THE VALUE OF AWARDED DESIGN IN REAL ESTATE ASSET PRICING



ABSTRACT

This study investigates the financial performance of awarded architectural design for commercial office buildings in Manhattan, New York.

Awarded design is based on the achievement of the architect/architecture firm receiving prestigious awards from the industry. To measure financial performance, I use several datasets, RCA, Compstak, and NYC public data for New York City. To identify awarded design and compare it to non-awarded design, I employ a matched-pair analysis. I find 846 building transactions with 89 awarded design transactions that are matched geographically to 757 nonawarded design transactions within a quarter mile radius over the 2000 to 2017 period. The results of the multivariate hedonic analysis suggest that, office buildings designed by awarded architects have a statistically and economically significant transaction premium of 23.1 percent, ceteris paribus, with a model that explains just under 90 percent of the variation in transaction price. Results of this analysis are intended as way for designers to have agency in the design build development practice and for developers and investors to understand the value of engaging in awarded design effects

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The Value of Awarded Design in Real Estate Development

NEW YORK 2020: A SEA OF DESIGN

As part of its latest development report, real estate agency Cityrealty reported while fewer developers in 2016 are signing on to build sky-grazing towers, condominium prices are still on an upward trajectory with anticipated sales totaling roughly \$30 billion through 2019.

Source: A look into the future: a render of Manhattan. Photograph: CityRealty



The Value of Awarded Design in Real Estate Development

From Single Discipline Set of Understandings





Design is no longer a foreign concept for investors. The real estate development industry is actively re-inventing their relationship with design.



Design is multi-faceted, highly specialized, and interdisciplinary

To a Shared Knowledge Platform



This study intend to broaden the scope of understanding the value of design by adding substantially more driving factors in the real estate transaction pricing process.

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From Single Discipline Set of Understandings To a Shared Knowledge Platform



In recent years, due to increased market education and growth in number of leading examples, investing in high quality design became a standard for the real estate market in New York City. Despite the growing interest, however, a limited number of studies and discussions have been generated to help create a shared value surrounding the subject of design.

To resolve this issue, we find and measure the architectural legacy of the architects of New York City buildings and pair that with financial data. This study intend to broaden the scope of understanding the value of design by adding substantially more driving factors in the real estate transaction pricing process by incorporating buyer and seller decisions for all of the transactions over time, specifying the type of awards, and adding information on architects to every building in the sample data set. The added measures improved our model's ability to explain the variation in transaction price

02 WHY (STILL) NEW YORK?



The year 2018, marked the highest construction spending New York has ever witnessed in its history.

Annual Construction Spending in New York City, 2001-2020 (in billion)



Source: Dodge Data & Analytics, NYS Department of Laber, public sector capital budgets. U.S. Census Bureau, Urbanomics

As of June 2018, buyers of the condominiums designed by Pritzker prize laureates paid an average \$3,126 / SF

Star-Architect Condo Price Change Summary During Past 5 Years







2018



The continuing effort to open the city's database encouraged and boosted researchers to better understand the built environment, as demonstrated in "Open Data Law", NYC's recent endeavor to consolidate all public data into a single, easily-accessible platform. The database and the advanced data processing technology available today is opening a new horizon in understanding the price dynamics of the building industry in any given time

NYC OpenData





Source: Twitter, https://twitter. com/mikebloomberg/ status/44375346548 8367617?lang=en

03 WHY NOW: CURRENT CLIMATE OF DESIGN IN THE BUILT-ENVIRONMENT

The real estate development industry is actively re-inventing their relationship with design. The two most well known design development companies in New York are Alloy Development and ddg, established in 2006 and 2009 respectively, have architects as owners/partners of the business. Similar to the role of creative directors in the fashion industry, they take charge in managing the design from its inception to completion on behalf of the development company's interest.

ABEV+ MORTAR

Mortar Arch + Dev (2003)



Founder (Architecture & Development)



ALLOY Development LLC (2006)



(Architecture & Construction)

Source: Design Development Firms in New York (The diagram shows the interdisciplinary management structure of design development companies in New York City)



DESIGN DEVELOPMENT COMPANIES IN NEW YORK

Design is no longer a foreign concept for the investors as well. Investors have been witnessing the appreciation of design from the market and how that translates into additional profit for their investment. Since 1982, few academic studies from real estate finance and economics have attempted to uncover the investment premiums related with well-designed buildings. There are some differences in the subject market, building product, and the methods used to measure the value of design, however, the results unequivocally show on average 20% sales premium for well-designed buildings.

Source: Twitter, https://twitter. com/mikebloomberg/ status/44375346548 8367617?lang=en







"Design is more than a feeling: it is a CEO-level priority for growth and long-term performance."



