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# Three Tools for Forecasting Federal Elections: Lessons from 2001

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What is the best way to predict Australian federal election results? This article analyses three forecasting tools: opinion polls, economic models, and betting odds. Historically, we find that opinion polls taken close to the election are quite accurate, while economic models provide better medium-run forecasts. The November 2001 federal election largely follows this pattern, although the economic models provided more accurate projections than recorded through the 1990s. Against these, we compare betting odds, analysing a rich data source from one of Australia's largest bookmakers, Centrebet. The betting market not only correctly forecast the election outcome, but also provided very precise estimates of outcomes in a host of individual electorates. Betting fluctuations present an intriguing quantitative record of the shifting fortunes of the campaign. Particularly in marginal seats, the press may have better served its readers by reporting betting odds than by conducting polls. We conclude that the results of these three models can help determine how important the events of August and September 2001 were in deciding the outcome of the election.

This article analyses the implications of the 2001 Australian federal election for election forecasters. We review the performance of three forecasting tools. First, the predictions of major polling organisations are assessed. Second, we update and analyse recently developed economic forecasting models that seek to predict election outcomes on the basis of economic data. We provide the first true out-of-sample test of the predictive power of these models. And, third, we

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introduce a new source of data for picking elections—betting data from one of Australia's largest bookmakers.

We find that all three models performed reasonably well in picking this election. By election day, the betting market picked the Howard-led Coalition as favourite, as did two of the three major polling organisations. Economic models predicted a close Coalition victory. However, these similarities hide remarkable differences. The range of opinions across three polling organisations spanned 7.5 percentage points in terms of the predicted share of the two-party-preferred vote. Betting odds fluctuated substantially over the election campaign, telling a fairly nuanced story of fluctuating fortunes, with the Coalition and the Beazley-led Labor Party swapping the lead several times. And whilst the various economic models yielded similar projections, our update reveals that the relationship between economic indicators and electoral fortunes appears to be weakening over recent elections.

## Background

### *Polls*

Polling is easily the most established election forecasting tool, yet it is probably the most criticised. An early and oft-cited critique was Herbert Blumer's (1948) claim that polling created figures which were often inaccurate, but when quoted by the media were assumed to be a true assessment of the state of public opinion. Although the danger that Blumer warned of still exists, the quality of opinion polling has improved considerably over the past half-century. Near-universal telephone ownership has made it simpler to obtain a representative sample of the population, and the proliferation of polling organisations provides a way of checking the results of aberrant polls. However, there are still challenges to be met, including very low response rates,[1] systemic biases in the sample of people who answer 'Don't Know' (Converse 1976–77; Althaus 1996), and difficulty in assessing likely preference flows of minor-party voters.

However, the major problem with polling is not technical, but rather that it is used to forecast each party's vote share rather than to forecast the likely government and Prime Minister (an outcome that depends on winning a majority of Lower House seats rather than a majority share of votes). As electioneering has become increasingly sophisticated in targeting only those voters in marginal seats, this has become a more important problem. The major response by pollsters has been to add 'marginal seat' polls to their armoury. Even so, Goot (2000) has noted that this has occurred in a rather ad hoc manner, and pollsters have yet to find a particularly systematic approach to this issue.

Thus we start by assessing the historical accuracy of the polls on their own turf, by asking: how precise are opinion polls in predicting the share of first-preference votes gained by each party? We collected predictions from the Morgan Polls for the 1960–98 period and from Newspoll for the period 1986–98. Figure 1 charts these predictions against the realised vote shares. Each panel shows the predictions from polls taken over different horizons. For simplicity, we show only predictions for the Australian Labor Party (ALP); results from analysing the Coalition vote share are substantially similar.

Accurate polling should lead the data to be clustered along the 45-degree line.

[1] Lavrakas and Traugott (2000) report that the response rate to most opinion polls in the United States has now fallen below 50%.

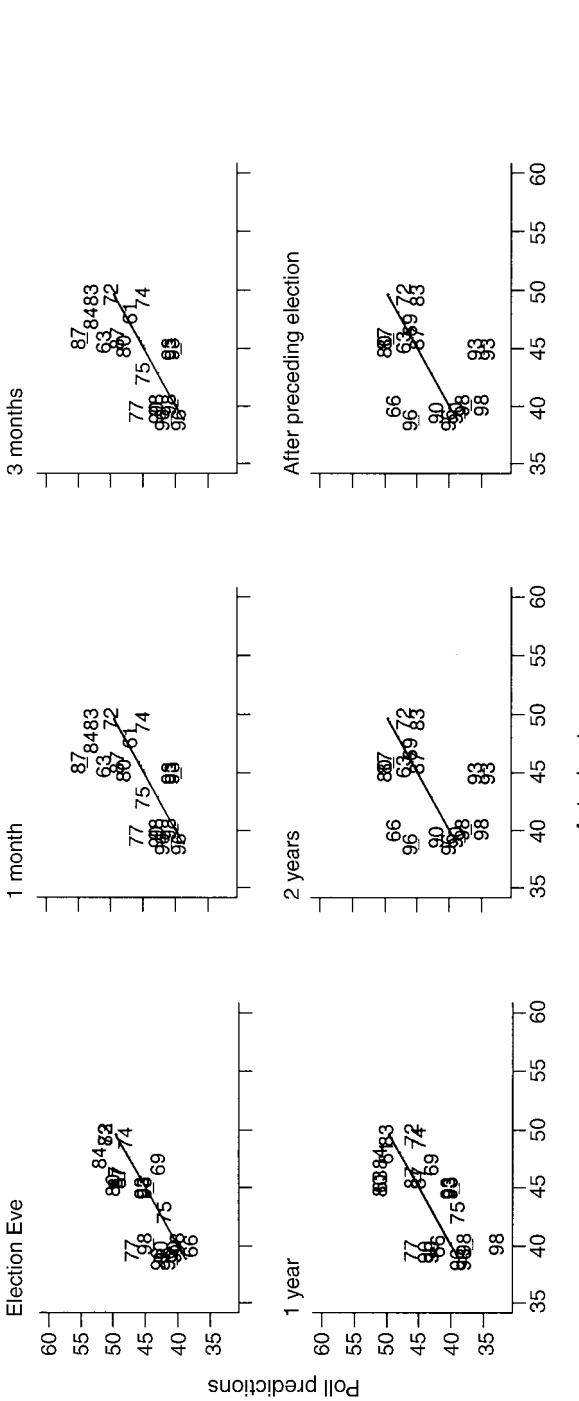


**Figure 1.** Predicted ALP vote over different horizons: Morgan Poll (1960–98) and Newspoll (1986–98). First-preference votes (%); Morgan poll predictions not underlined; Newspoll predictions underlined; a 45-degree line represents perfect prediction.

