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Application of AI, Insurtech and Real Estate Technology

Industry Background

Professor Christopher Geczy, PhD

Background and Definition of Real Estate Tech

- Global real estate is a vast industry
 - Global sales of commercial properties (FY 2017): \$873 billion
 - U.S. sales of commercial properties (FY 2017): \$375.6 billion
 - (57% of global total)
 - U.S. residential real estate: 5.3MM existing homes & 667K new homes sold in 2018
 - 86,004 real estate brokerage firms in U.S. (2012 Economic Census data) and 2 million active real estate licensees

Real Capital Analytics data cited in “Emerging Trends in Real Estate: The Global Outlook for 2018,” PricewaterhouseCoopers and the Urban Land Institute, March 2018.
National Assn. of Realtors®

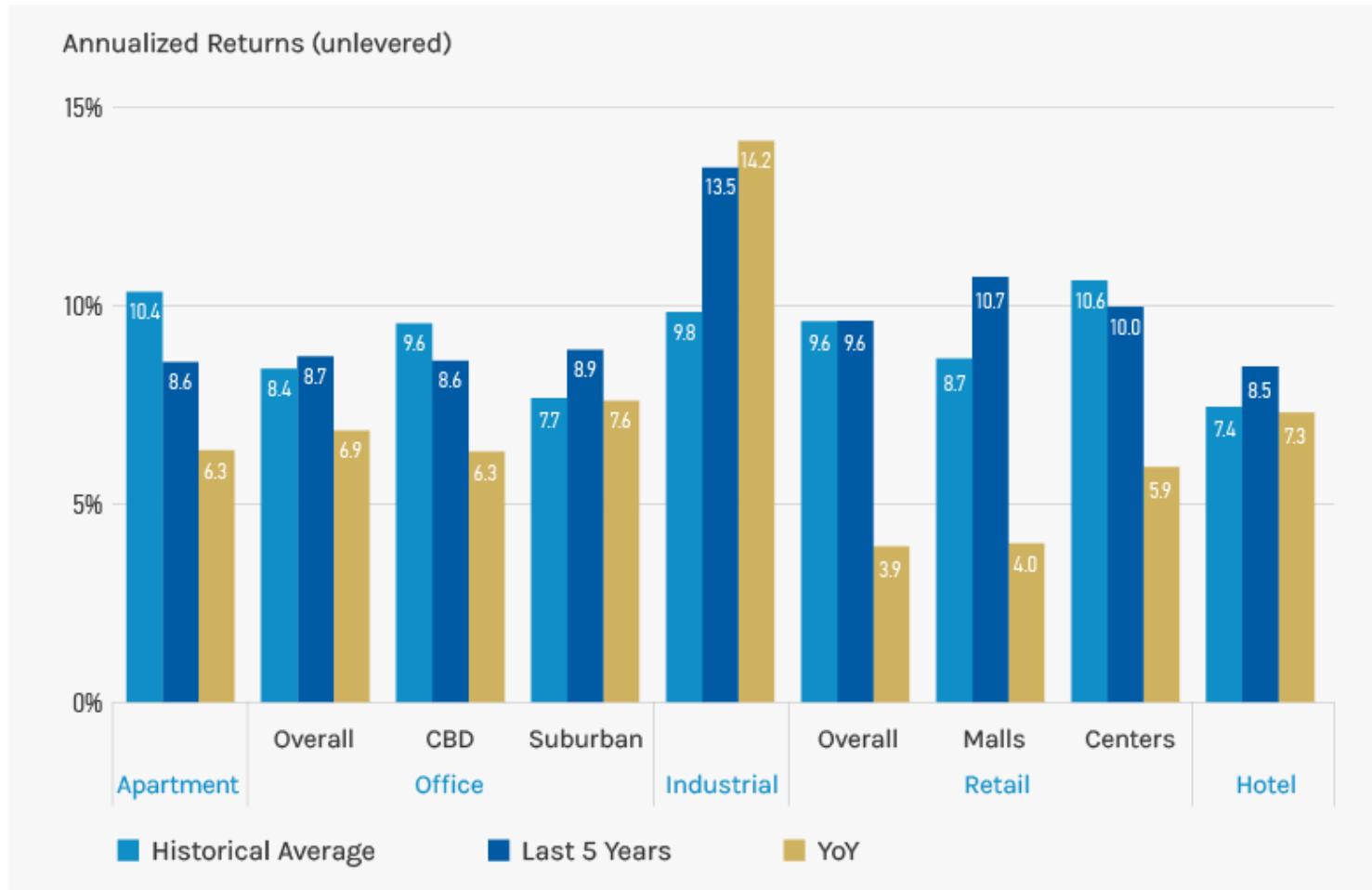
Background and Definition of Real Estate Tech