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Annual Compensation for All Architectural Staff Position Over Time (in 2015 Dollars)

Note

According to the 2015 **AIA** Compensation Survey, the average compensation for architectural staff positions is still recovering from the Great Recession. The report, found that average compensation for staff positions rose 3.5 percent since early 2013 (or 1.75 percent per year). This growth is up from the Great Recession. during which annual compensation increased an average of less than 1 percent, but moderate compared to the past two decades, when annual compensation increases ranged between 4 and 5 percent

Source **AIA** Compensation Report 2015



•• •• : Average Compensation Growth Rate (in 2015 Dollars)

: Average Compensation for All Architectural Staff Postitions Over Time (in 2015 Dollars)

MEDIA DEPICTION OF DESIGN

The Limited Public Discourse on the Current **Climate of Design in the Built Environment**

(+ Add to myFT Architecture

Age of the 'starchitect'

Big-name architects have existed for decades but today's celebrity culture is ideally suited to the blockbuster builder



CELEBRITIES, CHELSEA

Did Ariana Grande just drop \$16M on a condo in Zaha Hadid's Chelsea building? POSTED ON WED, JUNE 20, 2018 BY ANNIE DOGE



Source: https://www.ft.com/ content/d064d57cdf01-11e6-86acf253db7791c6

https://www.6sqft com/did-arianagrande-just-drop-16m-on-a-condoin-zaha-hadidschelsea-building/

https://www.forbes. com/sites/keithflam er/2017/09/30/ another-soaring-starchitect-tower-ascends-over-revitalized-downtown-manhattan/#184535e74b33 3,192 views | Sep 30, 2017, 08:39pm

432 Park Avenue, New York, by Rafael Viñoly @

Edwin Heathcote JANUARY 26, 2017

Another Soaring Starchitect Tower Ascends Over Revitalized Downtown Manhattan



Keith Flamer Contributor (i) Writer, pop culture virtuoso and luxury lunatic Forbes



04 MONEY & DESIGN: HOW FINANCE/ ECONOMICS DEFINE DESIGN

The Value of Awarded Design in Real Estate Development





The Hedonic Pricing Method is an asset pricing method that starts from the premise that the price of a property is determined both by internal characteristics and external factors that affect the property's transaction price.

External Factors: Location, Transaction Time, Building Age, Size, Parcel Area, LEED Status, etc.

Internal Characteristics: Building Amenities, Mechanical, Electrical, and Plumbing Quality, Building Occupants Use, etc.

DATA PROVIDERS FOR INFORMATION ON ARCHITECTS



Emporis is a real estate data mining company with specializing in high-rise and skyscrapers.

Buildings in Manhattan	83,301 buildings
Identified in Database	(100%)
Information on the	7256 buildings
Architect of building	(9% coverage)
Design Architect	146 buildings
of building	(0.17% coverage)
Landscape Architect of building	125 buildings (0.15% coverage)
Interior Designer	201 buildings
of building	(0.24% coverage)



The New York City Department of Buildings

- Enforces the city's building codes and zoning regulations
- Issues building permits
- The data base includes detail information regarding over 1,000,000 new and existing buildings.
- Currently the information on architects are only available upon request and per buildnig basis.

The information on architects who are responsible for the overall design quality of the building is often omitted.

In fact, Emporis and New York City Department of Buildings (DoB) are the only two sources of data among all the private and public data providers that include such information.

Even with these two data providers, the quality and accessibility of the data are highly limited. The database of Emporis only includes data on the high rise buildings and the coverage is less than 10% of the buildings in Manhattan. On the other hand, since one of the Department of Building's function is to issue building permits, the information on architects should be available for every building that is built, however, such information is only available by request and by per building basis

