

Sabotage in Handicap Contests

Preliminary and Incomplete*

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Abstract

Contests are used by societies to determine the holders of public office. In order to win these contests, candidates can either exert constructive effort to improve their own performance or, alternatively, exert destructive effort in sabotaging their competitors' performances. Handicap contests - where superior participants are *a priori* weakened - are thought to induce greater constructive effort, at least from weaker participants. It is still, however, an open question whether handicap contests also induce more sabotage. We utilise data on 9,646 U.K. horse-races in 2010 to examine a contest environment where there is both handicapping and sabotage. We find that participants in handicap races are substantially more likely to commit sabotage than those competing in non-handicap races. In other words, a levelling of the field increases the likelihood of destruction in contest environments.

JEL Classification: C3, D72, J24

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1 Introduction

Contests - where participants receive prizes based on their relative performance - are used to motivate agents in a variety of settings, including internal promotion tournaments, political races and sports (see Konrad (2009) for a discussion). An uneven contest, however, can fail to elicit significant effort from a weaker participant if they perceive their probability of winning to be too small (Lazear and Rosen (1981) and Runkel (2006)). Empirically, Brown (2008) finds that the presence of a 'superstar' - in this case, an in-form Tiger Woods - serves to reduce the absolute performance (and implicitly, the effort) of his fellow professional golfers. Sunde (2009) finds a similar effect in women's professional tennis.

It would be natural, therefore, to conclude that a firm that uses contests as a motivational tool should either hire workers of similar abilities, or handicap those of superior ability. Similarly, expenditure in political campaigns should be capped - thereby handicapping the candidate with the richest connections - so as to elicit effort from all participants. Such a policy, however, is not without danger. Contests between participants of comparable ability may also see effort diverted to destruction (i.e. sabotage), rather than production. In a political race this may take the form

of negative smear campaigning, rather than a positive focus on the issues. In a firm, sabotage could involve the spreading of malicious rumours about a colleague. Regardless of the setting, any increase in sabotage is to the detriment of the contest designer.

In this paper we capture an environment where there is both handicapping and sabotage, by examining 9,646 horse races run in the U.K. in 2010. Of these, 5,633 (58.4%) are handicap races, where superior horses are forced to carry more weight in order to even the contest. Further, the British Horse-Racing Authority (the regulatory body) investigates ‘interference’ between horses during each race. Interference can include one horse knocking into another horse, a horse forcing another off their racing line, and even cases of a jockey stealing another jockey’s whip during the race.¹ Interference is, in other words, sabotage.

In 2010 alone, there were 2564 jockeys investigated for sabotage, with 847 found guilty. We find that participants competing in handicap races are substantially more likely to commit sabotage than those competing in non-handicap races. In addition, we conduct analysis on the effect of hurdles/jumps on race outcome and sabotage. We find that the outcomes of flat races are more uncertain - as with handicap races - and, secondly, flat races are more likely to be affected by sabotage. In other words, it appears that any mechanism that levels the field - whether it be by removing jumps or introducing a handicapping system - leads to an increase in destructive efforts.

Sabotage in static and dynamic contests has been considered by a number of authors (e.g. Lazear (1989), Konrad (2000), Chen (2003), Kräkel (2005), Amegashie and Runkel (2007), Münster (2007), Soubeyran (2009), and Gürtler and Münster (2010)). Although experimental evidence has been forthcoming (e.g. Harbring *et al.* (2007), Harbring and Irlenbusch (2008), and Carpenter *et al.* (2010)), there has been relatively little field analysis. Notable exceptions include the work of Garicono and Palacios-Huerta (2006), del Corral *et al.* (2010), and Deutscher *et al.* (2011), who examine fouls, as a form of sabotage, in football matches. Our paper is, as far as we are aware, the first to consider sabotage in handicap and non-handicap contests.

The rest of this paper is structured as follows. In Section 2, we outline the data relating to handicapping and sabotage in horse racing, and Section 3 concludes.

¹Lester Piggott is the most famous jockey to commit this offense, stealing the whip of Alain Lequeux in a race in France in 1979 (*The Times*, November 15th 2008). He later explained that Alain ‘did not seem to mind and [had] got no chance [of winning]’ (*The Guardian*, 14th December 2003).

2 Data

We obtained data on 9,646 U.K. horse races in 2010 from Betwise, a betting information company.² This data includes information on the time and date of each race, the class (i.e. the level), the number of horses in each race, the prize money on offer to the winner, and the distance over which the race is run. In addition, we have the type of race (e.g. flat, jump) and whether or not the race was a handicap. In handicap races, horses within a range of abilities are permitted to take part, but stronger horses are given heavier weights so that, in theory, all horses have the same probability of winning.³

Supplementing this race data, we have information on each of the horses competing. This includes the age of the horse, and also the bookmaker odds at the time the race begins, otherwise known as the starting price. Summary statistics on race and horse data can be found in Table 1. As expected, the standard deviation of the Implied Win Probability (calculated from the starting price) is larger for non-handicap races than for handicap races. This reflects the fact that without handicapping, certain horses have very little chance of winning. As for the other observable characteristics of handicap and non-handicap races, the largest difference between the two sub-samples is found in terms of prize money. We also break down races into jump races and flat races. On average, jump races are of a higher level (i.e. closer to the top class 1), run over longer distances, and contested by older horses. In the latter part of this section we control for heterogeneity across all sub-samples.

