Multi-round Auctions for Institutional Real Estate Assets: Theory and Practice

by

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Submitted to the Department of Architecture in Partial Fulfillment of the Requirements for the Degree of Master of Science in Real Estate Development

at the

Massachusetts Institute of Technology

September, 2003

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Abstract

The theory of auctions has grown dramatically over the last four decades; it offers guidance and insights into the conduct of efficient and optimal auctions in real estate, and other industries. In this thesis an auction process used to sell institutional real estate assets in the US is identified. This auction came into being during the 1990s, and is now in common use. The auction is recorded though surveys with industry representatives and is characterized. Problems with the auction are identified, and solutions are proposed, referencing this auction to the body of auction theory. The auction consists of two rounds of sealed bid submissions, with attrition in the number of competitive bidders. After competitive bidding is complete a preferred bidder is selected, and engages in due diligence, a practice that often uncovers new information and induces renegotiation. Bids are not binding during the bidding process, because the auction is informationally incomplete. Sellers analyze bids based on the perceived quality of the bidder as a contractual partner, as well as the bid's value, complicating the objective selection of the best bidder. The auction is bilaterally incomplete and unstable, potentially influencing efficiency and optimality. Recommendations to improve the process are made. Descriptive statistics are formed and presented of multi-round auctions for institutional real estate assets.

Thesis Supervisor: William C. Wheaton
Title: Professor of Economics

Acknowledgements

Thanks to William Wheaton, Professor of Economics, and supervisor of this thesis for comments and guidance.

Special thanks to Sergei Izmalkov, Assistant Professor of Economics, for advice and support on this topic, and auctions in general throughout the year. Sergei also read the thesis and offered dozens of comments and suggestions prior to its submittal.

Thanks to David Geltner, Professor of Real Estate Finance, and Director, MIT Center for Real Estate, for introducing me to this auction, and offering support and guidance on the subject.

Thanks to Marc Louargand of Cornerstone Advisers for reading the thesis and offering many useful comments and corrections.

Thanks to six anonymous respondents who gave freely of their time and candidly discussed their experience of this auction in practice, and the real estate investment sales process in general.

Special thanks to the anonymous institutional real estate professional that provided the data for chapter four.

Thanks to Anne, my sister Niamh, and my parents, Seamus and Ursula for their collective support and patience over the last year.

Table of Contents

References are noted at the end of each chapter

Table of Figures

Table of Tables

List of Abbreviations

CBD	Central Business District
CMBS	Commercial Mortgage Backed Securities
CV	Common Value
DS	Dominant Strategy
FDI	Foreign Direct Investment
FPA	First Price Auction
IPV	Independent Private Value
IREI	Institutional Real Estate, Inc.
IREN	Institutional Real Estate Newsline
IV	Interdependent Value
M&A	Mergers and Acquisitions
MC	Marginal Cost
MR	Marginal Revenue
NAREIT	National Association of Real Estate Investment Trusts
NAV	Net Asset Value
NCREIF	National Council of Real Estate Investment Fiduciaries
NE	Nash Equilibrium
NPI	NCREIF Property Index
RCA	Real Capital Analytics
REIT	Real Estate Investment Trust
REOF	Real Estate Opportunity Fund
RFI	Request for Information
RTC	Resolution Trust Corporation
SPA	Second Price Auction

Chapter 1

An Introduction to Auctions and the Institutional Real Estate Marketplace

This thesis is concerned with the practice of competitive bidding for the sale of institutional real estate assets. Economic theory provides a strong body of knowledge on the practice of competitive bidding models. By recording the competitive bid processes used in the institutional real estate marketplace, and referencing these processes to the economic theory, useful insights and policy implications result.

The institutional real estate marketplace has recently come in to using a two round sealed bid auction model. This thesis records and characterizes this auction model.

Chapter one introduces auctions and competing mechanisms, and introduces the market for institutional real estate.

Chapter two consists of a terminology review, concept review, and literature review; it summarizes the salient literature and insights relevant to this thesis.

Chapter three records the outcome of a series of interviews held between the author and a number of respondents relating to the characteristics of the multi-round auction for institutional real estate. Chapter three also includes a characterization of the auction.

Chapter four provides descriptive statistics and graphic representations of data from single and multi-round auctions for institutional real estate assets.

Chapter five offers findings, conclusions and recommendations, and identifies topics where further research would be beneficial.

1.1 Objectives

The objectives of this thesis are:

1) To record a competitive bid process used for the sale of institutional real estate assets

2) To explain the practices of the auction using the economic theory of auctions

3) To identify potential improvements in the institutional real estate competitive bid processes

and

4) To identify components of the real estate competitive bid processes where analysis is not supported by the existing body of knowledge of auction theory

Constituting this introductory chapter are a methodology outline, a review of sale mechanisms, and a review of the institutional real estate marketplace.

From the perspective of this thesis the objects of concern are commercial real estate assets meeting the following definition of institutional real estate:

> *"Institutional quality commercial property... ...has traditionally been considered to include large, fully operational, income-producing properties of high-quality construction in high-quality locations (so-called class A or premium properties)."*
>
> Geltner, D. M. and N. G. Miller (2001), p.262-263.

These real estate assets would interest pension funds, real estate investment trusts (REITs), regional and national property owners and real estate private equity funds, who typically perceive such assets as core portfolio assets. Size is a major component of this

description; the average asset in the NCREIF database in the late 1990s was worth close to $30 million, Geltner, D. M. and N. G. Miller (2001).

In interviews with respondents active in the industry, several referenced $5 million as the asset value cutoff for their firms. Assets below that value were not considered part of the institutional marketplace. Real Capital Analytics (RCA), a firm that tracks institutional real estate trends and transactions also uses $5 million as the cutoff between institutional and non-institutional real estate.

1.2 Methodology

The methodology of this thesis is as follows:

1) Identify the overall relevance of the institutional real estate marketplace.

2) Survey and abstract from the auction theory literature the relevant concepts and insights of auction theory.

3) Conduct and record a series of interviews with senior managers involved with real estate acquisitions and dispositions.

4) Characterize the auction process.

5) Provide descriptive statistics on bid data from single and multi-round auctions for institutional real estate

6) Use the insights and concepts from auction theory to draw conclusions and recommendations on the institutional real estate auction process, and to suggest topics worthy of future research.

1.3 Auctions and Alternate Mechanisms

Introductory microeconomic theory of price and quantity is based on optimization models where the seller has access to complete information, buyers act rationally, and buyers don't have access to strategies other than the binary purchase decision.

In the introductory theory, markets are monopolies, oligopolies, imperfectly competitive or perfectly competitive. The seller's problem is to maximize profit, which occurs when the marginal revenue, (MR), of the last good sold is equal to the marginal cost, (MC), of the last good sold.

The buyer's problem is to decide whether or not to buy the object. The buyer's gain, consumer surplus, is equal to his valuation less the price.

In some monopoly markets the seller may price discriminate to various degrees, potentially allowing consumer surplus to be reduced or eliminated, and captured by the monopolist.

While highly relevant to many pricing models, introductory theory fails to take into account the entire process of how prices are set.

In well populated but volatile markets, like the capital markets, asking price must be constantly adjustable to dynamic valuations, and capable of reacting to news. In thin markets buyers or sellers may hold strategic power.

When market power exists on both sides of a market careful attention to pricing rules and potential responses is needed. Likewise, when the seller's information about valuation and preferences of potential buyers is incomplete, he must carefully design pricing and bidding rules to elicit his favored result.

Beyond the traditional theory of competitive markets under complete information, economists have developed the theory of incentives. This theory involves the analysis of contracts, bargaining, and asymmetric information. One of the most prominent fields of the theory of incentives is auction theory.

Auction theory deals with the dynamics and characteristics of competitive bidding games. Generally speaking, an auction is definable as a uni-dimensional competitive bid game amongst substitutable bidders for a specific object. The uni-dimensional term refers to the auctioneer's ability to objectively analyze and compare bidders; the substitutable term refers to the fact that a set of price points exist where the auctioneer is indifferent between bidders. Another definition is:

> *"An auction is a market institution with an explicit set of rules determining resource allocation and prices on the basis of bids to buy and/or sell from the market participants."* McAfee, R. P. and J. McMillan (1987)

Auctioneers seek to elicit the most favorable result (generally revenue maximization or welfare maximization). Bidders seek to maximize their surplus, which generally involves winning the object at the lowest price possible.[1] Regulatory agencies may have other goals, such as social welfare, simplicity or transparency.

Auctions may be modeled as ascending auctions, where an item is being sold, or descending, where an item is being procured; theoretically this distinction is semantic, although in practice additional concerns exist for procurement auctions.

The rigorous study of auctions originates with the advancement of game theory by John von Neumann and Oskar Morgenstern, refined by John Nash, winner of the 1994

[1] In an ascending auction.

Nobel Prize in Economics. Using the game theoretic tools, William Vickrey's seminal work, "Counterspeculation, Auctions and Competitive Sealed Tenders," (1961), proved the equivalence of a number of different auction formats, and launched an explosive body of research into competitive bidding games.[2] Vickrey won the Noble Prize in Economics in 1996 for his work on incentives under asymmetric information. By two authors' report Vickrey's work led to a flood of publications that included more than 500 scholarly papers by 1981, Riley, J. G. and W. F. Samuelson (1981).

Auctions are one of a number of selling mechanisms available. Alternate mechanisms include posted prices and bi-lateral negotiations. All three mechanisms have unique characteristics, and interactive advantages and disadvantages. Any of the three might be optimal for the sale of a particular good. Generally speaking the optimal mechanism choice is influenced by the following factors:

a) Expected revenue

b) Expected time to sale

c) The seller's risk tolerance of sale, time to sale, and revenue

d) Information structures

1.3.2 Posted Prices

A seller posts a price to sell an asset. Buyers have the binary option of taking or not taking the asset at that price. No negotiation is possible; the seller retains all control over price and terms of sale, and retains no control over the quantity sold (except to set quantity constraints).

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[2] Riley and Samuelson also generalized Vickrey's finding, and were able to define a family of auctions which are revenue equivalent; the literature is surveyed in chapter two.

This mechanism is suitable for goods where the valuations of buyers are well known by the seller, and price-setting and bargaining costs are to be minimized. It is typically employed in large markets; most retail stores and consumer services utilize posted prices.

Introductory economics considers posted prices as the general sale mechanism. The seller makes a pricing decision based on maximizing expected profit. Sellers produce quantities of goods such that for the last good sold MR is equal to MC. Actual production levels and sales price are based on projections, and are not dynamic.

In a posted price model bidders faced with the transaction opportunity will transact if the current price is equal to or less than their valuation. Valuation is a function of the private value a bidder holds for the object, and the prices of substitute goods.

1.3.2 Bi-lateral negotiations

Two parties engage in a series of offers and counteroffers, eventually reaching agreement on a contract. Negotiations are suitable where the scope of the object is likely to change during negotiation, or the bidder's input is needed to define the object. Negotiations are also suitable when buyers and sellers are 'unique' at a discreet point in time, active competition cannot be practiced, involving competition would be costly, or strong competition does not exist. Negotiations are also used when buyers and sellers are big, and neither can command full market power.

The sale of automobiles is most often practiced through bi-lateral negotiations, and many non-standard services and products are priced through bi-lateral negotiations. The theory of bi-lateral negotiations is less easily applied to industry, mainly because the intractability of bilaterally incomplete information makes many negotiations unsolvable.

John Nash is responsible for the development of tools that permit analysis of bilateral negotiations; the solutions to negotiations are often found to be Nash Equilibria.

1.3.3 Auctions

Auctions are competitive bidding game where competitors openly compete on price for an object; the object is sold to the highest bidder. Auctions are suitable for goods where the value is indeterminate or changing, the scope of the object is relatively fixed, and there is close competition amongst bidders for the object.

Auction theory is very well developed in the study of single-unit auctions, which is the case considered in this thesis. Auctions are more complex in the multi-unit case, and this is one of the most active research topics of auction theory.

In an auction a specific and credible set of rules (the set-up) is developed; within the set-up bidders seek to maximize their surplus.

1.3.4 The Seller's Problem

Across these mechanisms, the seller's problem is to maximize the expected revenue of the mechanism, less his costs of marketing and transacting.

The buyer also has a problem; he wants to maximize the expected surplus from sale, less his costs of being active in the market.

For a once-off sale, the seller will often find that an auction is the superior mechanism. Auctions are recognized as particularly suited to environments where there are only a few agents present, and when the agents possess valuable private information.

It has been shown that auctions typically dominate negotiations, Bulow, J. and P. Klemperer (1994), subject to certain conditions.

1.3.5 Auctions Defined

In the popular lexicon auctions are commonly considered as English auctions; bidders call prices out voluntarily, and the price increases gradually until bidding has halted. Although the word auction is from the Latin meaning increasing, auctions can be either increasing or decreasing with limited conceptual importance. Auctions may also be practiced using the submittal of sealed-bids, rather than open outcries.

Auctions can take a variety of forms, and can include a number of rules and characteristics, summarized in chapter two. For the purposes of this thesis, and for most academic purposes, an auction is a uni-dimensional competitive bid game amongst substitutable bidders for a specified object.

Auctions are a very common contract formation mechanism, and are used extensively in the following markets:

a. Financial assets (stocks, bonds, treasury bills, and derivatives)

b. Commodity exchanges

c. Licensing of electromagnetic spectra

d. Corporate mergers and acquisitions

e. Construction procurement

f. Art and antique markets

g. Agricultural land and plant

h. Privatization

and, the subject of this thesis,

i. Institutional real estate investments

1.4 The Institutional Real Estate Marketplace

Institutional real estate consists of the core, stabilized, high quality properties preferred as investments by the institutional investors in the US real estate market. These investors include pension funds, fund advisors, and real estate investment trusts (REITs), amongst others.

Institutional real estate trades in a well-populated and large asset market closely linked to the capital markets. Institutional investors typically have access to sophisticated investment selection and management capabilities. The institutional real estate market is a well informed marketplace with self-regulating feedback loops, investment oversight and access to alternative investments.

The size of the US institutional real estate universe is not particularly easy to survey. Most would agree it is large; CoStar, a real estate information provider has listings on 24 billion square feet of commercial real estate for sale; Loopnet, a competitor of CoStar, professes to have $115 billion of property listings, on 220,000 individual assets.[3] CoStar claims that their information is involved in 60% or real estate transactions, while Loopnet claims to have more market listings than any other company. These services appear to be weighted towards lower value property however; using Loopnet's own figures, the mean value of their listings is about $527,000, while the vast majority of CoStar's listings are priced at less than $5 million.

In the textbook, *Commercial Real Estate Analysis and Investments*, it is estimated that the US commercial property market has a traded value of $5.2 trillion, ($4 trillion if timberland is excluded), Geltner, D. M. and N. G. Miller (2001). This estimate is based

[3] Probably somewhere between $75 billion and $125 billion per year, although that is a very general estimate. The volume traded is highly variable on an annual basis.

on an earlier study with updates, Miles, M. and N. Tolleson (1997). The order of magnitude of this estimate is supported by the annual report, *Emerging Trends in Real Estate*, which estimates the value of commercial real estate at $4.63 trillion, Miller, J. D. (2002). This report proceeds to subdivide commercial real estate into "institutional" and "non institutional" holdings.[4]

Within the universe of institutional real estate are REITs, pension funds, real estate opportunity funds (REOFs), life insurance companies and foreign investors. Each of this major investor classes will be briefly surveyed. These investor classes are not mutually exclusive, and in some cases one class of investors maintains ownership in another class of investors.

1.4.1 Real Estate Investment Trusts

REITs are one of the predominant owners of institutional real estate in the United States, and a growing force in the institutional marketplace. REITs (alongside private equity limited partnerships) "dominated acquisition activity through 2002," Miller, J. D. (2002). According to NAREIT the overall equity capitalization of the 176 publicly traded REITs was $186 billion on June 30th, 2003.[5] This is the equity value of REITs holdings, and does not reflect the unlevered value of their real estate holdings.

Beyond this survey data, it is difficult to accurately measure the overall significance of REITs within the institutional real estate marketplace, although some information is available. For instance, REITs are typically leveraged to about 50% of holdings, NAREIT (2000), but there is no precise measurement of this.

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[4] The Miller report does not define "institutional" and "non-institutional" real estate, so it cannot be compared with the definition used in this thesis.

[5] The National Association of Real Estate Investment Trusts; http://www.nareit.org; accessed July 24th, 2003. A copy of the claim is included at the end of this thesis in printed form.

Another measurement problem is that the equity capitalization of REITs is not necessarily representative of the underlying real estate's net asset value (NAV). This is because REITs are typically valued as operating companies, rather than holding companies for real estate investments.[6]

Accepting that the source data is imperfect, for the purposes of an order of magnitude estimate the market capitalization of REITs can be divided by their aggregate loan to value ratio to give the value of their underlying real estate holdings; this results in a total net asset value of $370 billion. According to NAREIT, REITs had an estimated holding of $375 billion of real estate assets on June 30th, 2003.[7]

No information is available on typical holding periods for REITs' assets, in part because REITs as a major real estate investment class are really only ten years old. A mean holding period of ten years is a reasonable assumption, based on private correspondence with David Geltner, Director, MIT Center for Real Estate.

Interpolating the available data using a ten year holding period, REITs sell something in the order of $35 billion dollars of real estate per annum.

1.4.2 Pension Funds and Tax Exempt Investors

Pension funds are one of the largest classes of investors in real estate, investing mainly in equity and commercial mortgage backed securities (CMBS). Many pension funds consider real estate a core investment class alongside stocks, bonds and private equity. If a fund considers real estate investment, they allocate contributions across the real estate

[6] REITs were originally developed as a tax-efficient real estate investment, similar to a mutual fund. For many years they were not allowed to actively manage property, although that restriction was lifted in the late 1980s. In recent years the operating company model has taken over from the holding company model.
[7] NAREIT, http://www.nareit.org/aboutreits/faqtext.cfm, accessed July 24th, 2003; a printout is included at the end of this thesis.

investment spectrum, in REOFs, REITs, as well as direct real estate holdings. Given the risk tolerance of these institutions, pension funds often own real estate without leverage.

Information is available on the real estate holdings of pension funds. Pension funds' real estate managers are often members of NCREIF which maintains data on the real estate holdings of members' firms, all tax exempt investors. NCREIF uses this data to produce the NCREIF Property Index (NPI) and related information. The NPI is based on data submitted on 3,311 properties with an appraised value of over $100 billion, Fisher, J., et al. (2003).[8] One respondent who participated in the surveys recorded in chapter three dealt primarily with tax exempt investors, and estimated their direct real estate holdings at $150 billion. That respondent estimated that tax exempt investors overall real estate allocations of tax exempt funds were in the order of $400 billion, including their holdings of REITs, CMBS, directly owned real estate and REOF units.

In total NCREIF represents close to $200 billion in directly held real estate equity according to David Geltner, in private correspondence. NCREIF investors use less leverage less than other institutional investors. Typical leverage for an NCREIF property would be 20%, giving an overall value of NCREIF real estate in the order of $240 billion.

In a recent report surveying the sources of real estate finance and investments in the US, it was estimated that pension funds have holding periods of seven to nine years for real estate, Rosen, K. T., et al. (2003).

Using nine years as an average hold period, and the NCREIF estimate of real estate equity with 20% loan to value, tax exempt funds sell something in the order of $25 to $30 billion of real estate annually.

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[8] Fourth quarter 2002.

1.4.3 Real Estate Opportunity Funds

REOFs and private equity real estate investment vehicles are the fastest growing and most risk tolerant group of investors in institutional real estate. REOFs typically have holding periods of three to five years and often invest in turnaround properties, or those needing redevelopment. In fact REOFs usually do not always invest in institutional real estate per se; often they develop and sell institutional real estate.

Investments in REOFs are difficult to accurately measure; there are no central reporting standards or procedures, and non-transparent accounting practices are sometimes used.

Estimates made by the Pension Consulting Alliance and Ernst & Young were that REOFs have cumulative invested capital of between $75 billion and $100 billion; some of this has likely been returned to investors as funds are wound-up. In addition, REOFs often have significant available capital in committed units, estimated by one respondent at $100 billion. That respondent estimated the overall market significance of REOFs as something in the order of $200 billion.

REOFs have an aggregate loan to cost ratio of 61%, Pension Consulting Alliance, I. (2003); loan to value is not available for this group of investors.

As closed-end REOFs typically accrue returns, their actual value is likely well in excess of the capital committed. For instance with an aggregate invested capital of $100 billion, an average return of, say, 18%, and a mean half-life of say, two years, the market value of REOF holdings would be about $140 billion.

Using cost as a proxy for value, and the more conservative end of the cumulative invested equity range, REOFs hold about $125 billion in real estate assets. Using five years as an average holding period, REOFs sell about $25 billion in real estate annually

1.4.4 Life Insurance Companies

Previously one of the largest sources of finance for real estate, life insurance companies are gradually reducing their real estate exposure (at least their equity exposure; they are still the source of many commercial mortgages). They currently have an aggregate of $32 billion invested in institutional real estate, Miller, J. D. (2002). Leverage and holding period information is not available for this group of investors, however it would likely be similar to that of pension funds.

Information on holding periods for this investor class is not available. Assuming that life companies are exiting real estate, it might be safe to assume that they are selling at least $5 billion of real estate assets annually.

1.4.5 Foreign Investors

Over the past few years certain factors have made US real estate an attractive investment to investors from other countries, notably Germany, where restrictions on overseas investments have recently been lifted. The factors that have encouraged foreign direct investment in the US included the strength of the US economy. An MIT Center for Real Estate working paper estimated that real estate investment typically constituted about 10% of foreign direct investment (FDI) at any point in time, Bacow, L. S. (1988).

The US Department of Commerce's Bureau of Economic Analysis estimated that foreigners invested $2.4 billion in real estate in 1999 (the most recent data available). At

that time the historical cost of FDI real estate investment was $40.2 billion.[9] Cumulative FDI was $955.7 billion in 1999, and FDI was $283.4 billion in 1999. As with the closed-end REOFs, this may not account for accrued earnings.

It is not known to what extent this equity is invested through other investor classes, such as REITs or REOFs, although it appears to be direct holdings. Neither is it known to what extent these assets are leveraged, what typical holding periods are for foreign investors, or what typical returns are for accrued earnings.[10]

The volume of real estate sales initiated by foreign investors in US real estate can not be estimated with any degree of accuracy based on the information available.

1.4.6 Overview of Investor Classes

Using the estimates presented here, which are order of magnitude only, the classes of investors profiled above are selling something in the order of $100 billion of institutional real estate assets per year, and have holdings of institutional real estate in the order of $800 to $1,000 billion. The figures indicated by real estate information sources generally concurs with these estimates.

1.4.7 Survey of Institutional Real Estate Sales

Given the useful, but inconclusive information presented above, a survey of asset sales recorded by Institutional Real Estate, Inc (IREI) was compiled for this thesis. IREI publishes a weekly newsletter, the Institutional Real Estate Newsline (IREN), of recent news and events in the institutional real estate marketplace, including a summary of

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[9] Available online at: http://www.bea.doc.gov/bea/di/di1fdibal.htm; a printout is included in Appendix B .
[10] Bacow thought that foreign investors real estate holding periods were longer than usual, and that their returns were lower than usual; the underlying conclusions was that foreign investors held low risk long term real state investments.

acquisitions that were publicized the previous week. Eleven issues of the IREN, published between April and July 2003 were surveyed, and all investment sales were recorded and the transactions analyzed.[11] Temporal seasonal or market-cycle biases may have affected this data; the data was collected during the spring and summer of a down-market.

The investment sales recorded in the IREN on eleven occasions between April and July 2003 were aggregated, and analyzed. IREI records the buyer, seller, location, sector, and dollar value of all transactions it learns of each week within the context of its publication, the Institutional Real Estate Universe ("the Universe"). While the Universe is apparently not a comprehensive publication, it includes listings of approximately 150 real estate investment firms or advisors, who invested approximately $58 billion in real estate in 2002.

A total of 332 sales were recorded in these issues of the IREN, equal to an annualized total of about 1,500 sales. There were thirty sales per week on average, with a standard deviation of six. The mean sales price was $36.4 million, with a standard deviation of $65.9 million. The sales are summarized in table one.

Real Capital Analytics (RCA) is another real estate news source that tracks real estate markets and transactions; RCA tracked $57.4 billion of institutional real estate sells in the second half of 2000. This equals an annualized institutional real estate sales volume of $105 billion. A printout of the RCA figures is included in Appendix B.

[11] The publication dates of the IREN issues surveyed are: 4/28/03, 5/5/03, 5/12/03, 6/2/03, 6/16/03, 6/23/03, 6/30/03, 7/3/03, 7/14/03, 7/21/03 and 7/28/03.

TABLE 1: IREN SALES BY SECTOR

ASSET TYPE	NUMBER OF SALES (STUDIED)	NUMBER OF SALES (ANNUALIZED)	AGGREGATE SALES VALUE (STUDIED)	AGGREGATE SALES VALUE (ANNUALIZED)	MEAN SALES VALUE	SALES VALUE (STD DEV)
APARTMENTS	86	407	$ 2,731.5	$ 12,912.5	$ 31.80	$ 39.40
HOTEL	20	95	$ 753.9	$ 3,563.7	$ 33.60	$ 36.30
INDUSTRIAL	49	232	$ 925.4	$ 4,374.5	$ 18.90	$ 25.50
OFFICE	109	515	$ 4,764.9	$ 22,525.0	$ 43.70	$ 88.20
RETAIL	67	317	$ 2,483.7	$ 11,741.2	$ 43.00	$ 75.50
TOTAL	331	1,565	$ 11,659.32	$ 55,116.8	$ 36.45	$ 65.85

As can be seen in figure one, distribution by asset type is dominated by office (42%) followed by apartments (21%) and retail (21%).

As can be seen in figure two, sale volume distributed by sale value is dominated by a relatively small number of trades in excess of $100 million (35% of total sales value), followed by $50 million to $100 million (25% of total sales value). Sales between $25 million and $50 million, and $10 million and $25 million each accounted for 18% of aggregate sales value. Sales for assets valued at less then $10 million were relatively insignificant, accounting for only 4% of the sample.

Sale value and the number of deals differed widely across price range, as can be seen in figure three. For instance the transaction in excess of $100 million accounted for about 4% of the total number of sales, yet accounted for over 35% of the dollar volume. Sales not exceeding $10 million were 23% of the deals recorded, but only 4% of the dollar volume.

The total annualized investment activity represented by the sample is $54 billion; $11 billion in sales were represented in the sample, with an average of over $1 billion in sales per week.

If a weighted average holding period of seven years was assumed for the companies represented in the Institutional Real Estate Universe survey, this would imply a value of holdings in the order of $380 billion. Clearly this is not a comprehensive survey of the institutional real estate investment marketplace, although it might be 40% to 50% complete.

RCA, another information source for institutional real estate recorded $57.2 billion in sales of assets valued over $5 million in the second half of 2000; one of their competing information sources, the National Real Estate Index recorded $54.6 billion of institutional real estate sales in the same period.

1.4.8 Overview of Institutional Real Estate Marketplace

The institutional real estate marketplace consists of a dispersed and informationally inefficient marketplace. Investor classes are many, definitions of institutional real estate differ, and no central reporting protocols are practiced; indeed many participants actively try to prevent data on their activities reaching the public domain. As a result estimates of holdings and sales are imprecise, and estimates drawn from different sources differ significantly, sometimes to the point of being incompatible.

Investors in institutional real estate include tax exempt funds, publicly traded REITs, privately owned REOFs, and foreign investors. Total holdings of institutional real estate in the US is something in the order of $800 to $1,000 billion. Investors invest

for holding periods of three to ten years typically, although for stabilized assets average holding periods are likely close to ten years.

A survey of sales recorded in the IREN shows annual sales volume in the order of $60 billion; the RCA web-site indicates annual transaction volume was $115 billion in 2000. Given a prior estimate of institutional real estate as being worth something in the order of$800 to $1,00 billion, and holding periods between five and ten years the data available in IREN and RCA seem plausible. Although the IREN and RCA estimates of annual volume are quite different, the RCA data represented a market peak, and the IREN data represents a market down-cycle. The volume of transactions changes with the overall market cycle, perhaps as widely as between 2% and 20% of total holdings, according to David Geltner in private correspondence.

