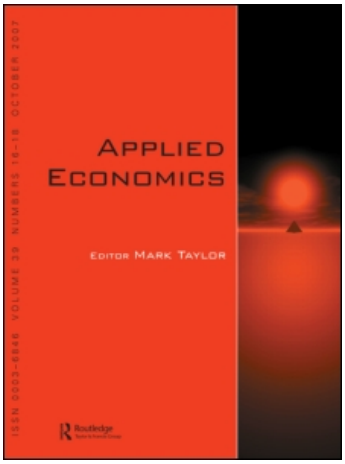

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Econometric tests of American college football's conventional wisdom

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Econometric tests of American college football's conventional wisdom

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College football fans, coaches and observers have adopted a set of beliefs about how college football poll voters behave. I document three pieces of conventional wisdom in college football regarding the timing of wins and losses, the value of playing strong opponents and the value of winning by wide margins. Using a unique data set with 25 years of Associated Press (AP) poll results, I use a hedonic regression to test college football's conventional wisdom. In particular, I test (1) whether it is better to lose early or late in the season, (2) whether teams benefit from playing stronger opponents and (3) whether teams are rewarded for winning by large margins. Contrary to conventional wisdom, I find that (1) it is better to lose later in the season than earlier, (2) AP voters do not pay attention to the strength of a defeated opponent and (3) the benefit of winning by a large margin is negligible. I conclude by noting how these results inform debates about a potential playoff in college football.

American college football occupies a singular place in the sports and cultural landscape. The reach of college football, when compared to other amateur or collegiate sports, is enormous. The stadiums that house the major college football powerhouses dwarf their professional counterparts – several stadiums seat more than 100 000 spectators, and even more teams have consecutive sellout records that top 200 games.[1] College football is also a big business – revenues generated by college football average more than $35 million per school in some conferences and Bowl Championship Series (BCS) appearances can net more than $15 million. The sustained tradition, pageantry, media attention and excitement generated by college football are arguably unmatched by any other major American sport.[2]

The potential lucrative payoffs are partly determined by off-the-field activity, over which there is much speculation but little hard evidence. Like most major sports, college football crowns a champion at the end of every season. Unlike most major sports, college football does not have a playoff system or any other hard rules to determine a champion or who will play in lucrative bowl games. While being listed as the

[1] For example, Michigan's Michigan Stadium has seated more than 100 000 spectators since 1956, and Nebraska's Memorial Stadium (current capacity above 80 000) has been sold out for every home game since 1962. On average, a team will play at home only six games per season – streaks of 200 or more imply home sellouts for more than 30 years.
[2] For example, more than half of all US televisions were tuned in to the Texas–Arkansas game in 1969, and the Army–Navy game of 1926 attracted a crowd of more than 100 000 (MacCambridge, 2005). In some locations, politics take a back seat to college football. In 2006, the recount of the contested election in Ohio's 15th congressional district was delayed by 1 day so that county election officials could watch the Ohio State–Michigan game.

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number one team in the country in the final Associated Press (AP) or Coaches' poll is seen by almost all observers to be a national championship, there are no rules for how either the AP or the Coaches' poll determine team quality.[3]

Since there are no formal rules for determining a champion, college football has adopted a set of 'conventional claims' about what a team has to do to be ranked highly at the end of the season. It is generally believed that a loss at the 'wrong' time or a close victory over a 'weak' opponent can cost a team a chance to claim a national title or lucrative bowl appearance. Moreover, observers have noted that it is better to lose early in the season rather than later, because a team's later performance will weigh heavily in how others view a team. Another piece of conventional wisdom is that a team is rewarded for playing (and winning against) strong opponents. Lastly, some have noted that large margins of victory are necessary to obtain or retain a high ranking because such victories receive 'style' points as they reflect a team's dominance.

Despite the large literature on college football rankings, particularly among statisticians and mathematicians (Callaghan *et al*., 2004), and the work about the efficiency of the rankings, particularly among economists (Fair and Oster, 2007), little work examines voter behaviour in the rankings themselves. I test three pieces of college football's conventional wisdom: (1) that it is better to lose earlier in the season than later in the season, (2) that teams are rewarded for playing stronger opponents and (3) that winning by wide margins earns a team 'style' points that result in improved rankings. This article takes these pieces of conventional wisdom seriously and is the first article to subject them to rigorous empirical testing. To test these propositions, this article exploits a newly created data set of week-by-week AP poll results for 25 of the most prominent college football teams over a 25-year period. This large and rich source of data allows us to estimate a hedonic model to look at each of these pieces of conventional wisdom to see if what 'everybody knows' turns out to be true empirically.

I find that the conventional wisdom of college football is wrong. Rather than being penalized for losing later in the season, teams are actually rewarded for losing late in the season. Teams that lose late in the season are re-ranked higher by roughly three-fourth of the AP poll voters than they would have been if they had lost early in the season. Similarly, defeating strong opponents does not yield any advantage in terms of ranking, but losing to strong opponents helps. Margin of victory matters – but only if you lose. While winning by large margins does not confer any ranking advantage, losing by a blowout hurts, and losing to a strong team does not soften the blow.

I begin the next section by documenting the three pieces of college football's conventional wisdom. I use the narrative record – news reports, sportswriter columns, fan blogs and message boards – to establish the widespread nature of the convention. I then discuss the data I assembled to test these propositions and present the empirical results of this article which refute the conventional wisdom of college football. I conclude by discussing what these results imply for current debates about a playoff in college football.

I. College Football Facts and Myths

If you are going to lose, lose early

The conventional wisdom of college football dictates that teams who lose early in the season stand a better chance of being highly ranked at the end of the season than teams who lose later. The logic is that teams who lose early have a greater opportunity to climb up in the polls after a loss, and also a greater chance of leapfrogging teams that lose at later points in time. Also, since ranking in the polls reflects recent performance, it is better to avoid losses late in the season. Similarly, the wisdom holds that voters view late losses unfavourably as they are a signal of low team quality.

This view is widely held among fans and observers.[4] Fans are not the only ones to assert that losing early in the season is better than losing later. Sports columnists, who may vote in the AP poll, have also made such claims.

> 'However, if the [Georgia] Dawgs keep on winning, beat Florida, win the [Southeastern Conference] East [division], and upset LSU, then yeah . . . the South Carolina loss doesn't look as bad. The pollsters have short memories . . . That's why the computers are so important in the BCS formula; they don't care when you lose.' (Fiutak, 2007)

[3] The National Collegiate Athletic Association (NCAA) lists 10 organizations that bestow national championships in college football, some of them retroactively.
[4] See Logan (2007) for specific examples of the conventional wisdom.

> 'History has shown us that it is better to lose early than lose late.' (Reback, 2007)

The assertion that it is better to lose earlier in the season than later is an empirical assertion about how pollsters weigh wins and losses as a function of the week of the season in which they are played. For example, many of the thoughts on this topic contain a notion that poll voters are 'forgetful' or 'myopic' in their behaviour, to the extent that they weigh evidence differently. In this way, the order of the signal matters. The logic is that it is better to send a bad signal early than late because there are fewer opportunities to make up for it.

There's a benefit to playing (and defeating) strong opponents

All else equal, teams should be rewarded for playing (and defeating) opponents who have strong records. While observers have long noted that this is true, the way in which opponent strength should be measured remains unclear. By convention, one has played a strong team if that team has a high winning percentage. In the discussion of this issue, several terms are used, and here I use them interchangeably.[5] For example, one cannot have a 'strong schedule' unless it includes 'strong opponents', and defeating 'strong opponents' results in, by default, a 'quality win'. The BCS formula, in certain incarnations, took 'strength of schedule' into account explicitly, and it has caused teams to remain interested in the records of their opponents long after the game has been played.

In the conventional wisdom, however, strength of opponents is already captured in the AP and Coaches' polls. In fact, some critiques of the BCS formula (which in its various incarnations has averaged the AP and Coaches' polls and included computer rankings, bonus points for defeating highly ranked teams and strength of schedule) have noted that the BCS's explicit inclusion of opponent strength leads to a double counting of strength of schedule, since the Coaches' and AP polls already take such factors into account (Callaghan *et al.*, 2004). The real argument among college football fans is not that quality wins or strength of opponents do not matter, but that pollsters do not weigh them correctly. Indeed, the belief that strength of opponent is included in the ranking is implicit – what fans debate is why a particular team is ranked above/below another when it has a stronger/weaker strength of schedule.[6]

Margin of victory matters

Even before the BCS incorporated (and later discarded) the use of margin of victory in its poll, it was widely held that teams should win by large margins as a sign of their dominance.[7] Good teams, it is argued, should win by large margins, especially when playing against weak opponents. Poll voters, it is argued, take such margins of victory into account. As with the previous two pieces of conventional wisdom, blogs and message boards are rife which such speculations. Unlike the other pieces of conventional wisdom, however, college football coaches openly admit that they believe (and play under the assumption of) this conventional wisdom. In fact, even after margin of victory was eliminated from the computer polls used in the BCS formula, coaches admitted that impressing voters in the 'human polls' (such as the AP poll) required them to think about margin of victory (Drape, 2002).

Even well after the BCS discarded margin of victory, coaches admitted that they believed that margin of victory was an important component of how their team would be perceived (Russo, 2007). This has caused some fans and sportswriters to encourage teams to win by large margins, or to assert that poll voters pay more attention to teams that win by wide margins. However, some pollsters have noted that wide margins of victory are not needed to send the message that a team is dominant (Dienhart, 2002).

The key here is that coaches are working under the perception that the margin of victory matters in the minds of the pollsters who will determine their team's ranking on a week-to-week basis. Like the other claims noted above – we should see if this concern

[5] For the purposes here, I am combining discussions of strength of schedule, opponent's strength and quality wins since the conclusions of these three lines of argument are the same.

[6] Two important caveats to the discussion of the strength of schedule are the roles of schedules themselves and of conferences. First, it should be noted that college football schedules are decided many years in advance. For example, the full schedules for the next three seasons are already posted for most major college football programs. Since players only have a set amount of eligibility, and because the number of scholarships is limited, the quality of a future opponent, particularly well into the future, is unknown. This also means that the quality of opponents in a given year may be weakly correlated with the scheduler's intent – one cannot predict the future quality of a team when they do not know who the majority of the players will be. To that end, a team that devised to create a weak schedule may inherit a strong one through no fault of their own. Second, teams play a significant number of their games within a conference, whose strength in any given year is not known.

[7] The original BCS formula incorporated margin of victory in the 1998–2001 seasons.

noted by the coaches (which is independent of the BCS poll's explicit inclusion of margin of victory) is true empirically.

II. Data and Empirical Strategy

Data

To test the conventional wisdom described above, I assembled a dataset that contains the weekly game and ranking information for 25 of college football's most prominent programs for the 25 seasons from 1980 to 2004.[8] In all, the data contains information on more than 6000 football games. I have information not only on the features of the team on a week-by-week basis, but also information on their opponents – critical for testing claims that the strength of opponent matters in determining rankings. While some studies have looked at end of season rankings over long-time periods (Langllet, 2003; Sutter and Winkler, 2003), and others have looked at weekly poll progressions for short-time periods (Goff, 1996; Lebovic and Sigelman, 2001; Campbell *et al*., 2007; Paul *et al*., 2007), this is the first study that looks at over 20 years of weekly data for such a large number of teams, and is also the first study to look at the effect of a large number of game characteristics on voting outcomes.[9]

The data contains a rich set of variables to investigate the conventional wisdom claims. These variables include the score of the team and their opponent ('Close Win/Loss' is defined as a margin of victory of three points or less, 'Blowout Win/Loss' is a margin of victory of more than 17 points), the record of the opponent at both the time the game is played and for that season ('Opponent Strength' is the number of victories minus the number of losses for an opponent that season), and the week of the season that the game is played (a 'Late Game' is defined at the 10th week or greater).