Not surprisingly, the election-eve polls appear to be the most accurate, although polls taken one month prior to the election also have substantial predictive power.[2] Polls taken more than a month before the election fare substantially worse, suggesting that the act of calling the election leads voters to clarify their voting intentions. Those taken three months prior to the election do not perform much better than those taken a year prior. By contrast, polls taken two years before the election, or immediately following the preceding election, have a very poor record. Indeed, we cannot reject a null hypothesis that they have no explanatory power at all. This is somewhat surprising in that the mere presence of an incumbency advantage should yield some explanatory power. Interestingly, a naïve model in which one simply expects the previous election's results to be repeated yields greater explanatory power than polls taken either immediately after an election, or two years before an election. These results suggest that there is little reason to conduct polls in the year following an election.

More formal tests of the forecasting performance of these polls is shown in Table 1. Each row reports the regression relationship between the election outcome and the polling numbers. Two formal statistical tests are also shown. First, we ask whether there is statistically significant evidence that the polls have useful predictive power. Second, we present a fairly simple test of the efficiency of these estimates, testing whether one can reject a model with an intercept of zero and a slope of one. That is, we ask whether the polling error is forecastable from information available in the poll itself. This analysis suggests that the Morgan Poll contains useful predictive power when conducted 12 months or less before the election. For polls at longer horizons, we cannot reject the hypothesis that the polls contain no useful information. Parallel tests on the Newspoll data yield similar results although, given the smaller sample (five elections), some caution is required in interpreting these numbers. Table 1 also suggests that these two polls provide inefficient forecasts of the eventual election result.

The election-eve polls, while fairly accurate in forecasting primary vote share, are less useful at yielding predictions of the likely Prime Minister. The eventual winner lost Morgan's election-eve poll in 1963, 1977, 1980, 1990 and 1993.[3] Between 1986 and 1998, Newspoll picked the wrong winner in two out of five elections—1993 and 1998.

Figure 2 provides a more formal assessment of the predictive power of these polls, reporting mean absolute prediction errors.

The average error rises (monotonically) with time until the election. An alternative measure of closeness, the root mean squared error (ie the square root of the average of the squared errors) shows a similar pattern. Interestingly, over the long run of election polling, the election-eve poll has been wrong by around 2.4 percentage points on average. This is to be contrasted with the hubris of pollsters

[2] While polls often show dramatic fluctuations in the month prior to the election, Figure 1 suggests that their explanatory power appears not to rise. One plausible reconciliation is that much of this variation simply reflects measurement error.

[3] Unfortunately we were only able to obtain a substantial run of historical data for first-preference voting intentions. Obviously, surveys reporting on a two-party-preferred basis are likely to provide more robust predictions of the likely election winner.

**Table 1.** How accurately do the Morgan Poll and Newspoll forecast the next election? Regression estimates of: *Actual ALP First-preference Vote Share* $= \alpha + \beta$; *Polling Prediction* $+ \varepsilon_t$

| | Morgan Poll (1960–98) | | | Newspoll (1986–98) | | |
|---|---|---|---|---|---|---|
| | | Polls have NO predictive power? ($H_0$: $\beta = 0$) | Polls are efficient? ($H_0$: $\alpha = 0$ and $\beta = 1$) | | Polls have NO predictive power? ($H_0$: $\beta = 0$) | Polls are efficient? ($H_0$: $\alpha = 0$ and $\beta = 1$) |
| Election eve | *Actual* = 14.6 + 0.66**Polls*<br>(7.5) (0.17) | Reject<br>$F_{1,12} = 15.8$<br>($p = 0.002$) | Accept<br>$F_{2,12} = 2.2$<br>($p = 0.15$) | *Actual* = 2.4 + 0.90**Polls*<br>(14.3) (0.33) | Reject<br>$F_{1,3} = 7.6$<br>($p = 0.07$) | Accept<br>$F_{2,3} = 2.3$<br>($p = 0.25$) |
| 1 month | *Actual* = 15.7 + 0.64**Polls*<br>(9.0) (0.20) | Reject<br>$F_{1,12} = 10.4$<br>($p = 0.008$) | Accept<br>$F_{2,12} = 2.5$<br>($p = 0.13$) | *Actual* = 28.0 + 0.32**Polls*<br>(11.1) (0.25) | Accept<br>$F_{1,3} = 1.6$<br>($p = 0.30$) | Accept<br>$F_{2,3} = 4.2$<br>($p = 0.14$) |
| 3 months | *Actual* = 21.9 + 0.52**Polls*<br>(9.9) (0.22) | Reject<br>$F_{1,14} = 5.3$<br>($p = 0.04$) | Reject<br>$F_{2,14} = 2.7$<br>$p = 0.10$ | *Actual* = 5.6 + 0.80**Polls*<br>(9.8) (0.21) | Reject<br>$F_{1,3} = 13.8$<br>($p = 0.03$) | Reject<br>$F_{2,3} = 13.7$<br>($p = 0.03$) |
| 1 year | *Actual* = 25.0 + 0.45**Polls*<br>(6.8) (0.16) | Reject<br>$F_{1,14} = 8.3$<br>($p = 0.01$) | Reject<br>$F_{2,14} = 7.0$<br>($p = 0.01$) | *Actual* = 24.0 + 0.44**Polls*<br>(19.9) (0.49) | Accept<br>$F_{1,3} = 0.8$<br>($p = 0.43$) | Accept<br>$F_{2,3} = 1.1$<br>($p = 0.44$) |
| 2 years | *Actual* = 32.0 + 0.29**Polls*<br>(9.9) (0.23) | Accept<br>$F_{1,9} = 1.5$<br>($p = 0.25$) | Reject<br>$F_{2,9} = 5.7$<br>($p = 0.02$) | *Actual* = 37.3 + 0.11**Polls*<br>(12.9) (0.31) | Accept<br>$F_{1,3} = 0.12$<br>($p = 0.75$) | Reject<br>$F_{1,3} = 8.1$<br>($p = 0.07$) |
| After preceding election | *Actual* = 33.0 + 0.25**Polls*<br>(8.5) (0.19) | Accept<br>$F_{1,13} = 1.8$<br>($p = 0.21$) | Reject<br>$F_{2,13} = 8.1$<br>($p = 0.01$) | *Actual* = 46.5 – 0.13**Polls*<br>(11.9) (0.28) | Accept<br>$F_{1,2} = 0.24$<br>($p = 0.68$) | Reject<br>$F_{2,2} = 9.2$<br>($p = 0.10$) |

