

A Critique of Nardinelli and
Simon's *Quarterly Journal of
Economics* paper

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In a standard presentation we would not typically list the journal but we would like you to list it so we know the journal the paper is from.

Objectives of this Talk

- Provide an overview and critique of Nardinelli and Simon (1990) *Quarterly Journal of Economics (QJE)*
- Discuss how the paper has (and can be) extended
- Discuss how your interests can lead to a potential topic
- Throughout I will discuss dos and don'ts of presenting



Nardinelli and Simon question

Does *consumer* discrimination exist in the market for baseball cards?

(Always tell the audience what question you are answering very early in the talk)



Findings

Evidence supports the hypothesis of consumer discrimination

Cards of black and Hispanic players sell for less than those of white players with comparable performance measures in many of their models

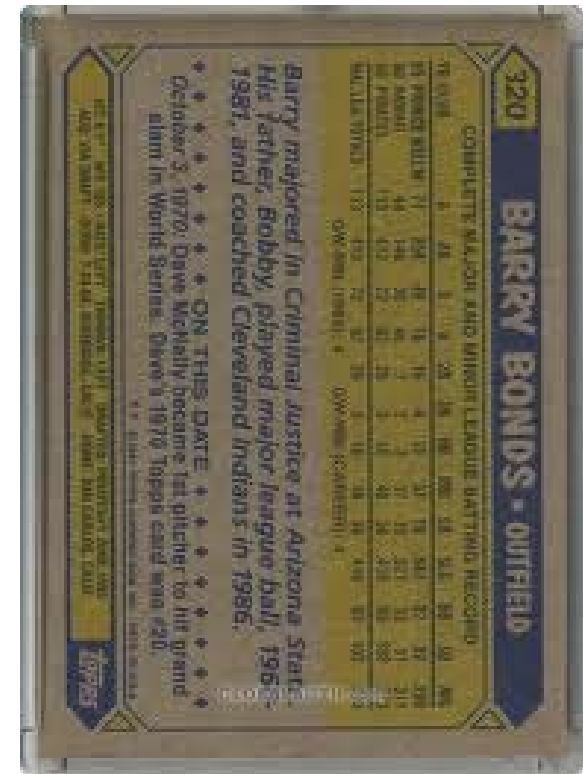
(Always give findings early in the talk when people are paying attention)



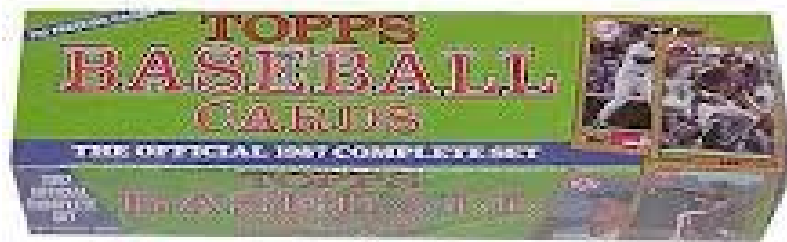
Baseball Card Market

- Picture cards of current (and sometimes former) players
- Biographical and/or statistical information on the back of the card
- Card manufacturers release card “sets” each year
- At times, sets were released in series throughout the calendar year

Front and back of a baseball card



A baseball card set





Exogenous factors that affect card price regardless of the player

- Quality/popularity of sets
- Scarcity of sets/series

Those factors affect the “common card” price of the set. The common card price is the minimum price for any card in the set. The higher quality, more popular, or more scarce the set is the higher the common card price will be.




Nardinelli and Simon Data

- Dependent variable: Use 1989 Beckett prices for cards from the 1970 Topps set
 - Use a natural log transformation of this price relative to the common card price
- Independent variables
 - Hitters: H, 2B, 3B, HR, BB, SB, AB, Seasons, Postseason games, Position, Race
 - Pitchers: W, L, SV, CG, ER, K, BB, IP, H, Postseason innings, Race

Critique: Why use these data?

