

# Property Derivatives:

Establishing Liquidity in the U.S. Market

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Presented by:  
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R A D A R L O G I C  
I N C O R P O R A T E D

Making property derivatives real  
[www.radarlogic.com](http://www.radarlogic.com)



# U.S. Property Derivatives

- Radar Logic was established to provide the basis and tools to enable a functional property derivatives market in the U.S. capital markets.
  - *Wall Street background*: Built with client applications in mind.
  - *Inclusive methodology*: Housing is a market, a trade is a trade.
  - *Transparent*: No “black boxes”
  - *Enablement*: The infrastructure for liquid trading exists.

**Radar Logic currently calculates and publishes daily values for residential real estate in 25 major metropolitan centers in the United States.**



# RPX: The Residential Property Index™

RPX is the *valuation* framework on which residential property derivatives are traded in the U.S. capital markets today.

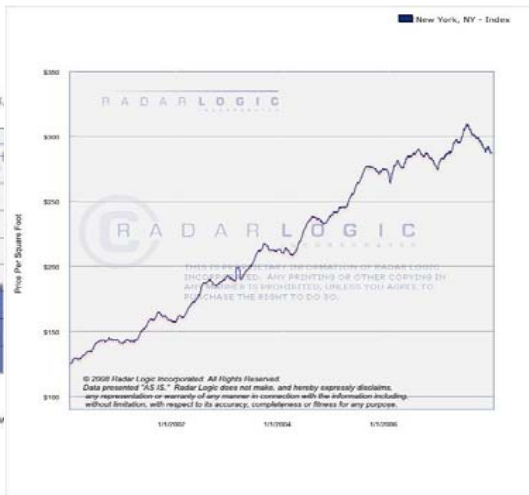
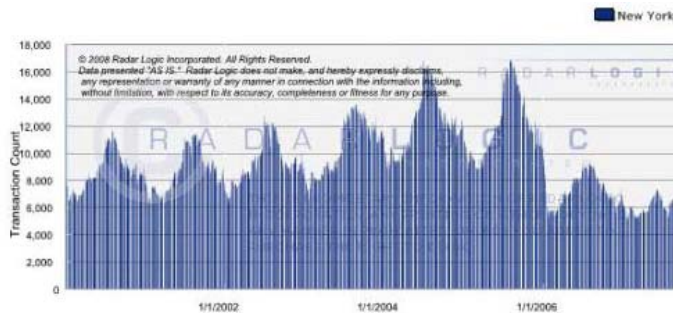
- Daily values represent *spot* prices for real estate
- RPX makes real estate a functional asset class for investors
- Investment activity began in September 2007 and has grown to more than \$500 million.



# Spot Market Surrogate

RPX is a *surrogate* for a spot market in U.S. residential real estate

- Comprised of Radar Logic Daily Prices for major metropolitan areas and a 25-MSA Composite
- 1-day, 7-day and 28-day prices are published on every business day for each market
- RPX prices act as daily “snapshots” which depict real estate trends over time



MSA	1-Day	7-Day	28-Day
25 MSA Composite	\$247.47	\$247.96	\$249.59
Atlanta, GA	\$90.65	\$93.52	\$93.49
Boston, MA	\$211.80	\$216.09	\$216.79
Chicago, IL	\$167.04	\$170.97	\$175.23
Charlotte, NC	\$99.27	\$97.88	\$96.47
Cleveland, OH	\$82.67	\$83.63	\$88.20
Columbus, OH	\$89.19	\$91.68	\$92.01
Detroit, MI	\$106.03	\$102.48	\$101.99
Denver, CO	\$134.76	\$139.40	\$135.84
Jacksonville, FL	\$121.11	\$117.80	\$114.76
Los Angeles, CA	\$322.84	\$333.01	\$336.95
Las Vegas, NV	\$135.42	\$141.36	\$145.62
Miami, FL	\$181.69	\$180.01	\$179.46
Minneapolis, MN	\$142.30	\$145.20	\$146.73
Milwaukee, WI	\$104.58	\$116.71	\$114.89
New York, NY	\$304.04	\$290.48	\$288.27
Philadelphia, PA	\$137.80	\$145.98	\$147.57
Phoenix, AZ	\$136.50	\$137.81	\$140.71
Sacramento, CA	\$174.48	\$172.21	\$176.73
Seattle, WA	\$204.09	\$220.48	\$219.15
San Francisco, CA	\$382.00	\$393.93	\$407.07
San Diego, CA	\$251.31	\$267.06	\$273.48
San Jose, CA	\$429.88	\$433.38	\$446.48
Saint Louis, MO	\$90.49	\$93.14	\$93.38
Tampa, FL	\$121.87	\$121.96	\$122.60
Washington, DC	\$255.83	\$235.73	\$225.85



## Why Does RPX Work?

- Inclusive
- Neutral
- Published frequently
- Transparent
- Licensed by 7 Wall Street Dealers
- Supported by 4 Interdealer Brokers



## Important Factors in any Accepted Asset Class

There are several key factors consistently found in attractive asset classes:

- Scale*: Will the outcome of investing justify the effort?
- Relevance*: Can profits be realized based on informed decisions?
- Liquidity*: Can the investor express a point of view quickly and easily?
- Suitability*: Can investors reasonably expect a return and adequately evaluate risk?

