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THE ECONOMIC EFFECTS OF THE STEROIDS ERA IN MAJOR LEAGUE
BASEBALL ON FAN BEHAVIOR

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ABSTRACT

A scandal can rock any organization to its core with potential lasting effects felt for years. The effects of each scandal are always different and can be significantly hard to determine with the ever-changing circumstances surrounding each individual scandal. Scandals are pervasive and have been felt in every industry. The sports world is no different. Major League Baseball (MLB) was rocked by the Steroids Era in the late 1990s and early 2000s. It involved hundreds of players using illegal anabolic steroids and other banned substances to enhance their performance on the field. Widespread steroid use angered the league and its fans. The MLB implemented new drug testing procedures, suspensions, and fines. Many believed fans would boycott games, causing untold economic effects on the league and its franchises. This thesis studies the first ten years (1998-2007) of the Steroids Era of Major League Baseball. It studies the economic impact of attendance and average ticket prices on each franchise for each year of the study. The results were stunning, but in various ways. Individual franchises could profit from the Steroids Era by having a certain number of scandalized players on their roster. However, as a whole, the league suffered staggering losses, losing over \$100 million in seven of the ten years studied. The implementation of a league-wide drug testing policy at the end of 2002 saw these losses begin to diminish. The effects of this scandal were felt for many years and the league continues to fight the battle against steroid use.

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Introduction

When something goes right, we tend not to hear about it. When something goes wrong, we tend to never hear the end of it. Newspapers and television news programs litter the headlines with everything bad that happened that day. Included in these headlines are often scandals. A scandal occurs when people are shocked or upset because they learn that a person or organization was engaging in behavior that was morally or legally wrong. Scandals may not be everyday news, but when they do occur, they can grab headlines for weeks and even months.

Major scandals spark endless media attention and put that organization under a microscope to be scrutinized by the public eye. The scandal can take untold economic effects on the organization and the industry. The effects can be drastically different from each scandal to the next. It often depends on the people and organization involved and the industry within which the organization operates and most importantly, its consumer base. But, how can we quantify these unpredictable effects as they unfold? A scandal is a subjective event, accompanied by various reactions that range from indifference to outrage. It is hard to assess the degree to which consumers will change their behavior due to a scandal and it differs for each specific situation and each industry.

One such industry that has had its fair share of scandals is professional sports. The consumer base and its reaction to a scandal are extremely important. Growth and profitability of the league are tied directly to fans of the sport. It is the fans and their

reactions who dictate the economic effects the scandal will have on the player, team or league involved. Major League Baseball has been involved with several major scandals over its history, most notably the 1919 Black Sox scandal, the Pete Rose betting scandal, and the Steroids Era. Each of these has supposedly had long-lasting effects on the MLB, but it's difficult to see if the league has been affected economically. In this thesis, I want to determine how Major League Baseball is affected economically by major scandals like this. I will be analyzing the Steroids Era of the late 1990s and 2000s. I will decipher these ambiguous effects and determine the specific economic impact by studying the attendance and ticket prices for all thirty teams during the ten-year period of 1998-2007 using regression analysis.

Background

Brief History

Major League Baseball is the oldest professional sports league in the United States, with its origins dating back to 1869. The MLB's inception in 1901 created a league of 16 teams located entirely in the Northeast and Midwest. Comprised of the National and American Leagues, the MLB became officially recognized as the first "major league" in 1921 under the authority of a single commissioner. In 1947, Jackie Robinson broke the color barrier and became the first African-American to play in the MLB. After 50 years, the MLB began to expand, adding eight new teams by 1969. The MLB expanded to its 30-team format with the addition of the Arizona Diamondbacks and Tampa Bay Rays in 1998.

Major Scandals

Baseball is a game. Major League Baseball, however, is a business and a lucrative one at that. The average MLB team is worth \$744 million in 2013, a staggering increase of 23% from last year (Badenhausen, Ozanian, Settimi, 2013). Like any business or organization, the MLB, its players, and its teams are susceptible to scandal. There have been several major scandals that have rocked the MLB throughout its history. The 1919 Black Sox scandal might be the most infamous of all. Eight players from the Chicago

White Sox, including the famous Shoeless Joe Jackson, were banned from baseball after intentionally losing the 1919 World Series to the Cincinnati Reds in exchange for a bribe. The 1994-95 MLB strike is one of the most infamous work stoppages in sports history. As a result, nearly 950 games were cancelled and for the first time since 1904, the World Series was not played (“1994 Strike”). The strike lasted until April 2, 1995 and the 1995 season began on April 24, 1995, 232 days after the strike began. The Pete Rose betting scandal involved one of the greatest hitters of all time. Pete Rose has the most hits, 4,256, in major league history. After retiring as manager of the Cincinnati Reds, Rose was accused of betting on games in which he played and managed, which is a direct violation of the rules. These allegations were confirmed and Rose finally admitted to betting on baseball in 2004. He has been on the MLB’s permanent ineligibility list since 1989 and is banned from being elected to the Hall of Fame.

The Steroids Era

The Steroids Era is one of the defining moments in recent sports history. The era included numerous scandals and engulfed countless players, with the game’s greatest among them. The Steroids Era is not one specific scandal, but a collection of individual player scandals. Each scandal is defined as an individual player who was using steroids or other performance-enhancing drugs. There were 31 steroids scandals from 1999 to 2008. This period of scandals became known as the Steroids Era.