*Notes*: Standard errors in parentheses. For F-tests, *p*-values shown in parentheses.
Morgan Polls: n = 14, 14, 16, 16, 10 and 14 at each horizon from election eve to after the preceding election, respectively.
Newspoll: n = 5 for all but after the preceding election, when n = 4.

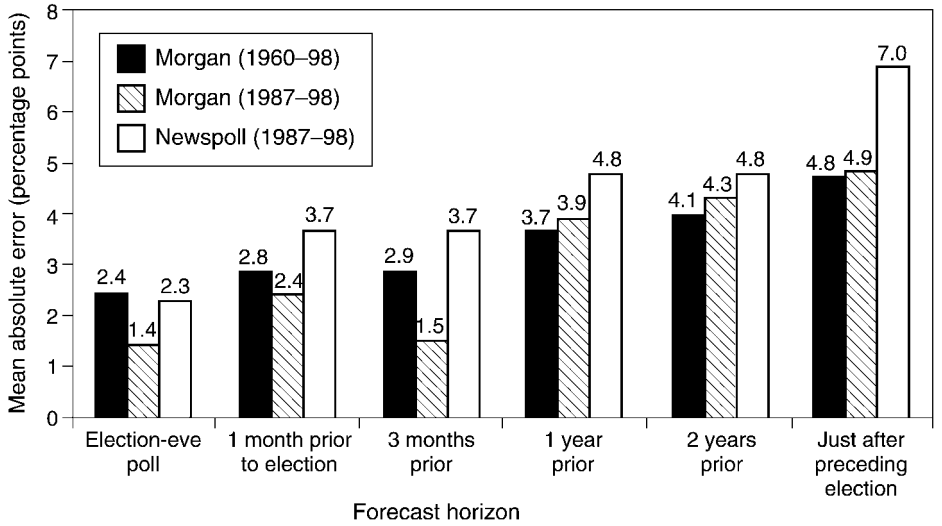


**Figure 2.** Average prediction errors, Morgan Poll (1960–98) and Newspoll (1987–98).

such as ACNielsen, whose polling reports state that 'the maximum margin of error to apply to this sample is 2%' (eg ACNielsen 2001a).

Figure 2 also allows a comparison of the relative merits of Newspoll and Morgan's historical performance (comparable data not being available for the other major pollsters). The black bars show Morgan's average prediction errors, while the white bars show Newspoll's average errors. In most cases Morgan has recorded smaller prediction errors than Newspoll, although the election-eve predictions have a fairly similar record. A fairer comparison would assess their performance over the same set of elections. The grey bars show the performance of the Morgan Poll over the same set of elections as Newspoll's white bars (1987–98). This comparison suggests that Morgan has outperformed Newspoll over all forecast horizons. That said, the small sample of common elections requires some caution in drawing strong conclusions. Assessing each of the six predictions over each of the five elections as independent draws, this superior performance is statistically significant at the 10% level. However, only the difference over the three-month horizon is individually statistically significant.

It is also worth comparing these results with overseas polls. In general terms, polling in Australia should more accurately predict election results than in nations without compulsory voting. Not much difference is noticeable, however, with the average error of the election-eve prediction from Gallup's US presidential poll averaging 1.6 percentage points since 1960 and 2.4 percentage points since 1936.

### *Economic Models*

The use of economic indicators to predict election results dates back only a quarter of a century. Initial research focused on US House of Representatives elections (Kramer 1971; Stigler 1973), then broadened to encompass US presidential elections (Fair 1978; Hibbs 1982a) and elections in other industrialised nations (Lewis-Beck 1988; Palmer and Whitten 1999). Elsewhere, recent years have seen

the study of economics and elections extended to a variety of other countries and to related problems.[4]

Previous articles in the *Australian Journal of Political Science* provide the leading models for predicting Australian federal elections in the political-science literature (Jackman and Marks 1994; Charnock 1995; Jackman 1995). More recently, in the economics literature, Cameron and Crosby (2000) provide complementary results. Not surprisingly, the most important economic indicators in Australian elections are unemployment and inflation. Other variables that have been tested include growth in Gross Domestic Product (GDP), real wages, and interest rates. Naturally, these variables tend to move together.

Australian election forecasting models have had mixed success. Jackman and Marks (1994) analyse 18 post-war elections and find suggestive evidence of a role for unemployment, inflation, and an incumbency advantage. Yet it is only by fairly liberal standards that these results are to be judged as statistically significant. Indeed, in their opening footnote, the authors not only thank colleagues for suggestions, but add that 'special mention goes to Australia's political leaders for confounding our best efforts to model election outcomes'. Jackman (1995) also finds evidence of 'honeymoon effects' reflecting the fact that Australians have tended to re-elect novice governments.