- Dependent variable
 - Beckett price guide is the industry standard
 - Wanted a long enough lag so that they were studying players whose careers were complete
 - Use natural log (typically) because of fit
 - Use $\ln(\text{price}/\text{common})$ to control for scarcity of series
- Independent variables:
 - Performance measures are statistics with which most baseball ***fans*** would be familiar
 - Could have used a single composite index instead of distinct performance measures
 - Position variables to control for defense
 - Race variable – variable of interest

Too much on this slide!!! Two separate slides.




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Critique: Where did they get the data?

- Player statistics – baseball encyclopedia (there are now downloadable databases)
- Card prices – price guide

But what about:

- Race variables – ???
- Position variables – ???

(Readers should know where they can locate the data so they can replicate the study if they choose)

Summary Statistics

Notice how neatly the table is formatted! No grid lines, reasonable number of decimal places, decimal places lined up.

TABLE I
PERCENT COMMON PLAYERS AND COMMON PLAYER PRICES (IN DOLLARS)

Player ID	Number of players	Percent common players	Common player price	Maximum card price	Mean card price
A. Hitters					
1-132	61	72.1	0.20	18.00	0.538
133-263	67	73.1	0.25	35.00	1.095
264-459	93	64.5	0.30	18.00	0.813
460-546	34	64.7	0.35	18.00	1.221
547-633	44	65.9	0.60	75.00	3.210
634-720	45	71.7	1.50	75.00	4.054
B. Pitchers					
1-132	41	78.0	0.20	2.50	0.328
133-263	43	83.7	0.25	11.00	0.721
264-459	63	81.0	0.30	25.00	0.852
460-546	28	75.0	0.35	4.50	0.639
547-633	29	79.3	0.60	1.50	1.062
634-720	29	85.7	1.50	45.00	3.160

Note. Player ID is the Topps card number. The number of observations is smaller than the total number of cards because many cards are not of individual players. Percent common players is the fraction of players who sold at the common player price.



Theoretical Model

- Fan utility, V , is determined by player characteristics
 - V is increasing in player performance
 - V may be a function of other factors, such as the player's race
 - V is unobserved, so use card price as a proxy



Critique: Theoretical Model

- Not very rigorous
- Most of the assumptions are sensible (what you are typically critiquing in a theoretical model are the assumptions, unless the authors have done the proof incorrectly)
- Main reason for its inclusion seems to be to motivate the choice of a Tobit model for the econometric model



Econometric Models

- Separate models for hitters and pitchers due to different performance measures
- Tobit models using $\ln(\text{price}/\text{common price})$ as the dependent variable
- Probit models using a binary equal to 1 if the player was a “Star”, 0 if not
 - A “Star” is a player who had a card price above the common price



Critique: Why use these models?

- Tobit model
 - Used because there is a lower bound on card price, the common card price
 - Want to know how each of the independent variables affects card prices
- Probit model
 - Used as a control on the influence of very high card prices for some star players
 - Robustness check



Important point on model selection

You will have to determine which econometric models to use when conducting your research. This is why you have taken (and/or are taking) courses in econometrics!!!



Results – Tobit models

- For hitters:
 - Using a single dummy variable for minorities, find a 10% premium for White players
 - Using dummies for Black and Hispanic, found 6.4% and 17% reductions compared to White players
- For pitchers:
 - Using a single dummy variable, find a 13% reduction for minorities
 - Using distinct dummies for Black and Hispanic players, find 16% and 12% reductions



Critique: Tobit model results

- They really only discuss the race variable
 - May be because of reviewer comments
- They make many statements about differences in prices (even for the race variables) but these differences are **NOT** statistically significant
 - See this shortly
- I am not certain if the chi-square tests for equal coefficients are for only Black and Hispanic coefficients or all three races
 - Based on text on page 592 I believe it is just the minority coefficients

