



## Sports facilities, agglomeration, and public subsidies<sup>☆</sup>



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### ABSTRACT

We develop a monopolistic competition model of urban service consumption and production that includes spatial structure and property values. The model shows that the introduction of a new professional sports facility and team generates agglomeration effects that change the mix of services and property values, and increases local welfare, part of which is transferred to the team as subsidies for the construction of the facility. The distributional consequences of the new facility and the implications of property tax based financing for the subsidy are analyzed.

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### 1. Introduction

Professional sports facilities occupy an important place in the fabric of modern urban society. This importance stems from the iconic nature of these facilities, consumers' interest in the events that take place in them, growing interest in professional sport in society, the rapidly expanding media coverage of professional sporting events, and the passionate emotional relationship between fans and the professional sports teams that play in these facilities. In Chicago, the importance of Wrigley Field differs significantly from the Wrigley Building. Professional sports facilities also make contributions to two critical urban amenities identified by Glaeser et al. (2001) as drivers of urban growth: a rich variety of consumer goods and esthetics related to the physical setting.

New professional sports facilities have a large and increasing economic significance in cities around the world. Zimbalist and Long (2006) report that 234 new professional sports stadiums and arenas were built in the US over the period 1950 to 2010, including projects under way at the time the paper was published, and estimate the total cost of these facilities at over \$59 billion in 2006 dollars. More than half of these new facilities, accounting for more than 75% of the total construction spending, were built after 1990. Zimbalist and Long (2006) also

estimate that the value of state and local government subsidies for these facilities was \$36.3 billion dollars, or 61.5% of total spending. The economic activity that takes place in these stadiums and arenas is entirely private enterprise. Professional sports teams are privately held profit maximizing firms, and the revenues generated from professional sporting events are split between team owners and employees, primarily players. Very few private, profit generating urban economic activity receive this sort of subsidy for capital spending; imagine if more than 60% of the costs of building new hotels in cities was paid for with public funds.

Public subsidies on this scale require some justification, especially given that the owners of many professional sports teams are billionaires (Seattle Seahawks and Portland Trailblazers owner Paul Allen has estimated personal wealth of \$13.5 billion, and a number of other team owners have reported net personal wealth in the billions) and players typically earn millions of dollars each year. The primary beneficiaries of these subsidies appear to have access to sufficient financial resources to pay for their own new facilities. Tangible labor market and fiscal benefits, in the form of new jobs, higher income, and increased tax revenues were once used to justify subsidies for the construction of professional sports facilities. However, a significant body of academic research refuted claims of significant tangible economic benefits flowing from professional sports.<sup>1</sup>

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<sup>1</sup> Coates and Humphreys (2008) survey this literature and conclude that an overwhelming amount of academic research over the past 30 years refutes claims that professional sports generate tangible net labor market and fiscal benefits in cities.

Recently, the justification for subsidies for professional sports facility construction changed. Instead of tangible labor market and fiscal benefits, proponents of sports facility subsidies now tout urban redevelopment as a key justification. [Rosentraub \(2009\)](#) documents the role played by a select group of professional sports facilities in the revitalization of declining urban cores in several North American cities, suggesting that urban revitalization might be an important justification for subsidies.<sup>2</sup>

This paper develops a spatial model to analyze the impact of professional sports facilities on urban redevelopment and local welfare in the presence of agglomeration in service provision, and investigates the negotiation between professional sports leagues and cities to understand the size and redistribution effects of sports facility subsidies. The model contributes to the literature of urban economics and sports economics. It provides a framework for assessing professional sports facilities as an urban redevelopment tool and interpreting results in the large empirical literature on the economic impact of professional sports teams. The model highlights the role played by the monopoly power of professional sports leagues, generated by explicit and implicit exemption from antitrust law as a matter of long-standing public policy in North America. It helps to explain why local decision makers continue to provide large subsidies for the construction of professional sports facilities in North America, despite the lack of evidence that professional sports can generate significant tangible labor market and fiscal benefits for the local economy.

The spatial model of service production and consumption developed in [Section 3](#) includes consumers with preferences for variety in the consumption of both traded goods and non-traded services, building on a model of consumer behavior developed by [Spence \(1976\)](#) and [Dixit and Stiglitz \(1977\)](#) and agglomeration effects in spatial monopolistic competition model discussed by [Fujita \(1988\)](#). The long-run equilibrium with free entry of service firms may under-supply services that are less substitutable by traded goods but have high fixed cost or that are provided by suppliers who have market power. Professional sports games have all the three characteristics that may lead to under-provision.