05 STUDYING THE VALUE OF DESIGN METHODS

DATA

The Value of Awarded Design in Real Estate Development

Design Value Studies

D. E. Hough &C. G. Kratz, 1982	Can "Good" Architecture Meet the Market Test?	K. D. Vandell & J. S. Lane, 1989	The Economics of Architecture and Urban Design
Data Recognized by "official" authority LDMK & CAIA, 20 buildings out of 139	Conclusion Is \$1.85 (or \$1.64) per square foot truly the value of "good" new architecture? If so, at an average rentable area of 844,000 square feet	Data 102 Commercial Office building Rents and Vacancy rates in Boston, 1979 - 1986	Conclusion The coefficient for DE- SIGN, although positive, is not signif- icant. Consists with the notion that
Criteria 139 Commercial Office building rents in Chicago CBD in 1978	for post-1955 Chicago office buildings, the annual return to this attribute would be \$1.6 million (or \$1.4 million, using the \$1.64 per square foot premium).	Survey criteria Survey done by panel of architects. Examined in categories such as, decorativeness of facade, color and texture of surface material, massing	cost more to the extent that "overin- vestment" may contribute to negative marginal returns to design.
F. Fuerst, P. McAllister & C. B. Murray, 2010	Estimating the Economic Value of 'Signature' Architecture	I. Nase, J. Berry & A. Adair, 2016	Impact of Quality-Led Design on Real Estate Value
Data CoStar US national database for commercial office rental (16,932 buildnigs observed) & sales (9,418 sales observed) in 682 submarket clusters	Conclusion Compared with buildings in the same submarket, ODSAs have rents that are 5% - 7% higher than non- ODSAs and sell for prices 12% - 17%	Data 424 Condominium units in Belfast city center, 2000 - 2008	Conclusion Empirical findings indicate that from the seven building quality features initially investigated, the ones mostly valued by end users are those
Criteria Pritzker Prize+AIA Gold Medal, 499 buildings out of 16,932	higher. In other words, for the average structure, movement into the next high- er design quintile will increase rents from \$27.58/SF to \$28.96SF.	Survey Criteria Survey done by group of local experts. Categories include, facade material, facade identity, quality of material used, fenestration, massing, height in floors, building condition	that are easily perceived visually.

Can "Good" Architecture Meet the Market Test?



A considerable rent premium is paid for "good" new architecture but not for "good" old architecture. Chicago AIA award increases the annual rent about \$1.85/ SF, however Land Mark status decreases the annual rent about \$0.81/SF.

F. FUERST, P. MCALLISTER, & C. B. MURRAY, 2010

What is the Economic Value of 'Signature' **Architecture?**

0 (%) SIGNIFICANCE*** 6 8 2 4 Asterisks in a regression table indicate the level of the statistical significance of a regression coefficient. *** p<0.01, ** p<0.05, * p<0.1 **COEFFICIENT %** The standard error is our estimate of the standard deviation of the coefficient. **Rent Premium** Source Fuerst F., McAllister P. 6% ** & Murray C. B., 2011, Designer Buildings: Estimating the economic value of 'signature' architecture, Journal of Environment & Planning, 43, page 166–184



Compared with buildings in the same submarket, Office Designed by Signature Architects have rents that are 5% - 7% higher than Office Designed by Non-Signature Architects and sell for prices 12% - 17% higher.

K. D. VANDELL & **J. S. LANE. 1989**

Does well designed building rent for more or result in lower vacancy?



For the average structure, 5.0% increase in rents with every increase of one in the design rating.

This suggests that, at the mean, an increase of one quintile in design quality would decrease the vacancy rate from 1.7% to 1.0%.

I. NASE, J. BERRY, & A. ADAIR, 2016

What is the Impact of Quality Led **Design for Real Estate Value?**



SIGNIFICANCE***

Asterisks in a regression table indicate the level of the statistical significance of a regression coefficient.

*** p<0.01, ** p<0.05, * p<0.1

COEFFICIENT %

The standard error is our estimate of the standard deviation of the coefficient.

Source

Nase I., Berry J. & Adair A., 2016, Impact of quality-led design on real estate value, Journal of Property Research, 33:4, page 309-331

Empirical findings indicate that from the seven building quality features initially investigated, the ones mostly valued by end users are those that are easily perceived visually.

TYPICAL METHODS USED TO MEASURE THE EFFECTS OF **DESIGN ON THE VALUE OF** THE BULIDING



1. Examine the Quality of Design by Associating it with Architecture Awards



2. Scoring Process for Design Quality Variables ex) Massing, Fenestration, Material Quality, etc. Largely two different approaches were found when understanding and measuring the effects of design on the value of the building.

One set of papers examine the quality of design by associating it with the architect's achievement and the recognition of their peers by looking at a sample of buildings designed by architects who have won important architectural prizes (Hough and Kratz, 1982; Fuerst, McAllister, and Murray, 2010; Cheshire and Dericks, 2014).

The other approach chooses to conduct a survey by a group of experts to grade the overall design quality of the sample buildings. The experts score building elements such as façade fenestration, building material, massing composition, etc. of the sample buildings and the overall design score of the building is derived by averaging the scores of each element (Vandell and Lane, 1989; Nase, Berry, and Adair, 2016).



Our research differs from these previous studies. It focuses on different types of awards that can include a broader range of architects, it includes architecture firms as well as individual architects and further elaborates on the estimation by incorporating information on architects and architecture firms of every building in the data set.