FIGURE 1
SALES FROM IREN SAMPLE, SUMMARIZED BY SECTOR

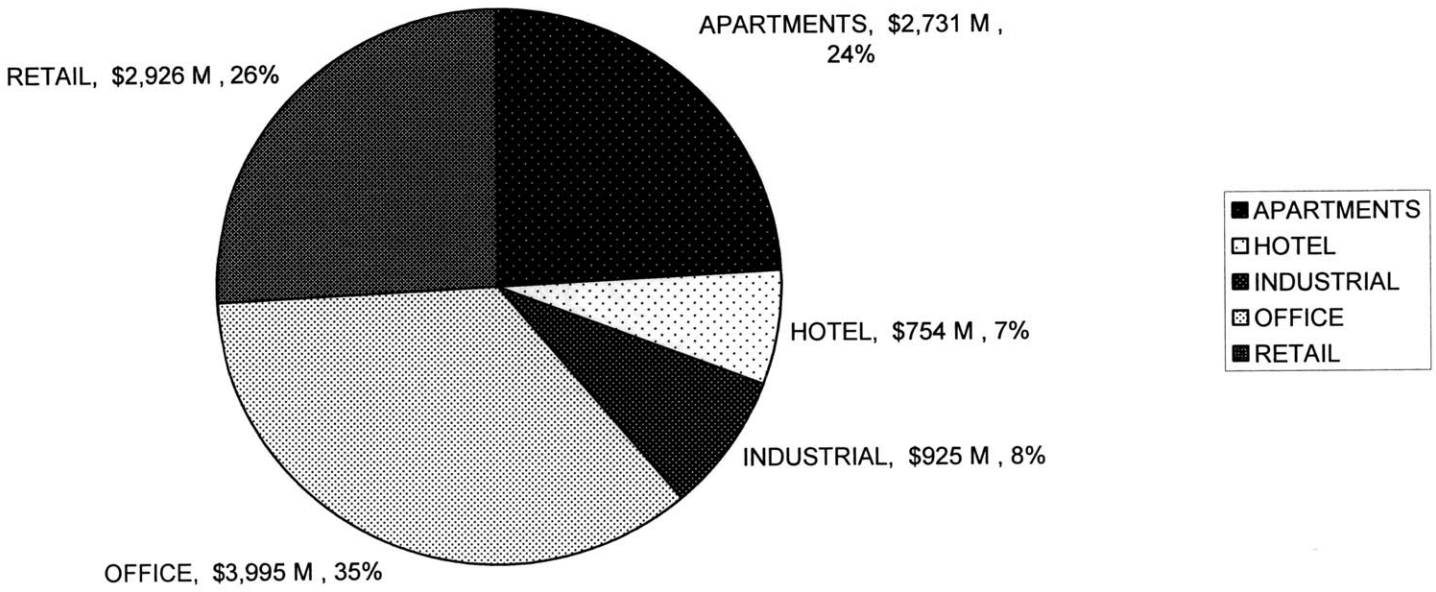


FIGURE 2
SALES FROM IREN SAMPLE, SUMMARIZED BY VALUE ACCORDING TO SALE VALUE RANGE

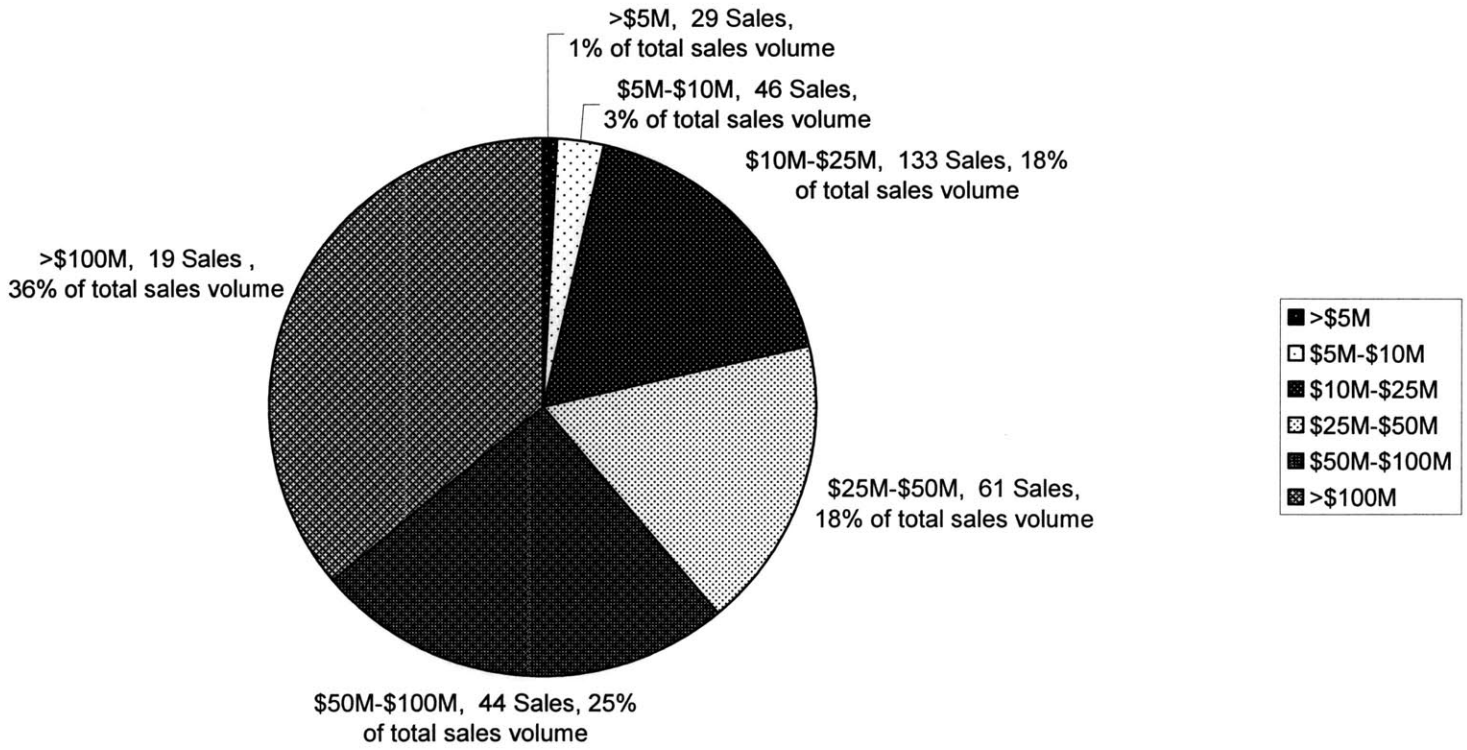
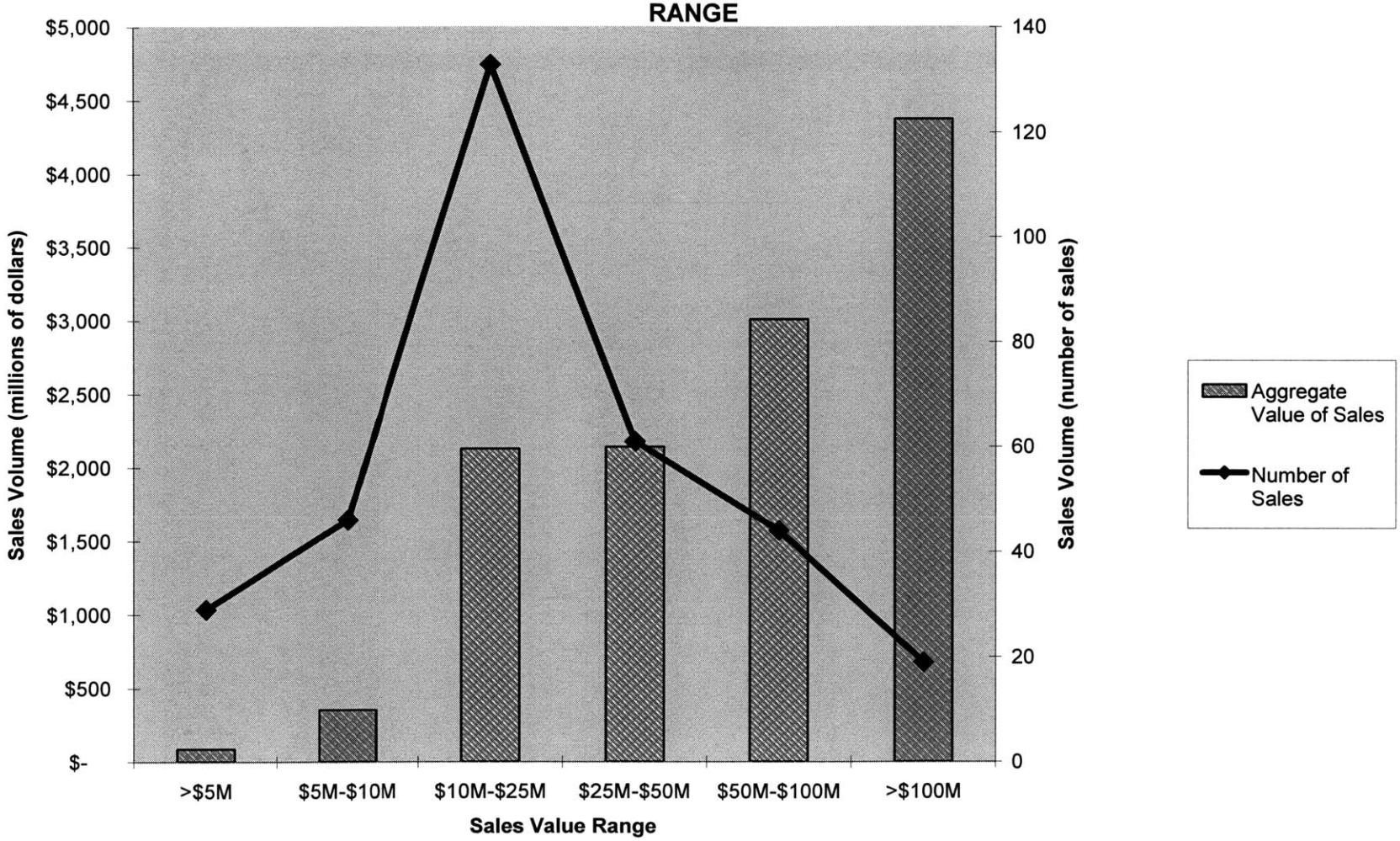


FIGURE 3
DISTRIBUTION OF SALES IN IREN SAMPLE BY VALUE, ACCORDING TO SALES VALUE RANGE



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Chapter 2

An Overview of Auction Formats, Concepts and Literature

This chapter consists of an overview of auction formats, including the English auction, the Dutch auction, and the first and second price sealed bid auctions.

The set-up of a market institution is introduced.

A review of auction concepts, common solutions, and the goals of auctions is then presented.

A literature review surveys the most relevant literature to the topic of this thesis, including papers relating auctions to negotiations, and the most important literature on the efficiency, optimality and revenue equivalence of auctions. Papers relevant to multi-round auctions and real estate auctions are also reviewed.

The final section of this chapter abstracts the points from the literature review and concept review that are most relevant to the two round sealed bid auction for the sale of institutional real estate.

2.1 The Set-up

The problem of selecting a mechanism consists of the set-up. This is the set of conditions within which the framework must operate.

The set-up begins with the participants. While the seller typically selects, and perhaps designs, the mechanism, selection should be in reference to the bidders in the market place. The bidders react to the seller's mechanism. If the seller is trying to elicit favorable responses from the bidders, the mechanism must be designed with their responses in mind.

The set-up includes the sets of private information that bidders possess, in addition to publicly available information. Auctions generally work well in circumstances with little private information; mechanisms can be designed to elicit private information from the bidders, and distribute it across the marketplace.

Based on the information available to him, each bidder develops a valuation of the object. The valuation might be very close to, or dependent on, other valuations in the marketplace. The valuation is independent of the bid strategy.

Each bidder also develops a bid strategy, which is a best response to the valuations and bid strategies he thinks other bidders have, and how the winner is identified. A bid strategy is a function of competitors bid strategies and a valuation. The winner of an auction is most commonly the highest bidder. Usually the winner is the only bidder who has to pay, however different winning and payment rules can be devised.

A solution to an auction consists of a set of strategies played by bidders. In cases where dominant strategies exist, the collection of strategies that solve the game will be an equilibrium. In other cases solutions will be Nash Equilibria or Bayesian-Nash Equilibria. It is possible for an auction to have no solution.

2.2 Auction Formats

The rule and bidding structure of auctions generates a variety of mechanism types, with different appearances, but often similar expected outcomes. The main auction formats fall into open outcry or sealed bid models where the winner of the auction is the highest bidder, and losers pay nothing. Other major distinctions are whether equilibrium is found using the second highest bidder's publicly revealed information, or a proxy for his valuation.

2.2.1 English Auction

An English auction is the format usually associated with arts and antiques auctions. Bidders, who have previously been able to examine the lot, form a valuation and bid competitively. When competition ends (i.e. only one bidder remains), the item is knocked down to the remaining bidder at the last price that had competition.

A dominant strategy (defined later) exists in an English auction is to bid up to your valuation. Deviating from this strategy can only have a negative effect on a bidder's welfare. This auction is efficient, (defined later), under a wide range of circumstances, and is simple to implement and participate in.

2.2.2 Dutch Auction

A Dutch auction is an open outcry auction where the price descends on a price clock. It is most closely associated with the Dutch flower markets at Aalsmeer and Naaldwijk, and their smaller competitors. This auction is isomorphic to the first price sealed bid auction, reviewed later.

In this auction format the price starts high and gradually descends; when the first bidder calls for the object he wins it at the price he bid.

In this auction bidders must develop a strategy. A bidder's optimal strategy is to maximize their surplus by shading their bid below their valuation to maximize their expected surplus. As a bidder shades his bid further he reduces his probability of winning the auction, but increases his conditional surplus. Facing rational competitors, bidders will find that one strategy best represents their interests as long as all other bidders play their best strategy.

The collection of strategies from rational informed bidders forms a Nash Equilibrium (NE). This auction is efficient under a certain range of circumstances.

2.2.3 First Price Sealed Bid Auction

In a first price sealed bid auction (FPA) each bidder prepares a single bid for the object, and submits it to the auctioneer. The auctioneer selects the highest bid amongst the bidders, and awards the object to the highest bidder, who pays his bid.

This auction format is theoretically identical to the Dutch auction. The bidder is faced with the same problem; the auctioneer accepts the highest (or only) bid.

Bidders develop strategies in a manner similar to the Dutch auction, optimizing the probability of winning the auction and the conditional surplus. Like the Dutch auction, a set of rational informed bidders will form a NE, which no bidder is incentivized to deviate from.

2.2.4 Second Price Sealed Bid Auction

In a second price sealed bid auction (SPA) bidders identify their valuations and submit them to the auctioneer. The auctioneer identifies the bidder who values the object most highly, and awards it to them at the second highest bid. In a single unit case this auction format is isomorphic to the English auction, except for the potential for the auctioneer to profit from acting dishonorably.[1]

As the English auction, the second price sealed bid auction is highly efficient, and simple to operate and participate in. Bidders have a dominant strategy to reveal the highest price they are willing to pay. This auction format is relatively rare in practice,

[1] The auctioneer can take advantage of the highest bidder using their signal, and the private information of the second highest bidder.

most likely due to its perceived corruptibility; a longer discussion is available, Rothkopf, M. H., et al. (1990).

2.2.5 All-pay Auction

In the all-pay auction bidders identify their valuation, but bid on the understanding that whatever they will have to pay their bid, whether or lose. The item is awarded to the highest bidder. This auction format is theoretically revenue equivalent with the English and Dutch auctions under certain conditions.

Apart from being a theoretically stimulating subject, the all-pay auction exists in practice in cases of competition by attrition. For example political lobbying can be modeled as an all-pay auction, and the entry stage of auctions with entry can be modeled as an all-pay auction. An auction with costly participation can also be modeled as an all-pay auction.

All-pay auctions collapse with risk averse bidders.

2.2.6 Auctions and Entry

Auctions sometimes have control mechanisms restricting or discouraging participation. Examples of such mechanisms include rules that limit the number of competitors allowed, pre-qualification rules, and auctions that entail entry fees or participation costs.

Depending on the control mechanism auctions with entry are not necessarily tractable. For instance, Fullerton, R. L. and R. P. McAfee (1999) resolve that the optimal situation in an auction with entry is to allow only two bidders to participate, and to ensure that they are the two most efficient bidders. The lower the level of competition (as long as there is some), the more the bidders invest in the auction and the better the outcome.

Jeitschko, T. D. and E. Wolfsetter (2000) found that auctions with participation costs will always be won by the most efficient bidder; in turn less efficient bidders are discouraged from participation, leading to the failure of auctions.[2] Less efficient bidders will foresee a trivial probability of winning the auction at a profit, but know they must incur some cost by participating. Only the most efficient bidder can enter this auction with an expected surplus, and no bidder will participate if their expected outcome is negative. In reality information asymmetries and optimism across bidders probably maintains competition.

The spectrum auctions in the United States in the mid-1990's avoided the problem of Jeitschko, T. D. and E. Wolfsetter (2000) by subsidizing minority and disadvantaged bidders. These subsidies were supposedly designed for social reasons, but it has been found that they increased the auctioneer's revenue.

A solution to sub-optimality and inefficiency in auctions with entry has been proposed, Fullerton, R. L. and R. P. McAfee (1999). The solution gives a prize to all who gain entry to the later round thereby eliciting strictly non-negative expected returns for all round one participants. Entry to the costly rounds is restricted to those bidders who bring MR exceeding MC, which is usually at two bidders.

Bulow, J. and P. Klemperer (1994) find that restricting entry in a bidding environment with trivial costs will always harm the auctioneer. Facing a pool of bidders and the ability to negotiate, an auctioneer can improve his situation by attracting one extra bidder to the auction. An auctioneer should try his hardest to overcome an entry mechanism, and bring as many bidders as possible to an auction.

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[2] For all bidders but the best, the cost of participating in the auction exceeds their risk adjusted expected surplus.

2.3 Concept Review

The main concepts of auctions, including valuation functions and the most common goals and equilibrium strategies are summarized in this section.

2.3.1 Valuation and Valuation Functions

The valuation is the price a party considers the maximum an object is worth to them, or, in the case of a seller, the minimum below which they do not want to trade. A party does not want to trade beyond their valuation, but will try to trade as far below their valuation as possible (increasing their utility). A valuation function is the model used to arrive at an object's value.

In real estate valuation functions across bidders are likely very similar. Underwriting principles using discounted cash flows are the convention, and cash flows and risk should be very similar, if not identical, across bidders. The methodology used in the Argus software might be considered the expanded valuation function used in real estate. In some real estate cases the valuation function is prepared by the seller and distributed to bidders.[3]

2.3.2 Independent Private Values

The majority of auction theory deals with the Independent Private Value (IPV) framework. In this framework each bidder has a unique valuation function, from which they their IPV is determined. Competing bidders know the distribution of their competitors' bid functions, but don't know their actual valuations. In the IPV case a

[3] For instance, Spaulding & Slye Colliers in Boston provide floppy disks and CDROMs with Argus models as part of their investment sales packages; http://www.spauldslye.com/; see appendix for a printout.

bidder's valuation is determined absolutely independently all other bidders; there is no information that would change the first bidder's valuation of the object.

In the context of IPV, efficient allocation is a concern; welfare is affected by the allocation of the good. The IPV framework also has revenue generation implications.

The IPV case is an extreme framework where bidders are perfectly informed and have unique valuations.

An example of an IPV object in real estate would be a vacant site permitted for a new hotel. Each hotel operator has independent cost and revenue structures based on their business models; each operator will develop a value for the site independent of, but perhaps very similar to, all other operators' valuations.

2.3.3 Common Values

In the Common Value (CV) framework the object has a single value to all bidders, but they are asymmetrically and incompletely informed as to what that value is. In the CV framework a bidder updates his valuation if he learns the information other bidder's possess; if all bidders had access to the same information they would develop the same valuation for the object. In the CV framework everyone agrees about how to value an object, but are uncertain what that value is; effective collection and distribution of information can increase revenue by giving bidder's better information.

In the CV framework welfare is not affected by allocation. Revenue generation is not affected by allocation either, but is affected by the quality of information that bidders have. The CV framework includes an inherent selection bias towards the bidder with the most optimistic information, which can lead to the winner's curse (defined later).

The CV case is an extreme framework where bidders are imperfectly informed, and have no unique valuations.

CMBS and publicly traded REIT stocks are examples of CV objects in real estate.

2.3.4 Interdependent Values

In the Interdependent Value (IV) framework the object being auctioned has both CV and IPV characteristics. In the IV framework a bidder updates his valuation based on information he receives from other bidders. In this framework careful design to elicit signals and distribute information amongst bidders can increase revenue and promote efficient allocation. As in the IPV case, allocation of the object is important, affecting welfare as well as revenue; as in the CV case effective collection and distribution of information increases the auctioneer's revenue.

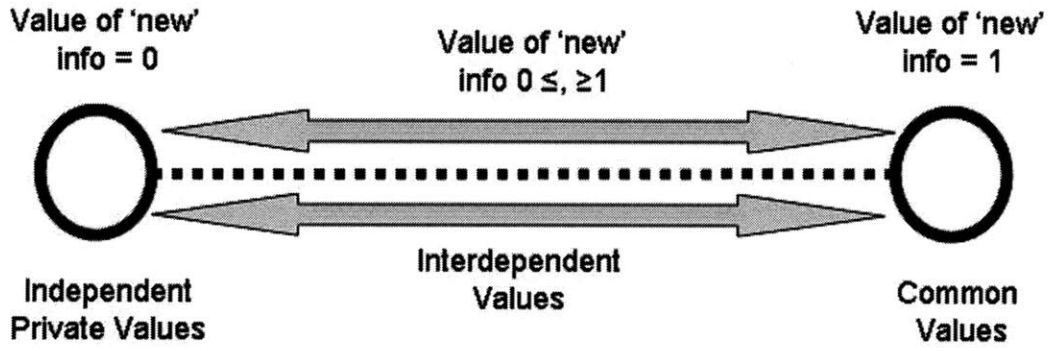
The IV case is analytically very complex, however it is the most relevant framework for many auctions. An example of an IV case in real estate is a hotel with the flag contract up for renewal in two years. In this circumstance the income stream over the next two years is CV, while the income stream beyond that time is dependent on the bidder's plans for the asset.

Arguably almost any real estate asset, even a security, could be considered an IV object; for instance while the future value of a CMBS is CV, different financial institutions will have different exposures and risks that define their current desire to own that security, an IPV.

2.3.5 Real Estate Valuation Models

Across the spectrum of valuation frameworks, Independent Private Values, Common Values and Interdependent Values, real estate assets will have varying tendencies. Individual assets will have relatively strong CV or IPV components, without fitting either framework precisely. This relationship is represented graphically in figure four.

FIGURE 4
GRAPHIC REPRESENTATION OF VALUATION FRAMEWORKS



In the IPV case for instance, a bidder's valuation is unique and the importance of external information to him is zero. In the CV case the bidder's valuation function is the same all other bidders, and the importance of external information him is one.

The IV case is a combination of the IPV and CV cases, where the object has components with CV and IPV characteristics, and the importance of external information to the bidder is between zero and one. Considering real estate specifically within these frameworks, most real estate assets will fall into the IV framework.

Simplifying the distinctions between the CV and IPV frameworks slightly, a stream of future income whose cash flows and risks is unlikely to differ significantly

across bidders falls into the CV framework. In contrast, streams of risky cash flows unique to each bidder, such as redevelopment projects, fall close to the IPV framework.

While generalization is by its nature somewhat inaccurate, institutional real estate assets has strong characteristics of the CV model. Institutional real estate assets typically have a steady stream of cash flows and systematic risk; future cash flows (expenses and leases) are typically more dependent on market conditions than any individual investor's attributes.[4]

On the other hand, assets with development potential have stronger characteristics of the IPV model, where cash flows and risks are dependent on the plans and programs developed by individual bidders.

Within the context of this thesis, the institutional real estate assets are IV objects, with strong CV components.

2.3.6 Bid

A bid is an offer to purchase an asset at a certain price. A bid signals a component of the bidder's private information to all those who can view it. A bid is not necessarily the same as a valuation. A bid is the combination of a valuation and a bidding strategy

The informational value of the bid to other bidders is dependent on the auction's rules. In an English auction the signal tells other bidders that your valuation has not been exceeded; in an M&A auction the signal may include detailed information regarding post-merger plans and valuations of business units. The amount of information contained

[4] As with many generalizations, exceptions exist; REITs often exhibit superior management capabilities and cano have economies of scale that other institutional real estate investors do not; in such cases REITs would fit closer to the IPV framework.

in the bid, and the rules for distributing the information can have implications for revenue generation and efficient allocation.

2.3.7 Reservation Price

A reservation price is the price below which the seller commits not to trade; the seller's reservation price is not necessarily his valuation. Indeed it has been proved that the optimal reservation price exceeds the seller's valuation in the IPV case, Riley, J. G. and W. F. Samuelson (1981). An optimal reservation price exceeding the seller's valuation strictly increases the auctioneer's expected revenue, but reduces the probability of sale.

A body of literature exists that demonstrates that it is not always to a seller's advantage to announce a reservation price. For instance if a seller can re-offer an unsold asset, a reservation price will be ineffective. It has also been shown that in the IPV case the seller's optimal reservation price reduces rapidly to zero (or to his valuation) as the number of bidders increases, Levin, D. and J. L. Smith (1996).

A reservation price that is not publicly announced is equal to the seller's valuation, and will not increase expected revenue.

2.3.8 Efficiency

Efficiency in auctions is the Pareto-optimal condition, where social welfare is maximized. In the case of market design or the economist as an engineer, social welfare is typically the primary concern. [5] It is widely believed that efficiency supports revenue generation. While not an absolute truth, a seller can probably generate the most revenue by selling an object to the bidder who values it most highly.

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[5] Borrowed from ROTH, A. E. (2002): "The Economist as Engineer: Game Theory, Experimental Economics and Computation as Tools of Design Economics," *Econometrica*, 70, 1341-1378.

2.3.9 Optimality

Optimality in auctions is the seller's concern with maximizing revenue. An optimal auction generates revenue weakly exceeding the revenue generated by other mechanisms.

Generally the optimal auction involves identifying the highest bidder and selling to them. In the real estate auction studied in this thesis bids are incomplete, and the optimal bidder is not necessarily the highest bidder; sellers value a component of the bidder's characteristics.

2.3.10 Winner's Curse

The winner's curse is the case in a CV or IV auction where the winner of the object pays too much, and immediately regrets winning the auction. In these frameworks there is a selection-bias towards the bidders with the most optimistic information about the CV. This force can push bidders to pay more for an object than it is worth. In a CV framework it is very difficult to systematically profit by participating in auctions.

The winner's curse is usually considered a phenomenon of the first price sealed bid auction in the CV case.

In experimental studies of construction contractors it was found that experience and judgment helped bidders avoid the winners curse, Dyer, D. and J. D. Kagel (2002).

Nanda, S., et al. (1997) showed that buyers at Resolution Trust Corporation (RTC) auctions experienced the winners curse.[6] Far from being the alleged fire-sales

[6] The RTC was a government sponsored clearinghouse and responsible for providing liquidity after the savings & loans debacle of the later 1980's. The RTC took non-performing loans, foreclosed assets and other assets onto its books, and sold them off, often using actions. The RTC provided much needed liquidity to distressed real estate market. Ultimately the RTC was responsible for the development of the CMBS market and improved underwriting and management standards in the industry; some of the respondents in chapter three credit the RTC-era as the source of the two round auctions studied in this thesis.

where bidders got bargains at the government's expense, their findings show that the RTC was generally effective at maximizing revenue. As discussed earlier, the winner's curse is a characteristic of the CV framework; the identification of the winner's curse in the RTC auctions suggests that the assets auctioned had strong CV components.

2.3.11 Dominant Strategy

A dominant strategy (DS) is a strategy which weakly benefits a bidder; the bidder will never benefit from deviating from this bidding strategy. For instance in an English auction a dominant strategy is to bid if your valuation exceeds the current price.

A DS present a bidder with very simple bid functions. Auction mechanisms with DS minimize bid preparation costs, and reduce the probability of irrational or unsophisticated behavior by bidders. A set of DS played by all competing bidders results in an equilibrium.

2.3.12 Nash Equilibrium

A NE is a collection of bidding strategy which bidder will not benefit by deviating from as long as all other bidders follow their best strategy. If all other bidders play their NE strategy, a bidder's best response is to play his NE strategy.

NE require more information to find equilibrium that DS, and are have less robust solutions. They will often involve more complex bid functions than DS.

2.4 Literature Review

This section includes brief reviews of the existing literature considered most relevant to the topic at hand. For more information the reader is referred to the excellent survey, Milgrom, P. (1989), the reading list in Klemperer, P. (1999) and a survey specific to real

estate, Quan, D. C. (1994). Two books available on the topic of auction theory are Krishna, V. (2002), and Milgrom, P. (forthcoming)

2.4.1 VICKREY, W. (1961): "Counterspeculation, Auctions and Competitive Sealed Tenders."

The paper that started it all; Vickrey, who won the 1996 Nobel Prize in Economics for this work, was concerned with the potential for inefficient markets to organically develop. In his view there were incentives in certain markets for bidders to develop strategies that result in inefficiency and sub-optimality, Vickrey, W. (1961). He proposed the EPMA, (Exclusive Public Marketing Agency), which would develop bidding rules enforcing truthful declaration from buyers and sellers. This intermediary and the information it elicited would result in a centrally-planned market with efficient allocation.

Vickrey moves on to discuss ways in which unregulated markets can elicit efficiency with auctions. He proved that a variety of common auction mechanisms are revenue equivalent and efficient under certain reasonable assumptions; an implication of his finding is that all of his auctions are optimal. His assumptions include IPV, homogenous distribution, and risk neutrality.

The expected revenue from any of the following classes of auctions (English auction, Dutch auction, FPA, SPA) is dependent on the second highest bidder's valuation for the object.

Vickrey also showed that the solution to the second price auction was a DS, while the solution to the first price auction was a non-cooperative NE. Although the expected revenue is the same, the fact that the equilibrium is reinforced by a NE in the SPA leads to a less robust outcome.

Vickrey considered the relevance of his assumptions, noting that the FPA will fail to be efficient in cases where there is variation in the information available, risk aversion, or an inability of bidders to practice sophisticated bidding strategies.

In cases where the FPA is sub-optimal, Vickrey proposed a sealed bid format, the SPA, that allocates efficiently, and has a DS solution. As Vickrey writes that while efficiency is relevant, mechanism selections are made by sellers who are often concerned with revenue generation; optimality is a component of mechanism design.

Finally, Vickrey notes that better informed bidders benefit from a FPA and lesser informed bidders benefit from a SPA. While a switch from a FPA will have a strictly non-negative impact on welfare, it might have a negative impact on the seller's revenue.

2.4.2 BULOW, J., and P. KLEMPERER. (1994): "Auctions versus Negotiations."

In this paper the authors address the question of whether or not a negotiation dominates an auction. They find that an auction will always best a negotiation, and that a pre-auction bid should never be accepted. While ex-post a reserve price will sometimes bring more value than an extra bidder, ex-ante an extra bidder is better. The model in this paper assumes costless bidding.

Bulow, J. and P. Klemperer (1994) also found that an extra bidder dominates a reserve price and a negotiation, and that a reserve price auction dominates one auction without. In the repeated play case the auctioneer cannot benefit from post-auction negotiation.

These findings are generalized to the IPV and IV cases. The authors' initial concern was how to advise an executive when confronted with an acquisition offer; they

conclude that an executive who can successfully engage a second bidder can be found to have exercised good business judgment. The executive who negotiates cannot say the same thing.

2.4.3 RILEY, J. G., and W. F. SAMUELSON "Optimal Auctions,"

In this paper the authors define a family of auctions which are revenue equivalent in the risk neutral IPV case. They go on to prove that these auctions are optimal in this circumstance when combined with an announced reservation price. The optimal reservation price is strictly exceeding the seller's valuation, and is unaffected by the number of bidders.

The authors proved that all auctions meeting four conditions are revenue equivalent in the IPV risk neutral case. Those conditions are an announced reservation price, the bidder with the highest valuation being the object, anonymous bidders, and bid functions strictly increasing in valuations.

The authors demonstrated that it is important for all bidders to be anonymous for revenue equivalence to hold. They modeled a match auction where a certain bidder was always given the opportunity to match any other bid received; they showed that the match auction was both inefficient and sub-optimal.

Riley, J. G. and W. F. Samuelson (1981), also showed that the FPA dominates the SPA with risk averse bidders.

2.4.4 FULLERTON, R. L., and R. P. MCAFEE (1999): "Auctioning Entry into Tournaments."

A tournament may be considered an auction with an entry round and participation costs. A tournament may also be considered a multi-unit auction followed by a single unit auction.

Fullerton, R. L. and R. P. McAfee (1999), find that in general the number of participants in the final round of the tournament should be restricted. In the vast majority of cases the optimal number of bidders is two. Limiting entry saves the auctioneer costs on administering the tournament, and encourages the bidders to invest more in winning the auction. The level of effort expended by each bidder increases with the probability of winning, as long as the probability of winning is not one. In that case the bidder will exert no effort above a minimum requirement. When restricting the number of entrants to a second round, the auctioneer faces the additional problem of identifying the two best bidders; this can be done using multi-round auctions not surveyed in this thesis.

2.4.5 MAYER, C. J. (1993): "A Model of Real Estate Auctions versus Negotiated Sales."

In this paper a comparative study of search and auction markets for residential real estate is developed. In this model bad pools of bidders come to an auction. Better pools of bidders are in the search market and come to view the asset stochastically.

Mayer concludes that auctions with bad bidder pools sell at a discount to negotiated sales because they develop a poorer match. Mayer developed a concept of a monetary cost and a mismatch cost for a bidder at auction. At auction bidders will buy at

the same total cost as at negotiation, but the monetized price that the seller gets will be inferior to a negotiation.

This paper is one of a body of literature that addresses the existence simultaneous search and auction markets for real estate; Adams, P. D., et al. (1992), Mayer, C. J. (1993), Mayer, C. J. (1998), and Quan, D. C. (2002). Together these papers develop a series of models that explain how the two mechanisms can co-exist, and what their relative advantages are. This body of literature consistently assumes that auctions for residential real estate don't attract the best bidders, who arrive stochastically in the search market. A sellers optimal mechanism selection is dependent on time to sale, holding costs, and the auction discount.

The conclusions of these authors are not directly applicable to institutional real estate. Holding costs for an income producing real estate asset should be positive giving the seller flexibility in mechanism selection.

