, suggests this as a benchmark); (2) polls (e.g., Perry, 1979); (3) prediction markets (Forsythe, Nelson, Neumann, & Wright, 1992; (4) structural models (e.g., Fair, 1978, or Lewis-Beck & Tien, 2007); (5) time series models (Norpoth, 1996, uses time series elements); and (6) less formal methods such as focus groups, interviews of knowledgeable parties, and expert panels (news sources often interview various pundits and experts; on the more

formal side, Cuzán, Armstrong & Jones, 2005, conducted Delphi Techniques using a panel of experts).

Given a sufficient number of observations under essentially identical conditions, a correct specification and sufficient stationarity, parameter estimates from both time series and structural models should converge to their true values, thus eliminating sampling error and leaving inherent randomness as the only error in forecasts of the outcome of the election. However, sufficient data under stationary conditions may be difficult to come by in the political process, and the idiosyncrasies of individual elections may still leave forecast errors unacceptably high. Given a random sample, accurate responses and a sufficiently static environment, surveys or polls should also accurately predict election outcomes. However, obtaining a truly

---

\* Corresponding author.

E-mail address: [joyce-berg@uiowa.edu](mailto:joyce-berg@uiowa.edu) (J.E. Berg).

random sample can be difficult (e.g., the Truman/Dewey race and, now, the prevalence of voters who do not have traditional phone lines), and often the environment can change quickly. Political campaigns are designed to influence how people will vote in an upcoming election. They often react to counter poll results and, if they are effective, essentially invalidate the poll predictions. Expert opinion can be difficult to aggregate in an acceptable manner. The Delphi Technique is designed to overcome many issues with expert opinion, but Cuzán et al. (2005) and Jones, Armstrong and Cuzán (2007) found no extant studies in the literature of the application of the Delphi method to elections. Ongoing research by these authors into the use of that method suggests promising results, but perhaps little gain over simple expert surveys. As with opinion polls, however, the expert surveys and Delphi methods are expensive, and more experience is needed to assess their efficacy.

Here, we extend the research studying whether prediction markets can serve as effective forecasting tools in elections. Prediction markets are designed and conducted for the primary purpose of aggregating information so that market prices forecast future events. These markets differ from typical, naturally occurring markets in that their primary role is as a forecasting tool instead of a resource allocation mechanism. Beginning in 1988, the faculty at the Henry B. Tippie College of Business at the University of Iowa have conducted markets designed to predict election outcomes.<sup>1</sup> These markets, now known as the Iowa Electronic Markets (IEM), have proven accurate in forecasting election vote shares the evening and week before elections. Here, we show that these markets dominate polls in forecasting election outcomes, well in advance of the elections.

We report on five markets from the Iowa Electronic Markets designed to predict US Presidential election vote shares and compare them to the obvious alternative: polls. We compare these two techniques specifically because (1) polls and prediction markets are used to forecast the same thing (the vote shares of candidates); (2) in contrast to naive forecasts and typical structural and time series models, they generate a large number of forecasts in each election; and (3) unlike expert opinion, they are readily available and can easily be understood and compared.

Prediction markets like the IEM should predict complex phenomena, including election outcomes, accurately for several reasons. First, the market design forces traders to focus on the specific event of interest, in

this case how the entire electorate will vote in the specific election. This requires more than simply building a model based on past elections (because of the large differences across elections), and more than the simple consideration of a fictitious election “if it were to be held today” (as polls ask respondents to consider). Second, to voice their opinions, traders must open a position in the market, putting money at stake. Presumably, the more confident they are in their predictions, the more money they will be willing to risk. Third, the market aggregates the diverse information of traders in a dynamic and, hopefully, efficient manner. Finally, the markets provide an incentive to generate, gather and process information across information sources and in a variety of ways. Traders who perform these tasks well, prosper. Those who don’t may go broke, may drop out of the market, and appear less likely to set forecast determining prices (see Oliven & Rietz, 2004).

The existing evidence (e.g., Berg, Forsythe, Nelson & Rietz, *in press*, and references cited therein) shows excellent predictive accuracy for election vote-share prediction markets in the very short run (i.e., one-day-ahead forecasts using election eve prices). Extending a similar figure from Berg et al. (*in press*) to include the 2004 election results, Fig. 1 shows this accuracy on election eve, a 1.33 percentage point average absolute error. For the five elections included in that figure, the average absolute error in the market’s prediction of the major-party presidential vote share across the 5 days prior to the election was 1.20 percentage points, while opinion polls conducted during that same time had an average error of 1.62 percentage points.

In this paper, we present an analysis of the long-run forecasting ability of markets relative to polls. Because many of the settings in which prediction markets could be used do not have long histories of results on which to model adjustments to raw data, we compare market prices to raw poll data, adjusting only so that both market prices and poll numbers sum to one.<sup>2</sup> The results show that prediction markets are more accurate long-run forecasting tools than polls across elections and across long periods of time preceding elections (in addition to election eve). The basis for our statement is a simple one. We compare the market predictions of two-party vote splits to poll predictions, normalizing poll splits to control for third party and undecided votes and comparing them to the IEM price on the last day a poll is in the field, so that the market prices and polls are

<sup>1</sup> These markets are the longest running prediction markets known to us.

<sup>2</sup> There are many methods of adjusting raw poll data to arrive at “revised” predictions. For examples, see Crespi (1988), Panagakis (1997), Campbell (2000), and Erikson and Wlezien (*in press*).

Download English Version:

<https://daneshyari.com/en/article/998453>

Download Persian Version:

<https://daneshyari.com/article/998453>

[Daneshyari.com](https://daneshyari.com)