**For residential real estate, all the answers are “yes”.**



# Scale

Will the outcome justify the effort?

**The housing market is one of the world's largest asset classes**

—U.S. residential real estate market estimated in excess of \$23 trillion\*

—RPX markets capture more than \$15 trillion\*\*

**The derivatives market for housing can be even bigger**

—A mature derivatives market can be 5-10 times the size of its underlying asset market

\*Flow of Funds Accounts for the United States, Federal Reserve (December 2007, Table B. 100); includes nonprofit organizations

\*\*2006 Census data for number of housing units; company data.



# Relevance

Will market analysis be effective?

**Investing in property derivatives enables the capture of the returns of the housing market directly**

- As RPX is a direct surrogate for housing values, investors can benefit from positions in the RPX market based on changes in actual housing values
- Factors affecting home prices can be evaluated using RPX
- Phenomena and economic events expected to impact housing values can create trading opportunities via RPX





# Making Real Estate “Tradable”

## **What do investors need to make Real Estate a tradable asset class?**

- Comfort in understanding residential property markets
- A liquid vehicle for trading real estate values

## **Property derivatives allow investors to buy and sell real estate quickly and easily**

- Lower transaction costs than purchasing physical property
- Greater velocity than available with physical property
- Infrastructure designed to support investment criteria



# Liquidity

**Can investors act quickly on an established point of view?**

- Multiple market makers
- Large notional values
- Long and short positions
- High frequency of transactions



# The Potential of the U.S. Market

## The success of the U.K. market

- The UK-traded IPD commercial property derivatives market has gained momentum since its inception in 2004
- Trading volume for Q4 2007 was more than six times the volume for the entire calendar year 2004\*
- Cumulative notional of trades executed to date: \$24 billion\*

## The U.S. residential property derivatives market already contains the elements necessary for success

- Large scale of underlying market
- Relevance to investors
- Liquidity: Multiple market makers
- Several months in excess of \$100 million in volume

\*IPD Website, [www.ipd.com](http://www.ipd.com)



# Utility for Investment Professionals

**Any institutional investor involved in the U.S. housing market can use RPX; as can any institutional investor involved in the U.S. financial markets.**

- Incorporate property derivatives as a meaningful component of an investment portfolio
- Make investments in housing based on economic events and outlook
- Make investment and asset analysis decisions based on price trends in the housing markets



# Asset Manager

**Any asset manager with interest in housing can use RPX derivatives as a surrogate.**

- RPX will follow actual housing values more closely than either home builder equities or REITs.
- Any asset manager with a diversified portfolio can use RPX to add this important asset class to their portfolio.
- Given the size of the U.S. housing market, this asset class deserves careful consideration.



## Pension Fund

**One example of an RPX application for a pension fund or pension manager is the offering of an investment tied directly to a retirement objective.**

- Take the instance of an employee who lives and works in Ohio and wants to move to San Diego when they retire.
- By structuring an investment in RPX-San Diego, the pension is offering an investment choice directly correlated to the cost of San Diego housing.



# Real Estate Investor

**A large real estate investor can use RPX as an alternative to the purchase residential property in a new market.**

- The investor wants to avoid any perceived “price signal” by the announcement of its plans, which may increase prices before it purchases the desired assets.
- The investor can strategically purchase property derivatives *before* purchasing actual property, looking to protect itself from the increase in prices that it expects to see at the time it acquires the physical assets.
- Further, given the speed with which positions can be taken, the investor can protect itself from price increases that occur during the timeframe required for a physical purchase.



# Lender

**As the RPX market develops, development lenders will find new ways to improve both project leverage and project risk.**

- Not unlike “rate caps” that protect project economics from rising interest rates during construction, “price floors” created with RPX contracts can protect both lenders and sponsors in a volatile housing market.
- The result will be higher LTVs, higher ROIs and lower risk.





