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Geoffrey Propheter

Major League Sports and the Property Tax

Costs and Implications of a Stealth Tax Expenditure

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For Stacey and Ellis, my favorite people.

Preface

This book explores two areas of public policy that frequently converge in the real world but which rarely converge in academic work: property taxes and sports facilities. My goals are twofold. First, I aim to clarify what appears to be considerable confusion around the nature of the property tax as a vehicle for delivering subsidies to major league team owners. Second, I provide an estimate of the property tax expenditure for major league facilities active in 2020.

I think a useful way to view this book within the larger sports facility public policy literature is as an extended footnote to James Quirk and Rodney D. Fort's *Pay Dirt: The Business of Professional Team Sports* and Judith Grant Long's *Public/Private Partnerships for Major League Sports Facilities*. Quirk and Fort include a property tax expenditure analysis in their subsidy accounting, but their discussion of the tax is limited to two sentences. Long also includes a property tax expenditure analysis in her accounting and borrows Quirk and Fort's methodology. Her treatment is about one page. Both texts are two of the most comprehensive examinations of subsidy costs to date, but their respective treatments of the property tax, in theory and practice, are wanting. Since the scope of their studies extends well beyond the property tax, their superficial treatment is understandable. Both authors acknowledge the limitations, and as a property tax scholar operating in the sports facility economics space, there is an opportunity to add my two cents on this narrow subject matter. Chief among my contributions is to provide an alternative methodology for estimating the property tax expenditure; clarify analytic considerations such as the appropriate counterfactual; create an inventory of which teams pay which property taxes; and quantify the public service costs to residents of partially or fully exempting team owners from property taxes.

Because I am studying the convergence of two public policy areas, I have written this book to speak to different audiences. Foremost, I wrote with practitioners in mind—more specifically, staffers and assessment officials. Staffers answer to an executive or legislative committee, and they are typically responsible for conducting policy analysis and writing policy memos. As underappreciated cogs in the policy process, staffers can influence policy outcomes through their written and spoken words. In order to maintain analytic credibility, staffers must demonstrate their

competence in an assigned policy area. For those that find themselves responsible for learning about sports facility subsidies, I hope this book is useful. Assessing officials, meanwhile, are tasked with valuing facilities for property tax purposes. Since most facilities are currently exempt from property taxes, this is an easy task for many. Nonetheless, there are 32 facilities that currently generate some real property taxes, a figure that could grow if team owners heed my advice to stop avoiding the tax. I wrote the book so that assessing officials can more easily learn how different communities approach their facility assessments as well as to highlight the value of sports facility economics research to assessment administrators.

While my heart is forever practitioner-oriented, I also wrote with academics in mind. I am a member of two scholarly communities that periodically overlap, public finance and sports facility economics. In my experience, public finance scholars are interested in sports facilities at a case study level. They find value in studying particular instances but only as a means to illustrate broader public finance and budgeting principles in action such as revenue forecasting or public debt management. The value of treating major league sports facilities (and other large enterprising investments such as convention centers) as a subfield is not apparent to many. For my public finance colleagues, I hope this book increases interest in studying the budgeting, fiscal, and financial impacts of government intervention in major league sports.

My sports facility economics colleagues do not need this same convincing in my experience, as we have made studying the social costs and benefits of major league stadia a central part of our academic identities. For the sports facility economics community, I focus much of the book on governance, on the administrative aspects of the property tax. I think economic training largely treats public administration as a black box; that lawmakers adopt laws according to some political calculus, and policy impacts follow to be studied. Public administration entails the bureaucratic decisions made in the course of policy design, implementation, monitoring, and evaluation, or DIME as I tell my students. Revenue forecasting, capital budgeting, debt management, and fund administration are four areas where public administrators' decisions can ameliorate or exacerbate the social impacts of lawmakers' investment in pro sports. Though I focus almost exclusively on the administrative aspect of the property tax, I hope to motivate current and aspiring sports facility economists to give greater attention to bureaucracy.

Given the professional diversity of my target audiences, I expect that no reader will find all aspects of the book equally useful; though, I hope all readers find most aspects interesting. I think practitioners will find Chaps. 2, 3, 6, and 7 the most helpful. I think academics will find Chaps. 1, 3, 4, 5, and 7 the most helpful.

I have been a student of property tax and sports facility economics for over a decade. During this time I have learned immensely from too many people to mention, some of which will forever remain anonymous to me because of blind review and most of which I know only by name. That being said, the Lincoln Institute of Land Policy's *Significant Feature of the Property Tax* database along with Joan M. Youngman's *A Good Tax* and Steven M. Sheffrin's *Tax Fairness and Folk Justice* have been instrumental in my scholarly development. Given this book's

focus on property tax exemptions, readers should see my effort as an intellectual companion to the many edited volumes the Lincoln Institute of Land Policy has published over the last 15 years: Augustine et al.'s *Erosion of the Property Tax Base: Trends, Causes, and Consequences*; Michael E. Bell, David Brunori, and Joan M. Youngman's *The Property Tax and Local Autonomy*; and Richard F. Dye and Richard W. England's *Land Value Taxation*. Among sports facility economists, the prolific work of Robert Baade, Dennis Coates, Brad R. Humphreys, Victor A. Matheson, Gabriel M. Ahlfeldt, and Mark Rosentraub inspired me into this research area as a doctoral student, and their perspectives continue to inform my empirical efforts. Notwithstanding Quirk and Fort's *Pay Dirt* and Long's *Public/Private Partnerships*, I also owe an intellectual debt to Roger G. Noll and Andrew Zimbalist's *Sports, Jobs, and Taxes*; Neil deMause and Joanna Cagan's *Field of Schemes*; and Kevin J. Delaney and Rick Eckstein's *Public Dollars, Private Stadiums*. These books are invaluable sources for insights into the political economy and sociological aspects of subsidy decision-making.

A number of people have been formative in my development as a property tax scholar. Whether through their words of encouragement or serving as a sounding board for ideas, I am professionally indebted to Catherine Collins (George Washington Institute of Public Policy), Justin Ross (Indiana University), George Sweeting (New York City Independent Budget Office), and the property tax community in the Association for Budgeting and Financial Management. My former advisors Joseph Cordes (George Washington University), David Brunori (George Washington University), and Robert Wassmer (Sacramento State University) cultivated my interest in state and local tax policy. Finally, I am a member of a school whose leadership and faculty encourage scholars to pursue their passions, even if those passions exist on the periphery of public affairs research. To my School of Public Affairs colleagues, I am grateful for your support and friendship.

Denver, CO, USA
July 2022

Geoffrey Propheter

Contents

Abbreviations

ACIR	Advisory Commission on Intergovernmental Relations
AV	Assessed value
CSR	Corporate social responsibility
DOF	New York City Department of Finance
ETR	Effective tax rate
FMV	Fair market value
FY	Fiscal year
GASB	Governmental Accounting Standards Board
GPLET	Government property lease excise tax
IAAO	International Association of Assessing Officers
IRS	Internal Revenue Service
M&E	Machinery and equipment
MLB	Major League Baseball
MLS	Major League Soccer
NBA	National Basketball Association
NFL	National Football League
NHL	National Hockey League
PI	Possessory interest
PILOT	Payment in lieu of taxes
PIV	Public interest value
QF	Quirk and Fort
QSM	Quantity survey method
RCND	Replacement cost net depreciation
RFP	Request for proposals
RPT	Real property tax
SCM	Segregated cost method
SFM	Square foot method
TAV	Taxable assessed value
TIF	Tax increment financing
TPP	Tangible personal property

List of Figures

List of Tables

Chapter 1
Introduction

Abstract In this opening chapter I describe the contribution of this book to the sports facility economics and public finance disciplines. I introduce jargon and concepts to lay the foundation for topics I discuss in more detail elsewhere. Among the issues I review are: the definition and history of tax expenditures in general and property tax expenditures more specifically; statutory and economic property tax incidence; and defining the appropriate counterfactual for property tax expenditure analyses as it concerns sports facilities. I draw on past and current major league facility subsidy debates for illustration.

1.1 Why This Book

This book has two broad goals. The first goal is to provide a better estimate of the cost of exempting major league facilities, and hence team owners, from property taxes. Major league facilities in the United States are those hosting at least one team in the National Basketball Association (NBA), the National Hockey League (NHL), Major League Baseball (MLB), the National Football League (NFL), and Major League Soccer (MLS). There have been two useful prior attempts at estimating the property tax expenditure: Quirk and Fort (1992) and Long (2013).[1] The latter is more recent and more comprehensive, but both use the same methodology developed by the former. Long (2013) compiled an inventory of the 121 facilities active in 2010 and estimates direct and indirect state and local subsidies from all sources of $31.3 billion.[2] Of the $31.3 billion, she estimates $10.8 billion is delivered through indirect means—through land acquisition, facility revenue kickbacks, discounted municipal services, and property tax exemptions. Of the

[1] Okner (1974) and Baim (1994) also provide estimates of the property tax expenditure, but they cover select facilities and both assume assessed values on the tax roll are reflective of the counterfactual assessed value under private ownership. Okner is transparent about questioning this assumption, however.

[2] Drukker et al. (2020) provide a lower-bound estimate of the federal subsidy to team owners provided through local government issued tax-exempt bonds for 57 active facilities of $4.3 billion.

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indirect subsidies, she concludes property tax exemptions comprise about two-thirds of the estimate, or nearly $8 billion. As a fraction of the total state and local subsidy, she estimates a quarter derives from property tax exemptions. She further concludes that over a 30-year lease the property tax expenditure for the average facility is $66 million.[3]

The methodology used to generate these estimates, however, may overestimate and underestimate the property tax expenditure for various reasons I explain in great detail later. As the property tax specifically was not the focus of the Quirk and Fort (1992) or Long (2013) studies, the authors selected an estimation approach that traded precision for volume, a tradeoff anyone would have been forced to make in the same position. The minutiae of property tax law varies in important and usually substantial ways across states, and sometimes within them. Both sets of authors acknowledge as much. More precise estimates of the property tax expenditure require not only accounting for the idiosyncrasies in property tax law within and across states but also for the behavioral responses of team owners if their marginal facility choices had a tax price. These are factors I consider in my tax expenditure analysis.

The second broad goal is to correct misunderstandings about the property tax in the sports facility context. One example of a common misunderstanding is that journalists and sports management textbooks often argue that franchise owners negotiate for public ownership of a facility or land in order to avoid paying property taxes, because under most state laws, the reasoning goes, government-owned property is exempt.[4] That team owners negotiate to lease facilities rather than fee-simple own them for profit-maximizing reasons is a sensible position until evidence proves otherwise. Where the reasoning strays is concluding that simply being a lessee of exempt property is sufficient to avoid paying property taxes. This is not the case everywhere. California's state constitution, for instance, stipulates that such lessees are still required to pay property taxes but only on the value of the team's lease, what is known as a possessory interest as opposed to fee-simple interest. Public ownership of the land and facility is still a subsidy, since the property tax liability of the lease value is less than the liability of fee-simple ownership, but it is a smaller subsidy than when one assumes California teams pay no property taxes as lessees of government-owned property. Colorado also levies possessory interest taxes but under weaker state statutes rather than through its constitution. Florida does as well; though, only the Dolphins pay possessory interest taxes on their 99-year land lease for Hard Rock Stadium.[5] In contrast, in the wake of court decisions

[3] See page 109 in Long (2013). She uses a 6% discount rate. The $66 million discounted value over 30 years is equal to $2.2 million per year in inflation-adjusted terms at 6% or $5.0 million per year in nominal terms.

[4] Examples of this reasoning are given in Brown et al. (2016).

[5] The stadium was privately financed by former Miami Dolphins owner Joe Robbie on land that was gifted to the county for the exclusive use as a stadium site. Since Hard Rock Stadium's construction, no other Florida facility has used the same public-private partnership design. All other major league facilities in the state are publicly owned on public land.

concluding the New York Red Bulls owed the town of Harrison (New Jersey) property taxes on their leased soccer stadium, which is owned by a county special district, lawmakers amended the state's leasehold interest laws in 2016 to explicitly exempt sports teams from being liable for property taxes on leasehold interests.[6] In 2018, state lawmakers in North Carolina eliminated its possessory interest tax, freeing the Carolina Panthers of a $300,000 annual property tax payment on its leased city-owned land.[7]

Before pursuing the book's two goals and laying out the road ahead, I use the rest of this first chapter to introduce tax policy and economic concepts important for understanding property tax expenditures and their policy implications, particularly as it concerns sports facilities. As a way of easing into this discussion, I next offer a case study of Yankee Stadium. While the Yankee Stadium subsidy arrangement offers other economic, political, and legal lessons (Matheson & Humphreys, 2009), my focus is strictly on the property tax. From this vantage, Yankee Stadium is an exceptional case for illustrating the challenges of conducting a property tax expenditure analysis as well as the potential policy importance of doing it well.

1.2 A Property Tax Case Study: Yankee Stadium

Three days before Mayor Giuliani left office in 2002, he signed non-binding agreements in which taxpayers would split the cost of new stadiums for the Yankees and Mets. When Mayor Bloomberg took office, he terminated these agreements, citing the city's budget deficits. By 2005, however, Bloomberg and the Yankees agreed to a subsidy financing structure, one that would be emulated for new stadiums for the Mets (Citi Field) and the then-New Jersey Nets (Barclays Center). The arrangement revolved around the city's property tax.[8] The Yankees proposed making payments equal to the stadium's property tax liability were it taxable as

[6] See Bill A2574 in the 2016–2017 session that was codified as Chapter 65 in the New Jersey Public Laws of 2016. Prior to this change in state law, leasehold interests in stadiums and arenas were not explicitly exempted from property taxes and further only leases of municipal property could be exempted. This bill explicitly added stadiums and arenas as exempt leasehold interests and also expanded property ownership to counties and special authorities. The statement of support from the Assembly Appropriations Committee attached to the bill reads, "This bill clarifies and reaffirms that stadiums and arenas owned by government entities are entirely exempt from property taxation. The bill reaffirms that when government entities enter into private-public arrangements and lease property to for-profit entities to achieve stadium and arena uses, such property, including any leasehold interest in such property, remains entirely tax exempt."

[7] Leasehold interests are classified as intangible personal property in North Carolina. See §105-273(8). Session Law 2018-98 removed a leasehold interest in public real property exception from the intangible personal property tax exemption effective July 1, 2019.

[8] For this discussion I am ignoring other non-property tax policy changes that were needed to move the stadium project forward, such as a change in state law allowing the stadium to be built on park land.

security for the stadium's construction debt. Under city law at the time, these payments in lieu of taxes (PILOTs) were reserved for the general fund unless an alternative allocation was jointly agreed to by the city council and mayor.[9] The construction debt was in the form of tax-exempt bonds. Because bond holders do not have to pay federal income taxes on the interest earned from such bonds, the debt is cheaper to acquire than taxable bonds, all other things equal. But under federal law, only projects financed from general public revenue are eligible for tax-exempt bond financing. Since the property tax is (usually) general revenue, the Yankees argued that using its PILOTs as security counted as an allocation of general public revenue.[10]

Under federal tax law at the time, as interpreted by the Internal Revenue Service (IRS) in 2006,[11] the PILOT-backed debt could only be tax-exempt if two conditions held:

1. the payment is commensurate with and not greater than the amounts imposed by a statute for a tax of general application, and
2. the payment is designated for a public purpose and is not a special charge.

There are in fact four standards present, two nested in each of the above items:

(1a) *The Commensurate Standard*: the PILOTs must be commensurate with real property taxes;
(1b) *The General Applicability Standard*: the PILOTs must not exceed the property taxes that would have been imposed under statute;

and

(2a) *The Public Purpose Standard*: the PILOTs are for a public purpose;
(2b) *The Special Charge Standard*: the PILOTs are not a special charge (as defined by Title 26 of the Code of Federal Regulations §1.141-4(e)(3)).

For this case study, the third (2a) and fourth (2b) items are of no interest. Moreover, the commensurate standard is noteworthy for being a major focus of policy debates at the time. The IRS affirmed PILOTs are commensurate with real property taxes in 2006 but then subsequently changed its rules in 2008 by stating that the commensurate standard is only satisfied if the PILOTs float with the underlying real property taxes.[12] Whereas before the 2008 ruling PILOTs could be

[9] On PILOT allocations, see Local Law 73 of 2005. The city council approved the PILOT agreement in April 2006.

[10] Because the city agreed to forgo the stadium's PILOTs, the dollars never entered the city's general fund to be appropriated. Whether or not taxes must touch a local government's general fund to count as general revenue is a legal question.

[11] See IRS Private Letter Ruling no. 200640001 and Private Letter Ruling no. 200641002, both published in October 2006.

[12] For the 2006 ruling, see page 11 of the Private Letter Ruling no. 200641002. For the 2008 ruling, see the Final regulations published as "Treatment of Payments in Lieu of Taxes Under Section 141" in the *Federal Register*, 73 (207), Friday, October 24, 2008, and specifically page 63,373.

a fixed payment, after 2008 they must vary over time as property taxes vary. Fixed payments provide bond investors certainty while variable payments do not, making it presumably more difficult and costly to sell PILOT-backed debt after 2008.

The general applicability standard is the item of greatest interest from a property tax expenditure standpoint. As the IRS stated in its initial 2006 ruling, the general applicability standard means the PILOTs "may not exceed the amount of the real property taxes for such year that would have been levied on the Stadium, the Stadium Site, the Parking Garage and the Parking Garage Site absent the PILOT Agreement."[13] The important question, then, becomes, "What would have been levied on the stadium site had the PILOT agreement not existed?" The president of the Yankees during a Congressional hearing testified that without the PILOT agreement, the stadium would not have been constructed.[14] Taking him at his word implies that the real property taxes on the site without the PILOT agreement would be zero (assuming the land remained exempt park space in perpetuity otherwise), and since the PILOTs cannot exceed, in this case, zero or by definition be negative, it logically follows that the PILOTs would not pass the general applicability standard for tax-exempt debt. The team president's comments, though, came two years after the bonds for the stadium were issued.[15]

Notwithstanding this matter, in 2006 before the bonds were issued the Bloomberg administration needed to affirm to the IRS that the real property taxes based upon the taxable value of the stadium was roughly equal to the fixed PILOTs securing the bonds. There are two important consequences of this requirement. First, the city's Department of Finance (DOF), the agency responsible for assessing property, needed to assess the stadium and land *three years before it was completed*. While I could find no documented evidence to prove otherwise, I suspect this mandate made the assessment staff uneasy. Requiring an assessor to value a special-use structure that does not exist on land whose prior use was exclusively open park space and whose future use by law could only be for a major league baseball stadium is unreasonable.[16] When such a mandate has real-world tax implications—that is, when it is not just an academic exercise—unreasonable turns into unkind, since it

[13] See page 5 of the Private Letter Ruling no. 200641002.

[14] Team president Randy Levine testified before the Subcommittee on Domestic Policy on October 24, 2008. The hearing was titled *Gaming the tax code: The New York Yankees and the City of New York respond to questions about the new Yankee Stadium.* In written testimony he noted that "had this PILOT financing mechanism not been in place, a new Yankee Stadium would not have been built, and without any new stadium, regrettably, the Yankees would have been forced to leave The Bronx."

[15] In 2006, the New York City Industrial Development Authority, the city's economic development arm and the agency overseeing the stadium development, wrote to the IRS that it believed the Yankees would leave the city, and the threat of relocation was the basis for the city's support of the PILOT agreement. This threat was not articulated by the Yankees until 2008. The Yankees had been making threats to move to New Jersey since the 1980s, but those threats were not tied to a PILOT agreement, the focus here.

[16] Under New York state law, park land must go through a legislative review process known as alienation at the state level before it can be developed.

opens the city's assessors to public criticism for administrative decisions that they likely would not have made in the normal course of their duties.

Examples of these criticisms are contained in the so-called Brodsky report, a report organized by state assembly member Richard Brodsky.[17] One valid criticism, from my perspective, was DOF's apparent reliance on construction cost budget data from the team as the basis for its assessment of the stadium proper. Depending on the granularity of the cost data, expenses unrelated to the hard and soft costs of stadium development may have been erroneously included. Expenses for personal property, marketing, or the like, for instance, should not be part of a real property assessment. A second criticism made in the Brodsky report is that in assessing the land DOF used unreasonable comparable parcels. Assembly member Brodsky argued that parcels around the stadium site in the South Bronx should have been used as comparables whereas DOF used parcels in northern Manhattan. Since Manhattan has higher prices than the Bronx in general, the Brodsky report accused DOF of cherrypicking parcels in order to inflate the land assessment. Martha Stark, then-Commissioner of DOF, testified to Congress that the department's task was to value the land as though the stadium were complete, not as though the land were in its present vacant state. Because sports facilities increase land prices, the commissioner's logic of looking for comparables outside of the Bronx strikes me as reasonable; though, which comparables are the appropriate ones is a matter of professional judgment for which two reasonable people could still disagree.[18]

The second consequence is that the Yankees needed the assessments to be as large as reasonable. Whereas property owners usually fight to reduce their property tax liability through the assessment appeals process, the Yankees needed the assessed value of the prospective stadium and land to be great enough to cover as much of the required debt as possible.[19] The IRS's interpretation of federal law at the time, as previously noted, was that the counterfactual property taxes are those that would have been owed by the team if the PILOT agreement had not existed. Since the only way the general applicability standard is sensible is if the counterfactual property taxes the Yankees would have owed is greater than zero, it therefore follows that under the IRS's interpretation the counterfactual is a private taxable facility. But if the facility was fully taxable under fee-simple ownership, the Yankees most certainly would not have acquiesced to the greatest market value possible; they would have appealed to the city's Tax Commission. Given major league team owners' success on appeals, the Yankees probably would have won, and thus the market value would have been much less than $1.2 billion in the counterfactual. So even if one assumes that DOF assessed the stadium and land the same way it would

[17] The full title of the report is "The house that you built: An interim report into the decision by New York City to subsidize the New Yankee Stadium." A copy is available from the author.

[18] Bradbury et al. (2022) provide a thorough review of the sports facility economics literature, including the property price impacts research.

[19] Though this case study focuses on the Yankees, the New York City Mets and Brooklyn Nets also used PILOT agreements for their respective facilities.

have if the stadium were taxable—free of political pressure from city lawmakers and economic development officials—the Yankees certainly did not behave as they would have if the stadium were taxable and fee-simple owned. Had they, the amount of PILOTs eligible for tax-exempt status would have been much less than the $942.55 million the city issued.

The Yankee Stadium case study highlights two elements of the administration of the property tax crucial for understanding and measuring property tax expenditures. First, assessment administration involves judgment calls. Organizations such as the International Association of Assessing Officers (IAAO) and The Appraisal Foundation promote assessment and appraisal standards, but special-use property like sports facilities often have characteristics that may require deviation from professional standards for one reason or another. When to deviate and how much to deviate are administrative decisions for which there is likely to be disagreement. Second, even if one has confidence that the values on the property tax roll reflect reasonable judgment calls made by assessing professionals, roll values for properties that do not generate property taxes—or in the narrower case of the New York City facilities, generate taxes earmarked to secure a debt commitment—cannot be trusted, because the property owner has no incentive to monitor assessment quality. I often see students, fellow academics, journalists, and staffers use roll values as the basis for calculating the property tax expenditure for exempt properties. This is a mistake if the counterfactual is that of a taxable property. If it were taxable, assessors would make different choices, choices that reduce the chance of an appeal being upheld. Property owners, meanwhile, would monitor assessors' decisions and appeal accordingly. Since marginal property improvements would have a tax price, property owners would also make different site or design choices, decisions that could affect assessments. These behavioral responses suggest that values on the roll when a property is exempt are not equal to the values on the roll if the property were taxable.[20] I discuss both of these elements in greater detail at different points in this book.

[20] During the 2008 Congressional hearing, the then-Commissioner of the Department of Finance Martha Stark testified that the department "determines the value of a property regardless of whether it will be exempt from taxes. Our estimated value does not change because a property might receive a full or a partial exemption or tax exempt bond financing." If true, it is a waste of administrative resources, since the properties generate no revenue for the administrative cost incurred. Moreover, the issue is less about there being a value on the roll than whether or not that value is meaningful compared to the counterfactual world, which we cannot observe. In many jurisdictions in the US, exempt property are not assessed at all, a zero value entered on the roll, consistent with not allocating resources to property that generate no revenue. Moreover, DOF produces valuations for the Statue of Liberty, Governor's Island, and the Metropolitan Museum of Art, but it stretches credulity that these valuations equal the valuations if the landmarks were privately owned or put on the market.

1.3 Defining the Property Tax

As a preliminary, it is important to be explicit about what I mean by "the property tax." Using the term without a common understanding risks introducing unnecessary confusion. While the various faces of the property tax will be discussed in more detail throughout this book, for now it is sufficient to briefly describe the forms the tax can take.

Arguably the most well-known version of the property tax is the *real property tax*, which is a tax placed on the value of land and any buildings affixed to it. In property assessment administration parlance, affixed structures are called "improvements." Correspondingly, it is useful to remember the real property tax is a tax on a bundled good; land is immovable and generally fixed in supply whereas improvements can be modified, aged by time, or augmented in size and scope by design.[21] If expanding my house with an in-law suite will increase my property assessment, then there is a tax price for the expansion. This may affect how large and opulent I make the suite, for instance.

The *personal property tax* is a tax on anything not affixed to land, but what this means varies across states. Mobile homes, for instance, may be treated as real property if attached to plumbing but treated as personal property otherwise. Perhaps the most common personal property taxes are those imposed on business machinery and equipment, but dependent on state laws, cars and inventories may also face personal property taxes. Household goods are typically exempt. The key elements of personal property are that it is movable and if attached to real property, its absence does not impact the real property's value. Assessors would not classify an office building's air conditioning condenser as personal property even though it can be moved, for example. Instead, it would be treated as part of the improved real property, since its absence changes the value of the building. Televisions, chairs, desks, and copiers, in contrast, are personal property.

A third class of property taxes is *intangible property taxes*, an ad valorem tax imposed on the value of intangible assets and investments such as bonds, stocks, and patents. Ostensibly, very few states impose property taxes on intangible assets (Walczak & Cammenga, 2020), but a closer examination of state statutes demonstrates that definitions of "intangible" vary. As just noted, California and Colorado impose taxes on leasehold interests, defining them as real property even though the tax only applies to the value of the lessor's interest.[22] In contrast, Florida

[21] There are cases where human engineering has both created and destroyed land, implying that the supply of land is not fixed. The Erie Canal, the Panama Canal, and the redirected Harlem river are examples of land being destroyed. Battery Park City in Lower Manhattan and Dubai's Palm Islands are examples of land being created. These are extreme, infrequent, and expensive engineering feats, and for the vast majority of the Earth, notwithstanding natural changes in land on a geologic time scale, it is useful to treat land as fixed in supply.

[22] See California Revenue and Taxation Code §104 and §106 as well as Colorado Revised Statutes §39-1-102(11) and §39-1-102(14).

also taxes leasehold interests on real property but classify them as a property tax on an intangible if rent is received as consideration for the lease.[23]

Moreover, assessing and taxing property may fall on different levels of government. Property may be assessed at the state level but taxed at the local level, or assessed locally and taxed by the state. On the assessment side, we can distinguish centrally assessed and locally assessed property. Property that cuts across substate political boundaries, such as railroad tracks and utility lines, or that move across states, such as airplanes and trains, tend to be centrally assessed. Subsurface mineral deposits may also be centrally assessed if they reach across assessing jurisdictions' boundaries. Most of the statewide taxable assessed value, however, is locally assessed in the US.[24]

The importance of distinguishing the various faces of the property tax is illustrated by the common claim in journalism that major league owners tend not to pay property taxes. For instance, Easterbrook (2013) writes of the Dallas Cowboys:

> At the basic property-tax rate of Arlington, Texas, where the stadium is located, Cowboys owner Jerry Jones would owe at least $6 million a year in property taxes. Instead he receives no property-tax bill, so Tarrant County taxes the property of average people more than it otherwise would.

The statement that Tarrant County property owners pay higher taxes than they otherwise would as a result of the exemption, all else equal, is correct, but the statement the Cowboys do not pay property taxes is false. Jerry Jones remits personal property taxes on the taxable personalty he owns sited at the stadium—$5,845.96 in 2020 based on the county's records. He does not pay real property taxes on the stadium, however. Nor does he pay property tax on any government-owned leased personal property. Attentive readers may infer from context clues that the journalist was speaking about the real property tax, and that therefore my critique is a straw man. If this is one's response, it misses my point, which is that readers should not have to infer from context clues, particularly in investigative journalism or academic research. Greater specificity in describing public policy and policy implications is crucial in order to avoid perpetuating inaccuracies.

1.4 The Worst Tax?

The property tax occupies a curious position in tax policy debates in the US. While it is an important revenue stream for local governments, surveys of public

[23] See Florida Statutes §196.199(2)(b).

[24] Exceptions to this are oil and mineral-rich states like Alaska and Wyoming. Maryland and Montana are the only two states that centralize assessment administration for all property. Data on centrally and locally assessed property are available in the *Significant Features of the Property Tax* database.

attitudes towards various taxes have routinely found the property tax is perceived as the least fair tax. For more than twenty years, the US Advisory Commission on Intergovernmental Relations (ACIR) conducted annual surveys of opinions of various taxes using a representative nationwide sample of Americans.[25] Among the questions the ACIR asked was, "Which do you think is the worst tax—that is, the least fair?" This question was asked 20 times between 1972 and 1994, and nine times the local property tax ranked the least fair. In the other 11 surveys it ranked second worst behind the federal income tax.[26] After the Clinton administration defunded the ACIR, similar surveys were not conducted until the non-profit tax research group the Tax Foundation did so from 2005 through 2009 with a gap in 2008. The surveys did not ask the same question as the ACIR verbatim, however, making direct comparison impossible. In addition, in 2005 and 2006, questions elicited rank-order preferences among a set of taxes similar to ACIR, but in 2007 and 2009, the wording switched to a warmth Likert scale, allowing respondents to rate each tax separately. Despite these differences, the property tax continued to be rated the first or second least fair tax among state and local taxes. Popular opinions of the property tax are in sharp contrast to economists' opinions. In her aptly titled book *A Good Tax*, Youngman (2016) reports two surveys of tax professionals, one in 1934 for members of the Tax Policy League and one in 1994 for members of the National Tax Association. The question asked, "Should there be retention of property tax as a major source of local revenue?" In 1934, 86% of respondent agreed and 60 years later, 84% agreed.

Property owners tend to dislike the property tax for different reasons than economists like it. As Sheffrin (2013) documents in *Tax Fairness and Folk Justice*, property tax liabilities tend to be relatively large and salient, and they tend to be difficult to predict from one year to the next. Behavioral economics teaches us that *actual* tax rates matter less for predicting consumer responses to tax changes than do *perceived* tax rates, since consumers make choices based on how they construe the world with their imperfect information (Congdon et al., 2009). Consequently, tax changes that are less perceptible are less likely to affect consumers' decisions than are tax changes that are more perceptible, more salient. Property owners also tend to express disdain for the tax because of a perceived lack of transparency in both their tax bills and the underlying property assessment; though, the frequency and force of this complaint appears to have declined over time as states have adopted assessment

[25] The ACIR's archives are hosted by the University of North Texas library with digitized content, including the public opinion survey reports, available at https://library.unt.edu/gpo/acir/BrowseTitles.htm.

[26] Interestingly, for a period of 10 straight years, from 1979 through 1988, the federal income tax took the honor whereas before and after these bookends the local property tax was typically ranked the worst. This period coincided with the so-called property tax revolts instigated by California's Proposition 13. During this period state legislatures across the country restructured their property tax systems or implemented tax relief programs in an effort to curb increasing tax burdens on residential properties. The drop in the property tax's status as the worst tax could reflect taxpayers' satisfaction with these efforts, at least for a short while.

growth limits (Cabral & Hoxby, 2012).[27] Nonetheless, the consequence of poorly predicting future property tax burdens is profound. As the largest source of wealth for most Americans, underestimating property tax burdens leads to overpaying for homes relative to the competitive price under better tax information conditions (Bradley, 2017). Finally, because property taxes are based in part on the economic activity happening around a property, property tax burdens can change without the property owner doing anything, in stark contrast to most other taxes in which liability is a function of the extent of interaction with a market. This issue tends to raise concerns about involuntary displacement, particularly in gentrifying areas where an influx of wealthier residents can drive prices and property taxes upward (Martin & Beck, 2018).

The reasons why economists prefer the property tax are varied, and Youngman (2016) describes many of the property tax's benefits in great detail. I focus on three here that I think are noteworthy within the context of major league facilities as a locally provided public service; their relevance will become apparent in later chapters. One reason is that the property tax base in the aggregate is relatively stable compared to other taxes—even if property tax liability is somewhat unpredictable for particular property owners. A stable base tends to generate a more stable and predictable stream of revenue, which is valuable for public budgeting insofar as avoiding spending volatility on local public goods and services is desirable. Moreover, since most of the property tax is imposed on things that generally do not move (land and improvements), it is a tax uniquely qualified for local control. To the extent lawmakers have control over property tax rates, they can set rates at levels necessary to finance proposed local expenditures, which themselves residents have more control in shaping compared to taxing and spending at the state and federal levels. As a result, the property tax is a useful, albeit imperfect, signal of the quality and quantity of public services offered by a jurisdiction, thereby giving residents and would-be residents an opportunity to evaluate how well local spending levels align with their preferences. A final noteworthy benefit is that the property tax, at least at a national level, is largely a progressive tax such that tax burdens increase with wealth.[28]

It is worth emphasizing that these advantages apply only to the real property tax, not the personal property tax. Personal property is movable and administering the personal property tax is rife with challenges, not the least of which is that personal property valuations are self-reported by business owners. Because personal property can move, two consequences follow. First, from a tax administration standpoint, discovering evaded movable assessed value is more expensive than discovering evaded immovable assessed value (Cornia & Wheeler, 1999). Second, the personal property tax potentially distorts business decisions, thereby creating inefficiencies. For instance, since the tax makes purchasing new equipment more expensive,

[27] Fischel (1989) argues this reasoning extends to the public services financed by property taxes. State laws may severe the local benefit tax linkage, making it more difficult for residents to perceive what local public goods their taxes are financing.

[28] The extent of the tax's progressivity, as well as its impact on behavior, remains open to debate, however. Oates and Fischel (2016) provide greater insight on these matters. I avoid wading into this debate since the outcome is not relevant to my purpose.

business owners may be more likely to keep less efficient equipment (productively speaking) in service for longer than they would if personal property were exempt. Reducing the personal property tax rate, then, incents businesses to substitute away from relative more expensive labor into relative less expensive capital, all else equal. While politicians often argue eliminating the personal property tax is a boon to economic development, doing so may lead to greater unemployment in capital-intensive industries in the short-run (Mughan & Propheter, 2017). In the longer run, it could be a boon if production efficiency gains result in lower priced outputs, thereby making the state's industries more competitive in markets.

1.5 Property Tax Exemptions as a Stealth Subsidy

Property tax exemptions belong to a broader class of property tax expenditures that include credits, abatements, tax rate offsets, and other similar policy tools. Tax expenditures were formalized by the late tax scholar Stanley Surrey, who framed them as government spending through the tax code rather than through the budgetary process.[29] Surrey (1973) observed that spending through the tax code did not receive the same degree of policymaker attention as spending through the budget. A public choice account of politician behavior attributes this to taxpayers' inattentiveness. Because taxpayers are less aware of tax expenditures and have more difficulty determining their value, spending through the tax code provides lawmakers the political advantage of supporting influential rent seekers while keeping the true marginal tax burden obscured from voters (Howard, 1997). To illustrate, the late Princeton economist David Bradford often remarked that Congress could eliminate all military equipment spending from the federal budget by replacing outlays with a "Weapons Supply Tax Credit" whose value was equal to budgeted appropriations. Lawmakers could then announce that they cut taxes (to weapons producers) without compromising military readiness or increasing the deficit (Kleinbard, 2010). Of course, were such a tax policy adopted, nothing about the world would be any different—the government is still spending the same amount of money to receive the same amount of equipment—except that from an accounting perspective military expenditures *on paper* have been reduced.

Surrey's solution to this problem was the tax expenditure budget, an annual document containing estimates of the dollar value for all indirect spending enumerated by public program. Such a budget would bring transparency to spending that otherwise hides in the shadows, thereby providing the public a clearer picture of lawmakers' spending priorities and levels. While he focused his attention on the federal government, with the first tax expenditure budget published in 1968, states eventually began publishing their own tax expenditure budgets. As of 2021, only North Dakota has not published a tax expenditure budget; though, there is variation

[29] More specifically, Surrey had in mind spending on programs that lawmakers would not be willing to support to the same extent if spending had to come from the budget.

across the states in publication frequency, estimation methodology, and detail.[30] State tax expenditure budgets also tend to lack information on local property tax expenditures specifically, in large part because the property tax is a local tax. Academics have urged local governments to create property tax expenditure budgets (Bell & Brunori, 2014), but relatively few have done so—the most widely known being New York City, Philadelphia, Washington DC, and Montgomery County (Maryland).[31]

Whereas Surrey envisioned tax expenditure budgets as a spending control device, they have largely failed in this regard. Mikesell (2002) and Wassmer (2014) argue tax expenditure budgets have become hit lists for lawmakers searching for new revenue, for instance. Burton and Saddiq (2013) remark that Surrey failed to appreciate the political dimension of tax expenditures, criticizing his assumption that a dollar in direct spending through the budget had identical political costs and benefits as a dollar in indirect spending through the tax code, thereby making the two substitutes. However, people tend to be more supportive of indirect spending than direct spending (Faricy & Ellis, 2014), and thus moving tax expenditures into the sunlight does not lessen the political incentives to spend through the tax code (Dean, 2012).

The relevance of these considerations to major league facilities is straightforward: property tax exemptions are government spending by another name. While this is well-known by academics, it is often lost in broader public discussions of facility subsidies. For instance, when journalists reported that Gillette Stadium (New England Patriots) was privately financed (Vaillancourt, 2001), they ignored the fact the stadium sits on land fully exempt from property taxes. Similarly, for the St. Louis Cardinals (Naudi, 2004) and Austin FC (Bosnjak & Miller, 2021). Banc of California Stadium (Los Angeles FC) and Oracle Park (San Francisco Giants) are also regularly noted for being 100% privately financed, but this ignores a property tax subsidy arising from leasehold interest in the land rather than fee-simple ownership. While the teams still pay ad valorem taxes on the lease, the liability is less than what it would be if the teams owned the land, a de facto partial tax exemption.

Reducing government's direct spending on construction to zero and instead providing a property tax break is identical to Bradford's weapon supply tax credit. Suppose a team owner wants to build a $305 million stadium. After an initial round of negotiation with the host city, the agreement is for the team owner to purchase the land, have fee-simple ownership, and contribute $275 million to construction while the city would contribute the present discounted equivalent of $30 million, which it bond finances. Suppose further the cumulative present discounted property taxes on the site would be $30 million, generating a stream of annual revenue equal to the annual debt service on the bonds. If in a second round of negotiations the team agrees to cover the full construction cost and trade the city's cash contribution

[30] The non-profit and non-partisan Institute on Taxation and Economic Policy maintains an inventory of states with tax expenditure budgets, providing links to the most recent ones.

[31] The Governmental Accounting Standards Board adopted Statement 77 in 2015 in an effort to improve local tax incentive transparency.

for a property tax exemption, the *construction budget* now reads 100% privately financed rather than the initial 90% privately financed, and the team is no worse off. I emphasize "construction budget" because it is the only place that would show an absence of government dollars, even though we know that outside of the budget the $305 million stadium exists because the city made a contribution. The contribution simply is not measurable within the budget in the second scenario since it occurs through the tax code, not through appropriations.

1.6 An Economic Case for Property Tax Exemptions

While there is an obvious political incentive for awarding sports owners' property tax breaks, there is a less obvious economic case for them. Economic theory posits that subsidies are the appropriate policy response to positive externalities, which occur when private activity generates benefits for others. When positive spillover benefits are present, equilibrium prices in the private market are greater than the socially efficient price, resulting in underconsumption of a socially desirable good.

Though this reasoning applies to subsidies in general, the specific case for property tax exemptions is stronger if the source of the spillover effect is property-based, a conclusion resting on the deadweight loss created by the property tax. Deadweight loss is discussed in more detail shortly, but for now consider two documented positive externalities of sports facilities, civic pride and architecture. Here I use the term "civic pride" broadly to encompass any nonuse benefit associated with hosting major league sports (Whitehead et al., 2013) while architecture means broadly any physical characteristic of a facility visible to those outside (Ahlfeldt & Maennig, 2010). The crucial difference between civic pride and architecture for this discussion is the mode by which the benefits are delivered to residents. Civic pride is intangible with benefits delivered to residents passively through association; architecture is tangible with benefits delivered through design choices and construction. Because the property tax is a tax on property value, design choices that could maximize architectural spillover benefits may be too expensive to construct in the absence of a property tax break. To the extent civic pride is created by teams, not by the aesthetics of facilities, there is no economic justification for a property tax exemption on these grounds, since the magnitude of the spillover benefits do not turn on the property tax.[32]

[32] One might reason there is an accounting justification for exemptions. If a property tax exemption is given to encourage a social outcome, the same outcome can be realized through direct budgetary appropriations. If the direct appropriation and tax expenditure are the same amount, then differences in the cost to administer the spending—bureaucratic overhead—could give additional reason to prefer a tax expenditure over a budget line item. For instance, if state law exempts any property owned by a public entity from taxation, the cost to administer the exemption is basically zero, most certainly greater than the labor cost to legislative staff to determine the efficient appropriation level. I say "basically" because assessors still incur a trivial but non-zero marginal administrative cost of placing a value on the roll, exempt or otherwise. The marginal administrative cost trends towards zero as the size of the jurisdiction increases.

The Golden State Warriors provide a recent example to understand architectural and facility site design deadweight losses that could be avoided with a property tax break. Before constructing the Chase Center in the Mission Bay neighborhood in San Francisco, the team was planning to construct an arena at Piers 30–32 near the Bay Bridge. The arena design for the pier site included a glass facade that would allow views into the court and practice areas from outside and for those inside, views of the bridge and bay. In addition, 60% of the pier would be allocated to public space. When the team moved the arena to the current Mission Bay site, the facade design was changed to metal panelling and the public space reduced to 30% of the site.[33] Notwithstanding differences in location, the pier site included construction and operation subsidies while the Mission Bay site did not. Had the team not moved the arena, it would have received up to $120 million in subsidies as reimbursement for rehabilitating the pier supports. It also would have leased the pier site from the Port of San Francisco under a 66-year ground lease, making the team responsible for cheaper possessory interest taxes (rather than real property taxes on fee-simple ownership). In other words, two things the subsidy provided for taxpayers are an innovative facility design and more public space than if no subsidies were given. Whether or not these forgone benefits are things city taxpayers care about, of course, is a separate matter.

This discussion thus far considers property tax exemptions as a solution to positive externalities, but this is not the only economic basis for tax breaks. Sometimes organizations provide services that government would otherwise provide, and sometimes these organizations can provide a unit of public service at a lower average cost, holding service quality constant.[34] Hospitals are an example where there is considerable debate on whether publicly-owned facilities are more cost efficient than other forms of ownership (Tiemann et al., 2012). Government can enjoy budget savings by shifting the burden of service delivery to organizations with a lower average service cost, which can be done by providing such organizations public support. It may cost taxpayers $1.50 per unit of health care service to operate a public hospital, but if that same unit of health care can be provided by a private or non-profit hospital at $1.25 per unit, taxpayers are better off getting out of the hospital business (health care service equity considerations notwithstanding) and instead financially support non-public hospitals up to $0.25 per unit. While government could tax and then rebate dollars to non-public hospitals, it is more administratively efficient to use the tax code. It is a particularly useful subsidy mechanism when one would prefer relative stability in public service delivery.

[33] The pier arena was designed by Snøhetta, a global architectural firm with an extensive portfolio of cultural buildings such as museums. The Chase Center was designed by MANICA Architecture of Kansas City, whose portfolio is more focused on sports and entertainment. Additionally, the pier site was 12.5 acres, excluding 2.8 acres in ancillary development across the Embarcadero at what is known as Seawall Lot 330. The Chase Center block is 10.7 acres.

[34] Brody (2002) provides a thorough discussion about the so-called subsidy theory of property tax exemptions alluded to here.

Using the budget to provide financial support introduces health care services to the volatility of budgetary politics, potentially turning hospitals and their health care decisions into a political weapon. Subsidizing through the tax code offers some insulation from fickle politicians, but the crucial policy consideration is whether hospitals—and exempt entities more generally—provide enough public benefits to justify their tax breaks. The empirical support on this for hospitals is mixed (Propheter, 2019c).

This economic motivation for property tax exemptions may strike some as irrelevant to the case of major league owners. Team owners are foremost business people, as they like to remind the public when they threaten to relocate (deMause & Cagan, 2008), whereas hospitals, regardless of ownership type, have mission statements that enter their decisions (Bolon, 2005). While cost-efficiency matters to hospitals, it often matters less than providing core services to the community, in stark contrast to professional sports.

However, this reasoning ignores the increasing deployment of corporate social responsibility (CSR) initiatives in the major leagues. The NBA Board of Governors in 2020, for example, approved the formation of a non-profit foundation that would disburse $300 million over the next 10 years for programs and services targeting empowerment of Black communities.[35] Teams themselves often have non-profit philanthropy arms. Of the 136 US-based teams in the five major leagues active in 2019, almost 90% have a 501(c)(3) exempt non-profit charity. While the motives for CSR in the major leagues are varied, they include a desire to compensate communities for tax breaks (Babiak & Wolfe, 2009). To justify property tax exemptions from a CSR standpoint, it must be the case the value of the exemption equals or exceeds teams' charitable contributions. I evaluate this in the final chapter.

1.7 Static and Dynamic Tax Expenditure Scoring

A crucial aspect of debating property tax breaks is estimating their monetary value, a process known as scoring. Efficient tax policy will set the marginal exemption dollar equal to the marginal benefits the exemption provides, and thus this calculus requires an accurate estimate of the tax expenditure. When scoring the value of a property tax expenditure, analysts have two broad strategies: static scoring or dynamic scoring. In the former, the analyst assumes a property tax break does not change how much assessed value is developed whereas in the latter the analyst incorporates potential behavioral responses into their tax base estimation.

In instances where there is a behavioral response in fact, static estimates will overstate the value of the tax expenditure (Gale & Brown, 2013). However, dynamic estimates will only yield more accurate scores to the extent the analyst has

[35] The National Basketball Association Foundation received its 501(c)(3) exemption status effective June 2021.

compelling theory about how behavior might change and strong data to allow her to model such behavior (Wassmer, 2014). While there are compelling theoretical reasons to doubt static scoring is accurate, it may nonetheless be more accurate than dynamic scoring if rich data on the subject matter is lacking. The alternative would be to dynamically estimate based upon a range of developer behavior assumptions, the veracity of which cannot be easily verified.

The difference between static and dynamic scoring in the context of major league facilities helps illuminate how one reasons through facilities' property tax expenditure calculations. Static scoring the expenditure implies that the facility built in fact is identical to the facility that would have been built had the owner not received a property tax exemption. Dynamic scoring implies the facility is different with the exemption than without. In the absence of the exemption, there is a property tax price to the owner for each additional square foot of market value developed, and consequently the developed facility will have a smaller value per square foot than when the owner receives a tax break. The static tax expenditure estimate, then, overstates the true tax expenditure by assuming the value of the facility is insensitive to its property tax status. In earlier work, I provided empirical support for this theoretical implication by investigating how facility costs per acre varied by construction subsidy level, concluding that facilities receiving more subsidies are more opulent than those receiving fewer subsidies (Propheter, 2017).

1.8 Fully Taxable as the Appropriate Counterfactual

To estimate the property tax cost of facility exemptions, I need a counterfactual baseline, a valuation of whatever improvements would have been made to a site had the current subsidy arrangement not occurred. When pricing property tax expenditures, two competing perspectives of a counterfactual exist: assume the current site was developed for a sports facility but under private ownership exclusively, or assume the current site remained in its pre-facility condition indefinitely. As with most minutiae of public finance policy analysis, reasonable minds can disagree. Quirk and Fort (1992) and Long (2013), for instance, take the former position that private ownership is the appropriate counterfactual. Baade (2003) and Integra Realty Resources (2014) take the latter position that the pre-facility site condition, often vacant land, is the appropriate counterfactual.

My contribution to this debate is to point out that both counterfactuals are appropriate, but one is just more appropriate than the other depending on the research question phrasing. Revisiting my opening sentence to this subsection, the reader will notice that I phrased my counterfactual as reflecting a world in which the current *subsidy arrangement* did not exist, not that the facility did not exist. Stated differently, it is equally sensible to ask either of the following:

1. "What is the property tax expenditure for the facility?"
2. "What is the property tax expenditure of the facility's public ownership?"

The first formulation asks for the difference between the facility being built and not built. It is agnostic to who paid for it or owns it. The second formulation asks for the cost of a subsidy arrangement in which an exempt entity owns the facility, its land, or both. When presented in this way, I hope it becomes clear why the first formulation is less helpful from a public finance analysis standpoint. Lawmakers do not task their staff or contract with consultants to price the property tax implications of private development when there are no direct or indirect tax dollars involved. It is only when government intervenes in development that the cost of the intervention becomes policy relevant. A community may still care if a facility exists or not, of course, but whether the community is better off with the facility than without is an empirical question that is distinct from how much it costs taxpayers to obtain a facility. Only the second formulation yields an estimate of the property tax cost of intervention in sports facility development, at least when the intervention takes the form of public ownership of a facility or its land.

One might argue that if facility construction turns on receiving a full or partial property tax break, then both formulations yield the same answer, and therefore I am splitting semantic hairs that there is a difference. Notwithstanding it is the academic's job to split hairs because precision matters, I do not find fault with the conclusion that both formulations could yield the same answer—they might—but rather I disagree with the premise that facility construction turns on receiving a property tax break. A team could own a facility and its land and receive a higher public contribution for construction equal to the present discounted value of their lifetime property tax payments, for instance. As the foregoing discussion on tax expenditures highlighted, such an arrangement would be more salient to voters and potentially incite their ire with unclear political consequences, but the dollar amount of public contribution would be same. It is a political decision to subsidize team operations with property tax exemptions, not an economic one.[36] In short, then, as the goal of this book is to estimate the property tax cost of full and partial exemptions under public-private partnership arrangements when an exempt entity owns the facility, land, or both, the appropriate counterfactual is a fully taxable facility on fully taxable land where both are under private ownership.[37]

[36] As I have argued elsewhere in this chapter, there may be an economic case for using the property tax to deliver subsidies, but it does not follow from this that it must be in the form of exemptions. That is, again, a political decision.

[37] One way in which the first formulation may have some public finance policy value is in the facility siting decision. If government wants to grow its tax base, then it will locate a facility where it can grow the base the most. Clearly, though, having control over facility location is a form of government intervention, but it is also a decision government has little influence over in the real world. While there are instances where lawmakers express a desire to develop land for sports before a team expresses its interest, such as with UBS Arena, more often lawmakers are facility site takers.

1.9 Statutory and Economic Property Tax Incidence

Throughout this book I discuss who pays the property tax. However, the word "pay" invites confusion since the word has two meanings: an accounting definition and an economic definition. Accountants follow money, and as such who pays a tax is whomever remits it. This is also known as the statutory incidence of a tax, since the law prescribes who is responsible for remitting funds to the government. In contrast, economists follow behavior. Taxes change the price of goods and services, which in turn changes consumers' and producers' decisions. The economic incidence of a tax entails the utility gains and losses induced by the tax without regard to who remits.

For instance, the statutory incidence of the retail sales tax is on retailers in the US. Businesses collect the tax from consumers and remit to the government. (The statutory incidence of the use tax, a companion to the sales tax, is in contrast on the consumer.) But a sales tax increases the price of goods, and when the tax increases, consumers substitute away from higher priced goods to lower priced goods. Factors of production in the supply chain for the higher priced good are subsequently impacted by the reduction in consumer demand. Fewer goods sold means fewer retail workers or worker hours, reduced demand for intermediate goods, and so forth.[38] While this narrative is making certain assumptions about the sensitivity of consumers to changes in prices, the example intends simply to highlight that factors of production in most cases will also pay some of the sales tax through lost income.

Examples for the property tax are appropriate. Consider that at many points over the last few centuries, governments have levied property taxes on the size and number of windows, and to avoid the tax, property owners strategically reduced the frequency of large windows by, for instance, boarding them up. Fewer windows on new buildings means window manufacturers and everyone in the window supply chain pay a portion of the window tax because of the decrease in demand. Boarding up windows on existing buildings also creates public health hazards (Oates & Schwab, 2015). In an apartment building, then, tenants also pay for the window tax through lower health outcomes. A second more colorful example is offered by Fischel (1992). He recounts a story of driving through Connecticut and spotting a farm with hairy cattle. Curious, he asked the farmer about their origin and was informed they were from Scotland and could keep warm during the winter outside. The farmer said that the cattle were in lieu of building a barn as this would have increased his property taxes.[39] Presumably without the property tax, the farmer would have constructed a barn rather than imported the hairy cattle. Hence, local barn installers and material manufacturers pay a portion of the property tax through the farmer's tax avoidance behavior.[40]

[38] The size of the tax's effects depends on the size of the tax, its salience, and the relative sensitivity of consumers to small changes in prices.

[39] The farmer's logic prompted Fischel to make his t-shirt-ready statement, "The deadweight loss of the property tax is hairy cattle" (p. 171).

The distinction between statutory and economic incidence is pertinent to policy debates on major league facilities' property tax status. Suppose an owner is liable for property taxes. They receive a bill, and hence the statutory incidence is on the owner. But further suppose that paying property taxes results in the owner charging higher ticket prices. The owner may remit the tax but a portion of the tax is passed on to fans. Miller (2009) provides evidence supportive of such behavior. He concludes that subsidies for MLB stadiums show up in lower ticket prices. Propheter (2017) similarly concludes that team owners use subsidies to make their facilities more luxurious. Both studies investigate construction subsidies rather than operating subsidies, which is the nature of property tax exemptions, but this is a distinction without a difference since money is fungible. More to the point, these studies suggest that fans will pay some of a facility's property tax, if they were taxable, through higher ticket prices and less extravagant game-day experiences. Now suppose an owner is exempt from property taxes, and as such there is no statutory incidence. But there is always an economic incidence; someone always pays. As discussed more fully in Chap. 2, the mechanics of the property tax in much of the US are such that if lawmakers hold expenditures and non-property tax revenue constant, narrowing the base with exemptions results in higher property tax rates for all other taxable properties. Higher tax rates transfer additional income from other property owners to the government, who then transfers the income to team owners. If instead lawmakers reduce spending to make up for the lost revenue rather than raise rates on everyone else, there is an impact on the quantity or quality of public services.