TABLE III
LOG PRICE TOBIT REGRESSIONS AND PROBIT REGRESSIONS FOR HITTERS

Dependent variable:*	$P - P_c$		STAR	
	Tobit		Probit	
Estimation method	(1)	(2)	(3)	(4)
NONWHITE	-0.3188 (2.4)	—	-0.8389 (2.8)	—
BLACK	—	-0.2029 (1.4)	—	-0.3892 (1.2)
HISPANIC	—	-0.5516 (2.9)	—	-2.0647 (3.8)
HITS	0.0030 (4.5)	0.0031 (4.7)	0.0066 (2.9)	0.0084 (3.4)
DOUBLES	0.0008 (0.5)	-0.0008 (0.4)	-0.0066 (1.1)	-0.0044 (0.7)
TRIPLES	0.0021 (0.6)	0.0016 (0.5)	0.0132 (1.1)	0.0134 (1.1)
HOME RUNS	0.0032 (4.4)	0.0030 (4.0)	0.0095 (2.8)	0.0084 (2.4)
WALKS	0.0004 (1.2)	0.0003 (0.9)	-0.0013 (1.2)	-0.0019 (1.7)
STOLEN BASES	0.0002 (0.3)	0.0000 (0.1)	0.0026 (1.1)	0.0018 (0.7)
AT BATS	-0.0004 (1.7)	-0.0004 (1.8)	-0.0012 (1.7)	-0.0017 (2.2)
SEASONS	-0.1417 (1.7)	-0.1336 (1.6)	0.0872 (0.5)	-0.0510 (0.3)
POSTSEASON GAMES	0.0262 (6.0)	0.0262 (6.0)	0.0515 (4.0)	0.0538 (3.9)
First base	0.0597 (0.4)	0.0693 (0.4)	0.1939 (0.5)	0.1386 (0.4)
Second base	-0.0474 (0.2)	-0.0328 (0.2)	-0.2694 (0.6)	-0.2622 (0.5)
Third base	0.4496 (2.4)	0.4970 (2.7)	0.7988 (1.9)	1.0389 (2.3)
Shortstop	-0.0839 (0.4)	-0.0699 (0.4)	-0.0203 (0.0)	0.0212 (0.0)
Catcher	0.1402 (0.8)	0.1602 (0.9)	0.0670 (0.2)	0.1439 (0.4)
CONSTANT	-1.2845 (6.3)	-1.3116 (6.4)	-2.0219 (5.3)	-2.1714 (5.4)
SIGMA**	0.6445 (14.8)	0.6421 (14.8)	—	—
Log likelihood (Slopes = 0)	-421.95	-421.95	-224.05	-224.05
Log likelihood	-154.18	-152.49	-88.88	-83.06

Note. 334 observations. Asymptotic t -ratios are in parentheses.

* $P - P_c$ is the log card price minus the log price of the common player. STAR is the proportion of players with a card price greater than the price of the common player, that is, with $P - P_c > 0$.

**SIGMA is the estimated standard error of the regression.

If you are going to cut and paste tables from your paper make sure they are readable in your presentations!!!



Results – Probit model

- For hitters:
 - Find similar results as in their Tobit models
- For pitchers:
 - Find similar results as in their Tobit models



Critique: Probit model results

- Better at discussing statistical significance of individual coefficients
- In the pitcher model, an important variable (wins) is now **NOT** statistically significant
 - If you are a baseball fan this should seem strange