Another difference between Mayer's model and the institutional real estate market marketplace is the difficulty in matching. Institutional real estate investments are typically closer substitutes than single family homes; the relative value of waiting for a best match is reduced in the institutional market.

2.4.6 YE, L. (2002): "A Theory of Two Stage Auctions."

In one of the most relevant papers to the topic at hand, Lixin Ye develops a theory of indicative bidding in a two-round auction. This auction is used extensively in corporate mergers and acquisitions. In Ye's model learning valuation is costly, and participation in the costly round is limited to those who indicate in the costless first round they are the most efficient bidders. The auction as practiced in M&As is not efficient.

A characteristic of this auction similar to the multi-round auction for institutional real estate is that initial bids are non-binding; there are neither costs nor prizes for participating in round one, so selection of round two participants is inefficient. By introducing schemes with negative outcomes in the first round, the mechanism could be made efficient. For instance, if first-stage bids were binding, or deposits were made, second round entry could be made efficient.

Ye finds that in cases where the costly round doesn't have valuation-updating the optimal number of entrants is one. He finds that if the costly round does have valuation discovery the optimal number of entrants is two or more. Ye ran a Monte Carlo analysis with certain reasonable assumptions drawn from M&As and found that the optimal number of entrants in the costly round is generally finite and small, and almost always two.

Finally, Ye extended the revenue equivalence theorem to multi-round auctions and to the entry-fees bidders pay; the auctioneer ultimately pays all entry costs, and is incentivized to reduce the costs of participating as much as possible.

Ye concludes that the non-binding indicative bid process used in M&A is inefficient and sub-optimal, but that solutions for the inefficiency exist.

2.4.7 THOMAS, C. J., and B. J. WILSON (2001): "The Effect of Offer Verifiability on the Relationship between Auction and Multilateral Negotiations."

Thomas and Wilson propose that multi-lateral negotiations are equivalent to auctions, depending on the information revealed to bidders, and its verifiability. In a multi-lateral negotiation where the auctioneer's announcements are verifiable, the outcome is should equal an English auction. In a multi-lateral negotiation where the auctioneer's

announcements are non-verifiable the outcome should equal a Dutch auction. Thomas and Wilson proceed to test these hypotheses experimentally.

Their findings support the hypotheses, except for behavioral differences. Transaction prices are strictly lower in a verifiable multi-lateral negotiation than in an English auction, however this is because of bidding errors.

The equivalence of the institutions is not exact because in a multi-lateral negotiation the auctioneer may be able to initiate post-auction negotiations to elicit a better price. As demonstrated by Bulow, J. and P. Klemperer (1994), this strategy, in a single-play game, dominates an English auction.

In the Thomas and Wilson experiment subjects competed with two mechanisms; multi-lateral verifiable negotiation and English auctions. The results of the experiment show that both institutions are highly efficient (approx. 98%). In the procurement model the multi-lateral negotiation generated lower prices than the English auction because of unnecessarily aggressive initial bids by those with the lowest valuations. The experiment included a mechanism that favored early activity, generating non-equilibrium bidding strategies. When these cases are removed, comparisons showed that both institutions generated prices very close to the second highest valuation. When the inefficient cases were studied the authors found that the inefficiency was usually minor

Thomas and Wilson also found that the opportunity the auctioneer had to renegotiate with the best bidder was not the source of the more optimal results of the multi-lateral negotiation.

Finally, referencing an earlier experiment, Thomas, C. J. and B. J. Wilson (2001), the authors ascertained that under experimental conditions the FPA generated more

revenue than the non-verifiable multi-lateral negotiation; in turn the verifiable multi-lateral negotiation generated less revenue, and the English auction generated the least revenue. Differences in revenue generation and efficiency were dependent on the number of bidders in each experiment; the more bidders there were the better was efficiency, and the closer the revenue generation of the different institutions.

2.4.8 MCAFEE, R. P., D. C. QUAN, and D. R. VINCENT: "How to Set Minimum Acceptable Bids, with an Application to Real Estate Auctions."

In this paper the authors devise a mechanism to establish minimum acceptable bids at auction, specifically within the context of real estate auctions. It is found that the minimum acceptable bid weakly exceeds the seller's valuation, McAfee, R. P., et al. (2003). With a reservation price equal to his valuation, the seller does not increase his expected surplus. Any bidder with a positive probability of winning and a positive conditional revenue contributes to the sellers expected surplus; by setting a reservation price in excess of his valuation the seller 'bids,' and increases his expected revenue.

The authors also find that the number of bidders does not affect the optimal reservation price.

2.4.9 BULOW, J., and J. ROBERTS (1989): "The Simple Economics of Optimal Auctions."

In this paper, which considers the auctioneer as a price discriminating monopolist, the mechanisms that generate the highest revenue for the auctioneer are identified, Bulow, J. and J. Roberts (1989). The authors propose that the auctioneer is faced with the same

problem as a monopolist who can price discriminate to the third degree; they use the simple tools of introductory price theory to find the point where MR is equal to MC.

The auctioneer's expected revenue is the expected MR from each bidder times their probability of winning the auction. This is the same as the expected MR of the winning bidder. An optimal reservation price is where MR is zero for each bidder. Finally, the authors conclude that while a second price auction is always efficient, the solution to the optimal auction with private information is intractable.

2.4.10 Other Literature Relevant to Real Estate Auctions

In addition to the theoretical papers listed above, a body of empirical literature exists for real estate auctions, mainly focused on residential real estate. Although auctions for residential and institutional real estate have some similarities, they also have important differences. For instance, in the residential market bidders are motivated to own a fixed and consistent number of properties (often one or two); bidders try to maintain this throughout the transaction process which entails both a purchase and a sale. Bidder's incur costs and risk when the number of homes they own differs from their goal, Wheaton, W. (1990).

An auction model that expands on Wheaton's housing matching model was developed, Quan, D. C. (2002). In that model holding and search costs on the sell and buy side respectively define an equilibrium where some bidders participate in auctions and some participate in the search market.

While holding and search costs are significant factors in mechanism selection for residential real estate, they are less relevant in institutional real estate. Institutional real

estate is primarily bought as an investment rather than for use, and investors rarely have capacity constraints as limiting as that of the Wheaton model.

On a slightly different tack a model was developed where real estate buyers arrive at a stochastic rate; in this case the seller optimizes by holding a Dutch auction, with an infinitely slow price clock, Adams, P. D., P. D. Kluger and S. B. Wyatt (1992). The slow clock is isomorphic to a posted price. If buyers could be collected at one point in time the authors' conclusion wouldn't hold.

Empirical studies relating to the RTC auctions in the late 1980's and the early 1990's are several and inconclusive. A major political question was whether or not the RTC was acting appropriately and diligently when holding auctions for foreclosed real estate; auctions were relatively unusual for real estate sales at that time. The results were inconclusive in the worst result, and several papers found that auctions were at least acceptable, if not optimal. While one paper had found that vacant land was sold at a 33% discount at auction, a later paper, Mayer, C. J. (1993), found that selection biases existed; when selection biases are controlled for using hedonic estimations, discounts are no more than 10%. Mayer estimated RTC holding costs as 20% per year, indicating that auctions were sometimes optimal.

In general authors agree that discounts in auctions are acceptable in some instances, given holding and marketing costs, Nanda, S., J. E. Owers and R. C. Rogers (1997), although these authors also found evidence of the winner's curse in RTC auctions. Bulow, J. and P. Klemperer (1994), concluded that an agent holding an auction can assure his principals that he has exercised good judgment.

A couple of papers also look at the afternoon effect in real estate auctions, Vanderporten, B. (1992) and Lusht, K. M. (1996). The afternoon effect is a demonstrated characteristic of auctions when many substitutable objects are sequentially auctioned. It has been found in many empirical studies that prices decrease during the auction. Both papers look for evidence of the afternoon effect in real estate auctions (one for condominiums in New Jersey, one for commercial bank branches in Australia) and both document declining prices during the auction.

Lusht, K. M. (1996), studied residential real estate auctions in Australia, where auctions are a common mechanism to sell stable residential real estate. He found that auctions generated acceptable revenue when compared to posted prices. Lusht also found that houses sold prior to auction generated less revenue than those that went to auction, consistent with the theory of auctions.

2.5 Summary of Concepts and Proofs

Given the parameters most of the auction concepts and models exist within, they are sometimes contradictory, and sometimes exist under assumptions not representative of industry. In this section the most relevant points from the rest of this chapter will be reiterated, and distinctions drawn with relevance for later chapters.

2.5.1 Revenue Equivalence of Mechanisms

The revenue equivalence theorem proves that under certain circumstances, a family of auctions exist that are all efficient and optimal, Vickrey, W. (1961), and Riley, J. G. and W. F. Samuelson (1981).

As both papers discuss, when the risk neutrality assumption is relaxed the FPA is more optimal than the SPA. Risk averse bidders will sacrifice expected surplus to increase the certainty of winning the asset.

2.5.2 Multi-unit Auctions and Multi-round Auctions

A multi-round auction is actually a series of auctions. In a two round auction the first round is a multi-unit auction where bidders have demand of one; the item for auction is a berth in the second round. The second round can then be modeled as a traditional auction, depending on its format. This type of auction is particularly susceptible to inefficiency and sub-optimality.

Ye, L. (2002) showed that when final round selection is by choice additional concerns of conflict of interest arise.

2.5.3 Auctions with Entry and Participation Costs

When auctions have entry and participation costs, each bidder brings a MC to the auction. Under equilibrium bidding conditions all costs of bidding fall on the seller; hence each bidders MC is actually the seller's MC.

Each bidder who has a non-trivial probability of winning the auction has a MR; to the seller the MR is the probability of that bidder winning the auction times the increase in revenue if he wins.

As in any pricing optimization model, the seller should limit entry of an auction with costly entry such that the MR is equal to the MC.

2.5.4 Substitutability of Bidders

A notable problem for the multi-round auction for real estate assets not appropriately modeled in the auction literature is the case of non-homogenous but substitutable bidders. Seller's have multi-dimensional valuation functions, and are substitutable.

Bidders with two characteristics that seller's value will be substitutable when there is a collection of price points across which the seller is indifferent which bidder is awarded an object. In the standard theory of auctions for sale, sellers only value one characteristic of a bid, the bid itself. In procurement auctions, or in auction with opportunities for renegotiation, sellers have multi-dimensional utility functions. This does not imply that auctions can't be used, just that appropriate objective functions should be used to analyze the multi-dimensional bids.

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Chapter 3

Results of Interviews with Practitioners Responsible for the Purchase and Sale of Institutional Real Estate

In this chapter the results of a number of interviews with senior managers responsible for real estate acquisitions and dispositions are presented. From the results of these interviews the auction process is characterized, and the reasons for its use presented.

Six interviews were carried out with senior managers responsible for the purchase and sale of institutional real estate. Respondents worked nationwide on a wide variety of investment types.

The interviews consisted of conversations, typically an hour long, based on a structured interview, Appendix A. The interview was typically distributed to the respondent prior to the interview, which was held by phone or in person. The responses to the interview questions and other comments made were noted; a copy of the notes were sent to each respondent after the interview. The respondents had an opportunity to return the notes with corrections or clarifications they wanted made.

The clarified notes become part of the record of this project. Due to confidentiality agreements the actual text of the notes will not be presented in this thesis, and comments and quotations will be attributed anonymously.

3.1 Structured Interview

The structured interview, included in Appendix A, consisted of six sections. The interview questions were mainly open ended, and respondents were encouraged to discuss whatever they thought was of the most relevance.

Sections one and two provided consisted of a personal introduction, and an introduction of the subject of the interview, the two round auction for institutional real estate assets.

Section three consisted of a series of questions related to a general overview of the auction. Respondents were asked if they ever used the auction, if they referred to it by a specific name, whether or not they were personally involved with the mechanisms use, and what other mechanism were used to sell institutional real estate.

Section four consisted of a series of questions related to the mechanism's characteristics, including the number of bidders that showed up at each round compared to other mechanisms, and how much time it takes to execute the two round auction for institutional real estate. Respondents were also asked to speak to participation costs for both bidders and the seller, and whether and how additional information was distributed during the auction. The collation and distribution of 'new' information during the auction is specifically relevant to the CV framework, and the IV framework exhibiting strong CV characteristics.

Section four also included a number of hypothesis rooted in intuition and/or auction theory that may have been reasons for the auction's use.

Section five was concerned with anecdotal information about the auction's use not covered in earlier sections.

Section six was concerned with descriptive characteristics of the respondent and the respondent's firm, including the respondent's background, and the firm's size, role and annual turnover.

3.2 Respondents

Six interviews were held with respondents responsible for the acquisition, disposition, or both, of institutional real estate. Respondents were generally senior figures within their organization, and regularly involved in the auction, either as buyers, sellers or intermediaries. Respondents will not be identified in this thesis, and substantive clues to their identity will not be offered.

Respondents were contacted using two directories; the MIT Center for Real Estate alumni directory, and a directory of real estate investment managers published by Institutional Real Estate, Inc. In addition one respondent was generated through a personal referral. A large number of potential respondents were contacted, and interested parties were followed up with. In addition to the respondents who participated in the interview, five potential respondents agreed to participate, however these interviews were not successfully carried out.

In a randomized order (and in an order different to the letter identifications attached to respondents), following are brief descriptions of the respondents:

I. The president of a private equity investor focused on real estate and other investments. This respondent was previously the principal of a leading real estate investment banking firm. This respondent is responsible for the oversight of the firm's entire activities, including the purchase and management of real estate debt and equity, and non-real estate assets. Many of the assets purchased by this firm are troubled or distressed in one way or another (and hence would not be considered institutional). The firm's assets are not concentrated by region. This respondent

purchases approximately 20 assets per year through this auction, with a total value in the order of $200 million.

II. The managing director of an investment team at a private real estate equity fund manager. The respondent's group manages about $1 billion of real estate equity invested in about $4 billion of real estate assets. The fund is geographically and sectorally distributed. The fund is involved with 10-15 sales by auction per year, with a typical annual sales volume of $200 million. While the fund sells assets using this auction, it does not purchase real estate at auction.

III. The regional acquisitions manager for one of the largest owners of multi-family properties in the US. This respondent is responsible for sourcing and acquiring new multi-family investments in a certain region of the US. The investments are typically equity investments, although debt assets of distressed properties might also be purchased. The respondent buys and sells approximately 20 properties per year, with a total value in the order of $200 million; the respondent's firm is involved in these auctions for both acquisitions and dispositions.

IV. The executive managing director of an investment sales group at a leading brokerage firm. The respondent is responsible for managing a group of about 100 sales professionals. The respondent's firm is a brokerage house, and does not take any ownership position in the transactions it handles. Transactions are geographically and sectorally distributed. The respondent's group represents sellers in approximately one hundred institutional real estate sales per year, with a value in excess of $5 billion.

V. The vice president of a regional investment sales group at a leading brokerage firm. The respondent is responsible for the marketing and disposition of 10-15 properties per year, mainly multi-family residential properties in a regional market, with annual sales in excess of $150 million. The respondent's firm is a brokerage house, and does not take any ownership position in the assets it manages. The assets are marketed nationally.

VI. The managing director and chief investment strategist for a firm that represents institutional investors. The respondent is responsible for the oversight of investment research, investment strategy, capital market operations and mergers and acquisitions. This respondent is a member of the firm's investment committee. Investments were geographically and sectorally distributed. This firm manages over $5 billion of equity consisting of private real estate equity and public real estate securities. The respondent's firm buys or sells 40-45 properties per year using this auction, with a total value in excess of $1.25 billion.

The respondents collectively presented a highly experienced group, with significant roles and responsibilities in the acquisition and disposition of institutional real estate assets. Four of the six respondents are members of, or report directly to, the board of directors or investment committee at their firm. The respondents were collectively responsible for annual auction sales of over $5.5 billion ($600 million if one outlier is excluded), and annual auction acquisitions of over $1.5 billion ($500 million if one outlier is excluded).

The entities represented by the respondents included one fund representing institutional investors, and three funds that would be considered value-add or opportunity

funds; one opportunity fund was not restricted to real estate investments. The last two respondents represented two of the larger real estate consulting and brokerage firms in the US.

The manner is which respondents will be referred to is as follows:

a) In a situation where a respondent's response is of general relevance, the respondent will be identified as the random letter ('A' though 'E')

b) In a situation where the respondent's role or responsibility is especially relevant to their response, the respondent will be identified as the random Roman numeral ('I' through 'VI').

c) In a situation where I am concerned identifying the respondent by letter or number might give a clue to their identity the respondent will not be identified by either method.

3.3 Summary of Responses

The interview was structured around a description of a stylized auction process I was familiar with.[1] The function of the interviews was to find out the following:

a) Whether or not the auction exists.

b) How often the auction is used.

c) Whether or not the auction is used particularly often for certain types of real estate assets.

d) What are the characteristics of the auction's use in practice?

e) How does the auction's use and characteristics differ across firms?

[1] Thanks to David Geltner, Director, MIT Center for Real Estate, who introduced me to the auction.

f) What other mechanisms are used for the acquisition and disposition of real estate assets.

g) What are typical numbers of bidders involved in various stages of the auction?

h) What are the costs to participants at different stages of the auction?

i) What are the origins of the auction, and how does its use change over time?

3.3.1 Initial Stylization of Auction

At the beginning of the interview a stylized auction process was described to respondents. They were asked whether or not they were familiar with the auction process, and what comments they had about the stylization. The stylization the respondent's were presented with was as follows:

1) The seller sends "the book" to a large number of potential bidders.
2) The potential bidders submit "cheaply prepared" bids to the seller.
3) The seller reviews the "cheap bids," and selects a small number of the bidders to proceed to a second round.
4) While the bids are being prepared the seller or her agent publishes a "Whisper Price" to active round two bidders. The whisper price is a price around which final bids are expected to cluster.
5) The second round bidders submit "expensively prepared" bids.
6) The seller selects a preferred bid from the second round, and sells the asset to that bidder, or engages in further negotiation.

Not stated was the following step:

7) The preferred buyer engages in due diligence and purchases the asset as agreed or renegotiates based on new information becoming available.

The respondents were generally familiar with the stylized process, but made a variety of comments on different aspects of it. Relevant comments made by respondents included the following:

Prior to round one a 'teaser' is sent to many potential investors (perhaps hundreds). The teaser is a short flyer, perhaps two or four pages long that is widely distributed. Typically it is professionally designed and printed, and several respondents commented that they might be expensive to produce. A firm that produces teasers and offering memoranda, Greycliffe Partners, Inc., offers to design and distribute two hundred and fifty teasers for a fee of $1,250.[2] The preparation and printing of an offering memorandum for a CBD office property would cost $14,640 from the same firm.[3] Emailed teasers, which might include Flash Media presentations, cost about $2,500.

Respondent 'B' said that the teaser included no confidential information; a confidentiality agreement is usually attached and it has to be returned before bidders can receive the offering memorandum.

Respondents generally disagreed with the notion that round one bids were cheaply prepared and round two bids were more expensively prepared. Instead they felt that the same preparation, a desktop underwrite, probably with a visual inspection, was the basis for both bids. The later bids were revised versions of the initial bid with limited additional input.

Respondents also commented about the level of effort put into the bids. Several respondents mentioned that the appropriate and usual underwriting process was for all

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[2] Estimate based on author's selection of services. The fee schedule includes a fixed cost and a variable cost. No mention is made of mailing list fees, so presumably they cost extra.

[3] Based on author's selection; the selected deliverable for this price was thirty copies of an offering memorandum, sixty pages long, with four color front and back covers. Mailing and delivery expenses were not specifically included; they might be close to $1,000 for thirty packages for next day delivery.

bidders to visit the asset, and make a brief, visual and physical inspection (A, B, C, D, E). Bidders should also conduct some market analysis and do an Argus run.[4] The Argus run forms the basis for all bids submitted, although bidders might tinker with certain of the model's inputs during the process. Respondents commented that a bidder who had not visited the asset during the first round would not be a credible bidder. Respondent 'C' said that under extenuating circumstances a first round bid would be considered if the bidder had not visited the asset; a second round bid would not be considered without a visit.

Respondents commented that factors other than price were in negotiation and discussion throughout the process. These factors might include matters included in the bid documents such as terms of sale, or covenants and warranties. The fact that there is a negotiation component to this auction is one of the more relevant and thought provoking issues arising.

Respondents were contradictory about the use of whisper prices. Some felt it came up during specific bidder to broker conversations during the second round. Most respondents felt that the whisper price was not given to all bidders systematically, that it might be offered to some bidders due to relationships with the broker (A, D). Respondent 'E' felt the issuance of a whisper price might help set a cap on bids; 'E' concluded that a lot of sellers don't set whisper prices for that reason.

All bidders were familiar with the concept of "whispering" though, and had varying responses about the relationship between a whisper price and the final bid(s). 'E' felt that a relationship would exist between the whisper price and the sale price; 'F' felt

[4] For non real estate folks only: Argus is the most popular spreadsheet model used in evaluating and managing the financial performance of real estate. Argus is published and licensed by The REALM.

that bids generally fall short of a whisper price; respondent 'A' felt that final bids would be very close to a whisper price; 'B' felt that bids would usually 'hit' a whisper price, were one circulated. 'D' was the only respondent that never dealt with whisper prices.

'C' said that there was a lot of "whispering" going on throughout the process. Bidders might be given range estimates of the expected selling price; bidders might also be whispered a price at which they would definitely win the asset.

'E' felt that sometimes a whisper price is mentioned by the broker without the seller's authorization or instruction; 'E' said that the broker would believe he was acting in the seller's best interest in doing so. 'E' also said that a whisper price discussion between buyers and sellers was useful, to ensure that bidders and the seller had similar perspectives on a property

'A' stated that during the disposition process sellers respond to requests for information (RFI) and circulates the additional information to all active bidders.

'E' stated that particularly aggressive bidders might sometimes do due diligence especially early in the process and put a high-bid in. That would make that bidder a particularly attractive buyer, and in those cases the seller might just choose to deal with that individual. I have heard other anecdotes of cases where aggressive bidders offer earnest money early in the auction process. These earnest money bids often scuttle the auction process, presumably to the bidder's advantage.

'F' stated that the first round is a screening process. In the sense that further bids are expected from a smaller pool of 'selected bidders' other respondents would agree. What was not clear is to the extent he felt that the selection was made by the seller (via preferences over bidders) or by bidders (by the rank order of their financial proposals).

'F' also commented that a third round of negotiations usually occurs at the end of the process.

Finally, respondents were generally in consensus that the whisper price and the reservation price are not the same thing (A, B, C, E, F). Respondents were also generally in agreement that reservation prices are not issued, and indeed reservation prices are not shared between the principal and the brokers responsible for the investment sale (B, C, F). 'C' said that sellers will often "broker" the brokers, by giving them incorrect information about the reservation price. One respondent had recently been involved with the auction of a $50 million asset that failed because the reservation price was not communicated between the seller, the broker and the bidders.[5]

3.3.2 Incidence and Origin of Auction

After the general existence of the auction was identified, arguably the most important component of the interviews was to identify how often the auction is used, and whether its use is changing or growing over time. This was motivated by a concern that the auction was not widely discussed or practiced. This turned out not to be the case; not only were all respondents familiar with the auction, all respondents agreed that it was a very common mechanism for the disposition of assets. In fact most respondents felt that for certain assets types, the auction is the pre-eminent mechanism in use (B, C). In a data-set discussed in chapter four 68% of assets sold used multi-round sealed bid auctions; the other 32% used single round sealed bid auctions.

[5] In this instance there did not appear to be common ground between the seller and any buyers because of the high reservation price. The seller proceeded to refinance the portfolio, and revealed their true reservation price. The highest bidder later said that they could have met that reservation price.

Respondent 'A' felt that the auction may have originated with a prominent real estate investment bank forty years ago or more. This respondent felt its use was increasing in time. 'A' associated the process with auctions run by real estate investment bankers.

'B' felt the mechanism is the most common in use; while 'B' felt the auction's use was increasing over time, it is not ubiquitous.

Respondent 'IV,' the executive managing director of a brokerage house, felt that this auction had come into use approximately 10 years ago, and felt that his firm was one of the leaders in introducing and using this action in real estate. Other respondents agreed that this auction had become especially prominent during the 1990's (C, F).

'F' felt the use of this auction had grown out of the RTC era; the RTC commonly used auctions to sell distressed real estate assets and non-performing loans.

Respondents felt that this auction was the primary mechanism for the disposition on assets in competitive markets (such as office and industrial properties). Some respondents felt that in regions or building types that are relatively thin, the auction would not be used; instead private treaty sales (negotiations) were used. Microeconomics theory supports this observation.

Respondents noted that in some cases other mechanisms might be used if the situation warranted. 'B' said the auction might not used if a quick sale is needed, or if the seller needed to preserve confidentiality. In these cases the other disposition mechanisms that might be used would be pre-emptive bids, or limited marketing. 'C' also felt that the auction doesn't present the quickest disposition process available to sellers; the quicker process would be to initiate the sale with an invited bidder.

Respondent 'D' felt that a private treaty (bi-lateral negotiation) might be used if a particularly attractive offer became apparent. Private treaty agreements, it was commented, did not go as far as auctions in meeting fiduciary responsibilities to investors, and respondents commented that meeting these responsibilities were major concerns (A, B, D). Echoing Bulow, J. and P. Klemperer (1994), an auction, if nothing else, meets the disclosure and diligence requirements of a fiduciary.

3.3.3 Timeframe of Auction

There was a good deal of consensus between respondents on the time frame required for the auction, and the relationship between the auction's timeframe and competing mechanisms.

The interview contained a hypothesis that the time it takes to sell an asset by other means and the time it takes to run this auction were correlated with its use. The general view of respondents was that the time required is not a major factor in its use.

Respondents generally agreed on the timeframe needed to conduct the auction, and felt this timeframe did not differ from that of other mechanisms. The longest single activity of the process is the due diligence stage (60 to 90 days), followed by the first round of the underwriting stage (30 to 60 days). The subsequent rounds add one to three weeks depending on the number of rounds.

A private treaty sale (bilateral negotiation) does hold a timeframe advantage over this auction. This is because the two longest activities, the round one bids and due diligence, can be fast-tracked. This is obviously not possible with the auction without incurring significant due diligence expenses on the part of unsuccessful bidders.

The first round of the auction typically takes between four and six weeks, with six weeks being more usual. Many respondents gave a range. The auction duration is not a fixed period; instead the time-frame is decided on a case-by-case basis. The more interest shown in the teaser, the less time given for round one, according to 'C'.

The second and subsequent rounds of the auction occur over a period of a week to ten days. During this period the auction manager, usually an investment sales broker, will contact all remaining bidders, and discuss their bid and its components. The broker will discuss the assumptions in each bid, and try and get the bidder to revise their assumptions to generate an increase in the offered price. Bidders will have a certain period to review their assumptions, and revise their bid accordingly. The role of the broker, shaping the information in the market, including with the seller, is consistent with a valuable role in a market with asymmetric information and interdependent values.

Several respondents felt that the purpose of the second and subsequent rounds was for the broker to try and work up a bidding frenzy and exact higher revenue from bidders (B, C, D). Respondent 'IV,' executive managing director at a brokerage house, felt that the mechanism is successful as the broker keeps in touch with bidders, and gets attention focused on the asset. Respondent 'V,' vice president at a brokerage house, felt that the second round is where brokers really add value to their clients.

3.3.4 Numbers of Bidders and Bid Changes

Two characteristics of the auction the structured interview addressed were the numbers of bidders involved at various stages of the auction, and to what extent bids were increasing in the auction.

While the numbers of bidders is wildly varying across cases, all respondents generally agreed on the orders of magnitude of the numbers of bidders participating in each round and, the numbers receiving the teaser. All bidders generally concurred that the numbers of active bidders was reducing during the auction, and that bids were generally increasing in the auction.

Ranges of bidder numbers involved in the different stages of the mechanism were as follows:

1) Teaser Stage: many potential bidders, perhaps hundreds, would receive the teaser.

2) First Round: fifteen bidders might participate in the first round. Ranges mentioned by bidders between seven and twenty five, with fifteen being a common sentiment.

3) Subsequent Rounds: ranges of between two and seven bidders were citied with five being a common sentiment. Respondents noted that the selection of bidders for the second round would be based on clustering of first round bids. A seller would be unlikely to go back to, say, the top five bids, if the sixth and seventh were clustered with the top five.

Respondents generally agreed that bids were increasing from round to round, although it was not unheard of for them to remain the same, or even decrease marginally. Prices can be lowered during the due diligence process, (this practice is known as re-trading).

The extent to which bids increase from round one to round two can't be generalized. Some bidders increase their offer significantly from round to round, some

just a nominal amount. Respondent 'E' said that the higher bids generally increase the least. The data-set analyzed in chapter four showed a mean increase in the standing high bid from the first round to the last round of 3.7%.

3.3.5 Reasons for Using the Auction

Respondents were asked about the underlying reasons for using the auction. The purpose of these questions was to find out if there was a specific condition or characteristics of the real estate industry that gave rise to this auction format developing.

3.3.5.1 The Auction Cheaply Solicits Many Viewers

Respondents were asked if they felt this auction efficiently brought many 'viewers' to look at an asset. The hypothesis is that the auction causes many potential bidders to consider the asset, and that sellers like this. The hypothesis that the auction beings many viewers is accepted based on the responses received.

This hypothesis is rooted in the elements of auction theory related to the attraction of many bidders being good for the auction, Bulow, J. and P. Klemperer (1994).

Respondents generally felt that this is the case. All respondents agreed. Respondent A felt that the process gives sufficient exposure to the marketplace, and also gave an opportunity to screen bidders, and select the optimal subset of round two bidders. 'B' felt that it efficiently markets an asset to a wide universe of bidders.

Respondents felt the mechanism was not necessarily any "cheaper" to operate than any other mechanism. Rather the general sentiment was that the viewing of the asset by many viewers was key.

3.3.5.2 The Auction Efficiently Spends Entry Costs

Respondents were asked if there were characteristics of this auction that resulted in the efficient spending of bidding costs. The hypothesis is that the multi-round format with attrition in the numbers of bidders was welfare efficient in comparison with a standard sealed bid auction. Based on the responses received the hypothesis is rejected.

The hypothesis is drawn from the elements of auction theory related to optimal auctions when entry and bidding is costly, Fullerton, R. L. and R. P. McAfee (1999).

Respondents concurred that bidding costs are not a factor when selecting sale mechanisms. Responses generally thought that bidding costs were trivial.

All respondents stated that they considered it good practice to engage in a complete underwrite in the first round of this auction. Therefore the screening of entry to the second round does not save any investment on the part of unsuccessful bidders.

Respondents also said that the opportunity costs of participating in an auction were trivial. Typical costs of participating in an auction would be travel costs and personnel costs. Where possible, respondents viewed a few assets during a single trip, reducing effective travel costs. In any event respondents did not consider travel costs a significant decision making factor. Managers might consider the personnel costs of participating in an auction as a sunk cost, with no opportunity cost. Finally, respondents generally did not outsource any part of the underwriting process, so they incurred no direct expenses in preparing a bid.

Respondent 'D' said that the cost of participating in an auction might be estimated as $2,000 or $3,000, while 'C' said that the costs of participating in an auction might be $7,500 to $10,000, including travel and staff time.

3.3.5.3 The Auction Allows Withdrawal from the Market after Round One without the Asset Becoming Stigmatized

Respondents disagreed with this. The hypothesis is that the multi-round characteristic of the auction give the seller an increased option value of withdrawing an asset from the market without damage to the seller or to the asset. This hypothesis is rejected based on the responses received.

