THE HAZARDS OF MORAL HAZARD: 
COMMENT ON GOFF, SHUGHART, AND TOLLISON

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Goff et al. [1997] argue that the sharp increase in the number of hit batters after the adoption of the designated hitter rule is due to moral hazard. I argue instead that simple changes in the composition of batters faced explains much of the observed effect. Pitchers are bad hitters and therefore are much less likely to be hit than their designated hitters. Furthermore, there is no correlation between the frequency with which individual pitchers hit opposing batters and their personal likelihood of being hit by a pitch while batting, contrary to the predictions of the moral hazard model. (JEL D81, 128)

I. INTRODUCTION

In a recent study, Goff, Shughart, and Tollison [1997] demonstrate that the adoption of the designated hitter rule in the American League is associated with a sharp increase in the number of hit batters. These authors suggest an intriguing economic explanation for this empirical regularity: since pitchers in the American League no longer have to bat and risk being hit by pitches themselves, they do not face the full cost of their actions when hitting opposing batters, leading to a classic moral hazard problem.

It is important to note, however, that the reduced-form empirical strategy used by those authors has no power to distinguish between such a moral hazard story and other competing explanations. Foremost among the other explanations is a simple compositional change in the type of batter faced. Pitchers are by-and-large very poor hitters, making the marginal cost of a hit batter when a pitcher is at the plate high relative to that of other batters. Consequently, pitchers are only roughly one-third as likely to be hit by a pitch as are other batters. With the adoption of the designated hitter rule, pitchers are replaced at the plate by designated hitters who are far more effective batters and therefore more likely to be hit batters. Thus even if there is no change in the rate at which any batter of a given skill level is a hit batters (i.e. no change in behavior on the part of pitchers), the number of hit batters will rise when the designated hitter rule is put into effect.

Using data from 1993–1996, I demonstrate in this paper that compositional effects alone explain over 80% of the observed cross-league difference in hit batters in my sample. Excluding pitchers, National League batters are hit by a pitch once every 115.4 at bats and American League batters are hit every 114.5 at bats, suggesting little if any moral hazard once compositional differences are eliminated. In fairness to Goff et al., however, it should be stressed that the observed gap in hit batters between the leagues is smaller in my sample than in theirs, so that it is unlikely that compositional effects alone can explain their entire finding. 1

A number of other factors, however, further call into question the plausibility of the moral hazard argument. First, the very low rate of pitchers being hit by pitched balls when at the plate implies that only rarely are pitchers actually punished for hitting an opposing batter. Even if it were the case that every instance of a pitcher being hit by a pitch was retribution,

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1. Data on pitchers' batting performance is surprisingly difficult to obtain. Among the rich array of resources for baseball statistics, the only source that lists the number of times pitchers are hit while batting is Carter and Sloan [multiple editions]. The data is for individual pitchers, however, making calculation of the aggregated statistics time consuming. Consequently, I have not attempted to expand the analysis beyond the four years analyzed here.
TABLE I  

<table>
<thead>
<tr>
<th>League</th>
<th>(1) At-bats</th>
<th>(2) Hit batsmen</th>
<th>(3) Walks</th>
<th>(4) Total bases</th>
<th>(5) At-bats/ hit batsmen</th>
<th>(6) At-bats/ walk</th>
<th>(7) Slugging percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>American League total</td>
<td>281,316</td>
<td>2,456</td>
<td>231,349</td>
<td>124,513</td>
<td>114.5</td>
<td>9.0</td>
<td>.443</td>
</tr>
<tr>
<td>National League total</td>
<td>279,317</td>
<td>2,325</td>
<td>25,819</td>
<td>113,584</td>
<td>120.1</td>
<td>10.6</td>
<td>.407</td>
</tr>
<tr>
<td>Pitchers</td>
<td>16,777</td>
<td>50</td>
<td>647</td>
<td>3,207</td>
<td>335.5</td>
<td>25.9</td>
<td>.191</td>
</tr>
<tr>
<td>Non-pitchers</td>
<td>262,540</td>
<td>2,275</td>
<td>25,819</td>
<td>110,377</td>
<td>115.4</td>
<td>10.2</td>
<td>.420</td>
</tr>
</tbody>
</table>

Notes: Data are combined totals for the 1993–1996 seasons. Values in the table are author’s calculations using data in Carter and Sloan [multiple editions]. All data are for batting performance, i.e. the row corresponding to pitchers in the National league is the batting performance of pitchers when they are themselves at the plate.

only one in 50 times would a pitcher be punished for hitting an opposing batsmen. Second, there does not appear to be any correlation between the frequency with which pitchers hit opposing batsmen and the likelihood that the pitcher will himself be hit while at the plate. If retaliation is the motivation for hitting pitchers when at bat, as predicted by the moral hazard model, then there should be a positive correlation between those two variables.

II. FURTHER EXPLORATION OF THE MORAL HAZARD ARGUMENT

Table I presents relevant data by league for the years 1993–1996. In addition, National League batting statistics are broken down into pitchers and non-pitchers. The first four columns provide aggregate totals, the last three columns normalize by at-bats for easier comparisons. A number of important points emerge from Table I. First, comparing American League and National League totals, the elevated rate of hit batsmen in the American League demonstrated by Goff, Shughart, and Tollison [1997] for the period up until 1990 is also present in the more recent data used here. American League batters are hit an additional 131 times over the four year period; normalized by at-bats, American League batters are 5% more likely to be hit by pitches. The difference between the leagues is somewhat smaller than that observed by Goff et al. in the earlier period (roughly 50 additional hit batsmen per year).

Second, the frequency with which pitchers are hit by pitches while batting is very low. Normalized by at-bats in column 5, pitchers are approximately one-third as likely to be hit by a pitch as other batters. This is consistent with pitchers being very poor batters. Pitchers’ slugging percentages are less than half as great as other batters, making the opportunity cost of hitting a pitcher higher than that of a better hitter. Consistent with this explanation, pitchers are also much less likely to be walked than are non-pitchers (column 6). When pitchers are eliminated from the National League calculations—so that the composition of National League batters more closely matches that of the American League—the rate at which batsmen are hit is almost identical to the American League (115.4 vs. 114.5). Less than 20% of the observed variation in hit batsmen across leagues remains once pitchers are removed, leaving little to be explained by moral hazard, at least in the sample examined. Interestingly, the walk differential across leagues, which is affected by composition effects, but is not subject to moral hazard, persists even when pitchers are eliminated from the National League sample.

A third observation emerging from Table I is the rarity with which pitchers are struck by

2. An abbreviated schedule of games was played in both the 1994 and the 1995 seasons due to a players’ strike.

3. Pitchers represent about 6% of the at-bats in the National League and are one-third as likely to be hit. Consequently, the presence of pitchers at the plate can explain roughly a 4% differential in aggregate hit batsmen across leagues. This differential largely eliminates the gap between leagues in more recent years, but could not fully explain the magnitude of the effect observed in earlier years in Goff, Shughart, and Tollison [1997].
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