Winners Do It Differently!

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Introduction/Background/Purpose
Do winning teams play differently than losing teams? The recent growth in sport analytics has provided data for academics to examine a wide variety of sport related phenomena not previously possible (Alamar, 2013; Fry & Ohlmann, 2012). This study uses in-game information to examine team’s risk preferences and their impact on team performance. Previous related research has analyzed the effects of incentives caused by rule changes on team play (Abrevaya, 2004; Kawaura & La Croix, 2007; Banerjee, Swinnen, & Weersink, 2007; Easton & Rockerbie, 2005; Longley & Sankaran, 2007; Russell, & Van Beek, 2008; Shmanske, & Lowenthal, 2007; Williams, Hughes, & O’Donoghue, 2005). The findings largely suggest that teams respond to incentives, although sometimes there are unintended consequences to the rule changes that resulted in suboptimal outcomes in terms of their desired effects (Longley & Sankaran, 2007). Our article is different than the previous related research in that we examine team behaviours under the existing in-game incentive schemes to discern whether team’s optimally manage their risk preference to maximize the likelihood of winning games. We hypothesize that high performing teams have flexible risk preferences that change throughout the course of the game and that low quality teams do not, and that these behaviours contribute to winning beyond their relative roster quality.

Methods
We analyze the sport of professional hockey, a fast-paced sport consisting of constant flow and where there is an intrinsic tradeoff between offensive and defensive production, resulting in an environment where teams are required to dynamically alter their in-game playing style, in terms of balancing risk and reward, to maximize their chance of winning the game. Our data set consists of every National Hockey League goal scored during the 2009-10 through 2013-14 seasons (37,468 goals), which includes score and time remaining in the game-state information relative to the occurrence of each goal event. To test our hypothesis, we leverage the fact incentive asymmetries, in terms of winning, exist across competing teams to score and allow goals (McEntire, 2000; Mongeon & Longley, 2013; Mongeon, Mittelhammer & McCluskey, 2014). As illustrated by Mongeon & Longley (2013), the cost of a goal allowed is greater than the benefit of a goal scored when teams are leading, and vice-versa when teams are trailing; and that these incentives vary with the amount of time remaining in the game. A stochastic-frontier regression-based method estimates the marginal effects of goals scored and allowed across these score and time remaining in the game-states, while holding constant team quality. These estimates form the basis of our hypothesis tests which compare them across teams.

Findings/Contributions/Conclusions
Preliminary results suggest that high quality teams manage the benefit and cost incentive better than low quality teams. For example, during the 2013-14 season, the first place regular season team, Boston Bruins, allowed approximately 0.10 fewer goals against per minute than the last place Buffalo Sabres. While our method and results will be of interest to sport managers and analytic practitioners, our primary contribution is in the discernment of optimal risk preferences relating to outcomes. It is certain that sport economics will be interested in theory, method, and results; so will organizational theorists concerned with investigating decisions within the greater context of organizations. It is also our aim to demonstrate that in-game sport contest information is a fruitful area for academics to examine and test hypothesis.