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The Economics of Sports Arenas: A Property Rights Approach

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Research Interests

- Sports economics and applied microeconomics.
- Issues in sports economics: Fan loyalty, free agency, salary disparities, competitive balance.
- Previous research: Fan loyalty
 - Stadium referenda in baseball: Stronger fan loyalty correlates with a higher probability that a referendum will pass.
 - Franchise relocation in football: Stronger fan loyalty dissuades team relocation. Teams commonly move because of low fan loyalty, i.e., low attendance, rather than for stadium concerns.
- **Today: some additional thoughts on stadium economics.**



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Motivation

- In the 1990's municipalities spent **\$5,298m** on 57 new venues in the four major pro sports (NFL, NBA, NHL, MLB).
- Public contribution averaged **\$218m** each (approx. 66% of cost)
 - Average capacity of new arenas: **35,727**
 - Average total cost per seat: **\$6,613**
 - Average public cost per seat: **\$4,534**

- Questions addressed today:

Do team owners internalize the benefits of a new stadium?

If so, how much do team owners internalize?



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Arguments Supporting Public Funding

1. Economic development in the host city.
2. Employment and earnings of local workforce.
3. Tourism to host city.
4. Hosting special events
 - MLB All-Star Game, NFL Super Bowl, NCAA Final Four.
5. Reputation as a “big time” city encourages corporate relocation.
6. Civic pride and quality of living for local population.
7. Increased resources for team owner to hire expensive players and contend for a championship.
8. Stadium costs can be “exported” through sales and excise taxes.



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Arguments Against Public Funding

1. Proponents overestimate benefits and underestimate dollar and opportunity costs.
2. Team owners can raise capital in private financial markets (e.g., selling stocks and/or bonds).
3. Stadiums are expensive ways to spur limited economic growth.
4. Relocation threats generally have little credibility.
5. It is hard to define “public” property rights.
6. Public funding provides a wealth transfer to franchise owners.



Existing Economic Research

- Despite anecdotal evidence and estimates by highly paid consultants, economists have found little evidence that stadiums improve:
 - Per-capita income
 - Unemployment rates
 - Tourism rates
 - Local business relocations
 - Intercity business relocations
 - Sales tax revenues
 - Property tax revenues
- Yet, stadiums are clearly assets that provide value to someone. **Whom?**



Defining the Benefits of a New Stadium?

- Private returns: those internalized by the team owner or other business person
 - In the form of revenues, jobs, higher earnings
- Public returns: those difficult to allocate to specific people
 - In the form of quality of life, city pride and notoriety.



Why Public Funding?

- Arguments for funding:
 - The returns from the stadium asset cannot be internalized by private investors and therefore the stadium will not be privately funded.
 - If stadium is not publicly funded, the stadium will not be built and no benefits (public or private) will be generated.
 - Franchise might relocate if a new stadium is not forthcoming.
- Assumes property rights cannot be completely defined.
 - This assumption is not true.



Determination of Property Rights

- Property rights are determined in contract negotiations between the franchise owner and the host city.
- Over the past fifteen years,
 - Franchise owners often keep the majority of revenues from parking, concessions, advertising, and luxury boxes.
 - Franchise owners often acquire low rent payments, lower sales taxes on tickets, and less responsibility for maintenance and renovations.
- These negotiations can raise tens of millions of dollars a year in revenues for the team owners (*Forbes, 2001*).



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The Benefits of Holding Property Rights

- Team owners internalize some of the returns of a new stadium.
- How?
 - Lease contracts
 - Ticket prices are not fixed
 - Higher ticket prices reflect increased value in attending games
 - Team owners can adjust other prices: concessions, parking, advertising, and merchandise



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New Stadiums and Incentives

- What to do with additional revenue?
 - **Fan Perspective:** Use additional revenue to buy better (more expensive) players and improve team quality.
 - **Owner Perspective:** Keep payroll steady and use revenues to increase profits and the franchise's value.
- This is known as the **principal-agent problem**.
 - As demand/revenue increases after a new stadium, the team owner (**the agent**) may not improve the quality of the team, counter to what the fans (**the principal**) want.
- But why would a team owner not want to improve the quality of their team?



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New Stadiums and Incentives

- Except for personal preference, team owners care about winning only so long as it increases profitability.
- Fans respond to higher (lower) team quality but to different extents.
- Depken (1999) investigates this response in terms of “fan loyalty.”
 - Teams with high fan loyalty have strong attendance even when the team is bad (for example the Chicago Cubs).

Rangers ranked 6th out of 28 U.S. teams.