Transactions. Trends. Tools.

\bigcirc	COMPSTAK
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+ Walk Score V

PRIMARY DATABASE	ADDITIONAL DATABASE	ADDITIONAL DATABASI
Variables in Use:	Variables in Use:	Variables in Use:
Price Submarket Transaction Year	Building Class	Walk Score assig every building in
Built Year Number of Floors Building Area (SqFt) Land Parcel Area Renovation Year Buyer Type Seller Type Lender Type	DATA ON ARCHITECTS The information on architects were manually gathered through multiple sources such as, firm portfolio web- site, media articles, and architectural magazines	

The commercial building transaction database used in this empirical study was obtained from the Wide Data Project of MIT Real Estate Innovation Lab, which is a combination of publicly available data from New York government entities, Real Capital Analytics (RCA), and Compstak data. The integrated database provides fundamental hedonic variables that we will be using



SE

aned to datrabase

06 IDENTIFYING AWARDED ARCHITECTS & FIRMS

The Value of Awarded Design in Real Estate Development

AWARD CRITERIA & AWARDED ARCHITECTS AND FIRMS

Lifetime Achievement Awards that Evaluate the **Architect's Accumulated Body of Work.**



Awarded Architects: Architects who won the lifetime achievement awards and/or innovation awards

0	557 Broadway 555 Broadway
3	809 United Nations Plaza
08	45-47 W 53rd St
5	Three World Financial Center Four World Financial Center 900 3rd Avenue NY Mercantile Exchange
3 94 99	610 Lexington Avenue 425 Park Avenue
1 93 93	51 Astor Place
9 60	Seagram Building
8 79	5 East 44th Street Sony Plaza Lipstick Building
6 59	200 Park Avenue

AWARD CRITERIA & AWARDED ARCHITECTS AND FIRMS

The AIA Architecture Firm Award recognizes the architecture firm that has produced a notable architecture for at least a decade.



ns who won the AIA Architecture Firm Award				
75	100 William Five Manhattan West			
00	233 Spring Street 161 6th Avenue			
90	745 7th Avenue Five TIme Square One Vanderbilt 111 Murray Street 1100 6th Avenue 441 8th Avenue 10 Hudson Yards			
05	425 Lexington Avenue 65 East 55th Street			
67	Citi Group Center			

AWARD CRITERIA & AWARDED ARCHITECTS AND FIRMS

Within 18 Awarded Architects/Firms, **4 Firms Have Received More Than 2 Awards From 3 Award Categories**



	Architect
Building Image	Property Name Sub-Market Year Built No. Floors Building Area Building Class



Skidmore, Orwings & Merrill (SOM) 875 Third Avenue Midtown East 1982 29 FL 719,000 SF А



Skidmore, Orwings & Merrill (SOM) PaineWebber Building Midtown West 1960 42 FL 1,749,000 SF А



Skidmore, Orwings & Merrill (SOM) 830 Third Ave Midtown East 1956 13 FL 144,000 SF А



Skidmore, Orwings & Merrill (SOM) 510 5th Ave Midtown West 1954 5 FL 70,000 SF В



Skidmore, Orwings & Merrill (SOM) 450 Lexington Midtown East 1992 32 FL 910,473 SF Δ



Skidmore, Orwings & Merrill (SOM) Bertelsmann Bldg Midtown West 1990 44 FL 1,058,287 SF А



Kevin Roche

31 West 52nd Street Midtown West 1986 30 FL 729,011 SF А



Skidmore, Orwings & Merrill (SOM) 300 Madison Ave Midtown East 1910 16 FL 490,560 SF А



Kevin Roche

JP Morgan Chase HQ Downtown 1988 47 FL 1,612,000 SF А



Skidmore, Orwings & Merrill (SOM) 461 Fifth Ave Midtown East 1988 26 FL 200,000 SF А



Skidmore, Orwings & Merrill (SOM) Marine Midland Bank Downtown 1967 52 FL 1,200,866 SF А



I.M.Pei & Partners

499 Park Ave Midtown East 1981 28 FL 292,966 SF А



Skidmore, Orwings & Merrill (SOM) 450 Lexington Midtown East 1992 32 FL 910,473 SF Α



Kevin Roche

Deutsche Bank HQ Downtown 1988 47 FL 1,612,000 SF А



125 West 55th Street Midtown West 1989 23 FL 548,881 SF А

Edward Larrabee Barnes



Skidmore, Orwings & Merrill (SOM) Worldwide Plaza Midtown West 1989 47 FL 2,055,583 SF А



