Chapter 16: Financing Sports Facilities

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Private Investment

For a private investor, investing in a sports facility is like any other investment that has initial costs and future payoffs

A new facility will be built if the net present value (NPV) of the investment is positive

$$NPV = \sum_{t=1}^{T} \frac{R_t}{(1+i)^t} - I > 0$$

- Where R_t is net profit on operations in period t

- T is the useful life of the facility.

- i is the discount rate.

- I is the initial investment to acquire the land and construct the facility

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Example

Suppose initial construction cost (I) is \$500 million The useful economic life (T) of the new ballpark is 20 years The appropriate discount rate (i) is 10 percent Now assume that the expected operating profit is \$60 million (R_t)per year Is NPV positive?

$$NPV = \sum_{t=1}^{T} \frac{R_t}{(1+i)^t} - I$$

$$= \sum_{t=1}^{T} \frac{60}{(1+.10)^t} - 500$$

$$= 510.8500$$

$$= 10.8 > 0$$

Net present value is \$10.8 million which means it is economically viable.

Taxes on the operating profits, depreciation, and scrap values
Investment decision must include considerations of taxes on the operating profits, depreciation, and scrap values

- Suppose corporate tax rate on profits is represented by τ, so the investor will get to keep $1 - \tau$ each period and turn over $\tau * R_t$ the government
- Tax rules permit the investor to deduct depreciation of the ballpark from R_t
- Let Dt be depreciation (of the facility) in each period. Depreciation is deductible, so taxable income becomes $R_t - D_t$, so amount paid in tax is $\tau(R_t - D_t)$

Therefore,

$$NPV = \sum_{t=1}^{T} \frac{R_t - \tau(R_t - D_t)}{(1+i)^t} - I$$

Now, we add in scrap value:

- Scrap value (S) is what the land and facility are worth at the end of the facilitys useful life
- Scrap value is usually positive, but can be negative (example: land usually appreciates)

Scrap value could take into account land value, cost of tearing down the facility, market value of rubble

Scrap value is discounted to present value (as you dont receive or pay scrap value until it can be scraped) Therefore,

$$NPV = \sum_{t=1}^{T} \frac{R_t - \tau(R_t - D_t)}{(1+i)^t} + \frac{S}{(1+i)^T} - I$$

Example

An investor is considering whether or not to build a new stadium. It will cost $90 million in construction costs, and (for simplified calculations) will have a useful life of 3 years. Tax rate is 20%, and the investor is allowed to deduct $30 million in each year. The expected profit per year is $40 million per year. Scrap value is $20 million. Interest rate is 10%.

$$\begin{aligned} NPV &= \sum_{t=1}^{T} \frac{R_t - \tau(R_t - D_t)}{(1+i)^t} + \frac{S}{(1+i)^T} - I \\ &= \sum_{t=1}^{3} \frac{40 - 0.2(40-30)}{(1+.10)^t} + \frac{20}{(1+.10)^T} - 90 \\ &= \sum_{t=1}^{3} \frac{38}{(1+.10)^t} + 15.03 - 90 \\ &= \$19.53 million > 0 \end{aligned}$$

Therefore, the project is economically viable.

Public Financing

In the distant past, sports facilities were funded by the clubs that used them (and were thus privately owned and privately funded)

Cities became concerned about keeping their team or attracting a team, they began to offer support for stadium construction

To see evolution of stadium financing, watch this gif:

- http://img.gawkerassets.com/post/11/2012/11/arenas-megafile—final.gif

The split between private and public funding depends to some extent on a citys willingness to pay and a clubs willingness to move if the city does not pay

John Olivers take on publicly financed stadiums:

- https://youtu.be/xcwJt4bcnXs?t=2m11s