The use of performance-enhancing drugs (PEDs), which includes human growth hormone (HGH) and anabolic steroids. These allow players to increase body strength

much more quickly than they normally could. This results in greater offensive power. Despite policies stating PEDs were banned by the MLB in 1991, no drug testing efforts were implemented and the widespread use continued without fear of repercussions (“The Steroids Era”). Testing for steroids did not begin until 2003. The number of home runs surged dramatically, with many players passing the 50 home run mark in a single season, a feat that had only been done three times between 1961 and 1994. In 1998, Mark McGwire set the single season home run record of 70, nine more than the previous record of 61 (“The Steroids Era”). In 2001, Barry Bonds broke McGwire’s record by hitting 73 home runs, a record that still stands today. Allegations began to surface that Bonds, McGwire and other players had been using PEDs during their record-breaking seasons. Commissioner Bud Selig hired former U.S. senator George Mitchell to investigate the use of steroids in the MLB and its drug prevention policies. The Mitchell Report, as it came to be known, named 89 MLB players to have used steroids, including Barry Bonds and pitcher Roger Clemens (Nathanson, 2008). Sports Illustrated later named the MLB’s Steroids Scandal the sports story of the 2000s.

The home run chase between Mark McGwire and Sammy Sosa in 1998 is one of the most memorable displays of power baseball had ever seen. With McGwire and Sosa both on pace to break Roger Maris’ single season home run record, a race to 61 engulfed the baseball world that summer. Fans flocked to games when McGwire and Sosa played in their cities. Interest in baseball skyrocketed after it had plummeted due to the players’ strike a few years prior, which had caused the cancellation of the 1994 World Series. This provokes the question of what effects did player use of steroids have on fans and their behavior. This report aims to analyze the economic implications that the steroids

era has had on baseball fans following the Mark McGwire and Sammy Sosa home run duel in 1998.

The home run chase in 1998 is considered by many to be one of the biggest sports achievements of the 1990s, an incredible feat in a decade that included Tiger Woods becoming the youngest winner in tournament history at the 1997 Masters, the Magnificent Seven winning the first ever women's team gymnastics gold medal in the 1996 Atlanta Olympics, and of course Michael Jordan's six NBA championship victories. Watching these two power-hitting giants do what every player can only dream of captivated the baseball world that summer. On September 8, 1998, McGwire hit his 62nd home run and the record was his. He finished the season with a new record of 70, four more than Sosa's total of 66.

The impact of McGwire's and Sosa's summer showdown was felt by the baseball world. The offensive explosion by hitters was extremely exciting to watch and made the casual fan fall in love with baseball. Fans flocked to their games and were glued to the television with a chance to witness a piece of history. The impact would not be positive for long. Following Barry Bonds' historic season in 2001 when he broke McGwire's record, suspicions arose as to how such offensive power had surged as dramatically as it did. Reports surfaced suggesting Bonds and many other players had used steroids and illegal performance-enhancing drugs to boost their abilities. Alleged steroid use appeared to be rampant throughout the league, including both McGwire and Sosa. In the years that followed, the alleged steroid use was confirmed and many in the baseball world saw the achievements as tainted and the time was officially named the Steroids Era. Players and

league officials eventually appeared before a congressional committee and some faced criminal charges for their roles in the scandal.

The aftermath of the scandal left many questioning the integrity of the game of baseball and who was to blame for the indiscretions shown by players and the league. The scandal left many fans outraged at the way it was handled by league executives and the lack of effectiveness from the MLB's drug policy. Many felt the integrity of the players and league executives were failing. Criticism from the media concentrated on placing blame and the players' lack of honesty. Reading about the Steroids Era years later, I began to wonder why there has not been much focus on the economic effects of these scandals on the MLB and its teams. If fans were as outraged as they appeared, surely there would have been some effect on each team's economic performance. I wanted to examine this aspect to see if fans were losing interest in baseball because of the scandals surrounding some of their favorite players.

Literature Review

Examination of the literature in the study of scandals yields valuable information. The most important conclusion is the widely agreed upon fact that the discovery of a scandal has negative effects on the person or persons and the organization involved (Greve, Palmer, and Pozner, 2011). The second conclusion many studies agree upon is that the consequences are never straightforward (Greve, Palmer, and Pozner, 2011). The main cause of this is that reactions to the scandalous behavior differ in each situation. Society, and especially the media, show different levels of affection towards organizations and their reactions are largely based on the outcomes of the scandal. If the outcome is marginal or does not create an impact on consumers for example, they are likely to be indifferent to illicit or immoral behavior. However, some scandals that have profound negative effects on society or a large number of consumers, like the Bernie Madoff case for example, can spark outrage and lead to countless additional effects.

As one of the biggest scandals in the last 20 years, the Steroids Era of Major League Baseball has garnered intense scrutiny from the league and the media, but it does not fall easily into one of these two categories of reaction. Many involved in baseball, including league executives, team owners and front offices, and the media, were very upset that players had used illegal steroids and other performance-enhancing drugs. It has faced drug-testing reform and the implementation of a strict policy with definitive punishments of suspensions and fines and has seen the number of players using steroids decrease over the years. The economic impact on players and teams are well documented

and are significant. Steroids have long been characterized as high-risk, high-reward investments. For players, the most attractive effect of using steroids is that increased offensive productivity leads to increased salary. Players could earn up to an additional \$12 million if they used steroids for the duration of their career, a powerful incentive to engage in steroid use (Lenhardt, 2010). Teams were positively impacted. Calculations indicate that the value of MLB franchises rose dramatically throughout the steroids era. The average team valuation rose from \$140 million in 1994 to \$332 million in 2004 (Lenhardt, 2010). It is arguable that the league was positively affected by the steroids-fueled home run chase between Mark McGwire and Sammy Sosa in 1998 because there were more home runs and more offense in general (De Vany, 2010). This would seemingly cause attendance to increase as games would be more exciting for fans. On the surface, this may seem like the outcome greatly impacted the league and they implemented effective solutions. From this point of view, it seems clear that the Steroids Era should fall into the latter of the aforementioned categories.