Kevin Roche

31 West 52nd Street Midtown West 1986 30 FL 729,011 SF А

Skidmore, Orwings & Merrill (SOM) 510 Fifth Avenue Midtown West 1954 5 FL 61,159 SF В

The Value of Awarded Design in Real Estate Development



Skidmore, Orwings & Merrill (SOM) 450 Lexington Midtown East 1992 32 FL 910,473 SF А



Kevin Roche

750 Seventh Avenue Midtown West 1989 36 FL 591,169 SF Α



Skidmore, Orwings & Merrill (SOM) 34-36 E 51st St Midtown East 1922 10 FL 41,000 SF NA



Skidmore, Orwings & Merrill (SOM) 919 Third Midtown East 1970 46 FL 1,316,758 SF

А



Skidmore, Orwings & Merrill (SOM) 12 West 57th Street Midtown West 1904 11 FL 84,000 SF А



Skidmore, Orwings & Merrill (SOM) 875 Third Avenue Midtown East 1982 29 FL 719,000 SF Α



Skidmore, Orwings & Merrill (SOM) 450 Lexington Avenue Midtown East 1992 32 FL 910,473 SF А



Skidmore, Orwings & Merrill (SOM) PaineWebber Building Midtown West 1960 39 FL 1,749,000 SF А



Skidmore, Orwings & Merrill (SOM) 28 Liberty Downtown 1963 57 FL 2,215,030 SF NA



I.M.Pei & Partners

499 Park Ave Midtown East 1981 28 FL 292,966 SF Α



Skidmore, Orwings & Merrill (SOM) Worldwide Plaza Midtown West 1989 47 FL 2,055,583 SF А



Kevin Roche

750 Seventh Avenue Midtown West 1989 36 FL 591,169 SF А



Edward Larrabee Barnes

125 West 55th Street Midtown West 1989 23 FL 548,881 SF А



Pei Cobb Freed & Partners 7 Bryant Park Midtown West 2015 30 FL 470,000 SF А



Hugh Stubbins & Associates

Citigroup Center Midtown East 1977 59 FL 1,800,000 SF А



Skidmore, Orwings & Merrill (SOM) PaineWebber Building Midtown West 1960 39 FL 1,749,000 SF А



Edward Larrabee Barnes

787 Seventh Avenue Midtown West 1985 51 FL 1,706,007 SF А



Skidmore, Orwings & Merrill (SOM) Two Manhattan West Midtown West 2020 62 FL 2,000,000 SF NA



Skidmore, Orwings & Merrill (SOM) One Manhattan West Midtown West 2019 67 FL 2,000,000 SF NA



Kohn Pedersen Fox Assoc. (KPF) 745 Seventh Avenue Midtown West 2001 38 FL 1,020,000 SF А



Gensler

233 Spring St Downtown 1926 10 FL 249,148 SF



Murphy/Jahn

425 Lexington Ave Midtown East 1987 31 FL 750,000 SF А



Kevin Roche

31 West 52nd Street **Midtown West** 1986 30 FL 729,011 SF А



Kevin Roche

Deutsche Bank HQ Downtown 1988 47 FL 1,612,000 SF А



Kohn Pedersen Fox Assoc. (KPF) Five Times Square Midtown West 2002 39 FL 1,101,779 SF А



Hugh Stubbins and Assoc.

Citigroup Center Midtown East 1977 59 FL 1,800,000 SF А



Davis, Brody & Associates

100 William Downtown 1972 21 FL 357,000 SF А



Kohn Pedersen Fox Assoc. (KPF) future One Vanderbilt (partial) Midtown East 1913 17 FL 160,482 SF В



Kohn Pedersen Fox Assoc. (KPF) 111 Murray Street Downtown 1984 10 FL 145,525 SF NA

Five Manhattan West Midtown West 1969 16 FL 1750,000 SF А



Davis, Brody & Associates

100 William Downtown 1972 21 FL 357,000 SF А



Kohn Pedersen Fox Assoc. (KPF) **Five Times Square** Midtown West 2002 39 FL 1,101,779 SF А



Davis, Brody & Associates

Five Manhattan West Midtown West 1969 16 FL 1,750,000 SF А



Murphy/Jahn

Park Avenue Tower Midtown East 1986 36 FL 615,857 SF А

Davis, Brody & Associates



Murphy/Jahn

425 Lexington Ave Midtown East 1987 31 FL 750,000 SF А



Murphy/Jahn

Park Avenue Tower Midtown East 1986 36 FL 619,631 SF А



Gensler

One Soho Square Downtown 1904 15 FL 450,000 SF В



Hugh Stubbins & Associates

Citigroup Center Midtown East 1977 59 FL 1,800,000 SF А



Kohn Pedersen Fox Assoc. (KPF) Five Times Square **Midtown West** 2002 39 FL 1,132,865 SF А