Table 1. List of the college football teams in sample

Alabama	Miami (Florida)
Arkansas	Michigan
Auburn	Nebraska
Boston College (BC)	Notre Dame
Brigham Young University (BYU)	Ohio State
California (Cal)	Oklahoma
University of California, Los Angeles (UCLA)	Pennsylvania State (Penn State)
Colorado	University of Southern California (USC)
Florida	Stanford
Florida State	Tennessee
Georgia	Texas
Iowa	Texas Agricultural and Mechanical (Texas A&M)
Louisiana State University (LSU)	

Note: The data used in this article contains each game played by the teams listed above from the 1980–1981 season to the 2004–2005 season.

Table 1 shows the 25 teams included in the analysis. The data contains information on all but five teams who claimed any share of a national title from 1980 to 2004.[10] While starting in 1980 is somewhat arbitrary, it is at a point in time that is late enough for many of the changes begun in the 1970s to have an effect on the game. Similarly, since the focus here is on test of the rankings in college football, the sample is biased towards teams that were highly likely to be ranked for

[8] See Appendix A, available from the author, for further details. The 10 most winning programs of this time period were chosen, and the remaining 15 teams were chosen based on a stratification by quality (the likelihood of a team being consistently ranked over the entire time period) and geography (so as not to include a supermajority of teams from a particular conference, and to capture teams from all regions). One additional requirement was that a team had to be ranked in the final poll at least 25% of the available years. See the limitations of the data in this section.

[9] Previous studies have looked at how rankings evolve over a season and not what features poll voters take as most important. Goff (1996) looks at final season ranking as a function of mid-and preseason ranking, and Lebovic and Sigelman (2001) also look at inertia in the polls. See Campbell *et al*. (2007), Frechette *et al*. (2007) and Paul *et al*. (2007) for examples of work that use smaller samples of AP poll statistics.

[10] Of the five teams not included in the data that won a national championship, Southern Methodist University (SMU) was beset with an NCAA 'death penalty' in 1986 that devastated the football program. Since SMU was already on NCAA probation fore recruiting violations (1985–1988), the second set of charges that surfaced in 1986 led the NCAA to issue the most severe sanctions allowed. The penalty was severe, not only the loss of scholarships (55 scholarships over a 4-year period), but the 1987 season was cancelled and the 1988 season called for only a limited number of away games to be played (SMU cancelled this season as well). All television games and bowl appearances for SMU football were disallowed during the 1988 and 1989 seasons. In addition, SMU players could transfer to another school without having to wait a probationary season to play (which is the procedure under normal NCAA rules). Since the sanctions by the NCAA, SMU has had one winning season (1997–1998, going 6–5), and several commentators believe that the SMU 'death penalty' led to the collapse of the Southwestern Conference due to lost revenues (and, through its demise, the emergence of superconferences such as the Southeastern Conference and Big 12).

Table 2. Summary statistics

Variable	*N*	Mean	SD	Min.	Max.
	Ranking measures				
Points Change	4199	1.83	186.94	−1007	910
Rank Change	4286	0.00	3.16	−12	16
Points of Team Before Game	4483	871.98	447.44	36	1850
Points of Team After Game	4463	870.67	449.60	3	1850
Rank of Team Before Game	4483	10.44	6.60	1	25
Rank of Team After Game	4463	10.35	6.56	1	25
	Game characteristics				
Win	7502	0.75	0.43	0	1
Loss	7502	0.24	0.43	0	1
Tie	7502	0.01	0.12	0	1
Score of Team	7502	28.20	14.65	0	86
Score of Opponent	7502	19.23	12.10	0	82
Margin of Victory	7502	8.97	20.77	−77	81
Blowout Win	7502	0.37	0.48	0	1
Blowout Loss	7502	0.12	0.32	0	1
Close Win	7502	0.10	029.29	0	1
Close Loss	7502	0.08	0.27	0	1

Notes: Author's calculations. See Appendix A for definitions.

a majority of the time covered. Care was taken to produce a geographically balanced set of teams, and all major regions of the nation (as well as all major conferences) are represented in the data. The data contains the date of the game, score of the game, location of the game (home, away or neutral), opponent, opponent's record at the time the game was played, opponent's record for that season, the team's and opponent's ranking before and after the game in the AP poll.

The AP has ranked football teams continually since 1936. AP teams are ranked by way of a Borda count with a set (fixed) number of press representatives voting every week of a season, usually chosen to be geographically diverse. Each week members rank teams from 1 to 25 in a ballot. In calculating points, teams ranked first receive 25 points, those ranked second 24 points and so on. The team with the most points in that week's ranking is therefore ranked first. AP voters are explicitly instructed to base their votes on performance, not a team's stature or speculation, and they are told that it is perfectly acceptable to make significant changes in the ballot from week to week (Mandel, 2007). For the team ranked first, in a given week there is little disagreement in general. While this would seem to imply that the voting is fair for all ranks, Borda counts can be manipulated by ranking teams differently, but AP ballots are not secret and have never been (Wieberg, 2005). As such, AP voters have been regularly interviewed throughout the season about why they ranked teams as they did. While this does not eliminate sources of potential bias, it does act to reduce it.[11]

There are some limitations with the data at hand. For example, it does not include many teams from 'mid major' conferences, and as such the conclusions that one may wish to apply to all teams should be tempered. One may question the inclusion or exclusion of a particular team, although given the size of the data any particular team is highly unlikely to influence the results. Similarly, the data here will have little to say about programs that were competitive for a short number of years or teams that have not had many winning seasons, and the inclusion of these teams is unlikely to influence the results as well since they are rarely ranked over this time period. In short, the data here speaks to the most successful programs in college football for the last quarter century. As that is the focus of the conventional wisdom, however, such narrow attention is warranted.

Table 2 shows the summary statistics for the key variables used in the following analysis. Teams are

[11] The Coaches' Poll is not used because the ballots were not released publicly until the last regular season ballot of the 2005 season. Similarly, the Coaches' Poll has been criticized because there is evidence that the coaches themselves do not fill out the ballots (Barnhart, 1998) and that coaches have a strong bias towards their own teams, the teams in their conference, and their other opponents (Mandel, 2005). But, as recently stressed by Buchanan and Yoon (2006) it is not possible to assert that there is no bias in the AP poll, particularly when pollsters achieve a surprising amount of consensus with regards to the number one team so often.

much more likely to win than lose, as expected from this sample, and the average margin of victory is nine points, with the teams in the sample scoring around four touchdowns per game. I define a 'blowout win' here as winning by more than 17 points (two touchdowns, two extra points and one fieldgoal), and these victories happen more than half of the time. Teams lose by more than 17 points about 10% or the time. A 'close win' is winning by less than three points (less than the value of a fieldgoal), and these types of victories are relatively rare, and so are 'close losses'.

Empirical strategy

At the heart of each piece of conventional wisdom is the idea that some feature of a game – the time of the season it is played, the strength of the opponents, the margin of victory – have a larger effect on the change in ranking than other features that may vary over a season. Since the AP poll ranks teams based on the points each team is awarded by voters, looking at the changes in points is equivalent to looking at changes in rankings.[12] Also, since higher point totals lead to higher rankings, the interpretation is more intuitive than for rankings.[13] We can then think of the points in the AP poll as a function of the characteristics games played and the initial number of points

$$E(P_t) = P_0 + \sum_{k=0}^{t-1} \Gamma_k \beta \tag{1}$$

where P is the points for the team in the AP poll in the preseason poll (0) and week t and Γ is a set of game characteristics (win, loss, opponent strength, etc.). I test for the conventional wisdom by looking at the relationship between game characteristics and changes in AP point-totals. Since teams play one game only between rankings, this quasi-hedonic strategy will capture the relationship between game characteristics and AP point changes.[14] I test the conventional wisdom outlined above with

$$E(P_t - P_{t-1}) = \Gamma\beta \tag{2}$$

where I regress the change in AP points from week $t-1$ to t on the characteristics of the game played between $t-1$ and t. This estimates the hedonic value of certain characteristics in terms of changes in the polls on a week-to-week basis.

Each of the pieces of conventional wisdom can be used to generate hypotheses about what we would expect the sign of β to be for some game characteristic. If losing late in the season is worse than losing earlier in the season, then losing late would result in a large, negative effect on point changes (H_0: $\beta<0$). This would reflect the fact that teams would be downranked more for losing later in the season. As such, we would expect the coefficient on losing late to be negative. If opponent strength mattered to voters teams would be awarded more points for defeating strong opponents, then the conventional wisdom hypothesizes that the coefficient on defeating a strong opponent would be positive (H_0: $\beta>0$). If teams were 'rewarded' for decisive victories, then defeating opponents by wide margins would result in a gain in points, so the coefficient on blowout victories should be positive (H_0: $\beta>0$).

III. Empirical Results

Central findings

Table 3 shows the base specifications for the tests employed here. As a first check, column I shows that wins increase the number of AP points, and losses decrease the number of points in the following poll. For each win, each voter ranks a team three spots higher, and for each loss a team is ranked three spots lower by each voter, a large change in ranking. Column III adds close and blowout wins and losses as well as opponent strength. Blowout losses matter – a team loses about 20% more points if they lose by a wide margin but there is no benefit to winning by a wide margin – about three-fourth of voters rank a team one spot lower for a blowout loss versus a loss. The effect of a blowout win, however, is not statistically different from zero. While close wins are not rewarded or punished, close losses help – about half of voters rank a team one spot higher for a close loss relative to a loss in general, reducing the change in points from losing by about 10%. Opponent strength, which is defined as the opponent's number of wins minus number of losses for that season, does seem to matter in a very small way – each additional win by an opponent increases the points in the next ranking by five points, which corresponds to fewer than 10% of voters ranking a team higher for playing a stronger opponent. Playing a strong opponent, however, should have a small impact relative to

[12] Campbell *et al.* (2007) and Paul *et al.* (2007) are recent studies of football ranking points, but they use a small number of variables and are not concerned with game characteristics themselves.
[13] See the Appendix, available from the author, for ranking results.
[14] It is very rare, but in the beginning of some seasons teams may play two games before the first updated ranking is released. This is so rare, however, that it does not affect the results discussed further.

Table 3. Change in AP points on between rank game characteristics

Variable	I	II	III	IV	V	VI
Win	174.7***	124.1***	193.9***	191.1***	193.7***	192.8***
	[9.64]	[2.69]	[2.96]	[2.79]	[2.83]	[2.81]
Lose	−169.3***	−133.2***	−221.0***	−274.2***	−292.0***	−289.3***
	[−9.09]	[−2.83]	[−3.29]	[−3.88]	[−4.14]	[−4.08]
Close Win			−9.002	−7.943	−8.091	−8.352
			[−0.90]	[−0.79]	[−0.81]	[−0.84]
Close Loss			24.04*	28.95**	30.06**	29.64**
			[1.71]	[2.06]	[2.14]	[2.11]
Blowout Win			11.26*	8.654	8.472	8.835
			[1.76]	[1.35]	[1.32]	[1.25]
Blowout Loss			−42.30***	−50.43***	−49.50***	−46.89***
			[−3.13]	[−3.71]	[−3.65]	[−3.05]
Opponent Strength			5.161***	2.448	2.448	2.448
			[9.24]	[0.52]	[0.52]	[0.52]
Win ∗ Opponent Strength				1.647	1.676	1.87
				[0.35]	[0.36]	[0.40]
Lose ∗ Opponent Strength				9.554*	9.082*	8.350*
				[1.94]	[1.85]	[1.70]
Win ∗ Late in Season					−4.335	−5.092
					[−0.67]	[−0.53]
Lose ∗ Late in Season					48.89***	51.18***
					[3.92]	[3.59]
Win/Loss ∗ Home/Away		X	X	X	X	X
Close Win/Loss ∗ Home/Away						X
Blowout Win/Loss ∗ Home/Away ∗ Late						X
Observations	5578	5578	3846	3846	3846	3846
R^2	0.44	0.46	0.49	0.5	0.5	0.5

Notes: *t*-statistics are in brackets. Each column is a regression on the change in points in the AP poll on game characteristics. Late in Season is defined as being after the 10th poll week of the season. Opponent Strength is defined as the number of wins minus the number of losses of the opponent for that season. Blowout is margin of victory >14, Close is margin of victory <3. See Appendix A for further description.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

defeating a strong opponent. In Column IV, I interact winning and losing with opponent strength, and opponent strength and defeating a strong opponent have no effect on AP point changes. Losing to a strong opponent helps, but the effect is only marginally significant, and fewer than one-fifth of voters rank a team higher due to it. Column V includes an indicator for winning or losing late in the season. Late in season is defined here as greater than or equal to the 10th poll-week of the season. For most college football seasons, this week comes as the last week of October or first week of November, and well more than two-third of the games for the season have been played.[15] Teams will have, on average, three or four more games to play to complete the season. While winning late in the season has no effect on changes in AP points, losing late in the season actually benefits teams – the cushion provided by losing late in the season is around 20% of the value of losing. Given the point estimate in Table 3 and the number of AP poll voters, losing late in the season implies that more than three-fourth of AP poll voters rank a team one place higher in their rankings after a late season loss than for an early season loss.[16] In fact, if one were to lose in a blowout at the end of the season, the net result would not be that different from losing by a small margin early in the season.