Much of society's reaction to the outcome of a scandal ultimately revolves around blame. How is blame associated with society's reaction? When who to blame is definitive, society reacts quickly. When blame is ambiguous, society's reaction is hesitant. A very interesting comparison that has been made on the topic of blame is that of the Enron accounting scandal and the Major League Baseball steroids scandal (Nathanson, 2008). Both are characterized by a slew of missed warning signals and both cases exhibited evidence of wrongdoing long before the scandals truly went public. The failure to identify the misconduct essentially rendered society indifferent because initially, there was no one to blame. Following the steroids scandal, the MLB released

the Mitchell Report, which investigated the use of steroids and performance-enhancing drugs and identified numerous players who violated federal law concerning these illegal drugs (Nathanson, 2008). United States Senator George J. Mitchell led the investigation and conducted numerous hearings that ultimately resulted in Congress proposing a number of bills concerning steroids and professional sports (Saka, 2007). The Mitchell Report's main topic was shifting the blame of the steroids outbreak from individual players to the MLB as a whole. Having spawned a culture of corruption, it was not the MLB players and Enron employees "who brought the company to ruin; it was the people at the top" (Nathanson, 2008). Executives at Enron and the MLB were the ones many correctly chose to blame for their indiscretions and we have seen backlash against baseball's highest level over the past decade.

However, the Mitchell Report was not released until the end of 2007. Fan reaction and its effects are largely unknown prior to this time frame since blame had been tossed around in many different places. It is possible that reaction to the Steroids Era actually falls into the former of the two categories. It is possible that fans were indifferent to the steroid use or actually enjoyed the impact it made on players and the sport. There is little evidence on the subject of fan behavior and how they acted economically following the revelation of each player scandal.

Hypothesis

The most pressing questions I found unanswered were if millions of fans would continue to flock to games in the record numbers the previous years had witnessed and if there would be any fluctuations in ticket prices. The relationship between these variables and the scandal is largely unknown. My hypothesis is that these scandals had little or no effect on the fan behavior metrics of attendance and average ticket prices because fans did not view steroid use negatively. I believe this will be the result because although steroid use caused some negative publicity, players who were using steroids were delivering exciting performances and drawing fans to games.

Sports attract fans for a variety of reasons. Consumers show loyalty to specific brands. The motivation to buy a certain product or to go to a specific store is largely based on this. In sports, this motivation is when fans identify with a certain player or team. "Identification is when an individual reacts to events that occur to the team or player as if the events happened to him or her (What is Sports Marketing, 2014)." The psychology behind this suggests that fans have a deeper and personal bond with their team than consumers do with their favorite brands because they feel like they are truly part of the team (What is Sports Marketing, 2014)." The greater the passion for the team, the more likely fans will support the team monetarily by purchasing tickets, attending games, eating at the concessions, and buying souvenirs and apparel.

Fans identify more with teams when the teams are successful. Teams that can build a roster of players that scores more runs will win more games. When a team wins more games, fans are more likely to come out to the stadium to attend the games. This principle suggests that greater offensive production can earn the team greater revenues from fans. With the overriding belief that steroid usage by players improves performance and creates more offense, steroids have the potential to draw more fans to the stadium.

Methodology

I will be focusing on the ways that the scandals affect fan behavior. The metrics will be total attendance per team and average ticket prices. I chose these metrics because they are all indicative of fan attitudes and reaction to the use of steroids by baseball players and how they are affected by the revelation of the scandal to the public. I will be running a regression analysis using the software program, SPSS, created by IBM, to understand the effects of the Steroids Scandal on Major League Baseball teams. The regression will be run twice to account for both of the dependent variables. I will be studying the time period of 1999-2008. I will be utilizing a database from the Major League Baseball's website for total attendance for each team's home games from 1999-2008. This data is collected annually by the MLB. I will be using the annual report produced by Team Marketing Report for yearly average ticket prices. This data is collected annually and is released by Team Marketing Report prior to the start of each season.

Time Period

I will be analyzing the ten-year period from 1999-2008 using the data from the previous season to determine the economic effects of the steroid use on the current season. This period represents the ten years beginning with the McGwire-Sosa home run chase that occurred in the summer of 1998. With the chase fueling baseball's rise in

popularity after it plummeted following the 1994-1995 player strike, 1998 signaled the start of a decade filled with steroid usage, allegations, and investigations.

Scandal

A team is said to have been affected by the steroids scandal if they had a prominent player implicated by major media sources, suspended by the MLB, or openly admit to using steroids. These players are listed in the “Players Linked to Steroids and Human Growth Hormone (HGH)” database on the Baseball’s Steroid Era website. A prominent player is defined as a player who was an All-Star in at least two seasons. A team will receive a "1" if it has a player(s) that were accused of steroid use during the year(s) that the player was on the team. A team will receive a "0" if this was not the case. This metric is an independent variable.

Scandalized Players

The “Scandalized Players” metric calculates the number of players on the team during that season that were accused of, implicated, or suspended for using steroids. This metric is an independent variable. See *Appendix A* for the *List of Prominent Players*.

Total Attendance

Total attendance is the attendance at the team’s home games for the entire season. Attendance at games is the most obvious indicator of fan interest in baseball since Major

