Today

- Economic impacts of professional sports facilities and teams
- Professional sport's labor market

Sports Facilities

There have been two major periods of construction in major league sport arenas:

- A period beginning around 1990, where teams demanded new stadiums, several major relocations took place, and teams generally moved toward having their own stadium rather than sharing a stadium
  - In 2000 there were 115 professional sports teams in the NHL, NFL, NBA, and MLB
  - 46 of their stadiums were build or renovated between 1990 and 1998
  - 49 were scheduled to be renovated or built in 1999
- A period beginning around 1950 where teams relocated and expanded as the West and South developed economically, this period is characterized by both the threat of entry and actual entry by new leagues

Sports Facilities

Table 1

Expenditures on New Sports Facilities for Professional Teams by Decade

Decade (No. Built)	*Millions of Nominal Dollars*	*Millions of Constant 1997 Dollars*	*Public Share of Total Spending*
1910–1919 (7)			
Mean	$0.46	$7.65	
Total	$3.22	$53.53	0%
1920–1929 (8)			
Mean	$4.23	$39.58	
Total	$33.86	$316.65	23.5%
1930–1939 (6)			
Mean	$1.91	$19.06	
Total	$11.45	$114.39	34.5%
1940–1949 (1)			
Mean	$0.25	$1.72	
Total	$0.25	$1.72	0%
1950–1959 (7)			
Mean	$3.84	$22.65	
Total	$26.87	$158.51	100%
1960–1969 (21)			
Mean	$24.46	$120.92	
Total	$513.69	$2,539.39	63.2%
1970–1979 (25)			
Mean	$70.65	$215.76	
Total	$1,766.15	$5,394.10	94.6%
1980–89 (14)			
Mean	$103.25	$143.77	
Total	$1,445.50	$2,012.73	78.6%
1990–98 (32)			
Mean	$200.16	$211.73	
Total	$6,405.10	$6,775.21	55.3%
1999–[a] (41)			
Mean	$374.89	$275.25	
Total	$15,370.50	$11,285.40	73.4%

[a] Under construction or being planned as of October 1999.

Source: Keating (1999).

Sports Facilities

Both periods have seen public funding for arenas rising quickly in real terms:

- Prior to 1953 only stadiums that were built to attract the Olympics received public funding
- In 1953 that changed:
  - The Boston Braves moved to Milwaukee
  - They moved to a stadium that had been build with $5 million in public funding
- The baby boom increased demand, and jet travel allowed it to be filled
  - This opened up outside options for franchises

Sports Facilities

Why don't private investors just build them on their own?

- A franchise with an existing facility must get enough incremental revenue from a new facility to justify the cost
- Suppose the old facility produced \$100 million in revenue, and the new facility produces \$150 million in revenue
  - Incremental revenue: \$50 million
- The primary issue is that costs rise with the new facility
  - Players are paid in proportion to the revenue they generate and the new facility allows them to be more productive at generating revenues
  - This allows them to claim much of the incremental revenue, say \$20 million
- That leaves \$30 million to build the stadium

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Sports Facilities

Why do owners want new stadiums?

- Generally not because the stadium is physically insufficient
- Owners want improved revenue generating technology:
  - Displays for advertising
  - Naming rights
  - Luxury boxes

Sports Facilities

Leagues use their ability to collude to enforce this balance:

- Leagues require moves and new teams to be approved by vote of all owners
  - If team A leaves a city and team B can immediately move there, team A's negotiating position is weak

Sports Facilities

Why build a stadium and not give a direct subsidy?

- 20-30 year lease contracts help tie a team to a city, and using potential revenue rather than actual revenue keeps the incentive to produce high
- 1986 Federal Tax Reform Act created a perverse subsidy where local tax-payers pay more of the cost
  - The act prohibited federal tax free bonds to be used for construction of facilities where more than 10% of the facility's debt service is covered by revenues
  - This means debt is not as attractive an instrument for cities to use versus taxes
- Transfers to rich owners are not viewed well by the public

Sports Facilities

How do cities pay for the stadiums?

- Property taxes, hotel and motel taxes, and state income tax
  - These are usually progressive or proportional
- Sales taxes, sin taxes, and lotteries
  - Are generally regressive taxes
- Cities have used all kinds of taxes, but they have favored the second type

Sports Facilities

So generally lower income groups pay for stadiums, but who benefits?