Another perspective is that team owners may be paying for property tax exemptions with a loss in political capital and good will. Las Vegas Golden Knights owner Bill Foley made headlines when he said in an interview, "We can better spend [public] money on firefighters, teachers, and police. Let's have the best of that as opposed to building the big stadium" (Campo, 2017). Team owners are in a unique position to dictate the terms of public-private partnerships given that teams are in low supply and lawmakers typically want to avoid being perceived as responsible for losing a team (deMause & Cagan, 2008). Hence, to the extent remitting property taxes buys a team political capital, they can also use their leverage to pass on the cost of the property tax to taxpayers in less salient ways. The Sacramento Kings, for instance, pay possessory interest taxes on their lease but negotiated for their tax payments to count towards their contribution to the facility construction debt rather than in addition to rent. Clearly this is a subsidy, since, by comparison, homeowners' property tax payments do not count towards their mortgage. More importantly for this conversation, though, the team can on one hand position themselves as a member of the community that pays property taxes (statutory incidence) no

[40] I intentionally avoid discussing the broader debate in property tax economics whether the tax is a benefit tax or a tax on capital, since it is not obvious to me how this debate informs debates on government investment in sports facilities. For those interested in further reading on this debate, accessible treatments are provided by Zodrow (2001) and Oates and Fischel (2016).

differently than any other business while on the other hand negotiating to make lower lease payments to compensate for the taxes owed, thereby passing on the cost to other taxpayers (economic incidence). Any time team property taxes are used to support debt issued for a facility or its associated development, the jurisdiction is running the risk of increasing its future costs if the team successfully appeals. This came to fruition in the case of Real Salt Lake (McKellar, 2017). To the extent residents and lawmakers are indifferent about this sort of backdoor subsidy, it seems shortsighted for teams to avoid paying property taxes.

This discussion highlights the value of precision of word choice in tax policy debates. In public hearings and the media, "pay" is used as though it has a singular meaning, as though it means the same thing to everyone in all contexts. While certainly not true, confusion can be avoided by stating how one is defining words. In this book, pay and remit are used interchangeably unless stated otherwise. That is to say that this book does not offer an analysis of the economic incidence of property tax expenditures for major league facilities but rather only an estimate of their dollar value and potential budgetary implications.

1.10 The Property Tax Beyond Exemptions

Much of my discussion of the property tax vis-á-vis sports facilities has thus far focused on exemptions. But lawmakers also use the property tax in more indirect ways to financially support major league sports. Perhaps the second most recognizable use of the property tax in major league public-private partnerships is through tax increment financing (TIF). Sroka (2020) reports that a third of facilities in the five major leagues are supported by TIF. TIF is a type of value capture arrangement in which government taxes increases in property value to help pay for investments in surrounding infrastructure that created the increased value. Importantly, while not fully appreciated in the sports economics literature, the structure of the value capture can vary. Economists often prefer land value capture where only the increase in land value is taxed—because land is basically fixed in supply, taxing it is not distortionary. However, assessors rarely value the land portion of improved land well.[41] Since property owners appeal the total valuation, not the valuation of land and improvements separately, assessors have little incentive to allocate resources to improve the accuracy of the land portion of improved land. For this reason, value capture policies in the US more often than not tax the total increase in value, the land and improvement value aggregated together. Value capture policies also vary with respect to construction timing. TIFs tax value increases of all property within a district while other value capture arrangements—such as that used to finance the Hudson Yards redevelopment in New York City—only taxes value increases from new construction occurring after the district's creation date. Hence,

[41] I am referring to instances where the development footprint is a relatively large share of the parcel footprint.

how the value capture is arranged is crucial for evaluating how much revenue is diverted away from the jurisdiction's general fund.

Property taxes also may be used as part of team owners' contribution to facility construction. Previously I noted this is the case with the Golden 1 Center, but it is also the case with Oracle Park and Petco Park. I criticized the logic of this backdoor subsidy on the analogous grounds that banks do not consider property taxes on homes as offsetting a mortgage payment. A separate problem that arises is that making a team liable for property taxes provides it a means to reduce their tax liability through the assessment appeals system. To be sure, the fiscal risk this presents subsidizing local governments is not that a team can appeal—this is a right afforded all property owners and lease holders where applicable. Instead, the risk comes from allowing these property tax payments to count as part of the team's construction contribution. Once bonds are sold, government is responsible for paying them, and counting property tax payments as part of the revenue to secure the debt means that when team owners successfully appeal their assessment, the subsidizing government must increase their contribution to make up the difference.[42] If instead jurisdictions earmarked team property taxes for the general fund, the construction financing agreement would have to substitute in another revenue stream, probably one that team owners had less control to narrow.

A third way the property tax shows up in financing major league facilities, exemptions not withstanding, is through land sales, both sales of public land to

[42] An example illustrating this is the Capital Centre, the home of the then-Washington Bullets and Washington Capitals. In 1973, Abe Pollin moved into the arena on land owned by the Maryland-National Capital Park and Planning Commission, an exempt government entity. The arena was privately constructed by Pollin and his partner Arnold Heft, and the ground lease was for 20 years with two 10-year possible extensions. After the lease ended, the facility reverted to the Commission. The ground lease contained a clause stating that any real property taxes paid by the arena owner would count as rent, and further if the state's property assessor determined the facility was exempt from property taxes, the arena owner had to pay $325,000 per year in additional rent. Thus, if the assessor determined the arena and land were taxable and the tax liability were greater than $325,000, it would be in Pollin's financial interest to appeal. In 1974, the Prince George's County Supervisor of Assessments decided the arena and land were taxable as a leasehold interest, and issued property tax bills accordingly. Pollin appealed to the Property Tax Assessment Appeal Board for Prince George's County and won; he won again before Circuit Court for Prince George's County after the county, state, and Commission appealed the tax board's decision. However, upon appeal to the Maryland Court of Special Appeals, the state's intermediate judicial body, the court ruled in the county's favor, concluding that of the 75 acres upon which the arena and parking were constructed, only 20% remained park space, untouched by private development. This amount of park space was too little for the arena site to be exempted from property taxes under the state's leasehold interest laws, the court ruled. In a later court case, Pollin disclosed that the team paid $426,000 in rent in lieu of taxes in 1973, and thus Pollin would save $100,000 if the state assessor determined his leasehold interest in the land was tax exempt. Because property taxes and rent were treated as substitutes, though, this also meant the subsidy from the county would be at least $100,000 each year over the life of the lease. The only reason this did not occur is because the Court of Special Appeals overturned the lower court's ruling, instead deciding in the county's favor. For additional information, see *Supervisor v. Washington National Arena*, 42 Md. App. 695, 402 A.2d 148 (Md. Ct. Spec. App. 1979) and *Reyes v. Prince George's County*, 281 Md. 279, 380 A.2d 12 (Md. 1977).

teams and government acquisition of land through eminent domain. While the property tax does not take center stage in either situation, there are clear property tax implications. When government sells its land in order to raise funds for a facility, it returns land to the property tax roll, and if that land remains taxable, the discounted value of the stream of future property tax payments from the property must be subtracted from the sale price when tallying the total subsidy. Often times, however, the land does not remain in private ownership, and when it does, the property tax revenue it generates may be captured by a TIF, such as with Fiserv Forum's ancillary development. Whether the land reverts to public ownership or a TIF captures property tax revenue, the land ceases to generate property tax revenue for general purposes. The taxes generated, if any, instead serves the team owner's narrower interests.[43]

Eminent domain, meanwhile, is regularly used to compile the land needed to build facilities (Birch, 2012). Eminent domain is the act of forcing a property sale, a legal right afforded to government by the Takings Clause in the Fifth Amendment so long as the property is for a public use and the property owner is justly compensated. Public use traditionally entailed taking private land to re-purpose for general public use such as parks, highways, and so forth, but the US Supreme Court in *Kelo v City of New London* (125 S. Ct. 2655, 2658 (2005)) interpreted "public use" to mean "public purpose"; that government does not have to own and use the property in a literal sense for eminent domain to be legally justified. In *Kelo*, the city of New London initiated eminent domain proceedings in order to acquire and sell private residential land to a private developer that would build a new headquarters for Pfizer, the pharmaceutical giant. The homeowners argued this arrangement violated the Takings Clause since private development was not a public use. The Court ruled in favor of the city, arguing the city was not forcefully acquiring the property to benefit only the developer; it was doing it in order to increase economic development outputs—namely, jobs and tax revenue—and these serve a broader public purpose that is a benefit to all city residents.

The implications of the *Kelo* decision for sports facility construction specifically and for economic development more generally have been discussed elsewhere.[44] Given sports facilities' poor track record as catalysts of economic development (Agha & Rascher, 2021), we should expect to find lawmakers framing land takings as a means to increase intangible spillover benefits, the psychic benefits of hosting major league sports, rather than tangible ones, like jobs and tax revenue. A recent

[43] At the time of writing, a number of cities and counties in California have been accused of violating the state's Surplus Land Act, which requires that affordable housing developers be given preference to purchase any land owned by a government agency that is put to market. Over the last five years, Anaheim, San Diego, and Alameda County have sold public land to team owners or facility developers without making the land available for affordable housing developers. The California Department of Housing and Community Development sent notices of violation to each local government. The issue has yet to be resolved in Oakland while San Diego formally declared the site of surplus land as state law requires. In Anaheim, former mayor Harry Sidhu resigned amid an FBI corruption probe tied in large part to his interactions with the Anaheim Angels owner regarding the stadium land (Custodio, 2022a, 2022b).

[44] The legal perspectives that I learned the most from are offered by Sax (2006), Hartzog (2006), Lanza et al. (2013), and Miceli (2016).

example where we can see the implications of the *Kelo* decision is when the city of Inglewood used eminent domain to transfer ownership of 11 parcels of private land to Steve Ballmer, owner of the Los Angeles Clippers, so that he can construct a privately built and owned arena. The city's public use statement advocated for eminent domain because the arena would "promote the city as a premier regional sports and entertainment center recognized at the local, regional, national, and international levels" and it further would "support its City of Champions identity by bringing back an NBA franchise."[45] Whether or not the Supreme Court had intangible benefits in mind when it ruled is unclear, but the ruling is certainly a boon to team owners.

At the same time, though, it presents a non-trivial financial risk to affected property owners, if the just compensation forced upon owners is based upon the value of the property in its current use rather than in its use as the site of a sports facility.[46] Generally speaking, land in its current use is less valuable than land in its future use as the site of a facility, particularly if the property owner knows a team owner wants the land. Thus, the *Kelo* decision made it cheaper for team owners to acquire land, assuming their efforts to lobby state and local lawmakers are successful. Importantly, though, states can adopt laws more restrictive than the federal standard as Michigan did in 2006, when voters approved a constitutional amendment that explicitly excluded private-to-private property transfers from the state's definition of "public use."[47]

While the focus of this book is primarily on property tax exemptions, the property tax shows up in subsidy debates and financing arrangements in other ways, such as these examples. I highlighted these as they appear to be relatively common and pose largely ignored risks to the public fisc.

1.11 Overview of Chapters

This chapter introduced concepts important for understanding various policy dimensions of the property tax, particularly those relevant for undertaking a tax expenditure analysis. In Chap. 2, I expand on the administrative aspects of the property tax with a particular focus on assessment administration. State laws dictate which types of property are subject to taxation as well as how local governments administer assessments and calculate tax liabilities, and no two states are identical in these

[45] The complete statement of public use is contained on pages 10 and 11 in the staff report to the city council regarding use of eminent domain for the arena. The report is dated January 26, 2021 and titled *Resolution of Necessity—Hearing to Consider Adoption of Resolutions of Necessity to Acquire Property in the City of Inglewood for the Inglewood Basketball Entertainment Center Project*.

[46] A relevant sports facility case on this point is *Alibri v. Detroit Wayne County Stadium Authority*, 683 N.W.2d 147 (Mich. 2004).

[47] See Proposal 4 of the November 2006 election. The approved language was codified in the Michigan Constitution, Article X §2.

respects. Generating more accurate tax expenditure estimates requires knowing how property tax and administration laws vary, and this chapter serves as a reference on the matter. I also discuss more nuanced aspects of assessment administration as it pertains to sports facilities specifically, including assessment appeals, possessory interest valuation, public interest value, and dark store theory.

In Chap. 3, I provide an inventory of facilities' property tax status for all active stadiums and arenas as of January 2020. Property tax status is divided into three categories: fully exempt, partially taxable, and fully taxable. The chapter's value-added is documenting which team owners pay which property taxes. As I demonstrate, the accuracy of the claim that owners do not pay property taxes depends on the type of property tax. The data show that across the five major leagues team owners paid $293.0 million in property taxes, if one accepts the broadest definition of "property taxes" to include taxes on property. This figure, however, is skewed by PILOTs from the Yankees, Mets, and Nets. Excluding these, team owners across the five leagues paid $127.8 million in property taxes in 2021 (based on 2020 assessment year data).

I then describe my methodology for estimating the property tax expenditure for major league facilities in Chap. 4. My approach involves a number of steps. For real property, I first estimate land value and facility value; the former using the sales appraisal approach and the later an adjusted replacement cost net depreciation (RCND) approach. The replacement cost approach I use is similar to the replacement cost approach most often used by assessors for special purpose properties but with some modifications to accommodate mass appraisal and the unique nature of sports facilities. The sum of the land and facility value is an estimate of each facility's fair market value (FMV), which I then converted into assessed value based on respective state laws. In most cases, this entails applying an assessment ratio to FMV, but due to unique features in some states, such as California, additional steps are needed. After estimating assessed value, the applicable property tax rates are applied. The personal property tax expenditure estimate, meanwhile, is based on actual tax returns for more than half of all major league teams. Special assessments and parcel taxes are then applied based on charges from adjacent properties. The sum of the real property tax expenditure, personal property tax expenditure, and taxes on property minus actual property taxes paid is the total estimated property tax expenditure for the facility if it were privately constructed and owned.

In Chap. 5, I present my property tax expenditure estimates. For the 105 partially or fully exempt facilities active in 2020, I estimate the gross tax expenditure for taxes payable in fiscal year 2021 was $695.2 million (in 2020 dollars). The gross tax expenditure does not subtract out current real and personal property tax payments made by teams. Doing so produces a net tax expenditure estimate of $654.3 million (in 2020 dollars), a figure that represents the aggregate of real property taxes, personal property taxes, and other taxes on property. Extending each facility's tax expenditure over the life of its lease, the aggregate cumulative tax expenditure is $18 billion in present value terms discounted at 3%. If all lease extensions available are exercised, I estimate the expenditure increases to $20.9 billion. Discounting at 6% yields cumulative costs of $16 billion and $17.2 billion, respectively. I also evaluate

how my methodology and Quirk and Fort's 2% ETR methodology compare. While I argue that my methodology is better theoretically motivated, Quirk and Fort's method is undeniably less demanding in terms of time and data needs. Since both approaches attempt to quantify the unobservable, it is inappropriate to evaluate either as right or wrong in an objective sense. For producing aggregate *average* cost estimates, both methods generate similar gross tax expenditure values for non-football stadiums. Moreover, when comparing the distribution of the tax expenditure difference at the facility level, the Quirk and Fort approach overestimates the gross tax expenditure cost in 50–80% of cases compared to my approach. Failing to subtract out any payments under the current public-private partnership will always overestimate the tax cost of an exemption. The analytic value of this comparison is that scholars and policy analysts now have a benchmark to compare competing estimation techniques, one being plausibly more accurate but more time-consuming while the other is the reverse.

Property tax exemptions result in less money for general public services, and I show how the tax cost is distributed among public services and levels of government in Chap. 6. As the property tax is primarily a local tax, it should come as no surprise that K-12 education bears the largest share of the cost to services at 42% of the total cost. Public safety and judicial services comprise the second largest share of the cumulative cost at 20%. When evaluating the cost by level of government, 97% of the property tax cost is borne by local public services. Moreover, property tax exemptions for sports facilities finance one public service at the expense of others, which creates potential equity concerns. I provide some evidence that property tax exemptions provide benefits to wealthier facility attendees at the expense of host communities' relatively less wealthy residents.

In Chap. 7, the concluding chapter, I summarize the book's main policy insights. While quantifying the property tax expenditure and its public service impacts are central contributions, I also raise a number of property tax-related but tangential policy questions that are outside the scope of the analysis. For instance, there is good theoretical reason why team owners should want to pay property taxes. There is also a possibility that team owners earn their property tax exemptions through charitable activities. Aside from discussing these matters in greater detail, I provide cursory empirical analysis to support my arguments to the extent data are available. I hope the material in this chapter proves useful in future subsidy debates as well as helping to motivate future research on the topics.

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Chapter 2
Property Tax Systems and Their Administration

Abstract This chapter provides an overview of property tax policy and administration in the US. The focus is on concepts, vocabulary, and administrative issues pertinent to estimating the property tax expenditure for major league facilities. The chapter describes the tax's mechanics—how liability is determined and its role in local budgeting. The taxability of different types of property, assessments for exempt property, and the relevance of assessment appeals are reviewed. I also give attention to the various methods for valuing property. Finally, three unique valuation issues pertinent to major league facilities, in practice and theory, are discussed: possessory interest, public interest valuation, and dark store theory.

2.1 Calculating Property Taxes

On the surface, the property tax is no different than any other tax in that it follows a simple algebra:

$$Base_i \times Rate_i = Levy_i \tag{2.1}$$

where $Base$ is the value subject to taxation in jurisdiction i, $Rate$ is the statutory property tax rate, and $Levy$ is the amount to be collected.

What separates the property tax from any other tax, however, is how each component is determined. For most other taxes, lawmakers define taxable activity and set the rate, allowing it to vary over time periodically. In the case of the sales tax or the personal income tax, for instance, lawmakers define how much of which goods are taxable and how much of which income sources are taxable, and the respective rates are applied to the respective base to determine the amount due. For the property tax, though, the $Base_i$ is determined by the interaction of assessors and property owners while the $Levy_i$ is determined by local legislators. Unless a state or local law otherwise restricts the rate, $Rate_i$ falls out from Eq. 2.1 as the rate needed to satisfy the equality. That is, the property tax rate is whatever it needs to be in order to raise the levy from the taxable base. Crucially, while this narrative holds in much of the country, it does not hold everywhere. Moreover, no

G. Propheter, *Major League Sports and the Property Tax*, Sports Economics, Management and Policy 22, https://doi.org/10.1007/978-3-031-18790-2_2

two states define or administer the base, rate, and levy the same way. That being said, there are more similarities than differences across the US in terms of property tax policy and administration, and the discussion that follows intends to provide a broad understanding of the tax's mechanics so that readers can identify the subtle differences in property tax systems across states. It is logical to discuss the levy, the base, and the rate in this order.

Before continuing, it is worth noting that property tax terminology varies across states. Though the underlying concepts and mechanics of property tax systems are similar in much of the country, the lack of a common lexicon invites confusion. I have chosen to use terminology that I am most comfortable with, recognizing this may be an inconvenience to readers more familiar with a different vocabulary.[1]

2.1.1 The Property Tax Levy and Yield

In most states, local governments use the property tax to fill expected revenue gaps in the budget (Kitchen, 2013). Local legislators establish spending priorities for a given year, and staff forecast non-property tax revenue. Under a balanced budget scenario,

$$N_i + P_i = X_i \tag{2.2}$$

where N_i is non-property tax revenue in jurisdiction i for any given budget year, P_i is property tax revenue, and X_i is expenditures. The difference between expenditures and non-property tax revenue is the property tax yield, Y_i.

$$Y_i = X_i - N_i \tag{2.3}$$

Equation 2.4 suggests that $Y_i = P_i$, but the yield equals the amount of property taxes *collected* if and only if all liability is paid on time and no refunds are issued, which is unlikely. For simplicity, call these sources of debits and credits against the yield "uncollectibles" (U) to indicate taxes owed but uncollected in a given year.[2] To ensure enough property tax revenue is collected to balance the budget, expected uncollectibles are added to the yield, the sum being the property tax levy, or $Y_i + U_i = Levy_i$. Substitution into Eq. 2.1 results in:

$$Base_i \times Rate_i = Y_i + U_i \tag{2.4}$$

[1] Readers with in-depth knowledge of the intricacies of New York City's property tax will find my vocabulary familiar.

[2] In my experience with the property tax, the dollar value of nonpayments exceed the dollar value of refunds in any given year. Hence, uncollectibles are on net a debit against the yield.

or alternatively,

$$Base_i \times Rate_i = [X_i - N_i] + U_i \tag{2.5}$$

$$Rate_i = \frac{[X_i - N_i] + U_i}{Base_i} \tag{2.6}$$

Unpacking the levy into its components shows how they relate. Property tax exemptions narrow the base, and if spending levels, non-property tax revenue, and uncollectables are unchanged, then the tax rate increases to maintain a balanced budget.[3] Lawmakers interested in keeping the tax rate fixed, though, need to compensate for the narrowed base by decreasing general spending (X_i) or decreasing, say, delinquencies (U_i) or increasing non-property tax revenue (N_i). These choices impose costs on affected residents, but more importantly Eq. 2.6 shows that narrowing the taxable base by granting exemptions is never costless. It is possible to narrow a tax base in a revenue neutral way in the short run, but this would require a reduction in financed services. Defining revenue neutrality as costless, though, is misleading, since such a perspective ignores the opportunity cost of forgone public services.

2.1.2 The Property Tax Base

A jurisdiction's property tax base is the sum of all properties' taxable value. The starting point for determining the property tax base is commonly referred to as fair market value (FMV), which the International Association of Assessing Officers (IAAO) defines as "The most probable price (in terms of money) which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus" (IAAO, 2013a, p. 101). This definition is also sometimes called "full market value", "full cash value", or a close derivation.

How assessors measure FMV depends on the type of property and the jurisdiction. Investors price income-producing property differently than buyers pricing a home they plan to occupy. In the former case, investors want a stream of income whereas in the latter case, buyers want to consume the home's physical and environmental amenities, such as proximity to quality schools or better access to transportation. The most common methods for measuring FMV are discussed in greater detail shortly.

[3] An alternative view of the property tax base and rate relationship is that lawmakers use changes in the base to engage in fiscal illusion; that the algebra presented here is too simplified and ignores the political economy of the tax. See Ross and Yan (2013).

In many states, property owners are not taxed on FMV but rather on assessed value (AV), and AV is a function of FMV:

$$FMV = \lambda(AV) \tag{2.7}$$

where λ is the assessment ratio, sometimes called an assessment rate. For states that tax at FMV, $\lambda = 1$ while in other states $0 < \lambda < 1$. In Georgia, for instance, $\lambda = 0.40$ whereas Colorado has two property classifications for assessment purposes, residential and non-residential, with λ being 0.072 and 0.29, respectively.[4] Minnesota has 36 property assessment classifications, the most in the US, and it also allows for λ to vary within property type by value, a system that functions like income tax brackets.

Further complicating the tax base calculation are growth limits that restrict how much properties' assessed value may increase from one year to the next (Havemand & Sexton, 2008), as well as any exemptions or abatements property owners may be eligible to receive.[5] It is useful, then, to introduce a third term, taxable assessed value (TAV), which is defined as the value reflected on a property tax bill, the value subject to taxation. For example, for a property receiving no exemptions in a state that taxes at FMV, $TAV = FMV$. If on the other hand a property receives an exemption and the state sets λ to something less than one, then $TAV = (\lambda(FMV) - EX)$, where EX denotes the value of the AV exempted.[6] One important insight from this discussion is that due to state laws, the value on which property owners pay taxes may be much different than the FMV the assessing office generated.

A related misunderstanding of the property tax is that FMV reflects the price a property would sell for if put to the market *at the time the owner receives a tax bill* (Cypher & Hansz, 2003). This confusion arises from mistaking an appraisal for an assessment. The *Glossary for Property Appraisal and Assessment* published by the IAAO distinguishes the two. An appraisal is "the act of estimating the money value of property" (p. 7) with value set at the time of the appraisal whereas an assessment is "the *official* act of determining the amount of the tax base" (p. 11) [emphasis added]. Though the two concepts are related, they differ in at least two important respects. The first is that an assessment is an act of governance whereas an appraisal is not. As such, assessing offices make decisions foremost guided by statutes and case law whereas appraisers' judgements of value are dictated foremost

[4] In the November 2020 election, Colorado voters eliminated the Gallagher Amendment, which held the commercial assessment rate fixed at 29% and allowed the residential rate to remain unchanged or decrease. At the time it was repealed, the residential rate was 7.2%, down from 21% in 1983.

[5] As used here, an exemption is a permanent reduction in assessed value, such as senior citizen exemption, whereas an abatement is temporary. Both may be used to achieve social or economic policy goals.

[6] Some jurisdictions with fractional assessments may provide an exemption of FMV rather than AV. In such instances $TAV = \lambda(FMV - EX)$.

by professional standards.[7] Consequently, state law may require assessors to value property in a way that conflicts with professional standards. For example, under Nevada law, property taxes on improvements are based on the cost to replace them rather than what buyers are willing to pay while under New York law, the DOF must assess condominium and co-operative apartments as though they are rental properties rather than as owner-occupied residences.

The second important difference is that FMV is set as of a specific point in time, a date set in law and commonly known as the lien date or assessment date. In most of the country, the lien date is January 1.[8] On the lien date, FMV and AV are updated, a process known as a reassessment. If the reassessment is benchmarked to the market, it is sometimes called a revaluation to distinguish it from a change in value benchmarked to the prior year assessment.[9] While one might expect reassessments to occur annually, this is not the case in much of the country, and there is variation in the amount of time that passes before FMV and AV are updated. Colorado requires a reassessment every two years and Maryland requires it every three years, for instance. Others allow local assessing jurisdictions to set their own cycles while California has a system treating sold and unsold properties differently. Under Proposition 13, properties that change ownership reassess to the sale price at the time of sale while homes that never sold are reassessed on the lien date where the annual increase in assessed value cannot exceed 2% or the rate of inflation.

The effect of state laws and longer periods between reassessments is that FMV bears little resemblance to current market prices. Depending on how long property owners have to appeal their assessments and how long jurisdictions take to produce and disseminate property tax bills, property owners may be paying property taxes on a value that is anywhere from a year to six years old. This time lag is a unique artifact of the administration of the property tax base and the laws that determine it (Lutz, 2008).

2.1.3 Property Tax Rates

In much of the country, property tax rates change on an annual basis. They are determined by dividing the expected amount of property tax revenue needed to balance the jurisdiction's budget by the jurisdiction's taxable assessed value. To the extent either of these components change, the tax rate needed to satisfy the $Base_i \times Rate_i = Levy_i$ equality will change as a matter of algebra. (See Eq. 2.6.) Some states, however, restrict how much the tax rate can change. California, for

[7] Aside from the IAAO, the Appraisal Foundation and the Appraisal Institute are national and global organizations that also provide guidance to the appraisal profession.

[8] Other common assessment dates are December 31, January 2, January 5, July 1, and Oct 1.

[9] Some states such as Texas call the process a reappraisal, which is unfortunate since it gives the impression an appraisal and an assessment are the same thing.

Table 2.1 Floating tax rate example

Scenario	Added value	Base	Share	Levy	Tax rate
1		$100,000,000		$200,000	0.2000%
2	$500,000	$100,500,000	0.5%	$200,000	0.1999%
3	$5,000,000	$105,000,000	4.8%	$200,000	0.1905%
4	$50,000,000	$150,000,000	33.3%	$200,000	0.1333%

instance, limits the property tax rate to 1%; though, voters can approve higher rates to pay for capital projects. Tax rates to finance Colorado local governments, meanwhile, are set at the prior year's rate unless voters approve an increase.[10] The effect of restricting the tax rate's movement is to change a revenue-based property tax system, where rates float to meet revenue needs, to a rate-based system, where rate changes are slow to respond to changes in assessed values (Sheffrin, 2013).

An implication of having a (relatively) fixed property tax rate is that exempting property or adding taxable value to the base will have little to no effect on the rate, which improves the accuracy of a property tax expenditure calculation. Under a floating rate system, in contrast, estimating the tax rate entails predicting how lawmakers change their property tax revenue needs. Importantly, though, major league facilities tend to be a relatively small portion of a jurisdiction's property tax base. FedEx Field is 0.53% of Prince George's County's base; Dodger Stadium is 0.016% of Los Angeles County's base; and the Chase Center is 0.27% of San Francisco's base. The smaller the value of the exempt property relative to the jurisdiction's tax base, the smaller the change in the tax rate. This is demonstrated in Table 2.1.

In the baseline case (scenario 1), the hypothetical jurisdiction has a property tax base of $100,000,000 and a levy of $200,000, implying a tax rate of 0.2%. In each successive scenario, a larger valuation is added to the base. The change in the tax rate relative to the baseline increases as the share of the new value increases. Note that when the new value's share of the jurisdiction's base is half of a percent, the tax rate only changes by 0.0001 percentage points, or a difference of 0.50 cents in tax liability. When the value is about 5% of the total base, which is the case for Hard Rock Stadium in Miami-Gardens (Florida), the tax liability difference is about $475, perhaps an acceptable rounding error on a $9500 property tax bill.[11] This example intends to illustrate the difference between the algebraic mechanics of floating tax rates and the conditions in which we can use existing tax rates as reasonable estimates for counterfactual tax rates. While all changes in the base show up in floating tax rates, the size of the change may be too small to matter when the value of a facility relative to the jurisdiction's property tax base is small. How small is small enough to justify treating tax rate changes as zero is a matter of judgment.

[10] Property tax rates in Colorado are called mill levies. In rare circumstances, a mill levy in a current year can exceed the mill levy the prior year without voter approval. A mill is one one-thousandths ($\frac{1}{1{,}000}$) whereas a rate is one one-hundredths ($\frac{1}{100}$).

[11] The hypothetical $9500 is calculated by multiplying the example 0.001905 tax rate by the example $5,000,000 value added.

2.1.4 *Statutory and Effective Tax Rates*

In property tax policy discussions, one must take care to avoid conflating statutory property tax rates and effective property tax rates (ETRs). Statutory rates are the rates jurisdictions set to meet budgeting needs. They are the rates that appear on a property tax bill in the calculation of liability. ETRs reflect taxes paid relative to FMV.[12] Since taxes paid is a function of lawmakers' spending levels and the assessment system—including any assessment growth limits, tax rate limits, exemptions, exclusions, credits, and so forth—ETRs typically vary from property to property. Moreover, ETRs are more informative about relative tax burdens than statutory rates, since they implicitly control for differences in how properties are assessed and taxed. Nassau County assesses property at 1% of FMV, and Nassau Veterans Memorial Coliseum would have faced a statutory tax rate of $4.52 per $100 of AV in 2020 if not exempt. By comparison, Washington state assesses at 100% of FMV, and T-Mobile Park and Lumen Field would have faced a statutory rate of $0.92 per $100 of AV the same year. Comparing facilities' statutory rates is misleading, then, since the rates are applied to taxable bases of different magnitudes.

Table 2.2 displays ETRs for select taxable facilities as of December 2020. In this small sample, there is clear variation with Wrigley Field and Children's Mercy Park paying more in taxes relative to FMV than others, and Bank of America Stadium and T-Mobile Arena are at the other end of the spectrum. Crucially, while

Table 2.2 ETRs for select taxable facilities

Facility	Year built	FMV	Taxes	ETR
Bank of America Stadium	1996	$325,365,800	$2,152,795	0.7%
Children's Mercy Park	2011	$15,671,110	$656,402	4.2%
Exploria Stadium	2017	$105,338,715	$1,965,680	1.9%
FedEx Field	1997	$173,460,400	$2,613,510	1.5%
Moda Center	1995	$81,770,590	$1,218,751	1.5%
T-Mobile Arena	2016	$376,480,340	$3,733,170	1.0%
TD Garden	1995	$66,184,500	$1,649,318	2.5%
Wrigley Field	1914	$52,318,756	$2,723,223	5.2%

Notes: ETRs are based upon assessment data available in December 2020. In most cases, these reflect taxes payable in fiscal year 2021

[12] An alternative conception of a property tax ETR is taxes paid relative to Haig-Simon income. Owing to lags in the assessment system, laws defining market value in obtuse ways, and assessment growth limits, FMV-based ETRs lose a lot of appeal as a measure of relative tax burdens within and across jurisdictions. ETRs based on comprehensive income in a given tax period overcome this problem; though, the inferior wage income is really the only metric with any reasonable degree of measurement consistency available to most analysts. Analysts should present FMV-based ETRs and wage-based ETRs side-by-side when there is reason to doubt FMV is accurately capturing property wealth in a given point in time.

ETRs capture differences in assessment systems, they do not capture differences in legal arrangements or the configuration of tax parcels. The Carolina Panthers, for instance, only pay property taxes on Bank of America Stadium, not the land; it leases the land from the city for $1 a year. In addition, the stadium's FMV reflects the valuation for the stadium, stadium land, a training facility, and practice fields. The Mecklenburg County Assessor's Office combines these real properties into a single parcel; other assessing jurisdictions assign different parcel numbers to the facility proper and its related property. Such administrative variation means one should be cautious when comparing ETRs across facilities.

2.2 Taxable Personal Property

Policy discussions about sports and the property tax appear to focus on real property, but in most states, major league team owners may also be liable for tangible personal property taxes. The *Significant Features of the Property Tax* database indicates that only seven states exempt all personal property from taxation—Delaware, Hawaii, Illinois, Iowa, New Hampshire, New York, and Ohio. Another six states limit taxation to specific industries where personal property frequently cross local governments' borders such as railroads, airlines, and utilities (Minnesota, New Jersey, New Mexico, North Dakota, Pennsylvania, and South Dakota).[13] Of the remaining states that allow taxation of tangible personal property, taxes on business inventory and business machinery and equipment (M&E) are common. Inventories in transit are usually exempt whereas inventories of goods for lease or rent tend to be taxable. M&E includes things like computers, desks, chair, and other office equipment. For sports teams, while they are unlikely to have taxable inventories, office M&E, weightlifting, and training equipment may be subject to personal property taxation.

That team owners may be liable for personal property taxes challenges the frequent claim that major league franchises do not pay property taxes (Mitchell, 1999; Monroe, 2020; Brown et al., 2016). Teams in states that tax M&E will pay property taxes on the personal property they own, to the extent such M&E is not otherwise exempted by law or agreement.[14] When Ohio fully phased out its tangible personal property tax in 2009, for instance, it saved Nationwide Insurance, the owner of Nationwide Arena at the time, about a half million dollars a year. One should not consider this policy change a preferential subsidy to Nationwide or the Blue Jackets, since the policy applied to all tangible personal property owners. In

[13] Pennsylvania is a special case in that it allows certain cities and counties, at their discretion, to tax intangible personal property, but since 1998, no such government has elected to impose the tax.

[14] The taxable status of leased tangible personal property depends on state law. The Las Vegas Raiders, for example, do not pay property taxes on tangible personal property leased from the Las Vegas Stadium Authority, but in states with taxable leasehold interest laws, lessees would be liable even when the personal property is owned by an exempt entity.

contrast, the Atlanta Falcons are exempt from all property taxes—real, personal, and intangible—under the team's lease with the Georgia World Congress Center Authority, the owner of the Mercedes-Benz Stadium. This is a preferential tax subsidy since it is for the benefit of a specific business.[15]

2.3 Property Assessment Administration

As noted earlier in this chapter, an assessment is an act of governance, and the official entrusted to manage the delivery of this public service in most states is the local assessor.[16] The assessor is the executive of an assessing office, and she leads a team of appraisers and support staff (information technology and geospatial analysts, clerical workers, lawyers, and so forth) to execute the office's legal and administrative obligations. As such, assessors are responsible for the office's day-to-day operations, and they are accountable for assessment quality. In the US, assessors are municipal officials in much of New England and various parts of the mid-Atlantic and Midwest; they are county officials most everywhere else. Moreover, depending on state law, the assessor may be popularly elected or appointed by the local legislative body.[17] Assessment administration for local property is a state-level public service in only two states, Maryland and Montana.[18]

The primary task of the assessing office is to generate estimates of value for property tax purposes. Unlike goods that exchange hands on a regular basis—such as items at a grocery store, gas, or stocks—the likelihood of any particular real property changing ownership during the year is low. Thus, we never observe what people are willing to pay for properties that do not sell, nor do we observe bid prices for properties that are never put to market. For properties that do sell, it is possible that agreed upon sales prices reflect duress or preferential treatment, as we would expect with eminent domain, short-sales, and ownership exchanges between family members. The assessor's task is to generate, subject to state laws, an estimate of

[15] See page 22 of the team's Memoradum of Understanding, which is also restated in *Love et al v. Fulton County Board of Tax Assessors et al*, a lawsuit challenging the team's blanket exemption. The Georgia Supreme Court upheld the exemption in a decision rendered on June 1, 2021.

[16] The formal title of the assessor varies from state to state. In Texas, for instance, the executive in charge of the county appraisal district is the chief appraiser. The term "assessor" is used here broadly to identify the executive responsible for the assessing function. In states where assessment administration is centralized, a civil servant directs a local branch of the state assessing agency.

[17] Additional information on the elected and appointed status of assessors can be found in Dornfest et al. (2019).

[18] All states assess some type of property at the state-level, but typically it is unique property that requires a high degree of familiarity with specific industries. These types of property include subsurface mineral deposits, mobile personal property such as airplanes and boats, and real property improvements that span multiple jurisdictions such as trains and utility infrastructure.

FMV that takes into consideration, in most instances, properties' highest and best use at the time of the assessment.[19]

2.3.1 Assessing Exempt Property

Properties owned by a governmental entity and used for governmental purposes are permanently exempt from state and local property taxes in every state. This does not mean that leases of such property for non-governmental uses are exempt, a topic discussed more fully later. Because fully and permanently exempt properties generate no property tax revenue, there is little incentive for assessors to allocate administrative resources to valuing them well (Netzer, 2002). As the assessment record for the Enterprise Center and Busch Stadium in St. Louis notes, "As an abated parcel, the Assessor does not determine an estimate of market value for biennial reassessment." Many other assessing jurisdictions do not even record a value on the roll for exempt property—Milwaukee County (Wisconsin), Bexar County (Texas) and Detroit to name a few.[20] In addition, since they do not face a tax price from assessment errors, exempt property owners do not have a financial incentive to monitor assessment quality.

State or local laws may compel assessors to place a value on the tax roll for each parcel of real property, but it does not follow that the value accurately reflects the value that would be placed on the roll if the property were subjected to assessor and property owner scrutiny. By way of example, the New York City DOF is required to enter a roll for all real property, and for fiscal year 2021, the FMV for the Statue of Liberty was $32.1 million—$9.4 million for the land and $22.7 million for the improvements. It is unlikely that if the island and statute were taxable that its FMV would be 40% smaller than the average Manhattan hotel.[21] By way of further example, the Boston Assessing Department in 2009 simulated the assessment process for real property owned by higher education and medical institutions, organizations whose real property are typically exempt. The institutions provided detailed income and expense data to the city to generate assessments, and

[19] While highest and best use is the standard for most property, states typically require that agricultural property be valued in its current use instead. A crude example is to imagine grazing land adjacent to a busy shopping center. From a highest and best use perspective, the vacant grazing land looks similar to the land supporting the commercial real estate, and thus the grazing land should be assessed similarly. Under a current use perspective, however, assessors are required to ignore alternative uses of a property, instead focusing on the activity that is in fact taking place. Value in current use is generally much less than value in highest and best use. If the current use is the highest and best use, then the values would be identical of course.

[20] Some jurisdictions enter a value for exempt properties on the tax roll but the value is never updated. In these jurisdictions static tax expenditure estimates will become increasingly less accurate over time, persistently understating the tax expenditure.

[21] Using the fiscal year 2019 roll for hotels classified as HS, HB, H1, H2, and H5, the average FMV is $52.2 million and the median $34.0 million.

the institutions were then given a chance to critique the assessments as they would on appeal. The year-over-year increase in assessed value for these properties was 106%. By comparison, taxable commercial property assessments in the city grew 8.5%. The significant increase in assessments for the exempt property reveal the extent to which they were undervalued (Propheter, 2019).

The accuracy of values on the tax roll is relevant to major league facilities. Of the active major league facilities in 2020, 35 do not receive an assessment, zero values instead being entered on the roll. For the remaining facilities with roll values, one could calculate a property tax expenditure, but the resulting figure would be inaccurate for the reasons discussed in the Yankees Stadium case study: assessing staff have no incentive to value accurately and team owners have no incentive to monitor assessment quality. In non-zero value cases, is it sensible to use the roll value anyway to estimate the property tax cost? I think so, if the estimate is qualified. In cases like a cultural icon such as the Statue of Liberty, the roll likely understates the property tax expenditure. In cases like Madison Square Garden, an active place of business, it likely overstates it. Absent lawmakers' increasing investment in the assessment administration of exempt property, which economically makes little sense despite being good governance, roll values may be the only window into property tax costs available, short of conducting a book-length property tax expenditure analysis.

2.3.2 Assessment Appeals

A unique feature of the property tax is that property owners can appeal an assessor's judgement of value. A property appeal is an administrative remedy. In much of the country, property owners have three opportunities to appeal before asking the courts to adjudicate the dispute. The first opportunity is an informal appeal. No state requires them by law, but the IAAO (2016) encourages them. During an informal appeal, property owners may present their case to staff appraisers. If the property owner is unsatisfied with the informal appeal outcome, the second opportunity is a formal appeal with the local assessment appeals board. Board members are normally certified appraisers working in private practice and serving in either a pro bono or per diem capacity. These membership requirements, which are normally prescribed in state law, ensure the formal appeals process functions independent of assessing offices. Board hearings are structured similar to the courts with affidavits, witness testimony, and chances for rebuttal. Should the property owner remain unsatisfied, they can appeal to a formal state-level board of appeals. After this point, appealing property owners enter the judicial system, and consequently, the basis for an appeal changes from a matter of professional judgement to a matter of law.

The ability to appeal an assessment has two implications for major league facilities. First, as the appropriate counterfactual to an exempt facility is a privately owned and taxable one (Quirk & Fort, 1992), property tax expenditure estimates must take into consideration potential appeals decisions. Second, even if assessors

put as much effort into assessing exempt property as taxable property, the tax roll still may overestimate the taxable assessed value given the absence of team owners' incentive to appeal an exempt property. Hence, even if one has confidence an assessing jurisdiction values sports facilities well, an adjustment for appeals is warranted.

It is difficult to identify a rule of thumb for appeals adjustments, since few facilities are taxable. Recent high-profile cases are Levi's Stadium in Santa Clara and Bank of America Stadium in North Carolina. The San Francisco 49ers pay possessory interest taxes on the value of the stadium, and it recently won a decision that is estimated to reduce its future property taxes by $6 million a year (Vo, 2019). However, this tax reduction was not due to a dispute of the stadium's assessment. The year it opened, the county assessor valued the stadium at $1.1 billion compared to a construction cost of $1.27 billion. The county board of appeals ruled the value should instead be $961 million, a valuation that both the team and county stipulated. Instead, the tax savings come from the board of appeals ruling that the team does not have exclusive lease rights over the stadium, and as a result, the team is only responsible for half of the stadium's property tax liability. The county's assessor filed a lawsuit against the ruling, and at the time of writing the county superior court has not rendered a judgment. In the case of Bank of America Stadium, the Carolina Panthers argued for a reduced assessment following a 2019 revaluation. The city initially valued the stadium at $572 million, and then lowered it on informal appeal to $472 million and then again to $384 million. The team argued the valuation should be $87 million, and the Mecklenburg County Board of Equalization & Review ruled it was worth $215 million—a 44% reduction from the assessor's recommendation (Peralta, 2020).

In some instances, assessors and teams have negotiated assessment resolutions to avoid prolonged lawsuits in the court system. Oracle Park was the subject of frequent disputes between the San Francisco assessor and the San Francisco Giants in the early 2000s. Built for a reported $357 million, the assessor valued the team's possessory interest at $331 million while the Giants argued the stadium should be valued at no more than $200 million on the basis that some of the construction cost is a benefit to the city, not the team, and hence the team should not pay property taxes on that portion.[22] (The details of the team's arguments are discussed in greater detail later in this chapter.) In 2005, the team and assessor brought three years of assessments before the city's Board of Assessment Appeals (BAA), which ruled the stadium should be valued less than the assessor's value but more than the team's value. Table 2.3 details the disputed assessments. After the BAA ruled, the assessor filed suit against the decisions in San Francisco Superior Court, but before the case was heard, the team and assessor reached a settlement. The two agreed to an assessed value between the assessor's value and the BAA's value, and further that

[22] Some anecdotal evidence reports the team spent $200 million constructing the stadium, but I have found no documentation of this to date. I suspect the lower figure is a hard and soft cost figure and the larger $357 million reflects all development costs.

Table 2.3 San Francisco giants assessment appeal history

Tax year	Assessor	Team	BAA	%△	Settlement
2001	$331.0	$200.0	$230.0	−30.5%	$274.8
2002	$338.0	$200.0	$240.0	−28.9%	$268.9
2003	$344.0	$200.0	$236.0	−31.4%	$262.6
2004					$257.3
2005					$252.2
2006					$247.2
2007					$242.2
2008					$237.4
2009					$232.6
2010					$228.0
2011	$389.4	$193.0	$340.0	−12.7%	
2012	$397.2	$181.9	$355.0	−10.6%	
2013	$405.2	$170.3	$355.0	−12.4%	
2014	$407.0	$254.0[a]	$365.0	−10.3%	
2015	$415.1	$309.0[a]	$385.0	−7.3%	
2016	$421.5	$306.0[a]	$405.0	−3.9%	
2017	$429.9	$300.0	$437.0	1.7%	
2018	$438.5	$300.0	TBD		
2019	$447.3	$300.0	TBD		
2020	$456.2	$300.0	TBD		
2021	$462.4	$200.0	TBD		

Notes: BAA means board of assessment appeals. %△ reflects the percentage change from the assessor's value to the BAA's value. TBD means to be determined. Dollars are nominal and in millions. Data from Board of Assessment Appeals dockets dated April 11, 2005, May 31, 2016, and June 25, 2019; city ordinance 060973 (October 11, 2006); Dineen (2016); and Matier (2019). More recent appeals information comes from the Board of Assessment Appeals

[a] The team initially countered with assessments of $158.2, $145.7, and $200.0 for tax years 2014, 2015, and 2016, respectively

assessments from tax year 2004 through 2010 would decrease 2% a year to reflect depreciation. Despite the settlement's terms expiring in 2010, it was not until 2013 when the city's new assessor noticed the stadium was still being assessed under the expired rules. After re-assessing the stadium for missed value, the team appealed and has appealed every assessment since. Information on outstanding appeals from 2018 through the present are also included in the table; the board has yet to rule on this as of the time of writing.[23]

In 2019, the city's assessor escalated the recent disputes to the courts, filing a lawsuit against the team and BAA for the board's ruling on 2015 through 2017 assessments. It is presumably in a team's interest to avoid the courts given the risk a

[23] Assessors in California can bill property owners for assessed value that is discovered after a tax year has passed. These are called escape assessments.

judge will decide that financial statements are public record. More importantly, the Giants's appeals history indicates that the large decrease awarded to the Panthers may not generalize to all major league facilities. Despite Bank of America Stadium and Oracle Park being similar in age, over the 10 tax years for which the San Francisco BAA has ruled, the average assessment reduction to Oracle Park has been 14.6% through 2017.[24]

2.4 Approaches to Value

Perhaps the most important part of calculating property tax expenditures for exempt property is estimating FMV. The IAAO recognizes three methodologies for valuing property: the comparable-sales approach, the income approach, and the cost approach. The appropriateness of any particular approach will depend on the circumstances facing an assessor, including data availability, time, and whether the property under consideration is real, personal, or intangible. These three approaches in the context of major league facilities are discussed in turn.

2.4.1 Comparable-Sales Approach

The comparable-sales approach is arguably the most widely known methodology, since it is used almost everywhere in the US to assess non-income producing residential properties. The logic of the comparable-sales approach is straightforward: a property is worth what others are willing to pay for physically similar properties nearby. An underappreciated assumption of the comparable-sales approach is that

[24] Another example with a colorful appeals history is Nationwide Arena. The arena was privately constructed by Nationwide Insurance for between $147.1 and $175 million, depending on the source. The arena opened in 2000, and the Franklin County legislature approved a 15-year real property tax abatement for the arena, valued at about $4 million a year. In order to minimize the impact of exempting the arena on Columbus city schools, Nationwide agreed to pay PILOTs to the school district based upon the assessed value of the arena. To ensure the arena continued to be assessed accurately during the abatement period, the county and Nationwide also agreed to set the abatement to 99% of taxable value rather than 100%. But the one percentage point also gave Nationwide Insurance an incentive to appeal the assessment, since the PILOT was based upon it. After years of appeals and litigation in which the adjudicated valuation ranged from $44 million to $156 million, Nationwide and the city agreed to a settlement in which Nationwide made a lump-sum PILOT of $3.3 million to the schools and then at least $1 million a year thereafter through the end of the abatement in 2015. The Franklin County Convention Facilities Authority, a component unit of the county, purchased the arena from Nationwide Insurance for $42.5 million in 2012 as part of a bailout agreement. The Authority sought and received a full property tax exemption from the state legislature in December 2016. Had the state legislature and governor not approved the exemption, the Authority would have had to make real property tax payments to Columbus schools on the full assessed value of the arena.

what one can see is a reliable indicator of what one cannot see. In the case of property, we only observe willingness to pay when the properties are put on the market in fact, but not every property is put on the market each year. To the extent one can create an inventory of the measurable property characteristics across sold and unsold properties, the assumption is trivial.

As a property tax valuation strategy for sports facilities, the comparable-sales method is problematic. Facilities do not change ownership often, and when they do, they are typically bundled together with a team.[25] Unless details of the sale are publicly disclosed, it is impossible to determine how much of the price is due to the team, facility, debt assumption, or other property. Additionally, in modern public-private partnerships where government owns the facility and teams own a leasehold interest, sales prices do not reflect the market value of the facility proper but rather the value of the right to operate the facility. Sloppy reporting by news outlets may to be blame for glossing over this distinction (Oder, 2018). Taking these considerations together, facility assessments generated on the comparable-sales approach are unreliable (Wilmath, 2003).

2.4.2 Income Approach

The income approach is perhaps the most intuitive method for assessing commercial properties (IAAO, 2013b). Unlike owner-occupied housing in which buyers are interested in building equity, investors purchase commercial properties for a stream of income. Because a property is only worth as much as the profit it generates, property taxes should be based on this stream. The two most common variants of the income approach in assessment administration in the US are direct capitalization and gross income multiplier (GIM).[26] In direct capitalization, assessors determine assessable net operating income for a property and divide the amount by a capitalization rate, which is an after-tax rate of return investors would expect if they purchased an asset with all cash. GIM scales a property's gross income (before expenses) upward by a multiplicative factor. Both variants require detailed property financial data, but GIM is less data intensive as only sources of income are needed. The critique of GIM is that its lack of sophistication fails to account for differences across properties in expenses. While this concern can be ameliorated by using income from comparable properties (Olmsted, 2018), GIM is most common, to the

[25] The last exception to this general rule was Nationwide Area, which was sold for $42.5 million by Nationwide Insurance to a component unit of Franklin County in 2012. The major league tenant, the Columbus Blue Jackets, has leased the arena since it opened. Given the sale was part of a larger subsidy arrangement to bail out Nationwide Insurance, there is little reason to view the sale price as competitive.

[26] In the property appraisal profession, discounted cash flow analysis is a third variant, but this is not widely used by local assessors given the resources needed to implement it well.

extent allowed by law, for assessing property where rents are the main source of income.

Notwithstanding the appropriateness of direct capitalization or GIM, the greatest obstacle to implementing the income approach for major league facilities is acquiring a complete and detailed inventory of income and expenses. Because not every income and expense may be assessable under state and local laws, assessors need detailed financial data to value special purpose properties. Income from TV rights or from league revenue sharing arrangements, for instance, would not be assessable to the facility while debt payments are typically not assessable expenses. Complicating matters is that modern facility public-private partnerships are multi-layered legal arrangements with franchise owners creating numerous shell companies with multiple leases and subleases to organize their activities. Some contend owners intentionally create complex legal structures in order to confuse and inhibit accounting of revenues owed to government agencies (Dineen, 2019).[27] Local governments or special authorities often produce annual financial statements for the facility, but the income and expenses may not include facility-generated revenue owed to the team. Estimating a valuation based only on the revenue and expenses accruing to the government would downward bias the facility assessment. Simply put, unless tenant franchises and facility managers are compelled to provide detailed financial statements, it would be cost prohibitive for assessors to determine which facility-generated income and expenses are assessable and which are not, making it impossible to use the income approach in any credible way.[28]

2.4.3 Cost Approach

Given the difficulties with the comparable-sales and income approaches for special purpose properties in general and major league facilities specifically, the cost approach is the preferred methodology (Wilmath, 2003; IAAO, 2013b). The cost approach uses construction cost less depreciation and obsolescence as the basis for the assessments. There are two construction cost methods, reproduction cost and replacement cost. Reproduction cost is the cost to construct a physically

[27] Two useful examples of the complex legal arrangements are the Barclays Center in Brooklyn, New York and Levi's Stadium in Santa Clara, California. For the Barclays Center, a flow diagram is provided on page eight of the Brooklyn Arena Local Development Corporation's 2009 PILOT bond issuance. For Levi's Stadium, a flow diagram is provided on page 25 in a forensic audit conducted in 2017 for the Santa Clara Stadium Authority.

[28] Forbes regularly reports income and expense estimates, but these data are for teams and so are not useful for assessing facilities. An alternative way for assessors to access relevant income and expense data is for teams to appeal their assessments. In some states, information submitted on appeal become public record. Appeals that escalate to the courts may be ruled public record by a judge. Moreover, Cook County, Illinois was required under state law to assess the United Center under a statutorily defined "net income" standard. State mandates could be one way to implement the income approach for pro sports facilities.

identical facility using the same material, craftsmanship, construction standards, and design. Replacement cost is the cost to construct a physically similar facility with similar utility but using contemporary construction materials, craftsmanship, construction standards, and design.[29] The total assessment is the sum of the estimated construction cost and the value of the land, which is based on the comparable-sales approach.

It makes little sense to assess older major league facilities on their reproduction cost. Replicating a facility entails replicating its outdated features. For instance, state and federal laws on accessibility for physically disabled persons evolve as do local building codes for egress, plumbing, gas, and electrical. Construction materials also change. When Soldier Field was reconstructed, the Chicago Bears and Illinois Sports Facilities Authority spent $18 million removing 6,500 cubic yards of asbestos (Ford, 2003). Technological innovations in concrete and steel also occur over time (John et al., 2007), and to the extent these are more cost-efficient, a team owner would presumably use these innovations rather than the more expensive original construction techniques. For these same reasons, though, reproduction and replacement costs for newer facilities will be similar, since younger facilities are less likely to have outdated materials and designs.

