

C3
HYPOTHESIS

Pythagoras's Petulant Persecutors

Ira Horowitz

University of Florida, FL, USA

Ruggiero *et al.* (1997) argue that the 'Pythagorean Theorem' is an inappropriate basis for evaluating baseball managers and has an illogical arithmetic property that can result in a manager's evaluation being dependent upon the strength of his team. Their argument in the former regard is based on their failure to recognize that the existence of an *ex post* identity does not preclude the development of a related *ex ante* hypothesis; their argument in the latter regard is based on their conviction that their criterion for evaluating managers is correct and any other criterion is incorrect. The present remarks clarify these issues. © 1997 by John Wiley & Sons, Ltd.

Manage. Decis. Econ. 18: 343-344 (1997)

No. of Figures: 0 No. of Tables: 0 No. of References: 3

Over the course of a 37-year academic career, I have published approximately 125 papers and have written several others that never made it into print. Based on this total, I estimate that I have received close to 300 outright rejection letters from journal editors. Thus, on the average of once every six weeks for the past 37 years I have been told that my work does not pass muster. That's a humbling experience. The defense that I have developed in the face of such an onslaught is a very thick skin. This reply is not being written because Ruggiero *et al.* (1997) hit a tender nerve; they would have a hard time finding one. Indeed, after reading each of two earlier drafts of their Comment I recommended publication, subject to revision. I very much like what they have done and their extension of my work. In each revision, however, they chose to ignore several issues that I raised. I still believe some of those issues to be of sufficient import and general interest as to warrant my taking advantage of the opportunity to raise them anew.

Ruggiero *et al.* develop their Eqn (5) as an *ex post* identity that links a team's wins (W) and losses (L) to the number of runs that it scores (TR) and allows (OR). By an analogy that is so familiar I need not even bother defining the terms, $C_i = Y_i - I_i - G_i$ is also an *ex post* identity. Based on the Pythagorean Theorem, however, their Eqn (7), from which my PH measure of managerial performance is estimated, states an *ex ante* hypothesis: notably, when a particular manager's team has a TR/OR ratio, the team's expected ratio of wins to losses, $E[W/L]$, will be

given by $\beta_1(TR/OR) + \beta_2(TR/OR)^2$. Continuing the analogy, this is comparable to stating the *ex ante* hypothesis that $c_t = \alpha_1 + \alpha_2 Y_t + \mu_t$, calling this a consumption function, using the *ex post* data to estimate its parameters, and then asserting that the estimate of α_2 is the marginal propensity to consume. Most economists would judge the latter specification for a consumption function to be simple-minded and erroneous. Ruggiero *et al.* would make the same judgement about the former specification for a team's success, and particularly about the use to which the estimates of β_1 and β_2 , b_1 and b_2 , have been put: namely, to evaluate managers by $PH = b_1 + b_2$. They are entitled to their beliefs. There is, however, nothing inappropriate about the *statistical* procedure.

Ruggiero *et al.* also state that the theorem 'should not be used to model a production process...' Now, to the best of my knowledge I have never claimed that the theorem models a production process. They have raised a strawman. I have never presented the theorem as anything other than an empirical fact of *baseball* life. If one knows nothing about a team except for its run ratio, then $(TR/OR)^2$ usually provides a decent estimate of its W/L ratio. I would nevertheless suggest that the approximation works for two reasons. First, there is the authors' identity argument. Second, and perhaps more to the point here, the numerator in the runs ratio does reflect offensive productivity and the denominator does reflect defensive productivity. If Ruggiero *et al.* want to suggest that whether the theorem works or

1368
HOROWITZ, J.
1997

not is beside the point, and that any self-respecting economist should understand that the only appropriate way to evaluate managerial productivity is to employ a production-function approach (see e.g. Porter and Scully, 1982), I can understand and live with their professional biases. Having a PhD in economics is a weighty cross that many of us have had to bear.¹ In point of fact, I would be delighted to have the world debate and compare the differences between the evaluations and rankings yielded by a classical and sophisticated production-function approach and my own modest Pythagorean-based efforts. For reasons that elude me, Ruggiero *et al.* have steadfastly dismissed my suggestion that they make the comparison themselves.