Important points

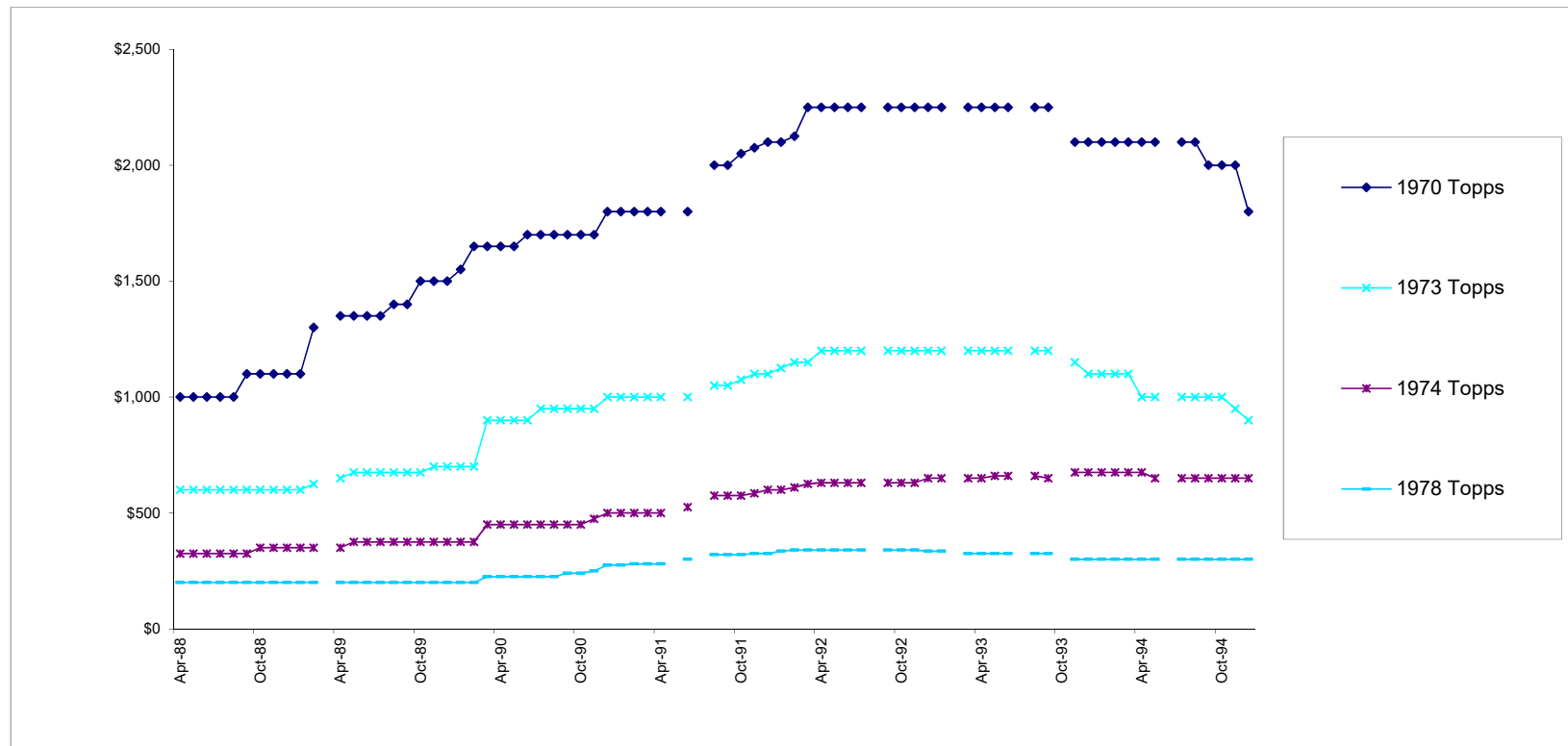
- Make sure that the reader knows what tests you are conducting
- Do not hide from your results
 - Your job is to take the best data you can find and use the best methods to analyze the data
 - If a coefficient estimate is not statistically different than zero, what impact does that variable really have in your model?
- Do not oversell your results



General Critique

- They do well in controlling for some factors (like the card series)
- Dismiss other factors
 - Player's team, in particular the team the player is pictured with on the 1970 Topps card
 - Discuss year of debut, but rookie (first year) cards are/were extremely important to collectors – do not control for these
 - Beckett lists 89 (49 individual player) RCs in 1970 Topps
 - At the time 2nd year cards were also important to collectors

General Critique



- In hindsight, the period from which the authors drew their data was a bubble, and prices for individual cards were much more variable than prices for sets



Extensions

- Use data from other sports with measurable performance (football, basketball, etc.)
- Examine data from other sets and/or time periods
- Examine prices of “rookie” cards – if discrimination exists then one might think it would show up when there is very little known about the player



Examining rookie card prices

- We use the first ever publicly available price for cards released from 1986-1993
- We also use a 17 year later price for the exact same cards
- Use similar models to Nardinelli and Simon
 - Find cards of black players with comparable measurable variables are more highly priced at initial release
 - Find no difference using 17 later prices for comparable players



Look to your own interests for topics

- Many times students want to tackle “big” topics
 - Big topics can be daunting
 - Many people are working on big topics
- Smaller topics may prove more fruitful
 - May want to look at a particular industry/market in which you are interested
 - Perhaps compare across different industries/markets