Replacement cost is more sensible both from theoretical and administrative standpoints. Since new stadiums and arenas continue to be built, in theory we can obtain data on the cost to construct the same sized facility but one built using modern workmanship, designs, and technology (Fuller, 2011). The quality of the replacement cost estimate depends heavily on the quality of the facility cost data that is obtainable, an issue discussed more fully in Chap. 4. Administratively, the replacement cost approach requires less time to execute, a benefit to local assessors in a world of shrinking budgets and increasing workloads (Propheter, 2014). Assessors do not need to search for prices for materials that may not exist or cannot be used, for instance, nor do they need to estimate the value of any obsolete craftsmanship, materials, or so-called superadequacies—improvements whose costs exceed their value to the market (Welcome et al., 2018).[30]

Once a cost estimate has been determined, physical depreciation and obsolescence must be subtracted. Physical depreciation is the loss in value due to materials aging (Wilmath, 2003), and it is common for assessors to depreciate value on a straight-line basis. Straight-lining entails dividing construction cost by the useful economic life of the facility, which yields an annual average loss of value due to physical wear and tear. This annual average is then subtracted from each year's cost estimate. Though it is the least controversial depreciation method, it is not

[29] Reproduction and replacement both have as their theoretical basis the principle of substitution, that rational and well-informed buyers "will not pay more for a property than the cost of acquiring a substitute property of equivalent utility" (Spletter, 2011, p. 29).

[30] In my review of assessment methodologies for major league facilities, I found no instances of jurisdictions using the comparable sales, income, or reproduction cost methods. I found seven using replacement cost: Foxborough township, Dallas County, Miami-Dade County, New York City, Duval County, Hillsborough County, and Salt Lake County.

uncontroversial; team owners and assessors have clashed over the useful economic life of a major league facility, as the Giants and San Francisco assessor did in the early 2000s (Kanter & Van Dongen, 2006). Whereas Quirk and Fort (1992) and Long (2013) assume facilities' useful economic life is 40 years, Wilmath (2003) and Humphreys (2019) show that facilities' useful life has been declining over the last century. The most recently completed facilities replaced predecessors that were only around 25 years old. The algebraic implication of a shorter useful economic life is a lower FMV.

Assessors must also consider functional and economic obsolescence. Functional obsolescence is loss in value due to facility designs and amenities that are no longer desired and cannot be cost efficiently replaced. Air-supported roofs, for instance, were a cost effective innovation in the 1980s, but they fail to meet the demands of modern consumers (Riddle, 2010). Economic obsolescence, meanwhile, entails non-facility related factors affecting a facility's capacity to generate optimal revenue (Wilmath, 2003). Common examples are declines in area personal income, changes in consumer preferences away from the sport in question, or changes in a facility's environment that may make attending a game less desirable.

I find it useful to catalog economic obsolescence into two categories: environmental and macroeconomic. Environmental economic obsolescence comprise changes in a facility's physical surrounding. If the area around a facility becomes blighted for reasons independent of team ownership, consumer demand for the facility may fall, and a claim of economic obsolescence is defensible.[31] This source of economic obsolescence is at the micro scale, relevant only to a facility's vicinity. Macroeconomic obsolescence entails changes in economic conditions affecting large swathes of people and businesses, typically transcending neighborhoods, local governments, and any particular industry. The COVID-19 pandemic and the Great Recession, for instance, are good examples, as their effects on consumer spending were global in reach and independent of franchise owners or facility managers.

Environmental economic obsolescence poses a particularly challenging theoretical issue. Because team owners have greater expertise in the sports marketplace, it is relatively easy for them to find reasons and provide supporting documentation for claims of such obsolescence. It is easier to defend environmental obsolescence when franchise owners exert less control over the facility's environment, and, hence, in a day and age where team owners are also increasingly landowners of ancillary development, claims of environmental obsolescence lose merit. Nonetheless, a useful way to corroborate the presence of meaningful environmental obsolescence is to evaluate facility attendance relative to its peers. Since economic obsolescence is the result of changes in *local* conditions, if similarly aged facilities in a league have similar levels of attendance, it is evidence the source of obsolescence is not local.

[31] The definition of blight is, appropriately, controversial, and everyone should be uncomfortable when a small group of individuals (lawmakers usually) can declare by simple majority vote any area of a community blighted and thus ripe for displacement. Grantmyre (2013) documents a fascinating history of this matter as it concerns Civic Arena in Pittsburgh.

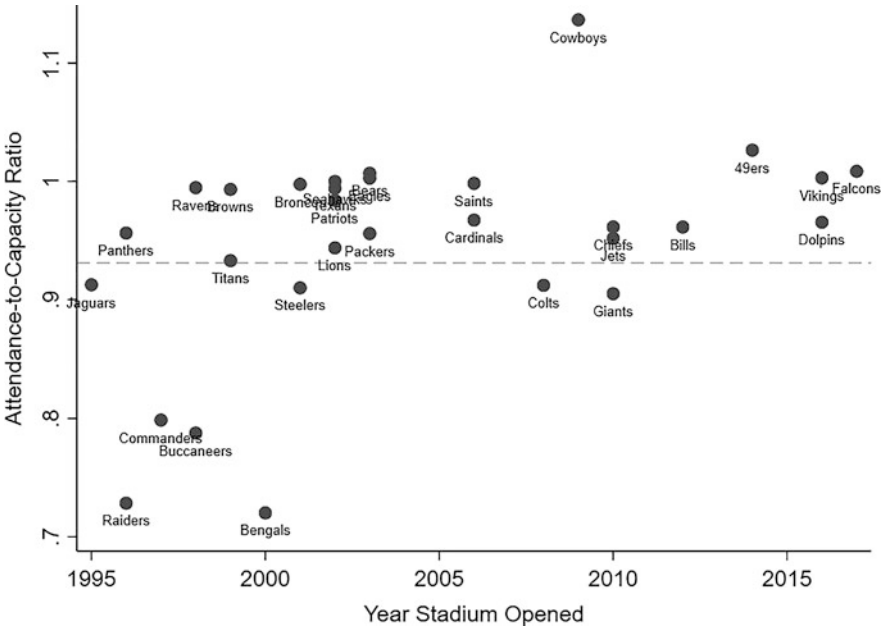

Fig. 2.1 NFL attendance-capacity ratio, 2019 season. Notes: Author's calculations of NFL attendance data. For facilities that have undergone major renovations, such as Soldier Field and Lambeau Field, the year of renovation completion is used. The Rams and Chargers are suppressed given the age of their respective facilities during the 2019 season

This does not mean the obsolescence is not legitimate or deserving of consideration. The obsolescence may be macro, such as a recession that creates local and non-local effects. However, bringing data to the table in an appeal would compel team owners to provide rebuttal evidence.

By way of example, Fig. 2.1 plots team attendance-capacity ratio for the 2019 NFL season. The horizontal dashed line in the graph is the league-wide average of 0.931, which means that across all home regular season games attendance was 93.1% of capacity. The average that one should consider is the group average within a particular effective age range. Since facilities built around the same time are likely to have similar design features and amenities, this method removes functional obsolescence as a confounding explanation of the observed ratio. For instance, among facilities built or renovated between 1995 and 1999, the Raiders, Commanders, and Buccaneers have a more compelling case for economic obsolescence than the Browns, Jaguars, Panthers, Ravens, and Titans.[32]

[32] The 2019 season was the Raiders's last year in Oakland.

2.5 Special Issues in Sport Facility Valuation

There are three valuation-related matters worth discussing in greater detail given their theoretical or practical relevance to major league sports facilities: *possessory interest*, *public interest value*, and *dark store theory*. These are discussed in turn.

2.5.1 Possessory Interest

Possessory interest entails the rights and privileges of a tenant to operate real or personal property, and it is thus distinct from fee-simple ownership interest. Possessory interest in the public sector is common. Private businesses' advertising on the side of a city bus, a bank's ATM on the campus of a university, and a privately constructed building on public land are examples. Whether the possessory interest applies to personal property, land, or land improvements depends on the particulars of the situation. Whether a possessory interest is taxable depends on state law. If a possessory interest is taxable, lease terms may require that a public agency remit liability on the lessee's behalf, making the lessee exempt.

With respect to tax law, in some instances, possessory interest of real property is taxable according to the state constitution, such as in California.[33] In other cases, taxability depends on case law. In Colorado, for instance, lawmakers and the courts have a history of conflict on the matter, a conflict that appears to have ended with a 2001 state supreme court case.[34] Arizona repealled its possessory interest tax in 1995, replacing the ad valorem tax with an excise tax—the Government Property Lease Excise Tax, or GPLET—that is based on the square footage of leased space. Under Arizona state law, however, major league franchise owners are generally exempt from the tax.[35] Washington state also imposes a leasehold interest tax, but nearly all of the square footage of the state's two major league facilities are exempt because the teams operate under a licensing agreement rather than a lease agreement; the latter provides a tenant exclusive right to use a property whereas the former does not. Team office space and locker rooms are leased and thus subject to the excise tax.[36]

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[33] See Article XIII, Section 12 of the California Constitution.

[34] In *Eagle County Board of County Commissioners v. Vail Associates, Inc.* (19 P.3d 1263, 2001), the court ruled a possessory interest is taxable if (1) it generates revenue independent of the government owner, (2) the business can exclude others from using the same interest, and (3) the duration of the possessory interest is long enough for a non-trivial private benefit to accrue. The state supreme court further upheld this test in *Cantina Grill, JV v. City & County of Denver County Board of Equalization* (344 P.3d 870, 2015).

[35] See Arizona Revised Statutes Title 42, §6208(4).

[36] In contrast, under Minnesota state law, all property leased to the tenants of the Target Center, or any future professional basketball arena owned by the city of Minneapolis, is exempted from property taxes so long as the leased property is used to operate the arena. Team office space and

Possessory interest taxation is a niche aspect of property tax law and administration, yet it is crucial for piecing together a complete picture of the property tax expenditure for sports facilities in the states that impose taxes on leasehold interests. The majority of public-private partnerships organized to build and operate stadiums and arenas involve land and improvements owned by an exempt government entity (Long, 2013). Even in instances where facility construction is financed with private funds, if the land is government-owned, the team's land lease may constitute a taxable possessory interest. Moreover, changes in legal arrangements may impact sports facilities and their property tax expenditures in small but meaningful ways. Government may sell the land to a taxable entity, thus making the land taxable. Effective for 2020 assessments, for instance, the land under Ball Arena in Denver is taxable whereas previously Kroenke Sports & Entertainment, the owner of the arena, paid a possessory interest tax on the land when it was owned by a special district. The Oakland A's are also in the process of purchasing the land around their stadium from the city; the team paid about $700,000 in possessory interest tax in 2019.[37] The taxable status of a leasehold interest may also change by law. North Carolina exempted taxes on leasehold interests of government-owned property effective with 2019 assessments. While the owner of the Carolina Panthers also owns Bank of America Stadium, the city of Charlotte owns the land, and the tax law change saves the Panthers about $300,000 a year in property taxes.

In general, possessory interest tax liability is a function of the length of a lease and the extent of the lessee's right to lease-generated revenue. Even if a lessee has exclusive right to revenue, a lease shorter than perpetuity implies possessory interest tax liability is less than the property taxes that would be owed if the franchise owned the building and land. Oracle Park illustrates these points.[38] Oracle Park was mostly privately constructed on city-owned land. The team received $16.6 million in tax increment financing from the city's redevelopment agency for improvements to a ferry landing that would service the stadium and $80 million from the city for infrastructure improvements.[39] Under the team's 1997 ground lease agreement with the city, the team receives all revenue and covers all expenses while the land and

locker rooms, thus, are exempt even if leased, whereas leases for restaurant space are taxable. Lessees are still obligated to pay any special assessments. This law went into effect in 2013 after the legislature approved enabling legislation and the city approved a resolution for local enactment. Since 1998, the state has carved out exemptions for each of the state's major league facilities.

[37] The stadium land was jointly owned by the city and county. The team closed on the county's portion in 2020 for $85 million paid over six years. The city's portion remains city-owned. At present, the team still rents the stadium from a city-county joint powers authority.

[38] As lease length increases, the present value difference in liability between fee-simple ownership and a leasehold interest trends towards being too small to matter, all other things equal.

[39] Most sources indicate the redevelopment agency provided $10 to $15 million in financial support, but the agency issued bonds for $16.6 million.

stadium revert to the city upon the lease termination.[40] The value of a facility beyond the lease is called a reversion value and if the property is owned by an exempt entity, the reversion value is likewise exempt.[41]

In 2001, the stadium's first year of being assessed, the city assessor used the replacement cost approach with only an adjustment for depreciation, determining a value of $331 million. The assessor further assumed the team would exercise lease extensions through 2047, and thus concluded the reversion value for the stadium would be relatively small. In contrast, the Giants argued that on the cost approach the possessory interest was only worth $162.5 million. The team's lawyers provided testimony from the owner that it was unreasonable to assume the team would exercise any extension beyond the initial 30-year ground lease that ends in 2022, and further that the reversion value of the facility was much greater than the city argued. Since reversion value is exempt, the larger the reversion value the lower the taxable assessed valued. The BAA found the team's reversion value argument persuading, and it was a factor in the board's decision to reduce the possessory interest valuation.

2.5.2 Public Interest Value

The San Francisco Giants's appeal of its possessory interest value is also noteworthy because the team's lawyers argued the city assessor should have factored the stadium's non-economic benefits into its assessment, thereby reducing it. The lawyers argued lawmakers regularly use facilities to achieve public policy goals such as revitalizing underutilized land. Hosting professional sports also generates intangible benefits in the form of civic pride and recognition as a major league city. There is ample empirical evidence supporting the argument that professional sports generate non-trivial intangible benefits for communities (Groothuis & Rotthoff, 2016), and further that they can generate indirect benefits by boosting nearby property prices (Bradbury et al., 2022). The implication of this line of reasoning is that a portion of the cost to construct a facility is to achieve a broader public policy goal, not to provide a direct benefit to the team. This so-called public interest value (PIV) should be excluded from the facility assessment as a result, the team argued.

PIV is controversial in property appraisal (Mundy & Kinnard, 2003). By way of example, if tasked with estimating the value of the Statue of Liberty, on the income

[40] The team's lease ends as early as 2023 and as late as 2048. The original ground lease terminates at the end of 2022 if the team does not exercise an extension, and the last extension possible terminates at the end of 2047.

[41] In every state I am aware of, such exemptions apply to any overlapping taxing jurisdiction. In 2019, the Texas legislature entertained legislation (SB 1771) that sought to give overlapping jurisdictions control on whether they would be precluded from billing property taxes for exemptions granted by another jurisdiction. At the time of writing, the legislation has not progressed past committee.

approach one might rely on tourism revenue data, or if using the cost approach, one might consider how much steel the statute contains and value it at current material and labor prices. What these methods have in come is that valuation is based on economic (monetary) information. But the Statue of Liberty has a historical and cultural significance to many Americans, and PIV makes an effort to reflect this non-use value. A valuation incorporating the intangible value of the monument would exceed the valuation using any methodology relying strictly on economic data. Roddewig et al. (2020a, 2020b) provide a glimpse into the difference. Under the cost approach, they appraise the Statute of Liberty (including the land) at $550.7 million while under the income approach and further assuming private-ownership, $547.3 million. Their estimate for PIV, however, is $7.3 billion, a value thirteen times greater than when relying on property-specific financial data only.

PIV is not simply an academic exercise for valuing monuments; it plays a central role in environmental policy efforts. Federal and state governments purchase and swap land from private owners frequently to achieve conservation and preservation goals, such as protecting timber land and acquiring water rights. From a neoclassical economic perspective, government's participation in such land acquisition is to resolve social inefficiencies arising from common pool resource problems and negative externalities. For instance, forest land provides scenery, but timber companies do not factor the value of scenery into their cultivation or land price decisions, resulting in underproduction of forest scenery. Government can increase scenery production by controlling timber land, thereby controlling timber cultivation, which it can accomplish by purchasing the land or exchanging it with another plot of land lacking scenery. In both cases, an appraisal of the land is necessary for public officials to negotiate pricing terms, and under federal guidelines, appraisers' judgment of land value shall "include historic, wildlife, recreation, wilderness, scenic, cultural, or other resource values or amenities as reflected in prices paid for similar properties in the competitive market."[42] The risk of incorporating non-use value into an appraisal is increasing the leverage private owners have in extracting rents from taxpayers by inflating the PIV (Panagia, 2015).

As discussed earlier in this chapter, however, an appraisal is not an assessment for property tax purposes. The Giants's argument against the city assessor, therefore, turns an appraisal controversy into an assessment controversy. While the IAAO (2013b) maintains the cost approach is appropriate for special-purpose property, with considerable academic research indicating the intangible benefits of hosting professional sports is not trivial, it is unclear if assessment appeal boards and the courts will agree when presented with a PIV argument.[43] Should they accept the PIV argument, though, logical consistency requires that property assessments also reflect the social costs created by sports facilities. That is, whereas positive externalities justify reducing a facility's assessed value, negative externalities justify

[42] See Code of Federal Regulations Title 36 §245.9(b)(1)(iii).

[43] Recall that the San Francisco Assessment Appeals Board did not rule on the merits of the team's argument, because it rejected the cost approach as appropriate.

taxing facilities at a greater rate. Over the last decade, academic research has begun exploring the social costs of professional sports. Locke (2019) found MLB games had a positive but small impact on air pollution due to increases in vehicle travel. Humphreys and Pyun (2018) estimated the pollution from increased traffic to MLB games imposes $7 million in annual costs on society. Pyun (2019) found assault crimes increased in DC after the Nationals moved to Washington, DC, postulating the increase in visitors to the city increased the supply of crime opportunities. Propheter (2020) found police response times to urgent calls in the vicinity of the Golden 1 Center in Sacramento, California were slower during arena event periods then prior to the arena as well as during off-event hours. van Holm (2018) further provides evidence that facilities can induce gentrification pressures, including involuntary displacement. To the extent aging in place is a policy goal for lawmakers, involuntary displacement is a negative and plausibly unintended consequence of constructing a new sports facility.

These studies do not reflect a full inventory of the social costs imposed by sports facilities, and academic research on the matter is ongoing. However, in their spirited debate, Matheson (2019) and Humphreys (2019) highlight the competing views on whether the net social benefits are positive or negative; the former arguing they are slightly positive and the latter arguing slightly negative. One take away from this debate as it concerns property assessments is that the net PIV may be too small to matter, both in terms of assessors' resources to value and the returns to team owners to appeal.

2.5.3 Dark Store Theory

Over the last decade a novel valuation argument has gained in popularity, threatening to punch large holes in local governments' property tax base. The argument is popularly known as dark store theory, and it has been used by big-box retailers to successfully lower their property assessments upon appeal. The crux of the dark store theory argument is that big-box retailers pay a premium to customize buildings to their specific purposes, but these customizations have no resale value (Welcome et al., 2018). Thus, so the argument goes, the appropriate assessment method is the comparable-sales approach. More specifically, rather than assessing a big-box retailer on the income the building generates or its construction cost, assessors should determine the value of the store based upon the sales prices of nearby big-box stores. Because the big-box stores that sell are typically vacant, dark store theory in effect argues that for property tax purposes an active, income-generating big-box store is the same as a vacant big-box store.[44] One particularly frustrating aspect

[44] The supply of big-box retailers is often constrained through deed restrictions that limits when vacant sites can be redeveloped as well as its future use. In this way, big-box retailers create the circumstances that allow them to claim a lower tax assessments, namely, a lack of sales for

of the success of the dark store theory for local government officials is that these retailers often receive tax incentives (Robinson, 2017).

As far as I am aware, team owners in taxable facilities have not applied dark store theory. However, sport facility financing strategies and public-private partnership arrangements evolve (Schwarz et al., 2015), and there are advantages to owners paying property taxes. For instance, the Sacramento Kings pay a possessory interest tax to operate the Golden 1 Center, and the city classifies these payments as part of the team's contribution to the arena's construction cost even though the city allocates the tax revenue to facility debt service.[45] There is almost certainly political goodwill to be enjoyed (and claims of corporate welfare that can be avoided) by paying property taxes, owing in no small part to the salience of the property tax and the magnitude of the tax bill. I unpack this perspective in greater detail in the closing chapter.

To the extent team owners find value in paying property taxes, they may apply dark store theory to reduce their assessments. The two characteristics of big-box stores that makes dark story theory plausible also apply to sports facilities: (1) highly customized real property and (2) an absence of similar active facilities nearby. It is therefore conceivable that assessors and assessment appeals boards could hear arguments that major league baseball stadiums, for instance, should be valued like a Triple-A or Double-A stadium that lack similar customizations, or that NBA arenas are for property tax purposes more similar to auditoriums. By way of example, the Compaq Center, the former home of the Houston Rockets, was leased by the city to a megachurch after the team moved to the Toyota Center.[46] Though the church spent a reported $95 million to make the arena suitable for its purposes (Pristin, 2004; Leland, 2005), the example nevertheless suggests that from a dark store theory perspective mega-churches may be appropriate "stripped down" comparables for basketball and hockey arenas.[47]

comparable active big-box stores. The major leagues also control the supply of franchises in metropolitan areas by acting as a cartel.

[45] The designation of the team's possessory interest tax payment as a private contribution is documented in the city's *Terms and Agreements for the Downtown Entertainment and Sports Center (ESC) Project* on page 12, item o. under "SBH Contribution Overview".

[46] The Forum, the former home of the Los Angeles Lakers, was also converted to a megachurch.

[47] While dark story theory has been successful at the local appeals level, courts have been less swayed by the theory's logic. The first dark store theory case to be heard in front of a high court occurred in 2017 when the Michigan Supreme Court rejected an appeal made by Menard's, a home improvement retailer. The city of Escanaba appealed an earlier ruling of the Michigan Tax Tribunal in Menard's favor, resulting in a store's 2014 tax assessment from $50.88 per square foot to $22 per square foot. A state Court of Appeals reversed the judgment, ruling in favor of the city, and it was this ruling the state supreme court refused to hear, instead directing the tribunal to reconsider the case. In perhaps the most substantial challenge to the theory's application to date, the Wisconsin Supreme Court agreed in 2022 to hear a dark store tax appeal filed by Walmart.

2.6 Property Tax Systems Across the States

How property taxes are calculated varies within the US. Table 2.4 summarizes the major policy characteristics of property tax systems in assessing jurisdictions that host major league sports. The real ratio is the assessment ratio for commercial real property. TPP ratio is the assessment ratio of business tangible personal property. The real cap and rate limit columns indicate if commercial property assessment growth are capped and if they enjoy a limit on local property tax rates, respectively. The real cycle column notes the frequency assessments are updated. For instance, Indiana revalues property to market value every four years, but on an annual basis for the three years in between, values are re-benchmarked to sales prices of nearby similar property. Thus, I list Indiana as an annual cycle state in the table. The final column indicates tax benefits for TPP, for which they are two types: an exempt value and a reporting threshold value. Exemptions reduce the value subject to taxation whereas threshold values indicate when a property owner must submit TPP returns for taxation. Any property owner whose TPP exceeds the threshold pays property taxes on the entirety of the value; those below the threshold pay no property taxes on the value.

Please note that the characteristics summarized in the table pertain to commercial property only and reflect conditions in 2020. This is important to highlight because many states have property tax system features that only apply to residential property. In Cook County, for example, only residential properties enjoy assessment growth limits. Moreover, some characteristics change over time. Arizona provides an exemption of business personal property that is indexed to inflation while Colorado's governor signed legislation in June 2021 increasing the personal property tax reporting threshold from $7,900 to $50,000. In addition, the property tax system characteristics only apply to the local jurisdictions in the noted states that host major leagues. For example, Tennessee law allows counties to reassess properties every four, five, or six years, and both Nashville-Davidson and Shelby County have chosen a four year cycle. Hence, in the table I report the four-year cycle even though other counties in the state may use something different. Additional details about specific characteristics of states' property tax systems are available from the Lincoln Institute of Land Policy's *Significant Features of the Property Tax* database.

At the beginning of Chap. 1, I briefly discussed the prevailing property tax expenditure methodology introduced by Quirk and Fort (1992) (QF) and popularized by Long (2013). The QF method scales facilities' original construction cost and the cost of subsequent major improvements upward to the current year by a construction cost index and subtracts from the figure depreciation on a straight-line basis over 40 years. I also noted that this method may overestimate the property tax expenditure in some respects and underestimate it in other respects. Though both authors call the QF method a replacement cost approach, readers can now correctly identify it as a reproduction cost approach within the assessment profession parlance. As facilities age, the difference between reproduction cost and replacement cost approaches increases, holding depreciation rates constant. The 2%

Table 2.4 Property tax system characteristics for commercial property

Assessing jurisdiction	Real ratio	TPP ratio	Real cap	Rate limit	Real cycle	TPP benefit ($)
Arizona	18%	18%	Y	N	Annual	$195,878
California	n/a	n/a	Y	Y	Annual	0
Colorado	29%	29%	N	N	2 years	$50,000[a]
Cook County, IL	25%	Exempt	N	Y	3 years	
Florida	100%	100%	Y	Y	Annual	$25,000
Georgia	40%	40%	N	Y[b]	Annual	$7500[a]
Indiana	100%	100%	N	Y	Annual	$40,000[a]
Kansas	25%	Exempt[c]	N	N	Annual	
Louisiana	15%	15%	N	Y	4 years	0
Maryland	100%	100%	N	N	3 years	0
Massachusetts	100%	100%	N	N	Annual	0
Michigan	50%	50%	Y	Y	Annual	$80,000[a]
Minnesota	2%[d]	Exempt	N	N	Annual	
Missouri	32%	33.3%[e]	N	Y	2 years	0
Nevada	35%	35%	N	Y	Annual	0
New Jersey	100%	Exempt	N	N	Annual	
Buffalo, NY	90%	Exempt	N	N	Annual	
Orchard Park, NY	43%	Exempt	N	N	Annual	
Nassau County, NY	1%	Exempt	Y	N	Annual	
New York City, NY	45%	Exempt	Y	N	Annual	
North Carolina	100%	100%	N	Y	8 years	0
Ohio	35%	Exempt	N	Y	6 years	
Oklahoma	11%	13.75%	Y	Y	Annual	0
Oregon	n/a	100%	Y	N	Annual	$17,000[a]
Allegheny County, PA	100%	Exempt	N	N	[f]	
Delaware County, PA	100%	Exempt	N	N	[f]	
Philadelphia, PA	100%	Exempt	N	N	Annual	
Tennessee	40%	30%	N	N	4 years	0
Texas	100%	100%	N	Y	Annual	0
Utah	100%	100%	N	Y	Annual	$25,000[a]
Washington	100%	100%	N	Y	Annual	0[g]
Washington, DC	100%	100%	N	Y	Annual	$225,000
Green Bay, WI	100%	100%	N	N	5 years[h]	0
Milwaukee, WI	100%	100%	N	N	Annual[h]	0

[a] Value is a reporting threshold value, not an exemption value
[b] Tax rate cap only applies to school districts and can be overridden by popular vote
[c] Business personal property put into service after 2006 is exempt
[d] The first $150,000 of FMV for commercial property is assessed at 1.5% and then at 2.0% for all value thereafter
[e] Taxable personal property is primarily vehicles
[f] Revaluations occur by court order or local legislative mandate
[g] TPP owned by sole proprietors receive a $15,000 exemption
[h] State law requires revaluations at least once every 5 years but may mandate them more often. Jurisdictions can elect for more frequency revaluations

ETR assumption, meanwhile, may be more accurate in some contexts than others, as Table 2.2 demonstrates.

It is instructive to consider a more concrete example. Based on QF's reproduction cost approach, Long (2013) estimates the taxable value of Ball Arena for 2010 at $196 million. Assuming a 2% ETR, the estimated cost of the exemption is $3.92 million that year. This estimate is reasonable if Ball Arena were fully exempt from property taxes, but at the time the arena was taxable and the land exempt. Under Colorado law, Kroenke Sports & Entertainment (KSE), owner of the arena as well as the Denver Nuggets and Colorado Avalanche, paid property taxes on a land possessory interest.[48] Colorado law also requires that commercial properties are taxed on 29% of FMV. Denver's assessor set a market value for the land and leasehold interest combined at $207.5 million in 2010, and 29% of this results in a total assessed value of $60.2 million; $37.8 million for the arena, $20 million for the land, and $2.3 million for the land leasehold interest. Since only the land was exempt, the property tax expenditure in 2010 was $1.3 million.[49] Hence, the Quirk and Fort (1992) method overstates the tax expenditure for this arena nearly threefold. If the facility were fully exempt, though, the method does well. The tax on the leasehold interest would not apply, and the tax rate in 2010 was 66.591 mills (6.6591%), implying a tax liability of $3.85 million.

Furthermore, property is reassessed biennially in Colorado, which means that property owners are taxed on the same assessed value for two years before they see a new value. Thus, if Ball Arena had undergone a major renovation between reassessments, the QF method would have included the renovation value into the tax expenditure estimate when state law prevents this from happening for one to two years, depending on the timing of the renovation. When one is estimating an average property tax expenditure over time, this usually is not a significant concern, but because tax expenditure analyses tend to be ad hoc, analysts must consider reassessment cycles in their estimates so as to avoid including value that should not be included yet.

The QF method is also problematic for estimating the tax expenditure well in states where there are assessment growth limits or any other features that drive a wedge between tax liability and construction costs. In the common case of assessment growth limits, tax liabilities grow slower than the economy. Since market values will tend to increase faster than assessed values, the difference between market prices and the value subject to taxation increases with time. By implication, effective tax rates fall. To illustrate, Fig. 2.2 plots the effective property tax rates for two taxable facilities: Bank of America stadium in Charlotte and Dodger Stadium

[48] In 2019 the team purchased the land, and thus as of 2020, the arena and land are fully taxable as fee-simple owned by Kroenke Sports & Entertainment. In the first year of full taxability, KSE paid $4.8 million in real property taxes.

[49] This figure is based upon the 2010 fiscal year tax rate. If instead Long's 2010 estimate is based on assessment years, then it would be more appropriate to use the 2011 fiscal year tax rates, in which case the tax expenditure would be $1.4 million.

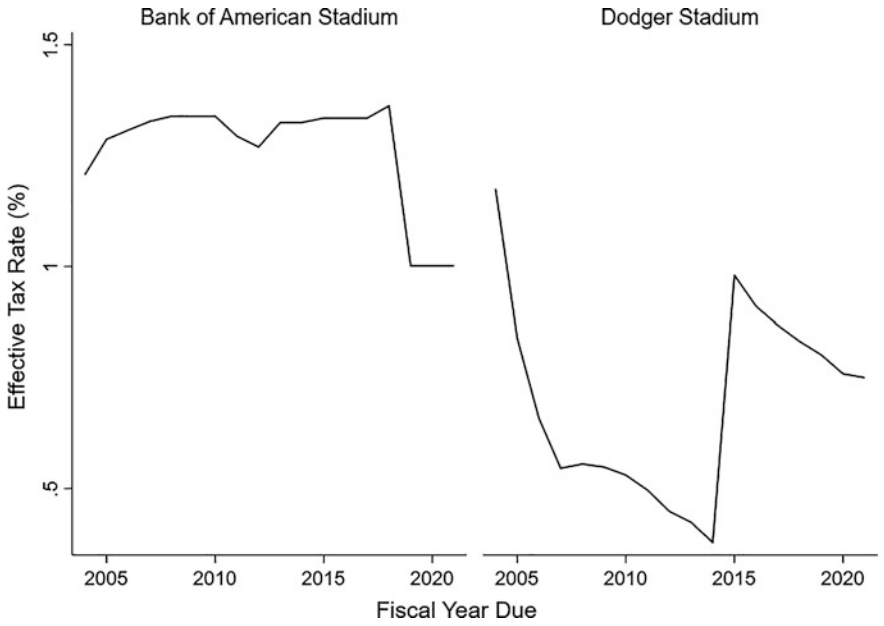

Fig. 2.2 Effective property tax rates, 2004–2021. Source: Author's calculations of Mecklenburg County assessor and Los Angeles County assessor data

in Los Angeles.[50] North Carolina taxes at 100% of market value and imposes a 15 mill (1.5%) rate limit.[51] Moreover, Bank of America stadium is reassessed every eight years. The consequence of these features is that the stadium's ETR is generally stable between assessments, and rapid changes in ETR is primarily due to a reassessment. Because of the mill limit, the stadium's ETR will never exceed 1.5%. (The stadium was reassessed in 2011 and 2019.) In California, properties enjoy a 2% annual assessment growth limit and a 1% tax rate limit.[52] Assessed value is set at the time of sale and the growth limit applies to that value. Between sales, then, the ETR decreases as the market increases. At the point of sale, the ETR increases to the rate limit and then returns to a downward trend. For Dodger Stadium, the graph is possible because the team and stadium were sold in 2004 and

[50] Note the Carolina Panthers do not pay taxes on the stadium land whereas Dodger Stadium is fully taxable. The effective tax rates for Dodger Stadium do not include the surrounding parking lots.

[51] See North Carolina General Statutes §153A-149. The limit does not apply to specific services such as courts and debt service.

[52] Voters in California can approve property tax rate increases to finance capital projects, but the tax rate increase is relatively small. For instance, in Los Angeles County, as of the time of writing the largest tax rate any property owner in the county will see is 1.23%—one percentage point to the county for general purposes and the balance to for capital debt.

again in 2012. The figure represents the ETR for the stadium and land only, based on the county assessor's records.

It is important to note that Quirk and Fort (1992) and Long (2013) emphasize the difficulty of estimating property tax expenditures for major league facilities well. The examples of Bank of America stadium and Dodger Stadium illustrate the potential inaccuracy of the 2% effective tax rate as a rule of thumb in certain states while the Ball Arena example demonstrates that tax expenditure accuracy requires knowing which parts of each facility are exempt or taxed and by how much. While these facilities suggest the 2% rule overestimates the property tax expenditure, using a replacement cost approach, rather than a reproduction cost approach, may offset these changes.

2.7 Chapter Summary

This chapter provided an overview of important aspects of property tax policy and administration in the US relevant to understanding and calculating property tax expenditures for major league facilities. The appropriate counterfactual to exempt facilities is a privately owned and taxable facility. The property tax expenditure equals the property taxes that would be paid if it were fully taxable and fee-simple owned minus the property taxes paid in fact. The most important part of calculating the property tax expenditure is estimating FMV. FMVs are values for property taxes. They are not values for resale nor values to secure a collateralized loan. FMVs are the result of staff appraisers applying professional standards (typically those promulgated by the IAAO) within the constraints imposed by state and local laws and the availability of data. For major league facilities, these constraints mean a replacement cost approach for estimating FMV is sensible with special attention given to potential sources of functional and economic obsolescence. I have argued that macroeconomics obsolescence has a stronger theoretical basis than environmental economic obsolescence, but macro economic conditions must affect the underlying economic activity used for the assessment in order to be applicable—income-generating capacity for the income approach and construction costs for the cost approach. Moreover, since major league facilities are a relatively small share of most jurisdictions' property tax base, existing statutory tax rates are reasonable estimates of counterfactual tax rates. The next chapter provides an inventory of the property taxes paid by teams. Many more teams than perhaps expected pay property taxes, and these taxes must be subtracted from property tax expenditure estimates in order to determine the net property taxes that would be owed if facilities and teams were fully taxable.

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Chapter 3
Who Pays Which Property Taxes?

Abstract This chapter reports the property tax status of active major league facilities and teams in 2020 using data collected from local assessors and tax collectors. It is common for academics and journalists to claim that most teams do not pay property taxes, and in this chapter I show this claim is correct in some respects but not in others. Whereas most teams do not pay real property taxes on their facilities, most pay personal property taxes. Many also pay other taxes on property including special assessments and payments in lieu of taxes. In other words, the claim that most major league team owners do not pay property taxes is misleading and requires qualification.

3.1 Property Tax Liability Types

In a county commissioners meeting in April 2013, Miami-Dade Mayor Carlos Giménez said that the Miami Dolphins, as far as he knew, was the only team in the NFL to pay property taxes. *Tampa Bay Times* journalists fact-checked this statement and concluded it was incorrect, reporting that the Carolina Panthers and Washington Commanders paid property taxes while the New England Patriots make a PILOT (Sherman, 2013).[1] Notwithstanding Mayor Giménez asserting a false belief, the *Tampa Bay Times* investigation highlights a more subtle and easy to overlook fact: property taxes can take on multiple forms. By extension, answering the question "How many major league teams pay property taxes?" will turn on how one defines property taxes.

I suspect that people discuss property taxes for professional sports facilities in much the same way they do property taxes on homes. Owner-occupied residences

[1] The Patriots make PILOTs to the town of Foxborough. The Giants and Jets make a $1.3 million annual PILOT to the New Jersey Sports and Exposition Authority for Metlife Stadium, which in turn makes a larger intergovernmental transfer PILOT to East Rutherford for removing land from the town's tax roll. However, even though the lease calls the teams' payment a PILOT, the lease also defines these payments as rent. See Section 2.04(b) of the *Stadium Project Ground Lease and Development Agreement*.

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are the most abundant type of taxable property in the US, and there is a tendency to anchor expectations of the world to the things for which we have the most familiarity. Anchoring can bias our opinions, however (Lambson et al., 2004), and in this case, people may err in assuming that residential and non-residential property owners pay the same types of property taxes. This assumption is generally incorrect. In prior chapters I discussed in broad terms the three main categories of property taxes (real, tangible, and intangible), and depending on state and local laws, teams may be liable for property taxes on their facility leases. Nearly every state exempts from property taxation household personal property, and further homeowners typically own the land their house is sited upon, which means there are no tax concerns as there are no leasehold interests. Hence, the property taxes homeowners experience most frequently are on real property.

Businesses, however, are often liable for personal property taxes on office equipment, machinery, and the like. If they own the real property, then they may be liable for real property taxes, parcel taxes, special assessments, or payments in lieu of taxes (PILOTs) as well.[2] For simplicity, I call parcel taxes, special assessments, and PILOTs "other property taxes" while recognizing that their status as property taxes is debatable—"taxes on property" may be preferred by some. As I have not done so already, it is worth describing these other property taxes in more detail.

Parcel taxes are a kind of excise tax where liability is determined by the number of units purchased rather than the value of the units purchased. The gas tax, for instance, is an excise tax since it is based upon how many gallons are purchased rather than on the price per gallon. Following this logic, parcel taxes are imposed on parcels rather than parcel values. For instance, San Francisco voters in June 2018 approved a $298 parcel tax on all taxable property in order to fund K-12 and charter school salary increases, increase staffing, improve professional development, and improve school oversight. Because of property tax limitations under Proposition 13, a voter-approved parcel tax is one of few options to raise property tax revenue in California. Since it is a parcel tax, the Chase Center has the same liability as a 500 square foot bungalow, suggesting the parcel tax is regressive.[3]

Special assessments, meanwhile, may be ad valorem or unit-based, and what makes them unique is that the tax payments are earmarked for specific purposes rather than general purposes. Business improvement districts or entertainment districts, for example, may have taxing authority and collect payments to finance goods and services within their boundaries. American Family Field in Milwaukee, for example, were it taxable would face property taxes not only to the city and county general funds but also to dedicated funds for public schools and vocational

[2] Even if they rent, they still pay property taxes through their lease in an economic sense.

[3] I say "suggestive" because we do not know who owns the bungalow. If one defines the regressivity of tax burdens with respect to owner income, being able to identify the property owner is necessary. If one instead defines regressivity with respect to property value, identifying the owner is unnecessary.

colleges. Local governments that are more fragmented in terms of public service delivery will tend to levy more earmarked assessments.

With respect to PILOTs, policy debates often gloss over the variety of forms they take. Three forms are common: (1) voluntary or statutorily mandated payments between a tax-exempt organization and a governmental entity, (2) statutorily required or negotiated payments between two tax-exempt organizations, or (3) payments to secure bonded indebtedness. The first form is common in parts of the country where tax-exempt organizations comprise a large share of the property tax base. Local governments in recent decades have pressured such organizations to make PILOTs as a way to offset the cost of providing public services that they otherwise would receive for free. As noted in Chap. 2, having to provide these organizations public services but not being able to tax them shifts the local property tax burden to all other taxable property owners.[4] Higher education institutions and hospitals are frequent targets for PILOTs (Kenyon & Langley, 2010). PILOTs from this perspective are voluntary; exempt institutions can and have rejected calls to negotiate payments. Though empirical research demonstrates these types of PILOTs have the same economic effects as property taxes (Fei et al., 2016), they also do not constitute a lien against a property, unlike general property taxes. For no other reason, these PILOTs are tantamount to a donation, not compulsory property taxation.

The second form is the historical basis for PILOTs; they were codified at the federal level in 1976 as annual payments to local governments to compensate them for removing land from the local tax roll (Hoover, 2017).[5] The federal government does not calculate its PILOTs based upon a valuation of the affected property but rather on acreage and the affected jurisdiction's population, among other variables.[6] In addition, the payments are transfers between governments, and thus represent intergovernmental aid by another name. For the purpose of accounting for revenue flowing between team owners and government, then, these types of PILOTs are not relevant. Consider, for instance, that the Cleveland Gateway Economic Development Corporation is a registered 501(c)(3) non-profit organization that owns Progressive Field and Rocket Mortgage Fieldhouse and leases them to the respective major league tenants. While a legally distinct entity from the city and county, under Governmental Accounting Standards Board (GASB) guidelines the Corporation is a component unit of the county. Hence, any property taxes the Corporation pays to the city or county are transfers across two governments' budgets. PILOT payments of this second form are obligated in some states by statute, where the

[4] Since they face no property tax penalty for expanding their real estate footprint—notwithstanding transfer taxes when purchasing and selling real estate—the exemption allows exempt non-profit organizations to grow their market share relative to competing taxable organizations, an advantage that is particularly acute in jurisdictions with higher effective property tax rates (McEachern, 1981; Hansmann, 1987; Gulley & Santerre, 1993).

[5] Policy discussions on PILOTs occurred decades before the federal government codified the annual payments. See Sorensen (1950).

[6] See Title 31 of the United States Code, Chapter 69 §6903.

policy intention is to minimize the impact of one government's fiscal policies on other governments' budgets. In Ohio, for example, schools receive these PILOTs from cities, counties, and component units as a way to mitigate school revenue loss when these governments exempt property from taxation to achieve their respective economic development goals.

As discussed in the Yankee Stadium case study in the introduction chapter, the third form PILOTs take was promoted by New York City and New York state officials as a means to circumvent IRS rules regarding the taxability of municipal bonds in order to finance three facilities. The interest earned from municipal bonds can either be taxable or exempt from federal income taxes, which is to say that investors have to either declare the interest as gross income or not. Generally speaking, municipal debt that is backed by payments received in exchange for services is treated as a private transaction under IRS rules, and the interest on the debt is taxable. If instead the debt is secured by general revenues, then the bonds are not private activity and the interest is subsequently exempt from federal income taxation. Tax-exempt debt is cheaper than taxable debt. City officials designed the stadium financing so that teams make PILOTs equal to what officials thought property taxes would have been if the facilities were taxable.[7] City officials argued that because the PILOTs have equivalent value to property taxes and that because property taxes are general revenue, it follows that the PILOTs are general revenue. By extension, the interest on the debt should be exempt. The counterargument is that the PILOTs never pass through the city's general fund, and thus is not general revenue.[8] The PILOTs are really lease payments for the benefit of exclusive use and monetization of government property. From this perspective, the interest should be taxable. The IRS initially supported the city's interpretation of federal law but then subsequently refined their rules in 2006 and prevented this form of PILOT arrangement from being used for bonds sold after October 2008. An exception was made for the Barclays Center, whose PILOT-backed bonds issued by the Empire State Development Corporation, a New York state authority, the IRS grandfathered in under the prior rules.[9]

[7] The New York City Industrial Development Authority issued bonds for the stadiums.

[8] A rebuttal to this counterargument is that the city council approved the PILOT arrangements by a vote, and this vote is a more efficient budgeting strategy than is annually taxing the stadium and then annually voting to appropriate the revenue for facility debt. That the two voting strategies may be budgetary equivalents—one vote for 30 years of payments or 30 yearly votes for one year of payments—does not mean they are legally or politically equivalent.

[9] This discussion raises a more subtle question: What is a property tax? Said differently, if I polled property tax scholars and practioners describing the characteristics of the creative PILOT-financing arrangement, would they identify PILOTs of this sort as property taxes? That the liability is based on assessed value is unassailable. The argument that such PILOTs cannot be a property tax since the revenue never passes through the general funds is wrong; TIF revenue also never passes through the general fund but its status as property tax is not disputed. From these perspectives, the PILOTs are a property tax, and hence the Mets, Nets, and Yankees pay property taxes. On the other hand, the property tax is a tax on the value of fee-simple ownership or on a taxable leasehold interest, neither of which apply to these facilities by design of the public-private partnerships. From this

This discussion reinforces two important points. First, the property tax is not monolithic. It can take a variety of forms, and exemption from one type of property tax does not imply exemption from other types of property taxes. Second, inquiries on the property tax treatment of major league sports facilities must be clear on what is meant by "property taxes." I have argued that real property taxes are what people have in mind when asserting major league teams generally do not pay property taxes, but once other types of property taxes are considered, this claim loses empirical support, as I show shortly. By extension, then, the question one should ask is not, "How many major league teams pay property taxes?", but rather, "How many major league teams pay which types of property tax?"

3.2 Researching Property Tax Liabilities

To determine which teams pay which types of property taxes, I collected assessment and tax data for each facility in the five major leagues from the facilities' respective assessing jurisdictions and tax collectors. State and local governments—usually counties—tend to have dedicated websites with robust search functions to help users identify assessment and tax data for a specific parcel. After locating parcel numbers and tax account numbers for facilities, I conducted broad searches for any real and personal property records associated with the team, team owners, or affiliated lessees associated sited at the facility.[10] In many instances, assessors' online portals contain a small fraction of the data publicly available, and thus, I supplemented my web-based searches with freedom of information requests and deep scans of jurisdictions' audited financial statements. The notes sections in annual financial reports provide a wealth of detailed data about jurisdictions and the special authorities that often own or operate facilities.

Through this process, I compiled a data set of 369 parcel and tax account numbers for the 118 major league facilities in the US active as of December 2020.[11] Though the data set is static for the purpose of this book, the property tax treatment of sports facilities changes from time to time. New facilities are constructed, teams re-negotiate leases perhaps with different property tax terms, and state legislatures or court cases may impose or remove a statutory exemption. Audi Field, for instance, is in the middle of a temporary property tax exemption that will phase out. Moreover, Nationwide Arena was granted a permanent property

perspective, the PILOTs are not a property tax but are more simply a lease payment that happens to be calculated based on assessed value. It seems more appropriate to consider these charges as a fee (an implicit tax) on property rather than as a property tax.

[10] For many facilities, the popular address available through web search engines is often not the address listed on the tax roll. This can make searches more challenging, particularly if a parcel is associated with multiple addresses associated with multiple sub-accounts.

[11] Climate Pledge Arena, Geodis Park, Q2 Stadium, Lower.com Field, TQL Stadium, and UBS Arena are not part of the study.

tax exemption through legislation in late 2016 whereas a series of court cases in Florida in the 1990s resulted in the Tampa Sports Authority (Raymond James Stadium and Amalie Arena) being liable for property tax payments to the county.[12] I also limited the scope of data collection to the facility proper; training facilities, parking garages, or any real property and personal property accounts associated with ancillary development were excluded.[13] Also excluded are any late payment penalties or early pay discounts. These are likely one-off charges and credits, and including them distorts the true tax liability picture.

It is important to note that my property tax data are incomplete but only for a handful of cases. Freedom of information requests often went unacknowledged, unfulfilled, or denied, the latter-most being the case when the property tax data I requested was protected by privacy laws. This was only a problem for personal property tax data. Since a facility may have multiple lessees with taxable personal property, there will be multiple personal property tax accounts. The only way to distinguish, say, a food vendor from the team is if the account owner's name or a doing-business-as name is publicly available, which is not always the case. At the time of writing I could not verify the personal property tax liabilities for the five Washington, DC teams: the Washington Wizards, the Washington Capitals, the Washington Nationals, DC United, and the Washington Commanders (in Landover, Maryland). Local law precludes disclosing personal property tax records when the

[12] The cases involved the leasing of exempt land owned by the Sebring Airport Authority to the for-profit Sebring International Raceway and whether the latter was exempt from property taxes because it was a lessee. The state supreme court ruled in April 2001 that lower courts had not erred in ruling the raceway owners were liable for property taxes, noting a distinction between land that is owned for public purposes and activities taking place on the land for public purpose. Under Florida's constitution, the state supreme court ruled that for a lessee to be exempt it must be engaging in a government function, and that "operating an automobile racetrack for profit is not even arguably the performance of a 'governmental-governmental' function." In this context, the first "governmental" refers to the activity taking place on the land and while the second "governmental" refers to the ownership of the land. Thus, "proprietary-governmental" describes private activity on government-owned land and "governmental-proprietary" describes governmental activity on private land. "Governmental-governmental" and "governmental-proprietary" relationships are exempt, the court ruled. Because of the decision, the Tampa Sports Authority incurred a $6.7 million tax bill for 1999 assessments and a $5 million bill for 2000 assessments. The Authority subsequently transferred ownership of 100% of Amalie Arena and 98% of Raymond James Stadium to the county. Hence, the Authority pays property taxes on 2% of the stadium. Notably, any shortfalls in the Authority's funding obligations is covered by the city and county, the city covering 1/3 and the county 2/3. Requiring the authority to pay property taxes, thus, simply results in intergovernmental transfers between the city and county.

[13] For example, the owners of the Boston Bruins and TD Garden receive a property tax break through 2029 on portions of ancillary development adjacent to the arena under the state's 121A economic development program. This property tax break, which taxes commercial property at a lower rate, is not included in this analysis.

owner is identifiable.[14] Compared to known personal property valuations for peer facilities along the East Coast, these teams likely pay some personal property taxes.

Data on PILOTs also presented a challenge. PILOTs are often negotiated outside of assessment administration, and thus there tend to be no property tax records for them. If a PILOT is based on assessed value, the assessor may have created a record in order to generate a tax bill, as is the case in Foxborough, Massachusetts, but this is rare. Most often, data on PILOTs come from freedom of information requests, newspaper articles, or teams' lease agreements; though, each of these have varying degrees of reliability. Not all PILOTs are codified in a lease agreement, for instance, while freedom of information requests frequently went unfulfilled. As a result, my inventory of PILOTs is probably incomplete. The effect of some omissions is trivial given that PILOTs are infrequent and tend to be a relatively small fraction of counterfactual liability.

Importantly, only PILOTs of the first and third form are cataloged, since these are payments made from a team to a government entity. PILOTs of the second form are intergovernmental transfers. By way of example, the following PILOT arrangements do not count for the purpose of this exercise: PILOTs from Memphis Light, Gas and Water to the city of Memphis to help pay the debt on the FedEx Forum; payments from the Centennial Authority to Raleigh and Wake County as part of an interlocal agreement for PNC Arena; payments from the New Jersey Sports and Exposition Authority to East Rutherford for MetLife Stadium; payments from the Minnesota Sports Authority to Minneapolis for US Bank Stadium land; and PILOTs from Hamilton County, Ohio to Cincinnati Public Schools to offset lost property tax revenue for building Paul Brown Stadium and the Great American Ball Park. The New York Giants and New York Jets, through New Meadowlands Stadium Company, are required to pay to the New Jersey Sports and Exposition Authority what the lease calls a "Tenant PILOT", which is $1.3 million a year. This payment is not treated as a tax on property because, first, it bears none of the markers of PILOTs of the first or third kind, and, second, the lease also classifies the payments as rent. For these reasons, I do not tally the liability as property taxes paid. On the other hand, FC Cincinnati agreed to make a one-time lump sum PILOT to Cincinnati Public Schools (Wetterich, 2018), which is a PILOT of the first form and thus counts.[15]

[14] I filed multiple freedom of information requests with the Washington, DC Chief Financial Officer's office, each time rewording the request to fit within the office's rejection rationale. Each time the office responded with a new rejection and a new rationale. I have concluded the city's laws are too restrictive, particularly when contrasted against laws in the rest of the country. Personal property tax returns should be private, but there is no compelling privacy reason to withhold from public record an *aggregate* assessed value for taxable property sited at a particular address for a particularly property owner.

[15] Additional information on the PILOT is available from the Cincinnati Board of Education. The meeting minutes for October 22, 2018 include the resolution outlining the payment details and terms.

3.3 Real Property Taxes by Facility Use

Table 3.1 summarizes facilities' real property tax status categorized by facility primary use. For joint NFL-MLS and MLB-MLS facilities, I categorize use based on the football or baseball tenant. I further define property tax status as fully taxable, partially taxable, or fully exempt. A fully taxable facility means land and improvements are fee-simple owned, receive no preferential property tax exemptions because of their use for pro sports, and pay property taxes to the general fund. Cases like Madison Square Garden and Capital One Arena, both of which are fee-simple owned, are exempted from all real property taxes by law.[16] Notwithstanding such rare instances, fee-simple ownership is equivalent to full taxability. A facility is partially taxable when the owners pay real estate taxes but less than what they would pay if the facility and land were fee-simple owned and not receiving a special exemption. Note that this definition excludes standard exemptions available to all property owners, since the team owner would receive statutory tax relief whether they are fully taxable or partially taxable. The most common example of partial taxability occurs when owners pay taxes on a ground lease. Finally, fully exempt means that owners pay no real estate taxes on the facility or land.