Cameron and Crosby (2000) expand their sample to include all elections from 1903 to 1996, and focus on higher-frequency economic indicators. Beyond economic variables, they improve their fit by adding indicators to take account of each of the World Wars and, in their preferred specification, exclude specific elections on a somewhat ad hoc basis, including 1906 (a three-party election), 1931 (the Depression) and 1975 (the Dismissal).

The common theme is, however, that unemployment and inflation are the key macroeconomic variables for election forecasting. Jackman and Marks find that voters reward a government that reduces the unemployment rate by 1 percentage point with a 0.75 percentage point swing (on a two-party-preferred basis). Cameron and Crosby find that the reward is slightly smaller. Inflation appears to have a lesser role, with a 1 percentage point reduction in the inflation rate worth around 0.25–0.5 of a percentage point to the government. These numbers are roughly comparable to those from models of US presidential elections (Fair 1998; Alesina and Rosenthal 1995).

These election-forecasting models appear to have useful predictive power. Jackman and Marks produce 'one-step-ahead forecasts' (estimated only on data available prior to an election), and find that their preferred model yields average prediction errors of 2.6 percentage points for elections between 1966 and 1993. Performing a similar exercise using Cameron and Crosby's specification—over the same elections—we find average errors of 3.0 percentage points. This suggests that,

[4] Political scientists have looked at the extent to which voters cared about their own finances ('pocketbook voting') versus the national economy ('sociotropic voting'): see Kinder and Kiewiet (1981) and Lewis-Beck (1985). Others asked whether various types of voters reacted differently to economic conditions (Hibbs 1982b; MacKuen, Erikson and Stimson 1992), and whether voters could be manipulated by artificially induced economic booms in election years (Alesina, Roubini and Cohen 1997). Another issue is voter rationality—in particular, whether voters in US gubernatorial elections parse out the effect of the national economy (Wolfers 2000) and whether voters in national elections take account of fluctuations in the world economy (Leigh 2001).

if accurate economic forecasts are available, these models yield more accurate long-range predictions than do polls.

However, while these economic models obtain some degree of in-sample fit, their out-of-sample performance has never been tested. This is a particularly salient issue given the degrees of freedom that the modeller has in choosing the economic variables, data sources, functional form and sample of elections. We turn to this issue below.

### *Election Markets*

The basic premise of election betting markets derives from the proposition that markets are efficient aggregators of information, and that equilibrium prices in such markets reflect an efficient estimate of election probabilities. Election betting markets (or 'election futures markets') have a relatively short history. The Iowa Electronic Market, established by political scientists at the University of Iowa in 1988, is perhaps the world's best-known election market. These academics operate an electronic market in which traders can purchase 'futures contracts' that consist of a promise to pay if the candidate wins the popular vote. Thus the price of this contract reflects the probability of a candidate winning the election. An alternative contract pays stockholders in proportion to their candidate's share of the popular vote. These prices thus reflect the likely vote shares of each candidate.

If these markets are efficient, these prices should yield assessments that reflect all available information—including polls, the state of the economy, and recent policy pronouncements. For US presidential elections, the Iowa Electronic Market has tended to be more accurate than opinion polls (Iowa Electronic Markets 2001; Forsythe et al 1992). Shaw and Roberts (2000) suggest that this is because the betting market focuses on the underlying dynamics of the race, and is therefore better able to parse out events that occur several months before the election but will not change the outcome. Conversely, the betting market responds rapidly to occurrences that affect the underlying dynamics of the race (such as the appointment of a new campaign manager), even if these events elicit relatively little response in the media or polls.

While the Iowa Electronic Market has expanded to include markets for national elections in Russia, France, Denmark, Taiwan, and Mexico, no comparable 'election futures market' operates on Australian elections. Fortunately, however, buying a futures contract that pays only if your candidate wins the election is equivalent to simply placing a bet on that candidate. With the legalisation of sports bookmakers in the Northern Territory in 1992, Australian political scientists now have a new source of data from this Darwin-based election market. And in the best of national traditions, Australian political scientists can call a bet a bet, rather than a 'futures contract'.

Our analysis of election markets relies on election betting data generously provided to us by Gerard Daffy and Michael Kain of Centrebet, a fully-owned subsidiary of Jupiters Limited. Centrebet is one of Australia's largest bookmakers and it was the focus of a substantial share of the betting on this election. These data are particularly useful because they focus directly on the object of interest to forecasters: the probability that a given party will form government. Indeed, following an article that we wrote in the *Sydney Morning Herald* about these data

(Wolfers and Leigh 2001), Centrebet reported substantial interest from various candidates calling to ask 'where the money is going'.

In Australia, the accuracy of the betting markets as a means of predicting elections remains an open question. As far as we are aware, no Australian researchers have previously collected or analysed these data.

## Lessons from the 2001 Election

We now turn to analysing the predictive performance of the polls, economic forecasting models and the betting market. In the election of 10 November 2001, the Liberal-National Coalition gained 51.0% of the two-party-preferred vote, and Coalition leader John Howard was returned as Prime Minister. We briefly review what the three models anticipated, before turning to look at their results in more detail.

On the eve of the election, ACNielsen and Newspoll predicted that the Coalition would gain 52% and 53%, respectively, of the two-party-preferred vote. Newspoll hedged its bets somewhat, also arguing that its marginal-seat polls showed a neck-and-neck race. In contrast, Morgan forecast that Labor would capture 54.5% of the vote, winning easily. Further, the Morgan marginal-seat poll showed a 5.7% swing to the ALP across Coalition-held marginals and a 1.3% swing in Labor's own marginal seats.

We updated Cameron and Crosby's model, finding that recent economic statistics predicted that Howard's Coalition would win 50.5% of the two-party-preferred vote. Similarly, Jackman and Marks's model predicted that Howard's Coalition would win 50.9% of the vote.