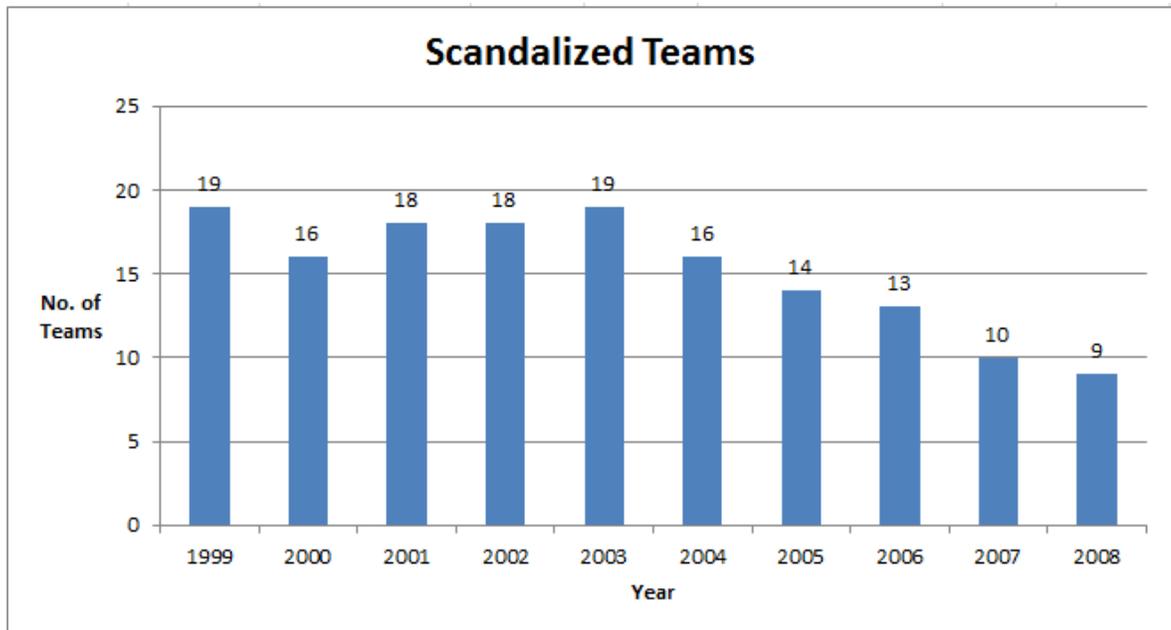
League Baseball draws more total fans each year than any other professional league in American sports. This will be both an independent variable and a dependent variable. I will be utilizing a database from the Major League Baseball's website for total attendance for each team's home games from 1999-2008.

Average Ticket Prices

Average ticket prices for each team are the average cost to gain entrance to their home games. Ticket prices take into consideration the power of substitutable goods fans could partake in instead of attending a game. I will be using the annual report produced by Team Marketing Report for yearly average ticket prices.

Scandalized Teams

Figure 1. Number of teams who had one or more scandalized players on their roster.



Results

Attendance

The results of the first regression are summarized below. The dependent variable in this regression was Attendance.

Table 1. Results of Attendance Regression Analysis.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1230449.205	112199.497		10.967	.000
	TicketPrices	12785.357	6270.196	.109	2.039	.042
	PlayerSalaries	.019	.002	.775	12.724	.000
	Scandal	346796.711	84829.878	.237	4.088	.000
	Number	-150579.589	43551.592	-.221	-3.457	.001
	1999	-93180.761	122843.918	-.038	-.759	.449
	2000	-218687.453	123717.059	-.090	-1.768	.078
	2001	-365281.608	125906.865	-.150	-2.901	.004
	2002	-558370.096	125639.912	-.229	-4.444	.000
	2003	-636142.385	127614.840	-.261	-4.985	.000
	2004	-425768.451	128591.868	-.175	-3.311	.001
	2005	-449129.431	131107.758	-.185	-3.426	.001
	2006	-500972.764	134983.533	-.206	-3.711	.000
	2007	-481021.470	137585.955	-.198	-3.496	.001

a. Dependent Variable: Attendance

The results indicate that the base attendance for a non-scandalized team in 1998 is 1,230,449.21. Each scandalized team experiences an average increase in attendance of 346,796.71 when it has one or more players implicated in the scandal on the roster in a given year. This says that each team sells an additional 346,796.71 tickets just by having a player scandalized by steroids on the team. This is the average for the entire ten year

period. Each team is also affected by the yearly change indicated in the results. For example, in 1999, teams experienced a decrease of 93,180.76, in addition to the 346,796.71 average.

Table 2. Net impact from attendance increases from steroids scandal on MLB as a whole.

Year	Number of Teams	Number of Players	Net Attendance Impact	Pct. Change
1999	19	27	6589137.49	N/A
2000	16	27	4057855.20	-38.42%
2001	18	25	2305966.68	-43.17%
2002	18	31	-332728.20	-114.43%
2003	19	32	-4019894.41	1108.16%
2004	16	26	-4629530.88	15.17%
2005	14	23	-1105604.36	-76.12%
2006	13	22	-1330325.36	20.33%
2007	10	17	-1541760.50	15.89%
2008	9	17	-1208022.84	-21.65%

Note: “Number of Teams” is the total number of teams who had one or more players involved in the scandal on their roster the previous season. “Number of Players” is the total number of prominent players involved in the scandal across all teams in the MLB during the previous season.

The net attendance impact is the number of additional fans attending home games of scandalized teams throughout the entire league. Net attendance impact is calculated by multiplying the number of teams by 346,796.71, the average gain in attendance for each team from being affected by the scandal, followed by subtracting the quantity of the specific yearly decrease in attendance multiplied by the number of teams. The net attendance impact from attendance revenue is positive on the league as a whole for the first three years while the attendance revenue is negative on the league for last seven years. In total, the MLB saw attendance decrease by 1,214,907.18 over the ten year period due to the scandals.

The overall steady decline over time can be attributed to the implementation of an official league-wide testing policy. A joint drug testing program was agreed upon by players and owners beginning with the 2003 season (“A Timeline of MLB’s Drug-Testing Rules”). Immediately, the league sees a decline in additional revenue earned from using scandalized players. The league-wide revenue decreases more with each additional year the testing program has been in place. MLB’s drug policy has been criticized since its inception and has been reviewed and tweaked numerous times. Much of the criticism stems from its lack of effectiveness as a deterrent since many players still test positive for steroids and other performance-enhancing drugs today, most notably Alex Rodriguez’s one year suspension in connection to the most recent scandal in late 2013. However, the results show that the program is working and the number of players using steroids is falling.

Average Ticket Prices

The results of the second regression are summarized below. The dependent variable in this regression was Ticket Prices.