Each piece of conventional wisdom is rejected in the results of Table 3. Losing later in the season actually benefits teams; opponent strength does not matter, win or lose and blowout victories do not result in any 'style' points. In fact, the evidence that we do have points strongly in the opposite direction. Rather than significantly hurting teams, losing late in

[15] For example, teams will usually play their eighth or ninth game by the 10th poll week. Considering that teams now play 11 or 12 games, this implies that three-fourth or more of the schedule has been played.
[16] Although it varies from year to year, the average number of AP voters from 1980 to 2004 was 65.

the season actually helps them – it lessens the blow of a loss significantly. Similarly, while defeating a strong opponent does not help, losing to a strong opponent actually softens the blow of a loss. For example, losing to a team with an 8–3 record would actually decrease the negative point change from losing by more than 15% of the change for a loss. Lastly, rather than blowout wins helping, close losses actually help, and blowout losses hurt the most. All told, the conventional wisdom of college football has little empirical support.[17]

It could be that the effects described in Table 3 actually obscure the important interactions between the effects. For example, losing late in the season against a strong opponent in an away game might mitigate the effect of losing late. To consider the possibility that these interactions play a role in the results, Table 4 presents estimates where late games are interacted with other characteristics.[18] The primary results are robust to the inclusion of these interactions. For example, the effect of a loss later in the season is still large and statistically significant. In terms of blowout wins and losses, winning late in a blowout against a strong opponent at an away game actually hurts a team, although the size of this effect is quite small. Similarly, losing late in a close away game hurts a team a great deal – each voter downranks a team by more than two ranks for these losses, which is substantial, especially given that teams have few weeks to make up for such a downranking. The effect of losing in a close game while playing at the opponent's field is negative, but playing against a strong opponent helps. For example, losing a close game late in the season to a strong (8–3 record) opponent at their field would result in losing about 100 fewer points that if one lost to an opponent with an even record. But this is counter to the conventional wisdom, strength of the opponent matters, but only when you lose.

Robustness

It is useful to check the validity of the results to some general robustness checks. I do this in three ways, (1) I check for the robustness of the results based on a team's previous point change and the sequence of those point changes, (2) I check the results by the length of winning streak and (3) I include fixed team and season effects and cluster the SEs.

The results of Table 3 could be due to the fact that teams' previous results are over-represented. For example, the results for losing late could be positive because they would represent a second loss, which may be weighted differently than the first. Similarly, the results could be driven by inertia in the polls, where teams near the top experience little movement from week to week or where teams who have large changes in the previous week see smaller changes in subsequent weeks. To check to see if the results are sensitive to previous results, I estimated regressions similar to those in Table 3 conditioned on the sign of previous point changes (a weaker condition than conditioning on previous wins or losses). Table 5 shows the results by the sign of a team's lagged point change. As the table shows, the results are not sensitive to how a team's points have previously evolved. Even more, they are robust to different ordering of the point changes the prior 2 weeks. This is also an encouraging check that conditioning on point changes captures the relationship between the current game's characteristics and the point change, and the results do not appear to be biased by inertia.

The results of Table 3 could be due to an over-representation of teams with long winning streaks. To deal with this issue, Table 6 shows the results by the length of the winning streak. We would expect that, if a long winning streak is an indication that a team is of high quality then the characteristics that negatively impact a point change would be lessened for teams with long winning streaks, although how much of this matter would depend on the particular specification of voting behaviour. Table 6 shows that to be the case in some instances. While teams with long winning streaks do not benefit more from a close loss, there is a slight benefit from losing to a strong opponent given a longer winning streak. The largest positive effect is for losing late in the season. Teams who manage to string together a number of consecutive wins receive the largest benefit to losing late.

As a last check, we should relax the assumption that each week of each season is a separate, independent observation. That obviously cannot be true. For example, there may be years in which pollsters act in a way that is different from other years, or teams that are perennially over-ranked or under-ranked, or weeks of the season that become 'shakedown Saturdays' where the prominent teams of the season separate themselves from the rest of the pack.

[17] Additional analysis, available in an Appendix from the author, shows that the main results are robust to a variety of alternative specifications and other checks. For example, the late loss result hold for alternative definitions of 'late' weeks, the margin of victory result holds for continuous measures of margin of victory, and the opponent strength result holds when looking at ranked teams only. For these specification checks and supplementary analysis, see the Appendix available from the author by request.

[18] This was done in Table 3 but the results not shown due to space limitations.

Table 4. Game characteristc interactions

Variable	I	II	III	IV	V	VI
Win Late in Season?	−7.205	−2.998	−12.68	−2.998	−2.998	−1.276
	[−0.67]	[−0.28]	[−1.13]	[−0.47]	[−0.40]	[−0.15]
Lose ∗ Late in Season	57.67***	61.21***	60.64***	61.21***	61.21***	61.03***
	[3.54]	[3.77	[3.52]	[3.24]	[3.12]	[3.35]
Win ∗ Late ∗ Blowout ∗ Home	6.259	6.567	7.48	6.567	6.567	5.053
	[0.41]	[0.43]	[0.47]	[0.51]	[0.44]	[0.43]
Lose ∗ Late ∗ Blowout ∗ Home	−101.3	−112.9	−110.1	−112.9	−112.9	−112.3**
	[−1.29]	[−1.45]	[−1.34]	[−1.42]	[−1.45]	[−2.23]
Win ∗ Late ∗ Blowout ∗ Away	−9.055	−11.26	−16.22	−11.26	−11.26	−12.67
	[−0.50]	[−0.62]	[−0.85]	[−0.93]	[−0.89]	[−1.11]
Lose ∗ Late ∗ Blowout ∗ Away	−99.04	−94.91	−128.3*	−94.91	−94.91	−94.3
	[−1.60]	[−1.53]	[−1.93]	[−1.21]	[−1.37]	[−1.40]
Win ∗ Late ∗ Blowout ∗ Home ∗ Opponent Strength	−0.309	−0.675	−1.482	−0.675	−0.675	−0.732
	[−0.14]	[−0.31]	[−0.64]	[−0.36]	[−0.39]	[−0.49]
Lose ∗ Late ∗ Blowout ∗ Home ∗ Opponent Strength	18.51*	19.25*	20.86*	19.25***	19.25*	19.23***
	[1.70]	[1.78]	[1.83]	[2.88]	[1.75]	[3.20]
Win ∗ Late ∗ Blowout ∗ Away ∗ Opponent Strength	−3.485	−3.919	−4.435	−3.919***	−3.919**	−3.919***
	[−1.27]	[−1.43]	[−1.55]	[−3.05]	[−2.55]	[−5.26]
Lose ∗ Late ∗ Blowout ∗ Away ∗ Opponent Strength	11.62	10.81	13.51	10.81	10.81	10.77
	[1.44]	[1.34]	[1.55]	[1.09]	[1.10]	[1.07]
Win ∗ Late ∗ Close ∗ Home	3.518	7.83	20.13	7.83	7.83	4.714
	[0.10]	[0.22]	[0.55]	[0.46]	[0.39]	[0.21]
Lose ∗ Late ∗ Close ∗ Home	−80.13	−66.65	−68.57	−66.65	−66.65	−65.17
	[−1.50]	[−1.25]	[−1.23]	[−1.23]	[−1.39]	[−1.06]
Win ∗ Late ∗ Close ∗ Away	20.82	20.57	34.18	20.57	20.57	17.75
	[0.74]	[0.73]	[1.15]	[1.27]	[1.26]	[1.32]
Lose ∗ Late ∗ Close ∗ Away	−125.7**	−139.4**	−194.3***	−139.4**	−139.4**	−139.2***
	[−2.00]	[−2.22]	[−2.91]	[−2.70]	[−2.23]	[−3.57]
Win ∗ Late ∗ Close ∗ Home ∗ Opponent Strength	−7.079	−6.738	−7.94	−6.738	−6.738	−6.757
	[−1.04]	[−1.00]	[−1.13]	[−0.92]	[−0.86]	[−0.67]
Lose ∗ Late ∗ Close ∗ Home ∗ Opponent Strength	13.73*	12.33	13.03	12.33**	12.33**	12.25**
	[1.77	[1.60]	[1.61]	[1.75]	[2.16]	[2.44]
Win ∗ Late ∗ Close ∗ Away ∗ Opponent Strength	5.251	4.662	3.52	4.662	4.662	4.675**
	[0.95]	[0.84]	[0.60]	[1.28]	[1.34]	[2.14]
Lose ∗ Late ∗ Close ∗ Away ∗ Opponent Strength	16.53*	18.47**	26.89***	18.47**	18.47**	18.54***
	[1.81]	[2.03]	[2.79]	[2.28]	[2.27]	[3.38]
Season Effects, Team Effects		X	X	X	X	X
Season ∗ Team Effects			X	X	X	X
Team Cluster				X		
Season Cluster					X	
Week of Season Cluster						X
Observations	3846	3846	3846	3846	3846	3845
R^2	0.5	0.52	0.57	0.52	0.52	0.52

Notes: *t*-statistics are in brackets. These are selected coefficients for the change in AP poll points as a function of game characteristics. The regressions included Win, Loss, Home, Away, Win/Loss ∗ Home/Away, Close/Blowout ∗ Win/Loss ∗ Home/Away, Opponent Strength, and Win/Loss ∗ Opponent Strength. See Appendix A for further details and variable definitions.