[16] For Madison Square Garden, see New York Real Property Tax Law Article 4, Title 2, §429. New York state does not tax personal property. For Capital One Arena, see DC Law 10-189 (1994), also known as the Arena Tax Amendment Act. The Capitals and Wizards pay personal property taxes. The land beneath Capital One Arena is owned by the city whereas most the land beneath Madison Square Garden is owned by the Knicks and Rangers ownership. Madison Square Garden was originally constructed atop land owned by Pennsylvania Railroad, which it leased to an entity called Madison Square Garden Center, Inc.—the owner and operator of the arena. In 1963, Pennsylvania Railroad owned 25% of Madison Square Garden Center, Inc. and Madison Square Garden Corporation owned the remaining 75%. The arena ownership distribution was part of the negotiated terms of construction between the two companies. In 1968, Pennsylvania Railroad merged with New York Central Railroad, creating the Penn Central Company. In 1977, Gulf & Western took over Madison Square Garden Corporation, along with its three-quarter ownership stake in the arena. In 1984, Penn Central sold the arena land to Gulf & Western, whose ownership is in the slab extending from 31.58 to 47 ft above sea level. In 1989, Gulf & Western became Paramount Communications. At this point in time, Paramount Communications owned the land lease while Madison Square Garden Center, Inc. owned the arena, but the ownership distinction is strictly a legal one; Paramount Communications owned Madison Square Garden Center, Inc.'s stake in the arena through its acquisition of Madison Square Garden Corporation. On November 19, 1993, Paramount Communication transferred ownership of the land lease to its subsidiary Madison Square Garden Center, Inc., and the same day, the company filed paperwork with the city "declaring the leasehold is merged into the fee estate and the lease is of no further force and effect." A copy of this declaration is available from the author. In 1994, Viacom purchased a controlling interest in Paramount Communications and Madison Square Garden Center, Inc. and is subsequently "merged out of existence," as the New York Department of State's records puts it. Viacom sold the arena and related assets to MSG Holdings, LP, a entity created by Cablevision and ITT Corporation in order to acquire the property in 1995; the latter sold its interest in MSG Holdings to the former a few years later. In 2015, MSG Holdings transferred ownership of the arena and slab to MSG Arena, LLC, the current owner of record as of the time of writing.

Table 3.1 Summary of facilities by real property tax status

Primary use	Fully taxable	Partially taxable	Fully exempt	Total
Baseball stadium	3	5	21	29
Football stadium	2	4	24	30
Soccer stadium	3	4	11	18
Arena	5	6	33	44
Total count	13	19	86	118
Total liability	$57.6	$42.2	$0	$99.8

Notes: Dollars are nominal and in millions. Tax liability is based on tax bills due in fiscal year 2021. Primary use is based upon the major tenant, which in the case of joint NFL-MLS or MLB-MLS stadiums are football or baseball, respectively. Data reflect facilities active in the US as of December 2020

Another important qualification is that I define taxability with respect to whether a team owner, or their legal affiliate, remits real property taxes on any portion of the facility's assessed value. This distinction is necessary because in some cases facility space is leased to organizations unaffiliated with the team. The assessment records for Paul Brown Stadium, for instance, indicate a small taxable value on the stadium, but this space is not available to the Bengals. Hamilton County, the stadium owner, leases some stadium space to other businesses such as an MRI center, and the taxable assessed value on the roll reflects the property taxes paid by these businesses, not the team.[17] Similarly, government facility owners may lease space to or from another government entity, which is common in cases where team owners are sub-lessees. State law may require the government lessee to pay property taxes to the government landlord, in which case a taxable assessed value may appear on the tax roll. However, because these payments are really intergovernmental transfers, not payments from teams to government, I categorize the facilities as exempt.

Of the 118 facilities active at the end of 2020, 86 generated no real property tax revenue from major league teams, or 73%. This is consistent with the popular belief that major league teams generally do not pay property taxes. While it may not be surprising that a majority of facilities are exempt, it may be surprising that team owners in about a quarter of the facilities pay some real property taxes and that 11% of facilities are fully taxable. Across the 32 taxable facilities, team owners paid $99.8 million dollars in real property taxes in fiscal year 2021. About a quarter of this amount came from the Chase Center and SoFi Stadium, two fully taxable facilities in California, while all California facilities combined account for almost two-thirds. The taxable status of the facilities is itemized in Table A.1 in the Appendix.

Table 3.2 lists the real tax liabilities for the 32 full and partially taxable facilities for taxes due in fiscal year 2021 (generally, based on assessments set in

[17] Both the Bengals and Reds have clauses in their lease that any property tax liabilities the team may face will be paid by the county. So if the state changed its laws to tax personal property again, which it eliminated in 2005, the team would remain exempt.

Table 3.2 Real property taxes for fully and partially taxable facilities

Fully taxable		Partially taxable	
Ball Arena	$4.6	Angel Stadium	$0.9
Chase Center	$16.3	Banc of California Stadium	$4.1
Children's Mercy Park	$0.7	Bank of America Stadium	$2.2
Dodger Stadium	$3.1	Coors Field	$0.3
Exploria Stadium	$2.0	Dick's Sporting Goods Park	$0.1
FedEx Field	$2.6	Dignity Health Sports Park	$1.4
Fenway Park	$2.7	Empower Field at Mile High	$0.2
PayPal Park	$1.3	Golden 1 Center	$3.7
SoFi Stadium	$8.8	Hard Rock Stadium	$4.6
TD Garden	$2.8	Honda Center	$0.6
T-Mobile Arena	$3.7	Levi's Stadium	$7.3
United Center	$6.3	Moda Center	$1.2
Wrigley Field	$2.7	Oakland Coliseum	$0.6
		Oracle Park	$5.4
		Petco Park	$2.9
		Rio Tinto Stadium	$0.6
		SAP Center	$0.2
		Staples Center	$4.7
		Vivint Arena	$1.2
Total	$57.6		$42.2

Notes: Dollars are nominal in millions and rounded to nearest hundred thousand. Ball Arena became fully taxable in 2020. Previously it was partially taxable due to a possessory interest on the land. Teams that pay only PILOTs to a government agency are excluded, as I catalog these payments as taxes on property, not as property taxes

2020). In most cases, facilities' real property tax status does not change; though, circumstances occasionally arise in which it does. In 2012, for instance, the Franklin County Convention Facilities Authority purchased Nationwide Arena, and in 2016, the state enacted legislation removing the facility from the county's taxable property roll.[18] Among the facilities in Table 3.2, Ball Arena changed its tax status in 2020, not from exempt to taxable but from partially to fully taxable. Up until 2019, the owner of Ball Arena (Kroenke Sports & Entertainment, KSE) was liable for possessory interest taxes on a ground lease with the city of Denver, but that year the city agreed to convey the land to KSE in exchange for the Nuggets and Avalanche remaining in Denver through 2040.[19] It is noteworthy that the city of Anaheim agreed in 2020 to sell Angel Stadium to the owner of the Anaheim Angels, Arte Moreno, and Alameda County agreed to sell its share of the Oakland Coliseum

[18] The Franklin County Convention Facilities Authority paid property taxes to the Columbus school district and county on the arena, but these are intergovernmental transfers. The state exempted the Authority from these property taxes in legislation enacted in December 2016.

[19] See city council Resolution CR 19-0489.

land to the Oakland A's. While these transactions would have returned some taxable assessed value to the local roll, the following year the state began investigating these land transactions for violating the Surplus Land Law.[20] In May 2022, the Anaheim city council subsequently canceled the Angel Stadium sale to Moreno after an FBI corruption probe came to light. Thus, because the sale had not closed in 2020, I catalog Angel Stadium as partially taxable. In Oakland, the A's lease the Coliseum from a joint powers authority, and though the team now own the county's share of the land, it does not own all of the land. For this reason, I also catalog the stadium as partially taxable.

3.4 Trends in Facility Ownership and Taxability

To put the current number of exempt facilities in a historical context, I determined the property tax status of every facility that hosted a major league franchise at the start of each of the last five decades. Owing to the difficulty of compiling property tax histories across all such facilities, particularly for facilities constructed and operated before the internet age, I rely on court cases, archived newspaper articles, historic lease agreements, and sports history books focusing on particular cities or teams. In most cases, these sources were adequate, since property taxes are a salient expenses whose payment terms are disclosed in lease agreements and adjudicated in courts. In instances where these sources did not reveal facilities real property tax status, I inferred exempt status from public ownership of the land in conjunction with states' laws on possessory interest taxes at the time.

Table 3.3 shows the percentage of facilities owned by a government entity as well as the percentage of facilities subject to real property taxes. The data offer

Table 3.3 Historical public facility ownership and real property tax status

Year	Public owned	Private owned	Share public owned	Share exempt
1970	45	14	76%	70%
1980	53	13	80%	76%
1990	56	17	77%	74%
2000	79	21	79%	79%
2010	89	23	80%	75%
2020	88	30	75%	73%
2022	96	30	79%	79%

Notes: Exempt means fully exempt, not partially exempt. Major League Soccer stadiums are not included until 2000. Climate Pledge Arena, Lower.com Field, Q2 Stadium, and TQL Stadium began operations in 2021. Geodis Park began operations in 2022

[20] Effective January 2020, the Surplus Land Law requires that any governing body looking to sell public land first declare the land surplus, after which developers of eligible land use are given buying preference. Eligible land uses include schools, parks, and affordable housing. Sports facilities are not an eligible land use.

two insights. First, the share exempt is usually less than the share publicly owned. This is because teams that own their facilities can often avoid paying real property taxes by lobbying for favorable public-private partnership arrangements. In 2000 there were eight facilities that were privately owned and fully exempt from real property taxes: Capital One Arena, the Bradley Center, Madison Square Garden, Mapfre Stadium, Nationwide Arena, Foxboro Stadium, TD Garden, and the Wells Fargo Center. By 2020, of these eight only Capital One Arena, Madison Square Garden, and the Wells Fargo Center were still fully exempt.[21] Second, both shares have remained remarkably stable over the last half century. For public ownership, the largest spread is five percentage points; for tax status, it is nine percentage points. Third, the share of publicly owned facilities is a reliable signal of the share exempt in the aggregate, notwithstanding the former slightly over-counting the former.

The last decade is noteworthy in that the share of team owners paying some real property taxes is the largest since 1970. In 1970, 70% of the 59 major league facilities generated no real property taxes compared to 73% of the 118 facilities in 2020. Among active privately owned and fully taxable facilities, six opened between 2010 and 2020: Chase Center, Earthquakes Stadium, Exploria Stadium, Children's Mercy Park, SoFi Stadium, and T-Mobile Arena.[22] By comparison, only three facilities completed between 1988 through 2009 were built as private facilities and fully taxable: Arco Arena, The Palace at Auburn Hills, and FedEx Field.[23]

This begs the question if there is a trend away from public-private partnerships that shield team owners from paying real property taxes. No, as there appears to be no underlying commonality across new taxable facilities. The Detroit Pistons moved from suburban and fully taxable Palace at Auburn Hills to the public and exempt Little Caesars Arena. (The Sacramento Kings made a similar move from Arco Arena to the Golden 1 Center, but the team pays possessory interest taxes at its new home.) After Clark County (Nevada) made an offer too good to refuse, the Oakland Raiders moved from the Oakland Coliseum where they paid possessory interest taxes to exempt Allegiant Stadium. At the same time, SoFi Stadium opened with two tenants (the Rams and Chargers), reducing the average cost of the stadium's property tax bill; Exploria Stadium opened fully taxable but only after initial plans for an exempt facility fell through and waiting for public participation would have delayed stadium completion beyond league-imposed deadlines (Damron, 2014; Turner, 2016); and T-Mobile Arena opened fully taxable because its owner has the rare perspective that taxpayer dollars should not be spent on major league facilities—either their

[21] The Bradley Center, Foxboro Stadium, and Mapfre Stadium were replaced by publicly owned and fully exempt facilities; Nationwide Arena was purchased by Franklin County, becoming fully exempt; and TD Garden had tax abatements expire. Notably, the United Center was also receiving a partial tax abatement under 1989 state legislation that sunset in 2016.

[22] At the time of writing, the future arena for the Los Angeles Clippers in Inglewood is expected to be fully taxable.

[23] Three facilities that were fully taxable in 2020 were not fully taxable at the time of their opening. Ball Arena became fully taxable in 2020; the United Center enjoyed property tax breaks that ended in 2015; and TD Garden was exempt from property taxes until 2013.

construction or operation (Campo, 2017). In 2021 and 2022, six new facilities began operations, all publicly owned and fully exempt, thus increasing the share of fully exempt facilities closer to historical highs.[24]

3.5 Total Property Taxes by Facility Use

Having thus far focused on real property taxes, I now consider all property taxes combined. Team owners are liable for personal property taxes and special assessments unless exempted by law or by the terms of a facility lease agreement. Among the sorts of personal property that may be taxable are weightlifting equipment, training equipment, office furniture, copiers, and so forth. As I noted earlier, the taxability of personal property undermines the broad claim, often reported by journalists, that major league teams do not pay property taxes.

Figure 3.1 contains two bar charts showing the distribution of property tax payments by property tax type for taxes due in fiscal year 2021. The personal property tax data reflect remittances made by major league teams or facility operators; remittances made by other entities, such as food vendors, are excluded. I have bundled special assessments and parcel taxes appearing on property tax bills into the category "PILOTs and charges."[25] The chart on the left encompasses all property tax revenues, and the data indicate that teams paid $293.0 million in property taxes from all sources. This figure, though, is skewed by the PILOTs for the three New York City facilities, Yankee Stadium, Citi Field, and Barclays Center. Excluding these facilities, teams paid $127.8 million in property taxes for the fiscal year 2021 pay period.

While these data indicate how much of which property taxes facilities generated, one may be curious about how many and which teams remit which sorts of property taxes. Answering this question is not as straightforward because some facilities host multiple teams, and in cases where facility ownership or operating rights are not jointly shared, team landlords may see the property tax bill, not tenants. For instance, the owner of the Boston Bruins (Delaware North) also owns TD Garden and leases the arena to the Boston Celtics. Tax records from the city of Boston indicate that Delaware North pays real and personal property taxes at the arena; there are no personal property taxes billed to the Celtics, which is consistent with the Celtics renting personal property owned by the Bruins as part of the lease.[26] In other words,

[24] Recall that an exemption means a team does not remit property taxes and that any taxes owed by one public entity to another is an intergovernmental transfer. The six facilities are: Climate Pledge Arena, Geodis Park, Lower.com Field, Q2 Stadium, TQL Stadium, and UBS Arena.

[25] FC Cincinnati paid a $9.3 million PILOT to the Cincinnati Public Schools, which was a one-time lump sum equal to the expected property taxes that would have been owed if the West End Stadium were taxable from 2021 through 2030. Since TQL Stadium is not part of this analysis, having opened in 2021, this PILOT is not reflected in the presented data.

[26] Attempts to verify this with the Celtics and Bruins were unsuccessful.

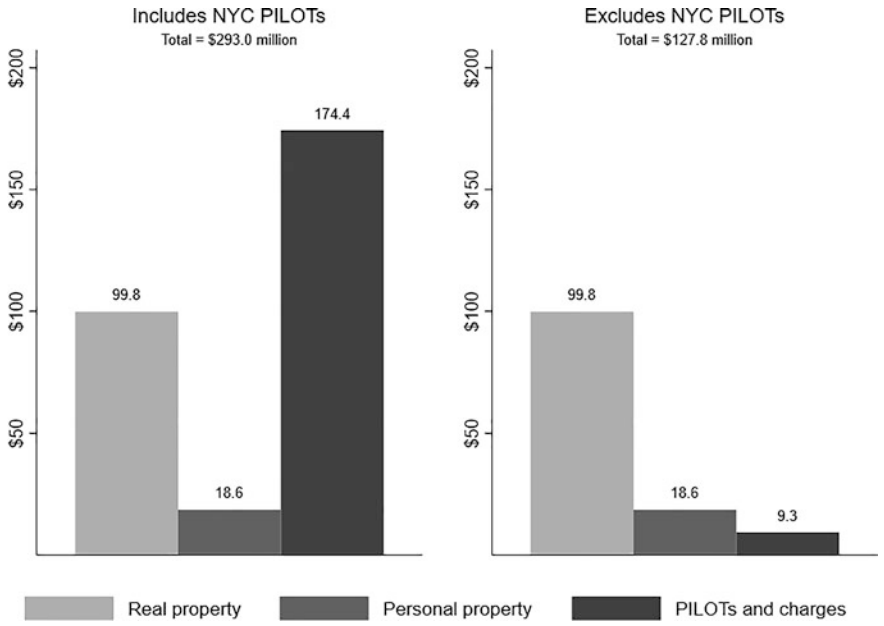

Fig. 3.1 Property taxes paid by tax type, FY21. Notes: Dollars are nominal and in millions. Figures may not add squarely due to rounding. Amounts are based upon taxes paid during the typical July-June fiscal year. For jurisdictions operating on a different fiscal calendar, I catalog liabilities billed as though they were billed between July 2020 and June 2021 even though they may have been billed a few months before or after this window

a facility-level analysis will yield a different count of exempt entities than a team-level analysis.

I previously reported the real property taxes paid by teams in Table 3.2. I do not report the personal property taxes paid by teams to maintain the privacy required by law in a handful of jurisdictions. For fiscal year 2021, 83 of the 135 US-based major league teams paid personal property taxes, or 61%. However, 33 of the teams that do not pay personal property taxes are located in states that do not tax tangible personal property generally. In these instances, then, the exemption is not a preferential subsidy unique to pro sports. Excluding these teams means that of the 102 teams that would be taxable under state law, 21% do not pay personal property taxes because of favorable public-private arrangements. At the facility level, 32 facilities are located in states that do not tax personal property. Of the remaining 86 facilities active in 2020, 74 generated *some* personal property tax from teams, or 86%. Hence, while it is true that a majority of teams do not pay *real* property taxes, it is false that a majority do not pay *any* property taxes. Distinguishing between types of property taxes is crucial to avoid perpetuating inaccuracies about major league teams and their property tax liabilities.

3.6 Real and Personal Property Effective Tax Rates

In Chap. 2, I noted the QF method assumes a 2% ETR. I also provided some evidence that this assumption is reasonable for the real property in some situations but not others. Further disaggregating ETRs by tax type and facility type provides additional insight. Figure 3.2 shows whisker plots of ETRs for real and personal property taxes by facility type for taxes paid in fiscal year 2021. The grey boxes show the 75th (upper) and 25th (lower) percentile values with the median (50th percentile) value appearing as a horizontal line inside the box. The location of the median value relative to the 25th and 75th percentiles provides information on the density of values in the respective ETR distributions. Vertical lines extending above and below the box indicate 1.5 times the respective percentile, an arbitrary but common way to measure outliers. In the graphs, outliers are represented as hollow circles.

Most real property ETRs for arenas, baseball stadiums, and soccer stadiums are clustered closer to 1% than 2%. Based on the median FMV for these facilities of $145 million in 2020 assessments, the 2% ETR assumption over states the median real property tax liability by $1.5 million per year. The reader should not interpret this figure as the size of the estimation error in the QF method, since their tax base

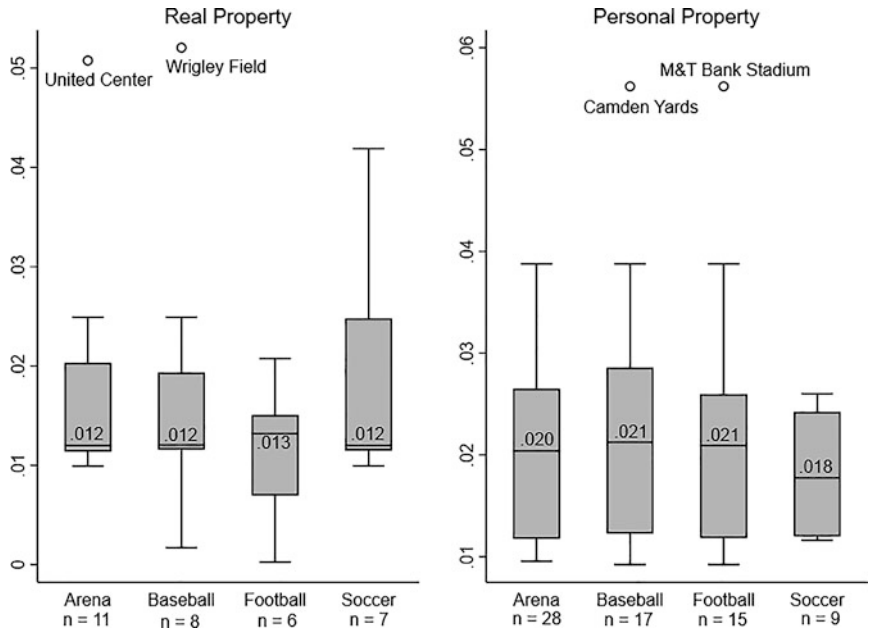

Fig. 3.2 Real and personal property ETRs, FY21. Notes: Data based on taxes paid in fiscal year 2021. Only facilities generating real and personal property taxes from major league tenants are included. Hollow circles indicate outliers

is defined as reproduction cost rather than, in most cases with taxable facilities, replacement cost. The calculation merely illustrates the risk of overestimation when using the 2% ETR assumption. For personal property, however, the 2% ETR assumption is sensible based on fiscal year 2021 data.

3.7 Impact of COVID-19 on Property Tax Revenue

The COVID-19 pandemic upended professional sports. Among states' efforts to stem the spread of the virus was limiting the size of public gatherings, which one might reason would affect facility income and therefore facilities' taxable value. Such reasoning fails to appreciate that taxable facilities are typically valued on the replacement cost approach, not the income approach, implying that changes in income do not translate directly to changes in taxable value.[27] Since changes in construction labor and material costs are of greater importance, it stands to reason that in the short-run the pandemic should not have had a substantial effect on the taxable assessed value of major league facilities. Table 3.4 catalogs the aggregate tax liability from all teams for fiscal year 2021 and fiscal year 2022, the former generally reflecting economic activity before the pandemic and the latter during the pandemic. Combined property tax liabilities among taxable facilities is only about 2% lower during the pandemic than before.

One may find these results curious if we consider the state of the construction industry during the pandemic. Inflation, labor shortages, and material supply chain slowdowns pushed construction costs upward, which suggests that, holding tax rates constant, taxable assessed value on the replacement cost approach should have increased. One possible explanation is there are often backlogs in property assessment appeals, particularly during economic downturns. The Golden State

Table 3.4 Property taxes by type, FY2021 and FY2022

Tax type	FY 2021	FY 2022	%△
Real property taxes	$99.9	$97.7	−2.2%
Personal property taxes	$18.6	$18.4	−1.0%
Other property taxes	$174.5	$171.8	−1.5%
Total	$293	$288.1	−1.7%

Notes: Dollars are nominal and in millions. Facilities beginning operation in fiscal year 2022 are not included. PILOT payments from New York City facilities are included

[27] The United Center is one instance that I am aware of where state lawmakers passed special legislation dictating how the Cook County assessor's office must assess the arena. Instead of the replacement approach—the professional standard—the assessor must value it on a statutorily defined "net income" approach. This mandate was in place for the first 22 years of the arena's life, a period that has since lapsed. As of the time of writing, I was unable to get confirmation if the office still uses this method. For more information on the statute, see 35 ILCS 200/Art. 10 Div. 8.

Warriors, for instance, appealed their 2022 assessment for the Chase Center and two adjacent office buildings, arguing the assessment should be $1 billion less (about $10 million dollars in lower property taxes). At the time of writing, the city's assessment appeals board has not yet ruled on the case. The current year's tax roll will not reflect the change until the board rules. If the board reduces the assessment, the team will receive a refund for taxes paid on the current valuation. Reviewing real property tax liabilities a few years from now will yield a clearer picture of the pandemic's effect on taxable facilities and teams.

3.8 Chapter Summary

In this chapter I provided an inventory of property taxes and taxes on property paid by major league teams and generated by major league facilities for fiscal year 2021. In the aggregate, teams paid $293.0 million in property taxes and taxes on property in fiscal year 2021. Removing the unique New York City PILOTs, this figure drops to $127.8 million, 78% of which was from real property taxes. Moreover, the COVID-19 pandemic hardly affected tax liabilities, but owing to lags in the appeals process, the full impact of the pandemic may not be known for a few more years.

My goal for this chapter was twofold. First, I demonstrated that the argument major league teams do not pay property taxes is false. This claim is too broad to be true, and the data I present here demonstrates as much. Journalists and academics can avoid perpetuating inaccuracies by being more precise. Most facilities do not generate real property tax revenue, but most generate personal property taxes from owners. Second, the inventory is a necessary part of calculating the major league property tax expenditure, which is the difference between taxes that would have been paid under taxable fee-simple ownership and what is paid in fact. In the next chapter, I discuss my methodology for calculating the property tax expenditure in the fully taxable counterfactual.

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Chapter 4
Estimating the Property Tax Expenditure

Abstract The property tax expenditure for major league facilities equals the difference between (a) the property taxes owed if a facility and its land were privately owned and treated no differently from any other taxable special purpose property and (b) the property taxes paid by team-related property owners at the facility site in fact. The most crucial element of the counterfactual property tax liability is the property assessment, which is the sum of the individual assessments for the land and facility. This chapter discusses my methodology for calculating the property tax expenditure.

4.1 Estimating Land Value

Between land and improvements, the former is the more straightforward of the two to estimate. Unlike estimating the value of improvements, land value is always based upon the comparable-sales approach. Rarely do we get the chance to observe facilities' land prices, though. For privately owned facilities, the land and facility are sold together, making it impossible to determine what portion of the price is for the land and what portion is for the facility unless it is explicitly stated in the sale contract. In the case of publicly owned facilities, the prices paid for the land are unlikely to be market rate. Land acquired through a forced sale such as eminent domain are not arm's-length. Moreover, if land acquisition needs to be done expeditiously, government may pay a premium to avoid the delays of eminent domain litigation. In both cases, the price for the facility site is unlikely to the be price a willing buyer and a willing seller negotiate in a competitive market. Note that if land is acquired by the team owner, and, as part of a public-private partnership agreement, they are reimbursed for this expense, these critiques still apply. Such arrangements only change which party pays for the land, not whether the price paid is determined under non-competitive conditions.

That land assessed values are based on market prices does not mean that researchers should use current market prices as an estimate of the market value an assessor would place on the land. As discussed in detail in Chap. 2, property assessments and property appraisals are not the same thing owing in large part

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to state laws dictating assessment lags and that sale conditions may not be arm's-length.[1] Assessors in Colorado, for instance, reassess property every two years and state law further requires using sales price data that are two to three years old at the time of the reassessment. Assessments set in 2021 for 2021–2022 fiscal year bills are based on sales occurring any time from July 1, 2018 through June 30, 2020, values which are then time trended to the present.

Because assessment administration laws vary, a more accurate way to estimate the land assessed value is to use existing land assessments for nearby taxable property with the same zoning restriction as a facility. The obvious advantage of using existing assessments for taxable properties is that they have already been subject to both assessor and property owner scrutiny, and further they take into account state and local assessment laws. Matching on zoning restrictions improves the precision of the facility's land value by implicitly accounting for land market differences that may show up in assessments. My estimates for a facility's land assessment are based upon the per acre land assessment for non-residential property on blocks adjacent to each facility with the same zoning. In the event a jurisdiction does not report separate assessed values for land and improvements, however, I use assessments for vacant land by necessity.

A logical question in light of these considerations is whether assessed values for vacant land or improved land should be used. I argue the latter is more sensible. Using vacant land would imply that the facility's land should be assessed as though it were vacant, but this position ignores the cost to make the land vacant. Land that has already been developed is more expensive to convert to an alternative use, and as such the underlying sales prices for improved land will be lower than for similarly situated vacant land, all other things equal. Using vacant land also assumes the future use of the land is the same, since use predicts prices, and prices (eventually) predict assessed values. This reasoning is contradicted by studies of sports facility announcement effects that demonstrate announcing a site location is sufficient for boosting nearby sales prices (Kavetsos, 2012; Ahlfeldt & Kavetsos, 2014).

That being said, a more general concern with using the land assessment for improved land is that in cases where property owners face the same tax rate on both the land and building values, assessors have little incentive to invest in accurately valuing either component individually (Dye & England, 2010). Contrast this with a property tax system that imposes different rates on land and buildings, a so-called split-rate system. Supposing land is taxed at a greater rate than improvements, the marginal tax cost of assessment inaccuracy will be greater for the former than the latter, implying that property owners will monitor the former more intensely than the latter. When the tax rate is the same, however, there is no additional incentive to monitor one more closely than the other, and consequently the individual components do not matter; only their sum matters. At present, there are no major

[1] As Thimgan (2010) notes, "On occasion, costs are higher than usual, for example, when a premium is paid to shorten the construction period or when the bid process is prejudiced. assessors should disregard or adjust for atypical costs" (p. 238).

league sports facilities in jurisdictions with split-rate property tax systems, making the use of improved land as the basis for a land mass assessment more viable.[2]

One might respond this choice seems to undermine the logic for using land assessments for improved land in the first place. If the land assessment for buildings is inaccurate, why use it? This reasoning confuses an evaluation of an assessment with an estimate of an assessment that would occur in the counterfactual. This study is not an evaluation of whether the values entered on the roll are accurate relative to market prices or some other real-world benchmark. The goal instead is to estimate what land value would be entered on the property tax roll if a facility and its land were constructed and owned privately. From this perspective I hope it is clear that I am only assuming assessing staff would treat a facility's land assessment the same as any other nearby commercial and similarly zoned improved land. If there is assessment error on taxable properties in the real world, I am assuming the same error would exist for the counterfactual taxable facility.[3]

4.2 Estimating Facility Value

To estimate each facility's FMV, I use a replacement cost mass assessment methodology. As discussed in Chap. 2, the replacement cost net depreciation (RCND) approach is appropriate for assessing major league facilities. There are three methods for calculating replacement cost, each requiring different amounts of data and administrative resources. In an ideal world, the three methods produce similar valuations, but this is rarely the case in practice for special purpose properties given differences in data demands. The three are:

- Quantity survey method (QSM)
- Segregated cost method (SCM)
- Square foot method (SFM)

QSM is the most detailed and precise method, but also the most data and time-intensive. Replacement cost is determined by itemizing the quantity of *every* construction material used—every nail, every yard of copper wiring, every pound of solder, every tonnage of steel, every cubic yard of cement, and so forth. Similar inventories are compiled for labor, equipment used, and soft costs such as overhead and permit fees. The quantity of each component is then multiplied by their

[2] The last major league town to have such a system was Pittsburgh, which replaced its land value tax with the more ubiquitous single-rate system in 2001.

[3] Assessment error is avoidable, and there is good economic justification for such error to exist. If the marginal cost of correcting the error is greater than the marginal benefit, it makes sense to leave the error alone. Call it rational negligence. Principles of good governance may demand perfect administration, but the first unit of error corrected is the cheapest. Correcting each additional error becomes increasingly more expensive, implying that at some point it is cheaper for assessing staff and property owners to leave the perceived error alone than work to remedy it.

current unit prices, and summing the values generates the replacement cost. Current unit prices are available from various sources, perhaps the most popular being the Marshall and Swift Cost Handbook and the National Building Cost Manual, both of which are updated annually. It is the material and labor inventory that is most difficult to compile. Assessors generally do not have access to this level of construction detail, and nor is it possible to compile such inventories across all active facilities for the purpose of the present study.

SCM is similar to QSM except that major parts of buildings are priced instead of individual units of labor and material. Examples of major parts are exterior walls, interior walls, plumbing, electrical, and roofing. The parts and their prices are measured on a square footage basis, and the sum of all major parts is the replacement cost. Though it is less precise than QSM, SCM is more practical. Assessors can compile an inventory of major parts from blueprints and physical inspections, for instance. A nice example of this method is the Orange County (Florida) assessor, who makes publicly available through their property portal details of sports facilities' major parts and their respective valuations. If this same level of building detail were available from all assessing jurisdictions, SCM would be the appropriate method. However, this is not the case. Most assessing jurisdictions do not take steps to value government-owned property, which would require collecting relevant data on building construction and design. SCM is thus not feasible for this study.[4]

QSM and SCM do not lend themselves to mass assessment, since the necessary data are unavailable for every active major league facility. In contrast, the SFM can be used for mass assessment, because its data needs are minimal by comparison, and such data can be collected from all facilities. The SFM approach multiplies the square footage of the facility by a cost factor representing current construction costs. One challenge with implementing SFM, though, is the reliability of publicly reported square footage. Facility websites, for instance, will report square footage of an entire development (that is, the facility and other buildings); other times square footage of the facility footprint; and other times size is unreported.[5] Property tax records are also inconsistent sources for facility area data, since these records are based on parcels, and parcels may include ancillary buildings. Building permits tend to be building-specific, and the data in the permit reflect facility design choices early during the construction process; these choices usually change.

As alternatives to square footage, I consider facilities' footprint in acres and the number of seats. These metrics have the advantage of being reliably measured across facilities over time. Their primary disadvantage is that they do not measure the physical space of the building directly. For instance, any useable space below grade will be missed, biasing the cost per acre or cost per seat measures upward.

[4] It is unclear if Orange County updates their records for exempt sports facilities when the building undergoes renovations, which means over time such records could become outdated.

[5] My attempts to gather this information from numerous facilities' media contact personnel regularly failed.

Under IAAO guidelines, facility construction costs should reflect both direct and indirect costs (Thimgan, 2010). Direct costs are labor and materials used in the construction proper and in its administration, such as fencing for a construction site, security, equipment rentals, and so forth. Indirect costs are commonly known as soft costs, costs incurred in securing construction financing, architectural design fees, and taxes on purchasing or using equipment and material, for instance. Land acquisition costs are excluded as are soft costs unrelated to construction, such as marketing and ticket sales expenses, and expenses on personal property to make the facility usable for the tenant's purposes, such as TVs in club suites or office equipment.

I use the following equation to estimate an RCND FMV for each facility's private and fully taxable counterfactual:

$$FMV_{it}^{B} = (RCF_{ijmt})(X_{it}) - D_{it} \tag{4.1}$$

where FMV_{it}^{B} is the building FMV for facility i in assessing year t; RCF_{ijmt} is a replacement cost factor for i of facility type j in metro area m; X is a measure for facility size, and D is the estimated depreciation value. I consider the components of the equation in turn.

4.2.1 Calculating Replacement Cost Factors

The *RCF* is a reproduction cost factor for newer facilities, but this means it is also a replacement cost factor for older facilities. I calculate *RCF*s using construction cost data for 17 facilities that opened between 2014 and 2020. The facilities are listed in Table 4.1, and I refer to these as donors, since their cost data contribute to an *RCF*. I index donor facilities as d. As new facilities are constructed and older facilities cease to be useful standards for valuing replacement costs, the pool of donors changes with time, as does the *RCF*. Moreover, every facility that is not fully taxable I call a target facility, indexed as i. I calculate an *RCF* for each target facility using the cost data for donor facilities of the same type, with types being baseball stadiums, football stadiums, soccer-only stadiums, or arenas. For completeness I include in the table the six facilities opening in 2021 or 2022, but these are not part of the analysis.

The formula for calculating the *RCF* for donor facility d in the year d opened, y:

$$RCF_{dy} = \frac{\widehat{C}_{dy}}{X_{dy}} \tag{4.2}$$

where $\widehat{C}_{dy}$ is the adjusted construction cost and X is a measure of facility size measured in three ways: as the building square footage, the number of seats, and the building footprint in acres; I evaluate the reliability of each *RCF* shortly. Because the counterfactual facilities do not receive construction subsidies, they will

Table 4.1 Newer major league facilities

Facility name	Opened	Facility type	City
Allegiant Stadium	2020	Football	Paradise, NV
Allianz Field	2019	Soccer	St. Paul, MN
Audi Field	2017	Soccer	Washington, DC
Banc of California Stadium	2018	Soccer	Los Angeles, CA
Chase Center	2019	Arena	San Francisco, CA
Climate Pledge Arena[a]	2021	Arena	Seattle, WA
Earthquakes Stadium	2015	Soccer	San Jose, CA
Exploria Stadium	2017	Soccer	Orlando, FL
Fiserv Forum	2018	Arena	Milwaukee, WI
Geodis Park[a]	2022	Soccer	Nashville, TN
Globe Life Field	2020	Baseball	Arlington, TX
Golden 1 Center	2016	Arena	Sacramento, CA
Levi's Stadium	2014	Football	Santa Clara, CA
Little Caesars Arena	2017	Arena	Detroit, MI
Lower.com Field[a]	2021	Soccer	Columbus, OH
Mercedes-Benz Stadium	2017	Football	Atlanta, GA
Q2 Stadium[a]	2021	Soccer	Austin, TX
SoFi Stadium	2020	Football	Inglewood, CA
T-Mobile Arena	2016	Arena	Paradise, NV
TQL Stadium[a]	2021	Soccer	Cincinnati, OH
Truist Park	2017	Baseball	Cumberland, GA
UBS Arena[a]	2021	Hockey	Elmont, NY
US Bank Stadium	2016	Football	Minneapolis, MN

Notes: DRV PNK Stadium is excluded because it was constructed and designed to be temporary, and thus presumes to lack many of the amenities a more permanent major league soccer facility would have

[a] Facility is not included in calculating the RCF for the respective facility type

be less opulent than their real-world counterparts (Propheter, 2017). $\widehat{C}$ denotes a construction cost measure where I have removed construction cost presumed to be induced by direct and indirect subsidies. Since I do not have an inventory of all construction subsidies for all facilities, I make adjustments only for the two largest subsidies, when applicable: direct construction subsidies from state and local governments and indirect subsidies from federal taxpayers due to lower-level governments issuing tax-exempt bonds. I discuss these in more detail shortly.

The *RCF* in Eq. 4.2 is specific to the construction labor and material cost in each donor facility metro area. Since these costs vary across target facilities, I adjust the donor *RCF*s of facility type j to the target facility i's local market m in assessing year t using the RS Means city construction cost index:

$$RCF_{it} = RCF_{ijmt} = RCF_{dy}\left(\frac{\lambda_{ijmt}}{\lambda_{dy}}\right) \tag{4.3}$$

where λ_{ijmt} is the cost index for target facility and λ_{dy} is the cost index for the donor facilities such that i and d belong to the set of j. Simply averaging the construction costs for the five donor arenas (see Table 4.1), for instance, would poorly reflect replacement cost for the Smoothie King Center in New Orleans given differences in construction labor wages across cities. Based on Bureau of Labor Statistics data for 2021, the median hourly wage for construction workers is $21.81 in the New Orleans metro area and $34.34 in the San Francisco metro area. With average construction labor hours for major league facilities exceeding two million, failing to reflect local labor costs could greatly over or underestimate replacement cost by tens of millions. Moreover, under IAAO guidelines, cost estimates should reflect the current and local market (Thimgan, 2010). By way of example, to calculate the *RCF* for the Smoothie King Center for 2020, the construction cost for the Golden 1 Center (Sacramento, California and constructed in 2016) would be adjusted to 2020 New Orleans dollars as would Fiserv Forum, Little Caesars Arena, the Chase Center, and T-Mobile Arena. I calculate λ using the RS Means construction cost index because it reflects only nonresidential buildings, and it is available for all major cities hosting major league sports.[6]

Note that t in Eq. 4.3 denotes an assessment year, the year in which the assessments for the underlying property tax expenditure estimate are determined. Thus, for facilities located in states where reassessments occur on less than an annual basis, t will be the estimated FMV for a calendar year in the past. In Allegheny County (Pennsylvania), properties are periodically reassessed but not on a set schedule; current assessments are based on reassessments conducted in 2013 using 2012 market data. In such instances, replacement costs are indexed to the most recent reassessment year.[7] Additionally, I include assessment growth limits in my estimates, respecting the nuance of states' laws were facilities taxable. Under California's Proposition 13, for instance, properties are reassessed to market value only at the time of an eligible transfer, and otherwise annual growth is limited to 2% a year (Propheter, 2021). In New York City, commercial properties' annual assessment growth is phased-in over a five year period, implying that every commercial parcel, including sports facilities if they were taxable, will eventually pay taxes on all assessed value growth but will only pay taxes on a fraction of the current and prior years' growth in any given year.

The final *RCF* for each target facility is the median of the indexed adjusted *RCF*s of the same facility type. The rationale for using the median is not to allow outlier

[6] For smaller towns hosting major league facilities, such as Foxborough, Massachusetts, East Rutherford, New Jersey, and Cumberland, Georgia, I use the cost index for the nearest major city.

[7] This approach clearly introduces some mismeasurement into *RCF*s for facilities in jurisdictions with something other than annual reassessment cycles. The extent of the mismeasurement will be greater the longer the time gap since the last reassessment. In other words, using 2019 cost data indexed to 2018 will create smaller mismeasurements than indexing the same data to 2012. Given that stadium construction technology and design preferences do not change dramatically over shorter periods of time, I assume the mismeasurement from backward indexing to a prior year is trivial in magnitude.

costs from influencing the *RCF*. SoFi Stadium and the Chase Center will pull the average respective facility cost upward, for instance.[8] Given the few number of donor facilities used to determine the *RCF*, the median is hardly affected by outliers.

4.2.2 Assessable Construction Cost Data for Donor Facilities

As Long (2013) notes, data on facility construction costs are of uneven quality. While total cost data are relatively easy to obtain from news reports and government documents through basic internet searches, the data are typically not comparable. One figure may include land costs and another may not; one may include costs for personal property and another may not. Further complicating matters is that seven of the most recent facilities completed through 2020 have been constructed privately. Whereas more detailed construction budget data are usually available for facilities receiving large public subsidies, for private facilities I am more heavily reliant on news sources. I also used local assessment records to estimate personal property expenses.[9] Another useful source in some instances are annual financial documents reported to the Securities and Exchange Commission. While these reports provide information on costs for major projects, they also are only useful when a team or a facility is owned by a publicly traded company. A third source for cost data is team media guides, which often contain information on facilities' construction and subsequent renovations. Finally, court cases and assessment appeals records are an undervalued data source, and since sports facilities are often the subject of lawsuits, evidence disclosure rules provide a means to obtain otherwise private facility cost information. By way of example, while the construction cost for Levi's Stadium is often reported as $1.3 billion, the team's assessment appeal to the Santa Clara Board of Equalization indicates the cost due to the stadium proper is only $890 million. When these sources did not provide specific enough cost data, I generalized from the known instances to the unknown instances. For example, the median personal property expense as a share of total construction cost for nine newer facilities built

[8] SoFi Stadium and its ancillary development was originally expected to cost $2.6 billion in 2016 when construction broke ground, but within two years costs had more than doubled, driven in large part by competition for construction labor from a $14 billion renovation of nearby LAX (Wickersham & Van Natta, 2019). Another non-trivial factor was unexpected engineering required to make the stadium compliant with the state's earthquake retrofit laws. The estimated final cost of the stadium is about $4.5 billion, more than double the cost for Allegiant Stadium in Las Vegas which was constructed during the same period. This figures excludes about $1 billion in ancillary development, such as an office building to serve as a new headquarter for the NFL's media arm. The Chase Center is a cost outlier because of the engineering needed to build the arena below grade and on a site with a high groundwater table near two active geologic faults.

[9] Tangible personal property tax records provide a lower bound estimate of expenses, since some personal property may be exempt from taxation.

between 2014 and 2020 is 7%. I used this figure to downward adjust the construction cost for donor facilities where I could not find any personal property expense data.

4.2.3 Adjustment for Subsidy-Induced Opulence

Though the *RCF* is based on total (hard plus soft) construction costs, an adjustment for subsidy-induced facility opulence is necessary. Subtracting this figure from construction costs yields the adjusted construction cost ($\widehat{C}$) used in calculating the *RCF*. The economic logic for this adjustment is that removing superadequacies generates a more plausible counterfactual, that of a privately financed, privately owned, and fully taxable facility. From an assessment standpoint, who finances what portion of a facility is immaterial to how much it costs to replace a facility *as it exists in fact*. However, the economist's logic is different than the assessor's in this respect, which highlights perhaps the most important difference between generating an assessment for property tax purposes and estimating an assessment for property tax expenditure analysis. Since the property tax expenditure is the difference between the taxes on the facility as it would have existed had owners been fully liable and the taxes on the facility as it exists, any FMV that would not have existed but for the public-private partnership should be excluded from a property tax expenditure analysis. (Such value should not be excluded from an assessment, however, because the value exists in fact.) Quirk and Fort (1992) call such value "gold plating", and in theory it occurs when owners do not face the full marginal cost for a building improvement. This happens when a portion of the construction cost is paid by someone else, in this case, by taxpayers.[10]

To illustrate the logic and importance of adjusting for subsidy-induced opulence, consider T-Mobile Arena in Las Vegas and the Golden 1 Center in Sacramento. Both arenas were constructed and opened in 2016; they are similar sizes (650,000 square feet with 20,000 maximum capacity and 675,000 square feet with 19,000 maximum capacity, respectively); both are in similar cities in terms of per capita income and demographics; and based on various indices, construction costs for large warehouses and recreation centers are similar. However, T-Mobile Arena was built without any construction subsidies while about 40% of the Golden 1 Center's total development

[10] A simple, albeit crude, example to illustrate the economics of gold plating is to imagine having dinner at a restaurant with yourself and a friend. Further suppose you are deliberating whether to pay for dinner with separate bills or to evenly split the bill. If you were deciding between two items, one priced at $10 and another at $20, under separate billing you would pay the full cost of the difference. However, under split billing, you would pay only half of the difference. If your friend's decision is unaffected by how the bill is paid, then you are more likely to select the $20 dish where you can pass some of the cost on to your friend than under separate billing when the difference is not $5 but $10. For gold plating to occur, then, at least one of the parties must select a more expensive option. Within the context of sports facilities, this is easily sports franchise owners, since they disproportionately, if not strictly, influence facility design decisions.

cost came from taxpayers, or $223 million.[11] The theory of gold plating implies that the $223 million construction subsidy will show up in the Golden 1 Center's design to some extent, and further that these design choices would not show up in facilities where the ownership group paid the full price for any additional improvements. That is to say the more unique an improvement relative to other facilities in a league, the more likely its inclusion in the facility design is due to the marginal cost being paid for in part by subsidies. One salient example of an improvement difference that likely exists only because of the subsidy is the Golden 1 Center's five bi-fold hangar exterior doors, each weighing about 28,000 pounds. No other arena has this door design.

Because money is fungible, the total value of subsidies is more important than the source of the subsidy. No study exists that inventories every transfer of public wealth to team owners, though. While Long (2013) is the most comprehensive to date, her study does not include, for instance, sales and use tax exemptions on construction-related equipment or material, opportunity costs of development, or exemptions from business license fees or construction permit fees. In lieu of compiling a complete inventory of subsidies and their tax value—a task that is practically impossible—I focus on what I presume to be the two largest (in dollar terms) subsidies: direct construction subsidies from state and local taxpayers and indirect subsidies from federal taxpayers. Direct subsidies are those approved by lawmakers or referendum and are dedicated to construction of a facility proper, including public costs for infrastructure and land acquisition.[12] These do not include facility operating subsidies, such as breaks on utility charges or job creation credits for workers. Indirect federal subsidies arise from state and local governments issuing tax-exempt bonds. Both provide team owners additional resources to build more opulent facilities

I rely on existing academic research to estimate the marginal opulence of subsidy dollars. In prior work, I estimated that each $1 million in direct subsidies results in $36,600 in additional total construction cost per facility footprint acre on average (Propheter, 2017).[13] Based on this estimate, Globe Life Field, for instance, has $258 million in additional FMV that would not have existed but for the city of Arlington's

[11] See page 5 of the arena term sheet, which is available at http://sacramento.granicus.com/MetaViewer.php?view_id=21&event_id=2468&meta_id=417377. The 40% figure does not include debt interest.

[12] I assume that any public contribution—whether it is for land acquisition, facility construction, or site improvements—shows up in the facility as additional opulence. For instance, Allianz Field in St. Paul received $29 million in public money for site improvements—$18 million from the city and the remainder from other government agencies. The estimated marginal opulence induced by the public contribution is $4.6 million. I assume this opulence shows up in the facility rather than in the less salient site improvements; that the money is spent making a "world class" facility instead of "world class" sewer lines or "world class" sidewalks, for example.

[13] The footprint is measured as the land area within the exterior walls of a facility, including any attached buildings. Footprints are not based upon parcel sizes. This method was chosen to ensure that footprint is measured consistently across facilities and over time.

$500 million construction contribution. Drukker et al. (2020), meanwhile, provide estimates for the federal tax savings enjoyed by bond holders of tax exempt debt for a sample of major league facilities. Because federal (and often state) taxes are not owed on the interest, the same amount of funds can be raised at a lower price or more debt can be issued at the same price than otherwise similar taxable bonds. I treat their federal tax savings per $100 million in construction cost as an estimate of the additional funds available to enhance facility opulence. Because this subsidy only applies in cases where tax-exempt bonds were issued, not every donor facility requires this adjustment. Returning to Globe Life Field, the estimates by Drukker et al. (2020) indicate the federal subsidy induced opulence is $191 million. The combined direct and indirect subsidy induced opulence is thus $449 million. With a construction cost of $1.17 billion (excluding costs for personal property, marketing, and so forth), the adjusted cost used in the numerator of the *RCF* for the stadium is $720 million. This is my estimate for the cost of the stadium had the responsibility to pay for it been strictly the Rangers. Table 4.2 provides details on the construction costs and opulence adjustments for the donor facilities.

4.2.4 Adjustment for Depreciation

An adjustment for depreciation is the final step in estimating the RCND for each facility. Depreciation may be of three sorts: physical, functional obsolescence, and external obsolescence. Total depreciation is the sum of the three, and all three may be present in a property. Because valuations are often quite sensitive to assumptions made about depreciation rates, transparency of the depreciation determination is paramount.

Perhaps the most common approach to depreciation is the accounting strategy of straight-lining, which evenly amortizes the facility value over its effective life. Wilmath (2003) recommends this, and Quirk and Fort (1992) and Long (2013) use it. While easy to implement, there are important limitations to this approach. Foremost, to use it well, the analyst must have detailed information about renovations every year they are undertaken and completed, and not every renovation improvement will be assessable. Each relevant improvement would then need to be amortized as well. As a practical data collection concern, this is not feasible for a mass assessment.

There are also two theoretical concerns. The first is that straight-lining assumes depreciation is linear over a facility's effective life. While methods exist to incorporate non-linearity into an effective age model (Williams, 2019), these require large sample sizes, and there are simply too few major league facilities. The second is that identifying the effective age of a facility becomes crucial, which turns a debate about depreciation rates into a debate about effective age. Quirk and Fort (1992) and Long (2013) assume the economic life is 40 years. In contrast, the Oakland-Alameda County Coliseum Authority assumes a 30-year economic life for the Oakland Coliseum and Oracle Arena; Forest City, when it owned leasehold rights

Table 4.2 Replacement cost factor components by donor facility

Facility name	Opened	Cost	Opulence			Adj cost	Acres	Seating	SqFt
			Direct	Indirect	Total				
Allegiant Stadium	2020	$1422	$382	$168	$549	$872	13.9	65,000	1.75
Allianz Field	2019	$186	$5	$0	$5	$181	6.9	19,400	0.35
Audi Field	2017	$190	$43	$0	$43	$147	7.8	20,000	0.50
Banc of California Stadium	2018	$180	$0	$0	$0	$180	7.0	22,000	0.51
Chase Center	2019	$1070	$0	$0	$0	$1070	5.2	18,064	1.41
Exploria Stadium	2017	$92	$1	$0	$1	$91	8.0	25,500	0.29
Fiserv Forum	2018	$410	$50	$68	$169	$293	5.9	17,341	0.73
Globe Life Field	2020	$1116	$258	$182	$440	$720	14.1	40,300	1.80
Golden 1 Center	2016	$465	$44	$0	$45	$421	5.2	17,608	0.68
Levi's Stadium	2014	$890	$64	$0	$64	$826	14.5	68,500	1.85
Little Caesars Arena	2017	$729	$78	$119	$197	$532	6.6	20,332	0.79
Mercedes-Benz Stadium	2017	$1085	$89	$128	$217	$867	14.8	71,000	2.00
PayPal Park	2015	$94	$0	$0	$0	$94	6.6	18,000	0.27
SoFi Stadium	2020	$830	$0	$0	$0	$830	25.5	70,000	2.73
T-Mobile Arena	2016	$329	$0	$0	$0	$329	6.2	17,500	0.65
Truist Park	2017	$611	$169	$0	$169	$442	11.8	41,084	1.11
US Bank Stadium	2016	$935	$231	$110	$342	$593	12.7	66,655	1.75

Notes: Donor facilities are those open by December 2020. Dollars are nominal and in millions. Replacement cost excludes land acquisition costs, personal property expenses, and site improvement costs. Direct opulence is estimated opulence due to subsidies from local or state governments for any part of aspect of facilities' construction including land acquisition, personal property, and site improvements. Indirect opulence is estimated opulence due to issuing tax-exempt debt. Acres refers to a facility's footprint. SqFt means square feet and measured in millions. Figures may not add due to rounding. SoFi Stadium cost is based on county recorder transfer records and reflects the parcel as of 2020

to the Barclays Center, assumed the arena had a 34.5-year economic life;[14] and the Tampa Bay Sports Authority assumes a 25-year economic life for its facilities. These economic life values are accounting choices, and different accountants may feel different economic life assumptions are warranted. Alternatively, Humphreys (2019) brings observational data to the matter. He reports that since the 1970s the life of major league sport facilities slowly declined, where life is measured as a facility's age at the time it is replaced. The average economic life of a facility is currently 27 years. Wilmath (2003) shows similarly.

Notwithstanding disagreements about effective life, in the counterfactual of a fully taxable facility it is likely team owners would argue facilities depreciate non-linearly, accelerating over time, an argument I suspect that would probably be affirmed on appeal. Only a few years after Rio Tinto Stadium opened, on appeal

[14] This information is contained in Forest City's annual financial disclosures to the Securities and Exchange Commission.

the stadium's valuation was cut by 42% (McKellar, 2017). Also on appeal, Bank of America Stadium's valuation was reduced from $572 million to $215 million with functional obsolescence being the driving motivation. While straight-lining has the advantage of being easy to implement consistently across facilities, these real-world examples and the theoretical concerns noted in the prior paragraph convince me it is inappropriate in a property tax expenditure analysis.[15]

An alternative is to make an assumption about the annual rate of depreciation. Assessors' records for existing facilities provide some insight on possible rates. I collected depreciation rates for a handful of facilities in jurisdictions where property cards are publicly available. These are listed in Table 4.3 and reflect conditions stated in 2020 assessments. Jurisdictions often report percent good, a technical appraisal term that equals one minus the depreciation rate. In theory, percent good is based upon inspections of properties' physical condition by staff appraisers; whether a physical inspection of exempt property ever occurs in fact is unknown. The far right column in the table is the annual average implied rate of physical depreciation calculated as

$$\frac{1 - \%\ Good}{Effective\ Age_{2020}} = Depreciation\ Rate \tag{4.4}$$

where facility effective age is relative to the assessment year, in this case 2020.[16] The average depreciation rate for these facilities is 0.78 percentage points per year

Table 4.3 Percent good for select facilities

Facility name	Effective age	% Good	Annualized rate
American Airlines Center	21	87	0.59
FTX Arena	21	82	0.82
Gainbridge Fieldhouse	21	63	1.68
Gillette Stadium	18	89	0.58
LoanDepot Park	8	95	0.56
Lucas Oil Stadium	12	93	0.54
PNC Arena	20	82	0.90
TIAA Bank Field	25	86	0.60
Mean			0.78
Median			0.60

Notes: Effective age is based on effective year built, which is documented on property cards. Age is as of 2020 and measured in years

[15] To be sure, some of the non-linearity is attributable to the frequency of reassessments, as in Bank of America Stadium's case. By extension, straight-lining is problematic because it ignores reassessment cycles.