Table 3. Results of Average Ticket Price Regression Analysis.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.010	1.206		4.983	.000
	Attendance	1.129E-006	.000	.132	2.039	.042
	PlayerSalaries	1.158E-007	.000	.546	7.045	.000
	Scandal	.720	.819	.058	.879	.380
	Number	-.606	.416	-.104	-1.457	.146
	1999	.747	1.154	.036	.647	.518
	2000	1.718	1.164	.083	1.475	.141
	2001	2.872	1.188	.138	2.417	.016
	2002	2.115	1.214	.102	1.742	.083
	2003	2.063	1.244	.099	1.658	.098
	2004	3.199	1.217	.154	2.630	.009
	2005	4.019	1.234	.194	3.257	.001
	2006	4.470	1.271	.215	3.516	.001
	2007	4.329	1.295	.209	3.343	.001

a. Dependent Variable: TicketPrices

The results indicate that each team experiences an increase in average ticket price of \$0.72 when it has one or more players implicated in the scandal on the roster in a given year. This says that each the team will increase the average ticket price by \$0.72 just by having a player involved with steroids on the team. This is the average for the entire ten year period. Each team is also affected by the yearly change indicated in the results. For example, in 1999, teams experienced an increase of \$0.75, in addition to the \$0.72.

Table 4. Net impact from ticket price increases from steroids scandal on MLB as a whole.

Year	Scandalized Teams	Number of Players	Net Ticket Price Impact	Pct. Change
1999	19	27	\$0.72	N/A
2000	16	27	\$1.46	102.78%
2001	18	25	\$2.43	66.44%
2002	18	31	\$3.59	47.74%
2003	19	32	\$2.84	-20.89%
2004	16	26	\$2.78	-2.11%
2005	14	23	\$3.92	41.01%
2006	13	22	\$4.74	20.92%
2007	10	17	\$5.19	9.49%
2008	9	17	\$5.05	-2.70%

Note: “Number of Teams” is the total number of teams who had one or more players involved in the scandal on their roster the previous season. “Number of Players” is the total number of prominent players involved in the scandal across all teams in the MLB during the previous season.

The net ticket price impact is the change in average ticket price across all scandalized teams throughout the entire league. Net ticket price impact is calculated by multiplying the number of teams by \$0.72, the average increase in ticket prices from being affected by the scandal, followed by adding the specific yearly increase in average ticket prices.

The net ticket price impact is positive on the league for each year of the ten year period studied and there was a steady overall increase. This indicates that average ticket prices across the league were higher throughout the ten year period studied for scandalized teams compared to non-scandalized teams. Fans were willing to pay more per ticket to see higher-performing players, the likely result of steroid usage.

Discussion

I examined the economic effects of steroid usage by players on fan attendance and average ticket prices at Major League Baseball games from 1999-2008. Teams with a scandalized player experience an average annual attendance increase of 346,796.71. Teams with a scandalized player experience an average annual ticket price increase of \$0.72. There are also specific factors that influence both attendance and average ticket prices on a year-to-year basis.

Practical Implications

Profit Analysis

The results of the regression analysis produced interesting results. When attendance was the dependent variable, attendance decreased over the period. When average ticket price was the dependent variable, prices increased over the period. With the results varying on whether it benefits teams economically from having scandalized players on the roster, I performed a profit analysis for each scandalized team using these two variables. To analyze the gain or loss each team experienced from the scandal, I developed an equation involving attendance and average ticket price. The profit equation is:

(Number of Scandalized Attendance * Average Ticket Price) + ((Total Attendance – Number of Scandalized Attendance)* (.72 + Yearly Ticket Price Factor)

I computed the number of attending fans due to the scandal. To do this, I calculated the scandalized attendance by subtracting the Yearly Attendance Factor from 346,796.71. I then multiplied that by the average ticket price to find the additional attendance revenue teams experienced from the scandals. Due to the scandals, the average ticket price was impacted. All of the fans who would have attended games regardless of the scandals were affected by the price changes. I subtracted the number of scandalized attendance from the total attendance. I then computed the difference in average ticket prices experienced by the scandalized teams. I added \$0.72, the gain teams experienced from the scandals, to the Yearly Ticket Price Factor and multiplied it by the fans who would have attended games regardless of the scandal.

Table 5. Aggregate Net Profit from all 30 MLB Teams each year during Steroids Scandal.