By polling day, Centrebet reported holding a total of $1.5m in bets. To give some perspective, this is more than was wagered with them on either the rugby league or Australian Rules grand finals. It is also well in excess of the US$150,000 turnover in Iowa's winner-takes-all market on the 2000 US presidential election. Ultimately, Howard's Coalition was favourite, with odds of $1.55 suggesting a 64% probability of winning the election (or 60% taking account of Centrebet's profit margin).[5] Even at those skinny odds, Howard's Coalition was backed for more than Beazley's Labor, and Centrebet lost money on the election. Interestingly, while the weight of money was behind Howard, the weight of numbers (in terms of numbers of bets written) favoured the ALP.

We now turn to analysing each of these forecasting tools in greater detail.

### *Pollsters*

Polling for the 2001 election was notable in two important respects. First, the major polling organisations disagreed vehemently about the likely election outcome, with predictions on a two-party-preferred basis differing by up to 7.5 percentage points. Second, the polls fluctuated wildly, predicting a Labor victory for almost two-and-a-half years until a sudden reversal in the months leading up to the election. Table 2 shows some of the basic predictions made by leading pollsters.

On a two-party-preferred basis, ACNielsen was closest, predicting a 52% vote

[5] Throughout we report the implicit probability of winning, rather than odds. Thus, assuming an 8% profit margin, we calculate this as: probability = (return on $1 bet $\times$ 1.08)$^{-1}$.

**Table 2.** Pollsters on the eve of the 2001 election

**ACNielsen**
- 'The Coalition are likely winners of the election but they are not certainties.'
- Howard to gain a 52% share of two-party-preferred vote. *Actual: 51.0%*

**Morgan**
- 'ALP Set to Win Federal Election': Howard predicted to gain a 45.5% share of two-party-preferred vote. *Actual: 51.0%*
- 'ALP Leads Easily in Key Marginals':
  - Prediction: 5.7% swing to Labor in 18 Coalition-held marginals. *Actual: –3.0%*
  - Prediction: 1.3% swing to Labor in nine ALP-held marginals. *Actual: –2.5%*

**Newspoll**
- Howard to gain a 53% share of two-party-preferred vote. *Actual: 51.0%*
- ALP to gain 50.5% of votes in marginal seats (those held by a margin of 4 percentage points or less on a two-party-preferred basis). *Actual: 51.8%*

*Sources*: ACNielsen (2001b), Roy Morgan Research (2001b), Newspoll (2001b).

share for the Coalition, with Newspoll a close second, predicting a 53% share. The Morgan Poll was the most inaccurate, suggesting that Labor would easily win the election.

Following the election, various commentators argued that the error was attributable to the fact that Morgan carried out face-to-face polling, while its competitors relied on telephone polls (Ramadge 2001; Day 2001). Not surprisingly, Morgan disagreed, arguing that its polls were an accurate barometer of the electorate, and that its polls reflected the electorate's 'true' mood at the time they were taken. To substantiate this assertion, Morgan re-interviewed a sample of those who had said they would vote Labor a week before the election, and discovered that around 15% had voted for a party other than Labor (Roy Morgan Research 2001a). Yet without re-interviewing *both* Labor- and Liberal-leaning respondents, it is impossible to know how many intending Liberal voters switched to Labor, and hence which party won the last few days of the campaign. (That is, Morgan *only* interviewed those who could shift away from Labor, and then argued that it had evidence of a *net* swing away from Labor.) Further doubt is cast on the 'late swing' theory by the fact that Newspoll and ACNielsen detected no such pre-poll volatility (Newspoll 2001a; ACNielsen 2001a).

Morgan aside, the major polls were reasonably accurate on the eve of the election. However, it is also worth examining their predictions throughout the election cycle.

Figure 3 suggests that while most of the election-eve polls accurately picked the result, the pollsters were much less accurate over a longer horizon. Polls taken months or years before an election have two purposes—as a barometer of the electorate ('What would happen if an election was held tomorrow?') and as a predictor of the result ('What would happen if an election was held on the date that we expect?'). Our findings suggest that polls with a longer horizon were not particularly accurate as predictors—indeed, all three major pollsters pointed to a Labor victory throughout much of the electoral cycle. Only immediately following the 1998 election, and just before the 2001 election, does support for the Coalition approach levels consistent with a Coalition victory. The two-party-preferred figures are even more striking. Of the polls taken between the October 1998 election and mid-September 2001, the ALP led in 26 of the 27 polls conducted by ACNielsen