# New Developments

Total Dollar Value of Sales since 2006

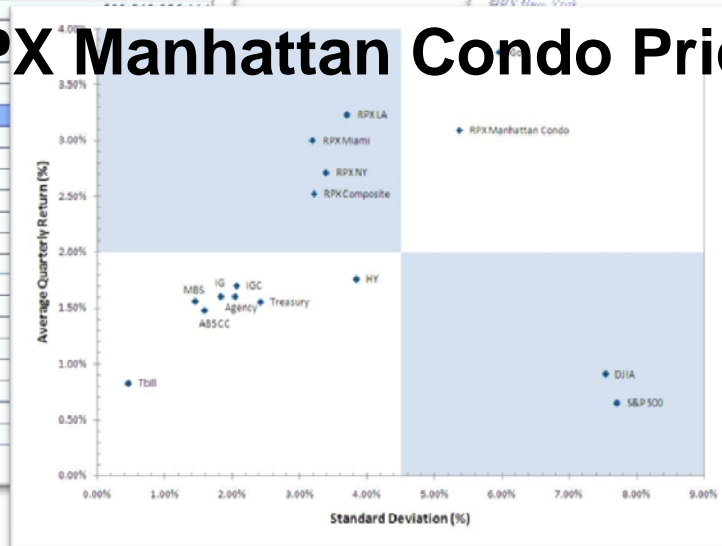
Rank	Index	\$ Value Sold Since Jan 2006 <sup>2</sup>
1	New York	\$359,856,000,730
2	Los Angeles	\$153,068,291,430
3	Washington, DC	\$112,468,604,808
4	Chicago	\$106,840,461,318
5	Miami	\$95,466,278,286
6	Phoenix	
7	Atlanta	
8	San Francisco	
9	Seattle	
10	Boston	
11	<b>Manhattan Condo</b>	
12	Philadelphia	
13	Tampa	
14	Las Vegas	
15	Denver	
16	San Diego	
17	Minneapolis	
18	San Jose	
19	Sacramento	
20	Charlotte	
21	Detroit	
22	Jacksonville	
23	St. Louis	
24	Columbus	
25	Milwaukee	
26	Cleveland	

<sup>2</sup>Includes sale records without square footage

Asset Class	Average Return	Standard Deviation
Gold	3.79%	5.96%
RPX Los Angeles	3.23%	3.70%
<b>RPX Manhattan Condo</b>	<b>3.09%</b>	<b>5.37%</b>
RPX Miami	3.00%	3.19%
RPX New York	2.71%	3.39%
RPX Phoenix	2.52%	3.22%
RPX San Francisco	1.76%	3.84%
RPX Seattle	1.70%	2.06%
RPX Boston	1.60%	2.04%
RPX Philadelphia	1.60%	1.83%
RPX Tampa	1.56%	1.45%
RPX Las Vegas	1.55%	2.42%
RPX Denver	1.48%	1.59%
RPX San Diego	0.91%	7.54%
RPX Minneapolis	0.83%	0.46%
RPX San Jose	0.65%	7.71%

Source: www.yahoo.finance.com

## RPX Manhattan Condo Price





# Launch of RPX Manhattan Condo Price

Today we introduced the RPX Manhattan Condo Price as part of our offering

## Why Manhattan Condo?

- **Large**

- Radar Logic estimates the total value of Manhattan residential property at more than \$1 trillion.

- When ranked against the 25 MSAs by total dollar value of residential sales since January 2006, Manhattan condos rank #11 (\$57 billion), behind Boston (\$64 billion) and ahead of Philadelphia (\$50.5 billion)

- **Growing**

- Number of condo sales in Manhattan have risen 22% from 2005 to 2006; 66% from 2006 to 2007\*

- **Valuable**

- RPX Manhattan Condo ranks #1 against existing 25 MSAs in terms of median sales price and median 28-day PPSF (Q3 2007)

- Median sale price: \$808,250

- Median 28-day PPSF: \$1,139.56

\*Miller Samuel Inc.



# RPX Manhattan Condo Price

## Manhattan Condo vs. 25 MSAs

Median 28-day PPSF (Q3 2007)

Rank	Index	Median 28-day PPSF(Q3 2007)
1	Manhattan Condo	\$1,139.56
2	San Jose	\$470.85
3	San Francisco	\$443.79
4	Los Angeles	\$385.14
5	San Diego	\$309.77
6	New York	\$300.93
7	Boston	\$243.11
8	Washington, DC	\$233.31
9	Seattle	\$233.25
10	Sacramento	\$211.66
11	Miami	\$194.41
12	Chicago	\$183.80
13	Las Vegas	\$172.05
14	Philadelphia	\$160.82
15	Minneapolis	\$157.59
16	Phoenix	\$154.02
17	Denver	\$148.72
18	Tampa	\$134.51
19	Jacksonville	\$121.89
20	Milwaukee	\$119.22
21	Detroit	\$107.27
22	St. Louis	\$105.61
23	Atlanta	\$101.19
24	Charlotte	\$99.86
25	Columbus	\$98.66
26	Cleveland	\$96.15

Median Sale Price (Q3 2007)