- Many expect the real estate industry to expand though there are concerns of a bubble
- Increasing allocation real assets (including RE) has been democratized
- Rate of Return has been ongoing and positive

Real Capital Analytics data cited in “Emerging Trends in Real Estate: The Global Outlook for 2018,” PricewaterhouseCoopers and the Urban Land Institute, March 2018.
National Assn. of Realtors®

Real Estate Returns

2018 RE Asset Subclass Returns by Property Type (YoY/Last 5 Years/Historical Avg.)



Source: NCREIF, MSREI Strategy, data as of December 2018.

Annualized Returns (unlevered)

15%

10%

5%

0%

Apartment

Overall

CBD

Suburban

Industrial

Overall

Malls

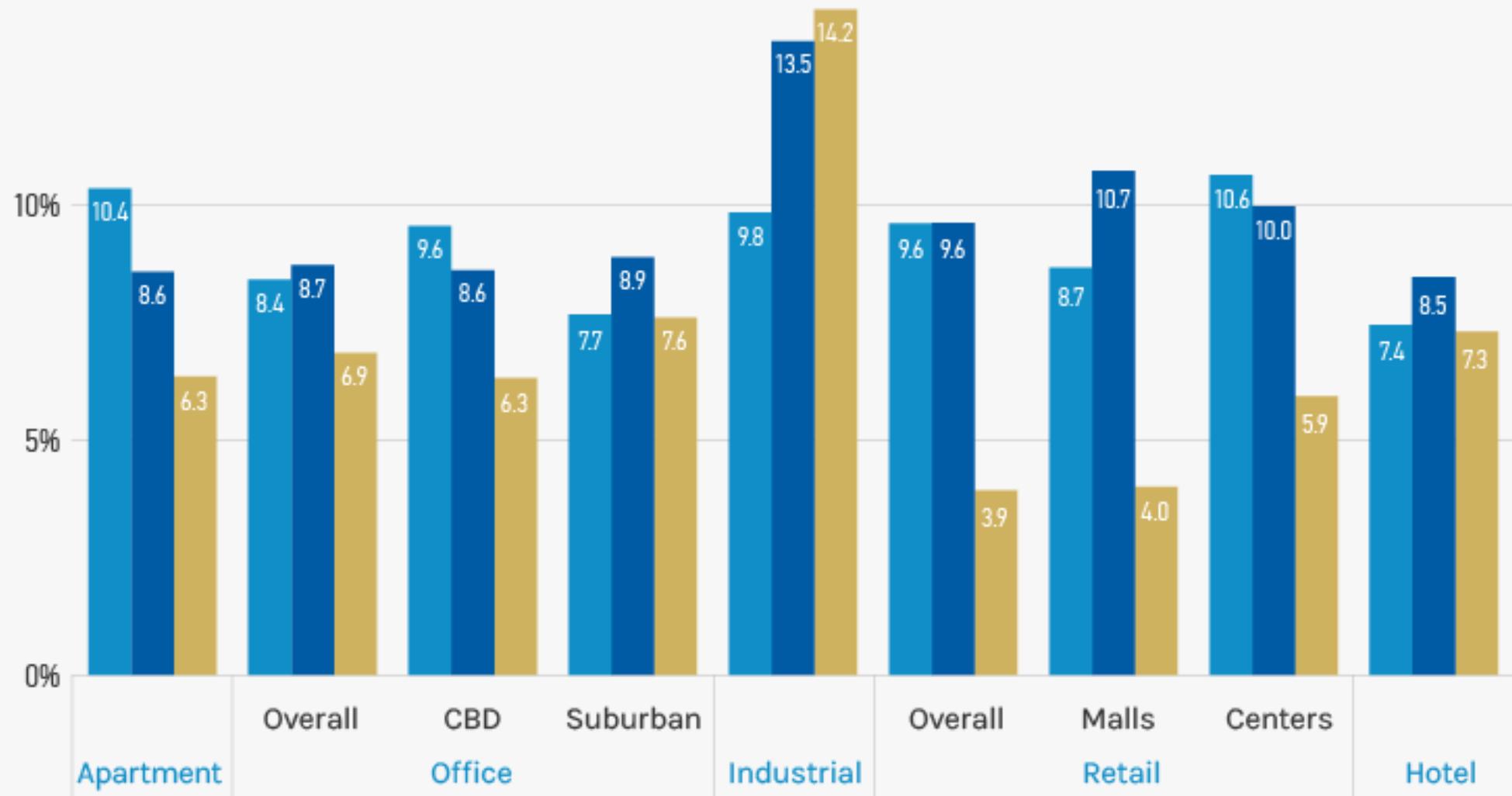
Centers

Hotel

Historical Average

Last 5 Years

YoY

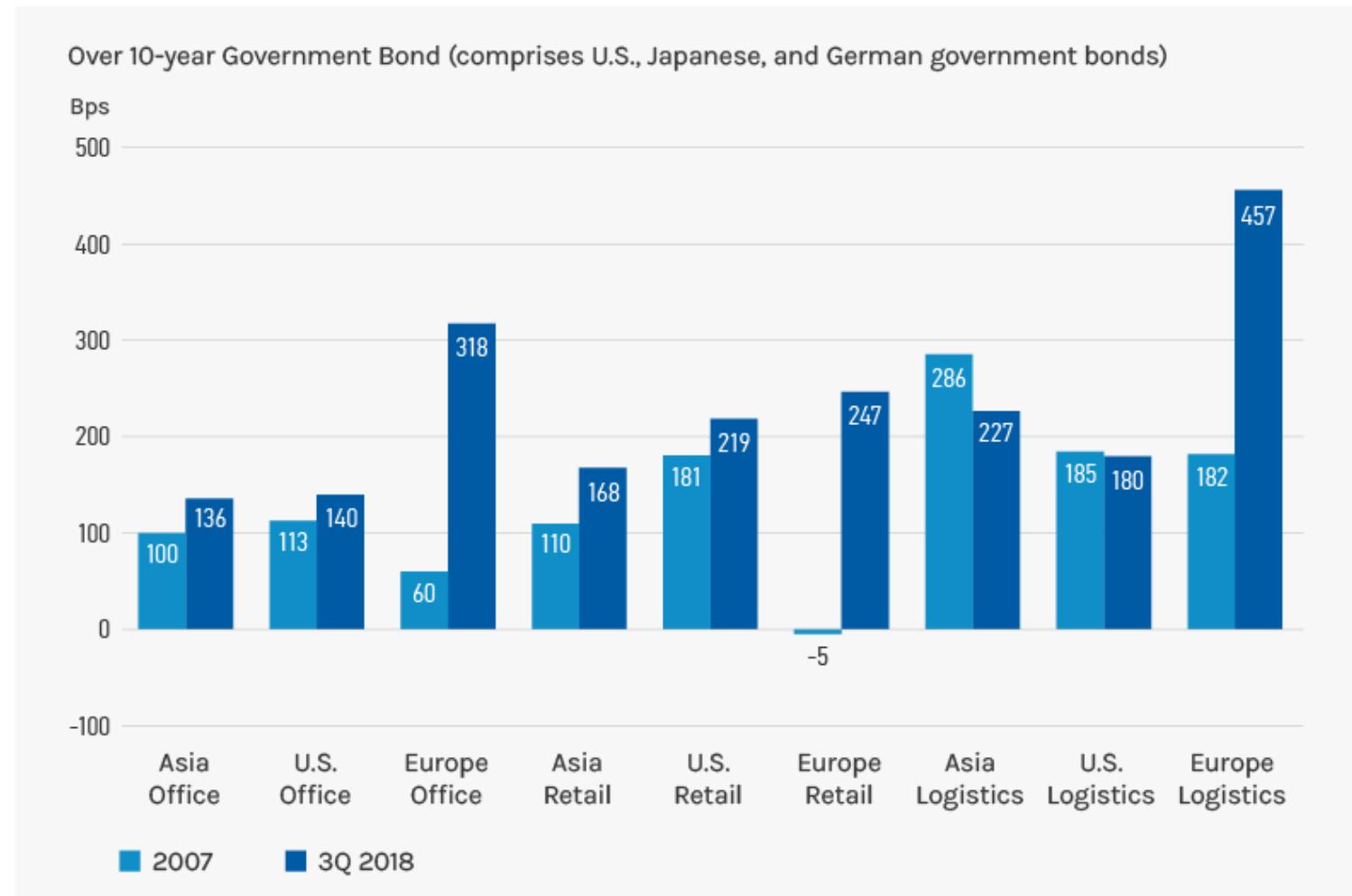


Real Estate Tech

- Cap rate – Capitalization rate
 - The rate of cashflows coming from a property scaled by the value of the price of the property

Real Estate Returns

2018 Cap Rate Spread



Source: Bloomberg, PMA, NCREIF, MSREI Strategy, data as of November 2018.

Over 10-year Government Bond (comprises U.S., Japanese, and German government bonds)

Bps

500

400

300

200

100

0

-100

Asia
Office

U.S.
Office

Europe