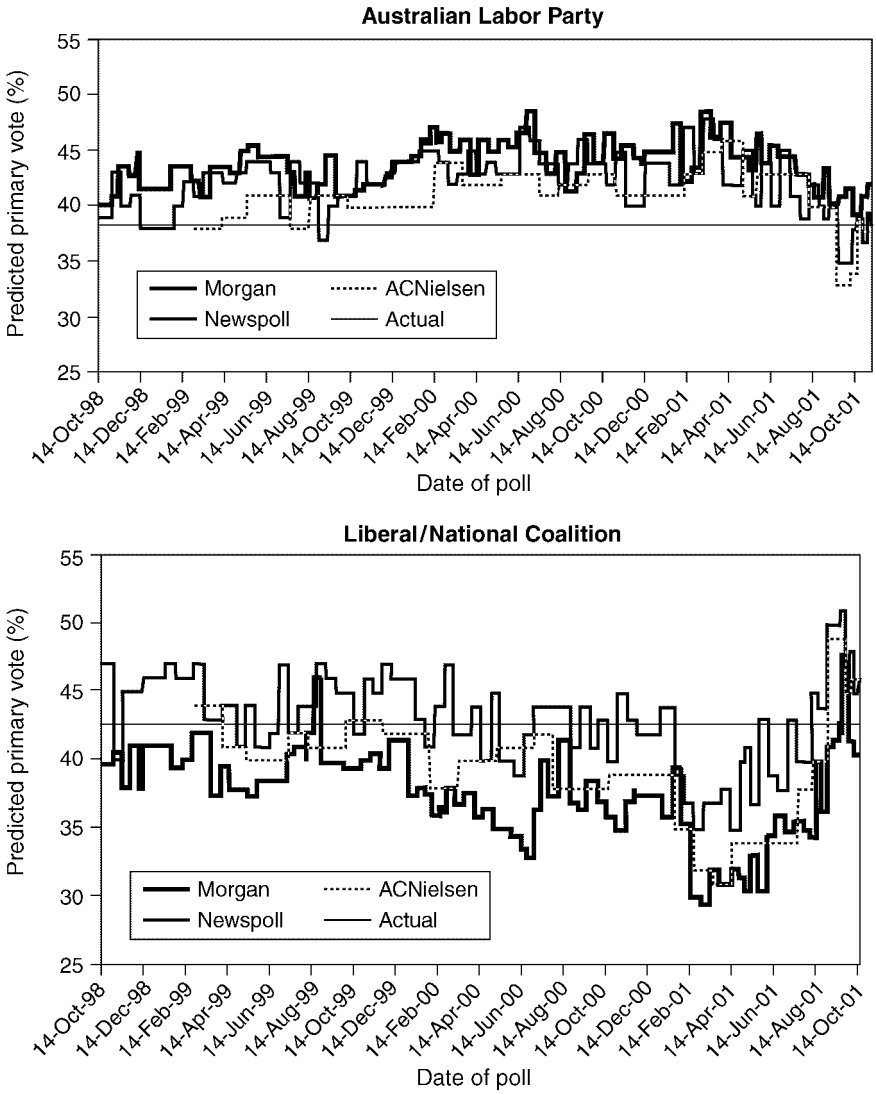


**Figure 3.** Polling through the 2001 electoral cycle.

(the exception being the first poll of the cycle), and led in 77 of 78 polls conducted by Morgan (the exception being a tied poll in August 1999).[6] Why does this matter? Because it demonstrates that, six months before the election, the economic models were arguably more accurate predictors than the polls.

Figure 3 also helps reconcile the gap between Morgan and the other pollsters. Throughout, Morgan appears to match both Nielsen and Newspoll on the ALP's predicted primary vote. The bottom panel is more revealing, with Morgan consistently finding a smaller primary vote for the Coalition than Newspoll. This suggests that its stronger numbers for the ALP reflect a greater share of third-party voters

[6] Newspoll does not produce two-party-preferred polls until just prior to the election.

and a strong flow of pro-ALP preferences. The Nielsen poll records a primary vote for the Coalition somewhere between Morgan and Newspoll.

### *Economic Forecasting Models*

This section reviews the insights of the three existing Australian economic forecasting models. The key parameters of these models are shown in Table 3. Using the authors' own data, we were able to perfectly replicate all three models. These results are shown in the first column. We then updated the data set to reflect data revisions by the Australian Bureau of Statistics (RBA 2002). These findings, shown in column 2, are reassuringly similar. The third column provides the fairest tests of the models, re-estimating them to reflect all elections through to 1998.

In order to translate these models into forecasts for the 2001 election, we simply fed election-eve measures of recent economic indicators through these equations.[7] All three models performed extremely well, recording predicted two-party-preferred votes for the incumbent coalition of 50.9%, 50.4%, and 50.5% for the Jackman and Marks, Jackman, and Cameron and Crosby models, respectively.

However, despite this apparent success, a striking feature of Table 3 is that the top two specifications appear to *lose* explanatory power when we include recent data, with the coefficient on unemployment falling by half. Figure 4 shows the puzzle graphically. Throughout the post-war period, variation in unemployment has appeared to be central to explaining election outcomes. Yet, through the 1990s, this relationship seems to be breaking down, with the most confounding results being the re-election of the Keating-led Labor government in 1993 and its subsequent defeat in 1996.

One interpretation is that Australian voters have stopped caring about unemployment. Yet surveys tell us that, while less than half of all Australians rated unemployment as an extremely important factor in their voting decisions in the 1987 and 1990 elections, this figure rose to over 60% in the subsequent three elections.[8] The 2001 election provides us with little to resolve this issue. While unemployment fell through this electoral cycle, it was rising sharply through 2001. We present this chart in the hope that it will stimulate future research into this intriguing and important issue.

### *Election Betting*

Centrebet starting betting on the Australian election in February 2001. The fluctuations in betting odds over the following nine months provide an intriguing daily history of the path of the campaign. The immediate response of the betting market to salient events such as the Queensland State election, the Tampa incident, the destruction of the World Trade Center, and the leaders' debate can be seen quite clearly in Figure 5. The odds of a Coalition victory were the same on the first and last days of the formal campaign, suggesting that it was an approximate draw, with

[7] Unemployment rate of 6.9%, headline inflation of 6%, annual GDP growth of 1.4% and real wage growth of $-0.7\%$ (RBA 2002).
[8] Australian Election Studies (AES 1987, 1990, 1993, 1996, 1998).

**Table 3.** Election forecasting equations. Models used: Jackman and Marks (1994) model 4, Jackman (1995) model 4, and Cameron and Crosby (2000) model 1.2. Dependent variable: incumbent party's vote share. (*Actual for 2001: 51.0%*)