In [Section 4](#), we formally introduce professional sports into the model as a less substitutable and high fixed-cost service. We analyze two scenarios: one with the professional sports facility locating at the existing service consumption center, where agglomeration already exists, and the other with the professional sports facility locating at a place with low property value, where redevelopment may be perceived as necessary. We focus on the latter scenario, where the government plays the coordinator role to overcome spatial inertia as land developers in the work of [Rauch \(1993\)](#).

[Glaeser and Gottlieb \(2009\)](#) identify research into the sources and nature of agglomeration economies as an important area. In this paper, agglomeration economies arise from a specific source – the ability of professional sports facilities to attract large numbers of consumers to a specific location on certain dates, which emphasizes the low substitutability of live professional sports with traded goods and other services. The agglomeration effect of professional sports facilities may lead to the emerging of a new service consumption center – an “arena district.” We analyze the impact of the “arena district” on the existing consumption center, property values, and city-wide welfare in detail. A general conclusion is that an “arena district” will increase city-wide welfare before the transfer between the city and the team, which means that the city has an incentive to provide subsidies in order to host a professional sports team.<sup>3</sup>

[Section 5](#) analyzes how the market power of professional sports leagues affects the size of subsidies. We describe a game in which a

monopoly sports league and two cities compete for one expansion team. When the two cities have similar economic conditions (average income in the model), the league may extract almost all the welfare gain from the host city.<sup>4</sup> [Section 6](#) discusses the redistribution effect of the sports facility and the “arena district” taking into account the financing of the subsidy.

## 2. Sports facilities and urban redevelopment

[Glaeser \(1998\)](#) discussed the economic problems inherent in urbanization, including urban decline, and identified a number of factors that could be expected to revitalize cities. He emphasized the role played by agglomerative forces, including non-work related agglomerative benefits, in the revitalization of cities. [Glaeser and Gottlieb \(2006\)](#) pointed out the importance of the large variety of consumer services available in cities, including entertainment services, in explaining the resurgence of cities that began in about 1980. [Glaeser et al. \(2001\)](#) investigated the role played by consumer amenities in explaining US urban growth since 1977, and identified the presence of live performance venues and restaurants as key consumer amenities. Professional sports are one type of service that could be included among the factors identified as driving urban revitalization in this line of research. Live professional sports at the highest level – the “big four” professional football, basketball, baseball and ice hockey leagues in North America – is provided almost exclusively in large cities. With the exception of Green Bay, Wisconsin, home of the 2010 population was 306,241, 153rd largest Metropolitan Statistical Area (MSA) in the US, all of the US MSAs that are home to professional sports teams in these four leagues have populations of at least 1,000,000 persons and are among the 50 largest cities in the United States. Sport is one of the most visible consumer entertainment services available in industrialized countries; most newspapers have a sports section and local news broadcasts have a sports segment that devote considerable attention to professional sporting events, and many cities derive part of their civic identity from the local professional sports team. Proximity to a professional sports team – living close enough to a professional sports facility – appears to be a potential urban entertainment amenity that drives urban growth.

Given these characteristics, and the large subsidies provided for the construction of professional sports facilities, it is not surprising that professional sports are increasingly identified as a key element of many urban revitalization plans. [Rosentraub \(2009\)](#) investigated the role played by professional sports facilities and teams in urban revitalization projects in several US cities over the past decade. The key feature of sports-led urban redevelopment projects that emerge from these case studies is the related development that takes place around urban sports facilities, and the way in which the facilities are integrated into the urban tapestry. In the context of the resurgent consumer city described by [Glaeser et al. \(2001\)](#), [Rosentraub \(2009\)](#) argues that professional sports facilities represent one specific entertainment service that the local government can promote, through specific policies, to revitalize a specific urban area. Because most sports-led urban revitalization projects are relatively new, and the effects of urban revitalization projects take a long time to appear, it will likely be some time before empirical evidence about the effectiveness of these policies can be developed. A model that includes the production and consumption of services, the spatial urban structure, and the presence of professional sports facilities with the potential to generate agglomeration effects will provide a context for evaluating the claims of proponents of sports-led urban revitalization projects and to better understand the role played by professional sports teams in the urban economy.

<sup>2</sup> The decline of the core of many cities in North America has been extensively analyzed. [Glaeser and Shapiro \(2001\)](#) document this decline in many large cities over the past 50 years, and identify factors associated with broad trends in urban growth and decline across cities.

<sup>3</sup> The city-wide welfare analysis in our paper is related to [Henkel et al. \(2000\)](#) and [Tabuchi \(2009\)](#), which investigate the welfare consequences of new marketplaces organized by coalitions of firms.

<sup>4</sup> Note that we do not adopt a mechanism design approach in this paper. We undertake a positive analysis of the process through which monopoly sports leagues determine the number and location of professional sports teams, cities compete for the right to host professional sports teams, and local governments subsidize the construction of professional sports facilities.

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