Office

Asia
Retail

U.S.
Retail

Europe
Retail

Asia
Logistics

U.S.
Logistics

Europe
Logistics

2007

3Q 2018

Source: Bloomberg, PMA, NCREIF, MSREI Strategy, data as of November 2018.



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What is Real Estate Tech?

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Definition of “Real Estate Tech”

- Excessive proliferation of acronyms
 - RealTech
 - PropTech
 - Proptology
 - RETech
 - CRE Tech
- Rotate the definition
 - Focus on being additive or disruption

Real Estate Tech Example

- Zillow
 - Online portals and listing aggregators for residential real estate were on the scene back in the late-90s dot-com boom.
 - Has leveraged multiple functionalities, relationships with brokers and expanded data access to become a category leader
 - Gives a democratized view into regions, properties, and other data

Real Estate Tech Example

- WeWork
 - A leading real estate tech company
 - A transformation of office space via the progress of technology and changing social values and workplace methods
 - A category leader in commercial real estate leasing, and gave it the market positioning and valuation of a unicorn tech startup



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Size of the Global Real Estate Tech Market

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Size of Global Real Estate Tech Market

A global market snapshot of venture capital investments in real estate tech.

Total Companies Funded: M-M

- December 2018: 22 (-8.3%)
- November 2018: 24

Funding Amount

- December 2018: \$108,438,923 (-96%)
- November 2018: \$3,283,446,028

Largest Amount Raised: Global

- \$30 Million - NeueHouse
- \$25 Million - Juniper Square
- \$13 Million - Zesty.ai

Median Funding Amount

- December 2018: \$3,188,124 (+121%)
- November 2018: \$1,443,876

Size of Global Real Estate Tech Market

Company	Location	Funding Amount (USD)
NeueHouse	New York, New York, United States	\$30,000,000.00
Juniper Square	San Francisco, California, United States	\$25,000,000.00
Zesty.ai	Oakland, California, United States	\$13,000,000.00
WhyHotel	Washington, District of Columbia, United States	\$10,000,000.00
Dazhu	Pingxiang, Hebei, China	\$7,260,000.00
Facilio	Atlanta, Georgia, United States	\$6,400,000.00
Home Hero	Herzliya, Tel Aviv, Israel	\$4,000,000.00
BuildSupply	Gurgaon, Haryana, India	\$3,538,370.00
Residently	London, England, United Kingdom	\$3,188,124.00
Wealth Migrate	Atlanta, Georgia, United States	\$1,531,731.00