***$p<0.01$, **$p<0.05$, *$p<0.1$.

Table 5. Validation check: results by lagged change in AP points

	Results for teams who had						Sequence of previous point changes	
	Previous positive change			Previous negative change				
Variable	1 Weeks I	2 Weeks II	3 Weeks III	1 Weeks IV	2 Weeks V	3 Weeks VI	T-2 > 0 T-1 < 0 VII	T-2 < 0 T-1 > 0 VIII
Win	211.5**	139.2	224.8***	80.68	341.0***	110.8	516.6**	344.1*
	[2.56]	[1.62]	[2.69]	[0.46]	[3.08]	[0.92]	[2.29]	[3.05]
Lose	−274.4***	−343.0***	−243.6***	−362.4**	−128.8	−441.5***	81.86	−77
	[−3.22]	[−3.90]	[−2.82]	[−1.99]	[−1.10]	[−3.56]	[−0.36]	[−0.64]
Close Win	−4.515	−2.76	2.572	−18.78	−2.341	−60.11***	−29.49	6.94
	[−0.36]	[−0.22]	[0.21]	[−1.04]	[−0.13]	[−2.91]	[−1.34]	[0.31]
Close Loss	37.91**	41.73**	35.49**	7.866	−4.926	−0.226	16.04	−1.467
	[2.24]	[2.48]	[2.10]	[0.28]	[−0.17]	[−0.0074]	[0.52]	[−0.045]
Blowout Win	12.13	13.43*	11.2	−1.999	0.498	−7.974	−6.571	−4.182
	[1.53]	[1.67]	[1.43]	[−0.17]	[0.043]	[−0.62]	[−0.45]	[−0.31]
Blowout Loss	−38.71**	−60.82***	−51.39***	−85.08***	−57.93**	−47.08	−96.15***	−51.37*
	[−2.38]	[−3.71]	[−3.18]	[−3.04]	[−1.76]	[−1.62]	[−3.11]	[−1.76]
Opponent Strength	2.665	2.364	0.745	−12.87	14.98	7.074	41.33*	17.26
	[0.49]	[0.43]	[0.13]	[−1.10]	[1.35]	[0.74]	[1.88]	[1.50]
Win * Opponent Strength	2.159	1.976	3.781	15.73	−11.24	−3.154	−39.09*	−13.45
	[0.39]	[0.35]	[0.66]	[1.34]	[−1.01]	[−0.33]	[−1.78]	[−1.16]
Lose * Opponent Strength	11.40**	7.652	11.45*	18.75	−0.986	1.815	−38.70*	−2.771
	[1.99]	[1.31]	[1.94]	[1.55]	[−0.086]	[0.18]	[−1.74]	[−0.23]
Win * Late in Season	−5.585	−6.133	−8.405	−0.741	0.969	2.281	−3.256	−2.061
	[−0.70]	[−0.77]	[−1.09]	[−0.062]	[0.084]	[−0.18]	[−0.24]	[−0.15]
Lose * Late in Season	40.10***	36.88**	41.74***	75.21***	93.71***	69.98***	64.27**	86.22***
	[2.75]	[2.50]	[2.82]	[2.81]	[3.90]	[2.69]	[2.22]	[3.22]
Win/Loss * Home/Away	X	X	X	X	X	X	X	X
Win/Loss * Opponent Strength	X	X	X	X	X	X	X	X
Observations	2631	2547	2573	986	964	921	626	659
R^2	0.51	0.51	0.51	0.47	0.53	0.5	0.54	0.57

Notes: *t*-statistics are in brackets. Each column is a regression on the change in points in the AP poll on game characteristics. Previous change is noted as a change given in the week noted only and the sequence of previous change is conditioned on changes to the points in previous weeks as noted. See Appendix A for further description and variable definitions.

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Table 6. Validation check: results by length of winning streak

	Length of winning streak					
Variable	6 Games I	5 Games II	4 Games III	3 Games IV	2 Games V	1 Game VI
Win	87.76	92.61	122.3	142.9*	114.1	201.3***
	[1.08]	[1.12]	[1.40]	[1.65]	[1.48]	[3.09]
Lose	−412.8***	−420.7***	−363.6***	−358.1***	−413.2***	−304.4***
	[−4.95]	[−4.95]	[−4.08]	[−4.07]	[−5.22]	[−4.53]
Close Win	24.03*	18.87	11.04	7.651	−3.701	−6.209
	[1.77]	[1.49]	[0.89]	[0.67]	[−0.34]	[−0.61]
Close Loss	33.41*	32.00*	31.54*	39.04**	36.65**	33.47**
	[1.92]	[1.92]	[1.92]	[2.57]	[2.46]	[2.39]
Blowout Win	7.403	10.34	12.01	10.31	8.46	7.2
	[0.88]	[1.31]	[1.57]	[1.45]	[1.23]	[1.11]
Blowout Loss	−92.28***	−75.41***	−74.74***	−73.07***	−47.58***	−51.14***
	[−5.20]	[−4.55]	[−4.63]	[−4.84]	[−3.32]	[−3.77]
Opponent Strength	−5.345	−4.891	−0.155	1.503	−0.703	1.812
	[−1.06]	[−0.97]	[−0.030]	[0.32]	[−0.15]	[0.41]
Win * Opponent Strength	7.702	7.755	3.604	1.69	4.474	2.016
	[1.51]	[1.52]	[0.69]	[0.36]	[0.94]	[0.45]
Lose * Opponent Strength	18.67***	17.86***	13.47**	13.24***	14.08***	9.623**
	[3.46]	[3.34]	[2.48]	[2.66]	[2.82]	[2.04]
Win * Late in Season	−22.60***	−20.90***	−24.02***	−18.94***	−16.36**	−12.62*
	[−2.73]	[−2.65]	[−3.11]	[−2.61]	[−2.33]	[−1.91]
Lose * Late in Season	93.48***	96.21***	92.16***	52.50***	42.98***	41.89***
	[5.59]	[6.19]	[6.19]	[3.84]	[3.27]	[3.36]
Win/Loss * Home/Away	X	X	X	X	X	X
Win/Loss * Opponent Strength	X	X	X	X	X	X
Observations	1391	1699	2041	2426	2877	3367
R^2	0.64	0.62	0.58	0.58	0.55	0.54

Notes: *t*-statistics are in brackets. Only teams who had won the previous number of games listed are included in each regression. Each column is a regression on the change in points in the AP poll on game characteristics. See Appendix A for further details and variable definitions.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

There could also be effects that vary over the season, such as opponent strength, which is likely poor early in the season as many teams play weaker opponents early in the season. Also, many teams in the data play one another, such that a win for one team will be a loss for another. While this is not a double counting, *per se* (e.g. each team will have its own point change, opponent strength, etc.), it does imply that the outcomes for some teams will be highly correlated when they play one another. For example, Campbell *et al*. (2007) and Lebovic and Sigelman (2001) find evidence that would be consistent with autocorrelation in the errors.

I deal with these possibilities in three ways. First, I estimate the regression with team and season fixed effects.[19] That is, Michigan may be a perennially over-ranked team (a team effect), and 1987 could have been a year of low rankings due to significant disagreement amongst the pollsters (a season effect). What we would like to know is if the results are robust to such considerations, where now each team and each season is allowed to have its own independent effect on the results. Second, I interact team and season effects to create team-season fixed effects, where now each team, season and team-season have their own fixed effects. For example, now Michigan has its own effect each season has its own effect, and each season is interacted with each team to control for the fact that each team may have a level effect that varies by season, so now Michigan in 1987 has its own fixed effect, as does Michigan in 1995 (this is intuitive if a team is always ranked, but in some years is systematically different from others).

To explicitly deal with autocorrelation in the errors, I cluster the SEs by season (to adjust for correlation and autocorrelation by season) by team

[19] These effects give each team an indicator and each season an indicator that is included in the regression.

(to adjust for correlation and autocorrelation of team quality/performance over successive weeks and seasons), and by week of season (to adjust for the correlation when one team in the data plays another since their errors are likely correlated, and to control for the fact that some measure may have more variability is certain weeks of the season than others, and these effects may persist one week to the next) to see if the result is robust to these concerns.[20] In the terminology of Bertrand *et al*. (2004), this type of clustering produces an arbitrary variance covariance matrix which is consistent in the presence of *any* type of correlation *within the cluster* over time, including autocorrelation in the residuals.

Table 7 presents the results. The addition of the team and season effects changes some of the results. For example, blowout wins do confer an advantage once team and season fixed effects are included, with about one-fourth to one-third of voters up-ranking a team one rank for a blowout win. Similarly, the benefits of close losses cease to be statistically significant once clustered SEs are included. The results for blowout losses and opponent strength remain, as do the results for late losses. Overall, the results are not especially sensitive to the inclusion of team or season fixed effects, but others such as blowout wins are sensitive to clustered errors.

IV. Discussion and Conclusion

The conventional wisdom offered by pundits regarding college football has little empirical support – and in some instances is exactly the opposite of what 'everyone knows' is true. Instead of teams suffering more for losing later in the season, a late season loss actually cushions the blow. A significant fraction of voters, more than two-third, rank a team higher for late losses than for early losses. Rather than being rewarded for defeating strong opponents, AP voters seem not to pay attention to the strength of a defeated opponent. Similarly, margin of victory seems to matter little in how AP voters choose to reward a team's performance.[21]

The lingering question is how such conventional wisdom persists despite the evidence to the contrary. One feature of the pieces of conventional wisdom is their insistence on the use of anecdote to establish their claims. For example, one sportswriter said about margin of victory

> Yes, sportsmanship matters, and there's no room in some voters' minds for rubbing it in. Still, it's important to win by a comfortable margin if you can. Just ask Penn State. In 1994, the Nittany Lions roared into Bloomington, Ind., with a 7-0 record for a date with Indiana. Penn State was ranked No. 1 ranking and had an eye on the national championship. The Nittany Lions got off to a dominating start and built a comfy lead, but Indiana notched several second-half scores to narrow the final margin to 35-29, making Penn State's game against an unranked foe look more competitive than it was. As a result, unimpressed voters knocked Penn State to No. 2, where it sat idly by and watched Nebraska win the national championship. (Dienhart, 2002)

This anecdote is used to claim that the general strategy of winning by wide margins is rewarded, although I find that no evidence that is true. Also note that this claim embodies more than one piece of conventional wisdom – Indiana was an unranked opponent, and voters took into account not only the margin of victory but how strong the opponent was. Similar anecdotal claims about other features of conventional wisdom tested here are quite common. In the case of college football, it seems that analysts, fans and sportswriters derive their beliefs based on a few salient outcomes and then claim that those outcomes (which may themselves be the result of an accurately described phenomena) apply more generally. In other words, it may well be true that Penn State's drop in the polls in the 1994 season was the result of voters looking negatively upon their margin of victory over Indiana, but it is a far leap to conclude that it matters for ranked teams in general.

This leads to a second way in which the conventional wisdom could be related to belief formation – salience. In most claims in support of conventional wisdom, stories from the past are usually focused on teams that were very highly ranked, and yet the claims of conventional wisdom are quite general and are alleged to apply to all ranked teams in general. It is difficult to say why and how this conventional wisdom develops, but these two explanations are consistent with its widespread persistence in

[20] As an example of this sort of effect that may be correlated over week of the season for successive seasons, opponent strength early in the season may be partially due to the fact that teams tend to play weaker opponents early in the season, and this effect may be the same one season to the next.

[21] The results presented in the Appendix show that the failure of the conventional wisdom is robust to a number of specification checks and alternative definitions of key variables.