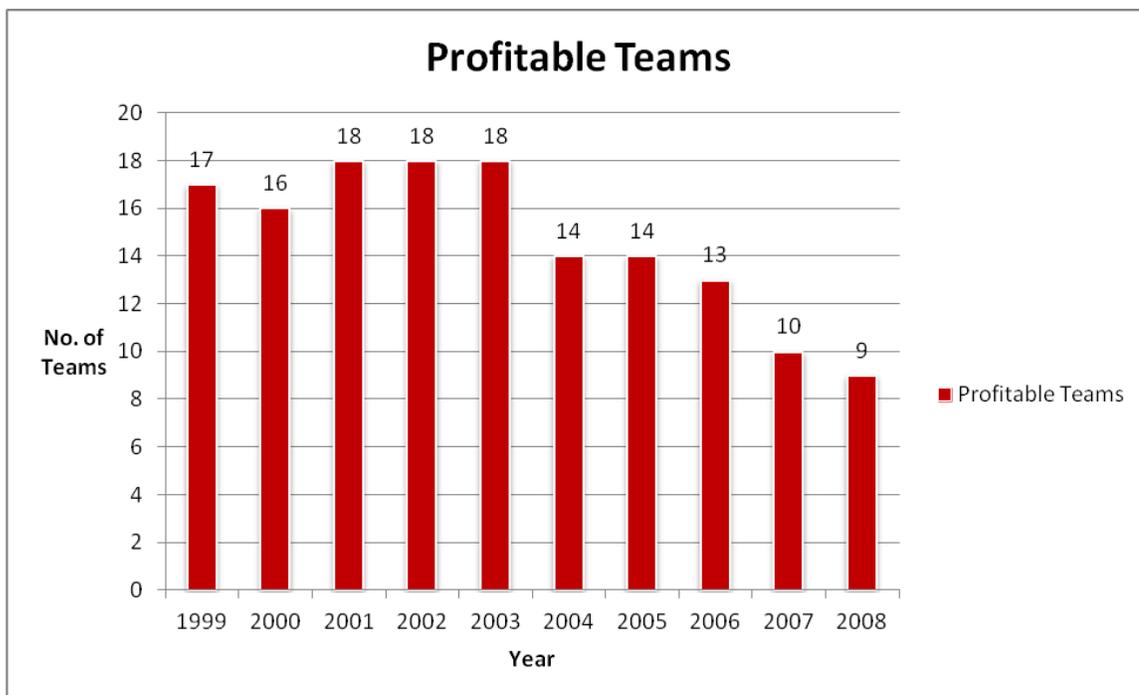
Year	Scandalized Teams	Net Profit	Pct. Change
1999	19	\$62,401,039.09	N/A
2000	16	\$120,216,595.87	92.65%
2001	18	\$150,287,808.78	25.01%
2002	18	\$173,105,815.49	15.18%
2003	19	\$75,230,512.46	-56.54%
2004	16	\$35,687,497.82	-52.56%
2005	14	\$129,843,329.67	263.83%
2006	13	\$139,558,456.31	7.48%
2007	10	\$125,089,597.53	-10.37%
2008	9	\$106,703,969.64	-14.70%
TOTAL	152	\$1,118,124,622.65	

Note: "Scandalized Teams" is the total number of teams who had one or more players involved in the scandal on their roster the previous season.

Major League Baseball experience significant profits as a result of the steroids scandal, totaling \$1,118,124,622.65 over the length of the study. The league gained additional profit each of the ten years. It is clear now that the increase in average ticket prices had a greater impact than the attendance did since profits increased despite attendance decreases. Gains totaled over \$100 million for seven of the ten years studied and all but 2004 saw increases north of \$60 million. 2002 witnessed the greatest gain of over \$170 million that year. That year experienced a very high number of scandalized players (27) and was the year following Barry Bonds, arguably the most high profile steroids user in baseball, and his historic season in which he set the single-season record for most home runs. Profits fell drastically following the 2002 season when an official testing policy was instituted and fell steadily for the remainder of the years studied. Random testing served as a deterrent and the number of scandalized players decreased after the 2002 season. Fans did not react kindly to the implementation of the new steroids policy of the MLB. 2003 and 2004 saw some of the lowest profits for the entire period. However, profits shot right back up to over \$100 million in 2005 and stayed at that level for the remainder of the period studied. The policy clearly did not have a lasting effect on fans.

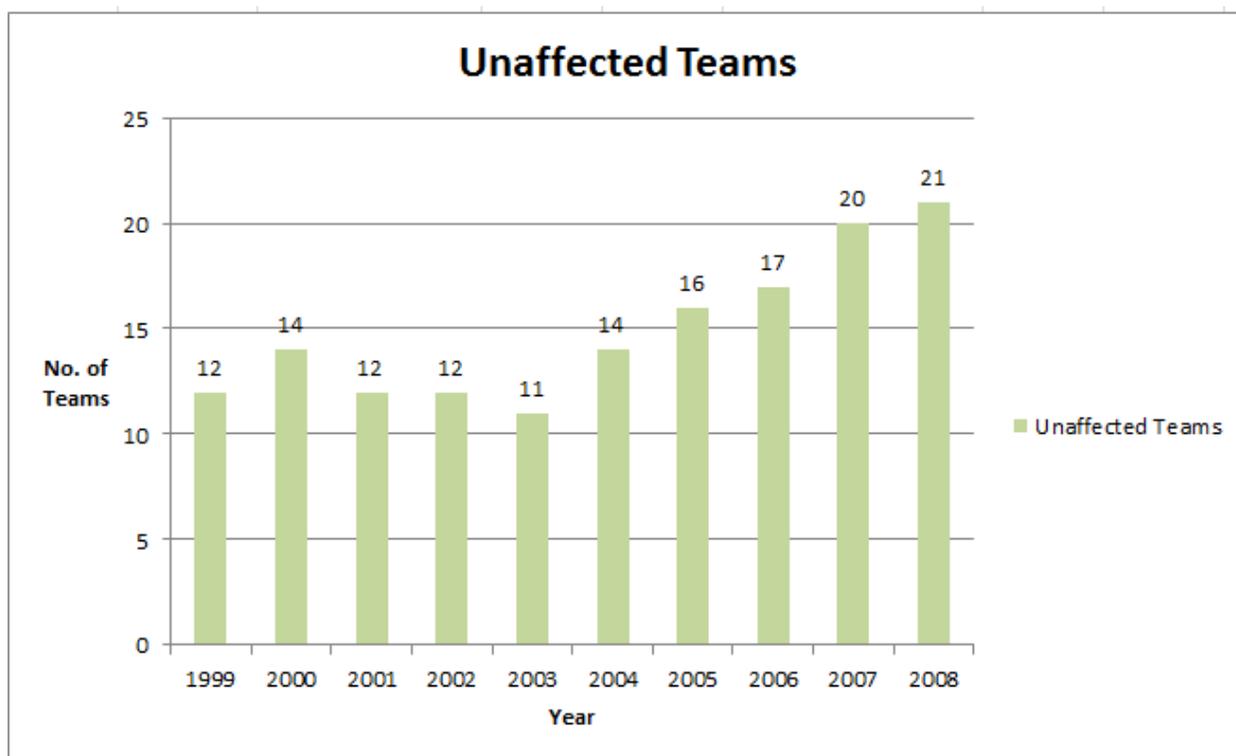
Summary of Teams

Figure 2. Number of Profitable Teams each year.