Gensler

One Soho Square Downtown 1926 10 FL 316,000 SF А



Kohn Pedersen Fox Assoc. (KPF) HBO Midtown West 1906 15 FL 344,000 SF NA



Kohn Pedersen Fox Assoc. (KPF) 441 Ninth Midtown West 1953 8 FL 423,000 SF NA



Kohn Pedersen Fox Assoc. (KPF) 10 Hudson Yards Midtown West 2016 52 FL 1,813,465 SF Α



5 E 44th St

Midtown East 1940 6 FL 15,726 SF NA



Ludwig Mies van der Rohe

Seagram Building Midtown East 1958 38 FL 820,000 SF А



Kohn Pedersen Fox Assoc. (KPF) HBO Midtown West 1906 15 FL 344,000 SF А

Philip Johnson / Alan Ritchie



Philip Johnson

Lipstick Building Midtown East 1986 34 FL 592,000 SF А



Alvar Aalto

809 United Nations Plaza Midtown East 1964 11 FL 100,000 SF NA



Foster + Partners

Fmr YMCA Midtown East 1926 10 FL 81,017 SF NA



Cesar Pelli & Associates

Three World Financial Center Downtown 1986 52 FL 2,100,000 SF А



Ludwig Mies van der Rohe

Seagram Building Midtown East 1958 38 FL 820,000 SF А



900 Third Ave Midtown East 1984 36 FL 595,105 SF А



Foster + Partners

Shangri-La hotel project Midtown East 1926 10 FL 81,017 SF NA



Walter Gropius

MetLife Building Midtown East 1963 58 FL 2,840,000 SF Α

Seagram Building Midtown East 1958 38 FL 820,000 SF А



Philip Johnson

Sony Plaza **Midtown East** 1984 36 FL 855,000 SF А





Philip Johnson

Lipstick Building Midtown East 1986 34 FL 592,000 SF А

Ludwig Mies van der Rohe



Philip Johnson / Alan Ritchie

5 E 44th St Midtown East 1940 6 FL 15,726 SF NA



Aldo Rossi

Scholastic Midtown South 1999 10 FL 112,500 SF NA



Foster + Partners

425 Park Avenue Midtown East 1957 31 FL 567,340 SF Α



Tre

Foster + Partners

425 Park Midtown East 1957 31 FL 567,340 SF А



Fumihiko Maki Cooper Union Engineering Dev Site Midtown South 1960 9 FL 158,816 SF А



555 Broadway

Midtown South 1900 12 FL 216,000 SF В

900 Third Ave Midtown East 1984 36 FL 595,105 SF А

Cesar Pelli & Associates

Cesar Pelli & Associates

New York Mercantile Exc. Downtown 1997 17 FL 502,000 SF А



Seagram Building Midtown East 1958 38 FL

820,000 SF

А

The Value of Awarded Design in Real Estate Development



Philip Johnson

Lipstick Building Midtown East 1986 34 FL 592,000 SF А



Cesar Pelli & Associates

Four World Financial Center Downtown 1986 34 FL 2,084,079 SF А

Ludwig Mies van der Rohe



Ateliers Jean Nouvel

53W53 Midtown West 2000 5 FL 28,291 SF NA

6

Philip Johnson

Sony Plaza Midtown East 1984 36 FL 855,000 SF А



Fumihiko Maki

51 Astor Place Midtown South 2013 13 FL 400,000 SF

07 CONTROL GROUP DATA

The Value of Awarded Design in Real Estate Development





In order to understand the effect of the awarded architects and firms on the transaction price, we matched each of the awarded buildings in this sample to nearby commercial buildings in the similar location using the Geographic Information System (GIS).

Out of 2,399 office building transactions identified in the integrated database constructed combining RCA and Compstak, 52 buildings were designed by awarded architects/firms.

Based on the latitude and longitude of each treated building we created a one quarter mile radius buffer zone to capture all the commercial buildings that intersect with the integrated database

CONTROL GROUP DATA PROCESS, GIS





The series of maps show the location of the treated buildings, quarter mile radius, and the filtered data points. Building Designed by Awarded Architect / Firm Identification

Create 0.25 Mile Radius



Identify All Other Office Buildings in Database within Radius

08 DESCRIPTIVE STATISTICS

METHODOLOGY

The Value of Awarded Design in Real Estate Development

IVE S DLOGY

TOTAL TRANSACTION OBSERVATIONS

INTEREST VARIABLES (NUMBER OF BUILDING TRANSACTIONS)