Table 7. Season, team effects and clustered SE estimates

Variable	I	II	III	IV	V	VI	VII	VIII
Win	187.7***	245.9***	187.7***	245.9***	187.7***	245.9***	192.3**	250.6***
	[2.74]	[3.43]	[2.94]	[3.14]	[3.00]	[2.94]	[2.60]	[3.17]
Lose	−301.9***	−258.5***	−301.9***	−258.5***	−301.9***	−258.5**	−300.3***	−257.0**
	[−4.28]	[−3.47]	[−4.62]	[−3.23]	[−4.34]	[−2.60]	[−3.81]	[−2.87]
Close Win	−10.16	−12.24	−10.16	−12.24	−10.16	−12.24	−8.641	−10.66
	[−1.02]	[−1.16]	[−0.93]	[−0.93]	[−0.90]	[−1.00]	[−0.80]	[−1.11]
Close Loss	29.46**	29.59**	29.46	29.59	29.46	29.59	29.48	29.44
	[2.10]	[1.99]	[1.41]	[1.14]	[1.36]	[1.23]	[1.05]	[1.09]
Blowout Win	16.33**	26.38***	16.33***	26.38***	16.33*	26.38***	16.72**	26.85***
	[2.29]	[3.47]	[2.99]	[4.57]	[2.04]	[3.02]	[2.39]	[4.79]
Blowout Loss	−48.83***	−53.31***	−48.83**	−53.31*	−48.83**	−53.31**	−48.83	−53.19
	[−3.19]	[−3.21]	[−2.23]	[−1.78]	[−2.21]	[−2.14]	[−1.54]	[−1.39]
Opponent Strength	2.401	3.523	2.401	3.523	2.401	3.523	2.448	3.535
	[0.52]	[0.72]	[0.49]	[0.56]	[0.38]	[0.44]	[0.42]	[0.54]
Win * Opponent Strength	2.387	2.087	2.387	2.087	2.387	2.087	2.395	2.126
	[0.51]	[0.42]	[0.49]	[0.33]	[0.41]	[0.27]	[0.41]	[0.33]
Lose * Opponent Strength Strength	9.289*	9.120*	9.289*	9.12	9.289	9.12	9.235	9.088
	[1.89]	[1.75]	[1.86]	[1.45]	[1.35]	[1.11]	[1.41]	[1.26]
Win * Late in Season	−0.6	−8.167	−0.6	−8.167	−0.6	−8.167	0.501	−7.047
	[−0.062]	[−0.81]	[−0.086]	[−1.06]	[−0.089]	[−1.08]	[0.084]	[−1.10]
Lose * Late in Season	54.96***	53.59***	54.96***	53.59**	54.96***	53.59**	54.99***	53.49***
	[3.87]	[3.55]	[3.28]	[2.60]	[3.19]	[2.54]	[5.08]	[3.50]
Blowout/Close Win/Loss * Home/Away * Opponent Strength	X	X	X	X	X	X	X	X
Season Effects, Team Effects	X	X	X	X	X	X	X	X
Season, Team, Season * Team Effects		X		X		X		X
Cluster on Season			X	X				
Cluster on Team					X	X		
Cluster on Week of Season							X	X
Observations	3846	3846	3846	3846	3846	3846	3845	3845
R^2	0.52	0.57	0.52	0.57	0.52	0.57	0.52	0.57

Notes: *t*-statistics are in brackets. Each column is a regression on the change in points in the AP poll on game characteristics.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

college football. Perhaps due to its rich and colourful history, college football gives rise to stories and anecdotes that become 'truths' without any careful consideration.

Beyond the conventional wisdom tests themselves, these results also inform some current debates in college football. While the BCS system (begun in 1998) is designed to produce a national championship game where the #1 and #2 ranked teams play against one another, the system has not avoided controversy. As such, proponents of a playoff have argued for some time that a four, eight, or 16 team playoff is needed to 'truly' determine the national champion. If any system were to determine the final four or eight teams who would play for a championship, it is likely to be similar to the current BCS formula, and only different to the extent that it incorporates more teams in a playoff system. Since such a system is likely to use polls to rank the teams that would qualify for the playoff, the results here suggest that the use of human polls may inappropriately help or hurt some teams. For example, in the final regular season poll of the 2005 season the difference between #4 (Ohio State) and #5 (Notre Dame) was 48 points, and in 2006 the point difference between the team ranked #4 (Louisiana State University (LSU)) and #5 (Louisville) was 32 points. As such, the results here, where losing late in the season can save upwards of 50 points, would have implications for who would be allowed to play for a national championship as long as rankings were based on polls. The stakes of these cutoffs are quite high. For example, appearing in a BCS bowl nets a team more than $15 million, while the next largest bowl payout is less than $5 million. That a $10 million difference is placed in the hands of voters in a subjective poll seems to require that we understand how those decisions are made.

In the end, shedding light on the conventional wisdom of college football has several benefits. First, these results may help us to devise a system of ranking teams and choosing a champion, where the stakes, for individual universities, can be quite high. Second, they allow us to see relationships in the voting behaviour of AP pollsters that was previously undetected, and this may itself induce changes in voting procedures or policies, or in how these polls are used to determine bowl appearances. Much is made of the fact that computer models 'double count' factors that voters take into account, but we know little about what voters actually place value on, and the evidence here suggest that voters do not factor in many of these effects. All of this, however, is simply a side show to the main event; the actual games played around the country are the true heart and soul of college football and the primary reason for its enduring popularity. Perhaps the voters, by not conforming to the conventional wisdom, keep the game more exciting than it otherwise would be.

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Appendix A: Data Appendix

The data used in this article was collected from two sources. The *ESPN College Football Encyclopedia* (MacCambridge 2005) was used to obtain all information except AP poll points, which were obtained from the website www.soonerstats.com, which is the website that the editor of the *ESPN College Football Encyclopedia* used for the historical AP poll progressions.[22] The Encyclopaedia lists the date of the game, the location of the game, the opponent, the score and the ranking of the team and the opponent before and after the game. Cross-checks in the Encyclopaedia allowed us to gather the win/loss record for each opponent at the time of the game and for that season. For the analysis, each game of each season for all 25 teams was recorded, whether they were ranked or unranked at the time of the game. In addition to this raw data from the Encyclopaedia and the points from the AP poll, the following variables were created:

- 'Close Win/Loss' is defined as a margin of victory of three points or less. Ties are listed separately and are not included.
- 'Blowout Win/Loss' is a margin of victory of more than 17 points (this means winning by more than two touchdowns, two point-after-touchdowns and one field goal).
- 'Opponent Strength' is the number of victories minus the number of losses for an opponent that season.
- 'Week of Season' is the poll-week of the season. Since the preseason poll is a ranking of teams before any games are actually played, I note this as the zero week of the season.

Changes in points and rankings are taken as week to week changes (e.g. the points/ranking from week three minus the points/ranking from week two) and the covariates in all models use the actual week of the event (e.g. the change from week two to three is regressed on the game characteristics of the game played between the second and third week rankings). As there are more weeks of the season than games played by any individual team, there are 'bye' weeks in which a team in inactive and their rank may change. Since these weeks contain no information about a given team (since they have not played an opponent in the interim) they are not used in this analysis. However, it must be noted that if their ranking changed this would be reflected in the data. For example, suppose a team was ranked 21st in the 4th week of the season, and did not play in the 5th week of the season, but changed ranking to 19 in the 5th week. In the 6th week the team played and their rank changed to 18. The change from the 3rd to 4th week is recorded here, as is the change in the 5th to 6th week. When I ran specifications with the teams as 'tied' for inactive weeks (the fourth to fifth in this example), the results were unchanged.

[22] The AP polls are for each week are listed at http://www.appollarchive.com/football/index.cfm.

Table A1. Summary statistics for late season games

Variable	Week 8 and after mean	Week 9 and after mean	Week 10 and after mean	Week 11 and after mean
Points Change	0.73	−0.57	−0.93	−5.34
	(184.2)	(181.9)	(176.7)	(172.3)
Rank Change	−0.02	0.00	−0.01	0.02
	(3.0)	(2.9)	(2.9)	(2.9)
Points Before Game	885.79	889.07	893.88	899.74
	(455.0)	(455.5)	(456.0)	(456.9)
Points After Game	880.67	883.77	887.33	887.16
	(456.6)	(457.0)	(457.5)	(460.3)
Rank Before Game	10.42	10.38	10.37	10.36
	(6.7)	(6.7)	(6.7)	(6.7)
Rank After Game	10.35	10.36	10.33	10.35
	(6.6)	(6.7)	(6.7)	(6.7)
Win	0.73	0.74	0.75	0.76
	(0.4)	(0.4)	(0.4)	(0.4)
Loss	0.26	0.25	0.24	0.23
	(0.4)	(0.4)	(0.4)	(0.4)
Tie	0.01	0.01	0.01	0.01
	(0.1)	(0.1)	(0.1)	(0.1)
Score of Team	27.47	27.27	26.82	26.39
	(14.4)	(14.4)	(14.1)	(13.7)
Score of Opponent	20.06	20.37	20.53	21.02
	(12.3)	(12.3)	(12.3)	(12.1)
Margin of Victory	7.41	6.91	6.29	5.37
	(20.3)	(20.3)	(19.8)	(19.3)
Blowout Win	0.51	0.52	0.54	0.57
	(0.5)	(0.5)	(0.5)	(0.5)
Blowout Loss	0.10	0.10	0.09	0.09
	(0.3)	(0.3)	(0.3)	(0.3)
Close Win	0.07	0.07	0.06	0.06
	(0.3)	(0.3)	(0.2)	(0.2)
Close Loss	0.06	0.06	0.05	0.05
	(0.2)	(0.2)	(0.2)	(0.2)

Notes: Author's calculations. SEs under mean values in parentheses. See Appendix A for definitions.

Data was collected between March 2005 and December 2006. The raw data was audited for accuracy using the following algorithm. First, three seasons were randomly selected and these seasons were re-checked for each team. Then, 3 weeks of seasons were randomly selected and these were checked for each team. Finally, three teams were selected and their results re-checked. In any instance, if more than 5% of the entries checked had to be changed for any reason that team's entire entry was redone. In addition, each team's data was checked against random checks of actual published polls and game results over the entire 25-year period. The auditing took place from January 2007 to June 2007.

The largest changes in the poll is that beginning in 1990 25 teams were ranked instead of 20, as had been the case from before 1990. In the data presented here, I weighted all 1980 to 1989 AP points by (25/20), which transforms the points as if there were 25 teams to be ranked in those polls. This preserves the original ranking while at the same time awarding 'contemporary' point totals. Similarly, in different years there are different numbers of voters in the AP poll. While this difference in levels is somewhat dealt with by the inclusion of season specific effects, I also standardized the point totals to control for differences in the number of AP voters.

Appendix B: Specification Checks

Checks for timing of losses

The result that teams actually benefit by losing later in the season, relative to those that lose earlier, can be checked in two ways. First, Table A1 gives the summary statistics by different definitions of 'late in the season.' In the results presented earlier, late in the season was defined as the tenth week or later, and in Table A1 I use the 8th, 9th, 10th and 11th weeks as the starting dates for late in the season. Table A1 shows that, relative to the season overall, later games

Table A2. Alternative definitions of late weeks of season

Variable	Late defined as week of season greater or equal to			
	Week 8 I	Week 9 II	Week 10 III	Week 11 IV
Win	193.3*** [2.82]	195.0*** [2.85]	192.8*** [2.81]	193.9*** [2.83]
Lose	−292.0*** [−4.13]	−294.1*** [−4.16]	−289.3*** [−4.08]	−284.8*** [−4.03]
Close Win	−8.038 [−0.80]	−8.022 [−0.80]	−8.352 [−0.84]	−7.854 [−0.79]
Close Loss	30.59** [2.17]	32.06** [2.28]	29.64** [2.11]	28.82** [2.05]
Blowout Win	8.601 [1.34]	8.58 [1.34]	8.835 [1.25]	8.327 [1.30]
Blowout Loss	−51.16*** [−3.77]	−51.16*** [−3.77]	−46.89*** [−3.05]	−51.10*** [−3.76]
Opponent Strength	2.448 [0.52]	2.448 [0.52]	2.448 [0.52]	2.448 [0.52]
Win * Opponent Strength	1.652 [0.35]	1.658 [0.35]	1.87 [0.40]	1.703 [0.36]
Lose * Opponent Strength	9.408* [1.92]	9.216* [1.88]	8.350* [1.70]	9.463* [1.93]
Win * Late in Season	−1.115 [−0.20]	−1.769 [−0.30]	−5.092 [−0.53]	−8.948 [−1.17]
Lose * Late in Season	35.06*** [3.07]	46.07*** [3.92]	51.18*** [3.59]	28.77** [2.04]
Win/Lose * Home/Away	X	X	X	X
Blowout Win/Loss * Home/Away	X	X	X	X
Close Win/Loss * Home/Away	X	X	X	X
Blowout/Close * Home/Away * Late	X	X	X	X
Win/Loss * Opponent Strength	X	X	X	X
Observations	3846	3846	3846	3846
R^2	0.5	0.5	0.5	0.5

Notes: *t*-statistics are in brackets. Each column is a regression on the change in points in the AP poll on game characteristics. See Appendix A for further details and variable definitions.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

are not more or less likely to result in victory or defeat, and the tenth and later weeks are not unique. Scores of teams and their opponents, the likelihood of a blowout or close win are the same as for the season overall. If I define late in the season as the 8th week or later, the summary measures are the same as if I define late in the season as the 11th week or later. To confirm the robustness of the result to the alternative definitions, I replicated the regression of Table 3 for these alternative definitions of late in the season. Table A2 shows the results. While the result remains, there is a change in the magnitude, and the value of losing later in the season is anywhere from 10% to 18% of the value of losing, depending on the specification. Recalling the discussion of the conventional wisdom, this result is still surprising – the conventional wisdom supposed that the result should be negative and large, and Table A2 confirms that the result is large and positive under these alternative definitions of late weeks of the season.