The final data required relates to interference. The British Horse-Racing Authority (BHA) entrusts their race stewards to investigate and punish cases of interference. Information on all steward's enquiries relating to interference can be found on the BHA web-page.⁴ Below is a typical example of the output displayed after an enquiry, in this case from the 14:00 race at Lingfield on 31st December 2010.

'The Stewards held an enquiry into possible interference inside the final furlong. They found that MUSHY PEAS (IRE), ridden by Cathy Gannon, placed third, had interfered with POPPY GO-LIGHTLY, ridden by Richard Kingcote, unplaced. They found Gannon in breach of Rule (B)54.1

²www.betwise.co.uk

³Full details on the handicapping system can be found on the British Horse-Racing Authority website www.britishhorseracing.com

⁴www.britishhorseracing.com/resources/about/whatwedo/disciplinary/stewardsEnquiries.asp

and guilty of careless riding in that she had maneuvered her mount to the left when not sufficiently clear. They suspended her for one day as follows: Friday 14 January.'

We married the data on interference with the race and horse data described above. For clarity, we will now refer to interference as sabotage. Horses/jockeys were classified as either an alleged saboteur, or both an alleged and guilty saboteur. The illustrative example above was a case of the latter. In our 2010 sample, there were 2564 alleged saboteurs, of which 1717 were not guilty and 847 were guilty.

Our first task is to conclusively establish that handicapping fulfils its role in increasing the uncertainty of an event. To do this, in Table 2 we regress an indicator variable equalling 1 if the favourite (i.e. the best horse) wins the race, and 0 otherwise, on an indicator variable equalling 1 if the horse was running in a handicap race, and 0 otherwise. If the favourite is less likely to win a handicap, this confirms that handicapping creates greater uncertainty in the race outcome. Indeed, in Regression 1 this is the result we find with significance at the 0.1% level. In Regression 2 we include control variables and find the result to be robust. One of these control variables is an indicator for jump races. We find that the favourite is less likely to win the race on the flat. In other words, it appears that the hurdles in jump races 'separate the wheat from the chaff', and increase the probability that the best horse wins the race.

In Table 3 we present the logit regressions relating to sabotage. The dependent variable in Regression 1 is an indicator variable equalling 1 if the horse/jockey was investigated, but not guilty of sabotage, and 0 otherwise. This was regressed on our handicap race indicator variable. The aim of this regression is to capture accidental sabotage. The relationship between accidental sabotage and handicap races is positive and significant (at the 1% level). Control variables are added in Regression 2 and the relationship is now significant at the 0.1% level. Our focus, of course, is on those horses/jockeys that intentionally sabotaged, and were therefore found guilty. In Regression 3, an indicator variable, equalling 1 if the horse/jockey was a guilty saboteur and 0 otherwise, was regressed on the same handicap indicator variable. The relationship is positive and significant (at the 0.1% level), with a larger coefficient for this specification. In our final regression, we include control variables for heterogeneity across handicap and non-handicap subsamples. Once again, the relationship is positive and significant (at the 0.1% level), and gives an odds ratio of 1.664 of sabotage occurring in a handicap race relative to a non-handicap race.⁵

⁵We would like to control for jockey fixed effects in these regressions - as there may be repeat offenders - but

As a final point, we can also use Regression 4 to compare the relative incidence of sabotage in flat and jump races. Our results indicate that flat races - where we have empirically established that the outcome is more uncertain - are more likely to witness sabotage. In other words, it appears that any mechanism which levels the field - whether it be by removing jumps or introducing a handicapping system - substantially increases the likelihood of destruction in contests.

There is one concern, which we have previously alluded to, that may arise from our results. If we assume handicap races are more competitive, horses will spend more time in close proximity to each other in these races. As a result, sabotage may simply be accidental. Accidents are indeed more frequent in handicap races, as Regressions 1 and 2 in Table 3 testify. However, this explanation does not cover our guilty subset, analysed in Regressions 3 and 4 of Table 3, as here sabotage was deemed to be intentional. In fact, judging by the relative size of the coefficients, intentional sabotage is a greater problem than accidental sabotage in handicap races.

3 Conclusion

In this paper we have utilised a unique data set from horse-racing to examine sabotage in handicap contests - where the aim is to artificially create an even contest - and non-handicap contests, which remain uneven. Although it has previously been shown that effort, particularly from weaker participants, is higher in even contests, we demonstrate that participants also display a greater propensity for destructive acts in such contests. This destruction may offset any benefits from capping campaign budgets in political races, or handicapping ‘superstar’ workers in internal labour market contests.