This hypothesis is rooted in the conjectural theory that real estate assets that fail to sell when offered to the market are stigmatized.

The main market exposure is during round one; an asset withdrawn from the market during round two, or during due diligence is publicly un-sold. If there is a stigma attached to an unsold asset, it is not relevant whether it is unsold after round one or after round two.

Respondents also disagreed with the significance of an asset being unsold after a public auction. Some felt that an asset would be tarnished; others felt that institutional investors would look beyond that fact. For instance, one respondent had recently removed an asset from the market during an auction because the market did not seem as optimistic about the asset as the seller. The respondent felt that they had not incurred any damage by doing this. 'C' felt that it is more often the seller that gets stigmatized, as one who repeatedly "tests the market" than the asset itself.

3.3.5.4 The Auction Elicits Valuable Signals from Bidders during Round One

Respondents agreed with this, but did not feel it is a reason the auction is used; instead it is a marginal benefit. The hypothesis is that the seller uses a two round auction to benefit

from the signals received in round one. This hypothesis is rejected based on the responses received.

This hypothesis is rooted in the CV framework where auctions perform better when information is collected and disseminated across bidders.

While respondents generally agreed that sellers were interested in the signals from bidders, no respondent felt the sole motivation of the auction was to elicit meaningful signals. In addition, bidders are incentivized not to reveal their true bid function during the first round, devaluing the information contained in the signals. The broker plays an important role in the analysis and distribution of this information, and the round two updating of bidder's signals.

As many respondents noted, a prudent seller reverse underwrites an asset being sold, and performs their own due diligence. A reverse underwrite is a valuation model of an asset for sale, prepared by the seller. Sellers have their own independently formulated valuation for the asset. Respondents noted that sellers know how much they want for an asset when they go the market.

However, respondents did value the information received from bidders at the margin. 'C' felt that occasionally a seller would change their selling strategy based on the first round bids.

Respondents also felt that a cluster of round one bids provided a powerful certification of an assets market value; in cases where the seller has a different opinion of market value, this information can convince them otherwise.

3.3.5.5 The Auction Allows Sellers to Fast-track Dispositions

Respondents generally disagreed with this. The hypothesis is that the multi-round nature of the auction allows the seller to fast-track the process, reducing the overall time to sale. Based on the responses received this hypothesis is rejected.

This hypothesis is rooted in the characteristics of institutional real estate as a generally illiquid asset, and the motivation of seller's to make their asset more liqud.

Respondents commented that no prudent seller would go to the market without a complete offering memorandum, and as the second round typically lasts a week to ten days, there is limited opportunity to process new information during the later rounds. Two respondents said that some information might be made available during the auction, as it became available, or as RFIs were issued; both respondents said that this was not a systematic process of issuing new information to a reduced pool of bidders.

3.3.5.6 The Auction is only used for Certain Types of Property

Respondents generally disagreed with this. The hypothesis is that this auction is used in certain sectors of real estate, or for properties with certain characteristics, such as those in default or distress. The hypothesis is rejected.

This hypothesis is rooted in the fact that different sale mechanisms exist, and the conjecture that different types of real estate assets have different optimal mechanism.

The respondents universally agreed that the auction is in use across all building types, and is not restricted to certain sectors or regions, or to distressed properties. It is often commented that auctions for residential real estate in the US is usually for distressed or foreclosed homes; this is not the case for institutional real estate auctions

3.3.5 Other Relevant Comments

In addition to the areas focused on with specific questions, the interview allowed respondents to voluntarily offer insights and opinions. The majority of questions asked were open-ended, requiring respondents to volunteer answers, which frequently went beyond the scope of the question posed.

3.3.6.1 Non Price Negotiation

Respondents consistently commented that issues other than price are discussed during the auction. This might include specific terms of a purchase and sale agreement including covenants and warranties. The examples mentioned by respondents are conceivably objectifiable; if bids are objectifiable the seller can analytically define a 'best' bid.

Respondent 'A' commented that other than price, bidders and the seller are negotiating on a number of issues relating to the bid documents posed. 'F' supported this sentiment; 'F' said that items being discussed might be terms of the purchase and sale agreement and warranties and covenants placed in the agreement. The agreements used for the purchase and sale of real estate are essentially non-standard, and negotiated on a custom basis. Rather than specify a rigid set of contract documents in the offering memorandum, 'F' felt the seller's interest was best served by offering a degree of flexibility with the documents.

3.3.6.2 Retrading and Instability

Respondents mentioned the instability of the due diligence process, and the sellers concern with picking reputable and qualified bidders to progress to due diligence.

Respondents spoke of retrading, which is when the buyer tries to renegotiate during the due diligence stage.

Bids submitted during the competitive rounds are subject to due diligence, and buyers can withdraw from the process without legal redress, although with potentially negative effects on their reputation.

This potential for withdrawal, at a cost to the seller, gives the buyer negotiating power during the due diligence stage. Buyers who attempt to renegotiate the purchase price during due diligence are said to be re-trading. The incidence of retrading is said to be quite high. Respondent 'C' said that buyers attempt to retrade in about 80% of instances; 'A' said that agreement breaks down between buyer and seller in about 40% of instances. Respondent 'V' said that retrading resulted in a deal breaking down only about 5% of the time; this respondent dealt with a specific asset type, and agreed that this figure might be different for other asset types.

'A' felt that companies that practiced gross re-trading gained a reputation that affected their desirability as a contractual partner. Other respondents supported this sentiment, although it is not clear to how efficiently industry communication distributes this information.

Respondents mentioned that bidders will try to retrade whenever they get an opportunity. For instance, if it is found that an asset has been subject to deferred maintenance, the buyer and seller may take adversarial positions on the value of the deferred maintenance.

On respondent when asked about different motivations for retrading agreed that distinctions could be drawn between taking a strong position on new information, and

opportunistic retrading. A respondent working in investment sales mentioned that you must be careful in the second round not to "push" bidders too far, as this might affect their ability to close the deal.

3.3.6.3 Conflicts of Interest

One of the issues of most concern with indicative bid auctions is the potential for conflict of interest in the sales process, particularly in the selection of round two participants, Ye, L. (2002). Ye's concern was that relationships between the investment bank (or in this case, the broker) and the bidders might harm the seller interests.

There is evidence from a number of respondents that these conflicts of interest can arise in the real estate industry, although respondents generally felt that these conflicts are well managed. Furthermore, rather than a direct conflict of interest, the problem in the real estate field seems to be one of many relationships in a small universe.[6] Sellers' might also have this interest in dealing with, or maintaining relationships with certain parties.

There was some evidence that bidding preference would be given to parties with whom the intermediary had a relationship, but there was no evidence that this was to the seller's detriment.

Investment sales brokers typically receive a fee based on a percentage of the sale price. The higher the sale price, the more the broker receives in fees; if the asset isn't sold, the broker receives nothing. This results in an alignment of interest between the principal and the agent, except that, as discussed in chapter five, the broker is more risk averse in the selection of a preferred bidder than the seller is.

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[6] The classical conflict of interest involves direct competing interests on an agent (two current clients for instance), one of which suffers at the others extent.

Furthermore, the role of the broker in the real estate sales process is much reduced from that of the investment broker in the situation analyzed in Ye, L. (2002). Typically the seller in the real estate auction is a sophisticated player in the institutional real estate market; the real estate seller has a more active role in the disposition process, including decision making, and the selection of auction process and preferred bidders. The real estate investor might also be a less desperate seller than some of the instances cited as the motivations for Ye's study. In the case Ye examined the sellers were unable to hold their assets, due to de-regulation of their industry, and sellers were not active traders of companies. In contrast, sellers of institutional real estate can hold their assets if pricing is unsatisfactory, and are typically active in the purchase of sale of the assets.

3.3.7 General Opinions on Auction

Respondents were asked for their general opinions on the auction. The purpose of this was to see what opinions good or bad the respondents offered on the process, and also to see what opinions they may have on the auctions efficiency and strength.

To paraphrase one person I spoke with, (not one of the six respondents): "this auction is great if you're a seller."

All six respondents were regularly involved with the auction, and all six used it where possible. No respondent expressed a manifest dissatisfaction with the process, although it had one or two shortcomings that were obvious. These included the additional time the auction takes when compared to a private treaty transaction, the potential for retrading, and the potential to find the asset unsold at the end of the auction.

Within the field of auction theory, the two major goals that are most often considered the goal of an auctioneer are efficiency, that is overall social wealth, and optimality, that is the sellers personal wealth.

A casual assumption is that the respondents were mainly considered with the optimality of the auctions they used. Within that context, all seemed reasonably satisfied with the process. The most common reason for liking the auction was the widespread marketing of the assets under this mechanism. Not only does widespread market result in more bidders, respondents felt that transparent and open marketing helped ensure that fiduciaries are seen to be acting in the best interests of their principals.

Respondent 'A' was satisfied with the level of market exposure the asset got through this auction. 'A' was also satisfied that the process enables the seller to select the optimal subset of bidders, a thought echoed by other respondents.

'D' volunteered another benefit of the auction: the second round typically involves cross discussion of underwriting principals and assumptions between the bidders and the broker; 'D' felt this assists in the industry-wide education of how assets are viewed and valued by bidders. Other respondents noted that the auction's introduction and use was correlated with the post-RTC advancement in the professionalism of real estate underwriting and investment.

Respondents 'C' and 'D' noted that when an auction occurs a public clustering of bids is helpful, both in gauging 'market' value, and also for the broker to credibly communicate the asset's value to the seller. If the seller happens to have a different opinion of the asset's value, a cluster of bids will help convince the seller that the 'market' value is different.

3.3.8 Anecdotal Information about the Auction

In addition to the pointed questions, respondents offered anecdotal and additional information about the auction.

Of the six respondents, four commented on the origins and history of the auction. Three of the four said the auction had arisen in the early 1990's, and was a post-RTC development. One of the respondents felt that real estate underwriting and investment had professionalized since the RTC period, and correlated this with the auction's development and use.

Of these respondents all felt the auction's use had become much more common over the past ten years. As mentioned, several feel it is the dominant transaction process in use in commercial real estate today.

Respondents were asked if they were aware of the auction being formalized or proscribed by any organization or professional association. None of the respondents were aware of any such formalization, nor of any standard procedure used as a guide. Respondents did generally note that the auction was relatively stable in use, although small changes would be identified on a case-by-case basis.

Respondents were also asked about what the auction was called. There was no conclusive answer to this, consistent with the finding that there has been no formalization of the process. a number of respondents know the final round as "best and final." Respondent I, who had previously been a senior manager in an investment bank, called it "indicative bidding," the name the investment banker's auction Ye studied is known as. Another respondent simply called it a "market transaction," as opposed to a "private treaty."

3.4 Characterized Facts

After the interviews were conducted with the respondents, a number of characterized facts are noted.

The auction is commonly used for real estate investment sales for all asset types and in all regions. The auction is typically two rounds, with the closing dates of the rounds a week to ten days apart. It is uncommon, though not unheard of for a third round to take place.

Bidders expect the auction to be two rounds, and act accordingly.

The seller of a real estate investment is the primary decision making authority, and is primarily responsible for selecting the disposal mechanism. This decision is made at the board of directors or investment committee level. The process is brokered by investment sales professionals, responsible for marketing the asset and managing the sale.

The auction is used in a preferred habitat of institutional investors, for assets priced at say, $5 million, and above. The auction is not used for assets traded in markets that are primarily local.

The auction is preceded by the sending of a "teaser" to many potential bidders. Potential bidders must express interest before participating in the auction.

The first round of the auction is a sealed bid round where bids are not binding. The costs of submitting a bid in round one is the reputational cost of later retracting a bid. There is no penalty or fee for active bidders.

Bidders have a small opportunity cost of participation in the auction. The opportunity cost is incurred in round one.

The auctioneer selects a reduced pool of bidders from the active round one bidders, and invites them to resubmit their bids. The number of round two bidders is commonly a half or a third of round one bidders. Bidders are advanced to round two based on their round one bids, not a pre-determined selection system.

The second round of the auction is a sealed bid round where bids are non-binding. Bids in the second round are generally, though not necessarily, higher than in round one.

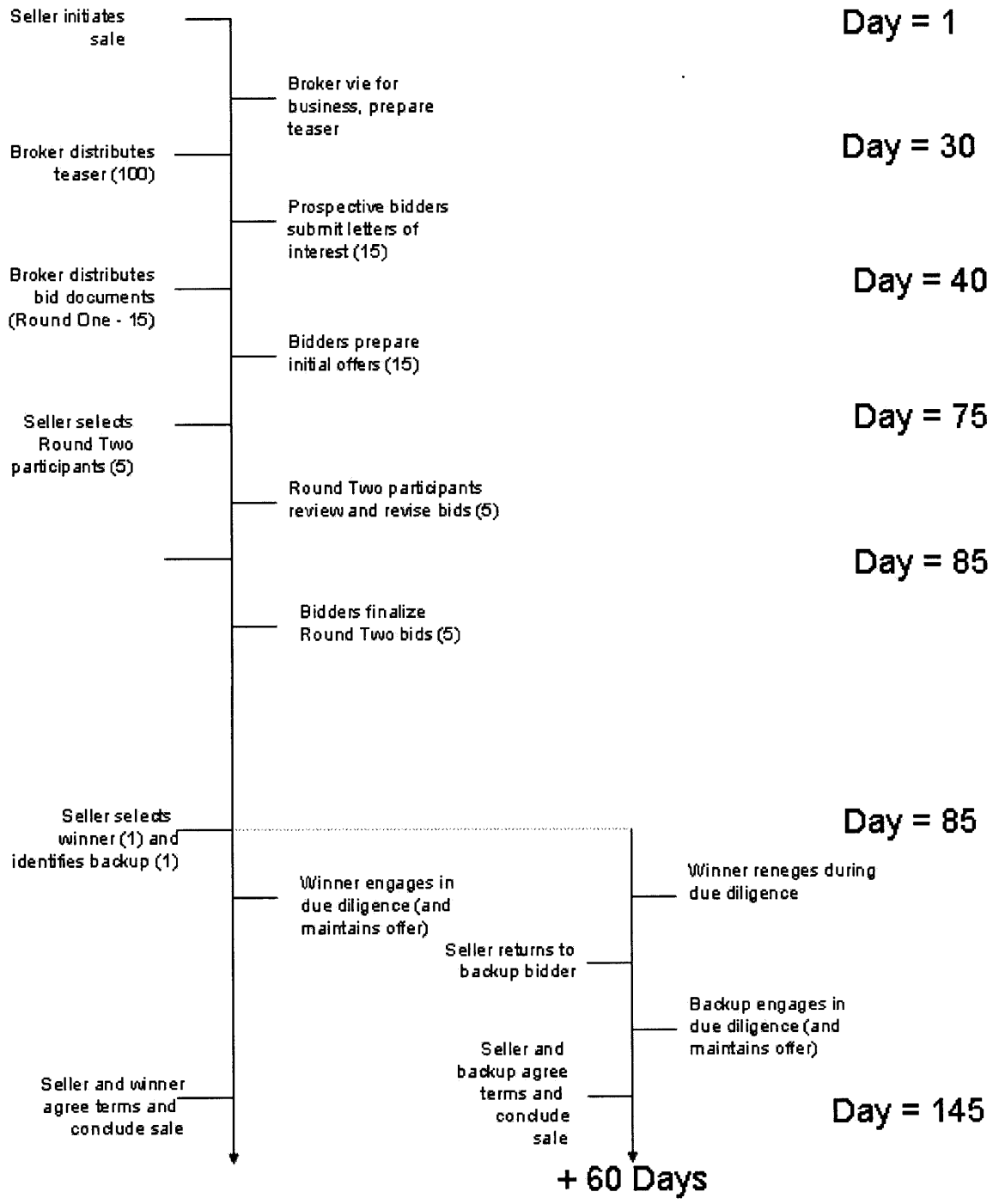
In the second round little new information is published, although some first round information might be updates. A model purchase and sale agreement is sometimes distributed in round two, and bidders would submit comments on the agreement.

The asset may be awarded to a bidder other than the highest bidder. The selection of the preferred bidder is made in conference between the broker and the seller, with the seller having the final say. A bidder might be preferred over a higher bidder due to their reputation, superior underwriting or because of negotiated clauses for the purchase and sale. In cases where a bidder other than the highest bidder is selected, there is every reason to believe that seller's act rationally.

The preferred bidder and the seller finalize a letter of intent, and the bidder then engages in due diligence, and discovers the asset. In many cases the bidder will try to renegotiate the agreed price based on new information discovered during the due diligence stage. This negotiation is known as retrading, and may or may not be warranted; in some cases the retrading leads to the original agreement breaking down.

The process and its timeframe is mapped in figure four.

FIGURE 5
MAP OF THE MULTI-ROUND AUCTION FOR REAL ESTATE ASSETS



Chapter Three References

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FULLERTON, R. L., and R. P. MCAFEE (1999): "Auctioning Entry into Tournaments," *The Journal of Political Economy*, 107, 573-605.

YE, L. (2002): "A Theory of Two Stage Auctions," Columbus, Ohio: the Ohio State University, Department of Economics.

Chapter 4

Descriptive Statistics of Bid Data from Institutional Real Estate Sales

Data on thirty-three real estate auctions was provided by a senior manager with responsibilities in the sale of institutional real estate assets. The assets were sold over a two year period, and were concentrated in one region of the US. The sales were predominantly of one asset type. The auctions were of the sealed bid models, and consisted of one, two or three rounds.

The thirty-three data points supplied included four data-points that were excluded as non-institutional sales. The excluded sales were sales of assets needing redevelopment or were too small in dollar value to be considered institutional.

Bidders in the data-set included institutional real estate investors and regional real estate enterprises. Amongst the bidders were REITs, REOFs, tax exempt funds, advisors to tax exempt funds, and regional real estate developers and property owners.

Of the twenty-nine institutional real estate sales, nine were one round auctions, thirteen were two round auctions, and seven were three round auctions. All of the three round auctions in the data set were for assets owned by the same group of owners. Nineteen of the auctions, or 66%, were multi-round auctions.

The dataset includes auctions for single assets, and in some cases auctions for portfolios of those assets. Both sets of auctions are included in the dataset; generally speaking the asset-level and portfolio-level auctions had different, though not exclusive, bidder-pools.

The aggregate value of the auctions (based on the standing high-bid after the final round) was in the order of $585 million; the mean high bid after an auction's final round was in the order of $21 million, with a standard deviation in the order of $19 million.

The findings from the descriptive statistics are generally in accordance with expectations, and in accordance with the findings of chapter three.

4.1 Numbers of Bidders

The number of active bidders in each round of each auction format was computed. These statistics are presented in figures six through eleven.

The multi-round auctions had more first round participants than the single round auctions, but less final round participants than the single round auctions.

The mean and standard deviations of bidders in each round of each auction format are presented in table two.

Table 2 –Numbers of Active Bidders by Auction Format and Round

AUCTION FORMAT / ROUND	MEAN	STDEV
ALL FORMATS - FIRST ROUND	7.069	3.494
ALL FORMATS - SECOND ROUND	4.211	2.275
ALL FORMATS - THIRD ROUND	2.857	1.574
ALL FORMATS - FINAL ROUND	4.828	2.253
ONE ROUND AUCTION	6.100	1.449
TWO ROUND AUCTION - FIRST ROUND	8.333	4.997
TWO ROUND AUCTION - SECOND ROUND	4.917	2.429
THREE ROUND AUCTION - FIRST ROUND	6.286	1.604
THREE ROUND AUCTION - SECOND ROUND	3.000	1.414
THREE ROUND AUCTION - THIRD ROUND	2.857	1.574

4.1.1 First Round Bidders

Multi-round auctions had more active bidders in the first round than one round auctions.

The numbers of first round bidders in each auction type, and all auctions, are presented in figures six, nine, ten and eleven.

4.1.2 Later Round Bidders

The mean number of active bidders decreased as the auction advanced. The reduction in the number of bidders from the second to the third round of a three round auction was insignificant.

The numbers of later round bidders are graphically presented in figures seven, eight, ten and eleven.

4.1.3 Final Round Bidders

The mean number of bidder submitting a bid in the final round of an auction was 4.8, but this varied across formats. Multi-round auctions had fewer final round bidders than single round auctions.

The numbers of final round bidders are graphically presented in figures nine, ten and eleven.

4.2 Bids Submitted, Ranges and Changes

The data on bid values was analyzed, and is presented in figures twelve through sixteen. The highest bid at the auction of the auction in each framework was compared with other metrics, including the mean bid, the lowest bid and the second highest bid.

4.2.2 Bid Ranges

The ranges of bids submitted for all auction types are presented graphically in figures twelve through fourteen

As can be seen in the figures, the range between the highest, second highest and mean bids were very often just a few percent. In a number of cases the range between the highest bid and the second highest bid was zero.

In many cases even the lowest bid submitted was close to the cluster of the mean, second highest, and highest bids. This is consistent with bidders having common perceptions of an assets value, as in the CV framework.

4.2.3 Changes in Bids

The changes in the standing high bid across rounds are presented graphically in figures fifteen and sixteen.

In the twelve cases of two round auctions the standing high bid increased by 3.5% on average, and 2.3% on a dollar weighted average. When an outlier is excluded bids increased by 4.5% on average, and 3.8% on a dollar weighted average.[1]

In the seven cases of three round auctions, the standing high bid increased by 2.9% on average, and 3.6% on a dollar weighted average.

When all multi-round auctions are aggregated, the standing high bid increased by 2.6% on average, and 2.6% on a dollar weighted average; the increases were 3.1% and 3.6% respectively when the outlier was excluded.

[1] The outlier was identified as such because the price dropped significantly from round one to round two, and the rounds were a week either side of the terrorist attacks of September 11th, 2001.

4.3 Summary of Findings

The findings from the descriptive statistics and frequency distributions show variations in the numbers of bidders, ranges of bids, and the changes in bids. Generally observations can be noted however.

Multi-round auctions had more 'viewers' than single round auctions, consistent with the findings in chapter three. They also had less final round bidders than single round auction, also consistent with the findings in chapter three.

The numbers and deviations of bidders are somewhat in accordance with the findings of chapter three; the exception is that respondents in chapter three estimated more first round participants in multi-round auctions than is observed in the data-set.

Ranges between bids, when compared using the second highest and mean bids were narrow in many cases. This indicates either that bidder's have (relatively) common perceptions of the asset's value, the CV case, or that the auction's results are close to bidding equilibrium in the IPV model. This is consistent with the proposal in chapter two, that institutional real estate fits the IV framework, with a strong CV component.

Changes in bids across rounds were generally positive, though not exclusively so. There are notable examples of the standing high bid reducing from the first to the last round in the multi-round case. The general observation is accordance with the findings of chapter three. The general observation is also in accordance with the proposal that real estate fits the IV framework, and that information updating increases the level of bids.