Checks for opponent strength

The strength of opponent variable is a noisy measure of opponent quality. For example, it does not take account of a team's division (BCS versus Football Championship Series (FCS), nor whether the opponent plays in a conference in a BCS tie-in.[23] How can we be sure that the results for opponent strength truly reflect a lack of attention to the quality of the opponent? One check would be to use alternative definitions of opponent strength such as

[23] By NCAA rule, BCS division teams can only play one opponent per season from a non-BCS division. These games are almost always played early in the season.

schedule strength. Power rankings by Sagarin (for *USA Today*) and the *New York Times* are available, but they do not cover the entire time period considered here, and such measures of strength are team specific (a team with a strong schedule causes their opponent's strength of schedule to increase). The measure I use applies to every opponent played, and is therefore calculated for every opponent, inducing more variation is opponent strength over the season for a team (whose schedule strength may vary less over the season), which allows us to capture the effect of opponent strength on ranking points.[24] Another stronger check would be to look at teams that are strong by a more objective criteria – the fact that they are ranked among the 25 best teams in the country that week. I do this check because it could well be that AP voters do not factor strength of the opponent, but they may factor 'quality wins', victories over teams that are highly ranked, which would be a select number of strong opponents. Since the specification is week-by-week, we capture the immediate effect of the victory over a ranked team (an obvious feather in the cap of the victor), even if that opponent is not so strong at the end of the season.

To see if teams were rewarded for playing (and defeating) strong opponents I replicated the results of Table 3 using only the sample of teams that played another ranked team. Table A3 shows the results. Here, I include the rank of the opponent inverted, so that a team ranked tenth receives an 'opponent rank' measure of 1/10 and a team ranked second receives a value of 1/2. Winning against a ranked opponent confers no advantage, and losing against a ranked opponent confers no advantage. Even including the strength of the opponent here does not improve the results. One problem with the use of inverted rank is that it is not possible to interpret the effect in a straightforward manner. To overcome this difficulty, I replicated the results of Table A3 using the log of the inverted rank and the results were similar. For example, in a specification that was similar to column I of Table A3 the coefficient on winning $*$ the logged inverted rank was -18.18 [-0.40] and the coefficient on losing $*$ the logged inverted rank was -33.42 [-0.74] (t-statistics in brackets). Also, when I use the measure of strength of opponent and restrict the sample to ranked teams, opponent's strength has no effect.[25] If voters are not sensitive to variability of strength of very strong opponents (which should matter for the determination of quality wins) they are unlikely to take it into account for weaker opponents, which is consistent with the results of Table 3.

Checks for margin of victory

In the specifications presented in this article, margin of victory was a dichotomous measure that indicated a close or wide point differential. Controlling for team and season effects seemed to suggest that blowing teams out did result in some style points, although other specifications did not. Another way to see if margin of victory matters is to use the actual point differential in the specification rather than dichotomous indicators. Table A4 shows the results. Column I shows that the point differential has no effect, and that defeating a strong opponent by a wide margin may actually cost a team points. Recall, however, that losing by wide margins appeared to be particularly negative, so there may be a difference for winning margins ($M>0$) and losing margins ($M<0$). I account for this by separating the effects for winning margins of victory and losing margins of victory. Columns III and VI show the results. In all of the specifications, margin of victory does not have a statistically significant relationship with point differentials, confirming the results of Table 3. Interacting margin of victory (defeat) with opponent strength does result in a statistically significant relationship. Losing by wide margins to strong opponents hurts (note that losing differential is a negative), which is consistent with the results for blowout losses discussed earlier. Curiously, defeating strong opponents by wide margins cost points as well. For example, if a team defeated a 8-3 record team by 20 points they would actually lose close to 20 points in the subsequent poll. Conversely, losing to the same team by the same margin would result in a 50 fewer points in the next poll. At the extreme, one could say that the results of Table A4 are consistent with the fact that teams should win by large margins ($M \gg 0$) against

[24] When I replicated the results of Table 3 with opponent strength defined as wins minus losses at the time the game was played, the results were unchanged – this is likely due to the fact that the current win/loss record is highly correlated with the season win/loss record, particularly after the first few games of the season are played, and as such is not a strong check of the results.

[25] In regression similar to those of Table A3 where I restrict the sample to be of ranked teams playing ranked teams (and where I do not include measures of the opponent's rank), the coefficient on opponent strength is 1.64 [0.14] the coefficient on winning $*$ opponent strength is 0.42 [0.04], and the coefficient on losing $*$ opponent strength is 12.89 [1.08] – t-statistics in brackets.

Table A3. Strength of opponent check using games with both teams ranked

Variable	I	II	III	IV	V	VI
Win	248.4***	248.4***	256.3***	231.8**	231.8**	241.4**
	[5.94]	[4.71]	[4.81]	[2.53]	[2.09]	[2.28]
Lose	−188.5***	−188.5***	−194.9***	−303.0**	−303.0**	−297.8***
	[−3.03]	[−3.78]	[−4.17]	[−2.49]	[−2.79]	[−3.29]
Close Win	−22.91	−22.91	−20.14	−28.81	−28.81	−24.39
	[−0.93]	[−1.33]	[−1.36]	[−1.10]	[−1.62]	[−1.55]
Close Loss	38.34*	38.34	41.51	38.1	38.1	38.81
	[2.05]	[1.67]	[1.51]	[1.70]	[1.63]	[1.25]
Blowout Win	−4.044	−4.044	−3.65	−5.536	−5.536	−4.51
	[−0.23]	[−0.38]	[−0.34]	[−0.30]	[−0.39]	[−0.38]
Blowout Loss	−66.03***	−66.03***	−64.37**	−75.08***	−75.08***	−75.40**
	[−3.23]	[−4.18]	[−2.52]	[−3.08]	[−4.07]	[−2.51]
Win * Late in Season	−35.13**	−35.13**	−35.62**	−35.39**	−38.39**	−35.39**
	[−2.73]	[−2.77]	[−2.32]	[−2.79]	[−3.17]	[−2.39]
Lose * Late in Season	94.46***	94.46***	92.13***	72.26**	72.26**	72.39***
	[3.93]	[4.47]	[4.90]	[2.80]	[3.12]	[3.90]
Win * Opponent Rank	−100.9	−100.9	−87.15	−24.11	−24.11	−18.58
	[−1.11]	[−0.84]	[−0.84]	[−0.29]	[−0.20]	[−0.20]
Lose * Opponent Rank	−76.7	−76.7	−72.63	−111.6	−111.6	−111.1
	[−0.65]	[−0.68]	[−0.76]	[−0.95]	[−0.95]	[−1.19]
Opponent Strength				−2.761	−2.761	−2.858
				[−0.26]	[−0.26]	[−0.30]
Win * Opponent Strength				−0.431	−0.431	0.106
				[−0.041]	[−0.037]	[0.011]
Lose * Opponent Strength				12.3	12.3	12.16
				[1.12]	[1.16]	[1.37]
Win/Loss * Home/Away	X	X	X	X	X	X
Close Win/Loss	X	X	X	X	X	X
Blowout Win/Loss	X	X	X	X	X	X
Close Win/Loss * Home/Away	X	X	X	X	X	X
Blowout Win/Loss * Home/Away	X	X	X	X	X	X
Blowout/Close * Win/Loss * Late in Season	X	X	X	X	X	X
Blowout Win/Loss * Home/Away * Opponent Strength				X	X	X
Season, Team Effects	X	X	X	X	X	X
Season * Team Effects	X	X	X	X	X	X
Team Cluster	X			X		
Season Cluster		X			X	
Week of Season Cluster			X			X
Observations	1348	1348	1309	1115	1115	1114
R^2	0.59	0.59	0.6	0.61	0.61	0.62

Notes: *t*-statistics are in brackets. Opponent rank is defined as 1/Ranking, so that teams of higher rank are ranked higher. Each column is a regression on the change in points in the AP poll on game characteristics. See Appendix A for further description and variable definitions.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

weak opponents (opponent strength $\ll 0$), but the results also imply that it is *better*, in terms of points, to lose by a large margin ($M \ll 0$) to a weak opponent (opponent strength $\ll 0$). For example, defeating a 3-8 record opponent by 20 points results in ($M = 20$, opponent strength $= -5$) results in a point gain of 20 points. However, losing to a 3-8 opponent by 20 points ($M = -20$, opponent strength $= -5$) results in a gain of more than 50 points. These specifications suggest that the combination of margin of victory with opponent strength may matter in curious ways that we might not have realized previously, but margin of victory itself is not substantially related to point changes in the AP poll.

Appendix C: Additional Analysis

There are five additional checks that should be performed on the data. The first is a check that

Table A4. Margin of victory check using game point differential

Variable	I	II	III	IV	V	VI
Win	189.1***	190.9***	174.2**	167.4**	167.4**	163.7**
	[2.76]	[2.79]	[2.53]	[2.57]	[2.48]	[2.46]
Lose	−285.3***	−290.2***	−277.1***	−312.7***	−312.7***	−302.6***
	[−4.03]	[−4.10]	[−3.91]	[−4.81]	[−5.04]	[−3.98]
Point Differential	0.418	0.127				
	[1.48]	[0.42]				
Losing Differential			3.074**	−0.759	−0.759	0.171
			[2.49]	[−0.31]	[−0.20]	[0.078]
Winning Differential			0.271	0.0962	0.0962	0.183
			[0.93]	[0.27]	[0.30]	[0.90]
Opponent Strength		2.448	2.448	2.321	2.321	2.382
		[0.52]	[0.52]	[0.36]	[0.41]	[0.41]
Differential * Opponent Strength		−0.109**				
		[−2.83]				
Winning Differential * Opponent Strength				−0.192***	−0.192***	−0.189***
				[−5.91]	[−5.90]	[−4.75]
Losing Differential * Opponent Strength				0.559**	0.559	0.517*
				[2.29]	[1.18]	[1.92]
Win * Late in Season	−5.19	−6.17	−5.16	−2.45	−2.45	−0.838
	[−0.54]	[−0.64]	[−0.54]	[−0.37]	[−0.37]	[−0.14]
Lose * Late in Season	51.13***	51.24***	50.89***	54.61***	54.61***	54.28***
	[3.58]	[3.59]	[3.57]	[3.10]	[3.22]	[5.48]
Win/Loss * Home/Away	X	X	X	X	X	X
Win/Loss * Opp Strength	X	X	X	X	X	X
Season, Team Effects				X	X	X
Season * Team Effects				X	X	X
Team Cluster				X		
Season Cluster					X	
Week of Season Cluster						X
Observations	3846	3846	3846	3846	3846	3845
R^2	0.5	0.5	0.5	0.52	0.52	0.52

Notes: *t*-statistics are in brackets. Differential is defined as the point differential such that losing teams have negative point differentials and winning teams have positive point differentials. Each column is a regression on the change in points in the AP poll on game characteristics. See Appendix A for further description and variable definitions.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

acknowledges the changes in the AP poll, which until 1990 only ranked 20 teams. A check, however, would be to throw out all rankings from 20 to 25 for all years after 1990. Table A5 shows the results, which are robust to the exclusion of all teams ranked 21–25. Similarly, the data here only records information on teams that are ranked both before and after the game. Teams can, and do, place themselves onto the rankings and also drop from the top 25 throughout the course of a season. Ideally, one would like to construct an imputed point total for each team, but that is not possible since an invented point total will not necessarily be consistent across all years. To deal with this possibility, I imputed a rank of 30 for any team that was unranked before or after a game. Table A5 shows the results, which regress the changes in rank on the game characteristics. The results are robust, at least for the ranking regressions, when a teams former or current rank is imputed. It is difficult to know how to interpret the effect of opponent strength in these regressions, however, because of the use of imputed rankings. Bowl games and championship games may be the driving factors behind the results as they usually feature an inordinate number of high quality matchups. I exclude Bowl Games and Conference Championship games from the data in Table A7. The results are not sensitive the exclusion of these games. Fourth, to deal with the concern that the results are driven by highly ranked teams, I excluded all teams ranked 1–5 from the regressions in Table A8. As the table show, the results are robust to their exclusion. Last, Table A9 replicates the regression of Column VI of Table 3 and includes week of the season in the specification. The central results are robust to this alternative specification.