TRANSACTION PRICE & MARKET CHARACTERISTICS

BUILDING TRANSACTION PRICE (AWARDED DESIGNS)

	Ν	Min	Max	Mean	SD		N	Min	Max	Mean	SD
Transaction Price	89	\$ 4.4 M	\$ 2.98 B	\$ 607.8 M	\$ 618.9 M	Transaction Price	757	\$1M	\$ 3.4 B	\$ 178.8 M	\$ 339.7 M
Log (Price)	89	6.64	9.47	8.53	0.55	Log (Price)	757	6	9.53	7.79	0.65
Price per SF	89	\$ 109	\$ 1,951	\$ 731	\$ 404	Price per SF	757	\$ 30.8	\$ 6,800	\$ 630.6	\$ 580.1
Log (PSF)	89	2.04	3.29	2.79	0.26	Log (PSF)	757	1.49	3.83	2.68	0.32

MARKET CHARACTERISTICS





Sub Market

BUILDING TRANSACTION PRICE (NON-AWARDED DESIGNS)

TRANSACTION CHARACTERISTICS

Transaction Year



BUILDING CHARACTERISTICS (AWARDED DESIGNS)







NUMBER OF RENOVATED BULIDINGS



AWARDED DESIGN TRANSACTION CHARACTERISTICS

TOTAL NUMBER OF TRANSACTIONS: 89

BUYER TYPE

SELLER TYPE



LENDER TYPE





NUMBER OF RENOVATED BULIDINGS



NON-AWARDED DESIGN TRANSACTION CHARACTERISTICS

TOTAL NUMBER OF TRANSACTIONS: 757

BUYER TYPE

SELLER TYPE

Government	2	REOC	2	REOC
Pension Fund	2	Retailer	4	Retailer
Private	9	Government	<u>14</u>	Government
Financial	33	Private	$\frac{20}{01}$	Corporate
Insurance	35	Fund	31	Institutional
International Bank	76	Corporate	33	REIT
	70	Institutional	33	Fund
		Offshore	41	Offshore
Local Bank	11	Unknown	249	Private
National Bank	84			
CMBS	124			
Unknown	315	Private	330	Unknown

1	REOC	
2	Retailer	
14	Government	
20	Corporate	
27	Institutional	
33	REIT	
34	Fund	
39	Offshore	
248	Private	
303	Unknown	

LENDER TYPE

$\log Pi = \alpha + \beta Xi + \delta gi + \varepsilon i$

i	Commercial Office Buildings	δ	Estimated Coefficients for Dummy Variable
log <i>Pi</i>	Logarithm of the		
C	Transaction Price	gi	Vector of Dummy Variables (e.g. Value of 1 if building i is
а	Constant		designed by awarded architects or firms)
ß	Estimated Coefficients for		
•	Hedonic Characteristics	Eİ	Error Term
Xi	Vector of Hedonic Characteris- tics(e.g. Location, Transaction Time, Building Features, and		

Transaction Features)

The dependent variable is the logarithm of the transaction price Pi in commercial office buildings *i*. Xi is a vector of hedonic characteristics (e.g., location and time, building features, and transaction features) for buildings *i*, and *gi* is a vector of dummy variables with a value of 1 if building *i* is designed by Awarded Architects, Awarded Firms, or Awarded Architects and Firms and 0 otherwise. α is a constant, β and δ are estimated coefficients and ϵi is an error term.

Using the logarithm of transaction price instead of the transaction price per square foot may cause measurement error for the size and construction cost may vary over the size of the building. However, we have conducted the same hedonic analysis using the transaction price per sf for every model and a substantial pricing difference was not found

09 RESULTS: AWARDED DESIGNS AND TRANSACTION PRICES

ROBUSTNESS: ALL AND TRANSACTION PRICES

ARCHITECTS & FIRMS

Ceteris Paribus, Awarded Designs are Transacted with a 23.1% Premium **Compared to Non-Awarded Buildings.**

Regression Fixed Effects Log (Price)	(1) Model 1	(2) Model 2	(3) Model 3	List of Varialbles	
Awarded Designs	1.530*** [0.144]	0.171*** [0.059]	0.231*** [0.059]	Location & Transaction Time FE:	Submarket Transaction Year
Constant	17.721*** [0.239]	6.757** [2.625]	8.525*** [2.960]	Building Characteristics FE:	Age Age Squared Number of Floors
Location & Transaction Time FE	YES	YES	YES		Log (SF)
Building Features FE	NO	YES	YES		Building Class
Transaction Features FE	NO	NO	YES		Renovated Walk Score
Observations	846	846	846	Transaction Characteristics EE:	
R-squared	0.229	0.899	0.906	Transaction Characteristics FE.	Seller Type
F Adj R-Squared	0.21	0.90	0.90		Lender Type

Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

AWARDED ARCHITECTS & AWARDED FIRMS, **BASE CASE NO AWARD**

Ceteris Paribus, Awarded Architects, Firms, and Laureates of Both Awards Show 17.7%, 32.1%, and 20.9% Premium.