FIGURE 6
NUMBERS OF BIDDERS IN FIRST ROUND, ALL AUCTIONS

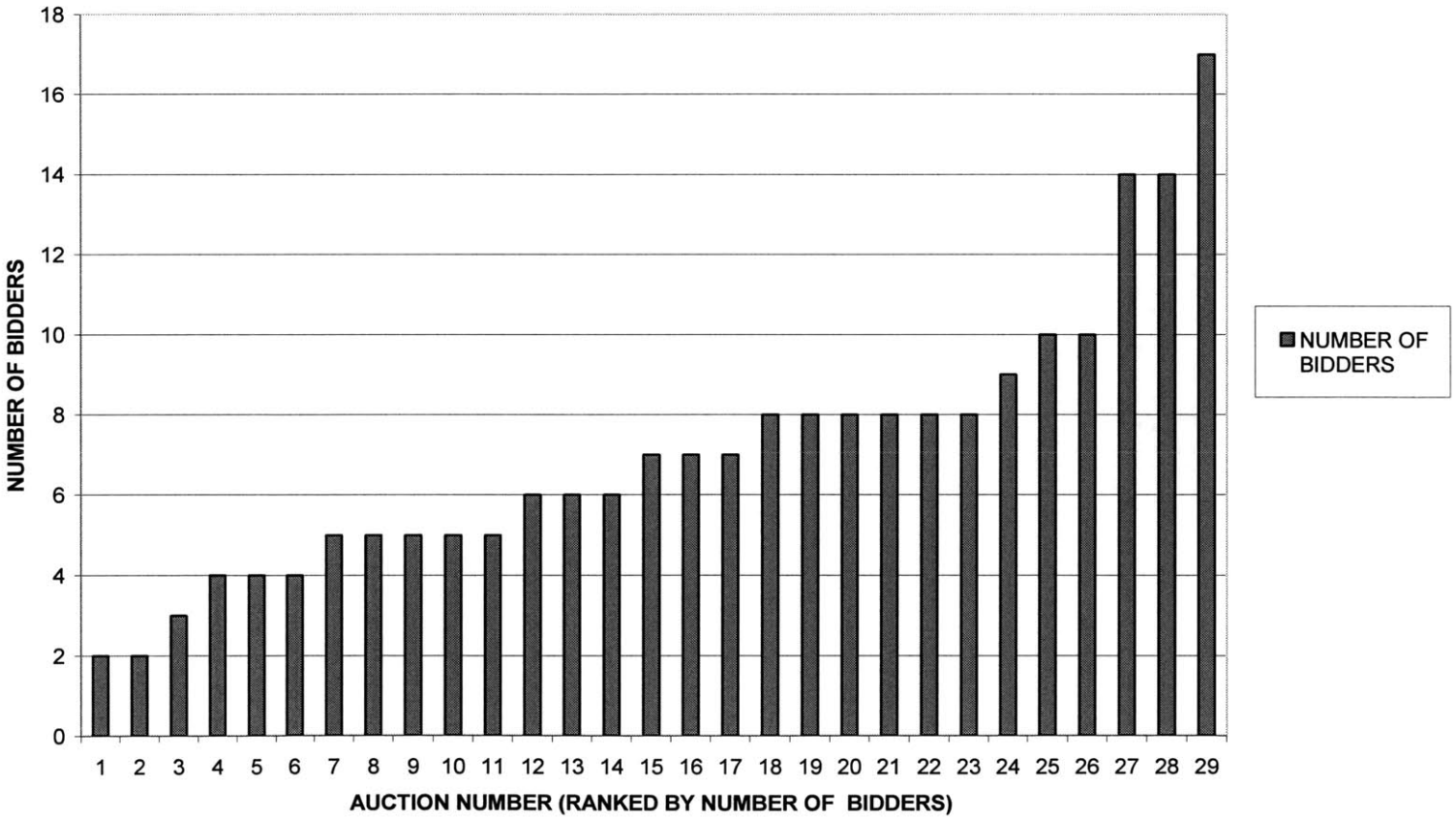


FIGURE 7
NUMBERS OF BIDDERS IN SECOND ROUND OF ALL MULTI-ROUND AUCTIONS

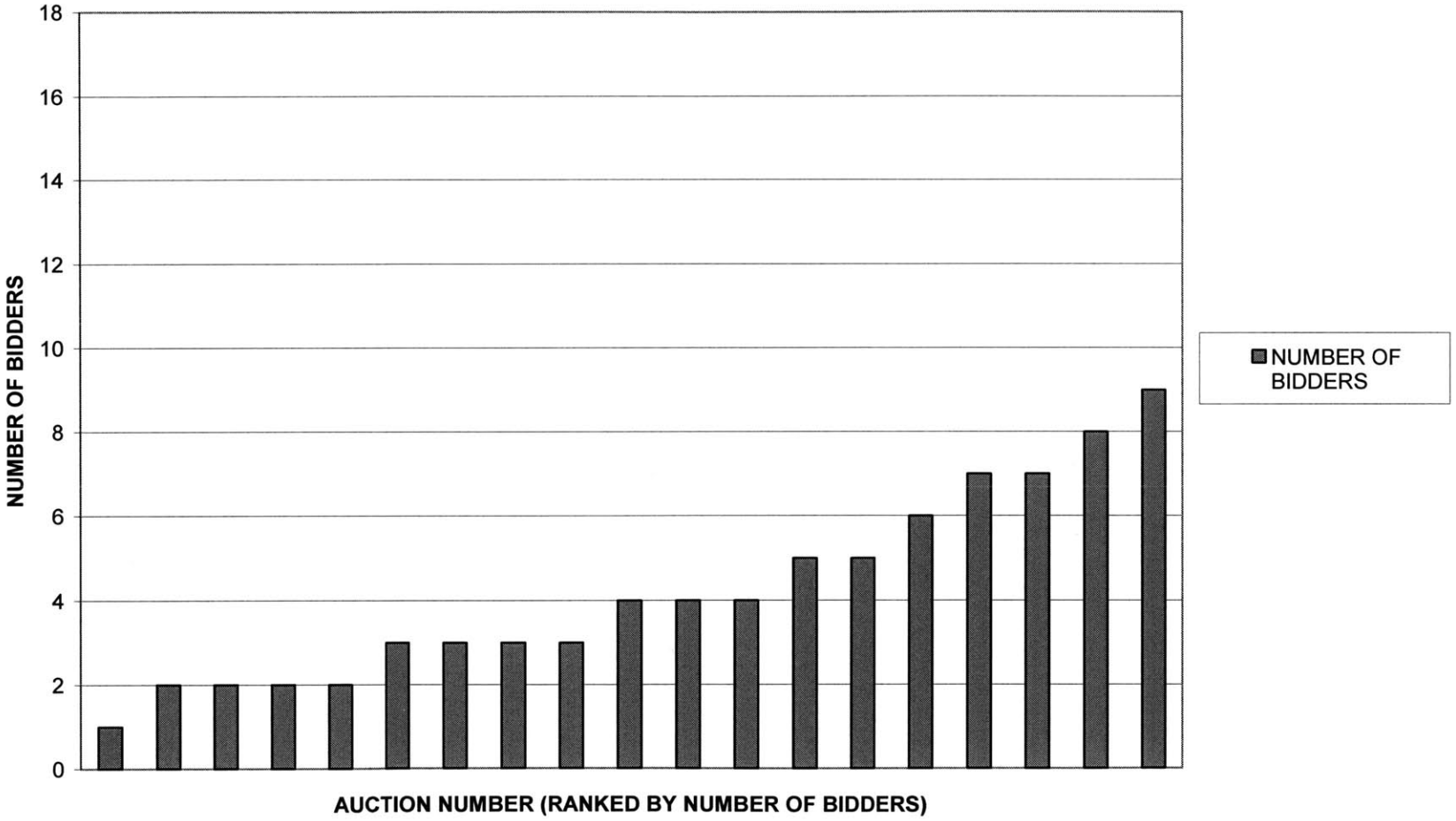


FIGURE 8
NUMBERS OF BIDDERS IN THIRD ROUND OF ALL THREE ROUND AUCTIONS

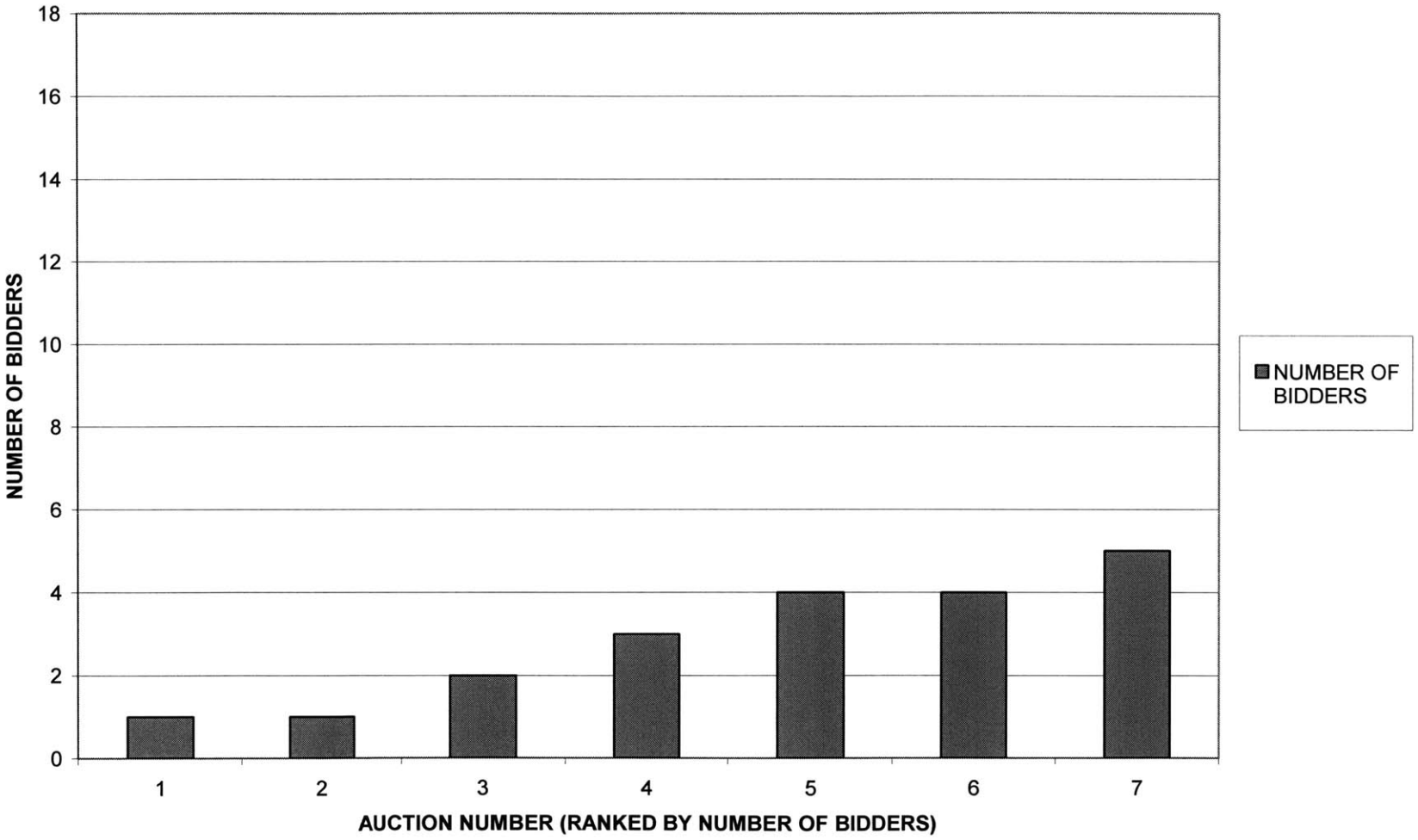


FIGURE 9
NUMBERS OF BIDDERS IN ONE ROUND AUCTIONS

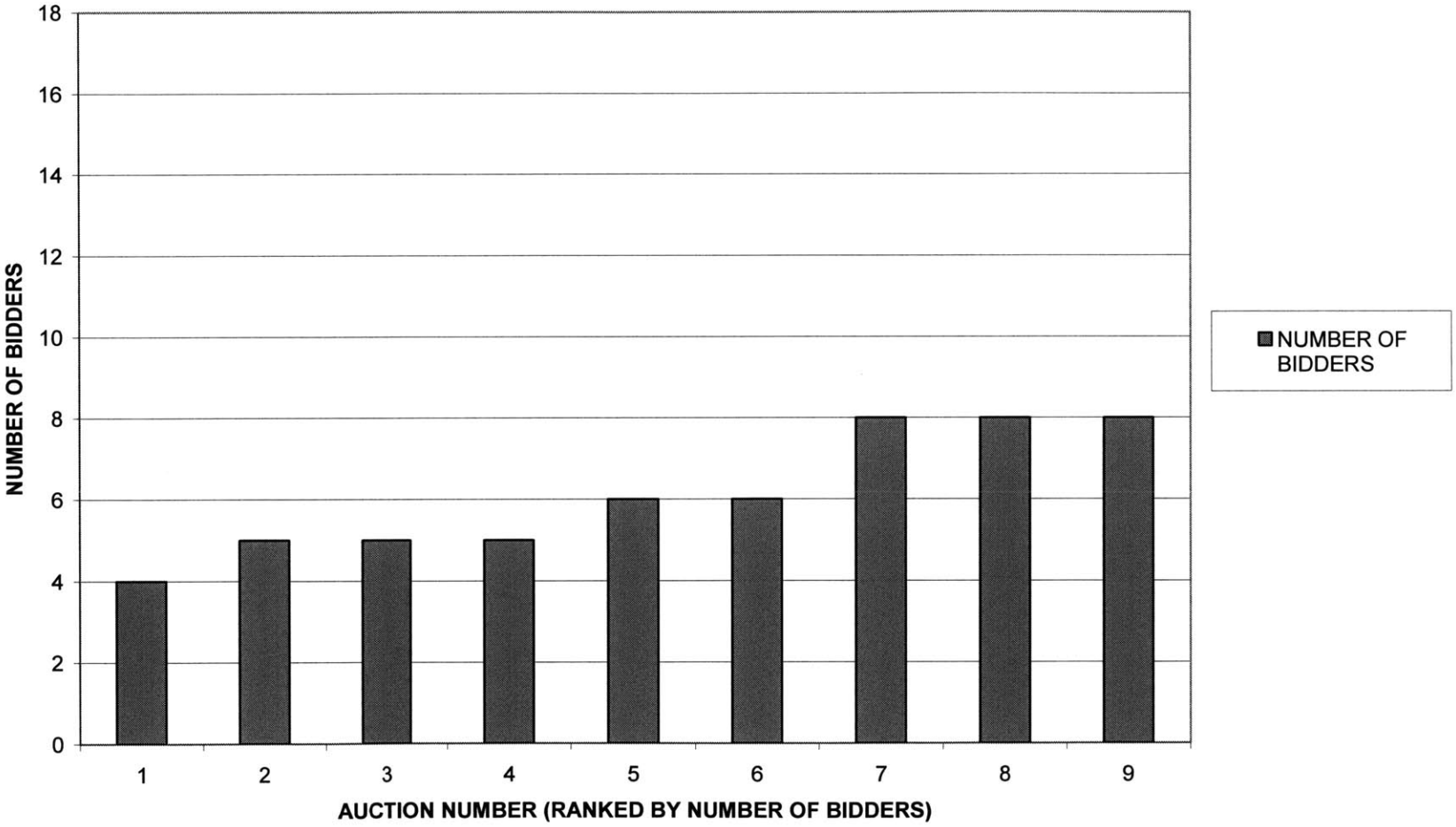


FIGURE 10
NUMBERS OF BIDDERS BY ROUND, ALL TWO ROUND AUCTIONS

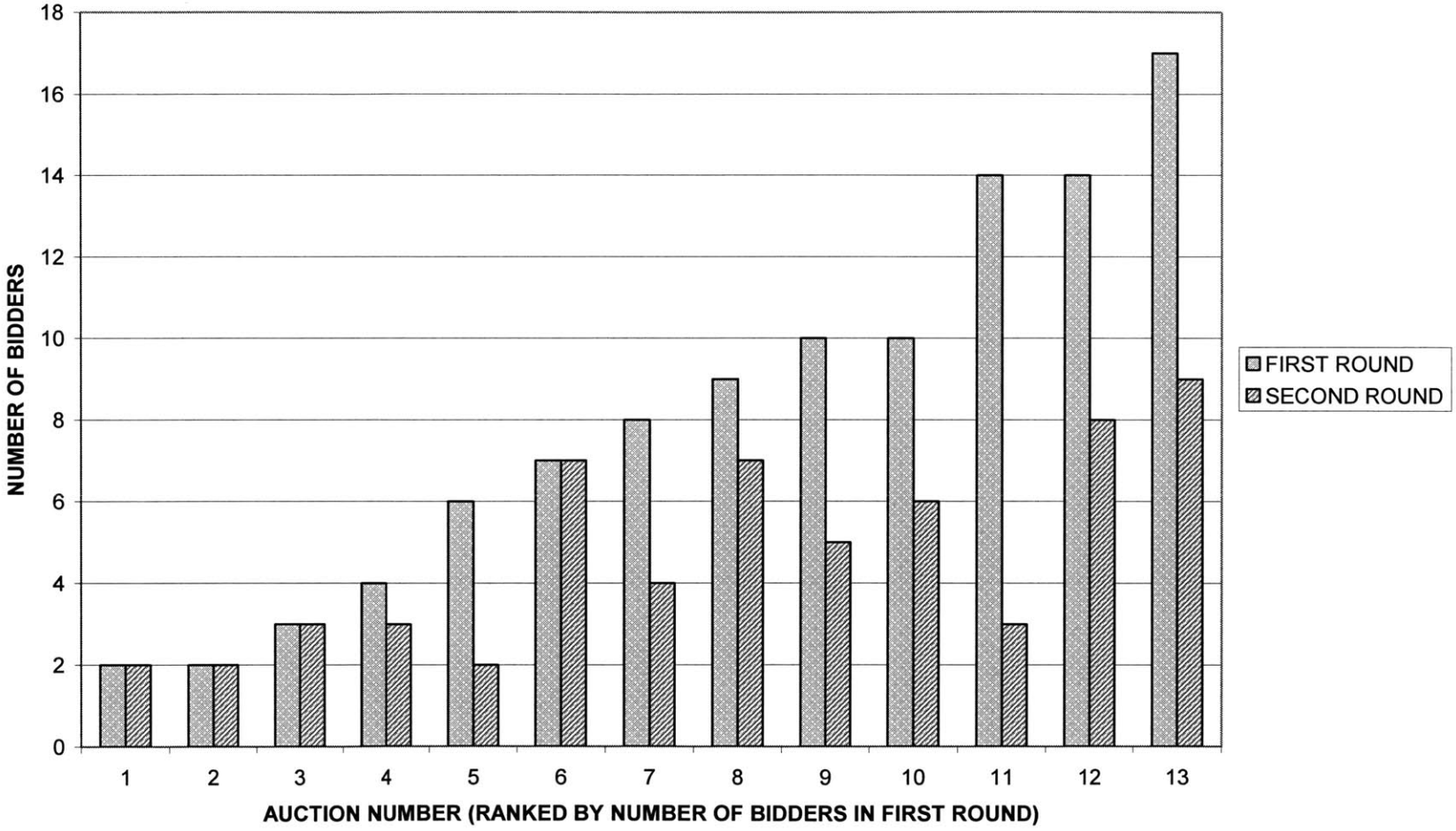


FIGURE 11
NUMBERS OF BIDDERS BY ROUND, ALL THREE ROUND AUCTIONS

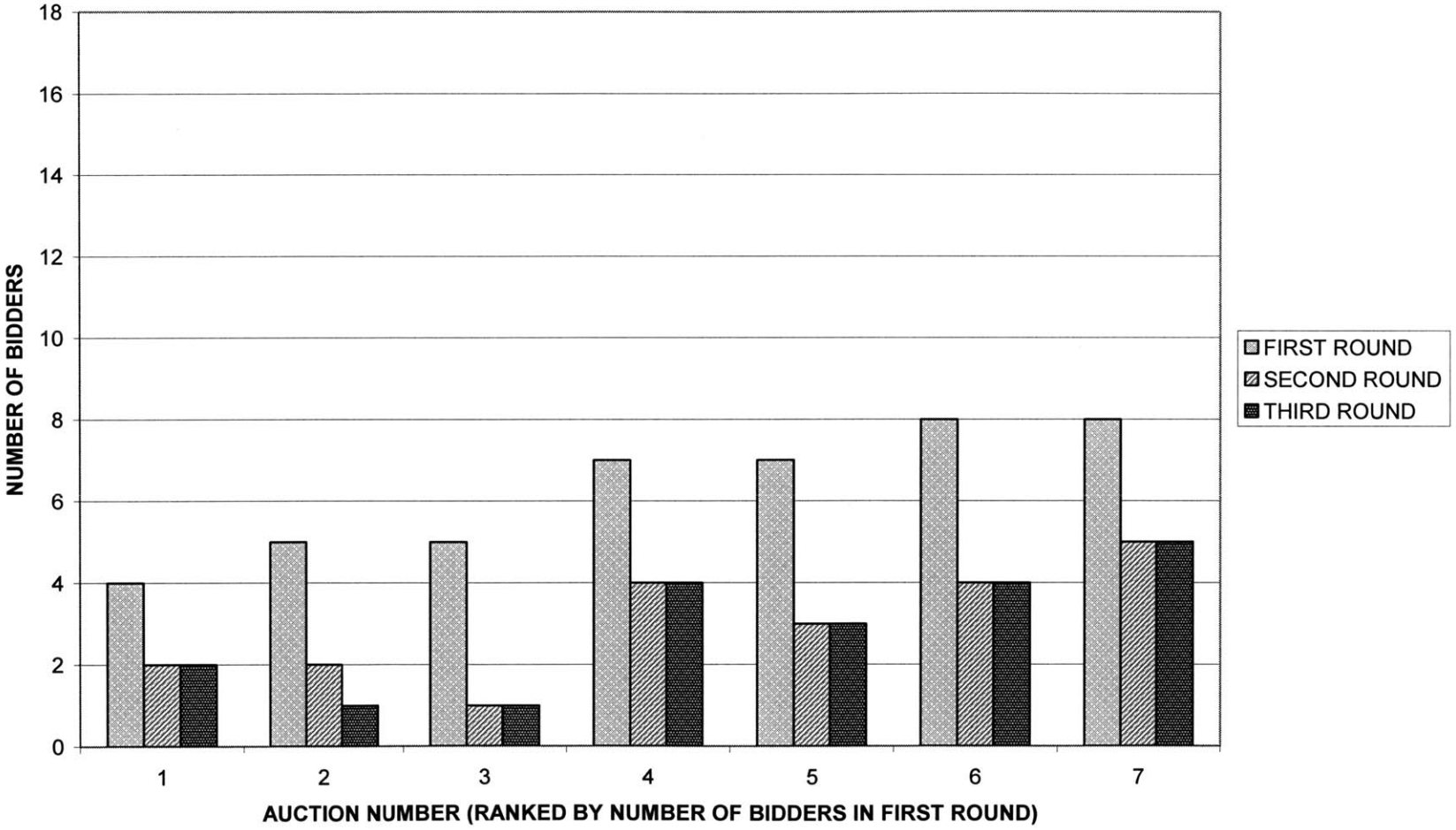


FIGURE 12
RELATIVE VALUE OF OTHER METRICS TO THE HIGHEST BID, ONE ROUND AUCTION

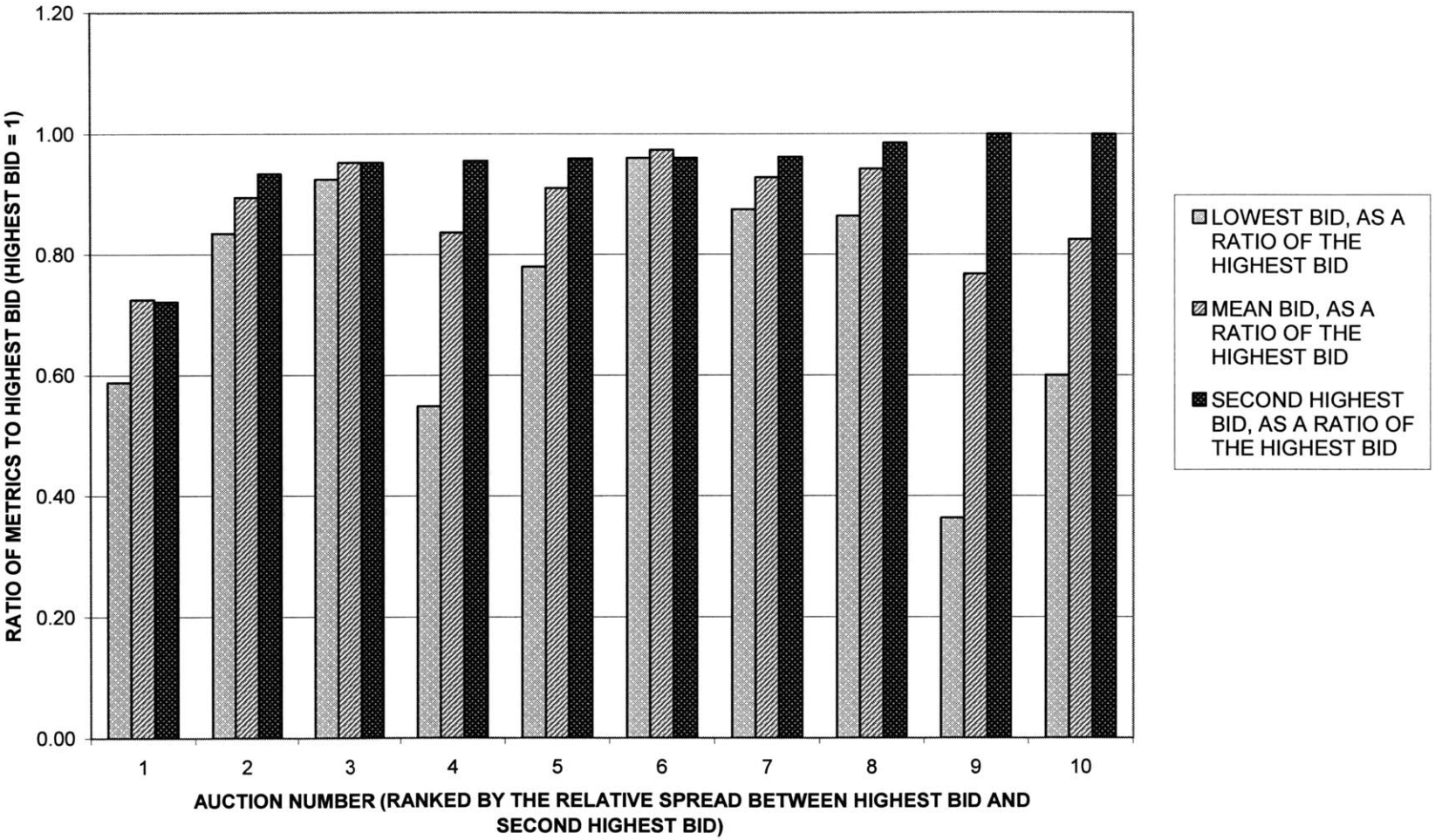


FIGURE 13
RELATIVE VALUE OF OTHER METRICS TO THE HIGHEST BID, TWO ROUND AUCTION, SECOND ROUND

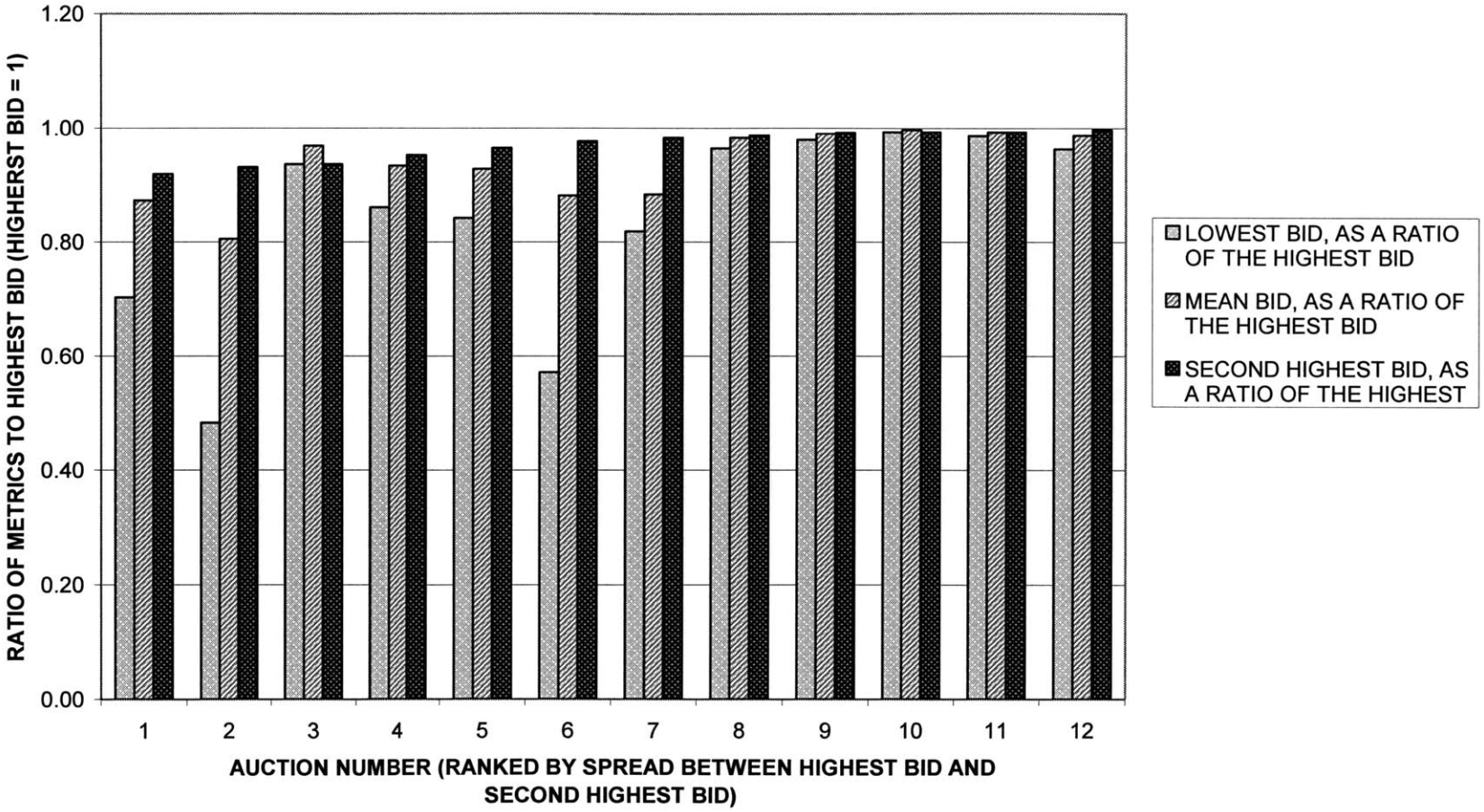


FIGURE 14
RELATIVE VALUE OF OTHER METRICS TO THE HIGHEST BID, THREE ROUND AUCTION, THIRD ROUND

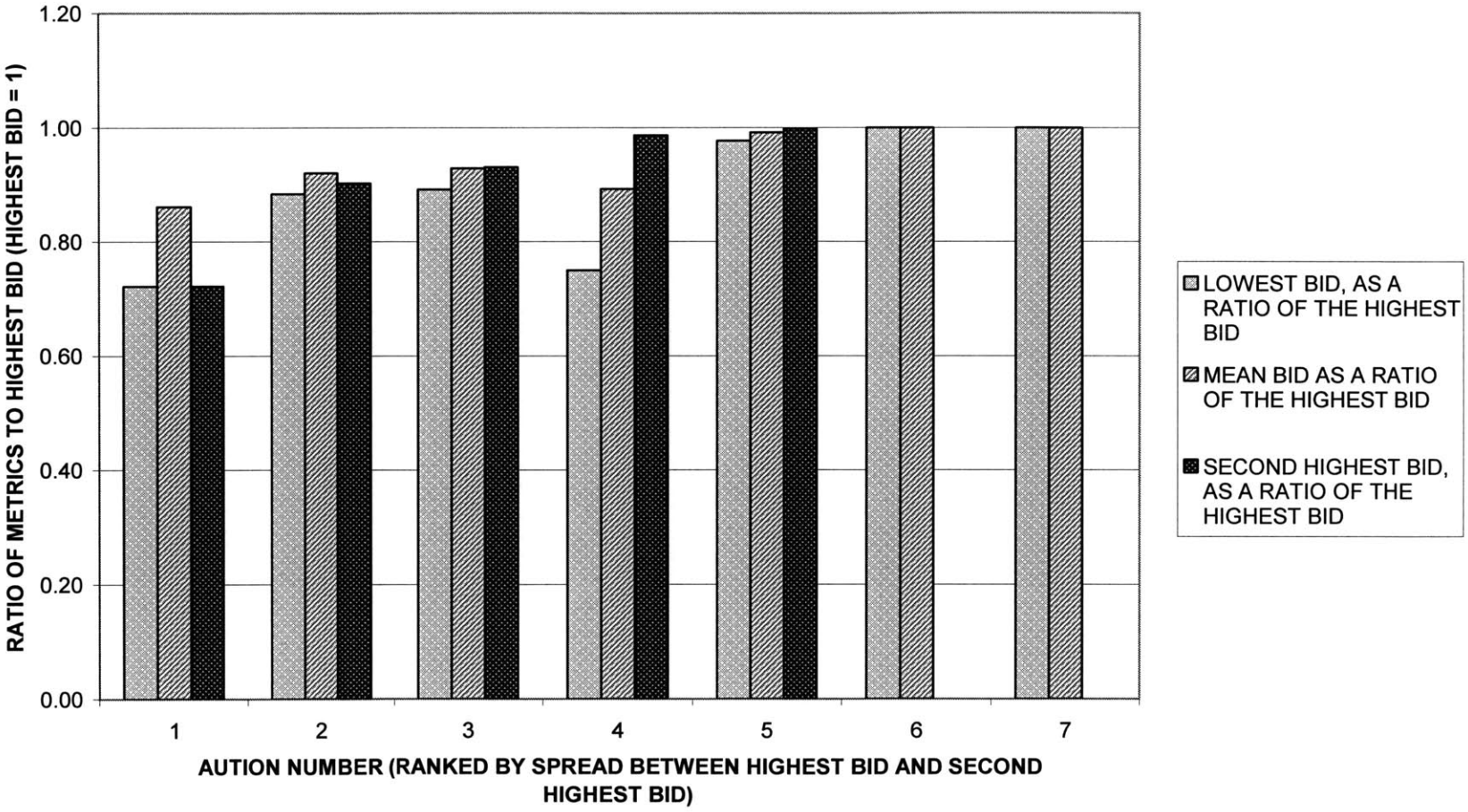


FIGURE 15
RATIO OF HIGHEST BIDS ACROSS ROUNDS, TWO ROUND AUCTIONS

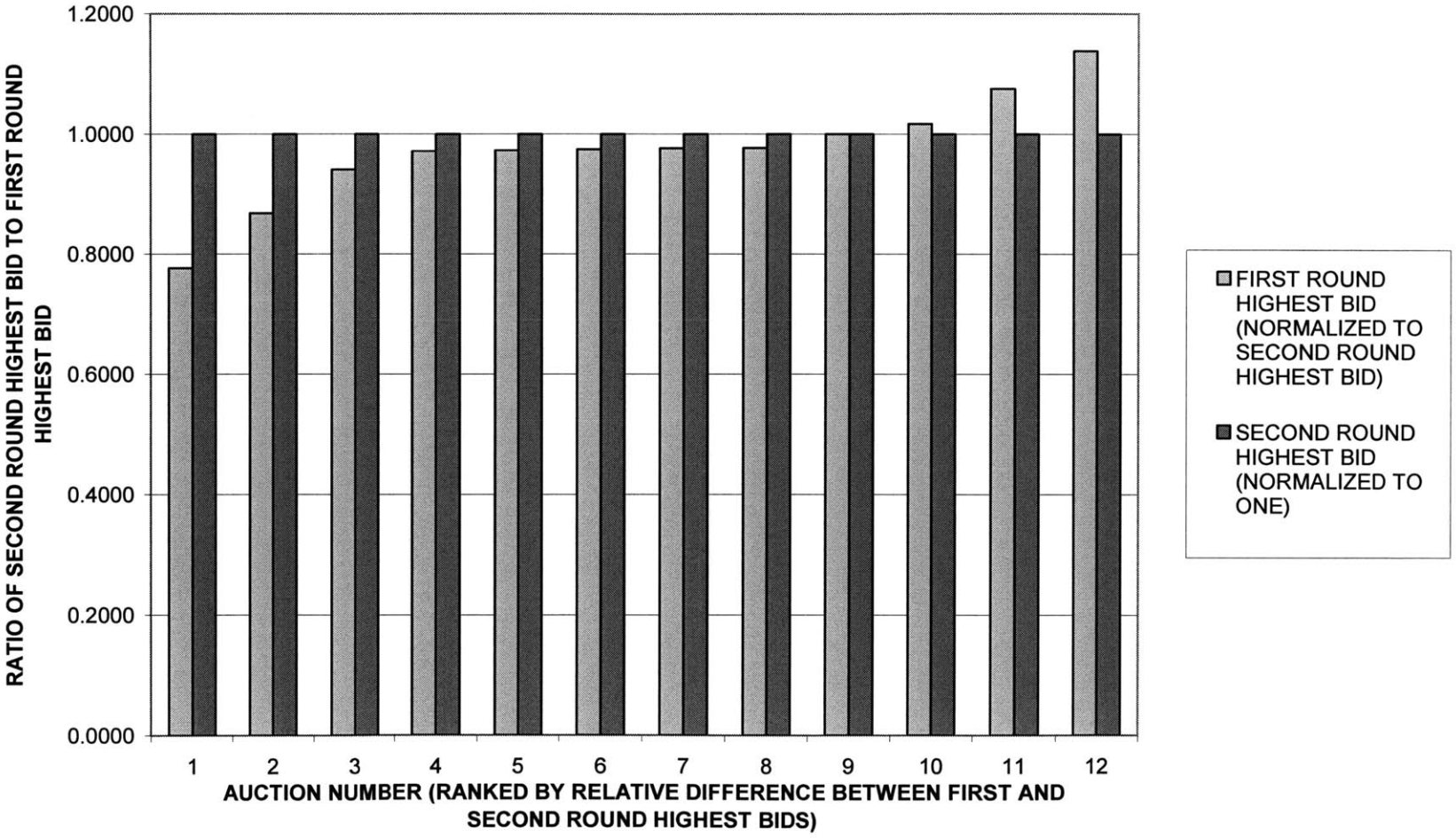
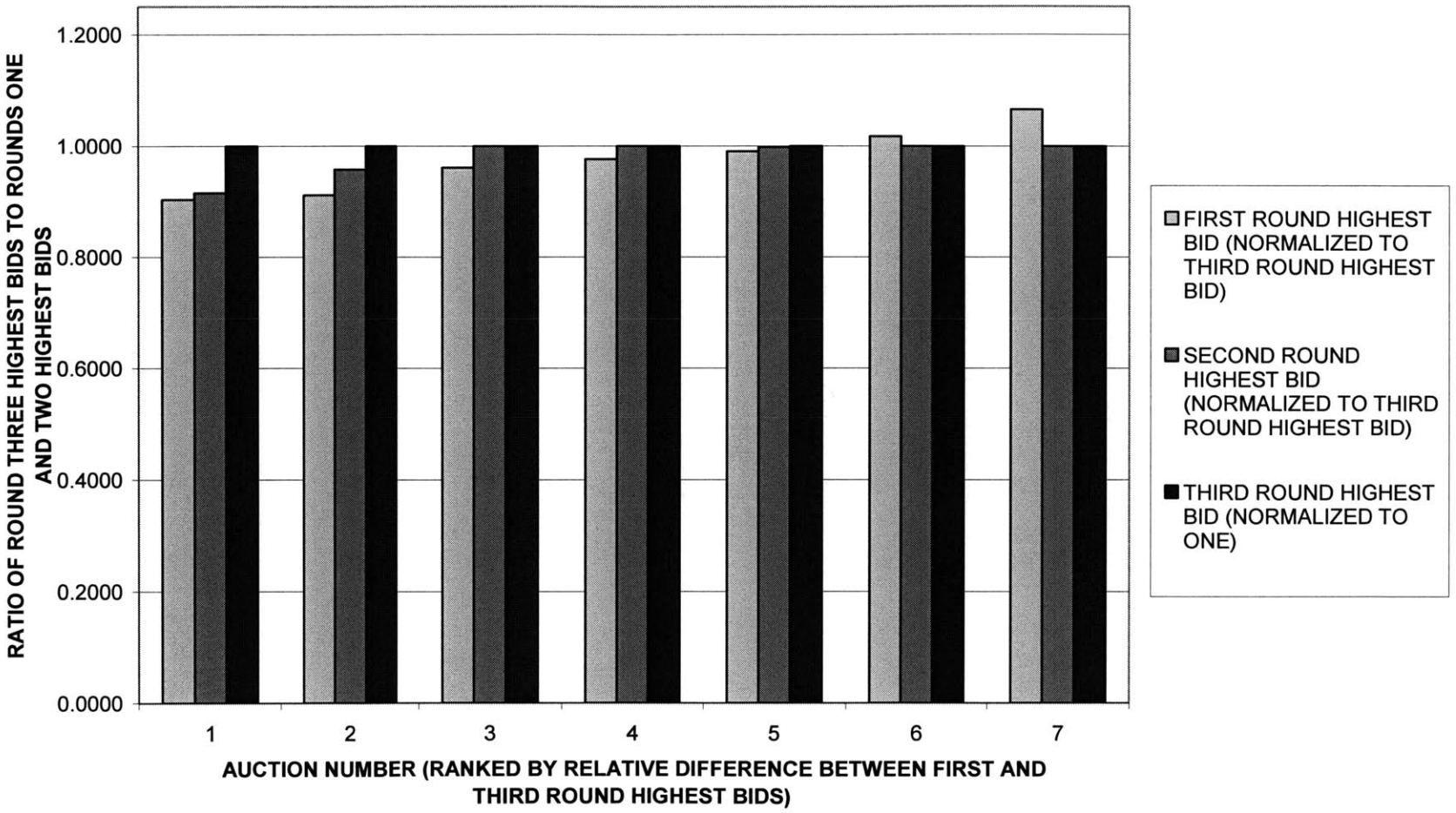


FIGURE 16
RATIO OF HIGHEST BIDS ACROSS ROUNDS, THREE ROUND AUCTIONS



Chapter 5

Findings, Recommendations and Conclusions

This chapter includes the conclusions and findings of this thesis, and recommendations for further research.