[16] A facility's effective age is its age once its condition is taken into account. For example, Soldier Field and Madison Square Garden have undergone many renovations in the last 20 years, making their effective age younger than their chronological age.

but this is pulled upward by Gainbridge Fieldhouse. The median is 0.60 percentage points.[17]

There are two concerns with using percent good figures on property tax cards. The first is that their accuracy is rightly questioned in the case of exempt facilities, given that exempt properties may not receive the same amount of administrative attention as taxable properties. Team owners also have no reason to challenge the rates. In the counterfactual, then, there is good reason to believe these rates would be different. The second is that even if the rates were trustworthy, they reflect the assessor's judgement, not an appeals board's judgment. Since team owners are often successful at appealing their valuations, appeals boards' judgments matter more so than assessors'.

My strategy is to derive a depreciation rate by generating RCNDs based on different depreciation rate assumptions and comparing the values against known FMVs from existing fully taxable facilities. Because team owners in these cases have had the opportunity to challenge the assessments on appeal, the facilities' implied depreciation rate is appropriately interpreted as combined rate for all sources of depreciation, those as evaluated by assessing staff and those as evaluated by appeals boards. An advantage of this approach is that I do not have to make a separate adjustment for appeals, as it is accounted for in the estimated depreciation.

To establish a baseline FMV, I simulated FMVs for eight taxable facilities: Ball Arena, T-Mobile Arena, TD Garden, Exploria Stadium, Rio Tinto Stadium, Bank of America Stadium, FedEx Field, and SoFi Stadium.[18] I used the FMV (set on the 2020 lien date) of these facilities (excluding the land) as benchmarks to evaluate RCNDs based on different annual depreciation rate assumptions, from 2% through 10%. For each rate I then calculated an RCND using the three *RCF*s—cost per square foot, cost per acre, and cost per seat.

A sample of results are detailed in Table 4.4. For each facility, multiple RCFs and depreciation rate combinations estimate actual FMV relatively well. For instance, for Ball Arena, all *RCF*s at a 5% net depreciation rate perform well; though, the seating capacity *RCF* is the most accurate of the three. The 5% rate also is reasonable for the other two arenas (T-Mobile Arena and TD Garden) but not for the soccer stadiums or Bank of America Stadium. While the goal is to select a net depreciation rate that approximates the real FMV on the local roll as accurately as possible, there is no one *RCF* that predicts FMV equally well across all facility types. I thus allow for each facility type to receive a unique *RCF*. For arenas, I use a 4.5% rate on a per acre basis while for soccer stadiums the acreage *RCF* at 9.0%

[17] Under Nevada state law, depreciation is fixed at 1.5% with a maximum depreciation of 75%. See Nevada Revised Statutes §361.227.

[18] I excluded Fenway Park and Wrigley Field because of their uniqueness. They are both extremely old facilities that have undergone substantial renovations multiple times. Since the value of their renovations are considerably greater than the FMVs entered on their respective tax rolls, I assume an RCND approach poorly captures their taxable value. California facilities also had to be excluded because their FMV are unknown due to Proposition 13. SoFi Stadium is the exception, because I can observe its FMV in its first year.

Table 4.4 Replacement cost net depreciation simulations

	Ball Arena	T-Mobile Arena	TD Garden	Exploria Stadium	Rio Tinto Stadium	BofA Stadium	SoFi Stadium
Facility FMV	$136.4	$386.3	$91.5	$92.2	$45.8	$215.0	$830
Square Feet							
2%	$236.5	$357.6	$308.7	$88.7	$80.5	$270.8	$1438.3
4%	$154.2	$324.5	$186.4	$82.1	$70.3	$166.6	$1410.7
5%	$125.0	$309.3	$145.3	$79.0	$62.1	$131.2	$,1397.2
6%	$101.4	$295.0	$113.6	$76.1	$54.9	$103.5	$1384.0
Acres							
2%	$230.2	$407.5	$166.2	$127.8	$111.1	$329.9	$875.6
4%	$150.2	$369.8	$100.3	$118.2	$86.3	$203.1	$829.7
5%	$121.7	$352.6	$78.2	$113.8	$76.2	$159.9	$821.8
6%	$98.8	$336.2	$61.1	$109.5	$67.4	$126.1	$814.0
Seating							
2%	$258.9	$372.6	$310.2	$142.0	$89.9	$413.4	$875.6
4%	$168.9	$338.1	$187.2	$131.4	$69.9	$254.4	$858.8
5%	$136.8	$322.3	$146.0	$126.4	$61.7	$200.3	$850.6
6%	$111.1	$307.4	$114.1	$121.7	$54.6	$158.0	$842.5

Notes: The FMV listed is set as of the 2020 lien date, generally January 2020. Age is measured in years and relative to facility opening. "BofA" means Bank of America

does well.[19] For football and baseball stadiums, which I treat similarly for lack of fully taxable baseball stadiums with observable and generalizable FMVs, I use a 4% rate.

4.2.5 Renovations

My methodology requires an assumption about the effective age of facilities, which in most cases is relative to the year it opened. However, some facilities have had major renovations that while not always equivalent to a new facility nevertheless would prompt an assessment increase. Consider Arrowhead Stadium and Kauffman Stadium, both of which were built in the early 1970s but both also underwent substantial renovations between 2007 and 2010. These renovations extended the useful life of the facilities' by at least 15 years, as evidence by the Chiefs and Royals each signing 15-year lease extensions. As of the 2020 assessment date used for this

[19] There is noticeably greater variation in soccer stadium opulence in the MLS than in other leagues. Using the cost data in Table 4.2 and adjusting the figures to a common denominator with the average of the facilities' respective RS Means cost index, the lowest cost soccer stadium is 30% that of the maximum. This ratio is 43% for football and baseball stadiums and 54% for arenas.

study, these facilities have a chronological age of about 47 years, but the renovations suggest their effective age is about 32 years. Given the renovations cost $467 and $285, respectively, the teams' agreeing to extend their leases imply on average one more year of useful life costs $31.5 million in 2020 dollars. This figure is similar to renovation-lease agreements for a number of other teams, and thus I use it to adjust renovated facilities' effective age.[20]

Importantly, I do not account for every ongoing capital improvement; only substantial enough ones requiring multiple years to complete or forcing teams to relocate to another facility temporarily. I assume all other renovations are for unassessable improvements, implying an underestimation of the counterfactual assessment. In addition, the effective age of a facility with respect to its revenue-raising capacity should not be confused with its effective age with respect to structural integrity. For instance, when the Boston Red Sox completed a $285 million, 10-year renovation of Fenway Park, structural engineers reported the stadium could stand another 40 to 50 years (Abraham, 2011). This figure implies that in 2020 dollars one more year of useful structural life costs $8.4 million. I do not use a cheaper structural useful life adjustment when calculating effective age for two reasons. First, while teams in the fully taxable counterfactual would argue on appeal that both economic and functional obsolescence are present, it is the economic obsolescence that dominates the cost-benefit decision to renovate. In light of the impossibility of compiling detailed structural quality data for all facilities, I chose an effective age adjustment determined by facilities' perceived (from the team's perspective) income potential. Second, the $31.5 million cost of one more year of useful life (relative to the $8.4 million figure) implicitly accounts for overestimation from shared renovation costs between teams and government landlords. In the fully taxable counterfactual, teams would make cheaper renovations than when the costs are shared. Increasing the marginal cost of a useful life, then, reduces the total number of years added. Using the $8.4 million figure on Kauffman Stadium, for instance, the renovation would have increased the economic useful life by 35 years, implying an effective age in 2020 of seven years old. This is unreasonable. The 35-year effective age using the $31.5 million per useful year cost is more sensible.[21]

[20] The other facilities I reviewed when evaluating price per useful economic year were Highmark Stadium, Fenway Park, Lambeau Field, Progressive Field, Madison Square Garden, and Bridgestone Arena.

[21] One exception to this rule is Nassau Coliseum, which I use the Fenway Park structural effective age cost of $8.4 million. The Coliseum underwent a major renovation before the 2017 season, but because the renovation was not tied to a lease extension with the Islanders, Nassau County's renovation plausibly has more to do with making the arena structurally viable for the foreseeable future. The Islanders moved into UBS Arena in 2021.

4.2.6 *Irregular Assessment Cycles and Growth Limits*

I used the foregoing method for facilities in states with annual or biannual assessment cycles as well as for facilities in states without assessment growth limits. For facilities in states with these property tax system characteristics, some modifications to my *RCF* approach were necessary.

I define an irregular assessment cycle as any where reassessments are determined at local option or court order rather than at some specific interval set in law, such as in Allegheny County, Pennsylvania. I define an infrequent assessment cycle as any in which more than two years pass between reassessments, such as in North Carolina. In these instances, rather than indexing the *RCF* to 2020, I index them to the reassessment year in effect in these jurisdictions in 2020. For instance, property taxes in Allegheny County due in fiscal year 2021 are based on reassessments conducted in 2012. This method assumes that the primary difference between facilities built around 2020 and those built around 2012 is construction cost, varying both over time and across the country; that there are no substantial design or construction innovations that would drastically affect the *RCF* over the eight-year period. While it is unclear how reasonable this assumption is, it is an assumption of convenience, since I was unable to replicate the level of construction cost detail for older facilities as I could with newer ones.

Assessment growth limits pose a similar problem but one that requires more assumptions to make the counterfactual valuations sensible. (Recall from Chap. 2 that states often have different property assessment and tax rules for residential and non-residential properties.) Assessment limits cap annual growth at some percentage with the first year a property is taxed at FMV being called a base year. Over time the limit widens the gap between FMV and TAV. Upon eligible transfers of ownership, the cap is removed and the property becomes taxable at the uncapped value relative to a new base year. From that point forward, the cap applies and the new owner pays taxes only on the capped value. Such a system exists in California, Florida, Michigan, and Oklahoma with annual caps on commercial property being 2%, 10%, 5%, and 5%, respectively.[22] Arizona and Oregon also have assessment caps, but they are unaffected by ownership transfers.

Given the various facility conditions that must hold in order to determine taxable assessed value in these states, I make the following simplifying assumptions. First, I assume that the frequencies of team sales is independent of facility property tax status. In the counterfactual where teams own their facilities and pay property taxes on them, teams and facilities are sold as a bundled good. While the discounted future property tax liability is certainly capitalized into the sales price, this assumption implies that facilities change hands at the same rate in the real-world as in the

[22] There are relatively minor differences in these states' systems; though. In California, the uncapped value applies at the time of sale whereas in Michigan and Oklahoma they apply at the lien date following the sale.

counterfactual. Hence, if a team does not change hands in assessing year t, then a facility is assumed to be taxed on its capped value, if applicable. For example, the Honda Center opened in 1993, with 1994 being its first base assessment year. The current owner of the Anaheim Ducks purchased the team in 2005. In the counterfactual world where the Ducks own the counterfactual arena, I assume a base year of 2006, the lien date following the sale. Second, I also assume that facilities do not undergo assessable improvements between the current assessing year and its most recent base year. Since the replacement cost of assessable improvements are added to the taxable value in the first year of service, this assumption will underestimate the true counterfactual TAV more so for older facilities than younger ones. Consequently, the property tax expenditure will be underestimated.

With these assumptions in mind, my approach for facilities in assessment cap states is to estimate two valuations each year, a capped TAV and an FMV. Since properties are taxed on the lower of the two, this method allows for declines in value due to market conditions. The capped value is based on the assessed value the prior year multiplied by one plus the cap rate or the rate of inflation, whichever is lower.[23] Moreover, similar to the base year calculation, I indexed the annual FMV to the assessing year and city using the RS Means cost data.

A related situation to assessment caps is that of phased-in assessment increases, which team owners in Maryland, Nassau County, and New York City would enjoy in the counterfactual. In phase-in systems, increases in assessed value between reassessments are spread over a period of time—three years in Maryland and five years in the other two. This creates a pipeline of assessed value such that a property's taxable assessed value in any given year comprises a fraction of assessed value growth experienced in prior years. Most importantly, however, is that unlike with assessment caps, property owners will eventually see all assessed value increases in their property tax bills. Given that I am not estimating a counterfactual assessment over time, and that the phase-in occurs over a relatively short period of time, I use the same RCND method for annual reassessments for facilities in phase-in states.

4.2.7 Possessory Interest Valuations

There are a handful of instances where I have categorized facilities as partially exempt because team owners have a taxable possessory interest in the land arising from a ground lease.[24] My methodology for these is simplified. If the facility proper is taxable and fee-simple owned, team owners can appeal, making the valuations

[23] I use the annual growth in the national Consumer Price Index for the capped values in order to be consistent with states' laws.

[24] These include Staples Center, Banc of California Stadium, Oracle Park, Moda Center, Hard Rock Stadium, Bank of America Stadium, Vivint Home Arena, and Rio Tinto Stadium.

on the roll credible.[25] Hence, I need only estimate the tax expenditure for the possessory interest in the land. Even if a team has exclusive right to use the land and all facility revenue, their interest in the land only extends as far as the lease. The value of one's interest in land with one year remaining on a lease is less than the value of the interest with 50 years remaining on the lease.

To estimate the value of the land as though it were private (i.e., no leasehold rights), I compared each applicable facility's land valuation on the roll to the average per acre valuations for nearby fully taxable and commercially zoned properties. If the facility's value per acre was less than the average per acre for the comparison parcels, I assumed the comparison average per acre value is a fee-simple owned valuation. I then multiplied this figure by the facility footprint to produce the counterfactual fee-simple land value. There is certainly imprecision in this method, but the effect of the imprecision in terms of the total tax expenditure is relatively small given that the value of land in most cases is dwarfed by the value of the facility.

4.3 Personal Property Tax Expenditures

I have thus far discussed my methodology for estimating the *real* property tax expenditure, but team owners may also be exempted from TPP taxes. Under most current public-private partnerships, team owners remain liable for property taxes on personalty owned by teams but not for property taxes on personalty leased by the team from exempt owners. In the team's lease with the Las Vegas Stadium Authority, for instance, the Raiders, only pay personal property taxes on taxable TPP it sites at the stadium; all other personal property is owned by the Authority and thus exempt. Based on Clark County tax records, the Raiders have yet to site any taxable personalty at the stadium.

In the counterfactual of a privately owned facility on privately owned land, all facility-related TPP would be subject to taxation, conditional on the property being taxable under state and local laws. However, estimating the personal property tax expenditure is complicated by the nature of the tax's administration. Personal property tax administration is what is known as a taxpayer active system. Similar to that of the personal income tax, personal property taxpayers file annual returns to the local assessor.[26] As part of the personal property tax return process, businesses follow assessors' guidelines on what property is taxable and its depreciation, and these depreciation rates will vary across jurisdictions and across types of personal

[25] This logic does not hold in the case of fee-simple owned facilities with a permanent or long-lived tax exemption, such as with Capital One Arena, Madison Square Garden, and Busch Stadium; I treat these like every other fully exempt facility.

[26] In contrast, real property tax administration is taxpayer passive, meaning that taxpayers do not have to do anything to receive a tax bill. The administrative effort is exclusively on the assessor.

property. These sources of variation—(1) which personal property is taxable, (2) how quickly taxable personal property is allowed to depreciate, (3) and how well team personnel comply with assessors' guidelines—cannot be measured across all jurisdictions.

I use predicted values from a quantile regression to estimate the personal property tax expenditure. The outcome is the log inflation-adjusted personal property FMV. Entering as covariates are a four-valued facility type categorical variable (see Table 4.2), facility effective age in years in 2020, and the interaction of the two. The data set contains the TPP FMV for all teams in facilities that generate some real property tax.[27] Because the FMVs are for a single year and spread across the country where prices vary, I spatially adjust local FMVs to the nationwide average Consumer Price Index for durable goods in 2019.[28] After generating predicted FMVs, I adjust the estimates back to the local market using the same CPI adjuster. I then apply any assessment ratios, de minimis tax exemptions, and the local tax rate to generate an estimate of the taxes that would be due if teams had to pay property taxes on all facility and team-related personal property sited at the facility.[29] The tax expenditure is the difference between a facility's predicted TPP tax revenue and its actual.[30]

4.4 Taxes on Property and Fees

Jurisdictions may impose special assessments or other charges that teams would be liable for if they were not exempt. Parcel taxes and service fees are relatively rare, but they exist for a handful of teams. These liabilities appear as line items on property tax bills, which creates a problem if, owing to their exempt status, the local taxing authority does not generate a bill for a facility. To ensure that these taxes and fees are included in the tax expenditure analysis, I reviewed property tax bills for three to five of the nearest taxable commercial real properties, documenting any charges imposed. To reduce the chances of missing or imposing a fee that would not exist in the counterfactual because of an unobserved special assessment boundary, I sampled properties in all directions of each facility. There is potential

[27] I pooled the personal property taxes of teams fully exempted from real property taxes with those partially exempted because a t-test revealed no difference in mean TPP FMV between the two. In contrast, the mean TPP FMV is statistically different from zero between fully taxable and fully exempt facilities (in terms of real property taxes) with fully taxable facilities having larger TPP tax liabilities than fully exempt facilities. This is consistent with team owners only paying for some of the TPP sited at a facility, namely, the TPP owned by the team, not the TPP leased from the government landlord. Parameters are fit using data from the 28 facilities fitting the necessary conditions.

[28] More specifically, for FMV x in jurisdiction i, I calculated the average CPI for durable goods across all is, and indexed the FMV in each i to the average. This approach assumes personal property is purchased at local prices rather than at national prices.

[29] Since the purpose of the quantile regression here is to predict, not to test hypotheses, I ignore the common concerns about model fit, significance, and so forth. Clearly the model is overfit.

[30] Note that in California, TPP assessments are subject to Proposition 13 growth limits.

for measurement error in this approach, but shapefiles of all taxing jurisdiction boundaries for each facility were unavailable. Similar to the TPP tax expenditure, measurement error in the fee expenditure estimate will have a negligible impact on the aggregate property tax expenditure owing to the relative size of the real property tax expenditure to everything else.

4.5 Property Tax Rates

Once FMV is converted to taxable AV based on the state and local laws, the appropriate property tax rate is applied. Property tax rates are of two types: rates for general purposes and rates for special purposes. General purpose rates are levied for the general fund of the taxing jurisdiction. Special purpose rates are earmarked for specific public services and often these rates appear as line items on a bill. Due to overlapping taxing jurisdictions, a property owner may face multiple general and special purpose rates. Moreover, the presence of overlapping tax jurisdictions further means that using only the tax rate for the host city as the basis for a tax expenditure estimate will undervalue the tax expenditure and its budgetary impacts.

One of the tasks in Chap. 6 is to determine how much of which public services are impacted by arranging public-private partnerships so that team owners are exempted from some or all property taxes. Since special purpose tax rates are earmarked, they do not present a challenge in determining which public services are affected. General purpose rates, on the other hand, yield revenue that are apportioned through the budgetary process, which makes it impossible to determine which tax expenditure dollar is spent on which public service. A second and related problem is cataloging public services consistently across jurisdictions. For instance, two jurisdictions may appropriate general revenue for mosquito abatement but one categorizes this spending as public health while another as environmental services. Moreover, spending on park rangers may be categorized as public safety in some jurisdictions but as parks and recreation in others. While seemingly trivial examples, they nevertheless highlight the challenge of comparing spending on public services across jurisdictions. If one wants to know how much property tax expenditures impact spending on, say, public safety, then the public services comprising "public safety" must be the same across jurisdictions.

To help standardize public service categorization, I rely on government accounting Statement 34 (hereafter, GASB 34) issued by the Governmental Accounting Standards Board (GASB). GASB 34 requires state and local governments to report the status of all government funds in Annual Comprehensive Financial Reports (ACFRs) on an accrual basis.[31] Among the government accounting products

[31] Until November 2021, Annual Comprehensive Financial Reports were known as Comprehensive Annual Financial Reports, or CAFRs. GASB initiated the name change in Statement 98 in response to the CAFR acronym bearing too close a resemblance to a racial slur tied to apartheid in South Africa.

implemented by GASB 34 is a balance sheet called *Statement of Revenues, Expenditures, and Changes in Fund Balances Governmental Funds*. Every state and local government whose financial accounting is compliant with Generally Accepted Accounting Principles has this sheet in their ACFRs, and all jurisdictions hosting a major league facility are GAAP compliant.[32] The *Statement* contains data on the jurisdiction's expenditures for each fund account on their balance sheet, and the expenditures are similarly grouped into public service categories. This feature of GASB 34 allows me to determine what portion of general fund expenses are allocated to what public services in a consistent way across jurisdictions. By extension, I can gauge how much of which services are impacted by exempting major league facilities from property taxes for general purposes.

By way of example, consider Kauffman Stadium and Arrowhead Stadium. If they were taxable, the owners would see a bill with eight tax rates in 2020, which are listed in the top section of Table 4.5. The first and second tax rates are general purpose rates for Kansas City and Jackson County, respectively, while the remainder are for specific purposes. Unlike the specific purpose rates, the general purpose rates cannot be traced to a dedicated public service. To determine how the property tax expenditure would be spent in these instances, I determine the share of general fund expenses to the public services listed in the city's and the county's *Statement* and multiply the figure by the respective tax rate. This yields tax rates for each general purpose use, the sum of which equals the jurisdiction's general fund tax rate. The second section of Table 4.5 are the implicit general fund tax rates for Kansas City and the third section for Jackson County. For example, the implied tax rate for Kansas City general government purposes equals $\frac{\$97.2}{\$550.7} \times 1.75 = 0.31$ percent. By repeating this process for each general fund spending area, I group the tax expenditure estimates by public service and by government level.

4.6 Deductions for Current Payments

After summing the tax expenditure estimates for real property, personal property, and special assessments, the final step in the total property tax expenditure estimate process is to deduct existing property tax liabilities and other payments made from team owners to government for taxes on property. The tax expenditure equals the difference between what team owners would have paid in the private, fully taxable counterfactual and what they pay in the actual world. The basis for these current payments are the collected taxes highlighted in Chap. 3.

An important qualification about what counts and does not count as a credit against taxes paid must be made. Because this book is concerned with only the property tax, all non-property related taxes payments are ignored. The purpose

[32] For further background on GAAP compliance among state and local governments, see Patrick (2010) and GASB (2008).

Table 4.5 Tax rate calculation example: Kansas City and Jackson County

Rate name	GF spending	Tax rate
City—Kansas City		1.75%
Jackson County		2.05%
Board of Disabled Service		0.06%
Kansas City Library		0.56%
Kansas City School #33		4.96%
Mental Health		0.11%
Metro Junior College		0.21%
State Blind Pension		0.03%
Kansas City implied general fund tax rates	$550.7	1.75%
General government	$97.2	0.31%
Fire	$159.2	0.51%
Public works	$0.3	0.001%
Neighborhood development	$62.0	0.20%
Culture and recreation	$0.4	0.001%
Police	$224.9	0.71%
Capital outlay	$6.7	0.02%
Jackson County implied general fund tax rates	$104.6	2.05%
General government	$73.9	1.45%
Public safety	$30.6	0.60%
Debt service	$0.1	0.002%

Notes: Dollars are nominal in millions. Percentages may not add due to rounding. Implied tax rates are apportioned from the jurisdiction-wide general fund tax rate based on the distribution of general fund spending. GF means general fund. Financial data from FY19 ACFRs for Kansas City and Jackson County. Tax rate data from Jackson County. The Jackson County tax rate is the sum of a 0.61% base rate and 1.44% replacement tax rate. The replacement tax is levied on class 1 subclass 3 real property to replace a prior levy on manufacturing tangible property that was eliminated effective in 1985

of this study is to improve understanding of the property tax expenditure, not to conduct a full accounting of all possible subsidies to team owners or payments from owners to government. This is worth emphasizing so that readers avoid comparing property tax expenditure estimates to non-property tax payments and potentially drawing incomplete or incorrect inferences. Consider annual lease payments, which are perhaps the most salient non-property related income transfer from team owners to government, the latter acting as facility landlord. Lease payments are often security for revenue-backed debt issued by a public entity to construct the facility. Even when debt is a general obligation, lawmakers tally lease payments as backfill. In such instances, the landlord and debtor are one and the same. In the counterfactual of private ownership, though, team owners would pay property taxes and a mortgage but to different entities—the former to government and the latter to investors.

Failing to appreciate this distinction may lead one to compare annual lease payments to the property tax expenditure in a vacuum.[33] In case the former is greater than the latter, one might erroneously conclude the government landlord is financially better off with a tenant team making annual lease payments than if the team owned the facility and paid full property taxes. If the annual lease payment were greater than or equal to the sum of the annual property tax expenditure *plus* the annual government-backed debt service, then this conclusion would be correct.[34] In other words, by comparing the property tax expenditure to current lease payments alone, an inattentive reader fails to appreciate that in the counterfactual, property tax payments and debt service payments accrue to different entities for different purposes.

For this reason, current lease payments, or any other payments made from team owners to government as security for facility debt, are not a credit against the estimated property tax expenditure. By extension, then, the PILOT payments made by the Yankees, Mets, and the Nets in New York City also are not counted, because these payments secure the PILOT-backed bonds.[35] Moreover, some teams pay property taxes, but these taxes may be treated as rent under a team's lease agreement. In these rare cases, such as with the Sacramento Kings and San Diego Padres, because the property taxes are equivalent to a payment for debt service, these taxes are also not a credit against the property tax expenditure. Simply put, the property tax expenditure I measure is the cost to general or targeted services; any property tax payments made by teams that exist to support their own interests is a property tax cost to residents.

[33] Lease payments, as used here, include fixed and variable payments. Variable payments are usually performance-based. The Pittsburgh Pirates, for instance, pay a base rent of $100,000 but also pass on a ticket surcharge that varies each year, a charge treated as additional rent. In fiscal year 2019, the team paid $628,630 in additional rent. When rent is performance-based, there will tend to be greater volatility in total rent, because the performance portion makes up a larger proportion of the total than the fixed portion. It is sensible to treat lease payments as a PILOT, and therefore deduct it from property taxes owed in a property tax expenditure analysis, if and only if the lease payment does not secure a debt or is earmarked for any facility purpose such as a capital improvement fund. If a lease payment is a credit into the general fund, it is functionally a PILOT. No study that I am aware of has created an exhaustive inventory of where lease payments go.

[34] Intuitively, it would not be surprising if current lease payments exceed the property tax expenditure. Current lease payments are a function of current debt service, which is a function of construction cost. As highlighted throughout this book, the facility built in part with public dollars will be more opulent than a facility in which the team owner pays the full marginal cost of an improvement. Moreover, in the private counterfactual, team owners will appeal their property taxes and gain larger increases as a facility ages. For these two reasons, the counterfactual FMV will often be less than the current lease payments needed to secure the debt on the comparatively more expensive facility.

[35] Under the terms of the teams' respective PILOT agreements, PILOT revenue in excess of debt service are allocated to a facility operation and maintenance fund. Similar to debt service, in the counterfactual team owners would make separate payments to separate debtors for property taxes and facility upkeep. Thus, the excess PILOT revenue is also ignored.

In the counterfactual of private ownership, there may be payments governments might have made to teams. State and local governments offer a variety of property tax incentives in order to achieve economic development and social policy goals, such as revitalizing Brownfields or encouraging solar panel installation. When teams do not own their facility, these programs are irrelevant, but they become relevant when facilities are privately owned. There is no way to know which property tax incentives team owners would receive in the counterfactual, but generally the value of these incentives are dwarfed by the value of a blanket property tax exemption.[36] By extension, then, while failing to account for such abatements biases the tax expenditure estimate upward, the size of the bias is assumed trivial.

4.7 Chapter Summary

This chapter detailed my methodology for estimating the property tax expenditure for major league sports facilities. The largest share of the property tax expenditure is due to exemptions from real property taxes. To estimate this tax expenditure, I use a footprint acreage replacement cost less physical depreciation approach to estimate each facility's FMV in 2020, which I then translate into TAV based on the facility's state law as discussed in Chap. 2. As with all mass assessment techniques, my methodology trades precision for volume, but my approach has a stronger theoretical basis, and presumably a smaller precision trade-off, than the reproduction cost net depreciation approach used by Quirk and Fort (1992) and Long (2013). After estimating the real and personal property taxes that would be owed in the counterfactual of taxable private ownership, current property taxes, special fees, and lease payments are subtracted. The difference is my estimate of the property tax expenditure. In the next chapter, I discuss and evaluate my results.

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[36] The *Significant Features of the Property Tax* database indicates the vast majority of economic development programs offer only partial tax breaks and only for periods of time shorter than the typical 30-year facility lease term.

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Chapter 5
What Is the Property Tax Expenditure Worth?

Abstract I present my property tax expenditure estimates in this chapter, recalling the tax expenditure equals what would be owed on a facility if it and the land were fully taxable under private ownership minus what the facility generates in fact. As the counterfactual property taxes depend greatly on the underlying assessments, I offer evidence my methodology provides plausible counterfactual FMVs. I also explore rules of thumb to help others evaluate property tax expenditures in future facility subsidy arrangements.

5.1 Evaluating Counterfactual FMVs

As a preliminary matter, it is helpful to provide some confidence that my property tax expenditure estimates are credible. Since the real property tax comprises the greatest share of the total property tax expenditure, I make real property FMVs my focus here. Under normal circumstances, when faced with the task of evaluating estimates for accuracy, quality control takes the form of comparing estimates to real-world benchmarks generated by a process external to and independent of an analyst. Given the obvious dearth of taxable facilities and the impossibility of observing the counterfactual fully taxable facility for each that is (partially) exempt, external benchmarks for major league sports facilities are not available. As a second best alternative, I evaluate if my FMVs exhibit characteristics consistent with those we would expect to observe in fully taxable facilities.

The first gauge I used involved mapping the share of land in the total AV against effective age. If my methodology for estimating counterfactual FMVs yielded plausible results, I expected to find two things. First, a positive correlation between land AV share and effective age. Recall that land is valued on a comparable-sales approach and facilities on the replacement cost net depreciation approach. Over time, then, under normal economic circumstances the value of land will increase while the value of facilities will decrease, all other things equal. Second, owing to their relatively greater size in terms of both building space and land footprint, I expected that baseball and football stadiums would generally have lower land AV shares. Land AV shares with respect to effective age are graphed in Fig. 5.1 with

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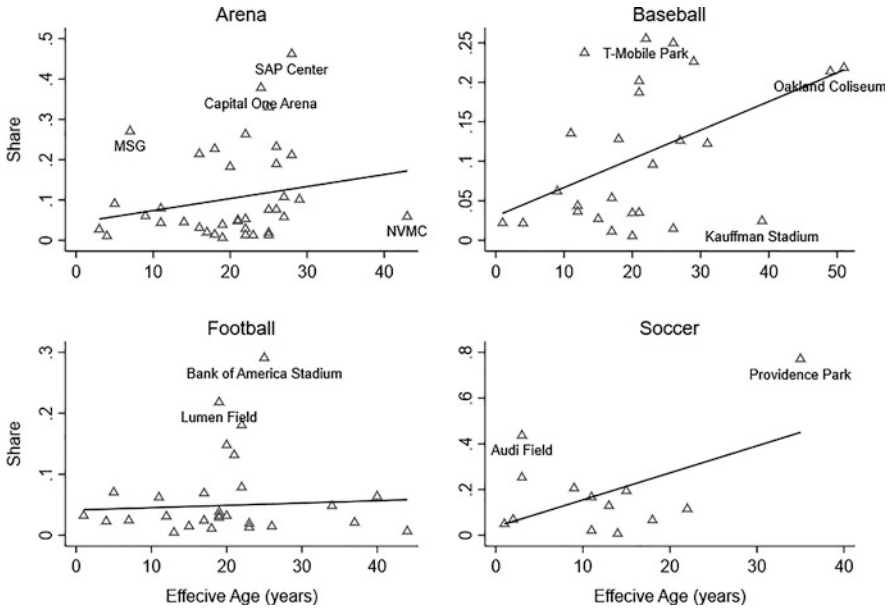

Fig. 5.1 Land AV as a percentage of total AV by effective age. Notes: AV means assessed value. MSG means Madison Square Garden. NVMC means the Nassau Veterans Memorial Coliseum. Total AV is the sum of the facility AV and land AV. MSG means Madison Square Garden. Soccer stadiums are soccer-only

some outliers identified. The data are consistent with both expectations. Notably, there appear to be differences in the rate of land AV share growth across facilities; though, I have no a priori reason to expect that such differences are due to variations in the physical nature of facilities rather than, say, characteristics of facility locations or other factors. Outliers appear to be driven by certain facilities being in higher land price areas.

The second gauge I used maps total FMV per acre against effective age; for states with assessment growth limits, taxable AV are reported. I expected negative correlations across all facilities, since in most circumstances the value of improvements will dwarf the value of land, resulting in a net decrease in FMV over time. Figure 5.2 supports these expectations. Newer facilities and those in higher land price areas tend to cluster closer towards the y-axis than the x-axis. Moreover, the marginal effects for each graph is the mean effect of increasing effective age by one more year. For instance, my methodology yields a marginal effect of −0.68 for soccer stadiums, which means that on average as a soccer stadium's effective age increases by one more year, the counterfactual FMV per acre decreases by $680,000. These rates are $1.6 million for arenas, $740,000 for baseball stadiums, and $1.1 million for football stadiums. Since these rates reflect the average for each facility type, they may poorly reflect marginal effects for any particular counterfactual facility, particularly if a facility has characteristics (physical or environmental) that make it an outlier among its peers.

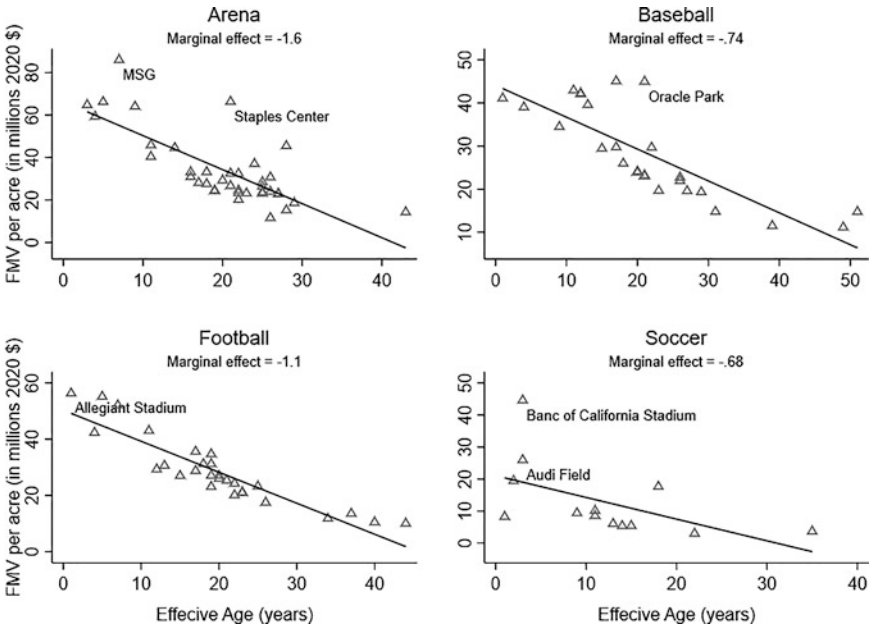

Fig. 5.2 Fair market value per acre by effective age. Notes: FMV means fair market value. MSG means Madison Square Garden. Soccer stadiums are soccer-only

A final evaluation tool I used was to map FMV per acre against the RS Means construction cost index for 2019. As my methodology adjusts valuations to local prices using the RS Means city construction cost index, I expected to find a positive correlation between FMV per acre and the index. Figure 5.3 validates this. Though not entirely obvious in the graphs, the strength of the relationship on average across facility types depends heavily on characteristics of states' property tax system. Baseball stadiums offer a good example. Angel Stadium and the Oakland Coliseum are located in relatively high construction cost areas, but owing to their age and Proposition 13, they have relatively low taxable valuations, which has the effect of drawing the trend slope downward.

While impossible to benchmark my counterfactual valuations against real-world data, taking these three sets of graphs as a whole provides confidence that, at least on average, the FMVs are reasonable.

5.2 Property Tax Expenditure Estimates

Before discussing my property tax expenditure estimates, it is worth reminding the reader of the dual nature of tax expenditures. On one hand, since taxes support spending for general public purposes, tax breaks to specific individuals reduce

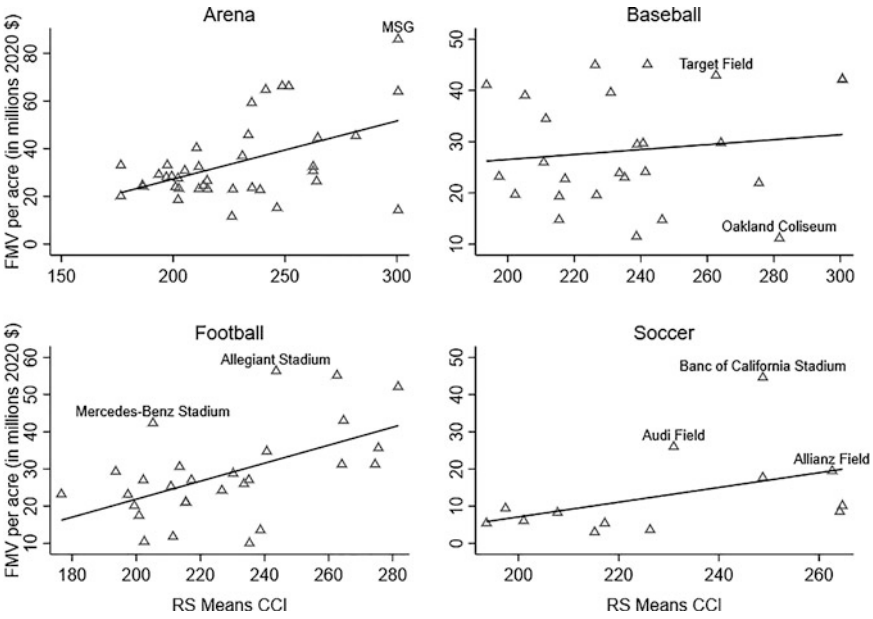

Fig. 5.3 Fair market value per acre by 2019 City RS means cost index. Notes: FMV means fair market value. MSG means Madison Square Garden. Soccer stadiums are soccer-only. For California and Oregon facilities, because of the states' property tax systems, taxable AV is displayed rather than FMV

general spending, all other things equal. On the other hand, lawmakers wield tax expenditures to achieve social and economic goals. The important difference between these is not whether team owners pay property taxes or not; from either perspective they do not if exempt. Instead, the difference is whether jurisdictions have additional revenue for general spending, holding tax rates and local spending levels constant. My primary interest is in quantifying the cost of property tax exemptions to residents, whether its through a combination of higher taxes to compensate for the narrowed property tax base or a reduction in services. Team owners may remit property taxes, but if their taxes are earmarked to support the facility, then the payments still constitute a tax expenditure to taxing jurisdictions' general fund, and hence are a cost paid by residents.

Consequently, this means there are two distinct types of tax expenditures: (1) the tax expenditure (revenue forgone) to general public services, and (2) the tax expenditure from exempting facilities. As some team owners pay property taxes that directly support the debt on the facilities, the former will be greater than the latter in the aggregate and in the particular instances where this condition holds.[1] Moreover,

[1] As noted in Chap. 3, there are 19 facilities in which team owners pay some real property tax, but only in some of these cases are the tax payments earmarked to support their respective facilities:

while quantifying both (1) and (2) have public policy value, I believe (1) provides a much better perspective on the cost to residents of using the property tax to subsidize sports facilities. A team owner that pays property taxes to, in effect, themselves diverts dollars away from other public services in the same way that exempting the team owner from paying property taxes does. For this reason, quantifying (2) provides an underestimate of the property tax cost to local residents, with the extent of the underestimation being determined by the number of teams whose property tax payments financially support themselves.

Table 5.1 contains my general spending property tax expenditure estimates for facilities that are fully or partially exempt with values expressed in thousands of 2020 dollars. The first column of values is the net real property tax expenditure while the second is the net property tax expenditure for personal property taxes and taxes on property aggregated together. Personal property comprises 98% of the column total. The first and second columns are net of actual taxes paid for the respective categories. In the third column is the gross property tax expenditure estimate for all property taxes, which is my estimate of the total tax expenditure from all sources. The fourth column is the total taxes paid by tenant teams from all property tax types, which when subtracted from the gross tax expenditure yields the net tax expenditure, the final column. I chose this presentation in order to mask how much teams paid in personal property taxes, which is privacy protected information in some jurisdictions. Additionally, the way to correctly interpret the tax expenditure figures in the last column is that they reflect the estimated amount of *additional* property tax revenue available for general purposes if the facility were fee-simple owned. For those interested in the estimated property tax expenditure before current team payments (perhaps for an ex ante analysis), the third column containing the gross tax expenditure estimates may be more useful.

Across the 105 facilities that do not pay full property taxes, I estimate the aggregate property tax expenditure to be $654.3 million for fiscal year 2021. This estimate is net of taxes paid to the general fund. Excluding taxes paid, the gross property tax expenditure is $695.2 million. Of the net total, 93% is from the real property tax. That only 7% is due to personal property taxes and taxes on property is a reflection of the fact that most team owners pay the former and relatively few facilities would be subject to the latter. On average, the tax expenditure for personal property taxes and special charges is $414,600 compared to an average real property tax expenditure of $5.8 million. The median is less than the mean, highlighting extreme variations in the tax expenditure distribution, which is visible in Fig. 5.4. The figure displays each of the 105 facilities, coding them as “a” for arenas, “b” for baseball stadiums, “f” for football stadiums, and “s” for soccer games. In an effort to keep the figure reader friendly, I omit facility names; though, the facility with the

Yankee Stadium, Citi Field, Barclays Center, Golden 1 Center, Petco Park, Oracle Park, Dick’s Sporting Goods Park, Staples Center, Vivint Smart Home Arena, and Rio Tinto Stadium. These teams pay property taxes that secure either facility debt or the debt jurisdictions incurred for infrastructure improvements to benefit a facility. These facilities are those that I could verify. To the extent I have missed others, my aggregate property tax expenditure figure will be underestimated.

Table 5.1 Property tax expenditure by facility

Facility name	RPT exp. to GF	Non-RPT exp. GF	Gross exp. to GF	Taxes paid to GF	Net tax exp. to GF
AT&T Center	$3263.8	$509.9	$3849.3	$75.6	$3773.6
AT&T Stadium	$13,086	$2633.6	$15,725.5	$5.8	$15,719.8
Allegiant Stadium	$8038.2	$1867.8	$9906.0	$0	$9906.2
Allianz Field	$5188.6	$15.9	$5204.5	$0	$5204.8
Amalie Arena	$1970.1	$218.8	$2275.2	$86.3	$2188.9
American Airline	$4638.8	$664.8	$5365.7	$62.1	$5303.7
American Family Field	$6749.2	$768.1	$7517.3	$0	$7517.2
Amway Center	$4657.0	$584.2	$5330.6	$89.4	$5241.2
Angel Stadium	$452.0	$8.6	$1777.9	$1317.2	$460.8
Arrowhead Stadium	$5290.4	$391.6	$5915.7	$233.6	$5682.2
Audi Field[a]	$3618.2	$433.3	$4057.1	$5.6	$4051.5
Banc of California Stadium	$220.0	$0	$5241.5	$5021.5	$219.8
Bank of America Stadium	$736.4	$0	$3612.0	$2875.6	$736.6
Barclays Center	$8440.4	$0	$8440.4	$0	$8440.5
Bridgestone Arena	$3401.2	$148.9	$3589.4	$39.3	$3550.0
Busch Stadium	$9494.7	$925.4	$10,629.7	$209.6	$10,420.3
Caesars Superdome	$3363.1	$358.2	$3721.3	$0	$3721.3
Camden Yards	$4556.5	$233.1	$4972.2	$182.6	$4789.5
Capital One Arena	$3414.2	$239.9	$3859.8	$205.8	$3654.0
Chase Field	$8099.1	$842.8	$8954.4	$12.5	$8942.1
Citi Field	$18,611.8	$0	$18,611.8	$0	$18,611.9
Citizens Bank Park	$5849.7	$0	$5849.7	$0	$5849.8
Comerica Park	$11,137.2	$405.3	$12,187.8	$645.4	$11,542.4
Coors Field	$5896.9	$215.2	$6604.1	$492.0	$6112.1
DRV PNK Stadium	$911.3	$418.2	$1329.5	$0	$1329.4
Dick's Sporting Goods Park	$1260.6	$118.6	$1508.8	$129.6	$1379.2
Dignity Health Sports Park	$173.3	$4.5	$2242.3	$2064.5	$177.9
Empower Field at Mile High	$7346.6	$1041.5	$8743.9	$355.7	$8388.2
Enterprise Center	$2447.1	$127.6	$2840.7	$266.0	$2574.9
FLA Live Arena	$2786.9	$342.3	$3149.7	$20.6	$3129.1
FTX Arena	$4945.3	$310.5	$5350.7	$94.9	$5255.8
FedEx Forum	$4332.3	$419.1	$4895.2	$143.8	$4751.4
FirstEnergy Stadium	$10,084.9	$0	$10,084.9	$0	$10,085.0
Fiserv Forum	$9996.3	$1414.0	$11,496.3	$85.9	$11,410.4
Footprint Center	$3923.1	$273.4	$4323.7	$127.2	$4196.8
Ford Field	$13,473.4	$2010.1	$15,830.5	$347.1	$15,483.5
Gainbridge Fieldhouse	$2730.8	$304.1	$3128.4	$93.5	$3035.0
Gila River Arena	$4309.9	$713.9	$5023.8	$0	$5023.7
Gillette Stadium	$8050.4	$939.8	$9024.8	$34.6	$8990.2
Globe Life Field	$15,683.6	$2510.3	$18,328.1	$134.2	$18,193.9
Golden 1 Center	$3805.8	$24.2	$4523.3	$693.4	$3830.0

(continued)

Table 5.1 (continued)

Facility name	RPT exp. to GF	Non-RPT exp. GF	Gross exp. to GF	Taxes paid to GF	Net tax exp. to GF
Great American Ball Park	$10,129.7	$0	$10,129.7	$0	$10,129.8
Guaranteed Rate	$6265.1	$0	$6265.1	$0	$6265.1
Hard Rock Stadium	$769.1	$71.1	$6450.2	$5610.0	$840.2
Heinz Field	$6934.9	$0	$6934.9	$0	$6935.0
Highmark Stadium	$1131.9	$103.2	$1235.1	$0	$1235.0
Honda Center	$184.5	$69.5	$1247.6	$993.7	$254.2
Kauffman Stadium	$4461.8	$103.3	$4740.5	$175.3	$4565.2
KeyBank Center	$1863.8	$0	$1863.8	$0	$1863.8
Lambeau Field	$12,284.4	$1588.4	$13,872.8	$0	$13,872.8
Levi's Stadium[b]	$217.8	$174.6	$9438.6	$9046.2	$392.3
Lincoln Financial Field	$5652.0	$0	$5652.0	$0	$5652.0
Little Caesars Arena	$17,683.8	$823.3	$19,726.3	$1219.2	$18,507.2
Lucas Oil Stadium	$9361.8	$2046.6	$11,408.4	$0	$11,408.4
Lumen Field	$4483.5	$360.9	$5401.3	$557.0	$4844.6
M&T Bank Stadium	$5897.5	$1115.7	$7094.0	$80.8	$7013.1
Madison Square Garden	$15,837.5	$0	$15,837.5	$0	$15,837.5
Mapfre Stadium	$651.5	$0	$651.5	$0	$651.5
Marlins Park	$8518.7	$1135.7	$9841.7	$187.3	$9654.6
Mercedes-Benz Stadium	$11,326.7	$2901.4	$14,228.1	$0	$14,228.1
MetLife Stadium	$8517.1	$0	$8517.1	$0	$8517.1
Minute Maid Park	$7297.2	$541.7	$7949.0	$110.0	$7839.0
Moda Center	$80.9	$22.8	$1574.8	$1471.1	$103.7
NRG Stadium	$8594.5	$1399.5	$10,056.7	$62.7	$9994.1
Nassau Coliseum	$4758.7	$0	$4758.7	$0	$4758.7
Nationals Park	$8865.8	$801.4	$9872.9	$205.7	$9667.2
Nationwide Arena	$2788.6	$0	$2788.6	$0	$2788.7
Nissan Stadium	$5324.5	$645.8	$5971.4	$1.0	$5970.3
Oakland Coliseum	$905.3	$130.8	$1630.9	$594.7	$1036.2
Oracle Park	$6739.0	$39.6	$7425.5	$646.9	$6778.5
PNC Arena	$1176.6	$156.9	$1342.6	$9.1	$1333.4
PNC Park	$5273.9	$0	$5273.9	$0	$5273.9
PNC Stadium	$1645.7	$267.0	$1950.9	$38.2	$1912.5
PPG Paints Arena	$4339.6	$0	$4339.6	$0	$4339.6
Paul Brown Stadium	$10,706.5	$0	$10,706.5	$0	$10,706.5
Paycom Center	$1058.0	$289	$1400.1	$53.1	$1347.1
Petco Park	$4875.5	$517.7	$5448.0	$54.7	$5393.2
Progressive Field	$7066.7	$0	$7066.7	$0	$7066.7
Providence Park	$438.5	$11.7	$490.1	$40.0	$450.3
Prudential Center	$10,503.2	$0	$10,503.2	$0	$10,503.2
Raymond James Stadium	$6233.8	$842.1	$7171.1	$95.2	$7075.7
Red Bull Arena	$1658.7	$0	$1658.7	$0	$1658.7
Rio Tinto Stadium	$660.1	$79.2	$781.7	$42.3	$739.5

(continued)

Table 5.1 (continued)

Facility name	RPT exp. to GF	Non-RPT exp. GF	Gross exp. to GF	Taxes paid to GF	Net tax exp. to GF
Rocket Mortgage Fieldhouse	$3998.1	$0	$3998.1	$0	$3998.1
SAP Center	$1308.6	$16.1	$1866.9	$542.3	$1324.6
Smoothie King Center	$1813.5	$374.2	$2187.7	$0	$2187.8
Soldier Field	$5864.4	$0	$5864.4	$0	$5864.4
Spectrum Center	$2320.5	$218.5	$2572.4	$33.4	$2539.1
Staples Center	$4694.8	$0	$5223.8	$529.0	$4694.7
State Farm Arena	$2698.4	$197.8	$3166.0	$269.7	$2896.3
State Farm Stadium	$12,390.2	$2512.9	$14,917.0	$14.0	$14,903.3
Subaru Park	$1163.6	$0	$1163.6	$0	$1163.6
T-Mobile Park	$4162.9	$107.9	$4552.7	$282	$4270.6
TIAA Bank Stadium	$4398.3	$597	$5104.6	$109.3	$4995.4
Target Center	$2846.6	$0	$2846.6	$0	$2846.6
Target Field	$15,375.4	$0	$15,375.4	$0	$15,375.4
Toyota Center	$4537.9	$517.9	$5067.5	$11.7	$5055.9
Toyota Stadium	$1208.3	$129.7	$1390.3	$52.4	$1338.0
Tropicana Field	$4101.1	$122.9	$4458.6	$234.6	$4224.0
Truist Park	$6041.8	$58.9	$7097.5	$996.9	$6100.7
US Bank Stadium	$25,079.2	$0	$25,079.2	$0	$25,079.2
Vivint Smart Home Arena	$1259.9	$0	$1592.6	$332.7	$1259.9
Wells Fargo Center	$1981.9	$0	$1981.9	$0	$1981.9
Xcel Energy Center	$9751.5	$2.4	$9753.8	$0	$9753.6
Yankee Stadium	$24,210.4	$0	$24,210.4	$0	$24210.6
Total	$610,807.0	$43,533.8	$695,195.7	$40,852.8	$654,342.9
Mean	$5817.2	$414.6	$6620.9	$389.1	$6231.8
Median	$4638.8	$130.7	$5273.6	$40.1	$5023.7

[a]At the time of writing, Audi Field is currently fully exempt from real property taxation, but its exemption begins to phase out on a sliding scale beginning in 2024

[b]Levi's Stadium is currently in the middle of a property tax dispute between the Santa Clara County assessor and the San Francisco 49ers. If the courts decide in favor of the team, the facility's real property tax expenditure will increase. The tax expenditure in the table assumes the team has exclusive possessory interest in the stadium

Notes: Figures may not add due to rounding. Values in thousands of 2020 dollars. Fully taxable facilities are omitted from the table. Taxes paid and tax expenditures for facility-related property (parking, training facilities, and so forth) are not part of the analysis

largest tax expenditure, denoted with the "f" in the top right, is US Bank Stadium followed by Yankee Stadium and Citi Field. The graph shows, as one might expect, less variation in the tax expenditure below the median than above, a characteristic that is obscured by focusing on a single measure of central tendency.

Moreover, Fig. 5.4 illustrates variation in the size of the tax expenditure by facility type, which also is not unexpected. The lower end of the distribution comprises mostly soccer stadiums and arenas; though, these facilities in relative

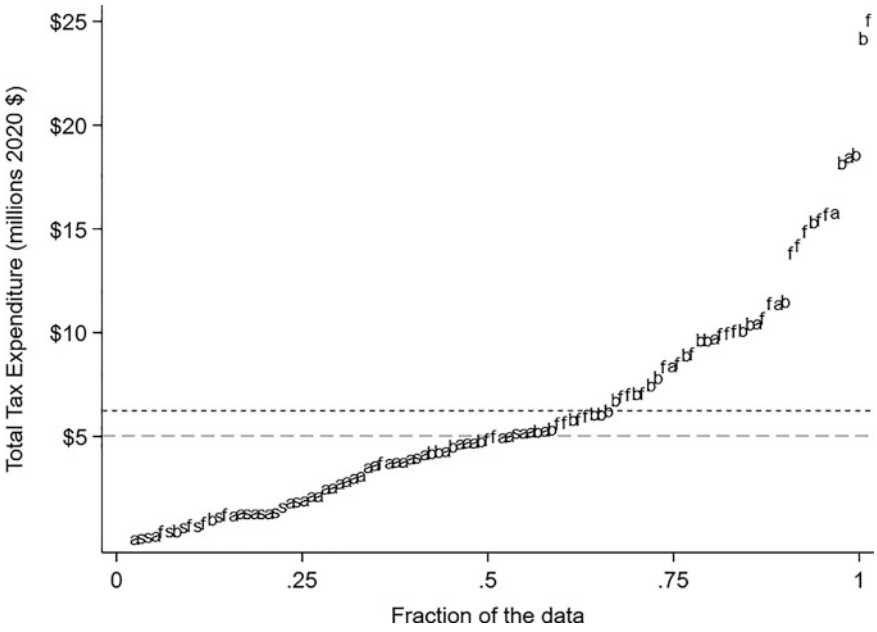

Fig. 5.4 Distribution of property tax expenditure estimates. Notes: Tax expenditure estimates are reported in millions. "a" indicates an arena; "b" indicates a baseball stadium; "f" indicates a football stadium; and "s" indicates a soccer stadium. The median property tax expenditure is identified by the long dash line while the mean is identified by the short dash line. Arenas are those used for either NBA or NHL. Stadiums jointly used for NFL and MLS are categorized as football stadiums; soccer stadiums are soccer-only stadiums

high land price areas or high tax rate areas will appear closer to the upper end of the distribution. Little Caesars Arena, for instance, is the arena with the largest estimated property tax expenditure in fiscal year 2021—$18.5 million—owing to a combination of Detroit's relatively high non-residential millage rate and the facility's age and size. Madison Square Garden is second at $15.9 million.