Table A5. Truncation check: point results for teams ranked 1–20 only

Variable	I	II	III	IV	V
Win	190.8***	190.8***	248.2***	248.2***	252.2***
	[2.90]	[2.89]	[3.23]	[3.58]	[3.36]
Lose	−316.0***	−312.5***	−269.7***	−269.7***	−268.4***
	[−4.64]	[−4.58]	[−2.81]	[−3.78]	[−2.97]
Close Win	−10.69	−10.91	−14.06	−14.06	−12.69
	[−1.06]	[−1.09]	[−1.27	[−1.03]	[−1.07]
Close Loss	32.10**	31.67**	29.62	29.62	29.24
	[2.32]	[2.29]	[1.36]	[1.13]	[1.07]
Blowout Win	6.363	6.078	19.88***	19.88***	20.32***
	[1.00]	[0.86]	[2.97]	[3.12]	[3.03]
Blowout Loss	−61.93***	−60.58***	−63.49**	−63.49*	−63.57
	[−4.59]	[−3.95]	[−2.21]	[−1.91]	[−1.47]
Opponent Strength	2.697	2.697	3.535	3.535	3.55
	[0.60]	[0.60]	[0.44]	[0.54]	[0.52]
Win * Opponent Strength	1.017	1.164	1.267	1.267	1.301
	[0.22]	[0.26]	[0.16]	[0.19]	[0.19]
Lose * Opponent Strength	10.85**	10.14**	11.05	11.05*	11.04
	[2.28]	[2.13]	[1.29]	[1.73]	[1.51]
Win * Late in Season	−8.059	−10.19	−14.04*	−14.04*	−13.01*
	[−1.24]	[−1.05]	[−1.87]	[−2.21]	[−1.83]
Lose * Late in Season	52.69***	53.60***	52.48***	52.48**	52.13***
	[4.30]	[3.83]	[2.38]	[2.37]	[2.94]
Win/Loss * Home/Away	X	X	X	X	X
Win/Loss * Opponent Strength	X	X	X	X	X
Close Win/Loss * Home/Away	X	X	X	X	X
Blowout Win/Loss * Home/Away	X	X	X	X	X
Blowout/Close * Win/Loss * Late in Season		X	X	X	X
Blowout Win/Loss * Home/Away * Opponent Strength		X	X	X	X
Season, Team Effects, Season * Team Effects			X	X	X
Team Cluster			X		
Season Cluster				X	
Week of Season Cluster					X
Observations	3590	3590	3590	3590	3589
R^2	0.53	0.53	0.6	0.6	0.6

Notes: *t*-statistics are in brackets. Each column is a regression on the change in points in the AP poll on game characteristics. Only teams ranked 1–20 before the game was played are included in these regressions. See Appendix A for further description and variable definitions.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

The results for the timing of wins and losses could be a function of the rank of the team itself. The results presented in this article could be driven by lower ranked teams whose rank does not change much (if at all) when they lose. If the result is driven by lower ranked teams, the conventional wisdom may, in fact, be true. Table A10 replicates the results from Column V of Table 3 in this article, where I regress change in AP points on a host of other game characteristics. Column I of Table A10 is the same regression as that in Column V of Table 3, Column II shows the same regression run for teams ranked 1–20 before the present game, Column III for teams ranked 1–15, Column IV for teams ranked 1–10, and Column V for teams ranked 1–5. The results show that restricting the sample to highly ranked teams actually *increases* the positive effect of late losses. As an additional check, Table A11 replicates Column VI of Table 3 in this article, which added a number of additional interactions to the specification for late season games. The results of Table A10 are confirmed by the results in Table A11. Although there are grounds to be concerned that the timing effect reported in this article was driven by the inclusion of low-ranked teams, the results presented here show that this argument has little empirical support.

Table A6. Truncation check: ranking results with imputed rankings

Variable	I	II	III	IV	V	VI	VII
Win	−5.419***	−3.912**	−3.648**	−3.755**	−3.648**	−3.648**	−3.683***
	[−9.10]	[−2.41]	[−2.26]	[−2.34]	[−5.69]	[−5.43]	[−7.05]
Lose	2.895***	5.422***	5.755***	5.742***	5.755***	5.755***	5.745***
	[4.95]	[3.28]	[3.49]	[3.48]	[7.61]	[7.35]	[5.92]
Close Win	−0.122	−0.123	−0.085	0.0391	−0.085	−0.085	−0.0956
	[−0.51]	[−0.52]	[−0.36]	[0.17]	[−0.41]	[−0.39]	[−0.36]
Close Loss	−0.982***	−0.986***	−0.890***	−0.704**	−0.890**	−0.890**	−0.891*
	[−3.20]	[−3.21]	[−2.91]	[−2.26]	[−2.45]	[−2.41]	[−1.77]
Blowout Win	−0.0644	−0.0686	−0.187	−0.455***	−0.187	−0.187	−0.188**
	[−0.42]	[−0.45]	[−1.22]	[−2.95]	[−1.19]	[−1.09]	[−2.14]
Blowout Loss	0.268	0.205	0.257	0.519	0.257	0.257	0.257
	[0.84]	[0.64]	[0.80]	[1.57]	[0.41]	[0.68]	[0.50]
Opponent Strength	−0.107***	−0.106***	−0.115***	−0.128***	−0.115***	−0.115***	−0.116***
	[−8.15]	[−8.11]	[−8.79]	[−9.84]	[−5.50]	[−7.88]	[−7.62]
Win * Late in Season	−0.229	−0.221	−0.286*	−0.0372	−0.286	−0.286**	−0.291**
	[−1.45]	[−1.40]	[−1.79]	[−0.24]	[−1.30]	[−2.14]	[−2.54]
Lose * Late in Season	−1.039***	−1.112***	−1.086***	−1.009***	−1.086**	−1.086***	−1.086***
	[−3.24]	[−3.45]	[−3.38]	[−3.09]	[−2.55]	[−3.75]	[−3.45]
Win/Loss * Home/Away	X	X	X	X	X	X	X
Win/Loss * Opponent Strength		X	X	X	X	X	X
Blowout/Close Win/Loss * Home/Away * Opponent Strength		X	X	X	X	X	X
Season Effects, Team Effects			X	X	X	X	X
Season * Team Effects				X	X	X	X
Cluster on Team					X		
Cluster on Season						X	
Cluster on Week of Season							X
Observations	4350	4350	4350	4350	4350	4350	4349
R^2	0.41	0.41	0.43	0.54	0.43	0.43	0.43

Notes: *t*-statistics are in brackets. Teams unranked before or after the game are given a missing rank of 30. Each column is a regression on the change in rank in the AP poll on game characteristics. See Appendix A for further description and variable definitions.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

Table A7. Truncation check: eliminating Bowl Games and Conference Championship games

Variable	I	II	III	IV	V	VI
Win	197.8***	196.3***	252.6***	193.0***	193.0***	193.0**
	[2.89]	[2.86]	[3.51]	[3.10]	[3.04]	[2.58]
Lose	−312.1***	−306.6***	−272.7***	−319.0***	−319.0***	−319.0***
	[−4.38]	[−4.30]	[−3.63]	[−4.41]	[−4.79]	[−3.77]
Close Win	−4.9	−5.138	−9.613	−6.942	−6.942	−6.942
	[−0.49]	[−0.51]	[−0.90]	[−0.61]	[−0.63]	[−0.63]
Close Loss	28.67**	28.10**	28.00*	28.25	28.25	28.25
	[2.03]	[1.99]	[1.87]	[1.29]	[1.38]	[1.00]
Blowout Win	9.094	9.876	27.57***	17.52**	17.52***	17.52**
	[1.41]	[1.38]	[3.60]	[2.19]	[3.19]	[2.48]
Blowout Loss	−51.91***	−54.42***	−59.52***	−55.85**	−55.85**	−55.85
	[−3.78]	[−3.48]	[−3.52]	[−2.34]	[−2.64]	[−1.67]
Opponent Strength	2.448	2.448	3.56	2.473	2.473	2.473
	[0.52]	[0.52]	[0.72]	[0.39]	[0.50]	[0.42]
Win ∗ Opponent Strength	1.698	1.921	2.132	2.377	2.377	2.377
	[0.36]	[0.41]	[0.43]	[0.40]	[0.49]	[0.40]
Lose ∗ Opponent Strength	8.748*	8.073	9.027*	9.023	9.023*	9.023
	[1.78]	[1.64]	[1.73]	[1.30]	[1.80]	[1.37]
Win ∗ Late in Season	−3.241	−3.135	−7.475	0.644	0.644	0.644
	[−0.49]	[−0.32]	[−0.72]	[0.097]	[0.090]	[0.11]
Lose ∗ Late in Season	46.81***	44.10***	46.09***	47.31***	47.31***	47.31***
	[3.67]	[3.00]	[2.97]	[3.05]	[2.94]	[4.61]
Win/Loss ∗ Home/Away	X	X	X	X	X	X
Close Win/Loss	X	X	X	X	X	X
Blowout Win/Loss	X	X	X	X	X	X
Win/Loss ∗ Opponent Strength	X	X	X	X	X	X
Close Win/Loss ∗ Home/Away		X	X	X	X	X
Blowout Win/Loss ∗ Home/Away		X	X	X	X	X
Blowout/Close ∗ Win/Loss ∗ Late in Season			X	X	X	X
Blowout Win/Loss ∗ Home/Away ∗ Opponent Strength		X	X	X	X	X
Season, Team Effects, Season ∗ Team Effects			X	X	X	X
Team Cluster				X		
Season Cluster					X	
Week of Season Cluster						X
Observations	3492	3492	3492	3492	3492	3492
R^2	0.5	0.5	0.57	0.52	0.52	0.52

Notes: *t*-statistics are in brackets. Each column is a regression on the change in points in the AP poll on game characteristics. Regressions include all games except championship and bowl games. See Appendix A for the definition of variables.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

Table A8. Truncation check: results for teams not in the top 5

Variable	I	II	III	IV	V	VI	VII
Win	254.2***	253.4***	246.1***	300.9***	246.1**	246.1***	254.6**
	[2.89]	[2.88]	[2.77	[3.18]	[2.77]	[2.95]	[2.89]
Lose	−264.3***	−265.4***	−274.4***	−230.1**	−274.4***	−274.4***	−274.4***
	[−2.94]	[−2.94]	[−3.02]	[−2.36]	[−3.32]	[−2.86]	[−3.04]
Close Win	−10.64	−11.04	−12.8	−9.513	−12.8	−12.8	−10.84
	[−0.90]	[−0.93]	[−1.07]	[−0.73]	[−1.00]	[−0.91]	[−0.90]
Close Loss	29.62*	29.26*	30.68*	23.99	30.68	30.68	30.68
	[1.72]	[1.70]	[1.77]	[1.27]	[1.21]	[1.08]	[0.89]