The findings of the field research in chapter three are summarized, with reference to the theory and literature of auctions.

Suggestions for the improvement of the auction are made.

Components of the auction model identified in chapter three that are not explained by the current body of knowledge of auction theory are identified.

Suggestions of topics for research that would have been useful in the research and writing of this thesis are made.

A final conclusion statement is made.

5.1 Findings of Interviews

Six interviews were carried out with senior managers responsible for the purchase and sale of real estate. Each interview lasted approximately an hour, and consisted of in depth discussion of the topic. Due to the low number of respondents, the findings are (to use some auction terminology) indicative.

The respondents were collectively responsible in the sale of $5.5 billion of institutional real estate annually and collectively responsible for the purchase of over $1 billion of real estate annually.

5.1.1 Auction Process Verified and Recorded

While each respondent had different views and experiences on the auction, they collectively were familiar with and verified the existence of a two round sealed bid auction for the sale of institutional real estate. The auction is organic, and is not based on published guidelines, best practices or standard procedures. The auction is common in the sale of institutional real estate assets, and is considered a standard, perhaps even dominant, sale mechanism.

The process consists of four stages; the teaser, round one, round two, and due diligence.

The teaser stage is a marketing process, and consists of an offer to enter the second stage subject to a confidentiality agreement. The purpose of the teaser stage is to widely market the asset for sale, and bring a pool of entrants to the second stage.

The second stage consist of all entered bidders preparing a sealed bid that is costly to prepare; estimates from respondents ranged from $3,000 to $10,000, however there is no standard participation cost. There are typically few or no restrictions on entrance to the second stage. It is rare, though not unheard of, for a seller to choose to sell at the end of the second stage.

The third stage consists of a small pool of stage two bidders submitting revised sealed bids. After the bids are submitted, the seller reviews each bid, and reviews the characteristics of each bidder. The auction is incomplete at this point. The seller objectifies the characteristics of each bidder and their bid, and identifies a preferred bidder. Objective tools are not used for this process, although they could conceivably be generated with little difficulty.

The characteristics of the bidder of most concern are the likelihood that the bidder will act honorably throughout the fourth stage. The fourth stage includes information revelation, and presents a moral hazard, and the bidder's requirements in relation to the purchase and sale agreement.

The fourth stage, due diligence, consists of a bi-lateral negotiation of the incomplete elements of the auction process; the participants of this stage are the seller and the preferred bidder.

The auction is informationally incomplete at the end of the third stage; the preferred bidder now has the opportunity to verify the information included in the offering memorandum, and renegotiate when discrepancies are found. In addition, bids are not legally binding and the preferred bidder can renege on their bid, or opportunistically renegotiate with the seller.

The fourth stage also consists of a purchase and sale agreement being made; this is a non-standard agreement that is negotiated on a case-by-case basis.

5.1.2 Auction Process Origins

The auction process came into common use during the 1990s, and is now one of the most common sale mechanisms used for institutional real estate. It is not known if the use of the mechanisms is still growing, however it has grown significantly over the past ten years, to the point where it is the most common mechanism in use.

The origins for the auction are not clear, however several respondents felt that its use was correlated with the involvement of investment banks in institutional real estate, and the RTC-era, after which real estate underwriting and management professionalized.

5.1.3 Reasons for the Auction Use

Practitioners use this auction because they feel it engages the widespread marketing they consider important for successful sales and because they think it efficiently manages the selection of bidders and preferred bidders. In addition the transparency of auction mechanisms is considered important to real estate investment professionals, who are typically fiduciaries. As fiduciaries they must ensure that principals interests are best represented, and openly so. In comparison with other sale mechanisms, an auction effectively meets these two requirements.

5.1.4 Differences in the Auctions Use

The auction is considered one of several tools in the investment sales toolbox. It is commonly repeated in industry in a familiar form.

One notable modification of the auction that sometimes occurs is the adding of sealed bid rounds. This might happen in the case of an asset that had significant levels of competition during the second sealed bid round.

Although the underlying assets might differ across institutional real estate sales, it does not appear that the auction adjusts to these differences.

5.1.5 Costs of Auction Process

While the second stage of the auction is costly for bidders to participate in, the participation costs are not a significant factor in mechanism selection. The costs to a bidder were estimated between $2,500 and $7,500;

The seller's expenses are generally not dependent on the sale mechanism chosen, and may be regarded as a sunk cost.

In contrast the first and third stages have trivial costs for the bidders.

The fourth stage, due diligence, is particularly costly, due to the required involvement of professional consultants, including appraisers, engineers, environmental consultants, and lawyers, as well as a lot of time required of the bidder's acquisitions staff. The costs of the due diligence stage can be $75,000. Due to the costs of the due diligence stage it is the practice to only include one bidder in this stage.

5.1.6 Optimality of Auction

Industry practitioners perceive this auction as being one that offers sellers favorable results, not a surprising conclusion. A casual observation of auction theory would show that this is probably true at the industry level, when compared to posted prices and bi-lateral negotiations. The theory of auctions supports this conclusion.

Given the dynamics of bidding costs it would be difficult, perhaps impossible to model this auction and conclude that it is optimal.

The fact that the auction has come into common use and continues to exist, offers empirical support to the observation that it is optimal.

The fact that bidders occasionally 'scuttle' the auction through aggressive round one bids offers further empirical support to this observation. In these cases be used bidders offer binding bids to sellers; a risk averse seller might accept such an offer rather than proceeding with an auction, despite the fact that the binding offer would be less than the likely result of the auction.

5.1.7 Efficiency of Auction

There is no evidence from the respondents that this auction is efficient, that is meets the Pareto-optimal condition. Given the dynamics of bidding costs it would be difficult, perhaps impossible, to model this auction and conclude that it is efficient.

A number of roadblocks potentially stand in the way of the auction's efficiency, while a couple of characteristics assist it.

The selection processes at the end of the second and third stages potentially restricts efficiency, however there is every reason to believe great effort is made to select the most efficient candidates at each stage, based on the information available to the seller and the broker.

In some cases sellers or brokers offer some bidders an opportunity to match the highest standing bid. Depending on the circumstances this may be sub-optimal; if bidders expect a match offer to be made to a particular bidder it will reduce the competitiveness of their initial bids, Riley, J. G. and W. F. Samuelson (1981). However the seller has a multi-dimensional utility function, so it is not clear that this is a true match auction in the Riley and Samuelson model; rather it is something like post-auction negotiation, which is optimal, and does not reduce welfare, Bulow, J. and P. Klemperer (1994).

There is however a potential conflict of interest with the broker acting in an advisory role at this point. This conflict of interest could be avoided by having the final sealed bids submitted to another agency (a law firm for instance) or the seller, however this is at the expense of the opportunity to have the broker renegotiate with the best bidder.

At the same time, it is likely that the valuation functions of bidders is of the IV model; in this model bidders update their valuation based on information received during the auction. The role of the broker during the third stage supports efficiency and optimality on the IV case.

5.1.8 Incompleteness and Instability of Auction

The auction is bi-laterally incomplete during the competitive stages. Sellers don't know to what extent bidders will act opportunistically in the second stage; buyers don't know to what extent the information in the offering memorandum is inaccurate or incomplete.

During the due diligence stage full information revelation occurs. In some cases this information revelation and the responses by the buyer and seller leads to instability. Respondents in the surveys felt this happened quite often, and that the auctions were unstable between 5% and 50% of the time, depending on different respondents experiences.

Buyers and sellers are motivated to avoid instability, because of a reputational cost they suffer when a deal breaks down. From the evidence provided by respondents these at risk reputational costs, and information distribution in the institutional real estate investment community, contributes to stabilizing the auction, though not perfectly.

Two strategies exist to enhance stability in the due diligence stage. The first is for sellers and bidders to increase the cost they would suffer in the case of a break-down. They could do this, for instance, by offering cash deposits, forfeited if the deal breaks down. Perhaps these cash deposits could accrue to the broker, who is unpaid in the case of a breakdown (see later section). These costs would increase the incentives of both

parties o complete the transaction. Currently it is the practice for bidders to offer deposits when they are selected as the preferred bidder, however these deposits are trivial.

The second strategy would be for the seller to identify a preferred back-up bidder from the round two participants, who would observe, but not participate in, the due diligence stage. In the case that agreement fails to be reached in due diligence, this bidder would be given the opportunity to prepare due diligence. The presence of the observer would reduce the costs the seller faces in the case of a breakdown, reducing the bidder's incentive t act opportunistically during this stage. Communication channels between the two bidders would police the seller, removing an incentive to purposefully issue incomplete offering memoranda.

A third available strategy is not recommended; This strategy would invite a second bidder to participate in due diligence, with the unsuccessful bidder's costs reimbursed by the seller. Although an elegant proposition, this strategy would restructure the entire bidding game, and could have negative consequences not studied within the scope of this thesis.

5.1.9 Conflicts of Interest

Potential conflicts of interest exist between the seller and the broker. The broker is incentivized by two factors within this auction; the opportunity to earn a fee for a completed sale, and the opportunity to work for auction participants at a later, including both the seller and the bidders. Both of these incentives raise potential conflicts of interest. Under the existing model these conflicts are policed by the value of the broker's reputation, the broker's morals, and the seller's right to overrule the broker at any time.

A solution is proposed to the first problem; the second is more complicated, and no solution is proposed.

The set-up to the solution is as follows: the broker only gets his fee if the sale is completed. If the sale breaks down the broker gets nothing, but the seller retains the underlying asset. Given the risk the broker faces if the asset is unsold, he is likely to identify a different optimal bidder than the seller would; the brokers optimal bidder is more likely to complete the transaction, at the expense of having a higher bid. This conflict of interest potentially influences efficiency as well as optimality.

Sellers could better align the broker's interest with their own if a significant portion of the broker's commission was a stipend, and less of it a commission. If the recommendation from an earlier section were used, the sellers and bidder's cash deposits could be paid to the broker if the auction breaks down.

Regardless of the solution imposed, it should be recognized that if a conflict of interest exists it is because of the incentive alignment structure of the auction, which is constructed by the seller.

To an extent there is an industry mechanism that does align incentives as recommended here; a number of respondents noted that when a deal breaks down, and the broker is not at fault, the broker would be given an opportunity to represent the seller on another investment sale at a later date. A materiel stipend would likely be a more effective mechanism than this promise of future work however.

Sellers that think their brokers have conflicts of interest can, and should, do something about it; they can choose to restructure the broker's interests in the auction's outcome.

5.2 Recommendations

The following are recommendations based on the findings and research of this thesis.

5.2.1 Formulation and Publication of Best Practice

Further interviews with senior industry figures, as well as thought leaders should be conducted. The findings of these thesis, coupled with further research and analysis should be used to formulate a best practice guide for this auction.

It would be to the benefit of the industry if serious thought and planning put into its development, and it were widely published. The real estate industry consists of a widely dispersed personnel base and knowledge base. Active participation by knowledge able associations in the development and improvement of market mechanisms would be beneficial. That would ensure that practitioners without access to the academic resources of incentive theory could best represent their interests.

5.2.3 Solution for Instability

The instability of the due diligence stage, currently policed, somewhat effectively by the industry's information structure, would be better policed by cash deposits that the seller and bidder would forfeit if a sale breaks down. By increasing the opportunity cost of the agreement breaking down overall optimality and efficiency could be enhanced. Arbiters or the legal system would still police misrepresentation or fraud.

Alternatively a backup bidder could be chosen, and invited to observe the due diligence process; if the auction broker down during negotiation this bidder would be given the opportunity to step in. This would incentivize both the bidder and the seller to

complete the deal in accordance with their announced intentions at the end of the third stage.

5.2.4 Solution for Conflicts of Interest

The auction process as currently practiced includes a potential conflict of interest on the apart of the seller's agent. The seller's agent, who has a role in recommending the best bidder, and administers the auction and sale process, is more risk averse in the selection of the preferred bidder for due diligence. This is a function of the broker's usual compensation structure, which is all fee with no retainer.

Seller's can restructure the broker's fee structure to include a stipend to reduce this conflict of interest.

5.2.5 Qualification of Bidders

One of the biggest problems faced by sellers in this auction is the varying quality of bidders, as perceived by the seller. The seller has to engage in bi-lateral negotiation with the selected bidder, and the bidder also has to be able to close the sale. Respondents consistently noted that the seller is concerned with the quality of bidders, particularly their reputation for retrading and their perceived competence.

Sellers could benefit from the implementation of qualification processes; rather than using these processes to exclude bidders, they would be used to better inform seller's when objectively comparing bids submitted.

5.3 Theoretical Conundrums

In the course of the research and writing of this thesis, a number of questions arose not currently modeled or solved in the auction theory literature. In this section these questions will be introduced.

5.3.1 Substitutability of Bidders

Sellers have to compare bids of different amounts across bidders with differing characteristics, and select the one that is best. While bidders are not identical, they are substitutable. A price point exists between two feasible bidders where the seller is indifferent between the two bidders.

A model that incorporates the substitutability of bidders was not found in the auction theory, although multi-dimensional utility functions are studied.

5.3.2 Incomplete Auctions

The auction researched in this thesis is bilaterally incomplete. At the end of stage three the bidder does not know how accurate the offering memorandum was, and the seller does not know how competent or opportunistic the bidder will be during due diligence.

Literature on incomplete auctions was not found, although incomplete contracts have been a subject of significant research.

5.4 Suggestions for Future Research

In the course of researching this thesis existing data was found to be lacking in two areas. Had more rigorous research been done in these areas, the context of the institutional real estate market could have been better developed. Research or publications in these areas might prove beneficial.

5.4.1 Survey of Institutional Real Estate Market

In the course of researching this thesis, efforts were made to survey the overall context of the institutional real estate market, including aggregated asset value, aggregate loan to value, for the industry as a whole, and for different classes of investors. Efforts were also made to survey holding periods for different investor classes, to estimate the annual value of institutional real estate transactions.

The available data was not sufficient for such a survey, beyond the estimates made at the industry level, Miles, M. and N. Tolleson (1997), and Geltner, D. M. and N. G. Miller (2001). Efforts to define and research investor classes, aggregate real estate holdings, loan to values and holding periods would be worthwhile. Currently most of the available information is in the form of estimates which seem conflict with each other.

5.4.2 Segmentation Studies of the Real Estate Industry

The overall real estate industry consists of sub-markets and segments. In the course of the research of this thesis brief surveys were made of these segments to put the auction and transactions in context. The data available on market segmentation, by asset type, by investor class, and by overall property grade was unsatisfactory at best.

Detailed research of the commercial real estate universe would be a worthwhile topic of future research.

A worthy component of this research might be the definition of investor class and asset class. For instance commercial real estate is usually considered in respect to classes ('A,' 'B' and 'C'). Generally accepted definitions of these do not exist however, hence surveying and researching classes and submarkets is difficult.

5.5 Final Conclusions

Over the past ten years or so the institutional real estate industry has developed a competitive bid process that supports seller's goal of maximizing revenue, while supporting the fiduciaries' role of demonstrating the principals' interests have been served.

This auction is now very commonly used in the institutional real estate marketplace, which has an annual sales volume of something in the order of $60 to $100 billion. This auction is typically used to sell institutional real estate assets, which tend to be large, stabilized, high quality assets.

This auction consists of the widespread marketing of the institutional real estate asset. A round of indicative bidding is then conducted with a wide pool of bidders. The best bidders are promoted to a second sealed bid round where they have the opportunity to revise their bid. Bids are generally, though not necessarily, increasing from round one to round two. The best bidder at the end of round two is promoted to a due diligence stage, during which additional bilateral negotiation takes place. Bids may be revised down during the due diligence stage based on new information, or because of opportunistic behavior by the bidder (a practice known as retrading).

To all outward appearances this is a moderately successful and efficient model. Opportunities for improvement do exist however; the auction is unstable in some cases, and conflicts of interest exist between the seller and his agent. Solutions to these problems seem to exist however, as with many solutions they may pose problems of their own if implemented.

Chapter Five References

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Appendix A

Structured Interview

CRE.SPEC - THESIS

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, SPRING 2003

ADVISOR: PROFESSOR WHEATON

APRIL 1, 2003

STAGE 1 EMPIRICAL RESEARCH (INITIAL INTERVIEWS)

THE TWO ROUND WHISPER PRICE AUCTION FOR REAL ESTATE ASSETS

SECTION 1 – GENERAL INTRODUCTION:

I am a graduate student at the MIT Center for Real Estate engaged in thesis research. The MIT Center for Real Estate is the home of the first one-year full-time Master's degree in real estate in the US, and has been offering graduate degrees in real estate since 1983. It also the home of a respected summer institute of professional development courses. If you would like to know more about the Center for Real Estate the URL is http://web.mit.edu/cre/.

My background is in construction management consulting. My previous responsibilities included cost estimating, cost analysis, and project management. I worked on biotechnology, institutional and aviation projects for Atkins H F & G (formerly Hanscomb). The subject of my thesis, and the reason I am calling you today, is in relation to a two round bid process sometimes used to sell real estate assets. I will describe this bid process a little more shortly, but first I should explain the context of this subject.

The theory of bidding for assets or procurement contracts has developed quite rapidly over the past three or four decades (this field is usually known as Auction Theory). Different bid processes elicit very different responses on the part of bidders. As a result complex results can come out of process selection, and different mechanisms can be suitable for different circumstances. While a rapidly developing field, auction theory has not fully addressed how the specific markets and players in certain industries (such as real estate) affect mechanism selection, nor has it fully addressed optimal mechanism selection when bids are costly to prepare, as is the case in real estate.

As a result, I think research into competitive bidding mechanisms in real estate is a field worthy of study. My interest in this field is partly influenced by my previous experience in selecting and managing procurement systems for construction projects on behalf of owners.

This is the first stage of a three stage research process I am carrying out. I plan to speak with about five senior managers in organizations that own, buy and sell major real estate assets in this phase. In the second phase I intent to send out a mail in survey, with questions developed based on the first phase interviews. In the third phase I will again interview a number of managers in real estate ownership organizations to discuss any remaining questions I have, and collect some data on actual auctions, if possible.

As a footnote, I am very interested in assessing as much auction data as I can get, although that is not the primary purpose of this interview. In general it is normalized data that is of interest, so if you wished to assist me, but were concerned about confidentiality that might help.

SECTION 2 - INTRODUCTION TO THE RESEARCH TOPIC (TWO ROUND REAL ESTATE AUCTION):

The subject of my research is a form of auction being sometimes used to sell real estate assets. I have been calling the auction the "Two Round Whisper Price Auction," however you might now it by another name. For instance, this auction might be similar to an auction process with an initial round of "Indicative Pricing," where bidders submit what they think the asset might be worth before being selected to actually bid on the object.

Basically, the characteristics of the auction are as follows:

1) The seller sends "the book" to a large number of potential bidders.
2) The potential bidders submit "cheaply prepared" bids to the seller
3) The seller reviews the "cheap bids," and selects a small number of the bidders to proceed to a second round
4) While the bids are being prepared the seller or her agent publishes a "Whisper Price" to active round two bidders. The whisper price is a price around which final bids are expected to cluster.
5) The second round bidders submit "expensively prepared" bids
6) The seller selects a preferred bid from the second round, and sells the asset to that bidder, or engages in further negotiation

SECTION 3 - GENERAL FAMILIARITY:

Q 3.1: Are you generally familiar with this bid process, or one with similar characteristics? Have I correctly described the bid process? Please explain.

Q 3.2: Do you have a name for this auction format at your company? What is it? Do you have other information regarding its name that you might like to share?

Q 3.3: Does your company use, or has it ever used, this auction format to sell a real estate asset? Please explain.

Q 3.4: Do you think this mechanism is used especially commonly for a particular sort of asset, or by a particular type of seller? Are there any characteristics of a sale that you associate with this mechanism (institutional property, distressed property, non-core property, quick sell, slow sell)?

Q 3.5: What other mechanisms does your company use to sell real estate assets? Who decides which method to use to sell an asset? Who else is involved in the decision? Who carries it out, and do they have any control over mechanism selection?

Q 3.6: What other anecdotal evidence would you like to share with me at this point in the interview?

SECTION 4 - GENERAL INFORMATION REGARDING THE MECHANISM AND BIDDING:

Q 4.1: Further discussing the mechanism and individual characteristics, would you agree that round one of this auction brings more bidders than a normal single round sealed bid process? What about round two?

Q 4.2: What would be typical numbers of bidders for each round of each of the major disposition techniques your firm uses? Even if you find it difficult to give an exact number, perhaps you can position the relative numbers (i.e.: method x brings more bidders than method y, but less than method z). Are bidders told (either officially or otherwise) how many firms they are competing against in each round? How often (in each round) does a bidder fail to submit a bid?

Q 4.3: Can you talk about the length of time that is typically given between sending the book out and bid-close for each round of each of the major auction mechanisms you use? Is one mechanism noticeably speedier or slower than another?

Q 4.4: Can you talk about the cost of participating to bidders (especially to unsuccessful bidders) in each round of each auction mechanism used? Is one mechanism noticeably less or more expensive than another?

Q 4.5: Not used

Q 4.6: Can you talk about the cost of participating to the seller and its agents? Is one mechanism noticeably less or more expensive than another from the point of view of in-house costs and consulting expenses?

Q 4.7: Thinking about the book published in the first and second rounds of the Two Round Whisper Price Auction, is it the same book that is used, or is it substantially updated? Is there any other information that bidders are exposed to in the second round that wasn't available in round one? Are FTP web-sites used to manage the auction and RFIs?

Q 4.8: Do round one bidders visit the asset prior to submitting bids? What about round two bidders? Who pays for / facilitates these trips?

Q 4.9: Are round one bids considered binding? If so how often are round one bids accepted? Is the level of due diligence in the round one bid submission enough to meet a public organizations requirements prior to buying an asset?

Q 4.10: How common is it for an asset to be taken off the market after round one? What about after round two?

Q 4.11: Is there a stigma attached to a property pulled off the market after round two? What about after round one? Do you think this is a significant factor in selection of the two round mechanism for asset disposition?

Q 4.12: Not used.

Q 4.13: Are round two bids higher than round one bids? To what extent. How often is this not the case?

Q 4.14: What do you think about each of the following potential reasons for this mechanisms use? Please explain your answers

Q 4.14 a) This auction is used because it 'cheaply' solicits many viewers. We then proceed to a second round with the optimal viewers/bidders. This system efficiently solicits bidders, which is why we use it.

Q 4.14 b) This auction efficiently spends entry costs. The 'small' entry cost to the first round is affordable to many bidders, while bidders don't want to pay to enter the second round unless they know they have a good chance of getting the object.

Q 4.14 c) We tried this auction because it seemed like a good idea, and we borrowed it from another industry (namely Investment Banking). It is an okay disposal mechanism, but I don't think its characteristics are very critical, and I don't think it performs any differently to other mechanisms we use.

Q 4.14 d) This auction is good because we can withdraw from selling it if we are unhappy with the round one bids without the asset becoming stigmatized.

Q 4.14 e) We use the first round bids to establish the assets' value, because we don't really know how much they are worth (either because the market is moving rapidly or because it is an unusual asset). We use the information from round one to set our reserve price for round two.

Q 4.14 f) This auction lets us begin selling the asset while we are still preparing the book. By the time the book is complete we have identified the right bidders.

Q 4.14 g) This auction lets us to cheaply find out what ideas other property companies might have about redeveloping the asset. Their ideas for redevelopment or repositioning of the asset are distributed to all bidders prior to round two.

Q 4.15: Does your firm use the 'Whisper Price" I mentioned earlier? If so, when is it published and by whom? When is it set, and by whom? Does the publication of the Whisper Price differ from the other mechanisms your firm uses? How does the Whisper Price relate to the appraisal?

Q 4.16: Is the Whisper Price the same as the reservation price? Who sets the reservation price, and when? Does the reservation price change during the bidding process? Is the reservation price (the price below which you won't sell) published?

Q 4.17: What does the relationship tend to be between the actual round two bids and the Whisper Price? How does this compare with other mechanisms your firm uses?

SECTION 5 - ANECDOTAL INFORMATION ON THE MECHANISM:

Q 5.1: Do you know anything about the origins of this auction? Who brought it into real estate, and when? How commonly do you think it is used? Do you think its use is increasing with time?

Q 5.2: Are you generally satisfied with the mechanism? Do you recommend it to colleagues either inside or outside the organization you work for? Do others recommend it to you?

Q 5.3: When this mechanism is used is it always the same, or do managers 'tinker' with the mechanism each time? Does your company have a specific guideline to follow when using this (or any other) disposal mechanism?

SECTION 6 - SOME BRIEF DEMOGRAPHIC QUESTIONS:

Q 6.1: What is your job title / level or responsibility? How long have you been with your firm?

Q 6.2: What would be typical properties and positions your firm would take in the ownership of real estate? Do you hold debt and equity, or mainly one? Are these properties concentrated by geographical area, country or building type?

Q 6.3: What would be a typical number of properties your firm would buy and sell in a year? Could you estimate the market value of these properties?

Q 6.3: How many people work in the acquisitions and dispositions department of your real estate division? Do you outsource any activities to reduce their workload? Do you outsource any of the responsibilities for the two round whisper price auction?

Q 6.4: Is there anything else you'd like to tell me about your company that you think might be relevant to this research subject?

Thank you very much!!!!

Appendix B

Printouts of Electronic Sources

CoStar GROUP

news
corporate info
events
products
support
contact us
add a listing
site map

Subscriber Login

User Name

Password

login

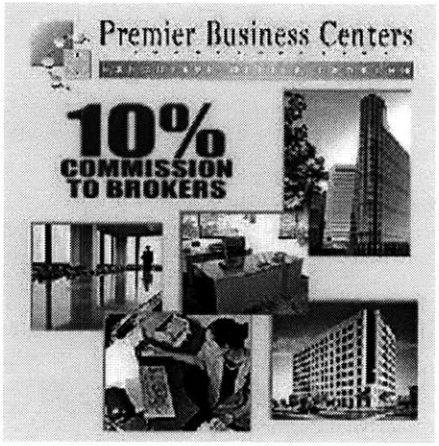
By logging in you are agreeing to CoStar's terms of use.

Forgot your password?

Access restricted to licensed users. Sharing of passwords is prohibited.

$41M Office Sale in Phoenix

The three office buildings that make up Hohokam Towers sold to RREEF. The San Francisco, CA-based REIT will take title under the name RREEF America REIT II Corp. PP. Sold by Nationwide Realty Investors of Columbus, OH, the investment property is comprised of 4605 E. Elwood St. (117,440 square feet), 4615 E. Elwood St. (85,488 square feet) and



Property

- Lookup Property
- Search Properties
- Analytic Search
- Costar 1Q 2003 Office Reports
- Open Last Survey
- My Surveys
- New Release Notes

Comps

- Lookup Property
- Search Comparables
- My Searches
- On-Demand Pricing
- On-Demand Membership

Tenant

Exchange

Events

Thu, Aug 7, 2003
NAMA National Education Conference (TX)

Thu, Aug 7, 2003
Open House at 33 Clinton Road (NJ)

Thu, Aug 7, 2003
BOMA San Diego Newsletter Committee Meeting (CA)

Thu, Aug 7, 2003
Georgia CCIM, CI Intro-

- Lookup Tenant
- Search Tenants
- My Searches

- Look Up Property
- Search Properties for Sale
- My Searches
- My Listings
- My Reports
- Alerts
- Professional Profile

Education Course (GA)

Thu, Aug 7, 2003
CREW Cleveland Meeting (OH)

Go to **more events** >

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CoStar Group, Inc. is the leading provider of information services to commercial real estate professionals in the United States and the United Kingdom.

Products & Services: CoStar Exchange®

CoStar EXCHANGE® 24 billion square feet of property. One window.

The powerful solution for buying and selling commercial property on the Web.

Some provide information.
CoStar Exchange® provides knowledge.

It's what you get when you combine the power and reach of the Internet with the world's largest commercial real estate databases.

For investors and their brokers, knowledge means making the best investments. For sellers and their brokers, it means maximizing the value of their property.

No matter what side of the transaction you're on, CoStar Exchange® is quite simply the most powerful partner you can have.

No one can match the vision of CoStar Exchange®.

CoStar has been relied upon by commercial real estate professionals for 16 years -- more than any other company by far. We've set a precedent in the leasing industry -- our information facilitates 60 percent of all transactions in the U.S. And we're about to do the same in the "for-sale" marketplace with CoStar Exchange®.

Over the years, CoStar has earned a solid reputation for offering the most accurate data available. The reasons are simple. We have more than 500 researchers -- the largest staff in the industry -- tracking over 1 million properties, including over 57,000 pre-qualified, top-quality properties which are for sale online through CoStar Exchange®. And with CoStar COMPS®, the most comprehensive database of comparable sales available,the information provided is like no other.