Madison Square Garden provides an illustration of how my methodology attempts to avoid overestimating facilities' property tax expenditures by accounting for differences in behavioral responses driven by tax status. The arena is exempt under state law, and lawmakers, should they have the political will, could remove the exemption at any time. Given this, the city's DOF may have an incentive to assess the arena accurately, which is far from clear, but James Dolan, CEO of the facility's ownership group, has no incentive to challenge the assessment since the expected cost of doing so exceeds the expected benefit of success. The facility's taxable value on the roll in fiscal year 2021 was $410.7 million.[2] At the city's property tax rate that

[2] This figure is the facility's transitional assessed value, not the actual assessed value. Class 2 and 4 properties in New York City are taxed on the lesser of transitional and actual assessed value.

year of 10.694%, using the roll value implies a tax expenditure of $43.9 million. But if the arena's owner was going to face a property tax rate equal to 10% of assessable improvements, then not only would it challenge DOF's assessment but it also may have scaled-back its three-year, $1 billion renovation that was completed in 2014. My property tax expenditure estimate for the arena is one-third of that implied by the tax roll valuation, because my methodology attempts to account for these behavioral responses as well as reductions on appeal that probably would have occurred in the taxable counterfactual.

Table 5.2 reports the tax expenditure estimates by facility type. Perhaps unsurprisingly, baseball and football stadiums comprise the largest share of the aggregate net tax expenditure, nearly 70%. Though the underlying fee-simple counterfactual valuations are determined in no small part by facility size, size also predicts taxes paid. Instead, the differences in net tax expenditure are driven by differences in the frequency of full and partially taxable facilities. Of the 32 such facilities, 11 are arenas with the balance roughly split between the other facility types. Between football and baseball stadiums, though they have similar real property tax

Table 5.2 Property tax expenditure by facility type

Facility type	Count	RPT exp. to GF	Non-RPT exp. GF	Gross exp. to GF	Taxes paid to GF	Net tax exp. to GF
Sum						
Arena	38	$166,549.6	$ 8,983.6	$183,083.7	$7548.0	$175,535.0
Baseball	26	$210,821.3	$ 9,469.1	$226,772.7	$6482.4	$220,290.9
Football	28	$214,637.9	$23,602.6	$257,668.3	$19,427.8	$238,240.4
Soccer	13	$18,798.2	$1478.5	$27,671.0	$7394.6	$20,276.6
Overall	105	$610,807.0	$43,533.8	$695,195.7	$40,852.8	$654,342.9
Mean						
Arena	38	$4382.9	$236.4	$4818.0	$ 198.6	$4619.3
Baseball	26	$8108.5	$364.2	$8722.0	$249.3	$8472.7
Football	28	$7665.6	$843.0	$9202.4	$693.9	$8508.6
Soccer	13	$1446.0	$113.7	$2128.5	$568.8	$1559.7
Overall	105	$5817.2	$414.6	$6620.9	$389.1	$6231.8
Median						
Arena	38	$3407.8	$152.8	$3854.6	$57.6	$3713.8
Baseball	26	$6744.0	$115.4	$7261.5	$154.8	$6922.7
Football	28	$7140.9	$494.3	$8630.5	$3.4	$7732.0
Soccer	13	$1163.6	$15.9	$1508.8	$38.2	$1329.4
Overall	105	$4638.8	$130.7	$5273.6	$40.1	$5023.7

Notes: Arenas are those used for either NBA or NHL. Stadiums jointly used for NFL and MLS are categorized as football stadiums; soccer stadiums are soccer-only stadiums. Figures may not add due to rounding. Values in thousands of 2020 dollars. Fully taxable facilities are excluded. Taxes paid is the sum of real property taxes, personal property taxes, and taxes on property paid by team owners at each facility site flowing into a state or local general fund for general purposes

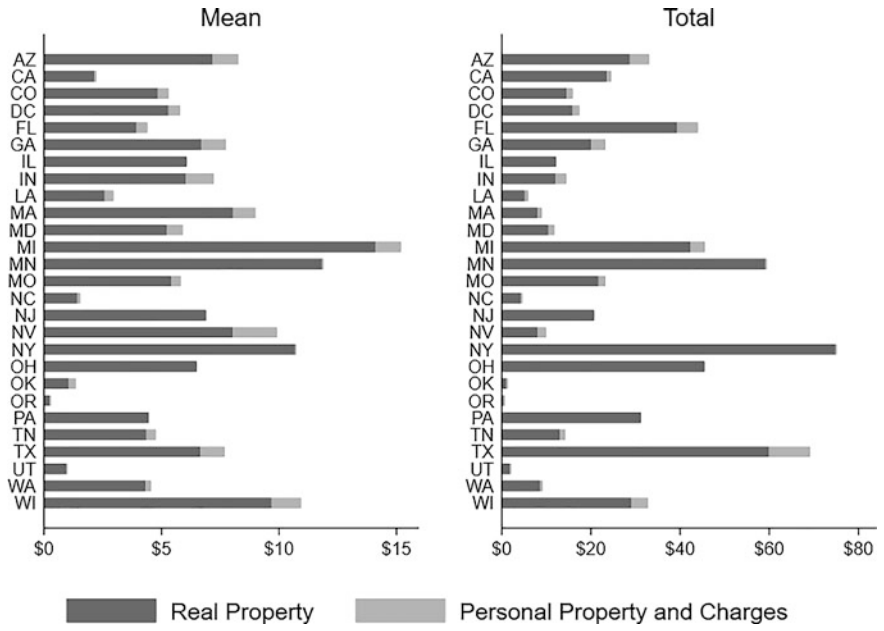

Fig. 5.5 Property tax expenditure estimates by state, FY2021. Notes: Dollars are in millions indexed to 2020 for taxes paid in fiscal year 2021

expenditures in the aggregate, their personal property tax expenditures vary much more markedly. This is not surprising in one way: NFL teams have larger rosters than MLB teams and thus they may need more assessable machinery and equipment to serve the additional players and staff. Differences in luxury suites amenities, and by extension the number of luxury suites, also may play a role.

It is also insightful to consider variation in the property tax expenditure by state owing to differences in property tax laws and as a result, property tax burdens on commercial properties. Figure 5.5 displays the average and total estimated property tax expenditure by state. In both graphs, the real property tax expenditure is in dark gray while the property tax expenditure from all other sources is in light gray. Michigan (Detroit), Minnesota (Minneapolis and St. Paul), and New York (New York City, Buffalo, Orchard Park, and Hempstead) have the greatest total property tax expenditure and the greatest average property tax expenditure. Though they share the distinction for having the most costly major league property tax expenditure, the reasons for the costs are different and noteworthy. Readers may not be surprised by New York being among the most costly. The four facilities in New York City comprise 90% of the state's total tax expenditure estimate with the

state's other three facilities comprising 10%.[3] One might assume this is due in no small part to the city having relatively high construction costs and land prices, and based on data provided by the Lincoln Institute of Land Policy and the Minnesota Center for Fiscal Excellence, this assumption has merit.[4] New York City has a comparatively low effective tax rate on commercial property (39th highest out of 53 cities studied) whereas Detroit has the highest and Minneapolis the seventh. These patterns highlight that in some cities relatively higher property values will drive the property tax expenditure upward. Detroit, in contrast, has relatively low commercial property values. Michigan also has a residential assessment limit that indirectly shifts more of the burden of financing local public goods on to non-residential property. The city's low home values and the state's tax system combine to drive the effective tax rate on commercial property upward. Detroit's property tax expenditure, then, has less to do with property values and more to do with marginal and average tax rates.

Minneapolis, meanwhile, occupies a middle ground between the two extremes of Detroit and New York City in terms of land and property value (Albouy et al., 2018), but it has an effective commercial property tax rate more similar to the former than the latter. Minnesota has a statewide property tax assessment and tax rate system unlike any other in the US. It has a two-tier graduated assessment ratio system such that different amounts of commercial property value are assessed at different rates.[5] The state also imposes a statewide real property tax, which is calculated using a three-tiered assessment ratio before applying the statewide tax rate. There are also three different local property tax rates levied on two different bases for each parcel. It is an empirical question outside of the scope of this book whether public services in Minnesota could be delivered more efficiently (that is, at a lower average property tax cost) under a different taxing system, but with property tax liabilities being determined by multiple political forces at different levels of government, I am not surprised that commercial tax burdens in the state are among the highest in the nation.[6]

State-level comparative analyses have policy value in so far as lawmakers base their decisions off what lawmakers elsewhere are doing. In the context of major

[3] The New York City facilities are Barclays Center, Citi Field, Madison Square Garden, and Yankee Stadium. The other facilities in the state are KeyBank Center, Highmark Stadium, and Nassau Veterans Memorial Coliseum. After fiscal year 2021, the Islanders relocated from the Coliseum to UBS Arena.

[4] The Lincoln Institute of Land Policy and the Minnesota Center for Fiscal Excellence jointly produce an annual report that compares property tax burdens for different types of property in major cities in every state. The title of all the reports are the same—*50-State Property Tax Comparison Study*—with the most recent study as of the time of writing being published in June 2020, covering taxes paid in 2019.

[5] The first $150,000 of market value is assessed at 1.5% and every dollar in market value thereafter is assessed at 2.0%.

[6] A noteworthy advantage for New York and Minnesota businesses: no tangible personal property tax.

league sports facilities, subsidy debates typically involve learning more about how facility characteristics and subsidies vary across jurisdictions within leagues. While such comparative analyses encourage a keeping-up-with-the-Joneses cost escalation (Trumpbour, 2007; Euchner, 1993), my discussion of Detroit, Minneapolis-St. Paul, and New York City highlights that comparing tax costs of subsidy agreements requires a deeper understanding of property tax systems across states. Failing to appreciate differences in tax systems risks introducing avoidable inaccuracies into tax cost estimates, possibly resulting in over-subsidization.

5.3 Cumulative Property Tax Expenditure Estimates

I use the fiscal year 2021 net property tax expenditure estimate to generate cumulative tax expenditure estimates. For each facility, I calculated the estimated remaining tax expenditure over the life of the current lease as of 2022 using 3% and 6% discount rates.[7] I then inflation-adjusted the value to all prior years a facility hosted professional sports and had been exempt. Since most facilities' taxable status does not change over time, the first year of an exemption is when the facility opens and the last year is when the team leaves. If the facility persists beyond a team

[7] Social discount rates allow one to express future dollars in today terms. From one perspective, the social discount rate is the amount of money needed to incentivize society to trade private consumption today for private consumption in the future. This is the social rate of time preference definition of the discount rate. The alternative is to view the discount rate as the cost of forgone private investment. Since taxes reduce private consumption, the opportunity cost of each dollar transferred to public purposes equals the return private investment would have yielded. The former is often measured with the municipal bond yield, which has decreased from 10.5% in early 1985 to 3.5% in late 2021. The 20-year corporate bond rate measures the latter, which has decreased from 11.3% in early 1984 to 4.0% in early 2022. When deciding between the two, Boardman et al. (1993) advise to decide based upon the perspective of the public officials supporting the project. They classify public officials as being either Analysts, Guardians, or Spenders. Their description of Spenders fits lawmakers in the sports subsidy context perfectly. For instance, Spenders view project costs and benefits as benefits, which is consistent with politicians supporting facility subsidies for job creation even though jobs are always an economic cost (but a political benefit). Spenders also treat expenditures on constituents as a benefit, and demonstrating larger expenditures means delivering greater benefits. As such, Spenders prefer lower discount rates for measuring future benefits compared to the other public official types. Since Spenders choose discount rates with political benefits in mind, they presumably would prefer higher discount rates for tax expenditures to make costs appear cheaper. For its part, the US Office of Management and Budget (OMB) requires federal agencies to use, at minimum, discount rates of 3 and 7% when valuing the cost and benefits of social investments. OMB also stipulates, though, that US Treasury borrowing rates should be used as discount rates in cost-effectiveness analyses, of which a property tax expenditure analysis is a component. It recommends a 7% discount rate for cost-benefit analyses, which a property tax expenditure analysis is not. See the Office of Management and Budget's Circular A-94, or https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/circulars/A4/a-4.pdf.

vacating, its taxable status may not change, but it is no longer a major league facility.[8]

The cumulative tax expenditures are detailed in Table 5.3. Note the values are expressed in millions of 2020 dollars. The column labeled "current" assume no lease extensions are optioned whereas the column labeled "maximum" assume all available lease extensions in the current lease are optioned. A useful feature of this exercise is that it incorporates variation in lease lengths across facilities. While a 30-year lease is relatively common across all five major leagues, 20-year and 25-year leases are more common for soccer stadiums, for instance. Ground leases, meanwhile, occasionally exceed 50 years. The single-year tax expenditure estimates in Table 5.1 fail to respect such differences across facilities and leagues. The cumulative estimates also take into consideration temporary abatements, such as Audi Field's.

At my preferred 3% discount rate, the total property tax expenditure across all active facilities' from exempt status start to the end of the current lease is almost $18.0 billion. At 6%, the cumulative estimate is about 10% lower, or $16.0 billion. Extending current leases to the maximum period of time allowed would increase these costs by nearly $3 billion at 3% and by $1.2 billion at 6%. The difference illustrates the practical importance of using a reasonable discount rate for the policy context. The marginal tax expenditure of one more lease year in the future is cheaper with a higher discount rate than with a lower one, making it appear cheaper to keep a facility exempt longer assuming a higher rate than a lower one. The typical rationale for setting lease lengths is to tie facility usage intensity to the repayment period for any public construction debt. Lease length decisions do not factor in the cost of the tax exemption shifted onto all other property owners. If tax expenditures were included, leases would have to be longer, as facilities would need to generate additional revenue to compensate property owners for such negative fiscal externalities.

Moreover, the average facility cost at 3% over the current exemption window is $171.3 million compared to a median of $141.9 million. The average and median mask the extent of variation in total tax expenditure cost by facility type, though. Whereas the average lifetime cost for active football and baseball stadiums are similar ($229.4 million and $238.2 million, respectively), the average cost for arenas and soccer stadiums is, unsurprisingly, cheaper ($129.2 million and $35.6

[8] This process required some judgement calls. For instance, Providence Park has been around for almost 100 years, but it has only been used for MLS since 2011. I use 2011 as the start of its exemption period even though it has been exempt since constructed in the 1920s. Madison Square Garden is another curiosity. It has had a property tax exemption since 1982 but its current operating permit expires in 2023. The start of the exemption period is clear cut, but the end of the exemption period is not. For most teams, I presume the end of a facility's exemption period is when the current lease ends, at which point the facility may be replaced. For Madison Square Garden, though, the exemption is permanent so long as homes games are held at the arena but its operating permit is not. I assume local lawmakers do not attempt to evict the Knicks and Rangers, and I further assume the exemption persists for at least another 40 years.

Table 5.3 Cumulative property tax expenditure by facility

Facility name	Current, 3%	Current, 6%	Maximum, 3%	Maximum, 6%
AT&T Center	$85.0	$82.5	$85.0	$82.5
AT&T Stadium	$397.9	$348.2	$397.9	$348.2
Allegiant Stadium	$208.0	$147.9	$208.0	$147.9
Allianz Field	$141.9	$91.8	$141.9	$91.8
Amalie Arena	$72.9	$67.0	$84.2	$73.0
American Airline	$139.1	$131.9	$139.1	$131.9
American Family Field	$191.7	$183	$191.7	$183
Amway Center	$115.8	$104.2	$115.8	$104.2
Angel Stadium	$20.2	$18.8	$20.2	$18.8
Arrowhead Stadium	$218.5	$210.7	$218.5	$210.7
Audi Field	$48.4	$41.1	$48.4	$41.1
Banc of California Stadium	$5.3	$3.8	$7.5	$4.3
Bank of America Stadium	$36.7	$27	$38.1	$27.1
Barclays Center	$233.3	$186	$333.6	$211.3
Bridgestone Arena	$139.6	$119.8	$139.6	$119.8
Busch Stadium	$300.3	$262.2	$367.2	$292.0
Caesars Superdome	$151.1	$142.8	$186.7	$160.7
Camden Yards	$120.9	$120.1	$140.9	$137.1
Capital One Arena	$94.2	$91.8	$138.4	$119.7
Chase Field	$231.9	$224.7	$292.1	$266.0
Citi Field	$471.2	$412.2	$764.9	$511.7
Citizens Bank Park	$153.2	$141.5	$153.2	$141.5
Comerica Park	$293.5	$282.2	$538.3	$392.6
Coors Field	$238.7	$207.5	$271.6	$219.8
DRV PNK Stadium	$35.5	$22.3	$35.5	$22.3
Dick's Sporting Goods Park	$31.1	$29.0	$31.1	$29.0
Dignity Health Sports Park	$6.8	$5.4	$6.8	$5.4
Empower Field at Mile High	$220.0	$208.6	$247.8	$227.2
Enterprise Center	$95.9	$85.9	$95.9	$85.9
FLA Live Arena	$81.2	$78.6	$102.2	$93.1
FTX Arena	$174.3	$156.4	$174.3	$156.4
FedEx Forum	$107.7	$103.1	$171.1	$139.0
FirstEnergy Stadium	$262.9	$253.0	$262.9	$253.0
Fiserv Forum	$247.9	$186.7	$247.9	$186.7
Footprint Center	$149.3	$138	$160.9	$144.6
Ford Field	$456.1	$414.5	$715.4	$507.4
Gainbridge Field	$106.9	$93.6	$106.9	$93.6
Gila River Arena	$88	$87.6	$88	$87.6
Gillette Stadium	$236.0	$221.9	$236.0	$221.9
Globe Life Field	$396.0	$277.1	$498.1	$307.6
Golden 1 Center	$95.1	$71.9	$108.2	$76.5
Great American Ball Park	$291.4	$264.1	$291.4	$264.1

(continued)

Table 5.3 (continued)

Facility name	Current, 3%	Current, 6%	Maximum, 3%	Maximum, 6%
Guaranteed Rate Field	$192.5	$186.3	$263.9	$228.8
Hard Rock Stadium	$44.9	$34.6	$44.9	$34.6
Heinz Field	$181.9	$172.4	$131	$130.5
Highmark Stadium	$39.4	$39.2	$39.4	$39.2
Honda Center	$10.3	$9.0	$12.3	$9.6
Kauffman Stadium	$174.8	$168.6	$174.8	$168.6
KeyBank Center	$46.1	$45.4	$46.1	$45.4
Lambeau Field	$577.1	$552.4	$657.7	$600.3
Levi's Stadium[a]	$11.2	$8.5	$11.2	$8.5
Lincoln Financial Field	$148.3	$138.2	$191.7	$162.8
Little Caesars Arena	$449.6	$332.9	$648.5	$379.3
Lucas Oil Stadium	$263.8	$240.9	$263.8	$240.9
Lumen Field	$123.8	$117.1	$175.8	$146.4
M&T Bank Stadium	$176.4	$171.8	$176.4	$171.8
Madison Square Garden	$469.4	$466.9	$469.4	$466.9
Mapfre Stadium	$12.5	$12.5	$12.5	$12.5
Marlins Park	$258.5	$209.1	$295.6	$223.9
Mercedes-Benz Stadium	$316.3	$243.5	$392.8	$272.2
MetLife Stadium	$171.3	$158	$346.8	$227.4
Minute Maid Park	$292.0	$246.2	$292.0	$246.2
Moda Center	$2.6	$2.6	$4.0	$3.5
NRG Stadium	$262.3	$246.6	$262.3	$246.6
Nassau Coliseum	$143.6	$143.4	$143.6	$143.4
Nationals Park	$247.3	$219.0	$295.7	$243.9
Nationwide Arena	$81.5	$72.6	$81.5	$72.6
Nissan Stadium	$151.1	$146.3	$151.1	$146.3
Oakland Coliseum	$35.0	$34.7	$35.0	$34.7
Oracle Park	$282.2	$223.4	$326.7	$231.7
PNC Arena	$34.8	$33.5	$43.5	$39.3
PNC Park	$134.5	$128.4	$152.5	$140.8
PNC Stadium	$46.6	$39.2	$46.6	$39.2
PPG Paints Arena	$108.7	$93.9	$108.7	$93.9
Paul Brown Stadium	$246.9	$241.5	$246.9	$241.5
Paycom Center	$25.8	$25.6	$25.8	$25.6
Petco Park	$113.9	$110.4	$151.3	$136.8
Progressive Field	$239.3	$222.0	$276.9	$242.5
Providence Park	$13.3	$12.2	$14.1	$12.7
Prudential Center	$270.9	$242.6	$270.9	$242.6
Raymond James Stadium	$183.5	$177.8	$183.5	$177.8
Red Bull Arena	$39.7	$34.8	$54.2	$41.5
Rio Tinto Stadium	$16.6	$15.3	$16.6	$15.3
Rocket Mortgage	$130.3	$122.3	$130.3	$122.3

(continued)

Table 5.3 (continued)

Facility name	Current, 3%	Current, 6%	Maximum, 3%	Maximum, 6%
SAP Center	$35.0	$34.5	$48.7	$44.2
Smoothie King Center	$48.1	$47.6	$57	$54.9
Soldier Field	$234.5	$224.1	$293.9	$255.6
Spectrum Center	$57.6	$54.6	$66.3	$60.6
Staples Center	$183.3	$152.7	$183.3	$152.7
State Farm Arena	$104.7	$90.6	$104.7	$90.6
State Farm Stadium	$387	$350.4	$466.2	$393.5
Subaru Park	$29.1	$25.2	$38.7	$29.3
T-Mobile Park	$166.8	$138.9	$186	$144.9
TIAA Bank Stadium	$146.2	$140.3	$146.2	$140.3
Target Center	$136.2	$127.6	$136.2	$127.6
Target Field	$358.7	$317.3	$358.7	$317.3
Toyota Center	$132.6	$123.6	$132.6	$123.6
Toyota Stadium	$36.6	$33.0	$36.6	$33.0
Tropicana Field	$125.3	$122.6	$125.3	$122.6
Truist Park	$132.9	$103.2	$145.8	$108.8
US Bank Stadium	$569.5	$447.3	$742.5	$510.5
Vivint Smart Home Arena	$47.6	$43.3	$47.6	$43.3
Wells Fargo Center	$75.4	$65.7	$93.4	$71.7
Xcel Energy Center	$288.5	$266.8	$288.5	$266.8
Yankee Stadium	$730.7	$595.1	$914.3	$653.2
Total	$17,988.0	$15,992.2	$20,881.3	$17,193.8
Mean	$171.3	$152.3	$198.9	$163.8
Median	$141.9	$131.9	$151.1	$140.3

[a]From January 2014 through June 2017, the 49ers received $30.3 million from the Santa Clara Stadium Authority paid for from possessory interest taxes deposited into the Redevelopment Property Tax Trust Fund. I amortize this property tax expenditure evenly over this period when calculating the stadium's cumulative tax expenditure

Notes: Values in millions of 2020 dollars. Fully taxable facilities are omitted from the table. The dollar amount are estimates of the net property tax expenditure to general purposes from the start of major league facilities' exempt status through the end of its current lease. Estimates are provided using 3 and 6% discount rates. Prior year values are adjusted with the Consumer Price Index. For each facility and discount rate, two estimates are provided. Columns labeled "current" contain estimates assuming no facility operating, licensing, or ground lease extensions. Columns labeled "maximum" contain estimates assuming team owners use all extensions available in the current lease agreement. If current values equal maximum values, it means I could find no extension provisions in the current lease. Figures may not add due to rounding

million, respectively). The comparatively low cumulative tax expenditure estimate for soccer-only facilities reflects their lower replacement costs and shorter leases, many of which are for 20 years or less.

5.4 Comparing Property Tax Expenditure Estimates

As I noted in Chap. 1, one of the main goals for this book was to evaluate the QF methodology for estimating the property tax expenditure: a 2% ETR applied to a reproduction cost value depreciated on a straight-line basis over 40 years. However, direct comparisons between my estimates and my predecessors' are cautioned. The most obvious reason is that we study different inventories of facilities at different points in time. I also consider all property taxes rather than strictly the real property tax. Finally, my property tax cost estimates are net of property taxes paid, which of course is only relevant for partially taxable facilities.

As an alternative, I calculated the property tax expenditures using the QF method for the current inventory of facilities. I used the stadium construction cost data as reported by Long (2013) for the facilities active between her study and mine, and for newer facilities, I used the cost figures from the most recent Sports Facility Reports as published by the National Sports Law Institute at Marquette University. Because some facilities underwent major renovations in the last decade (Target Center, Madison Square Garden, and Nassau Coliseum), I use those reported renovations costs. In addition, I focus only on the real property tax expenditure, and to ensure some consistency across studies, I use the gross real tax expenditure estimates, before current payments are subtracted.

Figure 5.6 plots the respective tax expenditures broken out by facility type. For each set of estimation results, I provide a linear trend. The more the trend lines overlap, the more similar the two methodologies' results with respect to effective age for a given facility type. The graph shows that the QF approach performs well *in the aggregate* for each facility with the exception of football stadiums. In other words, the QF method is a reasonable alternative to my more time and data-intensive approach for estimating the total tax expenditure, not necessarily the tax expenditure for any particular facility. For football stadiums, and more specifically younger ones, the two methods produce much less trivial variation.

It deserves emphasizing that because both methods estimate taxable value in a counterfactual world that is not observable, it is inappropriate to view this comparison as one being right and the other wrong. Though I have argued my approach is better grounded in current assessment theory and practice, the results also show that the additional analytic effort to obtain aggregate estimates may not be worth the additional benefit of precision for a non-trivial portion of facilities, football stadiums the exception. For these, the QF method is much more likely to overestimate the cost of a property tax exemption.

It is difficult to tell from Fig. 5.6 the size of the difference in the property tax expenditure estimates. Since the underlying data is for one year, a small difference over a 30-year lease could be a meaningful amount in present value terms. Figure 5.7 remedies this by plotting the difference between the QF approach and my methodology by fraction of facilities, providing a window into how the magnitude of the differences are distributed within each facility type. A positive value indicates the QF approach overestimates relative to my per acre replacement cost approach.

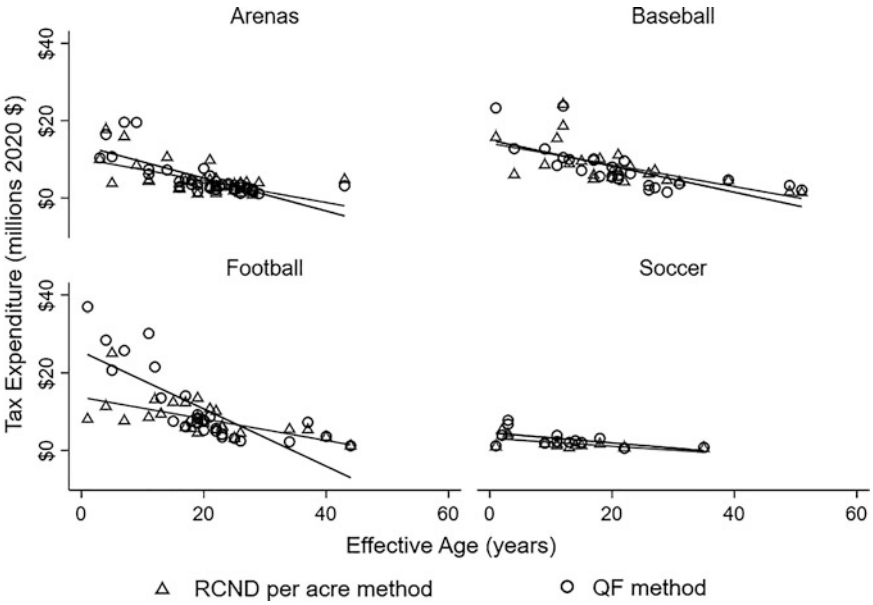

Fig. 5.6 Comparison of gross real property expenditure estimates. Notes: Dollars are in millions indexed to 2020 with the RS Means city-specific construction cost index. Replacement cost net depreciation per acre is my methodology. The QF method is a reproduction cost straight-line depreciated over 40 years with a 2% ETR

A negative value indicates the reverse. The plots show the QF method consistently overestimating the tax expenditure cost for football and soccer stadiums. For arenas, the two methods more often agree, only disagreeing in large terms for a handful of facilities. For baseball stadiums, it is hit and miss, and this graph more clearly demonstrates how the two methods can agree on average but disagree considerably for any particular facility.

Figure 5.8 presents a third way to evaluate the two methodologies. It plots the sum of the tax expenditure difference for all facilities by state against the commercial property ETR for the largest city in each state. Since state tax policy is an important determinant of tax burdens, the graphs provide a window into the size of the difference in the tax expenditure when tax policy is accounted for and when it is not. By way of example, because of Proposition 13, California has an effective tax rate well below 2%, and thus even if the reproduction cost straight-lined depreciated yielded an accurate taxable value, a 2% ETR overstates the tax expenditure. More generally, when the true ETR is greater than 2%, the QF method will understate the relative tax cost; when less than, it will overstate. These states are grouped in the bottom right and top left quadrants, respectively. For states grouped in the bottom left and top right, the differences between the two methods are more likely due to valuation.

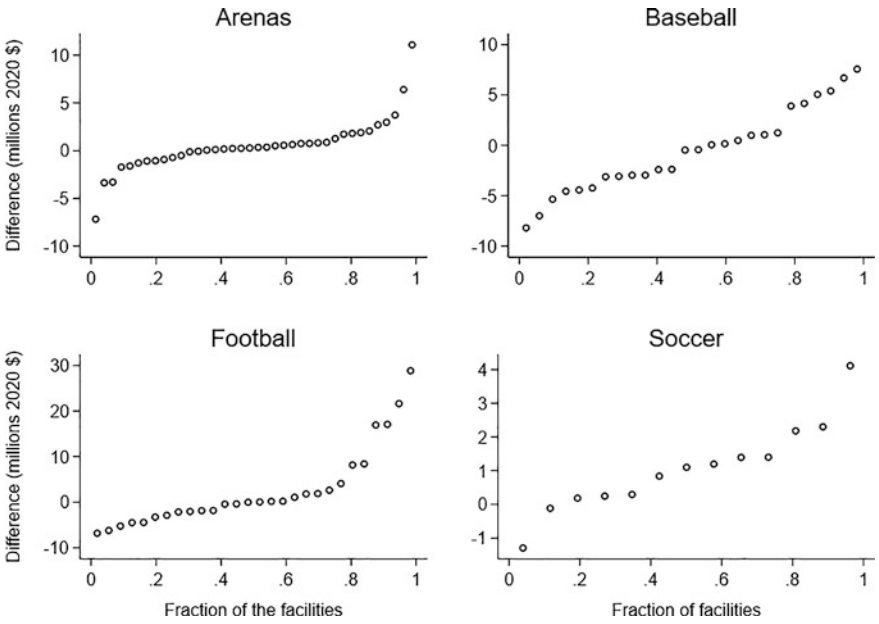

Fig. 5.7 Difference in property tax expenditure estimates. Notes: Dollars are in millions indexed to 2020 with the RS Means city-specific construction cost index. The graph shows the difference between the QF method and my RCND per acre method, subtracting the latter from the former

This comparison of the two methods' real property tax expenditure estimates can be summarized as follows. The QF approach and my RCND per acre approach report similar tax expenditure estimates in the aggregate on average for non-football stadiums. For football stadiums, there are greater tax expenditure estimate differences that are more acute for younger stadiums (those 15 years old or less). When disaggregating tax expenditure differences for each facility type, the QF approach generates a property tax expenditure estimate greater than my method in about 80% of non-baseball stadiums cases. For baseball stadiums, the figure is closer to 50%. Finally, the data provide some state-specific insights. Generally speaking, the tax expenditure cost in states with ETRs less (greater) than 2% will be overestimated (underestimated). Estimating the property tax expenditure in states located further from the (2%, $0) intersection in Fig. 5.8 are deserving of greater justification for the methodology selected, at least for the existing inventory of active facilities.

The attractiveness of the QF approach is that it is less labor and data demanding. The forgoing analysis shows, however, the trade-off of the QF method is potentially an increased inaccuracy of the property tax cost. It is important to reiterate that these comparisons were based on gross property tax expenditure estimates, which I chose to do in order for my estimates to be as comparable to figures published

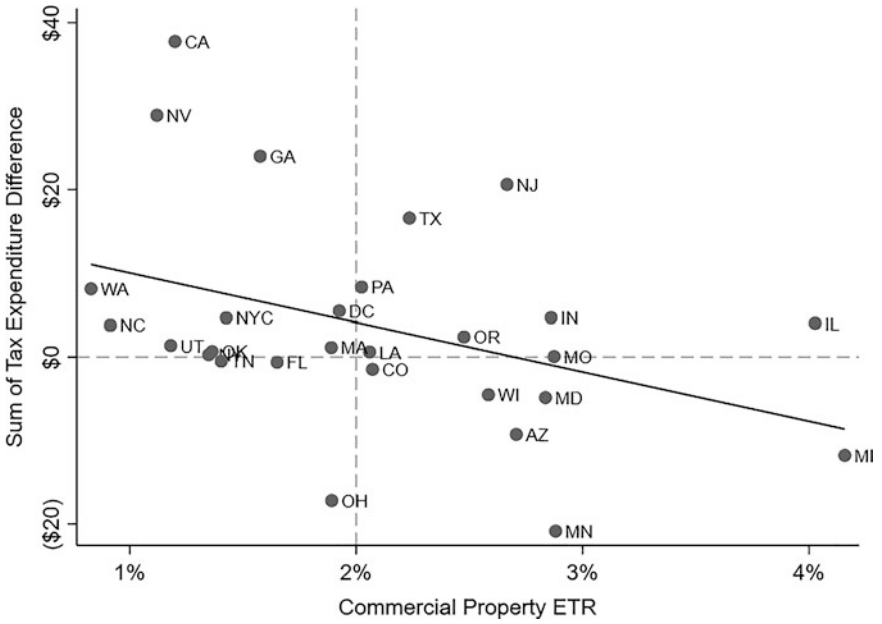

Fig. 5.8 Aggregate real tax expenditure gap by state. Notes: Dollars are in millions indexed to 2020 with the RS Means city-specific construction cost index. The graph shows the difference between the QF method and my RCND per acre method, subtracting the latter from the former, plotted against the commercial property ETR for the largest city in each state as reported in the Lincoln Institute of Land Policy's 2021 *50-State Property Tax Comparison Study*

by prior scholars. Failing to subtract current payments from the fully taxable counterfactual will always produce tax expenditure overestimates, in the aggregate and for particular partially taxable facilities and teams.

5.5 Estimating Future Property Tax Expenditures

I use my property tax expenditure estimates to create a *guide* for evaluating the cost of future property tax exemptions. It is a guide because the approach I offer is not a replacement for analysis of the counterfactual fee-simple ownership when rich construction cost data are available. However, such data are often unavailable until after a facility's subsidy is voted upon. To the extent lawmakers want to make informed decisions about the cost of a subsidy agreement before a vote, approximations are the only alternative.

For each state and some major assessing jurisdictions, I provide an ETR per acre factor that can be used to approximate the gross property tax expenditure of a fully exempt facility compared to it being fully taxable. The factors are the marginal

effects from a negative binomial regression of the estimated gross tax expenditure ETR for real and personal property taxes aggregated together.[9] For states that do not tax tangible personal property, the ETR reflects only real property.[10]

The ETR factors are detailed in Table 5.4. Note that when states have all of their major league facilities in the same city, the state-level factors are really city-level factors. The table contains factors for each of the four facility types for all states that currently host a major league team. I have included factors for facilities that currently do not exist; there is no MLB team in Oklahoma City, for instance, nor does Chester, Pennsylvania host an NFL franchise. The reason for providing factors for all facility types is simple: the factors are prospective about future costs, and any state that currently hosts a major league facility may host another one. The Oakland A's have been flirting with a relocation to Las Vegas, for instance. Rather than guessing which leagues could expand to which states, I decided to provide factors for all existing major league states. Moreover, for each state and facility type I have included a 95% confidence interval that can be used to set a minimum and maximum cumulative tax expenditure range.

As an example of how to use the factors, consider the agreement between the Buffalo Bills, New York state, and Erie County for $850 million in public financing for a new stadium. Of the $850 million, $600 million would come from the state and $250 million from the county. Though it appears (current and future) county taxpayers are only on the hook for 30% of the public financing, these residents will bear the cost of the stadium's property tax exemption, because the property tax is a local tax in New York state. To estimate the cumulative property tax expenditure of the exemption over a 30-year lease compared to the fee-simple ownership counterfactual, one needs:

1. the relevant ETR factor from Table 5.4,
2. the expected footprint of the facility in acres,
3. the number of years the facility is expected to be exempt,
4. the replacement cost under taxable fee-simple ownership, and
5. a depreciation rate that incorporates property appeals behavior under taxable private ownership.

Let us assume a new Bills stadium is the same footprint as Highmark Stadium (about 13 acres) and will be exempt for 30 years. Further assume that under taxable fee-simple ownership the replacement cost is $720 million, implying the cumulative

[9] The negative binomial regression respects the non-zero positive nature of the tax expenditure and fits the distribution of ETRs better, with values bunched closer to zero and a thinning tail as ETR increases.

[10] I included a facility's effective age, a facility type fixed effect, and a geographic fixed effect as reported in the accompanying table. This regression model is clearly overfit. Since hypothesis testing is not the purpose of the regression, however, I ignore my usual concerns about model diagnostics.

Table 5.4 Gross property tax expenditure ETR factors

	Arena		Baseball		Football		Soccer	
Facility name	Mean	CI	Mean	CI	Mean	CI	Mean	CI
Arizona	0.0111	±0.0012	0.0033	±0.0006	0.0027	±0.0004	0.0041	±0.0009
California	0.0125	±0.0029	0.0037	±0.0011	0.0030	±0.0009	0.0047	±0.0014
Colorado	0.0071	±0.0022	0.0021	±0.0007	0.0017	±0.0005	0.0026	±0.0008
DC	0.0054	±0.0026	0.0016	±0.0008	0.0013	±0.0007	0.0020	±0.0011
Florida	0.0151	±0.0009	0.0045	±0.0006	0.0037	±0.0004	0.0057	±0.0011
Georgia	0.0053	±0.0017	0.0016	±0.0005	0.0013	±0.0005	0.0020	±0.0008
Illinois	0.0058	±0.0020	0.0017	±0.0006	0.0014	±0.0005	0.0022	±0.0008
Indiana	0.0061	±0.0021	0.0018	±0.0007	0.0015	±0.0006	0.0023	±0.0009
Louisiana	0.0065	±0.0017	0.0019	±0.0006	0.0016	±0.0005	0.0024	±0.0008
Maryland	0.0077	±0.0018	0.0023	±0.0005	0.0019	±0.0004	0.0029	±0.0008
Massachusetts	0.0041	±0.0006	0.0012	±0.0002	0.0010	±0.0001	0.0015	±0.0004
Michigan	0.0110	±0.0019	0.0033	±0.0007	0.0027	±0.0005	0.0041	±0.0012
Minnesota	0.0198	±0.0024	0.0059	±0.0011	0.0048	±0.0008	0.0074	±0.0015
Missouri	0.0073	±0.0029	0.0022	±0.0010	0.0018	±0.0007	0.0027	±0.0012
NYC-LI	0.0310	±0.0037	0.0092	±0.0018	0.0075	±0.0014	0.0116	±0.0027
Nevada	0.0061	±0.0018	0.0018	±0.0006	0.0015	±0.0003	0.0023	±0.0009
New Jersey	0.0074	±0.0011	0.0022	±0.0005	0.0018	±0.0003	0.0027	±0.0007
North Carolina	0.0033	±0.0003	0.0010	±0.0002	0.0008	±0.0001	0.0012	±0.0003
Ohio	0.0125	±0.0026	0.0037	±0.0010	0.0030	±0.0008	0.0047	±0.0016
Oklahoma	0.0019	±0.0001	0.0006	±0.0001	0.0005	±0.0001	0.0007	±0.0002
Oregon	0.0037	±0.0012	0.0011	±0.0004	0.0009	±0.0003	0.0014	±0.0005
Outside NYC-LI	0.0029	±0.0010	0.0008	±0.0003	0.0007	±0.0003	0.0011	±0.0004
Outside Philly	0.0055	±0.0014	0.0016	±0.0004	0.0013	±0.0003	0.0021	±0.0007
Philadelphia	0.0025	±0.0008	0.0007	±0.0003	0.0006	±0.0002	0.0009	±0.0004
Tennessee	0.0077	±0.0017	0.0023	±0.0006	0.0019	±0.0005	0.0029	±0.0009
Texas	0.0187	±0.0020	0.0055	±0.0009	0.0045	±0.0007	0.0070	±0.0015
Utah	0.0051	±0.0017	0.0015	±0.0005	0.0012	±0.0004	0.0019	±0.0007
Washington	0.0030	±0.0010	0.0009	±0.0003	0.0007	±0.0002	0.0011	±0.0004
Wisconsin	0.0079	±0.0014	0.0023	±0.0005	0.0019	±0.0004	0.0030	±0.0009

Notes: The ETRs reflect the gross property tax expenditure for real and personal property combined. Arrangements where a team is expected to pay some property taxes would need to be deducted accordingly. "CI" is the 95% confidence interval error margin. The values are the state-level average marginal effects estimated from a negative binomial regression of the 105 full and partially exempt facilities. The regression includes controls for footprint acreage, effective age, and facility type with robust standard errors. "NYC-LI" means New York City and Long Island

present discounted FMV over 30 years of exemptions at 4% is $12.9 billion.[11] The mean ETR estimate for a football stadium in New York state outside of New York City is $0.0007 per FMV dollar per acre with a minimum and maximum of $0.0004 and $0.0010, respectively. Applying these ETRs to the present discounted value FMV results in a cumulative property tax expenditure cost over 30 years of $117.8 million with a range of $67.3 million to $168.3 million. Adding the $117.8 million to the $850 million proposal means the public's contribution is nearly $1 billion with county taxpayers responsible for about 40%. In addition, taking the present discounted cumulative tax expenditure estimate of $117.8 million and spreading it over the 373,000 taxable parcels in Erie County means on average each parcel pays $316 more over 30 years, or $10.50 per year in real terms.

Another way to consider this cost is on a per capita basis. For the county's 393,000 households, the average cost of the tax expenditure is $10 per year. Moreover, the county's debt commitment is $250 million. Assuming the debt has an interest rate of 2%—the same interest rate as the debt issued to renovate what was then Ralph Wilson Stadium in 2013—the nominal debt service on $250 million is $11.1 million a year. Discounting this future stream of costs at 3%, the per capita debt service alone would cost Erie County residents $22 a year. Including the property tax expenditure cost, then, I estimate county residents will each pay $32 a year under the current stadium agreement. Adding in county residents' share of the state's contribution using the same interest and discount rate assumptions, the per household cost is about $34.50 a year. As a reference point, Hamilton and Kahn (1997) estimated best-case per household annual costs to Baltimore residents of Oriole Park and M&T Bank Stadium of $14.70 and $17.33, or $26.60 and $31.35 in inflation-adjusted terms. They did not include estimates of the teams' real and personal property tax expenditures.

It is tempting to view the $34.50 as trivial, as a small price to pay to keep a team happy. This is a subjective judgment that implicitly compares costs to a subjective judgment about the benefits of hosting the team. Not every Erie County resident believes the Buffalo Bills provide more benefits than costs. For these residents, they would be better off if lawmakers allocated their $34.50 towards some other public purpose, or simply returned the money by lowering taxes.[12] Moreover, even if the opportunity cost of one's time was the hourly minimum wage for upstate New York ($13.20), it would be more expensive at the margin for the average resident to fight the subsidy than not. This highlights the political attractiveness of property tax exemptions specifically and subsidies more generally. Exemptions concentrate benefits and disperse costs. In this case, the Bills benefit disproportionately from

[11] I assume property taxes are paid at the beginning of each fiscal year. While the $720 million is to illustrate how to use the ETR factors, I derived the estimate using costs and opulence adjustments from Allegiant Stadium for the $720 million estimate. Allegiant Stadium is most similar to the Bills' agreement in terms of project development cost and direct subsidy as of the time of writing.

[12] Taxes would have to be reduced in addition to spending levels being reduced. Cutting taxes without cutting spending by an equal or greater amount simply increases budget deficits and accumulated debt.

the public debt and tax expenditure while some residents benefit from the team remaining in the Buffalo area and all residents pay the cost of doing so.

5.6 Chapter Summary

This chapter presented my property tax expenditure estimates for the 105 fully or partially exempt facilities active in 2020. The gross property tax expenditure is the cost of a property tax exemption compared to taxes owed if a facility were taxable and fee-simple owned. The net property tax expenditure subtracts from the gross any property tax payments made under the status quo exemption arrangement. For taxes due in fiscal year 2021, my gross tax expenditure estimate is $695.2 million while the net tax expenditure is $654.3 million. Extending this estimate from a facility's exemption start year to the end of tenant teams' lease, after adjusting for inflation and discounting the cumulative tax expenditure is $18.0 billion. If current leases are extended to their maximum allowed, the cumulative cost is $20.9 billion.

I also demonstrated that the QF method and my approach yield dissimilar property tax expenditure estimates for particular facilities; the former generating larger tax cost estimates in 50–80% of instances. The relative over-estimate is the greatest for football and soccer stadiums. The two methods report the most similar tax expenditure estimates in the aggregate for arenas. Though it is more likely to yield a larger tax cost, the QF approach can be deployed more quickly, since the analysis time and data needs are less demanding. As there is no way to validate either approach in terms of accuracy, future property tax analysis must incorporate an explicit defense of the QF method now that an alternative exists.

Property tax exemptions are government spending by another name. Providing teams (or any entity) a property tax break shifts more of the burden of financing local public goods on to all other taxpayers. That is, if team owners paid property taxes, all other things the same, residents would enjoy more public services at a (slightly) lower average tax cost.[13] If instead a jurisdiction annually reduces its spending levels proportional to the value of the tax expenditure in order to pay for the exemption, public service quantity or quality declines. Either way, the end result is the same: residents forgo other public services in order to provide major league sports.[14] In the next chapter, I use my tax expenditure estimates to determine how much of which public services are affected by facility exemptions.

[13] This does not mean that the cost of public services decreases. It would not. Instead, it simply means the marginal increase in public service cost is paid for by the team's property taxes. I assume economies of scale in public service provisioning as the basis for reduced average tax cost.

[14] In a general equilibrium sense, tax costs are further back-shifted to other local and non-local markets.

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Chapter 6
Public Service Cost of the Tax Expenditure

Abstract This chapter quantifies the public service trade-offs residents face when lawmakers provide property tax exemptions to major league teams. I show that K-12 education is the largest forgone public service, comprising 41% of the estimated property tax expenditure, followed by public safety (19%), and general government (10%). Since all public policies create winners and losers, the public service trade-offs have equity implications to the extent consumers of forgone services are different from consumers of major league sports facilities. I provide some cursory evidence this is the case.

6.1 Budget Trade-offs and Facility Financing

In October 2007, the Congressional Subcommittee on Domestic Policy held a hearing titled, "Professional sports stadiums: Do they divert public funds from critical public infrastructure?" Implicit in this title is the notion of policy trade-offs. Individuals have more wants than resources to achieve them. Given society's scarce resources, how should resources be allocated? Public budgets are a reflection of what politicians value, and if one further assumes that politicians behave consistent with the median voter, then budgets likewise are a window into residents' preferences for different quantities and quality of public goods and services in any given year. Like all spending decisions, allocating a $1 to good X means not allocating that dollar to good Y. Hence, all choices involve trade-offs; all choices have costs. When the Washington, DC city council diverted $32 million from its capital budget to help pay for its portion of Audi Field (Heller, 2015), for instance, lawmakers made it impossible to spend that money on any other use. In order to do so, it must raise taxes, make additional general fund appropriations to the capital budget, or reallocate capital funds to fill the gap, the latter two imposing a general fund and capital investment opportunity cost respectively.[1]

[1] How lawmakers decide which agency or program deserves how much of residents' tax dollars in fact and how such decisions should be made in theory is not within the scope of the current project;

G. Propheter, *Major League Sports and the Property Tax*, Sports Economics, Management and Policy 22, https://doi.org/10.1007/978-3-031-18790-2_6

It is common for lawmakers and teams to argue that there are no budget trade-offs when facility debt is secured by facility-generated revenue. In response to the criticism that public financing of a new stadium for the Seattle Seahawks will crowd out spending on other public goods, the Seahawks owner argued "This vote is not a trade-off. In supporting a new sports and exhibition center, voters are not saying that it is a more important expenditure for our tax dollars than education, public safety and other community services. If the governor's plan does not go forward, the proposed sports item taxes would not be enacted for other purposes" (Griffin, 1997).

There are a few reasons why this reasoning is misleading.[2] Consider a scenario where new taxes (meaning, an increase in an existing tax or the imposition of a tax on previously untaxed activity) finance a facility. Nothing prevents lawmakers or voters from approving the same tax increase but using the proceeds for another public purpose. When Hillsborough County, Florida lawmakers put a sales tax increase before voters in September 1996, they were confident earmarking the revenue for a bundle of public services, not just for a new stadium for the Buccaneers, would improve the chances the levy would pass (Corder, 1998). County schools annually receive 25% of the so-called Community Investment Tax revenue while the Tampa Sports Authority usually receives 6–8% in order to cover stadium construction debt and on-going capital maintenance.[3] Over the tax's 30-year lifespan, it will have provided $290 million (in nominal dollars) for the stadium. County officials could have put the tax before voters without the stadium earmark, thus giving schools the additional revenue. That is, less funding for schools is a trade-off for a new stadium for the Buccaneers.

The Buccaneers stadium also offers a second example for why the argument is misleading. When facilities fail to generate enough revenue to cover their own operating and capital expenses, they require transfers from other sources, often the jurisdiction's general fund. From 2011 through 2021, the Tampa Sports Authority received $24 million (nominally) in transfers from Tampa city and Hillsborough County for operating shortfalls. More generally, any time facility debt is secured with more income-elastic taxes, or facility use agreements lack a commitment from the team to cover facility operating and capital costs, jurisdictions will likely make additional appropriations to keep a facility operational over its lifetime. Long (2013) documents that among active facilities in 2010, nearly half of them were secured by sales and tourism-based taxes, suggesting that many jurisdictions make unanticipated appropriations during economic downturns which is often when

though, I point interested readers to Irene Rubin's *Public Budgeting: Policy, Process and Politics* for an insightful and thorough treatment.

[2] The discussion that follows here focuses on trade-offs in the public budget, not trade-offs forced on individuals by a system of taxation. New consumption taxes change how much of what people buy and where. These trade-offs are crucial for evaluating the efficiency of stadium financing, but they are a separate issue from the budget.

[3] At present, the tax sunsets in 2026, a year before the Buccaneers' lease ends. County officials are considering extending the tax to pay for a new baseball stadium for the Tampa Bay Rays.

communities demand more crucial public services than entertainment options. More recently, Tennessee passed legislation allowing Nashville-Davidson to extend its hotel tax to pay for a new stadium for the Titans. The mayor praised the legislation, arguing "the primary funding source for stadium construction will be the Titans and *visitors* to Nashville and the stadium campus" [emphasis added] (Cooper, 2022). During recessionary periods when tourism declines, the general fund covers shortfalls, imposing an opportunity cost on public services that otherwise would have been better funded.

Facilities may also impose unplanned expenses on jurisdictions, further necessitating general fund trade-offs. For instance, Cobb County, Georgia taxpayers pay about $450,000 each year for additional traffic control outside of the Truist Park mixed-used development, a cost that was not anticipated or built into the stadium lease agreement (Shamma, 2017). Previously, the county estimated the cost would be $900,000 per year (Klepal & Lutz, 2017), but the cost was cut by rearranging officers' shifts to avoid paying overtime. Such a cost is not covered by facility-generated revenue, and therefore requires an additional general fund appropriation.[4] Moreover, shifting officer hours to one area means fewer officer hours spent in other areas, suggesting longer response times to the latter, a social cost.

The foregoing examples highlight the variety of ways facilities can impose budget trade-offs, but they do not demonstrate the underlying argument promoted by the Seahawks that a particular revenue stream only exists because of a facility is specious. Consider the following simple example as a demonstration. Assume a new tax (or an increase in an existing tax or delayed sunsetting of an existing tax) earmarked for a facility generates enough revenue to pay off the debt early. If the tax is reallocated to other public goods rather than allowed to sunset early, then the logic of the Seahawks' argument is that the public goods financed by the tax would not have existed but for the stadium. By way of example, the excess gambling revenue securing US Bank Stadium's debt is deposited into a reserve account, and the account's balance is expected to be $200 million by 2023, prompting a legislative discussion about whether the bonds should be paid off early or the funds allocated to other public services (Cook, 2021). Among the proposed use of funds are $26 million for three veterans' homes and $4 million for a sexual harassment investigation office for state employees. Supposing these use of funds are approved, would the veterans' homes and the sexual harassment office only exist because the state built a new stadium? Of course not. The state could have adopted the same gambling revenue and spent it on these public services without ever having built

[4] A related example is the Golden 1 Center. The arena is located in a pre-existing redevelopment area, and under city law, the property tax growth in the area is earmarked for the Innovation and Growth Fund (IGF), a pool of money to help small business start-ups. The city council passed legislation reallocating the Kings' possessory interest taxes to the facility debt, also allowing the team's tax payments to count against its debt obligation. The city eventually reallocated the IGF dollars to the general fund to help with the city's structural budget deficit. Had the city not approved special legislation counting the team's property tax payments as debt repayment, it would have had more money for small business start-ups and eventually the general fund.

a stadium. Residents also would have received these and other services sooner. Moreover, if the $26 million dollar veterans' homes only exist because of the stadium, then the cost of the homes is really the sum of the cost of the stadium plus $26 million.[5] This is, of course, silly, and the reason why this conclusion is silly is because its premise—that paying for a facility with facility-generated revenue does not create spending trade-offs—is silly.