Rank	Index	Median Sale Price (Q3 2007) <sup>1</sup>
1	Manhattan Condo	\$808,250
2	San Jose	\$718,000
3	San Francisco	\$672,000
4	Los Angeles	\$560,000
5	San Diego	\$467,500
6	New York	\$460,000
7	Washington, DC	\$406,000
8	Sacramento	\$360,000
9	Seattle	\$355,000
10	Boston	\$350,000
11	Las Vegas	\$293,701
12	Miami	\$289,000
13	Chicago	\$255,000
14	Phoenix	\$243,885
15	Denver	\$238,500
16	Minneapolis	\$233,878
17	Philadelphia	\$229,900
18	Tampa	\$199,000
19	Atlanta	\$196,900
20	Jacksonville	\$189,900
21	Milwaukee	\$185,000
22	Charlotte	\$183,750
23	Columbus	\$156,000
24	Detroit	\$145,000
25	St. Louis	\$142,775
26	Cleveland	\$136,000

<sup>1</sup>Includes sale records without square footage

Total Dollar Value of Sales since 2006

Rank	Index	\$ Value Sold Since Jan 2006 <sup>2</sup>
1	New York	\$359,856,000,730
2	Los Angeles	\$153,068,291,430
3	Washington, DC	\$112,468,604,808
4	Chicago	\$106,840,461,318
5	Miami	\$95,466,278,286
6	Phoenix	\$83,848,956,114
7	Atlanta	\$78,605,190,210
8	San Francisco	\$77,770,983,164
9	Seattle	\$66,591,460,568
10	Boston	\$63,969,197,906
11	Manhattan Condo	\$56,985,258,462
12	Philadelphia	\$50,513,750,181
13	Tampa	\$47,651,304,835
14	Las Vegas	\$47,548,118,976
15	Denver	\$39,674,823,512
16	San Diego	\$36,567,466,439
17	Minneapolis	\$33,782,814,495
18	San Jose	\$31,333,044,152
19	Sacramento	\$30,925,018,711
20	Charlotte	\$26,325,710,273
21	Detroit	\$23,396,925,870
22	Jacksonville	\$20,604,754,725
23	St. Louis	\$16,735,246,336
24	Columbus	\$14,962,286,277
25	Milwaukee	\$10,370,933,354
26	Cleveland	\$9,224,437,898

<sup>2</sup>Includes sale records without square footage



# RPX Manhattan Condo Price

## Returns Analysis: Manhattan Condo vs. Other Asset Classes: 2000-2007

Since 2000, the average quarterly return of the Manhattan Condominium Price has been approximately 3.09%.

Average quarterly return for selected asset classes plotted against the standard deviation of those returns.



Asset Class	Average Return	Standard Deviation
Gold	3.79%	5.96%
RPX Los Angeles	3.23%	3.70%
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RPX Miami	3.00%	3.19%
RPX New York	2.71%	3.39%
RPX 25-MSA Composite	2.52%	3.22%
High Yield Credit (HY)	1.76%	3.84%
Investment Grade Credit (IGC)	1.70%	2.06%
Agency	1.60%	2.04%
All Investment Grade (IG)	1.60%	1.83%
Mortgage-Backed Securities (MBS)	1.56%	1.45%
Treasury	1.55%	2.42%
Asset-Backed Securities - Credit Card (ABS CC)	1.48%	1.59%
Dow Jones Industrial Average (DJIA)	0.91%	7.54%
T-Bill	0.83%	0.46%
S&P 500	0.65%	7.71%

Source: Morgan Stanley; Citigroup; Yahoo Finance, [www.yahoo.finance.com](http://www.yahoo.finance.com); Radar Logic



# RPX Manhattan Condo Price

## Who would use the Manhattan Condo Index?

- Real estate investors looking to enter the Manhattan condo market
- Building owners located in Manhattan
- Developers with projects in New York City
- Investors with funds affected by the New York City housing prices



# What's Next for Property Derivatives

**Continued education is needed in order for users to feel comfortable trading property derivatives**

—Users must fully understand the potential benefits

—Users must be aware of the components of markets

**With understanding and education will follow a level of comfort about the infrastructure in place to make timely and effective decisions**



## Volume and Liquidity Will Grow Naturally

**Once users are comfortable with the concept of property derivatives, the utility and infrastructure are in place for liquid investments in the RPX market, leading to increasing trading volumes**

- Volume of trades will build exponentially
- Opportunities will emerge for trades of larger notional values
- Trading property derivatives will be as ‘normal’ as trading oil, gold or interest rate futures



## Conclusion: Real estate in an Investment Strategy

**All institutional investors now have tools available through which they can include real estate in portfolios:**

- Property derivatives allow real estate and financial professionals to strategically incorporate the *returns* of real estate markets
- Investors are able to analyze projects and investments in relation to actual housing market trends
- Investors can act on their analyses of housing markets in a quick and efficient manner
- The asset class known as Real Estate is now Tradable





## Property Derivatives: Establishing Liquidity in the U.S. Market

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