Our researchers draw from brokers, owners, property managers, asset managers, industry news analysts, financial analysts, county, state and local registers, landlords/tenants and urban planning professionals to give you up-to-date, reliable, comprehensive information.

This information is gathered through millions of research phone calls, faxes, e-mails, field and courthouse research, door-to-door tenant canvassing, aerial and architectural photography, and satellite mapping systems. Our researchers are motivated by an incentive program that measures both the completeness and timeliness of their research. And an independent quality assurance team constantly monitors and guards database accuracy.

The vision of CoStar Exchange® is one of empowerment for all parties involved in the process. And we offer the content, verified data, trust, transparency and speed to make it happen. Our revolutionary new model for buying and selling commercial real estate supports, protects and enhances brokers' business -- helping them make more informed decisions for their clients.

CoStar Exchange® brings it all together for you.

What sellers and their brokers want is to maximize reach among potential investors. After all, the more competition there is to buy your building, the higher the price you'll get -- and the faster you'll close.

Over the past two decades, CoStar has accumulated extremely loyal and powerful subscribers. These are the serious investors and brokers who make most of the commercial real estate decisions in the U.S. every day. That's maximum reach by any standard.

However, releasing confidential information to a wide market of potential buyers has always meant losing control of your listing and risking a "too widely shopped" image. Until now.

Utilizing the interactive capabilities of the Internet, CoStar Exchange® allows you to decide who will see your information when you want them to. For instance, you could target a few key buyers, then selectively invite other qualified buyers or brokers who have expressed interest in your sale listing. With this kind of control, reach and security are no longer mutually exclusive concepts. Thanks to CoStar Exchange®, now you can have both.

What buyers and their brokers want is access to more and better properties. CoStar Exchange® offers this to you like no one else can -- with more properties added all the time -- because we simply have more and better resources to draw from.

By using CoStar Exchange®, you harness the power of the Internet, coupled with the massive databases in CoStar Property®, CoStar COMPS® and CoStar Tenant® to beat your competition to the best investments.

Bringing new efficiencies to the buying-selling process.

CoStar Exchange® is the selling broker's opportunity to efficiently supplement and energize current marketing efforts. And the investor's opportunity to save both time and money while expanding their clients' options.

We help owner brokers create a Web Investment Package by taking their current investment sale package and putting it into the Web format that serious investors prefer. The information is organized with investment highlights, building photographs (property and aerial), charts, sales comps, news, physical descriptions, area descriptions, market statistics, income and expenses, 360º virtual tours, locational maps, and attachments such as Argus™, Excel®, and PowerPoint® files.

And we make life easier for investors who are looking for property. Investors can store their investment criteria on CoStar Exchange® and receive e-mail alerts about new listings that match them. And our buyer-friendly searches help you quickly locate the best properties for sale.

How CoStar Exchange® benefits buyers:

- Gives you access to all investment sale and user sale properties -- class A, B and C office, industrial, multi-family, hospitality, land and retail.
- Alerts you with automatic e-mail notifications to keep you constantly updated and let you see premium properties before your competitors.
- Saves you time wasted on "dead deals" that have been sold or are off the market. Allows you to quickly select the best deals from a huge inventory.

How CoStar Exchange® benefits sellers:

- Simplifies your selling process with a dynamic, user-friendly, Web Investment Package -- at no cost.
- Helps you build your network of serious, qualified buyers. E-mail alerts let you know when buyers are interested.
- Allows you to expand reach while controlling distribution.

CoStar Exchange® makes it fast, easy and secure.

How can owners and brokers broaden their reach while maintaining security and controlling distribution? Easier than ever before.

First, CoStar enters into a non-disclosure agreement with the selling broker for properties that are over $5 million and require exclusive distribution. CoStar then distributes a special password to the seller's "short list" -- at no cost. This password allows these prospects to view the property in detail. CoStar Exchange®

subscribers, who are not on the "short list," see only an anonymous proprietary listing, but they too can request access to the property. CoStar forwards these requests to the seller along with a verified "Professional Profile" of the subscriber. The seller then decides whether or not to grant access to the property. In this way, the selling entity controls the listing's integrity and their own privacy at every point in the process.

Let CoStar Exchange® add to your success.

CoStar Exchange® is **the** Web solution, whether you're buying or selling investment grade property. By unlocking the value in the commercial real estate market, CoStar Exchange® is helping to grow business for everyone.

To subscribe or to get more information, please call **1-877-7COSTAR** and talk to a CoStar representative.

We look forward to helping you.


Click here for a list of markets covered by CoStar Exchange®

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LoopNet

#1 In Commercial Real Estate Online

$115 billion of Properties For Sale · 2.2 billion sq. ft. of Properties For Lease · 35(

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LOG IN

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Market your services in LoopNet's new Professional Directory

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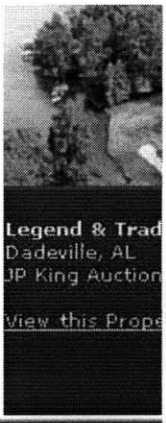
NEED A BROKER? Check out LoopNet's New PROFESSIONAL DIRECTORY

NEED HELP?

Help Center

Premium Member Benefits

User Guide



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WHO'S IN THE LOOP

WHAT'S NEW

Radius Searching
Radius Searching allows you to locate properties or office space for lease within a specified distance of any address; saving you time and giving you more control over your property searches.

Professional Profile - Build Your Professional Network
Professional Profile is designed to help brokers get noticed, build their network, and win business by marketing their services to the world's largest audience of owners, investors, tenants and brokers.

Professional Directory - Find a Broker
Looking for a broker to help you find or sell property? Let LoopNet's new Professional Directory help you locate the right professional for all your needs.

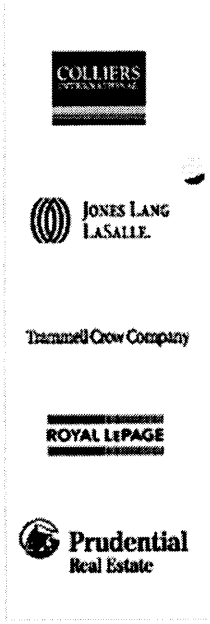
OTHER LOOPNET SERVICES

AppraiserLoop

Manage appraisal assignments and access a national online database of appraiser-verified commercial property sale comparables.

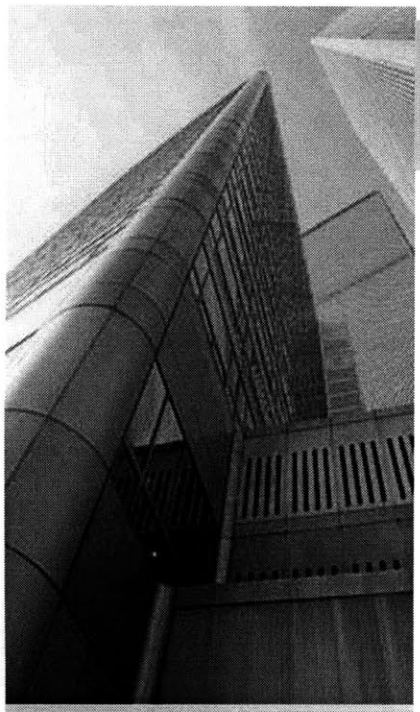
LoopNet Import Service
The Import Service offers brokerage firms, property owners and commercial real estate organizations a simplified way to market listings on LoopNet that reduces manual entry.

LoopLender
A full service commercial real estate finance team with direct access to 30 leading mortgage lenders and the lowest loan closing costs in the industry.



COMPANY OVERVIEW

LoopNet is a leading information services provider that offers a suite of products and services tailored to the national and local needs of the commercial real estate industry. LoopNet operates the largest commercial real estate listing service online with more than 220,000 commercial property for lease and sale listings, including $115 billion of property listed for sale, 2.2 billion sq. ft. of space for lease and 3 million acres of land for sale. LoopNet covers all property categories including commercial land, office, industrial, multi-family and retail. With more than 350,000 members, LoopNet attracts the largest community of commercial real estate professionals including brokers, investors, tenants and property managers. LoopNet's market-leading LoopLink product powers the web sites of more than 1,200 commercial real estate organizations and seamlessly integrates their web sites with LoopNet's listing service at www.LoopNet.com.



COMPANY
About
Team
Benefits
Testimonials
Contact

MEMORANDA
Process
Research
Writing
Graphics
Production

ARGUS
Methodology
New Models
Model Audits
Model Updates
Portfolio Models

FINANCIAL
Overview
DCF Analysis
NOI Analysis
Sensitivity Anal
Tenant Analysis

HOME

PROCESS

If you are an active acquirer of real estate, you have probably already seen a Greycliffe offering memorandum and not even realized it. Greycliffe Partners h created offering memoranda for investment brokers at many of the national brokerage companies as well as for local and regional brokerage firms. We wor on apartment, office, retail, and industrial properties valued from $5 million to $100 million, located throughout the country.

Our team of researchers, analysts, writers, and graphic designers create comprehensive offering memoranda that are renowned for their well-written content, rich graphics, and logical organization. At Greycliffe Partners, we hanc all the details—research, writing, analysis, desktop publishing, and more—and deliver our client's complete "turn-key" offering memoranda for under $10,00(Although most of our clients are capable of writing and producing their own offering memoranda, they have found that outsourcing this resource-intensive task to Greycliffe Partners results in a superior product and provides them witl additional time to go after new business and execute existing assignments.

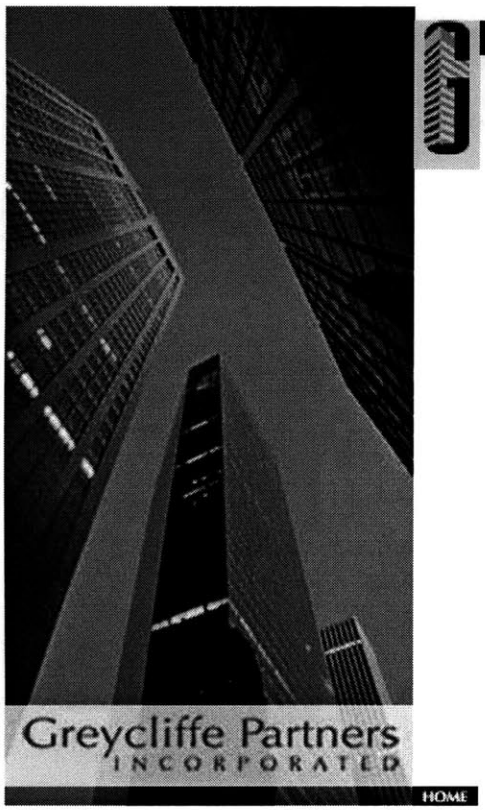
To view a sample offering memorandum, click here.

Offering Memorandum Fee Schedule

Offering Memoranda			
Apartment	$	9,000	per asset
Industrial	$	9,000	per asset
Office			
Suburban	$	9,000	per asset
CBD	$	12,000	per asset
Retail			
Neighborhood	$	9,000	per asset
Power Center	$	12,000	per asset
Regional Mall	$	15,000	per asset
Printing & Finishing			
Lazer color printing	$	0.85	per page
Collating & Binding	$	2.00	per book
Foil Embossed Covers (with backs)	$	3.00	per cover[1]
Laminated Photo Covers (with backs)	$	3.00	per cover[1]
5-Bank Custom Labled Tab Sets	$	4.00	per set[1]
7-Bank Custom Labled Tab Sets	$	4.50	per set[1]
Teasers/Flyers			
Design & Layout (11 x 17 printed)	$	1,000	per offering
Printing (4-color, 2-sided glossy)	$	1.00	per piece[2]
Email Teaser	$	2,500	per asset

Notes

[1]Minimum of 100
[2]Minimum of 1,500
All fees are subject to change without notice.
Please call for precise fee quote as additional charges may apply.
Additional services are available - please call.



FINANCIAL ANALYSIS OVERVIEW

At Greycliffe Partners, we believe that the creation of an Argus model should b the *beginning* of the analytical process, not the end. By combining the power c Argus with our own proprietary models, we are able to gain detailed insight int an asset. As a result, we add value for our clients at all stages of property ownership—acquisition, asset management, and disposition. Among our more popular analyses are the DCF Analysis, NOI Analysis, Sensitivity Analysis, Real Estate Tax Analysis, and Tenant Analysis, which are described on the following pages. To view samples of all our financial analyses and our current fee schedu click here.

Financial Analysis Fee Schedule

Basic Charges

Pricing Matrices & PV Summary	$ 75.00
Schedule of Projected Cash Flow	$ 50.00
NOI / Cap Rate Analysis:	$ 150.00
Detailed Tenant Roster:	$ 150.00
Rental Rate Analysis:	$ 150.00
Lease Expiration Schedule:	$ 75.00
Sensitivity Analysis:	$ 175.00
Real Estate Tax Analysis:	$ 125.00
Residual Analysis:	$ 50.00

Packages

Financial Report: $ 250.00

Includes pricing matrices, present value summary, proforma, & NOI / cap rate analysis

Due Diligence Book: $ 800.00

Includes Financial Report plus detailed tenant roster, rental rate analysis, lease expiration schedule, sensitivity analysis, real estate tax analysis, & residual analysis

Notes

(1) All fees are subject to change without notice.
(2) Please call for precise fee quote as additional charges may apply.
(3) Additional services are available - please call.

ARGUS MODELING METHODOLOGY

Greycliffe Partners has extensive experience modeling all types of commercial real estate, including office, retail, and industrial properties. Utilizing Argus, we accurately and efficiently model income-producing property, from single assets large portfolios. At Greycliffe Partners, we believe that the ability to anticipate model's output is critical to ensuring its accuracy.

Our professionals have extensive experience with both the technical aspects of Argus and the economics of commercial real estate. As a result, we have the ability to model complex properties and the real estate knowledge essential for determining when a model is not producing the expected results. Our in-house CPA audits every model that we produce on a tenant-by-tenant cash flow basis to make absolutely certain that the model is functioning correctly. We pay particular attention to expense-reimbursement calculations, because this is an area where many problems can occur.

To view our current fee schedule, including Argus modeling services, click here

Argus Model Fee Schedule

Basic Charges

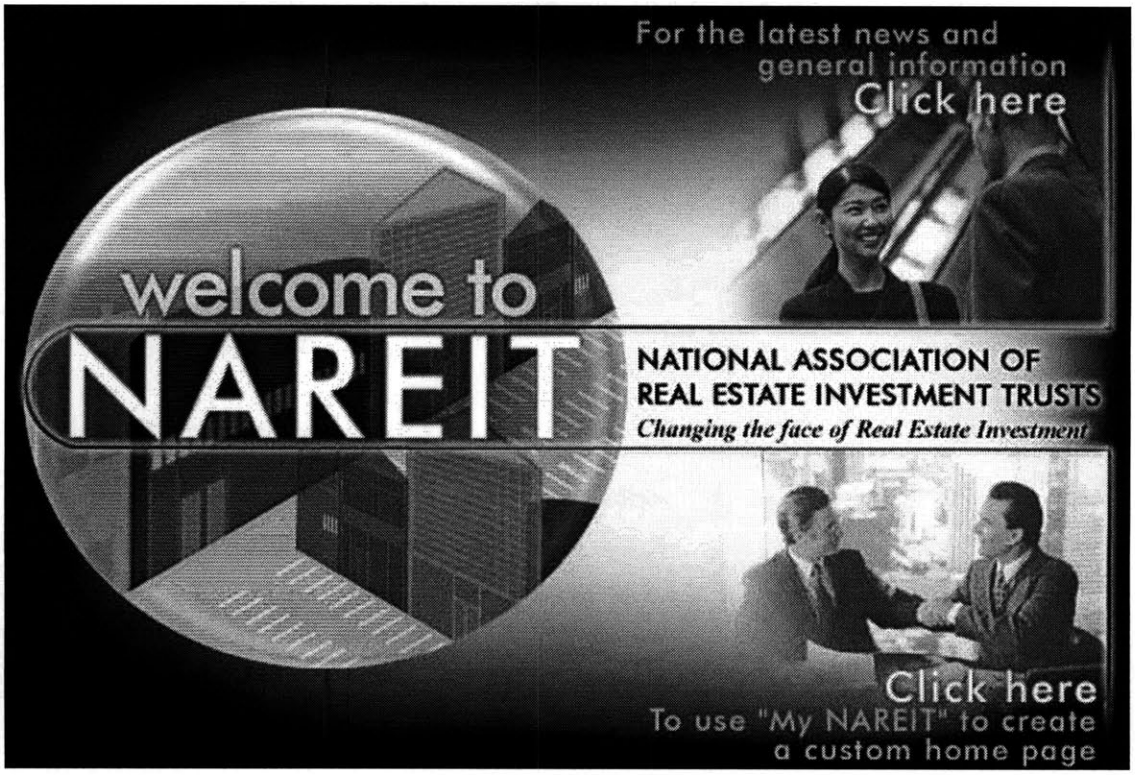
Building Size (SF)			Fee
	<	100,000	$ 800
100,000	to	149,999	$ 1,200
150,000	to	199,999	$ 1,600
200,000	to	299,999	$ 2,000
300,000	to	399,999	$ 2,800
400,000	to	499,999	$ 3,600
500,000	to	599,999	$ 4,400
600,000	to	699,999	$ 5,200
700,000	to	799,999	$ 6,000
800,000	to	899,999	$ 6,800
900,000	to	999,999	$ 7,600

Additional Charges

Portfolio Model:	$ 100.00
Debt (per loan modeled):	$ 50.00
Lease Abstracting (financial):	$ 75.00
Model Modifications (up to 5 changes):	$ 50.00
Summary of Assumptions:	$ 75.00
Presentation Quality Proforma:	$ 75.00
Pricing Matrices & PV Summary:	$ 50.00

Notes

(1) All fees are subject to change without notice.
(2) Please call for precise fee quote as additional charges may apply.
(3) Additional services are available - please call.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NAREIT Newsbrief
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Click above for direct access to that area.

NAREIT Online is your internet source for information about REITs and publicly traded real estate. Visitors seeking more information on our industry will find the **About REITs** section of this site a good place to start learning about the companies that are changing the face of real estate investment.

Latest News...

REITs: A Domestic Inflation Hedge

If inflation returns, where should you invest? According to syndicated columnist Scott Burns, "the first stop is to add a segment of REIT investing to your portfolio." To view his July 13 Seattle Times column, click here. **07/31/2003**

NAREIT 2003 Annual Convention -- Online Registration is Open!

Mark your calendar for the premier annual gathering of the REIT and publicly traded real estate industry, NAREIT's Annual Convention, November 12-14 in Boston. For convention information, click here. To register online, click here. **07/21/2003**

Real Estate a Good Location, Reports USA Today

Mutual funds investing in real estate companies had another stellar performance in the first half of 2003, USA Today reported on July 7. NAREIT's Michael Grupe told the newspaper the flow of money into real estate funds "suggests more investors are recognizing real estate as a necessity for a well-diversified portfolio." To read the complete story, click here. **07/07/2003**

New NAREIT Publications Highlight Benefits of REIT Investing

NAREIT is proud to introduce two completely revised publications designed to provide investors with straightforward and insightful information about REITs and real estate stocks. To view *The REIT Story,* click here. To view *Frequently Asked Questions About REITs,* click here. For ordering information, click here. **06/24/2003**

2003 NAREIT
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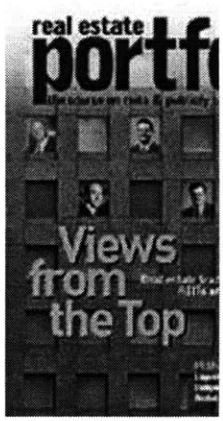


Real Estate Pc

REITs and the Tax Bill

President Bush signed the "jobs and growth" tax relief package that provides limited benefits to REITs. For an overview, click here. For questions and answers about the new tax bill, click here. For detailed information,click here. **05/29/2003**

THE

REIT STORY

Dividends & Diversification

An Introduction To The Benefits Of Investing In Real Estate Stocks

What is a REIT?

A Real Estate Investment Trust, or REIT, is a company that owns, and in most cases, operates income-producing real estate. Some REITs finance real estate. To be a REIT, a company must distribute at least 90% of its taxable income to shareholders annually in the form of dividends.

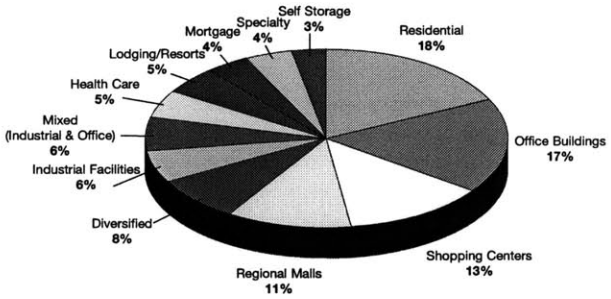
Types of REITs

There are approximately 180 publicly traded REITs in the U.S. today, with assets totaling $375 billion. The shares of these companies are traded on major stock exchanges, which sets them apart from traditional real estate. Other REITs may be publicly-registered but non-exchange traded or private companies. REITs are classified in the following categories:

- Equity REITs own and operate income-producing real estate.
- Mortgage REITs lend money directly to real estate owners and their operators, or indirectly through acquisition of loans or mortgage-backed securities.
- Hybrid REITs are companies that both own properties and make loans to owners and operators.

REITs Invest In All Property Types

(as of December 31, 2002)



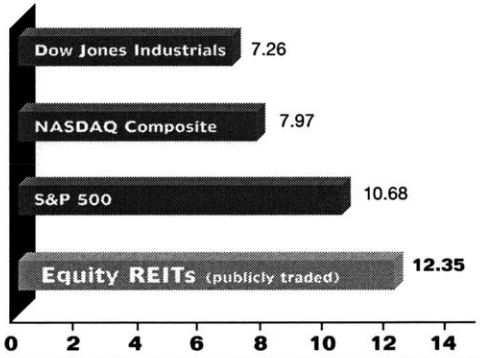
The Evolution of REITs

Congress created REITs in 1960 to give anyone and everyone the ability to invest in large-scale commercial properties. The REIT industry has grown dramatically in size and importance since then, and during the last decade in particular. Factors sparking increased investor interest include:

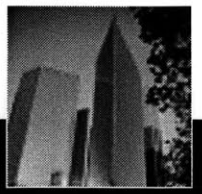
- REITs — also known as real estate stocks — have outperformed most other major market benchmarks over three decades with significantly less volatility.

REITs Measure Up Over Time

Compound Annual Total Returns In Percent: 1972 - 2002



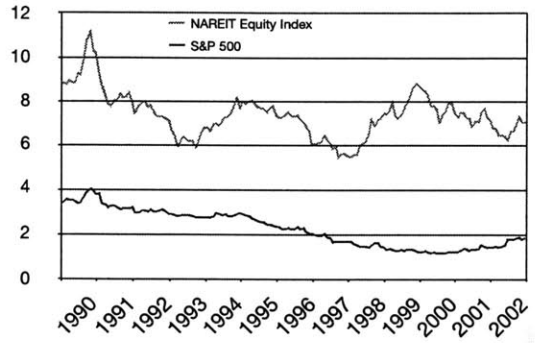
- REITs operate commercial properties in nearly every major metropolitan area across the country and in several international locations.
- In 2001, Standard & Poor's recognized the evolution and growth of the REIT industry as a mainstream investment by adding REITs to its major indexes, including the S&P 500.



Dividends and Diversification

Because REITs must pay out almost all of their taxable income to shareholders, investors can look to REITs for reliable and significant dividends (typically four times higher than those of other stocks, on average).

REIT Dividend Yield vs. S&P 500 Dividend Yield



Source: National Association of Real Estate Investment Trusts® and Standard and Poor's.

Analysis of historical data concluded that the relatively low correlation between REITs and other stocks and bonds makes them a powerful diversification tool.

In particular, Ibbotson Associates found:

- REITs offer an attractive risk/reward trade-off
- The correlation of REIT returns with other investments has declined over the last 30 years
- REITs may boost return and/or reduce risk when added to a diversified portfolio

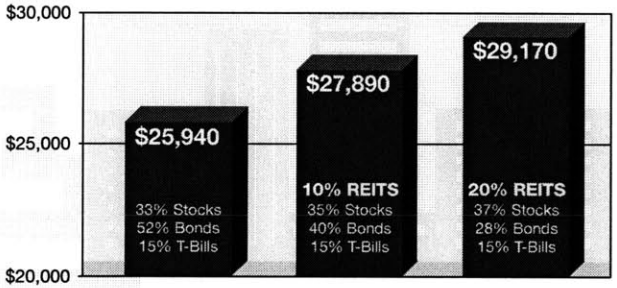
Any investor can build greater long-term wealth by combining homeownership and REIT stocks as part of a diversified investment portfolio.

REITs and Your 401(k) Plan

Institutional investors (organizations such as pension funds) routinely have included real estate in their portfolios. Yet, the latest study shows that only 8% of the nation's 401(k) plans even offer participants the opportunity to invest in a real estate fund.

In view of real estate stocks' record of providing dividends and diversification, every retirement plan participant should have the right to choose REITs.

$10,000 Invested in 1992...

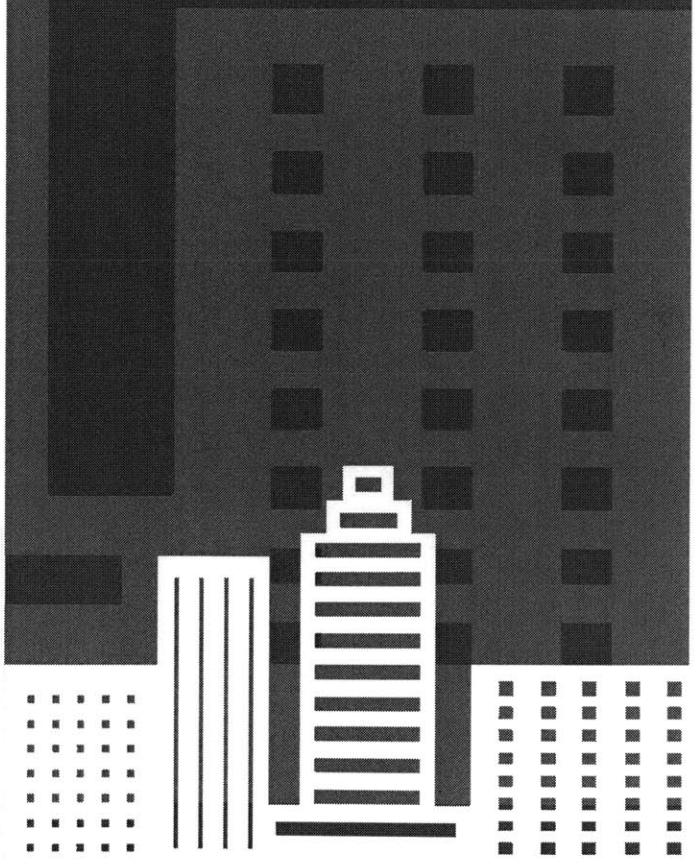


Source: NAREIT®; Stocks- S&P 500, Ibbotson U.S. Small Stock Series, MSCI EAFE Index; Bonds-20-year U.S. Government Bond; T-Bills- U.S. 30-day T-Bill. Figures based on average annual return over the period 1992-2001. Portfolios re-balanced annually.

If your 401(k) plan doesn't include a real estate option, ask for one. Your first step may be to talk with your company's benefits officer and request a prospectus containing information about the fees, expenses, and risks of investing in a REIT. That individual is also likely to serve as a liaison with your 401(k) provider. Remind them that a well-constructed 401(k) plan isn't possible without real estate.

To learn how to invest in real estate stocks, visit:

www.InvestInReits.com



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Frequently Asked Questions About REITs

Real Estate Investment Trusts **(REITs)** are an efficient way for many investors to invest in commercial and residential real estate businesses. As an investment, REITs combine the best features of real estate and stocks. They give an investor a practical and effective means to include professionally-managed real estate in a diversified investment portfolio.

The **REIT** industry began its fifth decade in 2000. Because of the industry's overall maturity and performance over the last four decades, **REITs** can be viewed as "all-weather" investments.

Here are answers to fundamental questions about **REITs** for investors, financial planners, stock brokers, the media and the general public.

1. **What is a REIT?**

A REIT is a company that owns, and in most cases, operates income-producing real estate such as apartments, shopping centers, offices, hotels and warehouses. Some REITs also engage in financing real estate. The shares of most REITs are freely traded, usually on a major stock exchange.

A company that qualifies as a REIT is permitted to deduct dividends paid to its shareholders from its corporate taxable income. As a result, most REITs remit at least 100 percent of their taxable income to their shareholders and therefore owe no corporate tax. Taxes are paid by shareholders on the dividends received and any capital gains. Most states honor this federal treatment and also do not require REITs to pay state income tax. To qualify as a REIT, a company must distribute at least 90 percent of its taxable income to its shareholders annually. However, like other businesses, but unlike partnerships, a REIT cannot pass any tax losses through to its investors.

RETURN TO THE TOP

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2. **Why were REITs Created?**

Congress created REITs in 1960 to make investments in large-scale, income-producing real estate accessible to smaller investors. Congress decided that a way for average investors to invest in large scale commercial properties was the same way they invest in other industries, through the purchase of equity. In the same way as shareholders benefit by owning stocks of other corporations, the stockholders of a REIT earn a pro-rata share of the economic benefits that are derived from the production of income through commercial real estate ownership. REITs offer distinct advantages for investors: greater diversification through investing in a portfolio of properties rather than a single building and management by experienced real estate professionals.

RETURN TO THE TOP

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3. **How Does a Company Qualify as a REIT?**

In order for a company to qualify as a REIT, it must comply with certain provisions within the Internal Revenue Code. As required by the Tax Code, a REIT must:

- Be an entity that is taxable as a corporation
- Be managed by a board of directors or trustees
- Have shares that are fully transferable
- Have a minimum of 100 shareholders
- Have no more than 50 percent of its shares held by five or fewer individuals during the last half of the taxable year

- Invest at least 75 percent of its total assets in real estate assets
- Derive at least 75 percent of its gross income from rents from real estate property or interest on mortgages on real property
- Have no more than 20 percent of its assets consist of stocks in taxable REIT subsidiaries
- Pay annually at least 90 percent of its taxable income in the form of shareholder dividends

RETURN TO THE TOP

4. How Many REITs are There?

There are about 180 REITs registered with the Securities and Exchange Commission in the United States. Their assets total over $300 billion. As of December 31, 2002, more than two-thirds of these traded on the major national stock exchanges:

New York Stock Exchange — 139 REITs
American Stock Exchange — 30 REITs
Nasdaq National Market System — 7 REITs

In addition, there are many REITs that are not registered with the SEC.

RETURN TO THE TOP

5. What Types of REITs are There?

The REIT industry has a diverse profile, which offers many alternative investment opportunities to investors. REIT industry analysts often classify REITs in one of three categories: equity, mortgage or hybrid.

Equity REITs
Equity REITs own and operate income-producing real estate. Equity REITs increasingly have become primarily real estate operating companies that engage in a wide range of real estate activities, including leasing, development of real property and tenant services. One major distinction between REITs and other real estate companies is that a REIT must acquire and develop its properties primarily to operate them as part of its own portfolio rather than to resell them once they are developed.