- There is a limit to what owners will spend on players, thereby limiting a team's overall quality.
- **Example: Relocate the New York Yankees and their \$140m payroll to Kansas City. The Yankees are as good as they were in New York, but they will not make as much revenue, therefore they are not as profitable.**



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Hypotheses Investigated

Previous discussion suggests several questions:

1. How does a new stadium impact attendance?
2. How does a new stadium impact team quality?
3. How does a new stadium impact team payrolls?
4. How does a new stadium impact ticket prices?
5. How does a new stadium impact team revenues?
6. How does a new stadium impact team profits?
7. How does a new stadium impact team value?

Data from 1990-2000 in professional baseball are used to look at general differences.



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New MLB Parks (1990-2000)

Team	Capacity	Year	Cost (m)	Percent Public	Total Public Dollars (m)	Total Cost per Seat	Public Cost per Seat
Devil Rays	46,000	1990	\$171.00	100.00%	\$171.00	\$3,717.39	\$3,717.39
White Sox	44,321	1991	\$167.80	100.00%	\$167.80	\$3,786.02	\$3,786.02
Orioles	48,000	1992	\$228.00	96.00%	\$218.88	\$4,750.00	\$4,560.00
Rangers	49,292	1994	\$196.00	71.00%	\$139.16	\$3,976.30	\$2,823.18
Indians	42,400	1994	\$177.80	88.00%	\$156.46	\$4,193.40	\$3,690.19
Rockies	50,100	1995	\$215.00	75.00%	\$161.25	\$4,291.42	\$3,218.56
Braves	49,831	1997	\$235.00	0.00%	\$0.00	\$4,715.94	--
Diamondbacks	48,569	1998	\$349.00	68.00%	\$237.32	\$7,185.65	\$4,886.24
Mariners	46,621	1999	\$517.60	65.68%	\$339.96	\$11,102.29	\$7,291.99
Tigers	40,000	2000	\$300.00	38.00%	\$115.00	\$7,500.00	\$2,875.00
Astros	42,000	2000	\$250.00	68.00%	\$170.00	\$5,952.38	\$4,047.62
Giants	41,059	2000	\$255.00	3.92%	\$10.00	\$6,210.58	\$243.45
Averages	45,683		\$255.18	64.47%	\$157.24	\$5,615.11	\$3,739.97

Parks in San Francisco and Atlanta built with majority private money.

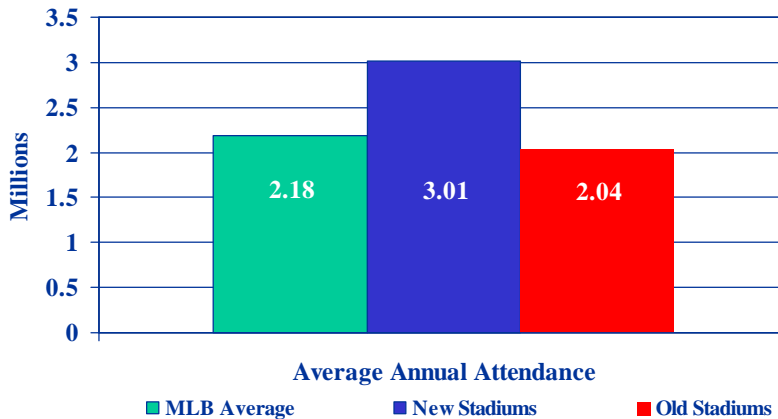
All new stadiums are single purpose, 3 are domed, 8 replaced multipurpose stadiums.



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New Stadiums and Attendance



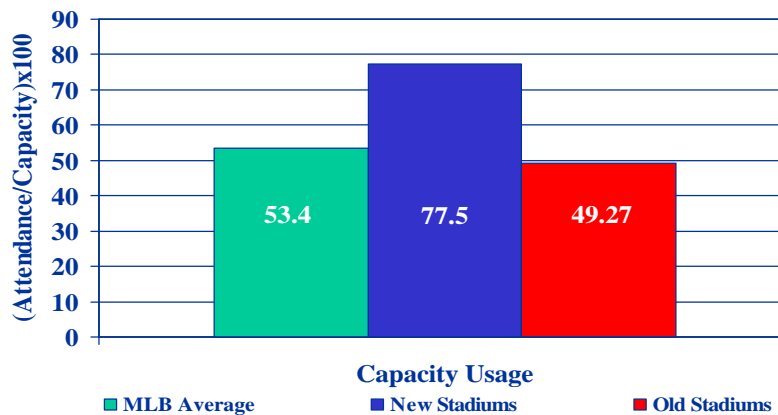
Teams in new stadiums have **964,200** greater attendance on average (**11,900/game**).
New stadiums average **4,911** fewer seats than older stadiums.



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New Stadiums and Capacity Usage



Teams in new stadiums average **28.26%** greater capacity usage.

