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Analytics Brief 2018-02

Modeling the Determinants of Handle: An Analysis of Woodbine Thoroughbred Racing Data

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Using data for 1,515 races over 165 race days from the 2011 Thoroughbred racing season at the Woodbine Racetrack, variability in all sources handle per race was explained as a function of field size, field quality and race conditions, race distance, surface, weather, and an array of seasonality control variables. Several robust and actionable insights emerged:

- Field size proved again to be the leading determinant of per race handle. However, each additional runner in the starting gate provided less wagering increase than the runner loaded just prior; this is diminishing marginal returns per entry (Figure 1).
- Restricted race conditions (i.e., race entries restricted to Ontario-Sired eligible runners) had a negative impact on handle. However, the larger average field sizes in those races did offset this effect consistent with prior studies.
- Diminishing marginal returns from field size and the negative effect of restricted races inspire the concept of return-on-entry (ROE). ROE can be evaluated where any runner in a given race represents an opportunity cost given that entrant may have otherwise filled another race at enhanced value to wagering (i.e., add to a smaller field and/or convert to an unrestricted race entry).
- Handle exhibited positive yet diminishing returns to race quality where outlier major stakes race events are controlled for separately in the econometric model.
- Races taken ‘off-the-turf’ suffer increased wagering penalties *in addition* to the impacts of reduced field size due to scratches.

- Finally, the data harbors a number of incidents where races aired on a ‘tape delay’ (i.e., not live) basis through the major distributing television/wagering network. These incidents proved harmful to total wagering.

A battery of empirical methods was tested with quite similar and robust results. A multilevel mixed effects modeling approach allowed for inferences beyond the 165 races herein and addresses higher-order autocorrelation across races within each race day. This latter point we dub ‘wagering inertia’ indicated handle in nearby races (i.e., race two and race one, or race three and race one) was not surprisingly correlated but handle in more distant races (i.e., race seven and race one) was not. On average 80 percent of the variability in handle per race day was explained by the model with highly statistically significant parameter estimates on not only key explanatory variables but also the usual seasonality and other control variables. Given only one race season is considered at one track, a hedonic specification is appropriate.

Research access to customer and track-level wagering data, horse racing performance data, and related sports betting data enables broader and deeper insights for the long-term benefit of the horse industry.

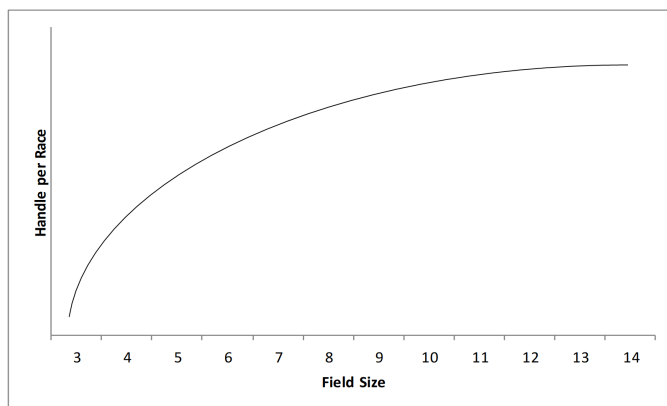


Figure 1. Diminishing marginal returns to handle from growing field size

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