Mortgage REITs
Mortgage REITs lend money directly to real estate owners and operators or extend credit indirectly through the acquisition of loans or mortgage-backed securities. Today's mortgage REITs generally extend mortgage credit only on existing properties. Many modern mortgage REITs also manage their interest rate risk using securitized mortgage investments and dynamic hedging techniques.

Hybrid REITs
As the name suggests, a hybrid REIT both owns properties and makes loans to real estate owners and operators.

Private REITs
Although most REITs trade on an established securities market, there is no requirement that REITs be publicly traded companies. REITs that are not listed on an exchange or traded over-the-counter are called "private" REITs. There are three typical types of private REITs:

> (1) REITs targeted to institutional investors that take large financial positions;
> (2) REITs that are syndicated to investors as part of a package of services offered by a financial consultant (some of these have more than 500 shareholders and must file statements with the Securities and Exchange Commission just like publicly traded companies); and
> (3) "incubator" REITs that are funded by venture capitalists with the expectation that the REIT will develop a sufficient track record to launch a public offering in the future.

REITs are typically structured in one of three ways: Traditional, UPREIT and DownREIT. A traditional REIT is one that owns its assets directly rather than through an operating partnership.

In the typical UPREIT, the partners of an Existing Partnership and a REIT become partners in a new partnership termed the Operating Partnership. For their respective interests in the Operating Partnership ("Units"), the partners contribute the properties from the Existing Partnership and the REIT contributes the cash. The REIT typically is the general partner and the majority owner of the Operating Partnership Units.

After a period of time (often one year), the partners may enjoy the same liquidity of the REIT shareholders by tendering their Units for either cash or REIT shares (at the option of the REIT or Operating Partnership). This conversion may result in the partners incurring the tax deferred at the UPREIT's formation. The Unitholders may tender their Units over a period of time, thereby spreading out such tax. In addition, when a partner holds the Units until death, the estate tax rules operate in a such a way as to provide that the beneficiaries may tender the Units for cash or REIT shares without paying income taxes.

A DownREIT is structured much like an UPREIT, but the REIT owns and operates properties other than its interest in a controlled partnership that owns and operates separate properties.

RETURN TO THE TOP

6. What Types of Properties do REITs Invest in?

REITs invest in a variety of property types: shopping centers, apartments, warehouses, office buildings, hotels, and others. Some REITs specialize in

one property type only, such as shopping malls, self-storage facilities or factory outlet stores. Health care REITs specialize in health care facilities, including acute care, rehabilitation and psychiatric hospitals, medical office buildings, nursing homes and assisted living centers.

Some REITs invest throughout the country or in certain other countries. Others specialize in one region only, or even a single metropolitan area.

RETURN TO THE TOP

7. **Who Determines a REIT's Investments?**

A REIT's investments are determined by its board of directors or trustees. Like other publicly traded companies, a REIT's directors are elected by, and responsible to, the shareholders. In turn, the directors appoint the management personnel. As with other corporations, REIT directors are typically well-known and respected members of the real estate, business and professional communities.

RETURN TO THE TOP

8. **How are REITs Managed?**

Like other public companies, the corporate officers and professionals that manage REITs are accountable to both their boards of directors as well as their shareholders and creditors. Most REITs became public companies within the past 10 years, often transforming to public ownership what previously had been private enterprises. In many cases, the majority owners of these private enterprises became the senior officers of the REIT and rolled their ownership positions into shares of the new public companies. Thus, the senior management teams of many REITs today own a significant portion of the company's stock, which helps to align the economic interests of management with shareholders.

RETURN TO THE TOP

9. **How do REITs Measure Financial Performance?**

Like the rest of corporate America, the REIT industry considers net income as defined under Generally Accepted Accounting Principles (GAAP) to be the primary operating performance measure for real estate companies.

The REIT industry also uses Funds From Operations (FFO) as a supplemental measure of a REIT's operating performance. NAREIT defines FFO as net income (computed in accordance with GAAP) excluding gains or losses from sales of most property and depreciation of real estate. When

real estate companies use FFO in public releases or SEC filings, the law requires them to reconcile FFO to GAAP net income.

Many real estate professionals as well as investors believe that commercial real estate maintains residual value to a much greater extent than machinery, computers or other personal property. Therefore, they think that the depreciation measure used to arrive at GAAP net income generally overstates the economic depreciation of REIT property assets and the actual cost to maintain and replace these assets over time, which may in fact be appreciating. Thus, FFO excludes real estate depreciation charges from periodic operating performance. Many securities analysts judge a REIT's performance according to its Adjusted FFO (AFFO), thereby deducting certain recurring capital expenses from FFO.

NAREIT's April 2002 "White Paper" on FFO discusses the definition in detail, advises REITs to adopt certain computational and disclosure practices and recommends that REITs disclose additional information about other financial calculations such as details on capital expenditures.

RETURN TO THE TOP

10. **How do Shareholders Treat REIT Distributions for Tax Purposes?**

REITs are required by law to distribute each year to their shareholders at least 90 percent of their taxable income. Thus, as investments, REITs tend to be among those companies paying the highest dividends. The dividends come primarily from the relatively stable and predictable stream of contractual rents paid by the tenants who occupy the REIT's properties. Since rental rates tend to rise during periods of inflation, REIT dividends tend to be protected from the long-term corrosive effect of rising prices.

For REITs, dividend distributions for tax purposes are allocated to ordinary income, capital gains and return of capital, each of which may be taxed at a different rate. All public companies, including REITs, are required to provide their shareholders early in the year with information clarifying how the prior year's dividends should be allocated for tax purposes. This information is distributed by each company to its list of shareholders on IRS Form 1099-DIV. An historical record of the allocation of REIT distributions between ordinary income, return of capital and capital gains can be found at NAREIT's web site, www.nareit.com.A return of capital distribution is defined as that part of the dividend that exceeds the REIT's taxable income. Because real estate depreciation is such a large non-cash expense that may overstate any decline in property values, the dividend rate divided by Funds From Operations (FFO) or Adjusted Funds From Operations (AFFO) is used by many as a measure of the REIT's ability to pay dividends.

A return of capital distribution is not taxed as ordinary income. Rather, the investor's cost basis in the stock is reduced by the amount of the distribution. When shares are sold, the excess of the net sales price over the reduced tax basis is treated as a capital gain for tax purposes. So long as the appropriate capital gains rate is less than the investor's marginal

ordinary income tax rate, a high return of capital distribution may be especially attractive to investors in higher tax brackets.

RETURN TO THE TOP

11. What Real Estate Fundamentals Should I Consider Before Investing?

REIT investors often compare current stock prices to the net asset value (NAV) of a company's assets. NAV is the per share measure of the market value of a company's net assets. At times, the stock price of a REIT may be more or less than its NAV. Investors should understand some of the fundamental factors that influence the value of a REIT's real estate holdings. One critical factor is how well balanced the supply of new buildings is with the demand for new space. When construction adds new space into a market more rapidly than it can be absorbed, building vacancy rates increase, rents can weaken and property values decline, thereby depressing net asset values.

In a strong economy, growth in employment, capital investment and household spending increase the demand for new office buildings, apartments, industrial facilities and retail stores. Population growth also boosts the demand for apartments. However, the economy is not always equally strong in all geographic regions, and economic growth may not increase the demand for all property types at the same time. Thus, investors should compare the locations of properties of different companies with the relative strength or weakness of real estate markets in those locations.

Information on company properties is available at their Internet sites, while information on local and regional real estate markets is available in the financial press or at research sites on the Internet such as www.lendlease.com or www.tortowheatonresearch.com.

RETURN TO THE TOP

12. How has Real Estate Financing Changed Over Time?

Historically, income-producing commercial real estate often was financed with high levels of debt. Properties provided tangible security for mortgage financing, and the rental income from those properties was a clear source of revenue to pay the interest expense on the loan. Property markets often were dominated by developers or entrepreneurial businessmen who were attempting to build personal fortunes and who were willing to take on huge risks to do so. Prior to the real estate recession of the early 1990s, it was not uncommon for individual properties to carry mortgages that represented over 90 percent of the properties' estimated market value or cost of construction. Occasionally, loan-to-value ratios went even higher. The severe real estate recession of the early 1990s forced many real estate lenders, developers and owners to reconsider the appropriate use of debt

financing on real estate projects.

Today, properties owned by REITs are financed on a much more conservative basis. On average, REITs are financing their projects with about half debt and half equity, which significantly reduces interest rate exposure and creates a much stronger business operation. Two-thirds of the REITs with senior unsecured debt ratings are investment grade.

RETURN TO THE TOP

13. **How are REIT Stocks Valued?**

Like all companies whose stocks are publicly traded, REIT shares are priced every day in the market and give investors an opportunity to value their portfolios daily. To assess the investment value of REIT shares, typical analysis involves one or more of the following criteria:

- Management quality and corporate structure
- Anticipated total return from the stock, estimated from the expected price change and the prevailing dividend yield
- Current dividend yields relative to other yield-oriented investments (e.g. bonds, utility stocks and other high-income investments)
- Dividend payout ratios as a percent of REIT FFO
- Anticipated growth in earnings per share
- Underlying asset values of the real estate and/or mortgages, and other assets.

RETURN TO THE TOP

14. **What Factors Contribute to REIT Earnings?**

Growth in earnings typically comes from several sources, including higher revenues, lower costs and new business opportunities. The most immediate sources of revenue growth are higher rates of building occupancy and increasing rents. As long as the demand for new properties remains well balanced with the available supply, market rents tend to rise as the economy expands. Low occupancy in under-utilized buildings can be increased when skilled owners upgrade facilities, enhance building services and more effectively market properties to new types of tenants. Property acquisition and development programs also create growth opportunities, provided the economic returns from these investments exceed the cost of financing. Like other public companies, REITs and publicly traded real estate companies also increase earnings by improving efficiency and taking advantage of new business opportunities.

The REIT Modernization Act (RMA), which took effect on January 1, 2001, provides REITs with other opportunities to increase earnings. Prior to the enactment of the RMA, REITs were limited to providing only those services

that were long accepted as being "usual and customary" landlord services, and were restricted from offering more cutting-edge services provided by other landlords. The RMA allows REITs to create subsidiaries that can provide the competitive services that many of today's tenants desire.

RETURN TO THE TOP

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15. **Who Invests in REITs?**

Tens of thousands of individual investors, both U.S. and non-U.S., own shares of REITs. Other typical buyers of REITs are pension funds, endowment funds and foundations, insurance companies, bank trust departments and mutual funds.

Investors typically are attracted to REITs for their high levels of current income and the opportunity for moderate long-term growth. These are the basic characteristics of real estate. In addition, investors looking for ways to diversify their investment portfolios beyond other common stocks as well as bonds are attracted to the unique characteristics of REITs.

Today, a broad range of investors are using REITs to help achieve their investment goals, from large pension funds seeking diversification to the retired school teacher seeking a high-quality income investment.

REIT shares typically may be purchased on the open market, with no minimum purchase required. Many investors also are choosing to own REITs through mutual funds or exchange traded funds that specialize in public real estate companies.

RETURN TO THE TOP

---

16. **Why Should I Invest in REITs?**

REITs are total return investments. They typically provide high dividends plus the potential for moderate, long-term capital appreciation. Long-term total returns of REIT stocks are likely to be somewhat less than the returns of high-growth stocks and somewhat more than the returns of bonds. Because most REITs also have a small-to-medium equity market capitalization, their returns should be comparable to other small to mid-sized companies.

There is a relatively low correlation between REIT and publicly traded real estate stock returns and the returns of other market sectors. Thus, including REITs and publicly traded real estate stocks in your investment program helps build a diversified portfolio.

REITs offer investors:

- Current, stable dividend income
- High dividend yields
- Dividend growth that has consistently exceeded the rate of consumer price inflation
- Liquidity: shares of publicly traded REITs are readily converted into cash because they are traded on the major stock exchanges
- Professional management: REIT managers are skilled, experienced real estate professionals
- Portfolio diversification, which minimizes risk
- Performance monitoring: a REIT's performance is monitored on a regular basis by independent directors of the REIT, independent analysts, independent auditors, the Securities and Exchange Commission and the business and financial media. This scrutiny provides the investor a measure of protection and more than one barometer of the REIT's financial condition

RETURN TO THE TOP

17. **What Role do REITs Play in 401(k) Plans?**

Most 401(k) plans offer a variety of stock and bond investment options. However, real estate is largely non-existent in most of today's defined contribution plans. Real estate stocks' competitive rates of return, stable levels of risk, and low correlation with the investment returns of other stocks and bonds offer significant diversification benefits to a multi-asset portfolio. Participants and sponsors should make sure that their 401(k) plans include real estate–one of the strongest sources of portfolio diversification–among their investment choices. Historically, institutional investors have invested in broadly diversified portfolios of multiple investments, meeting their plan liabilities while controlling the risk of catastrophic losses in any one year. Individual investors may not understand the importance of this investment concept.

Ibbotson Associates–a leading authority on asset allocation–examined the historical investment performance of the publicly traded equities of real estate companies to determine if REITs provide meaningful diversification benefits in diversified portfolios. Ibbotson found that, historically, REITs have earned competitive returns and exhibited lower volatility than other types of stocks. Ibbotson also found that REIT returns are relatively uncorrelated with those of other stocks and bonds. In fact, as the total equity market capitalization of REITs increased and the companies achieved wider analytical coverage from Wall Street analysts, the correlation of REIT returns with those of other investments declined appreciably. As a result of these investment characteristics, the Ibbotson analysis demonstrates that REITs are a strong source of portfolio diversification, raising returns and lowering risk in a wide range of diversified portfolios.

For example, the analysis by Ibbotson found that allocating 10 percent of your portfolio to REITs each year from 1972 to 2001 would have boosted the average annual return from 11.3 percent to 11.5 percent while reducing portfolio risk from 10.9 percent to 10.5 percent. Allocating 20 percentage

points to REITs would have boosted average annual return to 11.7 percent while reducing portfolio risk to 10.2 percent.

RETURN TO THE TOP

18. **If I Own a Home, do I Still Need to Invest in REITs?**

REIT investing complements homeownership. While owning a home can be a good investment, the investment benefits are enhanced when combined with REIT stocks.

Importantly, homeownership differs from other investments in some significant ways. A house is an expenditure as much as it is an investment, particularly when financed with a sizeable mortgage. It does not produce current income, but rather requires monthly mortgage interest payments and other occasional expenditures to be properly maintained.

A widely-used index of single-family house prices nationwide gained 5.7 percent annually on average from 1976 to 2001. Equity REITs, meanwhile, produced a 6.1 percent annual average return on a price-only basis, but with dividends reinvested, REITs' average annual total return for the span was 15.2 percent.

The low correlation between REIT returns and house prices, combined with the historically attractive total return and moderate volatility of REITs, make it no surprise that REITs show up in the optimal portfolios estimated for both homeowners and renters.

In the final analysis, investors may be able to build greater long-term financial wealth when they combine homeownership and REIT stocks as part of a diversified investment portfolio.

RETURN TO THE TOP

19. **What Should I Look for When Investing in a REIT?**

The market usually rewards companies that demonstrate consistent earnings and dividend growth with higher price-earnings multiples. Thus, investors should look for REITs and publicly traded real estate companies with the following characteristics:

- A demonstrated ability to increase earnings in a reliable manner. For example, look for companies with properties in which rents are below current market levels. Such properties provide upside potential in equilibrium markets and downside protection when economic growth slows.
- Management teams able to quickly and effectively reinvest available cash flow. The ability to consistently complete new projects on time

and within budget. Creative management teams with sound strategies for developing new revenue opportunities under the REIT Modernization Act.

- Strong operating characteristics, including effective corporate governance procedures, conservative leverage, widely accepted accounting practices, strong tenant relationships and a clearly defined operating strategy for succeeding in competitive markets.

RETURN TO THE TOP

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20. How do I Invest in a REIT?

An individual may invest in a publicly traded REIT, which in most cases is listed on a major stock exchange, by purchasing shares through a stockbroker. An investor can enlist the services of a broker, investment advisor or financial planner to help analyze his or her financial objectives. These professionals may be able to recommend appropriate REIT investments for the investor. An investor may also contact a REIT directly for a copy of the company's annual report, prospectus and other financial information. Much of this information is available on a company's web site. The NAREIT web site, www.nareit.com, also lists all publicly traded REITs with their exchange symbols. Many local libraries offer a wide range of publications which provide investment research and information on public companies such as REITs.

Another alternative is to diversify your investment further by buying shares in a mutual fund that specializes in investing in real estate securities. A list of such mutual funds is available at the NAREIT web site. Investors can compare and evaluate the performance of mutual funds through public information sources such as Morningstar, Inc., which can also be found in many local libraries. These sources can offer detailed information on past performance, current portfolio holdings and information dealing with the various costs of investing in funds. There are also a number of real estate and REIT exchange traded funds and closed end funds.

RETURN TO THE TOP

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21. How are REITs Different from Limited Partnerships?

REITs are not partnerships, although, as is the case with other corporations, REITs use partnerships to engage in joint ventures. There are important organizational and operational differences between REITs and limited partnerships.

One of the major differences between REITs and limited partnerships is how annual tax information is reported to investors. Each year, an investor in a REIT receives a traditional IRS Form 1099 from the REIT, indicating the amount and type of income received during the prior tax year. However, an investor in a partnership receives a more complicated IRS Schedule K-1

which must be furnished to taxpayers later in the year than a 1099. Also, a REIT investor must file fewer state tax returns than required by a partnership investment.

The corporate governance features of a REIT are believed to be far superior to those of a partnership.

Other important differences between REITs and limited partnerships are summarized in the accompanying chart.

Questions?

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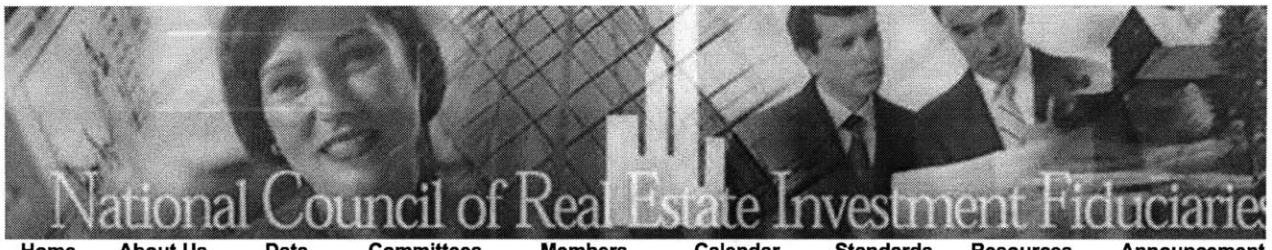

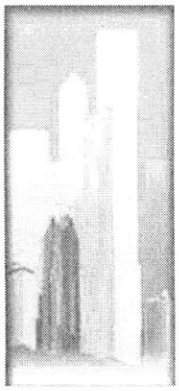

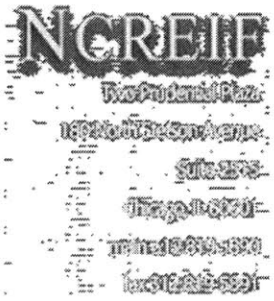

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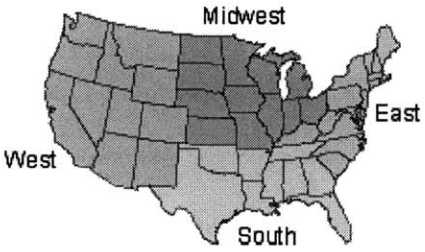

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Market Value by Region
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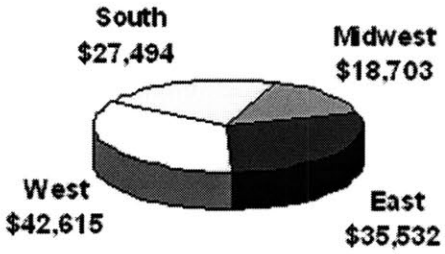
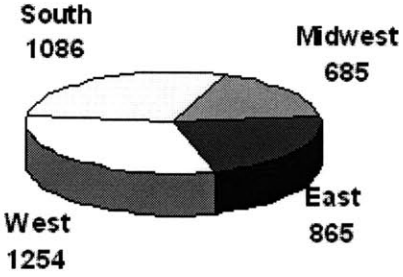


Number of Properties by Region



Market Value by Type
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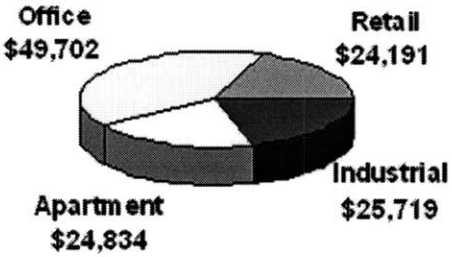

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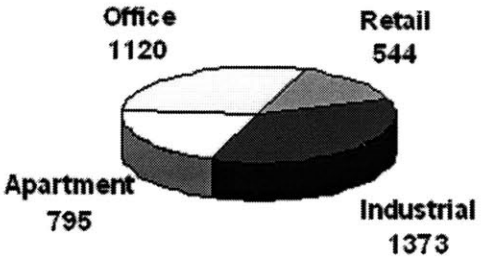

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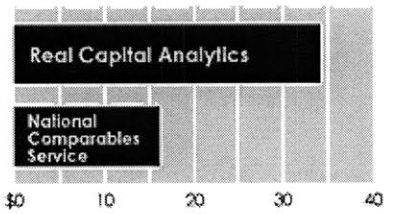
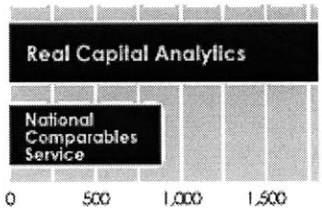
OFFICE / INDUSTRIAL / RETAIL / APARTMENTS

Property Sales - $5 million & greater - 1st Half 2001



investment volume tracked in billions



number of properties track

A. National Comparables Service as of 7/1/01

PUBLISHED INDUSTRY MARKET BENCHMARKS

	Real Capital Analytics (1)	National Real Estate Index (2)
Reported Closed 2nd Half 2000	$57.2 billion	$54.6 billion
Reporting Periods	Monthly	Quarterly
Reporting Period Lag	7 days	60 days
Basic Volume & Pricing Data	Yes	Yes
Data by Property Type & Market	Yes	Price Data Only
Quantitative Analysis of Offerings	Yes	No
Investor Composition & Depth	Yes	No
Individual Transaction Specifics	Online & Searchable	No

1. office, industrial, retail, and apartment properties greater than $5 million
2. reported by CB Richard Ellis; excludes land, unconventional uses and small properties

SPAULDING & SLYE | COLLIERS INTERNATIONAL

Integrated Real Estate S

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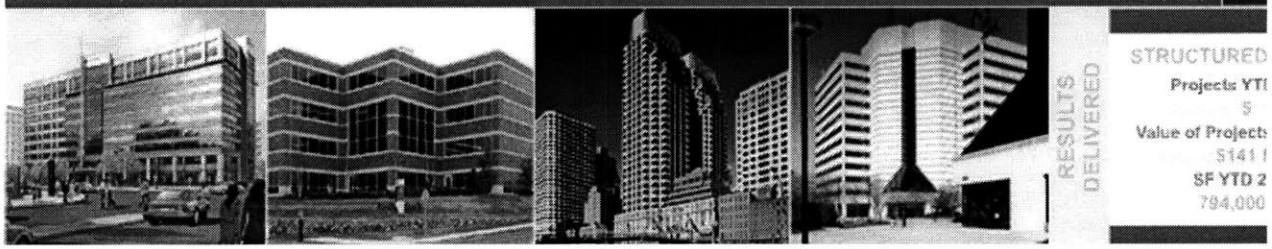


Spaulding & Slye Colliers is a privately-held company that provides integrated real estate services to a diverse mix of companies throughout the country and the world. With nearly 40 years of experience, we provide construction, development, investment sales, structured finance, consulting, leasing, marketing and research, property and asset management, and strategic planning services.

Whether they be investor, institutional, government, or corporate, each client's real estate requirements are unique. We work with our clients up front to identify goals and develop the optimal strategy that best meets these goals. We provide a broad range of real estate services on an integrated basis, and ensure responsiveness and effectiveness by offering a single point of accountability from which to access the full resources of our firm. Our comprehensive approach is particularly important, as clients are increasingly demanding more sophisticated and turnkey solutions to real estate needs.

For more information about our work in the New England region, please click here.

For more information about our work in the Mid-Atlantic region, please click here.

Offerings

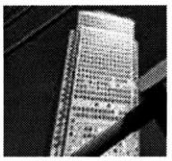
- Investment Sales
- Structured Financ

Services

Leasing
Property Manag
Developme
Structured Fir
Investment S
Consultin
Constructi
Corporate Pr
Management/Fa
Manageme
Marketin
Research

Practices

Professional Se
Life Scienc
Governme
Educational Inst
Corporate Ser



Investment Sales

- Over 24 Million SF Sold Since 2002
- $3 Billion in Sales Since 2001

Our Investment Sales Group specializes in the sale of commercial real estate for major institutions, developers, and individual investors. Averaging more than $850 million in sales for the past 3 years, Spaulding & Slye Colliers has established itself as a dominant capital markets player. We offer our clients up-to-the-minute assistance in the acquisition or disposition of real estate, including timing, pricing, deal structure, and contract negotiation.

For more information regarding our currently offerings, please click here.

Our Track Record

Our track record for closing deals with the first buyer selected is unmatched. Our broad experience in today's market yields a level of relationships with the "hottest", most qualified capital, enabling our clients to realize the highest value with certainty of execution.

Our Team

Our team is committed to maximizing value for our clients. To achieve this, we develop an optimum marketing strategy for each assignment and determine property value through the preparation of pro forma valuations, with a focus on generating defensible assumptions and conclusions that hold up under due diligence. We prepare an investment package in both written and electronic forms, including CD-ROM and our website. We identify, contact, and tour the property with all interested and qualified parties. Finally, the team coordinates every aspect of the closing phase, making every effort to preserve pricing during the delicate phase of due diligence and negotiations.

For more information on our Investment Sales Group, please contact:
Dick Reynolds, Principal, in the New England region, or
Steve Collins, Principal, in the Mid-Atlantic region.

- **Service Gro**
  - Leasing
  - Property M
  - Developme
  - Structured
  - **Investme**
  - Consulting
  - Constructic
  - Corporate I Manageme Manageme
  - Marketing
  - Research

Frequently Asked Questions

Print Frequently Asked Questions

Table of Contents

Do you have additional properties available that are not shown on the website?

Yes. The decision to make property materials available via our website is one that is made on a case-by-case basis after consultation with the seller. A website-based marketing program may not be deemed appropriate in a cases, and we also offer a time proven program that utilizes conventional methods to deliver marketing materials to investors.

If you would like to receive marketing materials for properties which do not appear on our website, or if you woul like to view private online offerings that are not presented on our entry page, please click the "Contact Us" buttor below and call a member of our team. Be certain to describe the type of investment opportunity you are looking for and we will include you in the offerings that meet your requirements.

CONTACT US

Back to Top

When I open a marketing package all I see is a blank (or black) page ...

Releases of Adobe Acrobat Reader prior to release 4.0 will exhibit this behavior when attempting to open our marketing packages. The solution is to upgrade your Adobe Acrobat Reader to the newest version. Version 5.0 or higher is strongly recommended.

You can download a free copy of the Adobe Acrobat Reader (or upgrade to the most recent version) by clicking here: ADOBE

Back to Top

How do I install the CD-MPS program (Property data on CD ROM)

Detailed instructions can be obtained and printed from this website by clicking here:

CD-MPS INSTRUCTIONS

Back to Top

I received an email about a new property but it isn't on the website...

If you are using a very old browser version (prior to Internet Explorer 5 or Netscape 4.7) and you received notification that a property has been added but cannot see it on the website, you may have to clear your browser memory and/or disk cache. For additional details, click here: CACHE

Back to Top

Why can't I access the marketing packages?

Our marketing packages are password protected. You must complete a confidentiality agreement for each property prior to being assigned access rights to the online data. Please note that our marketing packages are intended for use by ***principals only.***

A link to each property's confidentiality agreement is found in the property's overview section. Print the confidentiality agreement and fax a copy to us using the telephone number found at the bottom of the agreemen Be certain to include your email address so that we can forward your username and password.

If you have already faxed a confidentiality agreement for a specific property to our attention and have not been granted access to the property files within one business day, please email the CMG Site Administrator to ensure that your confidentiality agreement has been received:

EMAIL ADMIN

You should also email the CMG Site Administrator if your password is not working.

Back to Top

How do I obtain additional information about a property?

If you have a question that remains unanswered after reading an overview and/or marketing package, please contact one of the Spaulding & Slye professionals listed on the property's overview page. Complete contact information is also found at the front of each of our printed marketing packages.

Back to Top

Are there other ways to obtain Spaulding & Slye's marketing packages?

Spaulding & Slye offers a number of ways to obtain our marketing packages once a confidentiality agreement ha been received and approved:

Website - Many of our marketing packages and the associated Argus files are available through this website as soon as they are complete. Property updates (as needed) are posted regularly. You can print a hard copy of th marketing book on any printer at your location.

CD-ROM - Our marketing packages are also available on CD-ROM as soon as they are complete. In addition tc the marketing package, our CD-ROM's include Argus files, an online update manager and all necessary support files (Adobe Acrobat Reader, etc.). You can print a hard copy of the marketing book on any printer at your location.

Hard Copy - Most of our properties are available in book form with a diskette containing the associated Argus files. Hard copy marketing books are released as soon as they are published.

Note: Most marketing packages are available immediately via the Internet and on CD-ROM. Hard copy books must be printed and generally become available several days after the website and CD-ROM release.

Be certain to indicate which delivery format you prefer when you complete a property's confidentiality agreement

Back to Top

I'm having trouble downloading an Argus file...

The Argus property file(s) supplied by Spaulding & Slye are compressed into a self-extracting .EXE file using Winzip and must be installed to your hard drive or network server before use. ***You do not need to have Winzip installed on your computer to extract the Argus files.***

Illustrated instructions for downloading are located with the Argus files in the property "War Room". If you need further assistance, please call or email:

David A. Soucy
Assistant Vice President
Spaulding & Slye Colliers
Direct Line: 617-531-4197

EMAIL

Back to Top

Can you change the way something works on the website?

Absolutely.

This website has evolved due to many suggestions and requests from our clients. The Investment Sales and Structured Finance websites are built and managed by Spaulding & Slye and we pride ourselves on being immediately responsive to your needs.

If you would like something changed on the site, or if you have a suggestion to make the site more effective, please call me directly at the number shown below.

David A. Soucy
Assistant Vice President
Spaulding & Slye Colliers
Direct Line: 617-531-4197

EMAIL

Back to Top

I am trying to log in, but the system keeps telling me I am not authorized to use the database!

This message may appear for several reasons.

- You are using upper-case letters in your password. The password sent to you is case sensitive, and all letters should be in lower case.
- You have clicked on a link that was included in an email; however, the link was split between two lines by an email server between Spaulding & Slye and your email inbox. There are two possible solutions: (1) copy and paste the entire link into your browser; (2) go to http://www.invsales.com and click on the "Property Materials" button underneath the photo of the property. Follow the prompts and you should be able to access the property materials.
- Your browser may be set up to refuse cookies. Spaulding & Slye uses cookies to keep track of your user name and password while you are on our site. If you are unsure of how to set your browser to accept cookies from our site, please call David Soucy at (617) 531-4197 for complete instructions.
- Although we cross check your password before it is sent, it is possible that access to a particular databas has not been set up properly. Please call David Soucy at (617) 531-4197 for assistance.