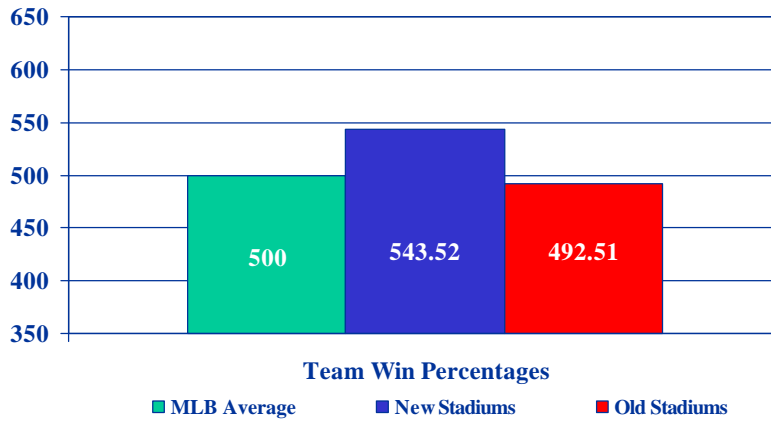
New stadiums average **47,367** seats, older stadiums average **52,278** seats.



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New Stadiums and Team Win%



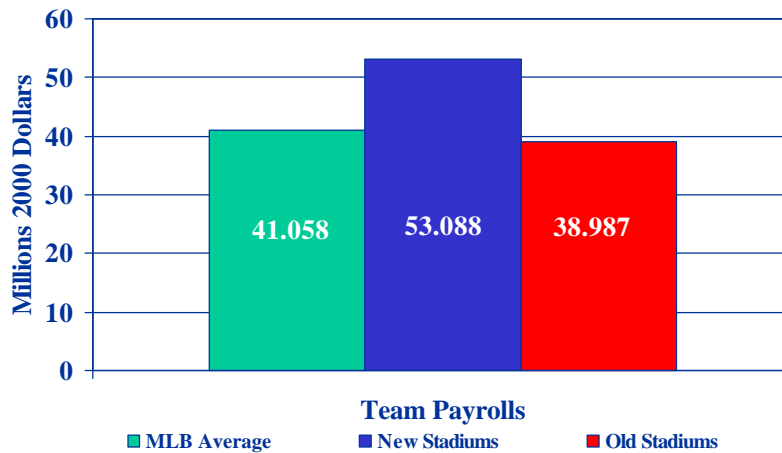
Teams in new stadiums win approximately **8 games** (total) more per season.



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New Stadiums and Team Payrolls



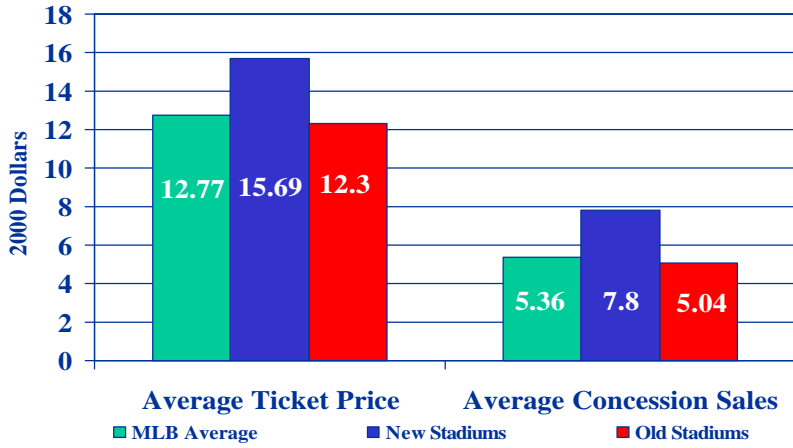
Teams in new stadiums spent an average of **\$14m** (2000 dollars) on player salaries.



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New Stadiums and Prices

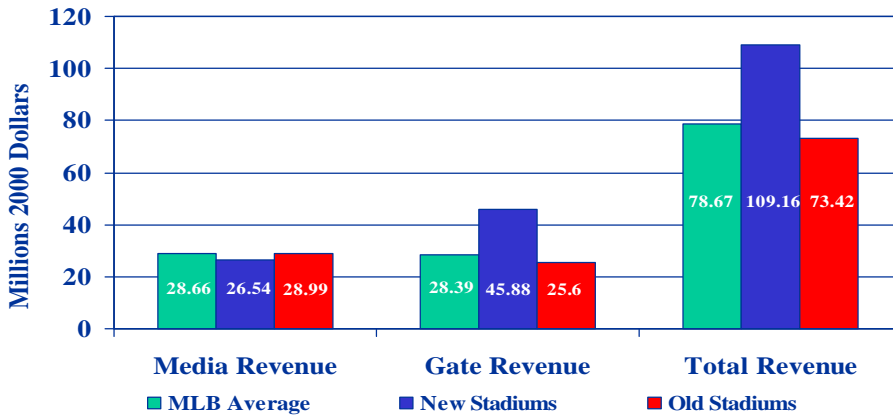


Teams in new stadiums charge **\$3.40** more for an average ticket.