Regression Fixed Effects	(1)	(2)	(3)	
Log (Price)	Model 1	Model 2	Model 3	List of Varialbles
Awarded Architects	1.124***	0.089	0.177*	
	[0.293]	[0.095]	[0.102]	
Awarded Firms	1.670***	0.248**	0.321***	Location & Transaction Time FE:
	[0.227]	[0.113]	[0.100]	
Awarded Architects & Firms	1.729***	0.182***	0.209***	Building Characteristics FE:
	[0.186]	[0.062]	[0.069]	Building Characteristics I L.
Location & Transaction Time FE	YES	YES	YES	
Building Features FE	NO	YES	YES	
Transaction Features FE	NO	NO	YES	
Observations	846	846	846	
R-squared	0.232	0.900	0.906	Iransaction Characteristics FE:
F Adj R-Squared	0.21	0.90	0.90	

Robust standard errors in brackets *** p<0.01, ** p<0.05, * p<0.1

Age Age Squared Number of Floors Log (SF) Log (Land SF) **Building Class** Renovated Walk Score

Transaction Year

Submarket

Buyer Type Seller Type Lender Type

REGRESSION ANALYSIS RESULT COMPARISON

SIGNIFICANCE***

Asterisks in a

regression table indicate the leve

of the statistical significance of a regression

*** p<0.01, ** p<<u>0.05,</u>

COEFFICIENT % The standard error is our estimate of the standard deviation of the coefficient.

The regression mode controls for location and transaction time building features (age, number of floors,

building area, land parcel area, building class, renovation, and walk score), and

transaction features (buver type, seller

type, and lender type)

coefficient

* p<0.1

NOTE:



Ceteris paribus, the hedonic analysis result shown in diagram indicates that buildings designed by awarded architects/firms are transacted with a 23.1% premium relating to buildings that are designed by non-awarded architects.

We further specified the study by looking into different type of awards with three categorical variables, Awarded Architects, Awarded Firms, and Awarded Architects & Firms. The result suggests that ceteris paribus, Awarded Architects, Awarded Firms, and Awarded Architects and Firms show 17.7%, 32.1%, and 20.9% transaction price premium respectively compared to non-awarded buildings.

ROBUSTNESS CHECK

Ludwig Mies Van der Rohe

60.6%***

Kohn Pederson & Fox (KPF)

51.4%

Hugh Stubbins and Associates

27.4%

As a robustness check, we specified the Awarded Design category by expanding the categorical variable to include data on individual architects/firms to ensure that no one designer was driving the result of one building.

Ceteris paribus, the results mainly have a low statistical significance, but some with a cautionary threshold indicate that compared to buildings designed by non-awarded architects. The architect Ludwig Mies van der Rohe achieved the most transaction premium of 60.6% with a p-value less than 0.001. Followed by KPF (51.4%), and Hugh Stubbins and Associates (27.4%). Positively awarded designers represent one-third of the transaction sample, the others are not statistically significantly different from zero. However, these designers have small samples.

However, the result should be considered with extreme caution. There is a probability of measurement error due to the small number of differentiating samples related to each architect

10 CONCLUSION



THE CITY OF THE CAPTIVE GLOBE



Despite the growing interest, a limited number of studies and discussions have been generated to help create a shared better value surrounding the subject of design.

In this study, we have identified that the difficulty of obtaining data related to design performance being one of the biggest hurdles in enabling further studies to disentangle the value of design. As a first step, a creative approach in gathering a new set of data related to the design performance is needed.

We believe combining the new measurements with the accumulated knowledge on design generated by architects will enable us to open up a substantial area for future research and moreover will help create an agency for design in the realm of finance and economics

SOURCE:

Rem Koolhaas & Madelon Vriesendorp 1972, The Clty of the Captive Globe, Delirious New York, page 294-295

APPENDIX



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This project is published as part of an on-going research, "Value of Design" from the MIT Real Estate Innovation Lab.

The overarching research questions the limitations of the existing real estate asset pricing framework. A team of researchers are developing a catalog of hypothesis for new metrics related with design, as well as seeking and creating new data sources to identify design as a metric in the existing building and urban fabric.

The goal of the research is to give credence and agency to the work of designers and engineers in the realm of real estate finance and economics

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