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we do not have complete data on jockey identity. However, given the magnitude and significance of the effects described, it is higher unlikely that such fixed effects would affect our conclusions.

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Tables

Table 1. Summary Statistics		1	2	3	4	5
Races	All (N=9646)	Handicap Races (N=5633)	Non-Handicap Races (N=4013)	Jump Races (N=3008)	Flat Races (N=6638)	
Class	4.31 (1.37)	4.39 (1.23)	4.19 (1.54)	3.72 (1.07)	4.58 (1.41)	
No. of Horses	9.62 (3.39)	9.99 (3.38)	9.1 (3.34)	9.4 (3.67)	9.71 (3.25)	
Win Prize Money (000s of GBP)	11.12 (34.11)	8.17 (17.77)	15.25 (48.22)	10.9 (27.5)	11.22 (36.72)	
Distance (000s of yards)	2.67 (1.38)	2.66 (1.4)	2.69 (1.36)	4.44 (0.75)	1.87 (0.69)	
Horses	All (N=92726)	In Handicap Races (N=56235)	In Non-Handicap Races (N=36491)	In Jump Races (N=28320)	In Flat Races (N=64406)	
Age (Years)	4.91 (2.29)	5.36 (2.28)	4.21 (2.14)	6.89 (2.05)	4.04 (1.8)	
Implied Win Probability	0.1 (0.08)	0.1 (0.06)	0.1 (0.09)	0.1 (0.08)	0.1 (0.08)	

Summary statistics for 9,646 races in the U.K. in 2010. Column 1 encompasses the full sample, with sub-samples relating to handicap races and non-handicap races in columns 2 and 3 respectively. Columns 4 examines jump races and column 5 examines flat races. The top panel focuses on race statistics with individual horse statistics in the bottom panel. The main measure is the mean, with standard deviations in parentheses. Implied Win Probability is calculated as $1/(SP+1)$ where SP is the starting price odds (a summary measure of British bookmaking odds at the start of the race).

Table 2. Favourite Wins		
Dependent Variable: Favourite Wins		
	1	2
Intercept	-0.354013*** (0.032067)	0.153554 (0.175365)
In Handicap Race	-0.499972*** (0.043312)	-0.357605*** (0.047137)
In Jump Race		0.299288** (0.095559)
Class		0.077645*** (0.019972)
No. of Horses		-0.082867*** (0.007223)
Win Prize Money (000s of GBP)		0.001243 (0.000978)
Distance (000s of yards)		0.02881 (0.032403)
(Horse) Age		-0.043293 (0.059390)
(Horse) Age ²		-0.004326 (0.005171)
No. of Obs. where Dep. Var.=1	3337	3337
No. of Obs.	9646	9646
McFadden R ²	0.010728	0.026766

Coefficient estimates when an indicator variable equalling 1 if the favourite won the race, and 0 otherwise, was regressed on an indicator variable equalling 1 if the horse was racing in a handicap race, and 0 otherwise. A logit specification was used and control variables were added in Regression 2. Huber/White standard errors are in parentheses and ***, **, *, and . indicates significance at the 0.1%, 1% 5%, and 10% level respectively.

Table 3. Sabotage				
Dependent Variable: Not Guilty/Guilty Saboteur	1	2	3	4
	Not Guilty	Not Guilty	Guilty	Guilty
Intercept	-4.064242*** (0.040636)	-3.680658*** (0.175023)	-5.01728*** (0.064763)	-5.383301*** (0.266689)
In Handicap Race	0.150495** (0.050771)	0.247636*** (0.056790)	0.499169*** (0.076549)	0.509623*** (0.084462)
In Jump Race		-0.615125*** (0.131823)		-1.082819*** (0.170584)
Class		-0.018365 (0.020035)		-0.032828 (0.027147)
No. of Horses		0.024023*** (0.006964)		0.005364 (0.009685)
Win Prize Money (000s of GBP)		-0.000467 (0.000641)		0.001237* (0.000551)
Distance (000s of yards)		-0.15514*** (0.040661)		-0.128934* (0.053194)
(Horse) Age		-0.135077** (0.050099)		0.198639* (0.087123)
(Horse) Age ²		0.004848 (0.004354)		-0.018976* (0.007842)
(Horse) Implied Win Probability		3.267155*** (0.285081)		4.420384*** (0.393969)
No. of Obs. where Dep. Var.=1	1717	1717	847	847
No. of Obs.	92726	92726	92726	92726
McFadden R ²	0.00052	0.031508	0.004698	0.039686

Coefficient estimates when an indicator variable equalling 1 if the horse was not guilty of sabotage but investigated, or guilty of sabotage after investigation, was regressed on an indicator variable equalling 1 if the horse was racing in a handicap race. A logit specification was used and control variables were added in regressions 2 and 4. Huber/White standard errors are in parentheses and ***,** *, and . indicates significance at the 0.1%, 1% 5%, and 10% level respectively.