The number of profitable teams begins a steady decline following the 2003 season, which is consistent with the league's implementation of the testing policy. The number of profitable teams is greatest in 2001-2003, the years with the largest net profits. This further supports the assertion that teams and the league profited from the scandals, even after the implementation of the drug-testing policy. Nearly every scandalized team was profitable. Only four scandalized teams during the entire period were not profitable.

Figure 3. Number of Unaffected Teams each year.



The number of unaffected teams begins a steady climb following the 2003 season, indicating that the league's drug-testing policy is deterring steroid use. The number of unaffected teams is greatest in 2008.

Team-by-Team Profits

Appendix B contains the list of all teams, the number of scandalized seasons they experienced and their total net gain/loss for the duration of the ten-year period.

There were 26 franchises that profited from the use of scandalized players and there were zero unprofitable teams. There were four franchises that did not have any scandalized players on their rosters during the period studied.

An overwhelming majority of franchises profited from the scandal on the whole. The potential to profit from signing scandalized players to your roster was great. The franchises that profited generally only had one scandalized player.

Theoretical Implications

In their study on the consequences of organizational misconduct, Greve, Palmer, and Pozner developed two conclusions: visible negative effects or ambiguous effects. The results of this study indicate that it belongs in the latter category. Scandalized teams saw increases in both attendance and ticket prices as opposed to non-scandalized teams. The overall profits from steroid usage increased league-wide. However, the overall impact is still ambiguous because individual teams were affected differently. Some became profitable as a result of the scandal, but others were not. The variety on an individual level is due largely to each team having a specific consumer base, the city or state in which they play home games, within the league's overall consumer base.

In De Vany's study of steroids and the impact on home runs as well as offensive production, he states that this combination creates a more exciting product for fans. This study proves his proposition as attendance increased when steroid usage by players hit home runs at rates greater than ever. From this economic perspective, the league was positively impacted from steroids as De Vany hypothesized.

Lenhardt's study documented the economic impact on players and teams. With the results of the impact on fans, it confirms that signing scandalized players to your roster is not necessarily a bad strategy. It has the potential to be a smart investment despite having to pay a higher salary. Lenhardt cites that team valuations grew 150% on average during the Steroids Era. The results of this study indicate that some of this growth can be contributed to the impact steroids had on attendance and ticket prices, even if the exact percentage remains ambiguous. It remains ambiguous because all teams saw growth in valuation even if they were unprofitable according to this study. Much of the growth is still unaccounted for. This asserts that there are other factors, unrelated to steroids, in determining the reasons for changes in attendance and ticket prices during this time period.

Limitations

This study identifies only a specific ten-year time period of the Steroids Era. The Steroids Era is believed to have started much earlier than 1999 and has continued after 2008. The time period of this study was chosen because this was the time period during which fans became aware of the usage. This study also has a very specific focus on attendance and average ticket prices as the potential economic effects of fan behavior. There are many other metrics that could be studied to give even more perspective on the overall economic impact steroids had on fans. There is also a simultaneous bias within this study. Attendance and average ticket prices were examined together in the regression analysis. A more detailed account of the effects could be determined if they

were examined separately in the future. It is also possible that there could be other explanations for the changes in annual attendance and average ticket prices. These explanations could have influence the results of the study. A more exhaustive approach could lead to a better overall answer to the effects of steroid use on fan behavior.

Conclusion

Based on the results of this study, I was able to determine that the economic effects of steroids on fan behavior in the MLB were significant. Steroid usage by players was a trying time for the baseball world and continues to be as the Biogenesis scandal involving Alex Rodriguez of the New York Yankees among others dominated the second half of the 2013 season. With improved testing procedures and strict guidelines concerning which supplements are legal for players to use freely, baseball is moving in a positive direction to deter steroid use. However, the question that has to be asked is if steroid usage might just be a good thing in the eyes of the consumer the results of this study support the use of steroids if only because it is financially beneficial for teams to sign scandalized players. More fans attending games benefit from watching more players using steroids hit more home runs. A more entertaining product increases the number of fans who attend games and puts more money in the owners' pockets.

Appendix A
List of Prominent Players

Prominent Players

Last Name	First Name	Year(s)	Team(s)
Bonds	Barry	1998-2007	SFG
Boone	Bret	1998, 1999, 2000, 2001-2005, 2005	CIN, ATL, SDG, SEA, MIN
<u>Caminiti</u>	Ken	1998, 1999-2000, 2001, 2001	SDG, HOU, TEX, ATL
Canseco	Jose	1998, 1999-2000, 2000, 2001	TOR, TB, NYY, CHW
Clemens	Roger	1998, 1999-2003/2007, 2004-2006	TOR, NYY, HOU
Finley	Chuck	1998-1999, 2000-2002, 2002	LAA, CLE, STL
Gagne	Eric	1999-2006, 2007, 2007	LAD, TEX, BOS
<u>Giambi</u>	Jason	1998-2001, 2002-2007	OAK, NYY
<u>Glaus</u>	Troy	1998-2004, 2005, 2006-2007	LAA, AZ, TOR
Gonzalez	Juan	1998-1999/2002-2003, 2000, 2001/2005, 2004	TEX, DET, CLE, KC
Hundley	Todd	1998, 1999-2000/2003, 2001-2002	NYM, LAD, CHC
Justice	David	2000-2001, 2002	NYY, OAK
Knoblauch	Chuck	1998-2001, 2002	NYY, KC
<u>Lo Duca</u>	Paul	1998-2004, 2004-2005, 2006-2007	LAD, MIA, NYM
McGwire	Mark	1998-2001	STL
<u>Neagle</u>	Denny	2001-2003	COL
Ordonez	<u>Magglio</u>	1998-2004, 2005-2007	CHW, DET
Ortiz	David	1998-2002, 2003-2007	MIN, BOS
<u>Palmeiro</u>	Rafael	1998/2004-2005, 1999-2003	BAL, TEX
<u>Petitte</u>	Andy	1998-2003/2007, 2004-2006	NYY, HOU
Piazza	Mike	1998-2005, 2006, 2007	NYM, SDG, OAK
Ramirez	Manny	1998-2000, 2001-2007	CLE, BOS
Roberts	Brian	2001-2007	BAL
Rodriguez	Alex	1998-2000, 2001-2003, 2004-2007	SEA, TEX, NYY
Rodriguez	Ivan	1998-2002, 2003, 2004-2007	TEX, FLA, DET
Santiago	Benito	1998, 1999, 2000, 2001-2003, 2004, 2005	TOR, CHC, CIN, SFG, KC, PIT
Sheffield	Gary	1998, 1998-2001, 2002-2003, 2004-2006, 2007	FLA, LAD, ATL, NYY, DET
Sosa	Sammy	1998-2004, 2005, 2007	CHC, BAL, TEX
Tejada	Miguel	1998-2003, 2004-2007	OAK, BAL
Vaughn	Mo	2001, 2002-2003	LAA, NYM
Williams	Matt	1998-2003	AZ