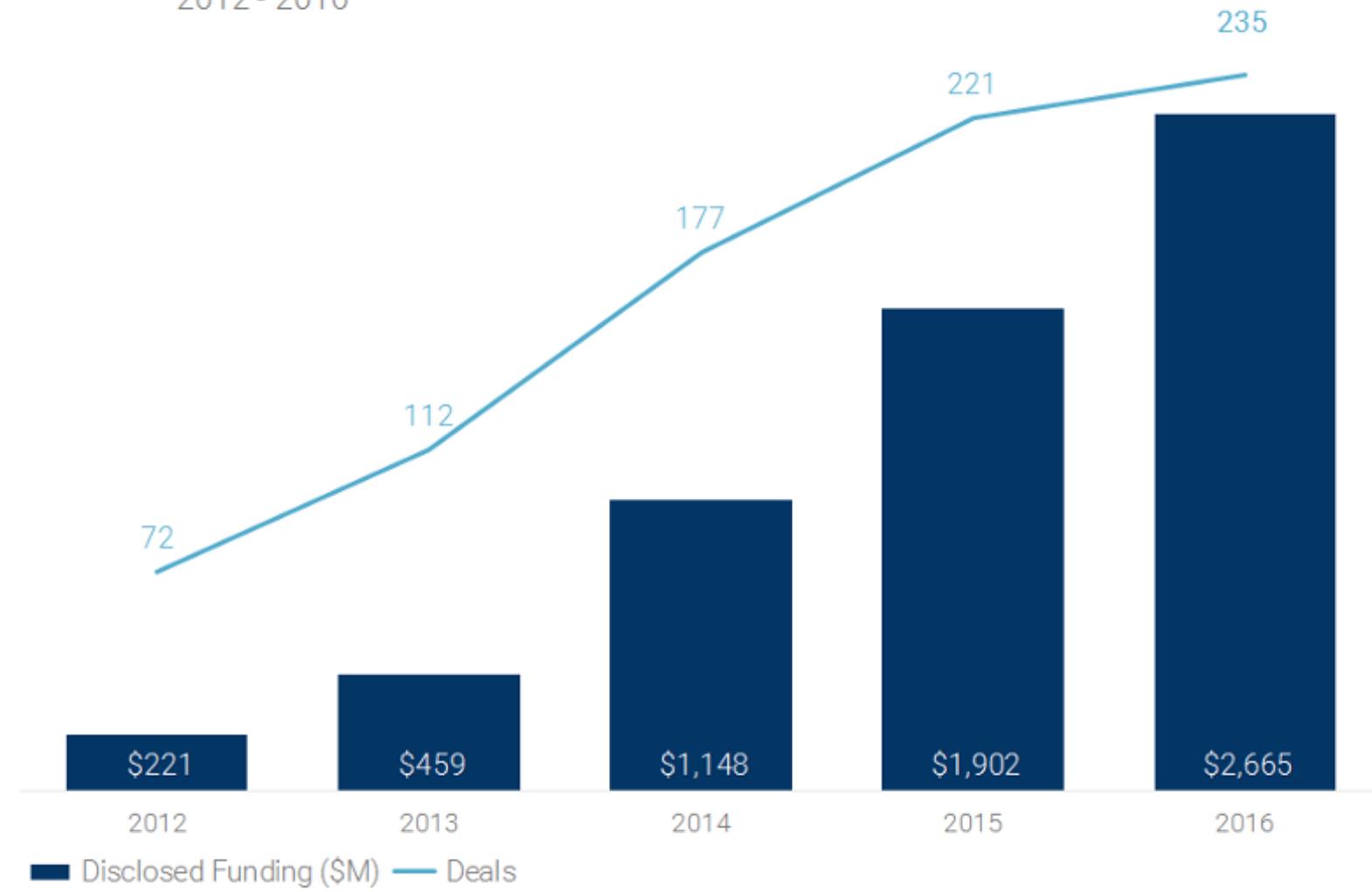
RE Tech: Venture Capital Investments in Real Estate Tech, December 2018