(*continued*)

Table A8. Continued

Variable	I	II	III	IV	V	VI	VII
Blowout Win	18.9	19.37	22.97*	29.20**	22.97**	22.97**	23.52*
	[1.42]	[1.25]	[1.64]	[2.04]	[2.29]	[2.41]	[1.78]
Blowout Loss	−50.14***	−44.90**	−44.79**	−53.47***	−44.79	−44.79	−44.81
	[−3.10]	[−2.44]	[−2.42]	[−2.61]	[−1.70]	[−1.69]	[−1.35]
Opponent Strength	2.406	2.406	2.613	3.053	2.613	2.613	2.683
	[0.39]	[0.39]	[0.42]	[0.45]	[0.39]	[0.36]	[0.35]
Win * Opponent Strength	3.712	3.944	3.957	4.255	3.957	3.957	3.982
	[0.60]	[0.64]	[0.63]	[0.63]	[0.60]	[0.59]	[0.54]
Lose * Opponent Strength	10.19	9.673	9.82	10.55	9.82	9.82	9.734
	[1.59]	[1.50]	[1.52]	[1.49]	[1.50]	[1.43]	[1.16]
Win * Late in Season	−0.778	−1.476	1.293	−7.007	1.293	1.293	2.782
	[−0.095]	[−0.12]	[0.11]	[−0.54]	[0.14]	[0.15]	[0.43]
Lose * Late in Season	37.37**	42.33**	43.64**	35.33*	43.64**	43.64**	43.60***
	[2.48]	[2.44]	[2.50]	[1.87]	[2.41]	[2.19]	[3.33]
Win/Loss * Home/Away	X	X	X	X	X	X	X
Win/Loss * Opponent Strength	X	X	X	X	X	X	X
Close Win/Loss * Home/Away		X	X	X	X	X	X
Blowout Win/Loss * Home/Away		X	X	X	X	X	X
Season Effects, Team Effects			X	X	X	X	X
Season * Team Effects				X	X	X	X
Cluster on Season					X		
Cluster on Team						X	
Cluster on Week of Season							X
Observations	2869	2869	2869	2869	2869	2869	2868
R^2	0.49	0.49	0.5	0.57	0.5	0.5	0.5

Notes: *t*-statistics are in brackets. Each column is a regression on the change in points in the AP poll characteristics. Regressions include all games expect those where the team was ranked one to five in the last poll before the game. See Appendix A for variable definitions and further description.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

Table A9. Specification check: addition of week of season to the specification

Variable	I	II	III	IV	V	VI	VII
Win	192.8***	197.6***	250.8***	250.8***	250.8***	122.5	179.8**
	[2.81]	[2.88]	[3.19]	[3.01]	[3.18]	[1.55]	2.17]
Lose	−289.3***	−287.6***	−257.0***	−257.0**	−257.0**	−352.1***	−331.6***
	[−4.08]	[−4.06]	[−3.22]	[−2.58]	[−2.87]	[−4.27]	[−3.81]
Close Win	−8.352	−6.842	−10.65	−10.65	−10.65	−6.778	−10.56
	[−0.84]	[−0.68]	[−0.81]	[−0.88]	[−1.11]	[−0.68]	[−1.00]
Close Loss	29.64**	29.65**	29.46	29.46	29.46	29.62**	29.65**
	[2.11]	[2.11]	[1.14]	[1.23]	[1.09]	[2.11]	[2.00]
Blowout Win	8.835	9.261	26.89***	26.89***	26.89***	9.36	26.95***
	[1.25]	[1.31]	[4.71]	[3.12]	[4.85]	[1.32]	[3.55]
Blowout Loss	−46.89***	−46.96***	−53.28*	−53.28*	−53.28	−46.70***	−53.36***
	[−3.05]	[−3.06]	[−1.78]	[−2.13]	[−1.40]	[−3.04]	[−3.21]
Opponent Strength	2.448	2.46	3.541	3.541	3.541	2.044	3.125
	[0.52]	[0.53]	[0.56]	[0.44]	[0.54]	[0.44]	[0.64]
Win * Opponent Strength	1.87	1.907	2.123	2.123	2.123	2.325	2.539
	[0.40]	[0.40]	[0.34]	[0.28]	[0.33]	[0.49]	[0.51]
Lose * Opponent Strength	8.350*	8.340*	9.091	9.091	9.091	8.748*	9.508*
	[1.70]	[1.69]	[1.44]	[1.11]	[1.26]	[1.78]	[1.83]
Win * Late in Season	−5.092	−6.027	−8.325	−8.325	−8.325	−10.02	−9.885

(*continued*)

Table A9. Continued

Variable	I	II	III	IV	V	VI	VII
	[−0.53]	[−0.52]	[−0.68]	[−0.81]	[−0.98]	[−0.83]	[−0.80]
Lose * Late in Season	51.18***	49.32***	52.29**	52.29**	52.29***	56.35***	48.14**
	[3.59]	[3.15]	[2.75]	[2.64]	[3.49]	[2.66]	[2.12]
Week of Season		0.283	0.205	0.205	0.205	−9.919*	−9.796*
		[0.29]	[0.16]	[0.19]	[0.23]	[−1.76]	[−1.65]
Win * Week of Season						10.81*	10.23*
						[1.89]	[1.69]
Lose * Week of Season						9.131	10.69
						[1.49]	[1.64]
Win/Loss * Home/Away	X	X	X	X	X	X	X
Close * Home/Away	X	X	X	X	X	X	X
Blowout * Home/Away	X	X	X	X	X	X	X
Close * Home/ Away * Late	X	X	X	X	X	X	X
Blowout * Home/ Away * Late	X	X	X	X	X	X	X
Season, Team Effects			X	X	X		X
Season * Team Effects			X	X	X		X
Season Cluster			X				
Team Cluster				X			
Week of Season Cluster					X		
Observations	3846	3846	3846	3846	3846	3846	3846
R^2	0.5	0.5	0.57	0.57	0.57	0.5	0.57

Notes: *t*-statistics are in brackets. Each column is a regression on the change in points in the AP poll on game characteristics. Column I is a replication of Column VI from Table 3. See Appendix A for further description and variable definitions. ***$p<0.01$, **$p<0.05$, *$p<0.1$.

Table A10. Late in season result robustness check: point results by team rank

	Results for teams ranked				
Variable	1–25 I	1–20 II	1–15 III	1–10 IV	1–5 V
Win	193.7***	183.2***	187.6***	52.81	100.9
	[2.83]	[2.81]	[2.72]	[0.65]	[1.27]
Lose	−292.0***	−324.6***	−322.3***	−438.7***	−374.0***
	[−4.14]	[−4.82]	[−4.53]	[−5.26]	[−4.48]
Close Win	−8.091	−16.92*	−14.28	−16.39	−24.61*
	[−0.81]	[−1.66]	[−1.30]	[−1.39]	[−1.67]
Close Loss	30.06**	31.07**	9.479	−17.12	50.48***
	[2.14]	[2.26]	[0.65]	[−1.13]	[2.71]
Blowout Win	8.472	7.148	9.596	9.906	3.654
	[1.32]	[1.12]	[1.43]	[1.39]	[0.42]
Blowout Loss	−49.50***	−65.79***	−66.24***	−59.75***	−55.40***
	[−3.65]	[−4.86]	[−4.72]	[−3.86]	[−2.85]
Opponent Strength	2.448	2.492	5.432	4.033	2.274
	[0.52]	[0.56]	[1.19]	[0.79]	[0.44]
Win * Opponent Strength	1.676	1.241	−2.351	−1.765	−0.874
	[0.36]	[0.28]	[−0.51]	[−0.34]	[−0.17]
Lose * Opponent Strength	9.082*	11.23**	9.348*	9.022*	5.962
	[1.85]	[2.38]	[1.94]	[1.68]	[1.07]
Win * Late in Season	−4.335	−6.043	−8.271	−9.548	−9.213
	[−0.67]	[−0.93]	[−1.22]	[−1.38]	[−1.16]

(*continued*)

Table A10. Continued

	Results for teams ranked				
Variable	1–25 I	1–20 II	1–15 III	1–10 IV	1–5 V
Lose * Late in Season	48.89*** [3.92]	54.86*** [4.49]	67.40*** [5.26]	88.86*** [6.35]	94.58*** [5.49]
Win/Loss * Home/Away	X	X	X	X	X
Close Win/Loss * Home/Away	X	X	X	X	X
Blowout Win/Loss * Home/Away	X	X	X	X	X
Observations	3846	3486	2894	2047	977
R^2	0.5	0.54	0.58	0.63	0.67

Notes: *t*-statistics are in brackets. Each column is a regression on the change in points in the AP poll on game characteristics. Only Teams Ranked 1-*X* (as given by column heading) before the game was played are included in the regressions. Column I is a replication of Column V from Table 3. See Appendix A for further description and variable definitions.
***$p<0.01$, **$p<0.05$, *$p<0.1$.

Table A11. Late in season result robustness check: point results by team rank

	Results for teams ranked				
Variable	1–25 I	1–20 II	1–15 III	1–10 IV	1–5 V
Win	192.8*** [2.81]	181.2*** [2.77]	187.2*** [2.70]	50.09 [0.62]	101.6 [1.28]
Lose	−289.3*** [−4.08]	−319.7*** [−4.73]	−317.4*** [−4.45]	−439.9*** [−5.27]	−352.7*** [−4.24]
Close Win	−8.352 [−0.84]	−17.08* [−1.67]	−14.45 [−1.31]	−16.79 [−1.42]	−24.78* [−1.70]
Close Loss	29.64** [2.11]	30.57** [2.22]	9.161 [0.63]	−17.08 [−1.13]	51.78*** [2.80]
Blowout Win	8.835 [1.25]	8.333 [1.18]	9.746 [1.31]	11.71 [1.48]	4.097 [0.42]
Blowout Loss	−46.89*** [−3.05]	−66.50*** [−4.32]	−65.30*** [−4.10]	−52.39*** [−3.01]	−65.50*** [−3.00]
Opponent Strength	2.448 [0.52]	2.492 [0.56]	5.432 [1.19]	4.033 [0.79]	2.274 [0.44]
Win * Opponent Strength	1.87 [0.40]	1.387 [0.31]	−2.199 [−0.48]	−1.453 [−0.28]	−0.629 [−0.12]
Lose * Opponent Strength	8.350* [1.70]	10.54** [2.23]	8.535* [1.76]	8.401 [1.57]	3.809 [0.69]
Win * Late in Season	−5.092 [−0.53]	−4.66 [−0.48]	−9.388 [−0.91]	−7.717 [−0.72]	−10.61 [−0.87]
Lose * Late in Season	51.18*** [3.59]	53.82*** [3.87]	67.44*** [4.59]	95.50*** [6.02]	87.59*** [4.54]
Win/Loss * Home/Away	X	X	X	X	X
Close Win/Loss * Home/Away	X	X	X	X	X
Blowout Win/Loss * Home/Away	X	X	X	X	X
Blowout/Close * Win/Loss * Late in Season	X	X	X	X	X
Blowout Win/Loss * Home/Away * Opponent Strength	X	X	X	X	X
Observations	3846	3486	2894	2047	977
R^2	0.5	0.54	0.59	0.63	0.68

Notes: *t*-statistics are in brackets. Each column is a regression on the change in points in the AP poll on game characteristics. Only Teams Ranked 1-*X* (as given by column heading) before the game was played are included in the regressions. Column I is a replication of Column VI from Table 3. See Appendix A for further description and variable definitions.
***$p<0.01$, **$p<0.05$, *$p<0.1$.