They assert that 'Apparently, the belief is that an effective manager will forego runs in a ballgame once a lead is obtained, and then use these forgone runs during future games in which his team is behind.' Although they are not entirely off-base here, the same cannot be said of their following statement to the effect that managers try to win each game by as large a margin as possible. Over half a century of watching baseball games leaves me with the impression that when teams get 'safely' ahead, managers start replacing their regulars, they stop stealing bases and invoking the hit and run, and they replace their starting pitchers with lesser-quality hurlers, saving their stoppers for another day. Moreover, they do the same thing when they are far behind. A manager's choice of a pitching rotation and who to match up against whom, when to rest players, and the like, is also critical. I had supposed that major-league managers were hired to win as many games as possible, given the existing talent and expectations for the team, and taking into consideration the standings, the need to develop and/or showcase players, the point in the season, and so forth. Until reading Ruggiero *et al.*, I was unaware of any knowledgeable baseball figure suggesting that managers were hired to win each game by as many runs as possible. Ignorance is bliss.

What, then, led me to encourage publication of their Comment? It is their very clever analysis that is captured in their Eqn (10) and summarized in their Table 2. I will meet my maker regretting that I had not thought of this myself. Their analysis reveals that my approach only ranks Weaver as the best manager of the particular set considered, because he is the better manager when the games are close: that is, 'as long as a team is expected to outscore their opponents by 20%'. Ruggiero *et al.* believe this result to be

'illogical.' Fine. I have clearly and forthrightly stated in print (Horowitz, 1994, p. 190) my belief that the seemingly greater ability to win the close games is precisely what distinguishes the better managers from the rest and that this *should* be the basis for ranking managers, which is why I like the *PH* approach. Others might argue that a criterion such as longevity, which may reflect some combination of a person's ability to get along with the General Manager and the players, the ability to win pennants, and the ability to develop talent, is the appropriate ranking statistic. Still others might want to focus solely on the number of pennants won in the years when the manager's team was the consensus favorite to win the pennant. This is not a matter of one view being 'correct' and the other views being 'incorrect'. Rather, there is an honest and defensible difference in how we look at things. Neither 'logic' nor 'illogic' has anything to do with it. I will take Earl Weaver over Al Lopez any day of the week and twice on a double-header Sunday. So would Porter and Scully (1982, p. 646). The production-function approach does get some things right after all.

Acknowledgement

I gratefully acknowledge Professor Ann R. Horowitz's allowing me to pick her brain over a Saturday-night dinner during which she clarified my thinking on the *ex post-ex ante* issue.

NOTE

1. During my second year as a doctoral student at MIT, I interviewed for summer jobs. One interviewer kindly explained that his company was not interested in hiring PhD economists and that 'We wouldn't hire you if you were Paul Samuelson'. While we were waiting for Professor Robert Solow to show up for his seminar, I was regaling my classmates with this story. The punch line and the laughs came at the exact moment that Solow entered the room. He asked what was so funny, so I repeated the story. Without batting an eye Solow asked: 'Did you tell him that you weren't Paul Samuelson?'

REFERENCES

- I. Horowitz (1994). Pythagoras, Tommy Lasorda, and me: On evaluating baseball managers. *Social Science Quarterly*, 75, 187-94.
- P. K. Porter and G. Scully (1982). Measuring managerial efficiency: the case of baseball. *Southern Economic Journal*, 48, 642-50.
- J. Ruggiero, L. Hadley, G. Ruggiero and S. Knowles (1997). A note on the Pythagorean theorem of baseball production. *Managerial and Decision Economics*, 18, 335-342.