Though tax expenditures are spending by another name, the trade-offs they force are not in the budget proper but rather in the tax expenditure policy process. Like all spending, property tax expenditures reveal what lawmakers' value.[6] Exempting sports facilities is tantamount to preferring a narrower tax base in order to provide sports rather than, say, narrowing the base to provide property tax relief for homeowners or other businesses, which jurisdictions could do instead of providing a tax break to team owners. Likewise, taxing facilities could raise additional revenue for other public services, or if the tax revenue financed a reduction in the jurisdiction's effective tax rate, then residents forgo the public services a taxable facility would have generated.[7] These are trade-offs, and evaluating trade-offs requires knowing what is given up and what is received in a potential exchange. What is received is obvious: a new major leage facility. In Chap. 5, I provided my estimate for the property tax cost of exempting major league facilities, but this aggregate cost masks variation within and across jurisdictions in the types of public services forgone because of the exemption. I consider this variation next.

6.2 Categorizing Public Services

A necessary part of evaluating the cost to public services is categorizing services across jurisdictions; that dollars to education or public works are categorized the

[5] The marginal cost of the homes is $26 million, but the total cost to obtain the homes, if the stadium was a necessary pre-requisite, is the stadium cost plus the $26 million.

[6] Facilities may be exempt at the local level because of policy decisions made by the state. If a state agency owns the facility, for example, it would still be exempt from local taxation. In such instances, the exemption reveals the preferences of lawmakers imposing the negative fiscal externality, not those on the receiving end. Very few states have laws requiring higher-level governments to compensate lower-level governments for narrowing the local tax base.

[7] When the Nashville mayor promised that "Under no circumstances will property tax increases pay for stadium construction or future stadium maintenance or renovations" (Cooper, 2022), this is word play, turning on how one defines a tax increase. For starters, not increasing property taxes could mean not increasing the jurisdiction's statutory property tax rate, its property tax levy, the average tax burden, or any particular home owner's property tax burden. Because of this ambiguity, so long as one of these things does not occur, the mayor can claim he was being truthful. Further highlighting the word play, if a facility is exempt, then the property tax base is narrower than what it could have been. If you could reduce the average tax burden by expanding the base and reducing rates but choose not to, it is equivalent to increasing taxes even if lawmakers did not pass an ordinance or local law explicitly increasing rates or the levy.

same way in all places. As I discussed in Chap. 4, property tax bills may contain three types of rates: rates for general purposes, rates for special purposes, and fees or parcel taxes. Fees and parcel taxes are levied on parcels, not parcel value. I also discussed my process for calculating implied tax rates for services financed by the general fund.

The next step is to group public services into similar categories, and GASB 34 assists in this. GASB 34 requires that GAAP-compliant governments at minimum classify expenditures in the "statement of activities" sections of the annual comprehensive financial reports (ACFRs) using easily identifiable public service titles. For example, the classification "public safety" is common in ACFRs, and this category may include spending on fire, emergency medical services, police, investigations, prisons, and local judiciaries. GASB encourages jurisdictions to adopt more precise classifications, and thus some may itemize "public safety" into its component services.

While GASB 34 provides a basis for grouping expenditures, it still provides public accountants some discretion in classifying expenditures. Thus, I cannot rely on GASB 34 alone for standardization. As an additional step, I group the categories reported in each taxing jurisdiction's ACFR into a smaller set of categories. Continuing with the public safety example, there are 67 ACFR spending classifications in major league cities for activities involving public safety including the following: administration of justice, city attorney, code enforcement, fire protection, fire district, fire prevention, detention and court support services, and protection of people and property. I group all services like these into a category called "public safety and judicial." I follow a similar logic for all other public services using 2019 ACFRs, a process that reduces 769 itemized service categories into the following 14 categories:

1. Capital expenditures
2. Debt principal, interest, and charges
3. Environmental, conservation, agricultural, water, and flood control
4. General government
5. Higher education and vocational colleges
6. Housing, community, and economic development
7. K-12 education
8. Parks, recreation, and cultural
9. Ports and waterways
10. Public health, hospitals, and sanitation
11. Public safety and judicial
12. Public works
13. Social services
14. Uncategorized spending

Capital outlays and debt expenses pose a classification challenge impossible to resolve fully. GASB 34 requires public accountants to report expenditures for operating, capital outlays, and debt for general government activities as well as the activities of enterprise funds and component units. However, GASB 34 does not

require that capital outlays and debt be disaggregated by activity; though, some jurisdictions do so. In other words, it is impossible to determine how much is spent on capital and debt for each public service for all jurisdictions. For this reason, I group all capital outlays and debt into their own dedicated category.

In addition to categorizing the property tax cost by public service, I also categorize the cost by level of government: municipality, county, special district, and state. Though the property tax is primarily a local tax, some states levy a property tax for state-level public goods. Evaluating tax cost by level of government provides a window into the magnitude of vertical fiscal externalities between higher and lower level governments. If a facility is exempt because it is owned by a state agency, a state policy decision imposes a property tax cost on local residents. Similarly, if a state levies a property tax and a facility is exempt because of local government ownership, a local policy decision imposes a property tax cost on state residents, some of which are also local residents. Given the tax's nature as a local tax, the property tax cost of a state exemption on localities will be greater than the cost of a local exemption on the state, and I can provide an estimate of the difference.

6.3 Tax Expenditure Cost by Public Service

Table 6.1 contains the cumulative property tax expenditure by public service. As with the cumulative estimates in the prior chapter, I report the cost over the life of the current lease assuming no lease extensions as well as the cost if all lease extensions under the current agreement are exercised. Services are ranked by their share of the total. To streamline my discussion, I only report estimates using the 3% discount rate.[8]

Of the $18.0 billion team owners avoid over the life of current leases (measured with a 3% discount rate), 42%, or $7.5 billion, is the cost borne by K-12 education. This comprises the single largest share of the aggregate property tax expenditure, which is not surprising given the property tax's characteristics that makes it ideal for local control (Kenyon et al., 2022). If all available lease extensions are exercised, the cost to publicly funded K-12 education increases to $8.7 billion in real terms. Perhaps a more useful context in which to place these figures is in terms of per pupil spending. There are roughly 6.6 million students enrolled in public schools in the host cities and counties. This implies a cumulative per pupil cost of $1137, or over a 30-year lease, $38 per student per year. At the maximum lease, the per student cost is almost $44 per year.

[8] Since the discount rate does not affect the distribution of estimates across services, interested readers can apply the percentage shares to the aggregate estimates using the 6% discount rate reported in Chap. 5. I also make the data using discount rates of 3, 6, and 7% available online at https://sites.google.com/view/gpropheter/home.

Table 6.1 Cumulative property tax cost by public service

Service type	Current lease	% Share	Maximum lease	% Share
K-12 education	$7506.5	41.7%	$8725.2	41.8%
Public safety & judicial	$3513.0	19.5%	$3977.0	19.0%
General government	$1943.6	10.8%	$2270.0	10.9%
Debt service	$904.2	5.0%	$1100.0	5.3%
Social services	$861.8	4.8%	$1035.3	5.0%
Public health, hospitals & sanitation	$822.5	4.6%	$911.2	4.4%
Parks, recreation & cultural	$635.5	3.5%	$766.2	3.7%
Public work	$635.5	3.5%	$724.1	3.5%
Housing & community development	$413.8	2.3%	$517.6	2.5%
Environment & water	$253.2	1.4%	$298.7	1.4%
Higher education	$279.1	1.6%	$315.8	1.5%
Capital expenditures	$98.5	0.5%	$110.6	0.5%
Uncategorized spending	$79.2	0.4%	$84.3	0.4%
Ports & waterways	$41.2	0.2%	$45.3	0.2%
Total	$17,988.0		$20,881.3	

Notes: Dollars are in millions. Historic dollars are indexed to 2020 with the Consumer Price Index while future dollars discounted at 3%. "Current lease" is the estimated property tax expenditure over the minimum life of teams' leases for all major league tenants at each facility as of 2020. "Maximum lease" is the estimated property tax expenditure if all outstanding lease extension options in the current agreement are exercised. Figures may not sum because of rounding

Also unsurprising is that public safety and judicial comprise the second largest chunk of the property tax cost. With an estimated cost of $3.5 billion and $4.0 billion depending on the lease extension assumption, it is 19% of the total tax expenditure. Unlike K-12 education, though, the public safety and judicial category contains a larger number of unique services—fire, EMS, fingerprinting, family courts, prisoners control, and anti-gang programs. Hence, though public safety bears half of the cost of K-12 education, its cost is spread across many more public services that cannot be standardized beyond these broad 14 categories. Similarly with general government activities, which includes legislative and administrative activities involving design, implementation, monitor, and evaluation of public programs not otherwise categorized.

Noteworthy is the cost borne by parks, recreation, and cultural services. Sports facilities provide passive entertainment whereas parks and recreation departments provide active entertainment. Active entertainment encourages physical activity, which has positive public health benefits. Passive entertainment presumably does not promote these positive external effects. The property tax expenditure estimate indicates that communities give up $636 million in active entertainment to finance $636 million in passive entertainment.

Because different levels of government tend to provide different types and amounts of public services, it is instructive to consider the public service costs

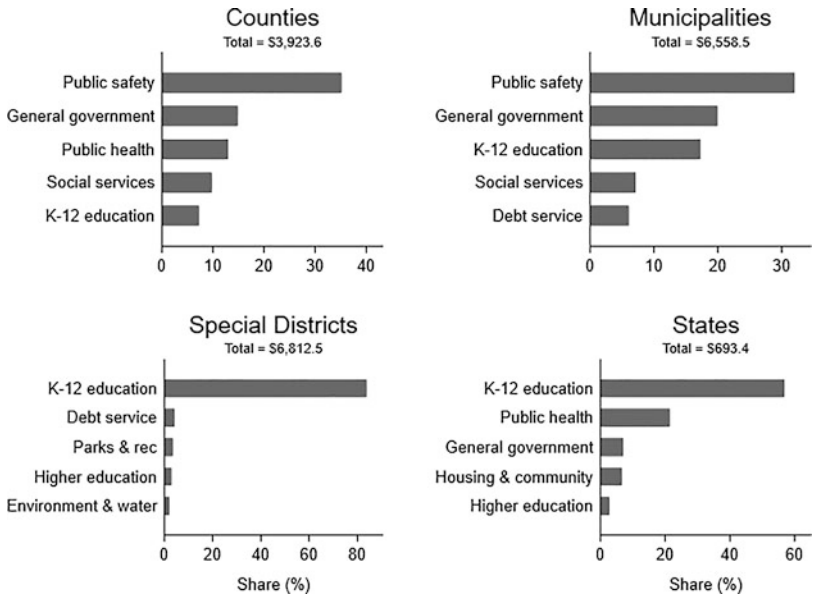

Fig. 6.1 Cumulative Property Tax Cost by Government Type. Notes: The graph shows the share of the cumulative total property tax expenditure by level of government. Dollars are in millions. Historic dollars are indexed to 2020 with the Consumer Price Index while future dollars discounted at 3%. The cumulative estimate is based on the life of the current lease for all major league tenants at each facility as of 2020 assuming no lease extensions

by government type. I group the 14 public service categories by four levels of government: counties, municipalities, special districts, and states. Figure 6.1 shows the top five largest shares of the total property tax cost for each level of government. The data indicate that K-12 education comprises the largest share of the property tax cost for special districts and states. Though K-12 education is a budget line-item for all types of local governments, it is a special district function in most of the US where public education is administered by local school boards. For counties and municipalities, public safety bears the greatest cost.

Since aggregating the cost impacts masks variation within and across state and local governments, I include in Table B.1 in Appendix B a breakdown by facility of the cumulative public service cost using teams' current leases assuming no extensions, besides those already in effect in 2020. Often, prior tax costs are a reasonable gauge of future tax costs, and it is with this in mind that I hope the estimates are helpful to lawmakers and residents in communities considering replacement facilities.

6.4 Public Service Cost Distribution Shares

An important element of this book is providing guidelines for predicting the consequences of property tax exemptions for sports facilities. To this end, I report property tax cost distribution percentages across the 14 public services for each state with at least one major league team in Table 6.2. The figures are state-specific percentages summing to 100% and when applied to an estimated property tax cost reveals how the aggregate cost is distributed across the public service categories. In states where all professional teams are located in the same jurisdiction, such as

Table 6.2 Public service cost distribution percentages by state

	Public service category													
State	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Arizona	0.2	22.8	0.8	1.6	7.0	0.5	45.0			5.5	7.4	9.1	0.1	
California	0.2	10.6	0.2	7.2	1.3		3.2	1.7		20.4	28.2	1.9	24.9	
Colorado	5.7	21.0	1.5	3.5		0.9	50.9	1.2		0.4	9.2	1.1	4.6	
DC		9.6		11.2		5.9	27.6				11.9	9.9	23.8	
Florida	1.0	2.6	1.7	12.9	0.5	1.8	31.4	5.3	0.2	0.8	32.1	5.2	4.0	0.6
Georgia		3.9		9.1		8.5	50.3	2.4		2.2	17.8	2.1	1.5	2.2
Illinois		0.1	5.3	7.2	1.8		41.1	26.3	0.9	0.2	16.4	0.6		
Indiana	5.4	0.2		6.4		0.1	59.5	5.9		8.9	8.6	5.1		
Louisiana	0.4	13.9	19.0	3.7		0.6	31.5	8.3		0.4	19.8	2.4		
Maryland		6.1		15.7	0.3	3.2	15.4	4.0	4.0	4.1	39.5	4.9	2.8	
Massachusetts		3.5		33.7			45.5	1.5			11.6	3.0	1.2	
Michigan	0.7	12.3		2.7		8.9	52.7	5.7		0.7	14.1	2.1		
Minnesota	0.1		0.9	21.2	1.1	4.6	30.2	0.8	0.1	13.2	21.0	5.7	1.1	
Missouri	0.1	5.2	0.7	5.3	2.3	1.1	60.2	7.3		2.1	12.3	0.6	3.0	
Nevada	1.9	18.9		1.9	0.7		26.9	3.4		2.5	25.9	3.8	5.7	8.5
New Jersey	0.3	6.8		7.1	1.0	0.6	47.1	3.8		1.1	19.1	3.7	1.8	7.6
New York			2.0	8.9	0.4	7.0	45.0	5.5		8.5	17.8	4.6	0.1	
New York City		0.1	3.8	25.2	1.3	1.5	31.8	1.2		2.9	12.3	2.2	17.8	
North Carolina		1.4	2.2	14.6		20.3	8.8	2.1	2.5	3.1	27.7	3.3	13.9	
Ohio	0.2	0.1		6.9		0.9	63.5	3.7			21.7	2.5	0.2	0.1
Oklahoma	0.5			17.4	17.7		49.9	0.8		0.4	13.0	0.3		
Oregon	0.4	17.2	0.5	5.1	1.3	14.4	36.4	1.9	0.3	6.8	11.3		3.4	1.0
Pennsylvania		0.2		11.3		0.4	50.8	1.4	1.4	5.9	24.7	2.9	0.9	0.1
Tennessee		21.5		9.2		3.3	40.1	1.2		1.9	19.0	2.4	1.1	0.4
Texas	0.5	0.8	0.6	6.1	4.5		49.9	2.0	0.2	8.5	24.0	2.8	0.1	
Utah	0.6	2.9	5.9	12.9		3.4	44.8	6.7		1.9	17.4	0.3	0.3	2.8
Washington	0.3	1.1	0.9	4.4		3.9	51.8	7.5	1.3	0.8	17.8	8.2	2.0	
Wisconsin	0.4		3.8	11.1	4.1		41.8	4.3		1.6	25.7	3.7	3.7	

Notes: Figures are percentages and may not add to 100 exactly due to rounding. Owing to considerable variation in prices between upstate and downstate New York, New York City is treated as its own state for the analysis. Public service category numbers refer to the public services enumerated earlier in the chapter

in Arizona (Maricopa County) and Michigan (Detroit), the state-level shares really reflect the local level. Note that missing values do not mean the public service is not provided but simply that it is not financed by the property tax directly or financed through general fund appropriations in host local governments. In addition, owing to considerable variation in prices between upstate and downstate New York, New York City is treated as its own state for the analysis. For readability considerations, I chose against further breaking down the figures by level of government; though, from Fig. 6.1 it is clear that most of the cost will be borne by local residents rather than state residents.

As a demonstration, suppose the proposed arena in Tempe, Arizona has a counterfactual FMV of $350 million when completed. Assume a 4.5% annual per acre depreciation rate and discount future taxes at 3.0% as I recommended in Chap. 4. Fixing the 9.4% statutory tax rate (the combined direct rates and implied general fund rates) over time, the present discounted value of the property tax expenditure is $85 million. K-12 education bears 44.4% of this cost, or $38.5 million, while debt service bears 22.8%, or $19.5 million. Applying the respective weights to the aggregate cost in this same way reveals the full distribution of fiscal impacts to residents, where nearly all of the service costs will fall on Tempe and Maricopa county residents.

6.5 Equity Implications

All public policy decisions create winners and losers. Policy winners gain something more desirable while policy losers lose something more desirable. Embedded in policy decisions, then, are implicit, and sometimes explicit, equity consequences. One concerned with equity in policy outcomes will weigh winners' winnings and losers' losses differently; that one person gaining a dollar and one person losing a dollar do not cancel each other out. Indeed, this is one rationale for a graduated income tax. The marginal dollar to a wealthier person means less to them than the same dollar to a poorer person, and as such, the logic goes, the marginal dollar to the wealthier person should be taxed at a relatively greater rate.[9]

Similar equity dimensions are present in the public budget. Since a dollar to one agency or program is a dollar not available to any other, it follows that anyone using a public service that gains a dollar benefits at the expense of everyone else. A person with stronger preferences for the funded service will experience a net increase in well-being while someone with weaker preferences will experience a net

[9] This argument implies money income has an opportunity cost, that each additional dollar received means less than the prior dollar received. This is sensible when money is a means to an end for a person, but it is less sensible when hoarding money is the end itself. A more sophisticated philosophical counterargument is that it is impossible for anyone to know how others value their marginal dollar, and so the theoretical basis for graduated taxes rests on a suspect assumption of interpersonal valuation.

Table 6.3 Attendee and general population household income

Household income	Attendees		General population
	CES	SBRnet	
< $25k	13.4%	4.5%	13.7%
$25–$50k	15.1%	16.1%	23.4%
$50–$100k	28.4 %	30.0%	28.3%
$100 >	43.1%	49.4%	34.6%

Notes: The table displays the share of households reporting attending sporting events and in the major league facilities' host counties. Attendee data are from two sources: the consumer expenditure survey (CES) and the Sports Business Research Network (SBRnet). County household data comes from the American Community Survey

decrease. The latter person would be better off if the dollar were allocated to their more preferred service. Senior citizens, for instance, may believe they are better off with greater spending on public health than, say, schools whereas working parents may have stronger preferences for better schools; both may value larger and cleaner public parks similarly. The public service trade-offs could manifest in a variety of ways: slightly longer response times for emergency services if schools are funded, or slightly larger student-teacher ratios or slightly less prepared teachers if emergency services are funded. These are intended to be simple examples demonstrating that budget decisions will affect different people differently. Moreover, the extent to which people care about such differences depends on the strength of their public service preferences, their attentiveness to costs and benefits notwithstanding.

Within the context of major league facilities, surveys demonstrate that a majority of residents believe government should not contribute any money to pro sports. Connolly and Touchton (2020), for instance, find that 69% of respondents in their national survey reported preferring zero dollars be spent.[10] To the extent these results generalize to all subsidizing communities, it implies that facility attendees win while non-attendees lose.[11] Two equity-oriented policy questions emerge: (1) who wins and loses?, and (2) should lawmakers care? The second question is normative, and thus no amount of data will provide an answer. In contrast, the first question is descriptive and answerable with data.

Table 6.3 presents data on household income distributions between sporting attendees and facilities' host counties. Equity is a concern when those that benefit from a policy look different from those that do not benefit. If facility attendees

[10] Johnson et al. (2001) report in their case study 50% of respondents were not willing to pay anything while Castellanos et al. (2011) caution that conclusions based on the contingent valuation method are sensitive to why respondents reported zero.

[11] I focus on attendees rather than fans more generally, since facility amenities are meant to attract spectators, not television viewers or restaurant patrons.

look like the general population, equity becomes less of an issue, at least along whatever dimension is being evaluated—in this case, household income. The table suggests that major league sports attendance is a normal good; as household income increases, the share of households attending at least one sporting event increases.[12] Moreover, the income distribution of attendees is noticeably different than the general population in host counties, suggesting the property tax exemption (indeed, all facility subsidies) are dollars spent improving the well-being and entertainment options of wealthier residents at the expenses of public services to poorer residents. These data are only suggestive, though, because it is not a comparison of attendees to non-attendees. Attendees are included in the "general population" tabulations, but this also means that the share of wealthier households in the general population is being pulled upward as a result. That is to say that the actual distribution gap among higher income households between attendees and non-attendees is greater than what is noted here. Empirical evidence on this is offered by Whitehead et al. (2013).

This brief analysis is not a replacement for one more sophisticated using individual-level income. Moreover, the data do not indicate that poorer households do not benefit from major league sports at all. They might. But on net, once the opportunity cost of forgone public services are accounted for, they will not. While no data yet exists that I am aware of to offer empirical insight on this point, the underlying theory is sound. Public services are either normal or inferior goods—the former being a good whose demand increases with income and the latter being a good whose demand increases as income declines. Every dollar allocated to a particular normal public good is a dollar forgone by all other public goods, including inferior public goods. Given any particular normal and inferior good, the more dissimilar the consumers between the two, the greater the equity trade-offs and implications of financing one service over the other. Consider that an essential inferior public good for much of the population is public education (Epple et al., 2004), with less wealthy families being more likely to use public schools than are wealthier families. Emergency medical services also appears to be an inferior good as are libraries in some cases (Vogel et al., 2022; Hemmeter, 2006). By extension, then, every public dollar allocated to construct and maintain facilities more heavily used by the wealthy is a dollar forgone by schools, EMS, and libraries that are utilized more heavily by the less wealthy.

Of course, this argument is not unique to subsidies for professional sports, since every allocation costs some other service and service users something. A strict economic perspective contends that the bundle of services that enhance net community benefits should be funded. This perspective, though, ignores the arguably more important policy questions of who gains and who loses. Too often do lawmakers, consultants, and economic policy analysts get caught up in defending facility subsidies on utilitarian grounds, that the net harm to some is less than the

[12] The SBRnet data are specific to major league attendance whereas the consumer expenditure survey data covers sporting event attendance more generally. Both data sets reveal a monotonic increase in the share of attending households with similar magnitudes.

net benefits to others. Though a utilitarian perspective has a place in subsidy policy design and ex ante evaluations, if lawmakers allow it to dominate subsidy policy discourse, they create a decision-making environment that all but ensures the lesser well-off remain the lesser well-off.

6.6 Chapter Summary

Exempting team owners from property taxes costs residents tax dollars for themselves or for public services they otherwise could have received. Which public services and how much revenue is forgone for each is an empirical matter I tackle in this chapter. I estimated that 42% of the cumulative $18 billion in property tax expenditure is paid for by K-12 education services. Moreover, K-12 education, public safety and judicial, and general government functions combined comprise almost three-quarters of the total property tax cost. Unsurprisingly, since the property tax is foremost a local tax, counties, municipalities, and special districts bear 97% of the total cost. I also presented guidelines useful for ex ante evaluations of how the property tax cost is distributed across public services. Notwithstanding the distributional budgetary effects, since property tax exemptions finance one particular type of public service at the expense of others, there are clear equity implications when facility users and users of forgone public services are not the same. I hope future subsidy debates give greater consideration to equity concerns.

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Chapter 7
Conclusion

Abstract My goals in this concluding chapter are twofold. First, I review what I think are the most important policy takeaways from the preceding chapters. While I have provided a number of quantitative estimates for various aspects of facility subsidy debates, I think the more helpful insights for policy analysts involve correctly framing and understanding the measurement of property tax expenditures. Second, I draw attention to aspects of the public financing of sports facilities that this book raises but does not answer. Some of these matters bear on the property tax directly; others are tangential. I hope this chapter inspires future research.

7.1 Key Takeaways

7.1.1 Takeaway #1: Property Tax Exemptions Are a Cost

It is inevitable that subsidy proponents will argue that the property tax expenditure for a facility is near zero because had the facility not received an exemption, it would not have been built; that only the property taxes on the land before a facility's development would be a cost, not the facility itself. Subsidy proponents apply this logic to tax revenues generated by a facility more generally, as Bradbury (2022) discusses in the case of Truist Park in Cobb County, Georgia.

The "property tax breaks cost nothing" argument is faulty. The most general reason is that every choice has an opportunity cost. The tax break given to a team could have been given to anyone else for perhaps the same or greater social benefits. The benefits society gives up by exempting a team from the property tax is a cost. A more specific to pro sports reason is that the argument assumes tax breaks are necessary to finance facility construction. They are not. Whether a team owner receives a dollar via a tax break or a present equivalent dollar of government-backed debt, for instance, does not change the fact the owner receives a dollar. How an owner receives a public dollar is an inframarginal policy decision distinct from the marginal policy decision of how much subsidy support to provide. A facility

G. Propheter, *Major League Sports and the Property Tax*, Sports Economics, Management and Policy 22, https://doi.org/10.1007/978-3-031-18790-2_7

decision may turn on the latter but not the former.[1] A jurisdiction could increase its upfront construction contribution equal to the present discounted value of the property tax expenditure so that a team owner is no worse off with or without the tax break, for instance. Or perhaps the government agrees to send a check to an owner each year as reimbursement for property taxes paid on a fully taxable facility and land.[2] Again, the team owner's financial situation would be unchanged, but now the tax break shows up in the jurisdiction's budget as an appropriation. These examples simply show the property tax expenditure is just another form of spending. It therefore follows that property tax exemptions are a debit against the public fisc, and a tax burden to be borne by a community, like any other budget decision.

Sometimes a facility is built on land that is already exempt from property taxes, in which case one might argue the property tax expenditure is zero. This conclusion is dubious for two reasons. The first is that why and when the property became exempt seems to matter. As part of the subsidy agreement to build AT&T Stadium (and previously the Rangers' former home now known as Choctaw Park), it was the city of Arlington's responsibility to acquire the land for the stadium, which obviously must happen before site preparation work on those parcels. The city did not own the entire stadium site until 2007, about two years before the stadium opened. Because the properties were taxable before the city took ownership, and further because the city only took ownership as part of the stadium agreement, it is inappropriate to conclude the property tax expenditure in such instances equals zero. The facility land is only exempt because of the team.

The other common scenario is that a facility is built on land whose exemption status is independent of a sports facility. The city of Tempe, for example, is considering a new facility for the Coyotes on a vacant parcel that previously was a landfill. In such cases, the property tax expenditure is zero but only if one assumes that it is legally impossible for the government owner to sell the property. This is an unreasonable assumption except for the hyper-rare cases where the land is under a deed restriction preventing ownership transfers or alternative uses.[3] Joe Robbie, for instance, constructed Hard Rock Stadium on land donated to the county for the express purpose of leasing it to the Dolphins for $1 a year. In the absence of a deed restriction the government owner could simply sell the land to a private developer, returning the property to the tax roll. With the tax base expanding, all other things equal, the jurisdiction could reduce its property tax rate, thereby reducing property owners' tax liability, or increase its revenue for additional public services, all other

[1] There is a healthy literature on tax incentives for businesses concluding that in most instances tax breaks carry little weight in the business location decision. See Bartik (2019), Buss (2001) and Kenyon et al. (2012).

[2] In this scenario, the owner still has no incentive to appeal an assessment, since it receives a rebate on the full amount. Nor does the assessing jurisdiction have an incentive to monitor assessment quality. The way around this is to follow Franklin County's example with Nationwide Arena and offer a rebate of 99% of taxable AV, or some other fraction.

[3] Since deed restrictions often stipulate conditions for removing the restrictions, they are not binding in the strictest sense.

things equal. These possibilities are forgone when a jurisdiction decides to keep property under government ownership.

I suspect the reason why non-economists tend to find the "property tax breaks cost nothing" for sports facilities compelling is because it requires reasoning through policy decisions beyond the world as it exists in fact, which is not intuitive. Economic training prepares analysts to consider the world as it could be given different policy decisions. Public policy could be different. Lawmakers do not have to use sports facilities to revitalize under-utilized land. Tempe could sell the landfill site to any private developer at a heavily discounted price to compensate for the necessary remediation, rather than pay the cost to remediate in preparation for the Coyotes' arena. When analysis is limited to the world as it is, ignoring the world as it could be, lawmakers may fail to appreciate that the same policy goals can be achieved (such as land revitalization), perhaps at lower cost.

7.1.2 Takeaway #2: The Property Tax Cost Is Considerable

I have estimated the property tax expenditure for major league facilities for fiscal year 2021 cost taxpayers $654.3 million, and the cumulative cost through the end of teams' current lease, without extensions, is $18.0 billion. For the average facility, this equates to an annual cost of $6.2 million per year. For the median facility, the cost is $5.0 million.

To place the cumulative tax cost figure into context, compare it to the subsidies state and local governments grant other businesses. For instance, in 2013 Washington state signed into law a subsidy package for Boeing valued at $8.7 billion nominally through 2040. The subsidy is delivered through a variety of policy mechanisms at multiple points in the commercial airplane supply chain running through the state: a reduced business gross receipts tax, exemptions from sales and use taxes, and exemptions on property taxes and leasehold excise taxes, when applicable.[4] The state's annual comprehensive financial reports indicate that Boeing received $107 million and $119 million in gross receipt tax breaks in 2018 and 2019, respectively.

The non-profit group Good Jobs First (GJF) catalogs such preferential tax breaks using information provided by awarding governments. Based on their data for the 27 states with at least one exempt major league facility, state and local governments have agreed to provide over $189 billion (in 2020 dollars) in tax breaks to businesses since 1990.[5] Because property tax exemptions for government-owned property are

[4] In March 2020, the business gross receipts tax break was eliminated at Boeing's request in order to bring the company into compliance with the World Trade Organization's rulings.

[5] The $189 billion figure is based on all preferential tax breaks in the GJF database awarded by a state or local government in a given year. The figures do not represent actual outlays in a given year but rather a commitment to provide the tax breaks over some period of time. I adjust dollars to 2020 using the Consumer Price Index.

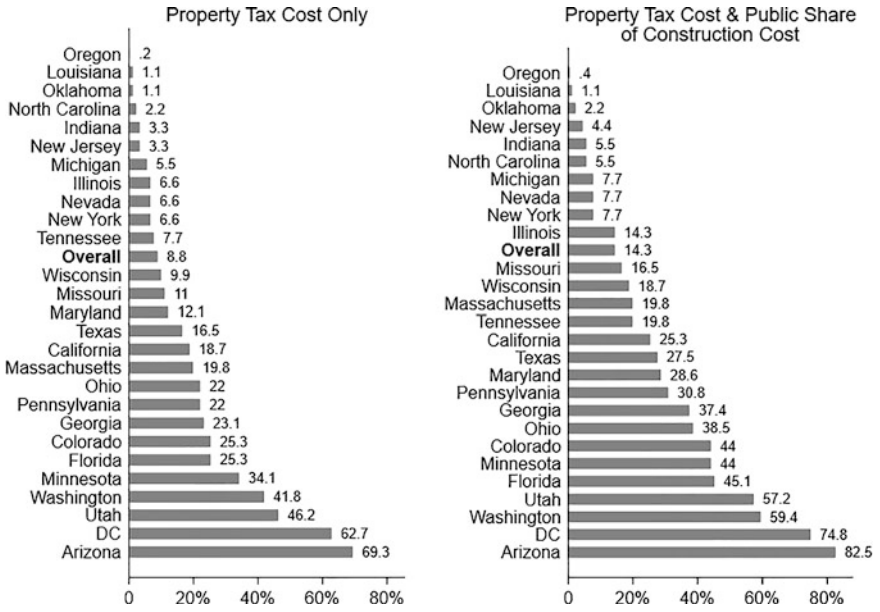

Fig. 7.1 Estimated share of total subsidies Notes: The graphs show the cumulative property tax expenditure (left) and the sum of the tax expenditure plus the public's share of construction cost (right) relative to the total amount of preferential subsidies awarded by state and local governments to businesses using the Good Jobs First subsidy tracker database. GFJ subsidies are present value discounted committed dollars in the year of commitment. The total subsidy denominator includes the property tax cost and construction cost when applicable. Both numerator and denominator reflect cumulative dollars since 1990 through 2019. All dollars used in the calculations are indexed to 2020

not often quantified and cataloged as preferential tax breaks, the tax cost of such exemptions are not included in governments' tax incentive reports. Adding my $18.0 billion cumulative estimate to this tally, which corresponds roughly to the same 30-year period as the GJF data, implies that franchise owners as a whole receive in property tax breaks alone almost 9% of preferential subsidies awarded to targeted businesses. Including the public's share of construction costs (deflated to 2020 using the RS Means cost index) to this tally increases franchise owner's share of all subsidies to 15%, a figure that does not include interest payments (Fig. 7.1).

There is variation across the country in terms of the share of the property tax cost with Arizona and DC providing the greatest share relative to all subsidies while Oregon and Louisiana the smallest share. The possible reasons for these patterns vary; though, the most obvious explanations are variation in the number of exempt facilities and state and local governments' penchant for providing subsidies. Excluding the sports facility subsidies, Louisiana, for instance, has committed the largest cumulative subsidies in the GJF database in 2020 dollars at $33.4 billion from 1990 through 2019. Arizona, in contrast, has committed the fourth smallest cumulative subsidies at $388.8 million. With Arizona having four major league

facilities and Louisiana having two, much of the difference between these two states can be explained by facility counts and propensity to award subsidies to businesses.[6]

7.1.3 Takeaway #3: Do Not Trust the Tax Roll

Academics and journalists commonly use roll values as the basis for property tax exemption costs, but doing so will tend to overestimate the tax expenditure. Aside from the roll being useless when a jurisdiction enters a zero value because the property is exempt, tax rolls will tend to overstate exempt valuations for two reasons. First, assessors have no incentive to allocate resources to accurately value and monitor property that generate no revenue for their budget. The marginal administrative cost will always exceed the marginal administrative benefit. Second, even if one were to make a compelling case assessors accurately value exempt property, property owners have no incentive to challenge valuations when the expected tax benefit of a successful appeal is zero. In cases where a roll value is entered by never updated, the value is obviously nonsensical.

In order to accurately value exempt property, assessors and owners would need to behave as though it were taxable. It is costly in terms of time and resources to create a situation closely replicating the counterfactual, to create an administrative process that involves property owners. To do so, lawmakers need to appropriately fund exempt assessment administration in order to get a better idea of how much assessed value is left off of the tax roll due to government and non-profit property ownership. The Boston Assessing Office's efforts to more accurately assess higher education and hospital property in 2009 is one example worth modeling. Absent such funding, roll values offer the most expeditious window into a property tax expenditure's magnitude, but analyses should qualify the reported tax expenditure accordingly.

[6] Arizona's constitution has what is known as the Gift Clause, a provision that limits the circumstances under which the state and local governments can give financial incentives to private businesses. While legal decisions have not prevented teams and governments from forming public-private partnerships with terms more favorable to the former, it does place a formidable barrier to giving some of the public purse to private interests, a likely factor in Arizona's low subsidy giveaways relative to the rest of the country. The state supreme court's recent decision in *Schires v. Carlat* (480 P.3d 639 (2021) 250 Ariz. 371) further strengthened the Gift Clause by excluding indirect benefits ("being a major league city," for instance) as part of the tax incentive justification. Contrast this with the US Supreme Court's decision in *Kelo* (see Chap. 2), which allowed indirect benefits to count.

7.1.4 Takeaway #4: Static Scoring Overstates the Tax Cost

Property tax expenditure scoring can be static or dynamic. In the former, one assumes the facility in the counterfactual is identical to the facility in fact. From this starting point, the property tax expenditure equals the property taxes on the assessed value of the facility as it currently exists. If the facility has an assessment on the roll, Takeaway #3 notwithstanding, the static tax expenditure equals the assessment multiplied by the statutory tax rate minus any current payments. In the latter, one assumes team owners change their behavior when granted an exemption; that the facility as designed and constructed looks different when the team owner faces the full marginal cost of each construction and operation dollar than when part of the marginal cost is paid by government.

Economic theory and empirical evidence supports the logic of dynamic scoring. Theory stipulates that people change their behavior as the expected costs and benefits of alternatives change, assuming they have control over their choices and also have full information about the costs and benefits. For team owners this means having sufficient control over the location, design, construction, and lease arrangement that they can capitalize on subsidies to buy more facility, so to speak, than they otherwise would if they had to pay all facility expenses themselves in perpetuity. Propheter (2017) provides empirical evidence supporting this theory.

The implication for property tax expenditure scoring is that the assumption buttressing static scoring—that team owners' facility construction and design choices do not turn on the facility's exemption status—has no merit. Subsidies induce behavioral responses that increase facilities' FMV, and therefore removing the subsidy-induced FMV has the effect of reducing the counterfactual assessment relative to that of the exempt facility as it is built in fact. The only reason one should consider static scoring is for lack of time, and the analysis should be accompanied by an acknowledgement that the static score overstates the true tax cost, all other things equal. Ideally, a static score is accompanied by an exposition discussing the potential magnitude of the overestimate as well as a sensitivity analysis.

7.2 Property Tax Exemptions and Team Philanthropy

In the opening chapter I discussed the subsidy theory of property tax exemptions: that government provides exemptions to non-profit organizations to encourage them to undertake activity that taxpayers would otherwise provide but at presumably greater average cost. Exemptions from this perspective are only justified if organizations provide more in public services than the value of the exemption. Subsidy debates often frame property tax exemptions as a giveaway to owners, not as a policy tool to encourage teams to engage in philanthropic behavior. And yet CSR initiatives

in the major leagues raises the question whether property tax exemptions can be defended on charity grounds.[7]

To evaluate this possibility, I calculated teams' charity spending-property tax expenditure gap, expressed as a ratio of the former to the latter. Teams that earn their property tax break from a charitable giving perspective will have a ratio equal to or greater than one. Charitable giving data come from Form 990 returns that tax-exempt organizations are required to file on an annual basis. I focus on 990 data for 2019 to align the charity spending with the property tax expenditure estimates.

Teams' 990 data and the analysis require qualifications. Foremost, I aggregated all 501(c)(3) spending together. Though data through the forms are disaggregated into spending on charitable purposes, administration, and overhead, there is considerable variation in the spending detail teams provide, making it impossible to standardized the spending categories across franchises. Nevertheless, I think it is crucial to count spending on charity administration as charity spending, since the non-profit bureaucracy is necessary for making decisions about how dollars are allocated. Moreover, about 10% of the franchises active in 2019 in the five major leagues did not have tax-exemption charity arms. These teams still provide charity but by making contributions through a private fund or by funnelling dollars to an otherwise unaffiliated 501(c)(3) non-profit to make disbursements. To the extent possible I collected what charity spending data I could in these cases. The Miami Heat, for example, have a private charity fund and makes some of the spending available on its website, from which I estimated the team's 2019 charity spending at $576,300. Another example is the Arthur Blank Foundation, which makes contribution to programs associated with the Atlanta Falcons and Atlanta United; the teams themselves do not have tax-exempt charity arms. In these sorts of cases, because the parent foundation donates to other non-franchise causes, I use only the expenditures made on behalf of teams.[8] Finally, I ignore charitable spending by players' associations. Though they are tax-exempt, these organizations' main purpose is to support current and former players, not provide services with a wider public good. While players associations' may make contributions to the broader public, unless they are itemized in the 990, they are excluded. Leagues themselves may have charity arms, and I include these dollars by apportioning funds according to host jurisdictions' relative population.

It is also important to highlight that the charity-to-property tax break ratio does not perfectly measure what I intend. On one hand, I overestimate the charity ratio by focusing exclusively on property tax breaks. As this is not the only type of tax break

[7] Since taxpayers have no say over how teams allocate their non-profit funds, property tax breaks shift spending on public services taxpayers desire, as revealed through the local policy process, to services they may not desire or have no control over.

[8] Another example is the Kansas City Chiefs, which is owned by the Hunt family. In 2019 the team made a $580,000 donation to the 501(c)(3) Hunt Family Foundation; the team does not have a tax-exempt charity arm. From 990 records, I do not know what the Foundation did with the money, but I assume it was spent on the organization's social mission, in which case the Chiefs indirectly made a charitable contribution.

Table 7.1 Ratio of charity giving to property tax expenditure, 2019

League	Teams	Mean	Median	Minimum	Maximum
MLB	26	0.443	0.223	0.027	3.488
MLS	12	0.834	0.185	0.009	4.194
NBA	23	0.657	0.190	0.003	6.173
NFL	26	0.872	0.143	0.004	8.956
NHL	18	1.214	0.550	0.015	9.487
Total	105	0.773	0.243	0.003	9.487

Notes: The data reflect the ratio of charity given to the estimate property tax expenditure for teams. Since the property tax expenditure is inflation-adjusted to 2020 using the Consumer Price Index, I make the same adjustment for charity giving. Charity spending data come from IRS Form 990 for 2019. Teams playing in fully taxable facilities are excluded from the table, but every fully taxable team reports charity expenses. There are 17 teams in 13 fully taxable facilities in 2020, and the average charity giving in 2019 among these was $2.9 million and the median was $1.7 million

owners benefit from, the denominator in the ratio will be smaller than what it is in fact. On the other hand, I underestimate the charity ratio because the accounting of charity spending through channels not documented in 990s is incomplete. The numerator in the ratio, then, will be smaller than it is in fact. I believe the charity ratio is more likely an overestimate than an underestimate since the volume of tax breaks and other subsidies excluded is much greater than the volume of charity excluded. It is better to overestimate the ratio, since overestimating means I am being as charitable (pun intended) as possible with respect to minimizing the denominator. If a team fails to provide enough charity equal to or greater than its property tax exemption, then it certainly does not provide enough when all other subsidies are included.

In Table 7.1, I report the mean, median, minimum, and maximum ratio by league for US-based teams playing in fully or partially exempt facilities in 2019 whose charity giving data were available. Across all 105 included teams, the average ratio is 0.773 and the median ratio is 0.243. The difference between the mean and median signals considerable dispersion in the ratio distribution. The interpretation of the ratios is as follows: for every dollar in property tax breaks the average team received in 2019, it provided 77 cents in charity giving, primarily to local causes. The median team gave 24 cents. Looking across leagues, NHL teams are consistently the closest to earning the property tax exemption from a charity standpoint while the median NFL team is the furthest.

A word is in order about the ratios reported in the maximum column. Since property taxes in 2019 are a function of facility age, we should expect to find in any given year greater ratios for teams playing in older than facilities than in younger facilities, all other things equal. In addition, teams that pay property taxes only on the value of land or pay possessory interest taxes will have greater ratios than those that pay no property taxes. Of the 105 teams, 15 have ratios greater than one and

13 of these pay some property tax.[9] Finally, one should be careful in extrapolating beyond a single year's worth of data. Because charitable giving varies from one year to the next, a team's charity ratio will likewise vary over time. What the data in Table 7.1 show is that very few teams can justify their property tax break in 2019 on charity grounds. Over the life of a property tax break, teams may earn the exemption, but the amount of giving in past and future years would have to be multiples greater of 2019 giving in real terms for this to be the case.

I have excluded teams in facilities that are fully taxable from Table 7.1 as a matter of algebra; dividing by zero is undefined. But there are 17 US teams that play in these facilities, and all of them made charitable contributions in 2019. The average contribution from these teams was $2.9 million compared to $1.7 million for the 105 teams in the full and partially exempt facilities. The medians were $1.7 million and $1.0, respectively. That teams paying full property taxes have greater charity expenses than teams paying less than full property taxes further suggests the charitable contribution justification for tax exemptions has no merit.

7.3 Should Team Owners Want to Pay Property Taxes?

As I have noted throughout the book, tax expenditures are spending by another name. I further argued that a team owner would be indifferent to a dollar in property tax breaks and a dollar delivered through any other mechanism. The benefits of subsidizing team owners through the tax code are political, accruing to lawmakers by obfuscating facilities' true cost. It is an empirical question whether team owners are indifferent to the subsidy delivery mechanism, but it is sensible to nevertheless ask if they should be indifferent. There are three compelling reasons why team owners should want to pay property taxes.

The first reason is that team owners would be able to shift much of the property tax liability onto others. Research suggests that attendance is relatively price inelastic, meaning that a small percentage change in ticket prices results in a smaller percentage change in attendance (Coates & Humphreys, 2007). Since property taxes are a factor cost, revenue-maximizing team owners will forward-shift as much of the tax as consumer demand allows. Hence, attendees will pay—in the economic sense—for some of the team's property tax liability. The portion of the tax that cannot be forward shifted will be backward shifted, perhaps to players, staff, or facility workers in the form of shorter contracts, lower wages, or the like. Any portion remaining will fall on the team owner, resulting perhaps in a less opulent facility or smaller footprint. That is, like any other business, the team owner will try to avoid as much of the property tax as possible by making others pay for it. The

[9] The two teams that pay no property taxes and had charitable contributions greater than their property tax expenditure in 2019 were the Pittsburgh Penguins and the Houston Astros.

more inelastic demand for professional sports, the less of the tax team owners have to bear.

The second reason is that team owners have some control over their property tax liability through the assessment appeals process, a feature unique to the property tax. Property owners in almost every state have three administrative remedies to cure assessment inaccuracies: an informal review by the local assessor, a formal review by a local assessment appeals board, and a quasi-judicial de novo review by a state-level appeals board. Teams remaining unsatisfied with the outcome must take their case to the courts. Remedies are sought in this order, and teams historically have great success in reducing their assessments. A successful appeal improves the chances owners can shift the entirety of their property tax burden onto others, since the amount needed to be shifted decreases.

The third and perhaps least appreciated reason is that doing so could build good will among voters, providing political capital for future subsidy decisions. Wang et al. (2022) conclude in an empirical study that firms perceived as more politically risky engage in less tax avoidance behavior, implying some political benefits accrue to these businesses by paying taxes. Borges and Ramalho (2022) review literature and theorize that CSR initiatives are a strategy for building political capital, and Babiak and Wolfe (2009) show that CSR initiatives among major league team owners are a result, in part, of receiving tax breaks. These studies point to the possibility that teams owners would enjoy political benefits for paying property taxes.

Rational owners would weigh the political benefit of paying property taxes against the sum of the taxes and the political cost of being a tax avoider. Given that owners enjoy a legislative environment that appears to grant their subsidy requests seemingly willy-nilly, there appears to be no political cost to them of being tax avoiders.[10] From the prior section, I showed that the median team owner already pays about a quarter of its $5.0 million (in 2020 dollars) annual net property tax exemption in the form of philanthropy. If paying property taxes buys political capital, then the median owner must value the political benefits at a minimum of $3.8 million a year. Over a 30 year lease and discounting future dollars at 3%, the cumulative political benefit must be worth at least $77 million. In other words, paying property taxes is financially justifiable to the median owner, first, if they do not change their charity spending or the amount of property taxes they currently remit, and, second, if they can extract more than $77 million in subsidies by framing themselves as a property tax-contributing business. Suppose a community is willing to give a team owner with sufficient good will $150 million and an otherwise similar team owner without sufficient good will $50 million. All other things equal, the value of good will is $100 million, and the median owner is better off spending $77 million on taxes in order to gain $100 million in additional subsidies.

[10] Subsidies decided by lawmakers are almost always approved whereas subsidies decided by voters are more split. See Propheter and Hatch (2015) for no-vote and referenda vote outcomes.

This is, of course, entirely theoretical. There is no empirical evidence to date valuing how much residents care about businesses paying property taxes, nor is there any reason to believe that team owners struggle to get what they want from state and local lawmakers. Remitting only a small fraction of the property tax expenditure appears to be adequate, and so long as this remains true, owners have no incentive to pay property taxes. The benefit of being perceived as contributing members of society appears to be too small, so owners face little incentive to invest in this outcome.

7.4 Land Banking for Sports Facilities

With the exception of Madison Square Garden, every facility receiving a property tax exemption, full or partial, has in common publicly owned land. Notwithstanding the property tax implications of publicly owned land, there is a broader normative question of whether government should be a land owner in the first place. Public land ownership requires taking from private ownership, sometimes through a voluntary transaction but more often through eminent domain. This is a distinction of *how* government acquires land, though; not whether it should be in the land owning business in the first place. While government needs property to carry out its core function of providing public services, it does not follow that it must own the property or land to do so. It could be a permanent lessee.

The economic case for public land ownership turns on whether the net social benefit of owning is greater or less than the net social benefit of leasing. If greater, owning is more appropriate; if less than, leasing is more appropriate. Long (2013) argues that public ownership of sports facility land is crucial for improving governments' sports subsidy outcomes. By retaining ownership, government can re-purpose the land at the end of a lease, presumably for another social benefit.

I am sympathetic to the logic of so-called land banking, but I have reservations. Perhaps my greatest issue is with purchase options, lease terms that give team owners the option to purchase the land and stadium at the end of a lease. The Sacramento Kings have the option of purchasing the Golden 1 Center and its land for one dollar. The Texas Rangers have the option of purchasing the Globe Life Field stadium complex and land equal to the difference between $100 million and the sum of the team's cumulative rental payments, stadium operating expenses, and any other project costs paid for by the team. The price cannot be less than zero. The team is obligated to pay $66 million nominally in annual rent alone over its 33 year lease. The balance will easily be covered by other expenses, ensuring the team receives the land for free. The Colorado Rockies and the Atlanta Braves have similar purchase options. While sale prices are not codified in the respective leases, the quasi-public owners must sell to the teams upon request or if desiring to sell to a third party, the same offer must first be made to the teams. Purchase options are akin to lease-to-own schemes, but in the case of major league facilities, teams owners pay little to no property taxes while a lessee and then gain ownership of land

at a heavily discounted price in the future. One cannot justify public ownership of facility land on land banking terms when teams enjoy an advantageous or exclusive purchase option compared to other would-be buyers.

If there is no purchase option, the logic of land banking is more sensible, assuming lawmakers are transparent about the cost to residents of the property tax expenditure. In Columbus, Ohio and Washington, DC, lawmakers swapped city-owned land with private landowners in order to put together the parcels needed for new soccer stadiums. Using public land as a trade chip can reduce a government's overall cash subsidy. Government can acquire the facility land through trade, and so long as lawmakers do not divert the dollars that would have been spent on land acquisition to facility construction or facility infrastructure, total public contribution decreases. That being said, there could be a difference in the current market price and appreciation trajectory of swapped parcels, thereby making land swapping more costly. Columbus, for instance, swapped a 7.55 acre parcel for a 4.8 acre parcel, the latter for Lower.com Field, an exchange that cost the city an estimated $3.4 million (Bush, 2019).

Public land also comes with social opportunity costs. Developing it for social purpose A prevents it from being developed for social purpose B for some time. If the highest and best social use of public land is for professional sports, the development opportunity cost does not warrant an alternative use. Academic research has yet to uncover the characteristics of the socially optimal location for major league facilities, but there is always an alternative land use that could provide a community economic benefits.[11] Consider that before announcing the Belmont race track as the site for UBS Arena, the quasi-governmental New York Empire State Development Corporation issued a request for proposals (RFP) for the site in 2012. It received four bids, one from the New York Cosmos, a soccer franchise in the low-level National Independent Soccer Association and the rest from non-sport developers. All bids centered around retail, restaurants, and community play areas. The state terminated the RFP in December 2016, and a few months later after meeting with officials from the Islanders, announced a new RFP (Winzelberg, 2020).[12] The Islanders' proposal was ultimately accepted. Comparing the 2012 bids and the Islanders' bids, the most substantial difference is the arena, a facility for private use that replaced proposals for youth soccer fields, playgrounds, and other community space. This community space is a development opportunity cost of UBS Arena.

Purchase options and development opportunity costs suggest land banking for sports facilities could be shortsighted. An alternative is to deed public land to the

[11] A modern perspective is that sports facilities should be integrated into neighborhoods and serve as anchors for larger real state development. This view is in contrast to building facilities in less urbanized space and surrounded by parking lots. The social benefits of integrated facilities, such as creating a thriving downtown, are greater than when facilities are located outside of urban cores. However, the social costs, such as congestion, crime, and so forth, are also greater. Whether the net social benefits of an integrated facility exceed those of a non-integrated facility is unknown.

[12] Information on the 2012 bids is provided by Winzelberg (2016).

team, perhaps at a discounted price to compensate for any land remediation or as advanced reimbursement of future property taxes owed. Doing so would also save government money on insurance and other overhead charges associated with land and property management. The specific circumstances surrounding a proposed facility site, the host government's fiscal health, the community's needs, and the demands of a team should dictate the appropriateness of land banking.

7.5 Do Subsidized Facilities Create a Debt Illusion?

Subsidizing sports facility construction could create a debt illusion, prompting a general increase in public spending and growing the public budget. Debt illusion is a form of fiscal illusion, which is the theory, broadly, that residents underestimate the real cost of public services. As a result, lawmakers have an incentive to increase spending in excess of what more attentive residents would otherwise demand. Fiscal illusion theories point to residents' imperfect information about public programs, but explanations as to why their cost information is imperfect varies. The most common economic argument is rational ignorance—that the marginal cost to residents to acquire additional program cost information is greater than the marginal benefit of having said information. Consequently, residents intentionally do not seek out more precise information on the true cost of policy choices.

Imperfect information and rational ignorance alone do not lead to fiscal illusion; lawmakers must take advantage of residents' indifference. Oates (1988) notes that this can happen by designing tax systems to be more complex or by designing tax systems to rely more heavily on income-elastic revenue streams. Both increase residents' policy information search costs, thus providing lawmakers additional insulation from public scrutiny. Lawmakers could respond to residents' inattentiveness by designing simpler tax systems, ones that require less time and resources for residents to track. Failing to do so is a political benefit to lawmakers.