- Owners and players split most of a teams revenues and are generally well off
  - In 1999 a bit more than 45% of team owners across sports were also on the Forbes 400 list
- Players are not as well off and there incomes are right tailed and transitory
  - Nonetheless at minimum they are making well above the median household while playing, and most will continue to be well off afterwards

Sports Facilities

So generally lower income groups pay for stadiums, but who benefits?

- The people who attend games (and who are able to watch games on TV) also directly benefit from a facility
- The median income of all sports even ticket purchasers in 1994 was 84% above the median income
- In 1972 that statistic would have been lower:
  - 58% for season ticket holders and 10% for single ticket holders

Sports Facilities

So generally lower income groups pay for stadiums, but who benefits?

- There are also possible positive externalities
  - City image, and the self-esteem of residence: a sense of identity
  - People also may enjoy following a team even if they do not attend the games

Sports Facilities

Some hints that the potential consumer surplus may not be enough at least in the minds of some people:

- If the benefits of the stadium were high enough then owners would not have to rely on arguments about economic development
- Many locations and individuals without a team are able to enjoy the positive externalities from teams in other cities
- The direct benefits may only be worth it to the small group that is fanatical and/or regularly attends games
- Votes have tended to be close

Sports Facilities

So what is the economic development impact on a local community?

- The consensus is that there is no statistically significant impact

Sports Facilities

How do teams claim there is a positive impact?

- Consulting firms that find positive impacts use an input-output model
  - Dollars flow into a city, and this leads to increased economic output
  - This involves estimating the expenditures generated by the facility and its construction, and then apply some multipliers
  - It is very easy to find old estimates of multipliers that will generate the desired results
  - Methodologically this is problematic because it fails to account for the fact that economic activity will be determined by equilibrium in markets

Sports Facilities

Academic economists rely on the quasi-experiments generated from team locations:

- Compare the same city before and after a team
- Compare cities with teams to cities without teams
- Both approaches give the same lack of evidence for an impact

Sports Facilities

Academic economists rely on the quasi-experiments generated from team locations:

- Compare the same city before and after a team
  - Showed that leisure spending does change composition
- Compare cities with teams to cities without teams
  - Showed that high school graduation and police spending were more important predictors
- Both approaches give the same lack of evidence for an impact
  - Some negative results as well

Sports Facilities

This may seem surprising:

- Sports teams garner attention that is disproportionate to their size relative to local economies
- For example:
  - The St. Louis Cardinals account for 0.3% of local GDP
  - Either baseball team in NYC accounts for less than 0.03% of activity
  - Columbus, MSA has GDP: $114 billion
  - Buckeye football revenue: $69.3 million (a bit above 0.06%)

Sports Facilities

This may seem surprising:

- A typical team employed between 70-130 people in its front offices, and 1000-1500 people on game day
- Consider an NFL team playing 10 home games and hiring people for 4 hours
  - This is equivalent to 20-30 full time full year jobs
- That puts full direct employment gains from an NFL team at 160
  - That is 200 jobs short of the average Wal-Mart Supercenter
- All stats from 1999

Sports Facilities

This may seem surprising:

- It is not just direct jobs and spending
- For an upper bound suppose every dollar that is spent at a new arena is matched with a dollar at a local establishment
  - This puts the St. Louis Cardinals for example at 0.6% of GDP
  - Or the Yankees at less than 0.06% of GDP

Sports Facilities

Local substitution plays a role in mitigating the effect of a team:

- Most consumers have inelastic demand for leisure and entertainment
- Thus new sports teams just re-allocate spending from other establishments
- In casinos this meant that tax revenue might increase, but here we are not taxing the teams

Sports Facilities

Therefore teams will need to attract fans from around the country to games:

- Fans from out of area at professional sports games is between 5% and 20%
- This depends on how the "area" is defined:
  - Should be defined as the area effected by taxes
  - If you look at a MSA you get fewer fans from outside the area
  - If you restrict to just a municipality you get more

Sports Facilities

This looks good at a narrowly defined area we get 20% of fans importing spending:

- However, most out-of-state fans turn out to be in town for business
- This means at least a portion of their inelastic entertainment demand would have been spent locally anyway
- Or they may be paid for as guests of local businesses and households

Sports Facilities

There are also leakages to consider:

- Players take between 50% and 55% of revenue, and owners take the remainder
- But both groups are not likely to live all of the time in the community in which the team's facility is constructed
- Further they have low MPC, and may invest money in businesses and financial markets that are not local
  - They also pay high income taxes exporting money to the federal government
- This means that a larger 'area' leads to less estimated leakages and a higher impact of an arena
  - Team's impact estimates sometimes use a larger area for estimating leakages than the area they use for estimating imported spending

Sports Facilities

A rough calculation:

- Estimate a sports multiplier to be 1.25
- So the benefit of the facility would be 1.25 multiplied by the value added to the economy from new local spending
- The opportunity cost is the spending being removed from other local venues, which has its own multiplier
  - This might reasonably be 1.51
- The sports multiplier is lower due to leakages

Sports Facilities

A rough calculation:

- An average baseball team had revenue of \$85 million in 1999
- \$15 million of this is new spending from the MLB's Central Fund
- Suppose 1/7th of the remaining \$70 million is imported spending
- So new spending from outside the area is \$25 million

Sports Facilities

A rough calculation:

- Suppose local net value added is half of that amount: \$12.5 million
  - Then the arena generates 1.25*(\$12.5 million)=\$15.625 million from new spending

Sports Facilities

A rough calculation:

- New spending was \$25 million leaving \$60 million of revenue as re-allocated local spending
- If this had been spent locally it would have generated 1.51*(\$60 million)=\$90.6 million
- Spending it at the arena generates 1.25*(\$60 million)=\$75 million
- So the cost of the new spending is what we forego by moving local spending to the stadium
  - Foregone spending: \$15.6 million
- The net impact is = \$15.625 million - \$15 million = \$25,000

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Sports Facilities

Some possible reforms:

- Public ownership or regulation
  - This may shift incentive problems to political sector
- Divestiture
  - Re-structure pro-sports to be like the NCAA with leagues competing for members
  - Add a rule to prevent leagues from controlling relocations so that teams cannot monopolize lucrative cities/regions

Labor Markets

The key issue in labor markets for professional sports is whether owners can exercise monopsony power:

- Review monopsony diagram

Labor Markets

One way to study this is to look at historical periods where rival leagues threatened to and did enter:

- This occurred during the period in baseball leading up to the formation of the MLB
  - 1876-1920
- During this period baseball faced growing demand so that it is likely variation in player salary reflects changes in market structure rather than fundamentals

Labor Markets

One way to study this is to look at historical periods where rival leagues threatened to and did enter:

- In 1882 the American Association entered the baseball market
- This led salaries to double from 1891-1892
- As soon as the AA was absorbed into the NL salaries dropped
  - In fact owners instituted a cap on player salaries

Labor Markets

One way to study this is to look at historical periods where rival leagues threatened to and did enter:

- In 1902 the American League formed with 8 teams
  - This league attracted many players from the NL for higher salaries
  - It also had higher attendance in its first season
- The NL had instituted a reserve clause–teams reserved the rights to players for their entire careers
  - But state courts did not enforce these contracts across state borders

Labor Markets

One way to study this is to look at historical periods where rival leagues threatened to and did enter:

- In 1903 the leagues merged and played the first World Series
  - Player salaries fell by 15%
- In 1912 the first players union formed, but owners had not legal obligation to negotiate
- In 1913 the Federal league formed, but it again was bought out

Labor Markets

One way to study this is to look at historical periods where rival leagues threatened to and did enter:

- However several of the owners who were not bought out brought an anti-trust suit against the NL in 1922
- The U.S. Supreme court ruled that baseball was not a business and so was exempt from rules against monopoly power
  - This has set the stage for a lot of cultural/legal norms around sports issues

Labor Markets

Figure 1

Average nominal and real salaries, Major League Baseball, 1876–1920

Labor Markets

The second major period of rival leagues occurred in the late 60s through the 80s:

- From the late 60s till 1982 the NFL and MLB had not major rival leagues competing
- Basketball had the American Basketball Association beginning in 1967 and continuing till 1976
  - After the merger 4 of its teams made the NBA playoffs
- Hockey had the World Hockey League beginning in 1971

Labor Markets

The second major period of rival leagues occurred in the late 60s through the 80s:

- NBA players in the early 1970s became the highest paid of any professional team sport's players
- Hockey players earned more money than NFL and MLB players
  - Despite lower demand and falling attendance during the period
- A similar story emerges for the USFL from 1982-1985

Labor Markets

In 1976 free agency was created:

- The MLB Player's Association was not a modern union until it choose Marvin Miller a former head of the United Steelworkers as its leader
- Marvin Miller negotiated the first collective bargaining agreement in 1968
  - He got the MLB owners to include the standard player contract in the agreement
  - This placed the contract and the reserve clause under the control of an arbitration process
- In Dec. 1975 it was ruled that clause only limited a player for 1 year after any current contracts
  - Almost all MLB contracts were 1 year contracts because teams had been protected by the reserve clause

Labor Markets

In 1976 free agency was created:

- This lead the owners and players negotiating the free agency system
  - After 6 years of experience in the league players became free agents
- From 1973 to 1975 salaries rose by 0% to 2%
- In 1977 salaries grew by 38%

Labor Markets

A significant literature has grown up around the idea of monopsonistic exploitation:

- Scully (1974) used a two step regression approach to measure whether players are played their Marginal Revenue Product of Labor (MRPL)
  - First estimate how a players measurable attributes effect the win percentage of a team
  - Second estimate how win percent is effects team revenue
  - Combine the estimates to get at how a players measurable attributes effect revenue
- Prior to free agency Scully estimated players were paid 15% of their MRPL (1970s)
- After free agency he estimated players were paid between 29% and 45% of their MRPL (1980s)
- Similar results have been found for basketball in the same time period

Labor Markets

Applying the Coase Thm. to sports:

- Recall that the Coase Thm. implies that given any property rights arrangement and no transaction costs or informational asymmetries
  - there is an institution that respects those property rights and delivers an efficient allocation
- In other words no matter how we assign players to teams there is an efficient institution which will re-allocate the players efficiently
  - For example trades or a free-agency market

Labor Markets

Applying the Coase Thm. to sports:

- Suppose players do not have free agency and there is a player with an MRPL:
  - \$500 thousand dollars in Cincinatti
  - \$800 thousand dollars in Cleveland
- If teams can trade players bilaterally Cleveland can offer Cincinatti \$500 thousand dollars or the equivalent in players
- In a free agent market the player auctions his services off, and Cleveland again gets the player and pays \$800,000
- The two allocations are efficient–the player ends up with the team that values him most
- The only difference is who gets the surplus

Labor Markets

Applying the Coase Thm. to sports:

- Without transaction costs there is no reason to limit free agency to prevent wealthy teams from paying to win
- Information asymmetry also effects efficiency of sorting
  - In bilateral bargaining when neither side knows how much the other values the player the offers will deviate away from the ones leading to efficient allocations
- Trading creates transaction costs versus cash sales which effects the allocation of players (players do not sort as well to the locations with highest MRPL)
- Player's preferences over locations may be altered by their wealth so that the free-agency system changes the comparative bidding advantages of some locations

Labor Markets

Attempts to measure these issues

- Both the introductions of the NFL draft and the advent of free agency in the professional sports broadly has not altered competitive balance
  - As measured by the standard deviation of winning percentages, or the range of winning percentages
- The MLB draft apparently increased competitive balance in the AL
  - This also coincided with the Yankees fielding poorly performing teams
    - Often this is attributed to their reluctance to hire african-american players
- The correlation each team's winning percentage from year to year fell after the introduction of free-agency
  - But the largest part of the effect was in the early 1990s suggesting team's revenue could have played a role which would effect player allocation under either mechanism

Labor Markets

Attempts to measure these issues

- Evidence suggests that MLB player mobility has fallen after free-agency
- The theorem would predict no effect, so this means there may be some deviations from its assumptions
- In particular wealth effects on player preferences may make players more willing to sign long-term contracts
- This however violates the story that player movement needs to be restricted because they act as mercenaries

Labor Markets

What are the incentive effects of labor contracts:

- There is some evidence that longer term contracts introduce principal agent problems
  - Players with long term contracts spend more time on the disabled list than those with shorter contracts
  - This could be a moral hazard effect: players choose to spend more time on IR than teams may want them too
  - Or it could be adverse selection: players who are more injury prone seek longer term contracts
- Incentive bonuses that reward players for being available for more of the season or post-season
  - Have a negative impact on a player's time on IR helping overcome these problems

Labor Markets

What are the incentive effects of labor contracts:

- For team sports the effect of salary on performance is not easy to measure
  - Individual sports like golf show a positive relationship
  - Tournaments that give a higher gain in salary for placing higher tend to generate better player performance
- Using manager quality measured by
  - The effect of manager experience wining percentage and other characteristics on manager salary
  - Had a positive effect on team performance and player performance after a higher quality manager was highered