Note: Players are said to be prominent if they were named to the All-Star team in at least two seasons. All of these players were accused, named, implicated, admitted to or were proven to have used steroids during their careers.

Appendix B
Team-by-Team Profits

Team	Scandalized Seasons	Net Profit
Arizona Diamondbacks	7	\$46,259,335.17
Atlanta Braves	4	\$25,174,605.53
Baltimore Orioles	8	\$60,920,793.08
Boston Red Sox	7	\$40,444,493.76
Chicago Cubs	7	\$47,573,456.49
Chicago White Sox	7	\$29,341,522.50
Cincinnati Reds	2	\$10,144,580.35
Cleveland Indians	5	\$40,278,987.89
Colorado Rockies	3	\$19,180,733.91
Detroit Tigers	5	\$48,298,072.36
Houston Astros	5	\$50,909,812.82
Kansas City Royals	2	\$7,518,700.20
LA Angels of Anaheim	7	\$43,607,532.28
Los Angeles Dodgers	9	\$86,002,340.38
Miami Marlins	4	\$17,948,146.26
Milwaukee Brewers	0	\$0.00
Minnesota Twins	6	\$27,505,636.97
New York Mets	10	\$83,362,233.53
New York Yankees	10	\$110,755,554.21
Oakland Athletics	7	\$29,889,848.65
Philadelphia Phillies	0	\$0.00
Pittsburgh Pirates	1	\$7,350,955.54
San Diego Padres	3	\$22,412,237.39
San Francisco Giants	10	\$92,196,119.13
Seattle Mariners	8	\$64,784,715.76
St. Louis Cardinals	5	\$39,288,577.13
Tampa Bay Rays	0	\$0.00
Texas Rangers	7	\$45,448,369.42
Toronto Blue Jays	3	\$18,699,830.83
Washington Nationals	0	\$0.00

Note: List of all teams and their net profits. Scandalized seasons is the number of seasons in which the team had one or more scandalized players on their roster.

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Education

The Pennsylvania State University, The Smeal College of Business, University Park, Pa

- Class of 2014
- Schreyer Honors College Scholar
- B.S. in Management
- Minors in Economics and Management Information Systems
- Intermediate level knowledge of Spanish – speaking, reading, and writing
- Proficient in SQL and Microsoft Word, Excel, Powerpoint, and Access

Professional Experience

ERNST & YOUNG, LLP, ADVISORY RISK INTERN, PHILADELPHIA, PA, JUNE-AUGUST 2013

- Assisted with Sarbanes-Oxley 404 financial and operational control implementations
- Analyzed control language, developed testing attributes, and created training materials
- Conducted Sarbanes-Oxley testing of financial and operational controls
- Conducted walkthrough meetings with clients discussing processes and controls

THE DAILY COLLEGIAN, STATE COLLEGE, PA

Assistant Manager for Business Operations, August 2012 – May 2013

- Led a team of 10-12 business operations and advertising staff members
- Worked with 11 business managers to increase advertising revenue, readership, and circulation
- Assisted local and national advertisers and customers via email, over the phone, and in our office
- Served as the national client representative for Refuel Now Advertising in New York
- Led department meetings and communicate with operations employees through weekly email updates
- Recruited new staff members and facilitate a semester-long training program

Business Operations Senior Representative, September 2011 – August 2012

- Assist local and national advertising clients in placing display, classified, and web ads
- Performed client relations and customer service tasks relating to billing and publication inquiries
- Responsible for office management during the absence of executive managers

ERNST & YOUNG, LLP EMERGING LEADERS PROGRAM, PHILADELPHIA, PA, JUNE 2012

- Participated in leadership building and networking events with E&Y professionals
- Attended presentations from several service line partners and human resources professionals
- Participated in two interviews with Advisory professionals, learning more about E&Y's advisory services

UPPER DARBY TOWNSHIP RECREATION, TEAM LEADER, UPPER DARBY, PA, Seasonal June 2007 – August 2012

- Managed a staff of 5 youth playground counselors
- Handled all finances and recreation fees as well as maintain each child's forms and emergency contacts
- Supervised seventy-five to one hundred children ages 6-14 in daily activities, including games and arts and crafts
- Resolved conflicts between children and provide fair solutions
- Performed First Aid
- Communicated with parents and guardians concerning their children and behavior

Association Memberships/Activities

- Penn State Dance MaraTHON
 - 2013 Merchandise Captain
 - 2013 Merchandise Committee Member
 - 2012 Finance Committee Member
- 2012-2013 Kent A. Petersen Scholarship Recipient
- National Society of Collegiate Scholars, Penn State Chapter
- Salutatorian, Monsignor Bonner High School, Drexel Hill, PA
- Volunteer – Mothers' Home, Darby Pa