Debt illusion is borne from the same theoretical roots—that residents are inattentive and lawmakers exploit this to grow the budget. But the mechanism is different. Instead of a tax system's complexity or its relative income elasticity, debt illusion arises from residents underpricing a debt-financed dollar relative to a dollar from current revenue. The argument here is that if residents ignore or underestimate the future tax cost of debt, perhaps mistaking a loan for a grant, then they will believe the average cost per unit of the debt-financed good to be less than the average cost per unit if the good were financed from current revenue. If residents are well informed about the cost of debt, then they will correctly see paying a dollar in taxes today and paying the discounted present value of a dollar in the future as equivalent. Of course, assuming residents are rationally ignorant, then lawmakers' mispricing

the future tax cost of debt would lead to them over-approving debt-financed services (in terms of dollar value) relative to what would be provided from current revenue.[13]

The empirical evidence of debt illusion is mixed, and it appears to be sensitive to the outcome being evaluated (Banzhaf & Oates, 2013). Two implications of debt illusion are, first, local expenditures are greater when more of a jurisdiction's bundle of public goods are financed by debt than current revenue, and, second, the future tax liabilities attached to debt payments will be capitalized into housing prices, assuming mobile residents. If residents are aware of future tax obligations and are making decisions at the margin with reasonably complete information, those payments will be fully capitalized into home prices (Oates, 1988). Dollery and Worthington (1999) find greater public spending in jurisdictions more reliant on debt while Dollery and Worthington (1995) find undercapitalization of debt, both results consistent with the presence of debt illusion.

In the major league sports context specifically, only Dehring et al. (2007) offer empirical insight to date. Studying home prices in Dallas and adjacent Arlington during the period where the Dallas Cowboys were shopping for a new stadium, the authors find that home prices in Arlington decreased on average by 1.5% once the team announced the city would be its future home. The stadium would be supported by three local option taxes approved by voters in 2004.[14] They further provide a back of the envelope estimate the average resident would pay about $2000 more in taxes in present discounted terms over the 30-year stadium bonds compared to the average property price (i.e., wealth) decrease of $1742. The 95% confidence interval for the home price effect includes $2000, suggesting full capitalization and therefore no debt illusion.[15]

The Dehring et al. (2007) study is only suggestive of no debt illusion, because the mode of financing does not vary in the Cowboys case. A more definitive test would involve a jurisdiction initially announcing a facility subsidy using current revenue and then, holding everything else, announce a change to debt financing, or vice

[13] Banzhaf and Oates (2013) argue that residents may have perfect information about the future tax cost of debt, and therefore suffer no fiscal illusion, but nonetheless prefer financing public goods with debt than current revenue if the interest on the public debt is less than the interest on private borrowing.

[14] The taxes were a half-cent sales tax increase, a two percentage point hotel tax increase, and a five percentage point car rental tax increase.

[15] Another way to illustrate the full capitalization is to calculate the amortized debt service in present discounted terms and divide it by the number of houses in Arlington at the time the team made its announcement. Using their assumption of a 4.5 discount rate, the nominal $641.3 million debt service cost from 2006 through 2035 (see the city's bond issue for the stadium, page 26) in present value terms equals $301.3 million. The American Community Survey estimates about 140,000 housing units in the city at the time, which means the average household is responsible for paying $2150 of the stadium's present value bond debt. This figure is still within the reported 95% confidence interval of the Arlington cumulative price reduction of −$3343 to −$142 as reported on page 637 in the Dehring et al. (2007) study. Importantly, the city refinanced the AT&T Stadium debt in 2017 in order to free up debt capacity for Globe Life Field. Whether refinancing debt creates a debt illusion or not is unclear.

versa. The only instance I am aware of where this has happened for a major league facility is with the Sacramento Kings. In March 2012, the city and team agreed to a public-private partnership where the city would make a $255.5 million contribution but where $230 million of this amount would come as an upfront cash payment. The city proposed leasing its parking system to an unrelated (to the Kings) firm for 50 years, and the $230 million was the agreed price for the firm to secure the lease. The team subsequently backed out of this deal before terms were finalized, and two years later, the city approved a new agreement with the Kings' new owners. The 2014 deal was similar to the 2012 deal except that the city's contribution was now entirely bond financed, a debt secured by city parking revenue. The city eventually issued $272.9 million in bonds under the 2014 deal, $43 million more than two years earlier. At 3.0 and 4.5% discount rates, the present discounted values of the debt service are $394 million and $324 million, respectively. Moreover, the American Community Survey reports the city of Sacramento had about 177,600 households in 2014. Hence, the arena's debt burden for the average household is around $2000.[16] This figure provides a basis for evaluating a debt illusion in Sacramento should future scholarship undertake such an exploration.

7.6 Forecasting Tax Revenue and Public Expenses

As part of the subsidy policy process, lawmakers rely on staffers, other public officials, or consultants to forecast facility operating revenue and expenses. If a dedicated tax secures facility debt, a forecast of the tax stream would also be necessary. Forecasting, though, is part art and part science (Willoughby & Guo, 2008), and though one may reason apolitical actors, bureaucrats or otherwise, are in the best position to produce unbiased forecasts, lawmakers influence revenue forecasts, directly by dictating forecast parameters and constraints and indirectly by deciding who oversees the forecast.[17] But lawmakers face a conundrum when forecasting revenue in the sports facility context, or more generally in any instance where they perceive capital spending to be a political benefit. On one hand, lawmakers presumably want to underestimate revenue projections as a hedge against declining revenue over the forecast horizon (Propheter, 2019b). On the other hand, there needs to be enough revenue to justify the proposed subsidy level. If the subsidy includes a long-term commitment, such as paying debt service or operation expenses, the forecast must demonstrate the adequacy of the underlying revenue

[16] Readers should avoid direct comparison of the average household debt burden of the Golden 1 Center and AT&T Stadium, since the figures reported here are not inflation-adjusted to a common base year.

[17] The empirical literature on the politics of revenue forecasting is considerable. For a snapshot of this literature, see Boylan (2008), Bretschneider et al. (1989), Mikesell and Ross (2014), and Williams and Calabrese (2019).

stream. It is lawmakers' responsibility to select and justify a forecast upon which they base their policy decisions.

Hamilton County, Ohio is a helpful example for illustrating the fiscal challenges and consequences created when politics drives forecast selection. In 1996, county voters approved a half-cent sales tax increase in order to finance a new stadium for the Bengals, a new stadium for the Reds, a property tax rebate to owner-occupied houses, and PILOTs over 20 years to Cincinnati schools. County lawmakers promised that 30% of the voted sales tax increase would finance the latter two; that 70% of the tax revenue would be sufficient to cover the debt and operation of the two stadiums.

Leading up to the referendum, the county commissioners approved putting the sales tax increase before the voters in June 1995. The commissioners initially approved a one percentage point tax increase, but in order to increase the chance of passage, they cut the rate increase in half and promised the aforementioned property tax rebate and school PILOT (Sparkes, 2002; Brown & Paul, 1999). Based on consultants' financial projections before both the commissioners' vote and the 1996 referendum, the 70% stadium portion of the sales tax was expected to generate $37 million and grow to $65 million in 2019 assuming a 3% annual growth rate.[18] After the referendum, the consultant continued to produce regular forecasts for both Paul Brown Stadium and Great American Ball Park except these subsequent forecasts included sensitivity analyses of the annual sales tax revenue growth—assumptions of 1–4% growth rates.[19]

Figure 7.2 shows the 70% dedicated sales tax revenue forecasts as reported by the county's consultant using the 1 and 3% annual growth assumptions. Actual revenue is plotted for comparison as the solid black line. I also provide forecasts produced in 1995 and 2000. Before 2000, the consultant produced forecasts in 1995, 1996, and 1998, all with nearly identical baseline estimates. Beginning with the 2000 forecasts, though, the consultant increased its baseline tax revenue receipts, which is indicated in the figure as a y-intercept jump.[20] Relative to actuals, the baseline forecast in 2000 is much more accurate than prior forecasts. It is not clear how commissioners would have voted if faced with a more conservative forecast.

As the state frequently indicated in its financial audits of the county, the Hamilton County commissioners typically assumed a 3% sales tax growth rate even though the county's historical sales tax performance did not support this assumption. The data in Fig. 7.2 show why a 3% growth rate assumption is unreasonable over the

[18] The 1995 forecast is contained in Public Financial Management, Inc's presentation to county commissioners on June 22, 1995. The 1996 forecast is part of a March 6, 1996 presentation. Both reports are available from the author upon request.

[19] It is unknown if lawmakers were presented with sensitivity analyses before each vote, and they simply decided to publicize only the forecast with the 3% growth rate. After the vote, the risk to the project of greater transparency greatly subsides. Such a decision would be consistent with lawmakers attempting to shield from public criticism the possibility of an inadequate revenue stream relative to financial commitments.

[20] The reasons for this change in the forecast are explained in Monk (2000).

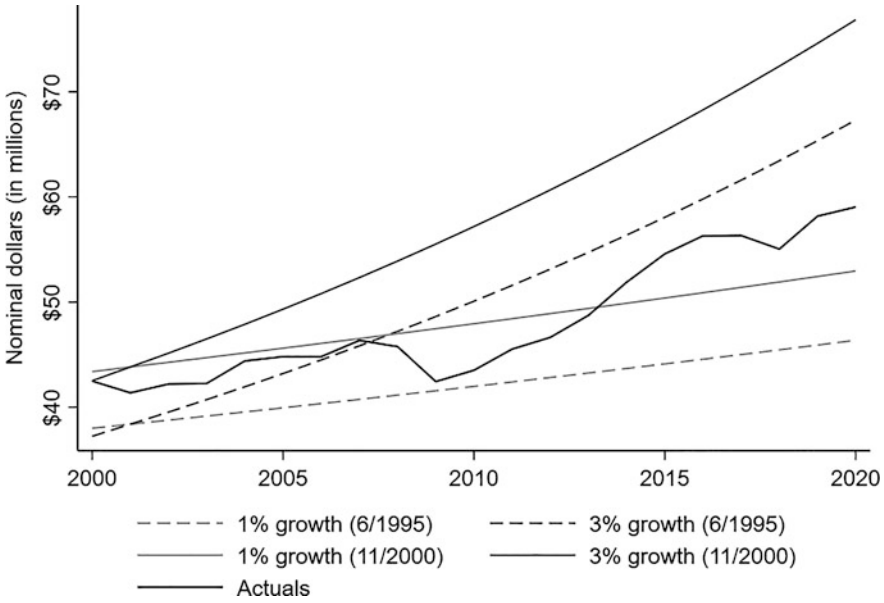

Fig. 7.2 Hamilton county sales tax revenue forecast and actuals. Notes: The graph shows forecast and actual revenue from the 70% stadium dedicated sales tax revenue from the half-cent tax increased approved by Hamilton County voters in 1996.

longer run. The June 1995 forecast is reflective of all of the consultant's sales tax revenue forecasts before 2000. Actuals are above forecast through 2007, but from 2008 onward actuals never recovered to forecasted levels. In the longer run, recessions and other policy decisions impact revenue generation, and these are often factors not in lawmakers' control. The Great Recession is visible in the sales tax data, but this was compounded by the stadiums' novelty periods ending around the same time.[21] Moreover, the state expanded the statewide sales tax base by shifting an excise tax on phones to a sales tax; this is noticeable in the actuals as a jump in revenue from 2003 to 2004. Tax bases are common pool resources when different levels of government tap the same economic activity, and in this instance, a state-level policy decision had a positive impact on Hamilton County, allowing actuals to exceed expectations for a little while longer than it seems they otherwise would have. Neither county officials nor the major league team owners are responsible for this.

Arguably more important than the quality of the tax forecast is whether the dedicated tax stream was adequate to finance the promised uses. Historically, it has not. For the 24 fiscal years from 1999 through 2022, property owners of owner-

[21] Coates and Humphreys (2005) find that attendance novelty effects for baseball teams is about eight years while for football teams about five years.

occupied residences have received the full 30% rebate 10 times. Eight of these times occurred before the Great Recession. It would be inappropriate to blame the recession, however. Before the recession was apparent, in 2006 the county renegotiated the PILOTs to Cincinnati Public schools because sales tax revenue was falling short. In exchange for larger PILOTs beginning in 2010, the school district agreed to defer the PILOT for both stadiums from the county between 2006 and 2009. This saved approximately $10 million a year during the deferral period, allowing the county to finance the full property tax rebate, or near to it.[22] This is to say county lawmakers were forced into making trade-offs even before the recession, given the half-cent sales tax's poor performance against projections.[23]

Overestimated sales tax revenue is not the only reason for Hamilton County's ongoing terrible stadium fiscal position: commissioners also accepted forecasts that underestimated the stadiums' operating expenses. Figure 7.3 shows the county's share of operating forecasts for Paul Brown Stadium and Great American Ball Park combined. I plot actuals (black line) against four different forecasts (dashed lines). The figure shows two important things. First, forecasts before either stadium opens (the May 1997 and August 2000 forecasts) show relative flat and slowly increasing county costs. After the facilities open (the June 2006 and February 2009 forecasts), the baseline forecast increases by about $4 million a year and the assumed annual growth rate increased. That an out-year forecast changes so dramatically before and after the stadiums come into operation arises from a combination of lease terms shifting a greater share of operating costs onto the county plus a realization the initial expense forecasts were gross underestimates.[24]

Secondly, the graph shows the extent of the underforecasting, particularly leading up to the recession. At the peak in 2003, operating expenses exceeded pre-facility development projections by about $13 million (in nominal dollars). A few years after both facilities opened, the forecasts began to reflect a more prudent overestimation of operating costs. By then, though, the initial damage caused by poor expense forecasting was compounded by the aforementioned revenue decline due to the recession.

While Hamilton County's lease terms with the Bengals and Reds have been maligned for years (Belson, 2009; Lopez, 2014), the county's experience is a useful case study for demonstrating the consequences when lawmakers ignore prudent

[22] From 2006 through 2009, the county rebated as a property tax credit 106%, 97%, 102%, and 101% of the promised sales tax revenue.

[23] In 2005, the county administrator presciently noted in the budget for the upcoming 2006 fiscal year, "If sales tax income continues to stagnate, the revenues may be insufficient to meet other county obligations after satisfying stadium debt service requirements. As early as 2006, the county may see deficits in funding property tax relief, payments to Cincinnati Public Schools and stadium operations." See the county's 2006 *Budget in Brief*, page 11.

[24] For example, the 1995 forecast estimated the Bengals' cost for game day expenses would be $250,000 per game and grow to $500,000 by 2018. When the county began paying this expense in 2018 and the cost became public, it turned out to be $2.67 million, not including Great American Ball Park (Wetterich, 2018).

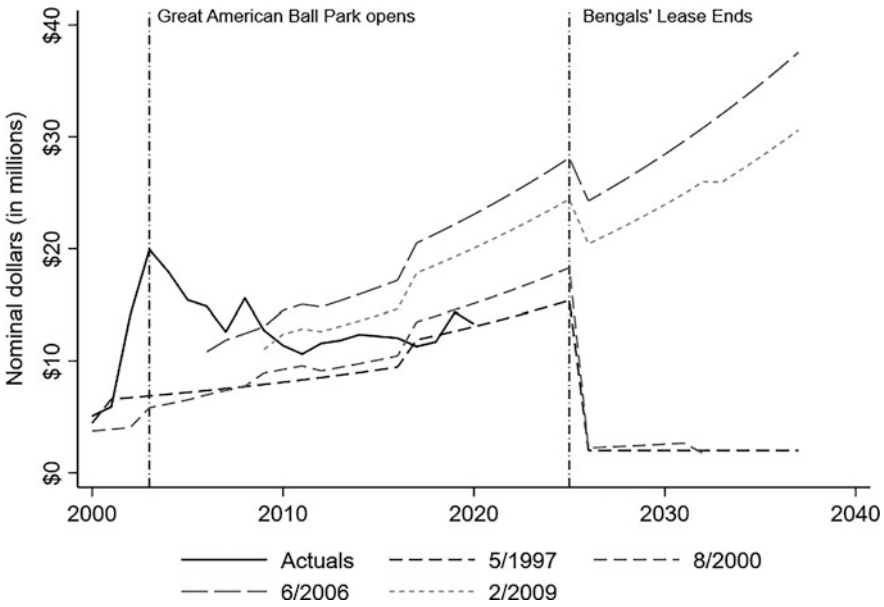

Fig. 7.3 Hamilton County Stadiums' forecasted and actual operating expenses. Notes: The graph shows the actual and forecasted operating expenses for Paul Brown Stadium and Great American Ball Park. Data come from the county's audited financial report and show the county's share of the aggregate operating expenses for both stadiums. Because public accountants treat depreciation as an operating expense, which is not an expense for budget forecasting purposes, I exclude depreciation and amortization from the figures. After the 2000 forecast, the consultant began assuming the Bengals would remain in Cincinnati. Prior forecasts assumed the Bengals would leave after their lease, illustrated in the forecasts as a sharp decline in operating costs

forecasting principles.[25] Unfortunately, facility revenue forecasting and its impacts is another area bereft of academic research. Our understanding of the matter is ad hoc. For example, I previously studied the Barclays Center, concluding that it had failed to meet its financial projections during the first three years of its life, which is noteworthy since this is supposed to be a facility's most profitable period (Propheter, 2019a). Meanwhile, the city of Sacramento forecast the city's share of the Sacramento Kings' possessory interest taxes, which are earmarked for arena debt, would be $1.2 million and grow 1% a year. Much like the Great

[25] To be clear, I do not blame Hamilton County's consultants, nor would I blame any consultant unless there was clear evidence of duplicity or prioritizing project start over protecting the fisc. Politicians can influence a consultant's forecast by dictating the forecast parameters, limiting data quantity and quality, or only releasing part of a consultant's analysis. Lawmakers could require as terms of a contract that a consultant only produce a forecast using a 3% annual revenue growth rate assumption, for instance. Or perhaps lawmakers allow for sensitivity analysis but selectively withhold such an analysis from public purview. No matter what a consultant reports, it is lawmakers' responsibility to be critical forecast consumers and for voters to expect as much.

Recession and Hamilton County, though, since COVID-19 the city has brought in less than expected, requiring unanticipated general fund appropriations to cover debt service.[26] Whether these examples are representative of major league facilities in general and how forecasting errors affect public budgets are matters for future research.

7.7 Conclusion

This book provides a rich treatment of the property tax within the narrow policy arena of major league sports facilities. My goals were to improve property tax literacy among journalists, academics, and the broader public; to provide a better estimate of the cost of property tax exemptions; and to provide a window into how these costs are borne by residents in terms of forgone public services. In this closing chapter, I further discussed policy topics directly and indirectly related to the property tax that I think are underappreciated in subsidy debates. The insights should provide useful background for staffers and their elected principals in communities considering sports facility subsidies.

Though my interests in this book focus almost exclusively on the property tax, it is not the only stealth subsidy governments provide team owners. For instance:

- The New Orleans Pelicans receive an annual allocation from the state equal to the income taxes paid on nonresident players' salaries. Aside from giving the Pelicans a financial incentive to avoid signing players with Louisiana residency, the arrangement also means the more the team pays non-resident players, the more it receives in income tax rebates. From fiscal year 2017 through 2020, these payments were $1.3 million, $1.8 million, $1.9 million, and $1.7 million, respectively.
- The Kansas City Chiefs did not have to pay $1 million in sales taxes on $23 million in material used to upgrade Arrowhead Stadium. The Missouri Supreme Court ruled these expenses, though incurred by the team, were on behalf of Jackson County, the stadium owner and an exempt entity. The precedent this sets in Missouri is unclear. While lawmakers typically must create a law exempting a special project from sales taxes, the court's decision in *The Kansas City Chiefs Football Club, Inc. v. Director of Revenue* (602 S.W.3d 812 (Mo. 2020)) in effect converts such exemptions into an as-of-right tax benefit for teams, or any private tenant of property owned by an exempt organization.
- Governments often rezone land for the benefit of team owners, increasing the latter's wealth. For instance, Cobb County commissioners approved rezoning the ancillary development land around Truist Park from office and industrial to mixed-use residential. Based on sales price data in the year leading up to

[26] In 2021, the shortfall relative to projects was $81,700 and $264,556 in 2022.

the commissioners' vote, the median commercial and industrial property in the stadium site's vicinity sold for $871,400 per acre in nominal terms. The median residential property sold for nearly twice as much. By rezoning the land, then, the commissioners increased the Braves owners' return on development.[27]

- Facilities may be exempted from competitive bidding laws when selecting general contractors, design firms, and management firms. The Golden 1 Center, Levi's Stadium, and FTX Arena are examples where competitive bidding was waived while the Buffalo Bills' MOU signed in March 2022 stipulates local competitive bidding laws will remain in effect. Competitive bidding, in theory, drives down costs, and therefore exempting a project from competitive bidding increases costs. Of course, competitive bidding requirements will have no effect on costs compared to competitive bidding exemptions when there are insufficient qualified workers and firms for the task at hand in the area. If teams control facility design and development, as is often the case, competitive bidding exemptions ensure their preferred firms are selected, which also allows the firms to charge a higher price. How much competitive bidding exemptions cost taxpayers is an empirical question for which academic research has yet to provide an answer.

As academic work moves toward a fuller accounting of the fiscal costs and benefits of subsidizing major league sports, these sorts of subsidies deserve scrutiny. Unfortunately, many of them are hidden from taxpayers, buried as subparagraphs in hundred-page lease agreements and legislation written in legalese that lawmakers themselves probably lack complete awareness of the details.[28] Property tax exemptions, while not the most obscure subsidy, nevertheless have received uneven and incomplete attention from scholars and journalists to date. This book is an effort to remedy many of the property tax policy misunderstandings common in academic research and the media. While I have focused primarily on the cost and implications of property tax exemptions in the aggregate, my effort here is not a replacement for more detailed analysis of the implications to particular communities. I hope this book aids staffers and lawmakers in devising more efficient subsidy policies by encouraging them to consider the taxpayer costs of subsidies delivered to major league sports through the tax code.

[27] I obtained sales price data from the county assessor. The reported data are for commercial, industrial, and residential sales occurring between July 1, 2013 and June 30, 2014 in the Wheeler High and Campbell High school districts, which sandwich the stadium site. In Propheter (2020), I report a rezoning for Arco Arena that increased land prices more than tenfold.

[28] For instance, 20 years after negotiating legislation enshrining Madison Square Garden's property tax exemption, former mayor Ed Koch restated his belief that he believed he agreed to only a 10-year exemption, not a permanent exemption in perpetuity (Purnick, 2002).

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Appendix A
Property Tax Status by Facility

Table A.1 shows the real and personal property tax status of facilities active during 2020. There are 32 facilities that paid some real property taxes in fiscal year 2021. For most of these facilities, the assessments were set in 2020; though, a few in jurisdictions assessing less often than annually (such as Cook County, Illinois) were set earlier. Government owners that make PILOTs to another government are not counted as taxable here, since those revenues are transfers between two public entities rather than a tax payment from a team to a government. Possessory interest tax payments are categorized as real property taxes. Facilities in states that exempt business personal property from taxation are denoted as "N/A" in the PPT column. There are 74 facilities that generated some personal property taxes from team owners in 2021.

I have also included information on the ownership status of the facility and its land. Most facilities are publicly owned and sited on public land. In the handful of instances where a facility is privately owned and sited on public land, ground lease terms specify the status of the facility upon lease expiration. Two outcomes are possible: the facility reverts to public ownership or the facility owner purchases the land. Most leases that I am aware of do not require the facility owner to purchase the land but rather codifies a purchase option.

G. Propheter, *Major League Sports and the Property Tax*, Sports Economics, Management and Policy 22, https://doi.org/10.1007/978-3-031-18790-2

Table A.1 Property tax status by facility, 2020

	Ownership		Paid some taxes?		
Facility name	Facility	Land	RPT	PPT	Charges
AT&T Center	Public	Public	No	Yes	No
AT&T Stadium	Public	Public	No	Yes	No
Allegiant Stadium	Public	Public	No	No	No
Allianz Field	Private	Public	No	N/A	No
Amalie Arena	Public	Public	No	Yes	No
American Airlines Center	Public	Public	No	Yes	No
American Family Field	Public	Public	No	No	No
Amway Center	Public	Public	No	Yes	No
Angel Stadium	Public	Public	Yes[a]	Yes	Yes
Arrowhead Stadium	Public	Public	No	Yes	No
Audi Field[b]	Public	Public	No	Yes	No
Ball Arena	Private	Private	Yes	Yes	No
Banc of California Stadium	Private	Public	Yes[a]	Yes	No
Bank of America Stadium	Private	Public	Yes	Yes	No
Barclays Center	Public	Public	No	N/A	Yes
Bridgestone Arena	Public	Public	No	Yes	No
Busch Stadium	Private	Public	No	Yes	Yes
Caesars Superdome	Public	Public	No	No	No
Camden Yards	Public	Public	No	Yes	No
Capital One Arena	Private	Public	No	No	No
Chase Center	Private	Private	Yes	Yes	Yes
Chase Field	Public	Public	No	Yes	No
Children's Mercy Park	Private	Private	Yes	N/A	No
Citi Field	Public	Public	No	N/A	Yes
Citizens Bank Park	Public	Public	No	No	No
Comerica Park	Public	Public	No	Yes	No
Coors Field	Public	Public	Yes	Yes	No
DRV PNK Stadium	Public	Public	No	No	No
Dick's Sporting Goods Park	Public	Public	Yes[a]	Yes	No
Dignity Health Sports Park	Private	Public	Yes[a]	Yes	No
Dodger Stadium	Private	Private	Yes	Yes	No
Earthquakes Stadium	Private	Private	Yes	Yes	Yes
Empower Field at Mile High	Public	Public	Yes[a]	Yes	No
Enterprise Center	Public	Public	No	Yes	No
Exploria Stadium	Private	Private	Yes	Yes	No
FLA Live Arena	Public	Public	No	Yes	No
FTX Arena	Public	Public	No	Yes	No
FedEx Field	Private	Private	Yes	Yes	No
FedEx Forum	Public	Public	No	Yes	No
Fenway Park	Private	Private	Yes	Yes	No
FirstEnergy Stadium	Public	Public	No	N/A	No

(continued)

Table A.1 (continued)

	Ownership		Paid some taxes?		
Facility name	Facility	Land	RPT	PPT	Charges
Fiserv Forum	Public	Public	No	Yes	No
Footprint Center	Public	Public	No	Yes	No
Ford Field	Public	Public	No	Yes	No
Gainbridge Fieldhouse	Public	Public	No	Yes	No
Gila River Arena	Public	Public	No	No	No
Gillette Stadium	Public	Public	No	Yes	Yes
Globe Life Stadium	Public	Public	No	Yes	No
Golden 1 Center	Public	Public	Yes[a]	Yes	Yes
Great American Ball Park	Public	Public	No	N/A	No
Guaranteed Rate Field	Public	Public	No	N/A	No
Hard Rock Stadium	Private	Public	Yes[a]	Yes	Yes
Heinz Field	Public	Public	No	N/A	No
Highmark Stadium	Public	Public	No	N/A	No
Honda Center	Public	Public	Yes[a]	Yes	Yes
Kauffman Stadium	Public	Public	No	Yes	No
KeyBank Center	Public	Public	No	N/A	No
Lambeau Field	Public	Public	No	N/A	No
Levi's Stadium	Public	Public	Yes[a]	Yes	Yes
Lincoln Financial Field	Public	Public	No	N/A	No
Little Caesars Arena	Public	Public	No	Yes	No
Lucas Oil Stadium	Public	Public	No	No	No
Lumen Field	Public	Public	No	Yes	Yes
M&T Bank Stadium	Public	Public	No	Yes	No
Madison Square Garden	Private	Private	No	N/A	No
Mapfre Stadium	Public	Public	No	N/A	Yes
Marlins Park	Public	Public	No	Yes	No
Mercedes-Benz Stadium	Public	Public	No	No	No
MetLife Stadium	Public	Public	No	No	No
Minute Maid Park	Public	Public	No	Yes	No
Moda Center	Private	Public	Yes[a]	Yes	No
NRG Stadium	Public	Public	No	Yes	No
Nassau Coliseum	Public	Public	No	N/A	No
Nationals Park	Public	Public	No	Yes	No
Nationwide Arena	Public	Public	No	N/A	No
Nissan Stadium	Public	Public	No	Yes	No
Oakland Coliseum	Public	Public	Yes[a]	No	No
Oracle Park	Public	Public	Yes[a]	Yes	No
PNC Arena	Public	Public	No	Yes	No
PNC Park	Public	Public	No	N/A	No
PPG Paints Arena	Public	Public	No	N/A	No
PNC Stadium	Public	Public	No	Yes	No

(continued)

Table A.1 (continued)

	Ownership		Paid some taxes?		
Facility name	Facility	Land	RPT	PPT	Charges
Paul Brown Stadium	Public	Public	No	N/A	No
Paycom Center	Public	Public	No	Yes	No
Petco Park[c]	Public	Public	Yes[a]	Yes	No
Progressive Field	Public	Public	No	N/A	No
Providence Park	Public	Public	No	Yes	No
Prudential Center	Public	Public	No	N/A	No
Raymond James Stadium	Public	Public	No	Yes	No
Red Bull Arena	Public	Public	No	N/A	Yes
Rio Tinto Stadium	Public	Public	Yes	Yes	No
Rocket Mortgage Fieldhouse	Public	Public	No	N/A	No
SAP Center	Public	Public	Yes[a]	Yes	Yes
Smoothie King Center	Public	Public	No	No	No
SoFi Stadium	Private	Private	Yes	Yes	No
Soldier Field	Public	Public	No	N/A	No
Spectrum Center	Public	Public	No	Yes	No
Staples Center	Private	Public	Yes[a]	Yes	No
State Farm Arena	Public	Public	No	Yes	No
State Farm Stadium	Public	Public	No	Yes	No
Subaru Park	Public	Public	No	N/A	Yes
T-Mobile Arena	Private	Private	Yes	Yes	No
T-Mobile Park	Public	Public	No	Yes	Yes
TD Garden	Private	Private	Yes	Yes	No
TIAA Bank Stadium	Public	Public	No	Yes	No
Target Center	Public	Public	No	N/A	No
Target Field	Public	Public	No	N/A	No
Toyota Center	Public	Public	No	Yes	No
Toyota Stadium	Public	Public	No	Yes	No
Tropicana Field	Public	Public	No	Yes	No
Truist Park	Public	Public	No	Yes	No
US Bank Stadium	Public	Public	No	N/A	No
United Center	Private	Private	Yes	N/A	No
Vivint Smart Home Arena	Private	Public	Yes[a]	Yes	No
Wells Fargo Center	Private	Public	No	N/A	Yes
Wrigley Field	Private	Private	Yes	N/A	No
Xcel Energy Center	Public	Public	No	N/A	No
Yankee Stadium	Public	Public	No	N/A	Yes

Notes: RPT means real property tax. PPT means personal property tax. Possessory interest taxes are categorized as real property tax

[a] Tenant team pays taxes on a possessory interest

[b] Team has exclusive facility use rights. Use returns to the city after the expiration of a ground lease. DC United receives a temporary real property tax exemption on its possessory interest of Audi Field that begins to phase out in 2024. Before then it is fully exempt

[c] Stadium ownership is shared between the city and Padres; though, the city has a majority stake

Appendix B
Public Service Cost by Facility

I detail the facility-specific public service property tax cost estimates Table B.1. The second column is my property tax expenditure estimate for all property taxes (real, personal, and taxes on property) assuming teams do not exercise any available extensions beyond those active in 2020. The typical lease without extensions is 30 years with many MLS teams having 25-year leases. The tax costs, of course, are greater if extensions are exercised. Future tax expenditures are discounted to 2020 at 3% a year while prior tax expenditures are inflation-adjusted using the Consumer Price Index. Columns labeled 1 through 14 correspond to the 14 public service categories I created, reduced from the categories in each taxing jurisdiction's *Annual Comprehensive Financial Report* in the *Statement of Revenue* section. The 14 categories are:

1. Capital expenditures
2. Debt principal, interest, and charges
3. Environmental, conservation, agricultural, water, and flood control
4. General government
5. Higher education and vocational colleges
6. Housing, community, and economic development
7. K-12 education
8. Parks, recreation, and cultural
9. Ports and waterways
10. Public health, hospitals, and sanitation
11. Public safety and judicial
12. Public works
13. Social services
14. Uncategorized spending

Missing values do not indicate that communities do not provide that public service but simply that the public service, if provided, is not financed with general property tax revenue for fiscal year 2021. Dollars are in thousands. These data using

G. Propheter, *Major League Sports and the Property Tax*, Sports Economics, Management and Policy 22, https://doi.org/10.1007/978-3-031-18790-2

different discount rates are accessible at https://sites.google.com/view/gpropheter/home.

Table B.1 Public service cost by facility

Facility name	Total	(1)	(2)	(3)	(4)
AT&T Center	$84,996	$7	$50	$563	$3084
AT&T Stadium	$397,946	$0	$0	$0	$25,406
Allegiant Stadium	$208,033	$3870	$39,258	$0	$3881
Allianz Field	$141,855	$169	$38	$1930	$18,980
Amalie Arena	$72,910	$0	$0	$2491	$8627
American Airlines Center	$139,119	$703	$1629	$0	$8953
American Family Field	$191,747	$0	$0	$11,876	$30,109
Amway Center	$115,831	$0	$1777	$1355	$13,150
Angel Stadium	$20,179	$267	$92	$600	$1467
Arrowhead Stadium	$218,483	$38	$11	$0	$17,349
Audi Field	$48,373	$0	$4660	$0	$5434
Banc of California Stadium	$5294	$0	$8	$14	$342
Bank of America Stadium	$36,715	$0	$0	$997	$5848
Barclays Center	$233,286	$0	$268	$8974	$58,686
Bridgestone Arena	$139,629	$0	$36,437	$0	$10,427
Busch Stadium	$300,294	$394	$30,904	$3954	$7966
Caesars Superdome	$151,132	$593	$21,050	$28,778	$5547
Camden Yards	$120,858	$0	$7371	$38	$19,028
Capital One Arena	$94,155	$0	$9070	$0	$10,575
Chase Field	$231,926	$643	$42,098	$2158	$3806
Citi Field	$471,158	$0	$539	$18,126	$118,524
Citizens Bank Park	$153,169	$0	$600	$0	$13,335
Comerica Park	$293,516	$2200	$36,097	$0	$7954
Coors Field	$238,733	$14,359	$53,554	$3300	$5960
DRV PNK Stadium	$31,140	$27	$957	$516	$4212
Dick's Sporting Goods Park	$6777	$293	$39	$1205	$5893
Dignity Health Sports Park	$35,534	$0	$11	$19	$423
Empower Field at Mile High	$220,025	$13,233	$49,355	$3042	$5495
Enterprise Center	$95,897	$127	$9870	$1262	$2544
FLA Live Arena	$107,728	$216	$2850	$1094	$11,929
FTX Arena	$262,946	$998	$7963	$2143	$18,311
FedEx Forum	$247,860	$0	$8466	$0	$14,415
FirstEnergy Stadium	$81,156	$1170	$673	$0	$19,403
Fiserv Forum	$149,281	$0	$0	$15,348	$38,922
Footprint Center	$456,138	$416	$27,094	$1391	$2450
Ford Field	$174,306	$3417	$56,097	$0	$12,361
Gainbridge Fieldhouse	$106,901	$5780	$169	$0	$6826
Gila River Arena	$87,974	$119	$23,312	$676	$1329
Gillette Stadium	$235,971	$0	$8236	$0	$79,605

(continued)

Table B.1 (continued)

Facility name	Total	(1)	(2)	(3)	(4)
Globe Life Field	$396,004	$0	$0	$0	$25,283
Golden 1 Center	$95,112	$0	$11,637	$0	$4276
Great American Ball Park	$291,381	$0	$38	$0	$19,281
Guaranteed Rate Field	$192,452	$0	$157	$7010	$11,968
Hard Rock Stadium	$44,872	$192	$5666	$539	$4716
Heinz Field	$181,911	$0	$0	$0	$23,496
Highmark Stadium	$39,355	$0	$7	$927	$6816
Honda Center	$10,328	$138	$49	$309	$752
Kauffman Stadium	$174,798	$30	$11	$0	$13,880
KeyBank Center	$46,079	$0	$8	$2290	$8063
Lambeau Field	$577,129	$3773	$0	$11,157	$43,420
Levi's Stadium	$11,195	$0	$1516	$35	$1340
Lincoln Financial Field	$148,273	$0	$580	$0	$12,910
Little Caesars Arena	$449,618	$3368	$55,296	$0	$12,186
Lucas Oil Stadium	$263,752	$14,260	$416	$0	$16,845
Lumen Field	$123,763	$340	$1355	$1129	$5385
M&T Bank Stadium	$176,360	$0	$10,758	$55	$27,769
Madison Square Garden	$469,409	$0	$536	$18,059	$118,085
Mapfre Stadium	$12,547	$22	$0	$0	$706
Marlins Park	$258,526	$1513	$12,071	$3245	$27,758
Mercedes-Benz Stadium	$316,321	$0	$16,035	$0	$28,003
MetLife Stadium	$171,330	$249	$6205	$0	$8473
Minute Maid Park	$291,954	$2853	$4685	$3825	$17,452
Moda Center	$2626	$60	$460	$13	$134
NRG Stadium	$143,572	$2564	$4210	$3436	$15,683
Nassau Coliseum	$247,254	$0	$91	$1249	$5593
Nationals Park	$81,461	$0	$23,816	$0	$27,771
Nationwide Arena	$151,088	$138	$3	$0	$4600
Nissan Stadium	$262,323	$0	$40,635	$0	$11,631
Oakland Coliseum	$34,976	$17	$9127	$0	$1624
Oracle Park	$282,157	$0	$40,189	$0	$23,406
PNC Arena	$246,900	$0	$1838	$294	$3762
PNC Park	$25,759	$0	$0	$0	$17,376
PNC Stadium	$113,893	$456	$748	$609	$2788
PPG Paints Arena	$34,765	$0	$0	$0	$14,035
Paul Brown Stadium	$134,519	$0	$31	$0	$16,336
Paycom Center	$46,640	$123	$0	$0	$4488

(continued)

Table B.1 (continued)

Facility name	Total	(1)	(2)	(3)	(4)
Petco Park	$108,661	$1463	$17,805	$325	$7482
Progressive Field	$239,330	$1067	$613	$0	$17,661
Providence Park	$13,301	$6	$2275	$62	$679
Prudential Center	$270,880	$361	$21,126	$0	$19,318
Raymond James Stadium	$183,519	$2397	$0	$6271	$21,717
Red Bull Arena	$39,668	$648	$5458	$0	$6306
Rio Tinto Stadium	$16,609	$97	$863	$998	$1542
Rocket Mortgage Fieldhouse	$130,340	$580	$332	$0	$9617
SAP Center	$35,027	$0	$4228	$111	$4313
Smoothie King Center	$48,139	$189	$6704	$9167	$1767
Soldier Field	$234,509	$0	$248	$15,580	$18,894
Spectrum Center	$57,610	$0	$0	$1566	$9175
Staples Center	$183,339	$30	$269	$535	$11,821
State Farm Arena	$104,747	$0	$5310	$0	$9273
State Farm Stadium	$386,950	$525	$102,537	$2973	$5851
Subaru Park	$29,137	$0	$0	$0	$6288
T-Mobile Park	$136,157	$456	$1823	$1519	$7256
TIAA Bank Stadium	$358,690	$755	$620	$1900	$17,584
Target Center	$146,179	$145	$39	$1071	$14,384
Target Field	$166,779	$385	$102	$2829	$37,887
Toyota Center	$132,631	$1295	$2127	$1736	$7931
Toyota Stadium	$36,561	$538	$0	$6	$3034
Tropicana Field	$125,310	$5921	$0	$1261	$31,429
Truist Park	$132,887	$0	$535	$0	$13,178
US Bank Stadium	$569,537	$611	$164	$4492	$208,464
Vivint Smart Home Arena	$47,636	$283	$976	$2817	$6776
Wells Fargo Center	$75,352	$0	$292	$0	$6562
Xcel Energy Center	$288,522	$710	$181	$3794	$36,933
Yankee Stadium	$730,666	$0	$836	$28,110	$183,806
Total	$17,988,046	$97,597	$904,240	$253,154	$1,943,574

Table B.1 (continued)

Facility name	(5)	(6)	(7)	(8)	(9)
AT&T Center	$4518	$414	$45,514	$1825	$0
AT&T Stadium	$19,935	$0	$212,452	$6339	$0
Allegiant Stadium	$1485	$0	$56,027	$7117	$0
Allianz Field	$1153	$1032	$38,017	$3653	$553
Amalie Arena	$0	$526	$21,917	$5902	$363
American Airlines Center	$4784	$136	$50,421	$6649	$0
American Family Field	$8282	$0	$64,796	$4316	$0
Amway Center	$5927	$1447	$40,637	$5541	$0
Angel Stadium	$552	$0	$1817	$0	$0
Arrowhead Stadium	$4910	$4760	$145,854	$8651	$0
Audi Field	$0	$2844	$13,375	$0	$0
Banc of California Stadium	$178	$0	$617	$87	$0
Bank of America Stadium	$0	$9829	$0	$120	$1251
Barclays Center	$2965	$3430	$74,097	$2880	$0
Bridgestone Arena	$0	$4154	$62,860	$2199	$0
Busch Stadium	$7285	$9	$161,012	$31,911	$0
Caesars Superdome	$0	$974	$47,569	$12,473	$0
Camden Yards	$394	$3861	$18,574	$4785	$4830
Capital One Arena	$0	$5538	$26,033	$0	$0
Chase Field	$15,932	$2386	$108,936	$16	$0
Citi Field	$5987	$6927	$149,651	$5820	$0
Citizens Bank Park	$0	$1086	$87,886	$2966	$2208
Comerica Park	$0	$26,164	$154,820	$16,623	$0
Coors Field	$0	$2257	$122,802	$2195	$0
DRV PNK Stadium	$0	$152	$12,354	$2066	$61
Dick's Sporting Goods Park	$0	$66	$13,165	$1608	$0
Dignity Health Sports Park	$164	$0	$770	$114	$0
Empower Field at Mile High	$0	$2081	$113,180	$2025	$0
Enterprise Center	$2328	$4	$51,416	$10,189	$0
FLA Live Arena	$0	$145	$25,970	$4544	$124
FTX Arena	$0	$1881	$55,541	$6924	$255
FedEx Forum	$0	$8867	$26,743	$0	$0
FirstEnergy Stadium	$0	$2816	$159,518	$17,114	$0
Fiserv Forum	$10,707	$0	$83,757	$5579	$0
Footprint Center	$10,255	$1537	$70,113	$10	$0
Ford Field	$0	$40,660	$240,598	$25,833	$0
Gainbridge Fieldhouse	$0	$74	$63,570	$6344	$0
Gila River Arena	$6231	$0	$38,188	$5	$0
Gillette Stadium	$0	$0	$107,392	$3496	$0
Globe Life Field	$19,837	$0	$211,418	$6308	$0
Golden 1 Center	$0	$0	$15	$767	$0
Great American Ball Park	$0	$2014	$188,095	$1979	$0

(continued)

Table B.1 (continued)

Facility name	(5)	(6)	(7)	(8)	(9)
Guaranteed Rate Field	$2660	$31	$43,794	$96,734	$1555
Hard Rock Stadium	$0	$379	$12,321	$2233	$59
Heinz Field	$0	$391	$80,497	$1655	$2545
Highmark Stadium	$0	$6895	$816	$5433	$0
Honda Center	$280	$0	$931	$0	$0
Kauffman Stadium	$3929	$3810	$116,693	$6919	$0
KeyBank Center	$0	$9139	$20,947	$463	$0
Lambeau Field	$22,502	$0	$276,025	$33,502	$0
Lincoln Financial Field	$0	$1052	$85,076	$2873	$2135
Little Caesars Arena	$0	$40,078	$237,154	$25,463	$0
Lucas Oil Stadium	$0	$180	$156,845	$15,653	$0
Lumen Field	$0	$4816	$64,067	$9342	$1587
M&T Bank Stadium	$574	$5630	$27,104	$6984	$7049
Madison Square Garden	$5967	$6900	$149,095	$5797	$0
Mapfre Stadium	$61	$140	$9552	$346	$0
Marlins Park	$0	$2852	$84,183	$10,494	$388
Mercedes-Benz Stadium	$0	$34,754	$144,156	$7323	$0
MetLife Stadium	$3693	$46	$129,360	$6644	$221
Minute Maid Park	$12,201	$18	$138,480	$5565	$1206
Moda Center	$33	$377	$957	$3	$8
NRG Stadium	$10,961	$16	$124,425	$5001	$1084
Nassau Coliseum	$899	$91	$81,298	$6665	$0
Nationals Park	$0	$14,540	$68,364	$0	$0
Nationwide Arena	$394	$902	$62,024	$2244	$0
Nissan Stadium	$0	$0	$70,102	$2455	$0
Oakland Coliseum	$0	$0	$3	$44	$0
Oracle Park	$0	$0	$0	$8366	$0
PNC Arena	$0	$1009	$11,389	$2448	$0
PNC Park	$0	$287	$59,529	$1222	$1880
PNC Stadium	$1948	$3	$22,124	$890	$193
PPG Paints Arena	$0	$233	$48,083	$990	$1520
Paul Brown Stadium	$0	$1707	$159,383	$1677	$0
Paycom Center	$4549	$0	$12,857	$210	$0
Petco Park	$3429	$0	$27	$1408	$0
Progressive Field	$0	$2564	$145,187	$15,575	$0
Providence Park	$172	$1920	$4844	$307	$44
Prudential Center	$1176	$3002	$83,540	$10,696	$0
Raymond James Stadium	$0	$1323	$55,172	$14,848	$915
Red Bull Arena	$0	$0	$13,972	$1013	$0
Rio Tinto Stadium	$0	$891	$9103	$1057	$0
Rocket Mortgage Fieldhouse	$0	$1396	$79,073	$8482	$0

(continued)

Table B.1 (continued)

Facility name	(5)	(6)	(7)	(8)	(9)
Smoothie King Center	$0	$310	$15,152	$3974	$0
Soldier Field	$5170	$48	$131,530	$15,516	$2455
Spectrum Center	$0	$15,424	$0	$188	$1962
Staples Center	$6135	$39	$21,378	$3026	$0
State Farm Arena	$0	$11,508	$47,733	$2427	$0
State Farm Stadium	$27,405	$0	$167,967	$23	$0
Subaru Park	$0	$0	$18,067	$300	$0
T-Mobile Park	$0	$6487	$86,342	$12,592	$2137
TIAA Bank Stadium	$0	$884	$49,020	$5223	$267
Target Center	$1192	$3015	$29,213	$361	$0
Target Field	$3145	$7943	$170,359	$947	$0
Toyota Center	$5543	$7	$62,910	$2527	$548
Toyota Stadium	$1478	$0	$23,823	$1055	$0
Tropicana Field	$0	$13,101	$31,423	$8331	$0
Truist Park	$0	$904	$86,497	$3300	$0
US Bank Stadium	$4994	$12,606	$122,196	$1504	$0
Vivint Smart Home Arena	$1305	$19,660	$3263	$0	$0
Wells Fargo Center	$0	$0	$43,236	$1460	$1084
Xcel Energy Center	$5531	$43,486	$91,835	$4876	$739
Yankee Stadium	$9286	$10,741	$232,078	$9023	$0
Total	$280,421	$431,606	$7,490,061	$632,650	$41,226

Table B.1 (continued)

Facility name	(10)	(11)	(12)	(13)	(14)
AT&T Center	$8931	$17,710	$1806	$574	$0
AT&T Stadium	$35,292	$88,990	$9071	$461	$0
Allegiant Stadium	$5168	$53,812	$7873	$11,850	$17,692
Allianz Field	$42,090	$21,531	$5786	$6923	$0
Amalie Arena	$0	$26,861	$2466	$2805	$0
American Airlines Center	$10,737	$49,138	$5959	$10	$0
American Family Field	$918	$42,029	$12,976	$16,445	$0
Amway Center	$0	$37,085	$3889	$2696	$2327
Angel Stadium	$3652	$6731	$171	$4830	$0
Arrowhead Stadium	$2438	$32,226	$53	$2193	$0
Audi Field	$0	$5756	$4797	$11,509	$0
Banc of California Stadium	$1223	$1352	$4	$1469	$0
Bank of America Stadium	$1565	$10,486	$1141	$5478	$0
Barclays Center	$6692	$28,656	$5130	$41,508	$0
Bridgestone Arena	$2289	$16,700	$3642	$173	$748
Busch Stadium	$8977	$29,473	$3738	$14,671	$0
Caesars Superdome	$589	$29,912	$3647	$0	$0
Camden Yards	$4953	$47,789	$5894	$3341	$0
Capital One Arena	$0	$11,204	$9336	$22,399	$0
Chase Field	$12,814	$21,963	$21,174	$0	$0
Citi Field	$13,515	$57,875	$10,361	$83,833	$0
Citizens Bank Park	$3252	$36,555	$2744	$2537	$0
Comerica Park	$1922	$41,409	$6205	$122	$0
Coors Field	$1047	$18,983	$2698	$11,578	$0
DRV PNK Stadium	$2208	$9487	$1337	$2157	$0
Dick's Sporting Goods Park	$0	$8427	$259	$185	$0
Dignity Health Sports Park	$1612	$1725	$1939	$0	$0
Empower Field at Mile High	$962	$17,495	$2487	$10,670	$0
Enterprise Center	$2868	$9411	$1192	$4686	$0
FLA Live Arena	$4040	$23,343	$2516	$4385	$0
FTX Arena	$1128	$58,572	$13,235	$3608	$3747
FedEx Forum	$2914	$40,216	$1934	$4173	$0
FirstEnergy Stadium	$187	$54,778	$5744	$952	$591
Fiserv Forum	$1186	$54,330	$16,774	$21,257	$0
Footprint Center	$8248	$14,136	$13,631	$0	$0
Ford Field	$2984	$64,355	$9642	$191	$0
Gainbridge Fieldhouse	$9496	$9197	$5445	$0	$0
Gila River Arena	$4854	$5007	$8054	$199	$0
Gillette Stadium	$0	$27,276	$7100	$2866	$0
Globe Life Field	$35,119	$88,556	$9024	$459	$0
Golden 1 Center	$25,186	$30,478	$0	$22,753	$0

(continued)

Table B.1 (continued)

Facility name	(10)	(11)	(12)	(13)	(14)
Great American Ball Park	$0	$70,240	$9441	$293	$0
Guaranteed Rate Field	$322	$27,170	$1048	$0	$3
Hard Rock Stadium	$251	$16,503	$475	$801	$737
Heinz Field	$17,514	$48,447	$7366	$0	$0
Highmark Stadium	$998	$11,933	$5530	$0	$0
Honda Center	$1869	$3441	$89	$2470	$0
Kauffman Stadium	$1949	$25,780	$42	$1755	$0
KeyBank Center	$1339	$3326	$455	$0	$49
Lambeau Field	$13,920	$165,217	$7613	$0	$0
Levi's Stadium	$2347	$2879	$0	$3078	$0
Lincoln Financial Field	$3148	$35,386	$2658	$2455	$0
Little Caesars Arena	$2945	$63,434	$9504	$190	$0
Lucas Oil Stadium	$23,431	$22,692	$13,430	$0	$0
Lumen Field	$1012	$22,023	$10,175	$2532	$0
M&T Bank Stadium	$7227	$69,733	$8601	$4876	$0
Madison Square Garden	$13,465	$57,659	$10,324	$83,522	$0
Mapfre Stadium	$0	$1680	$8	$32	$0
Marlins Park	$1708	$88,784	$20,059	$5471	$0
Mercedes-Benz Stadium	$8693	$54,226	$7611	$6252	$9268
MetLife Stadium	$1050	$9935	$1591	$1812	$2051
Minute Maid Park	$24,857	$71,553	$9259	$0	$0
Moda Center	$177	$289	$0	$89	$26
NRG Stadium	$22,333	$64,291	$8319	$0	$0
Nassau Coliseum	$17,238	$25,607	$4615	$184	$42
Nationals Park	$0	$29,421	$24,518	$58,824	$0
Nationwide Arena	$0	$10,904	$44	$208	$0
Nissan Stadium	$2553	$18,625	$4062	$192	$833
Oakland Coliseum	$8580	$7736	$392	$7453	$0
Oracle Park	$49,035	$79,767	$13,832	$67,562	$0
PNC Arena	$0	$8849	$1278	$3898	$0
PNC Arena	$12,953	$35,826	$5446	$0	$0
PNC Stadium	$3970	$11,430	$1481	$0	$0
PPG Paints Arena	$10,462	$28,937	$4401	$0	$0
Paul Brown Stadium	$59,517	$8002	$247	$0	$0
Paycom Center	$107	$3337	$88	$0	$0
Petco Park	$19,828	$35,373	$140	$26,613	$0
Progressive Field	$173	$49,855	$5229	$867	$539
Providence Park	$901	$1509	$0	$455	$127
Prudential Center	$3739	$74,799	$13,762	$6048	$33,313
Raymond James Stadium	$0	$67,609	$6204	$7063	$0
Red Bull Arena	$750	$7074	$2468	$919	$1060
Rio Tinto Stadium	$202	$1613	$189	$54	$0
Rocket Mortgage Fieldhouse	$95	$27,153	$2846	$472	$294

(continued)

Table B.1 (continued)

Facility name	(10)	(11)	(12)	(13)	(14)
SAP Center	$7544	$9102	$0	$9729	$0
Smoothie King Center	$187	$9529	$1160	$0	$0
Soldier Field	$508	$42,900	$1656	$0	$4
Spectrum Center	$2457	$16,456	$1790	$8592	$0
Staples Center	$42,321	$46,758	$149	$50,878	$0
State Farm Arena	$2879	$17,956	$2521	$2069	$3071
State Farm Stadium	$21,350	$22,020	$35,424	$875	$0
Subaru Park	$0	$2274	$511	$866	$831
T-Mobile Park	$1363	$29,680	$13,715	$3409	$0
TIAA Bank Stadium	$0	$59,017	$4284	$6625	$0
Target Center	$13,619	$64,328	$8790	$0	$0
Target Field	$35,888	$76,045	$23,160	$0	$0
Toyota Center	$11,294	$32,506	$4207	$0	$0
Toyota Stadium	$274	$5445	$908	$0	$0
Tropicana Field	$391	$10,009	$9947	$13,497	$0
Truist Park	$375	$26,538	$1560	$0	$0
US Bank Stadium	$56,982	$120,749	$36,775	$0	$0
Vivint Smart Home Arena	$1017	$9577	$0	$155	$1807
Wells Fargo Center	$1601	$17,984	$1350	$1247	$0
Xcel Energy Center	$49,327	$31,836	$10,027	$9247	$0
Yankee Stadium	$20,960	$89,751	$16,067	$130,008	$0
Total	$882,051	$3,461,522	$629,715	$859,583	$79,160

Notes: Dollars are in thousands and reflect the cumulative property tax expenditure over the remaining life of the current lease assuming any remaining possible extensions are not exercised. Future dollars are discounted to 2020 at 3% and past dollars are adjusted to 2020 using the Consumer Price Index. Figures may not sum due to rounding

Index

G. Propheter, *Major League Sports and the Property Tax*, Sports Economics, Management and Policy 22, https://doi.org/10.1007/978-3-031-18790-2