| | Replication | Updated data | Updated data and extended sample to 1998 |
|---|---|---|---|
| Jackman and Marks (1994) | | | |
| Unemployment | −0.77* | −0.73* | −0.36 |
| (*Δ over election cycle*) | (0.41) | (0.36) | (0.38) |
| Inflation | −0.19 | −0.20 | −0.15 |
| | (0.12) | (0.12) | (0.13) |
| Constant | 52.49 | 52.52 | 51.57 |
| | (1.01) | (1.01) | (1.05) |
| Prediction | 52.0% | 51.9% | 50.9% |
| Jackman (1995) | | | |
| Unemployment | −0.55 | −0.54 | −0.25 |
| (*Δ over election cycle*) | (0.41) | (0.36) | (0.39) |
| Inflation | −0.30** | −0.30** | −0.21 |
| | (0.13) | (0.13) | (0.14) |
| Honeymoon | 2.90 | 2.80 | 1.90 |
| | (1.70) | (1.70) | (1.72) |
| Constant | 52.41 | 52.47 | 51.41 |
| | (0.96) | (0.95) | (1.05) |
| Prediction | 51.1% | 51.1% | 50.4% |
| Cameron and Crosby (2000) | | | |
| Unemployment | −0.29* | −0.29* | −0.32* |
| (*Level*) | (0.16) | (0.16) | (0.16) |
| Inflation | −0.42*** | −0.42*** | −0.37*** |
| | (0.10) | (0.10) | (0.12) |
| GDP | −0.19 | −0.18 | −0.20 |
| | (0.16) | (0.16) | (0.16) |
| Real wage | −0.25 | −0.27 | −0.28 |
| | (0.16) | (0.17) | (1.7) |
| Honeymoon | 5.18*** | 5.21*** | 4.32 |
| | (1.63) | (1.64) | (1.77) |
| Constant | 54.97 | 55.00 | 55.00 |
| | (1.22) | (1.23) | (1.23) |
| Prediction | 50.4% | 50.4% | 50.5% |

*Notes*: ***, **, and * denote statistically significant at the 1%, 5% and 10% levels, respectively. (Standard errors in parentheses.)
Cameron and Crosby's specification also includes indicator variables for the two World Wars, 1931, and 1975. Owing to revisions in Stata's calculation of robust standard errors, our replication yields somewhat larger standard errors.

Beazley's Labor winning the first half of the campaign and Howard's Coalition the second.

Centrebet also offered odds on the outcomes in 47 electorates. Figure 6 focuses on the betting favourite in each race, plotting the probability of victory implicit in these odds against their two-party-preferred vote share. In 43 of 47 cases, the betting favourite won the election. Indeed, all 13 ALP candidates who were fancied in the betting won, while the four losers comprised two National Party MPs and two Liberals. Moreover, candidates who were more highly fancied also won a

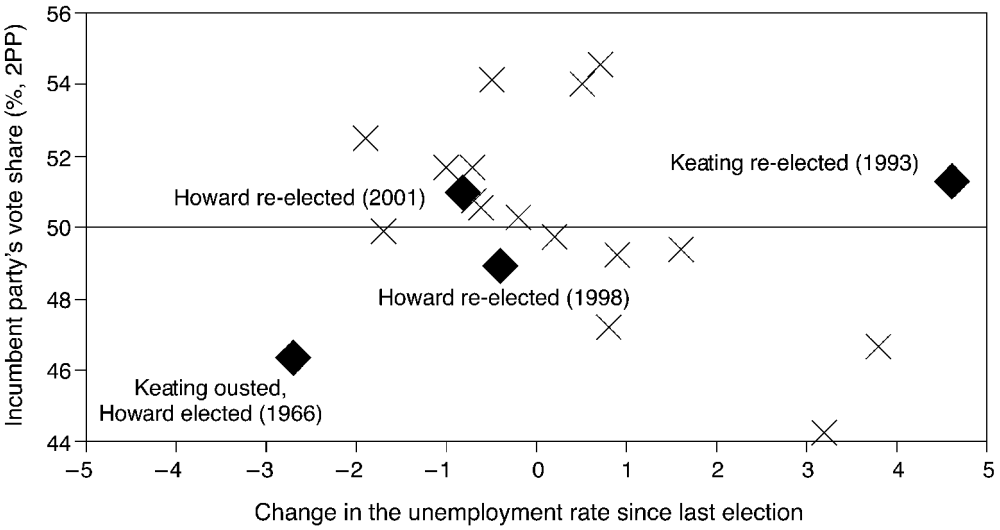


**Figure 4.** Do Australian voters still care about unemployment?

greater share of votes. Given that most marginal seats were in this sample, the fact that the market correctly selected so many tight races is quite extraordinary.

Only a limited direct comparison with the polls is possible, because polls tend not to focus on specific seats. Table 4 shows the few seats in which some comparison is possible. While the polls got two of these three races right, the betting market picked the winner in all three cases.

Further, Centrebet offered a second form of betting on 12 non-marginal seats, allowing punters to bet against 'the line'. For example, in Labor leader Kim Beazley's seat of Brand, punters were asked to bet on whether Beazley's primary vote would be under or over 50.5%, with equal odds offered on both results. In nine of these cases, the closing odds were the same whether betting on 'over' or 'under', suggesting that the market regarded the line as an unbiased estimate of the likely