Size of Global Real Estate Tech Market: Rapid Growth



REAL ESTATE TECH GLOBAL FINANCING HISTORY

2012 - 2016



Source: CBInsights.com



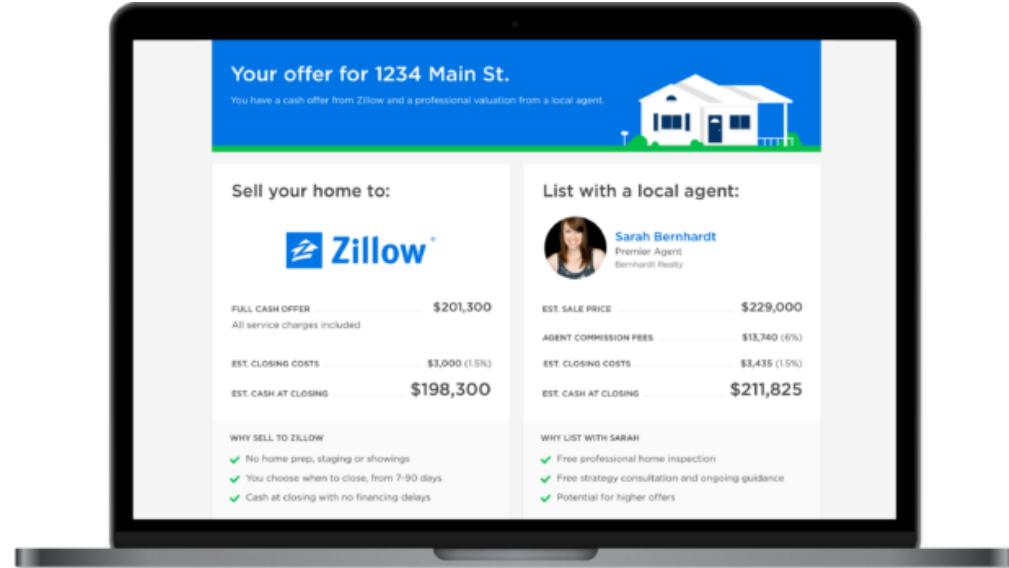
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Real Estate Tech: Exemplary Companies

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Real Estate Tech: Exemplary Companies



Zillow



WeWork: 1601 Vine St., Los Angeles

Real Estate Tech: Residential Sector

- Maintains a pricing system and data availability industrially
- MLS (Multiple Listing Services)
 - Used to be run by local affiliates of the National Assn. of Realtors® (NAR), the largest U.S. trade association
 - It's impractical to search for homes for sale without access to MLS data, which used to be mediated by realtors
- Today, the system is still partially owned and effectively controlled by NAR, but due to regulatory pressure and changing business models, access to some (not all) MLS data has been democratized

Real Estate Tech: Residential Sector

- The historical commission structure of residential real estate sales (the “6% rule”) has been more resistant to change
- Technology is making it easier to disintermediate brokers, or force them to compete on price
- Residential real estate transactions usually require inspections, title services, evaluations, and an appraisal if financing is involved



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Disruptive Incrementalist

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“ The next generation of real estate technology companies is taking a more expansive approach, dismantling existing systems and reimagining entirely new ones that address our growing demand for affordability, community and flexibility.”

- PATRICIA NAKSCHE AND JOHN LIN, TRINITY VENTURES

“ Technology has upended nearly every major industry — with one notable exception: real estate. Instead of disrupting the sector, the last generation of real estate technology companies primarily improved efficiencies of existing processes. Industry leaders Zillow/Trulia and LoopNet helped us search for homes and commercial real estate better and faster, but they didn’t significantly change what we buy or lease or from whom or how.”