Teams in new stadiums receive **\$2.76** more in concessions per attendee.



New Stadiums and Team Revenues



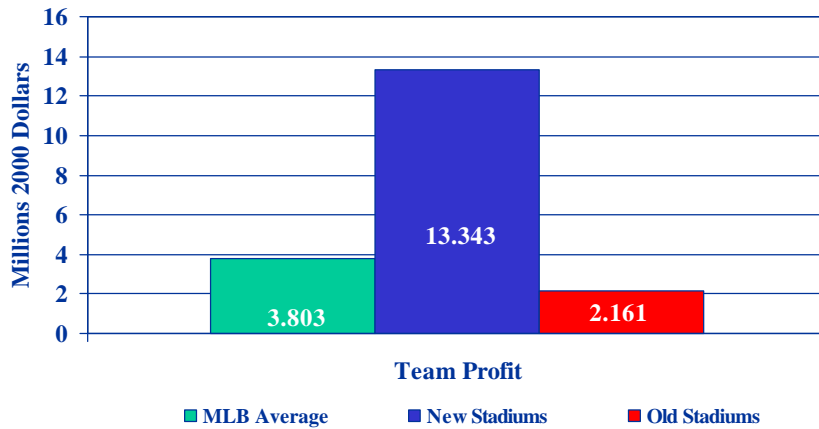
Teams in new stadiums average **\$2.44m** less in media revenues.

Teams in new stadiums average **\$20.2m** more in gate revenues.

Teams in new stadiums average **\$35.7m** more in total revenues.



New Stadiums and Team Profits



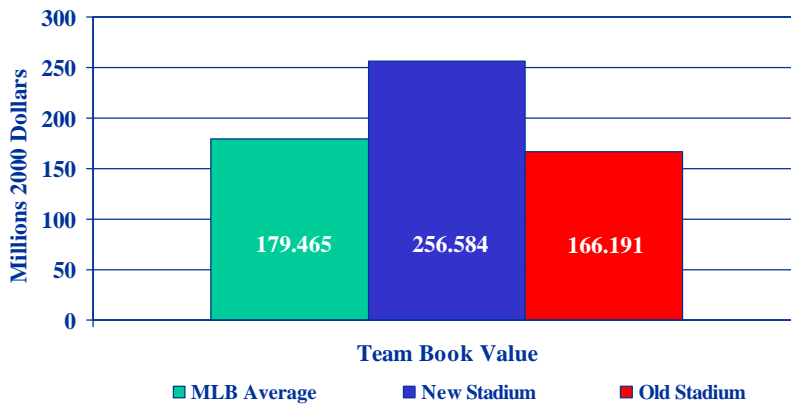
Teams in new stadiums average \$13.34m more in profits.



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New Stadiums and Team Values



New stadium increases book value \$90.39m on average.



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Recap of Difference-in-Means Tests

1. How does a new stadium impact attendance?
 - Average increase of 964,200 per season.
2. How does a new stadium impact team quality?
 - Average 8 wins more per season.
3. How does a new stadium impact team payrolls?
 - Average \$14m more in payroll.
4. How does a new stadium impact ticket prices?
 - Average \$3.40 more per ticket and \$2.76 more in concessions.
5. How does a new stadium impact team revenues ?
 - Increase gate revenue by \$20.2m and total revenue by \$35.7m.
6. How does a new stadium impact team profits?
 - Increase profits by \$13.4m on average.
7. How does a new stadium impact team book value?
 - Increase book value by \$90.39m.



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Conclusions?

- Data from 1990-2000 for MLB indicate that team owners gain considerably from new stadiums, especially when publicly funded.
- Why? Team owners often hold property rights to the benefits of the stadium even if the host-city “owns” the stadium.
- If stadiums were like other assets during the 1990’s then 10-15% annual returns are reasonable:
 - For new baseball stadiums between \$25.5m and \$38.25m per year;
 - However, on average a new stadium increases annual revenue by \$35m;
 - What benefits are “left over” for the public? Perhaps relatively little?
- New stadium increases attendance, prices, revenues, profit & team value.
- These elements should be included in a reasoned debate over public funding for a new stadium.
- **Main point: Stadium debates should be honest and informed.**



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