Reply to Fowler and Montanges (2015): Discussion of Auxiliary Tests

Andrew Healy, Neil Malhotra, and Cecilia Hyunjung Mo

This memo discusses five auxiliary tests reported by Fowler and Montanges (henceforth FM). FM argue that the results of these tests suggest that the findings reported in Healy, Malhotra, and Mo (henceforth HMM) represent a false positive. We were only permitted 500 words to craft a response to FM within *PNAS* itself. Consequently, we discuss the auxiliary tests in this memo. All five tests are poorly designed and the betting spreads analysis makes more sense than any of these auxiliary tests. Contrary to FM's assertions, our tests were theoretically motivated. There is a long line of papers suggesting voters make basic attribution errors, and that while emotions are often adaptive, they can also be disruptive to decision-making. Moreover, the psychology literature (and psychologists) could not be clearer that these kinds of effects are not only quite common, but pervasive. In contrast, FM's tests are not informed by that literature and rely on voters being decidedly more capable than much research (not just ours) suggests.

(1) County-Year Fixed Effects

FM report specifications that include county-year fixed effects. HMM included county and year fixed effects separately. FM argue that county-year fixed effects are needed because it is possible that incumbent strength and quality of football team may be correlated in a given year. Consequently, FM argue that one must leverage variation in incumbent party across offices within a county-year.

The analyses with county-year fixed effects are inappropriate because 80% of the observations do not have variation at the county-year level. These results are therefore conducted on a very different, very small sample that is not sufficiently powered to test the null hypothesis. It is possible that there is heterogeneity in the main treatment effect (i.e., college football games matter less in places where there is more party competition), but this does not mean that HMM's results are false positives. The heterogeneity in the treatment effect may be substantively and theoretically interesting; when voters are provided with campaign information in settings where there is robust electoral competition, it is possible that irrelevant events have less of an effect.

As a result, FM reach the entirely wrong conclusion from the analyses that include county-year fixed effects. Because these tests are conducted on a different sample, they do not speak to the results reported in HMM. A proper interpretation of FM's estimates is not that HMM reported false positives, but that there may be theoretically important treatment effect heterogeneity that was not considered in the original paper.

(2) Facebook Likes to Code High-Interest Teams

FM use a different approach to identifying which teams have high fan interest: the percent of Facebook users in a team's home county who express an interest in *any* college football team (taken from Irwin and Quealy 2014a). It is not clear why FM did not use Irwin and Quealy's alternative data source (Irwin and Quealy 2014b) that considers Facebook "likes" of the specific team in question in a given zip code, as that more accurately captures county-level

interest in the local college team. Regardless of data source, however, this approach is inappropriate for coding historical data. In contrast to the Facebook measure that estimates support only at the present moment, our measures quite deliberately came from data gauging fan support during a longer period of time overlapping with our sample for the betting spreads data (1985-2008) and our full dataset (1964-2008). Further, the FM approach produces a less face-valid list of teams than ours (e.g., FM code Texas and Michigan as "lower interest teams" and Baylor and Kentucky as "higher interest teams"). FM claim that their coding of high-interest teams has less measurement error than our two methods of operationalizing college football interest (based on football game attendance data between 1998 and 2008 and data on whether a team ever won a championship since 1964). Given that Facebook users are a non-random sample of both college football fans and American citizens (e.g., Facebook users are younger than the population at large), there is no proof or logic to suggest that FM's measure is less noisy than HMM's. Our measure includes a more face-valid bifurcation (interested readers can compare the list of high-interest teams employed by FM and HMM). Therefore, we trust our results on high-interest teams more.

(3) Incumbent Politicians Instead of Incumbent Parties

FM estimate regressions predicting the support of incumbent politicians while HMM estimated regressions predicting support of incumbent parties (i.e., not dropping observations when an incumbent retired or was term limited). Our test is more consistent with the theory of college football results affecting voters' perceptions of the status quo. If voters have a negative mood, then they may want to change any aspect of the status quo, including which party is in power at the time. The dependent variable used by FM is therefore less appropriate than the one used by HMM. Additionally, once again this re-coding of the dependent variable yields a different estimation sample than the one used by HMM, therefore not making the FM tests a replication of HMM's analyses, but rather instead point to potential treatment effect heterogeneity.

(4) The Effect of Football Results Within the State (but Outside the County)

FM show that college football games also influence election results outside the specific county where the team is located. This finding does not undermine our conclusions since many teams garner strong support from much of the state (e.g., Ohio State, Louisiana State), and in many cases, there is one Bowl Championship Series (BCS) college team or one high interest BCS college team in the entire state. For example, the Facebook data created by Irwin and Quealy that FM consider in Point (2) above clearly show that college football teams have wide geographic support outside their home counties (Irwin and Quealy 2014b). It is therefore not at all surprising that, on average, the effect would be of similar size throughout the state.

(5) The Effect of NFL Wins

FM find that the results of professional football (NFL) games do not affect incumbent vote share. The NFL analyses are flawed because those teams are located in large metropolises where there is much more entertainment competition. Several other features of NFL football complicate their analyses, and make NFL football less ideal than college football in the study of

whether irrelevant factors meaningfully influence voting behavior. First, professional teams have moved around to different cities (for example, the Oakland Raiders were previously the Los Angeles Raiders), and at times different states (for example, the Cleveland Rams in Ohio became the Los Angeles Rams in California, which then became the St. Louis Rams in Missouri). It is unclear how FM deal with this issue in their analyses using panel data. Second, the "home county" is often unclear for NFL teams, and it is not clear how FM coded each NFL team's home county, and how they should. For instance, should Norfolk County, which is where Foxborough, Massachusetts (and the New England Patriots' stadium) is located be deemed the home county for the Patriots or should all counties of New England be deemed the home county given that the Patriots represent the entire New England region? Third, for most of the sample period, important late season games were played in college football around Election Day, while the NFL games were closer to the middle of the season. Further, single games matter more in college football (for Bowl game invitations and conference championships) than in the NFL. Fourth, the sample size is no bigger than 32 teams at any point. Moreover, some teams use the same stadium (e.g., the New York Jets and the New York Giants), which calls for the exclusion of these teams in all analyses, reducing the sample size even further. FM acknowledge none of these issues in their NFL analysis. We still note, however, that the direction of the effect is the same in both the NFL and college football analyses.

References

Irwin, Neil, and Kevin Quealy. 2014a. "The Places in America Where College Football Means the Most." (http://www.nytimes.com/2014/11/08/upshot/the-places-in-america-where-college-football-means-the-most.html?_r=0)

Irwin, Neil, and Kevin Quealy. 2014b. "N.C.A.A. Fan Map: How the Country Roots for College Football." (http://www.nytimes.com/interactive/2014/10/03/upshot/ncaa-football-fan-map.html).