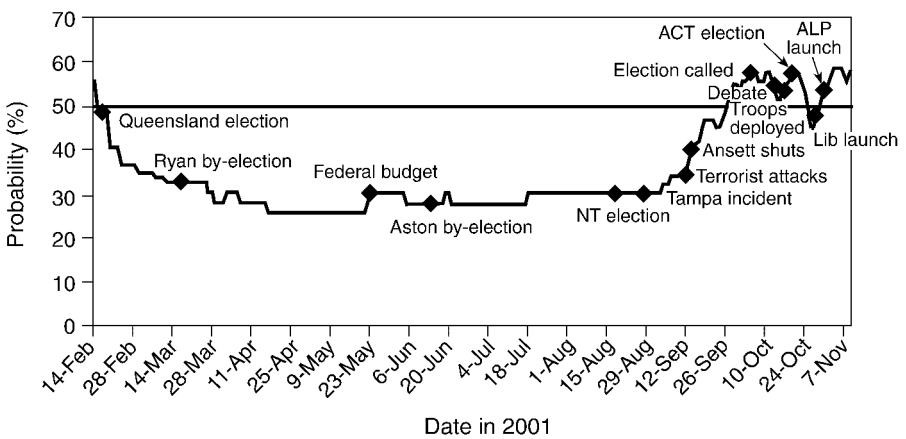


**Figure 5.** Centrebet: probability of Coalition victory.

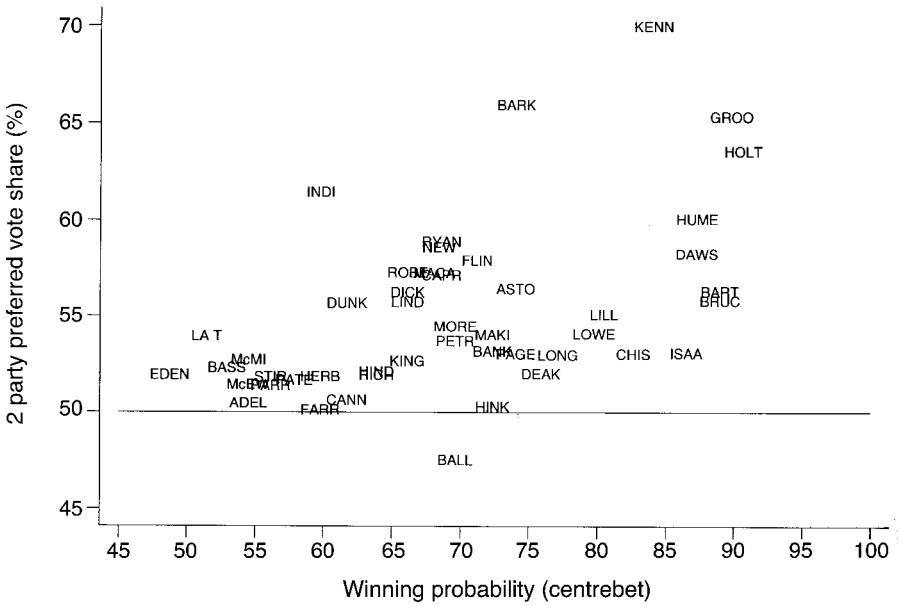


**Figure 6.** Performance of betting favourites in 47 seats.

outcome. Figure 7 shows that these predictions were indeed extraordinarily accurate. In three other cases, the market chose a favourite, and in each case successfully predicted the direction in which the line was a biased assessment.

## Conclusion

While Morgan Polls have historically outperformed Newspoll, the 2001 election presented a stark reversal. Moreover, ACNielsen outperformed both heavyweights this time around. Yet while the pollsters produced useful forecasts in the few days before the election, their projections over a longer time horizon were quite poor.

In what we believe is a first for Australia, we also tracked election betting. Not only did the betting market predict the election winner, but it also predicted the

**Table 4.** Picking marginal seats: comparing polls and bookies

| Electorate (date of prediction) | Polling prediction | Centrebet probability | Outcome |
|---|---|---|---|
| Parramatta (2–5 November) | Newspoll Liberals to win with 52.5% vote share | 54% probability of Liberal victory | Liberal victory with 51.2% vote share |
| Richmond (16–18 October) | ACNielsen ALP to win with 52% vote share | 71% probability of National victory | National victory with 51.7% vote share |
| MacArthur (30 October–1 November) | ACNielsen Liberals to win with 58% vote share | 64% probability of Liberal victory | Liberal victory with 57% vote share |

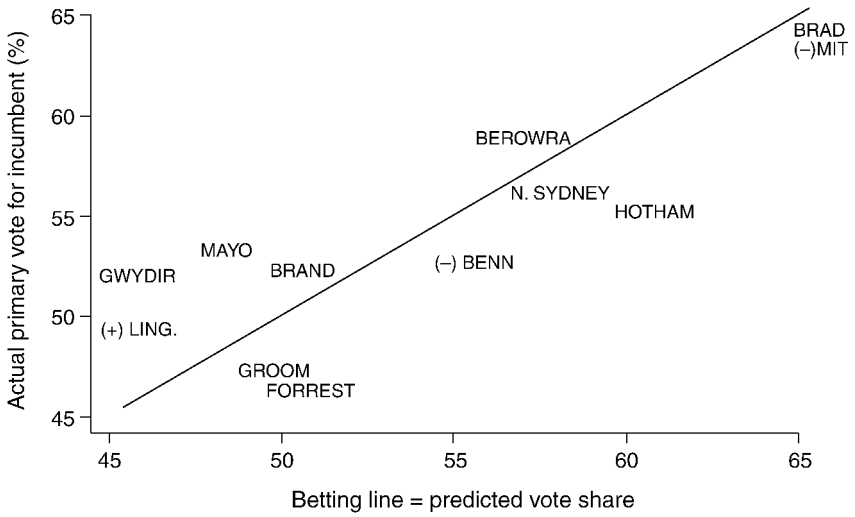


**Figure 7.** Seat-by-seat betting: under or over 'the line' 45-degree line is perfect prediction.

winners in a range of marginal seats. Moreover, an analysis of the betting odds in the nine months preceding the election shows the responsiveness of the market to events in the campaign.

Surprisingly, economic models—which focused only on the macroeconomic fundamentals—also produced forecasts that were accurate over both the short and medium run. This result followed a decade in which such models appeared to be losing their predictive power.

These results present a conundrum when placed beside the analysis of many political commentators, who have argued that Labor's loss can be attributed to two unexpected events—the Tampa 'boat people' crisis and the terrorist attacks that occurred on 11 September.[9] Our analysis of the polling data suggests that these events led to a large shift away from the ALP. And the betting data concur. Yet an economic model taking no account of either factor provided a fairly accurate prediction, which implies that, even without the Tampa crisis and the terrorist attacks, Kim Beazley would not be Australia's Prime Minister today. How do we reconcile this with the polling data, betting data, and common wisdom of many political commentators? Do these facts bring the common wisdom into question, or do they discredit the economic models? While we are hesitant to dismiss the importance of non-economic factors in shaping the 2001 election outcome, the high degree of accuracy of the economic model should at least give pause to the commentators.

Finally, we believe that, while opinion polling remains a reasonably accurate means of forecasting election results, there is no reason why it should enjoy a monopoly. Other tools for forecasting elections—the betting market and economic models—both merit greater prominence in the media and public discourse.

[9] See, for example, Carney (2001), Grattan (2001), Green (2001) and Henderson (2001). The Federal Director of the Liberal Party and the National Secretary of the ALP have also presented sharply divergent views on this issue: see Crosby (2001) and Walsh (2001).

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