- PATRICIA NAKSCHE AND JOHN LIN,
TRINITY VENTURES,



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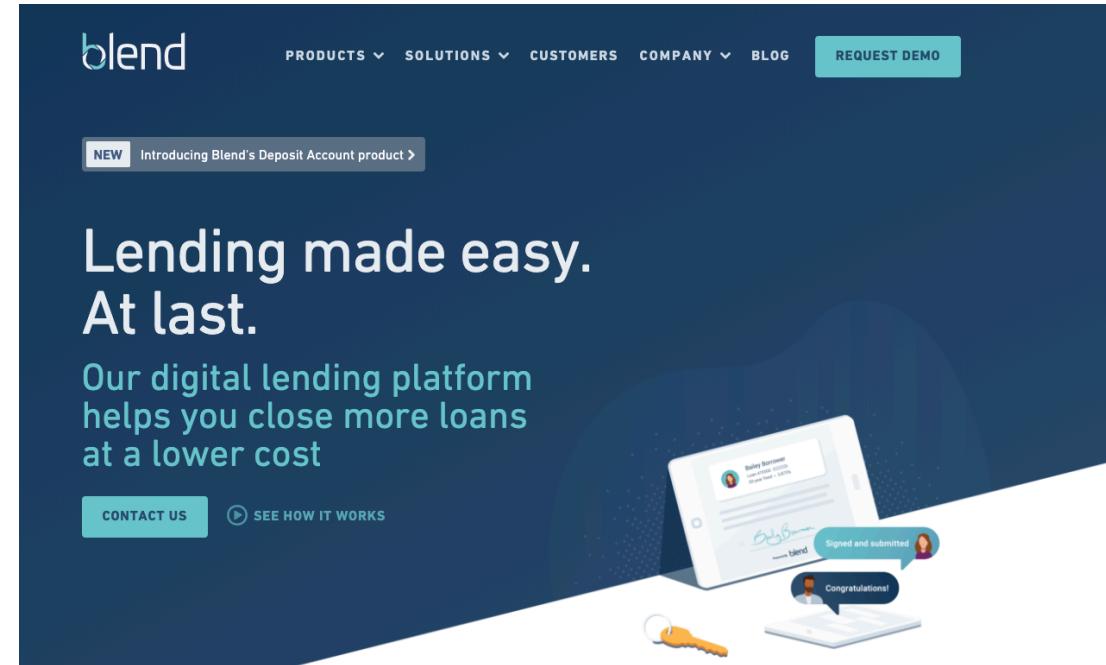
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Residential Real Estate Tech Startups

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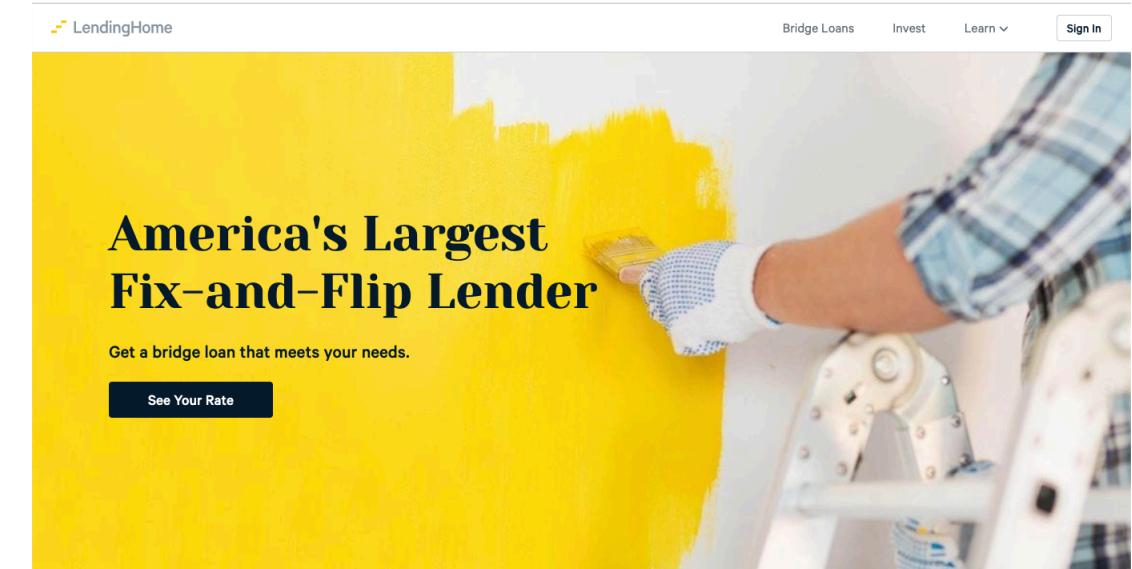
Snapshots of Residential Real Estate Tech Startups – Blend

- Cloud based software firm
 - Always applicants to share financial data with lenders
- Processes over \$1 billion
- Expanded to market services and products like homeowners insurance
- \$160MM VC funding including Greylock Partners, Lightspeed Venture Partners
- Valuation: \$500MM (Forbes Fintech 50, Feb. 2019)



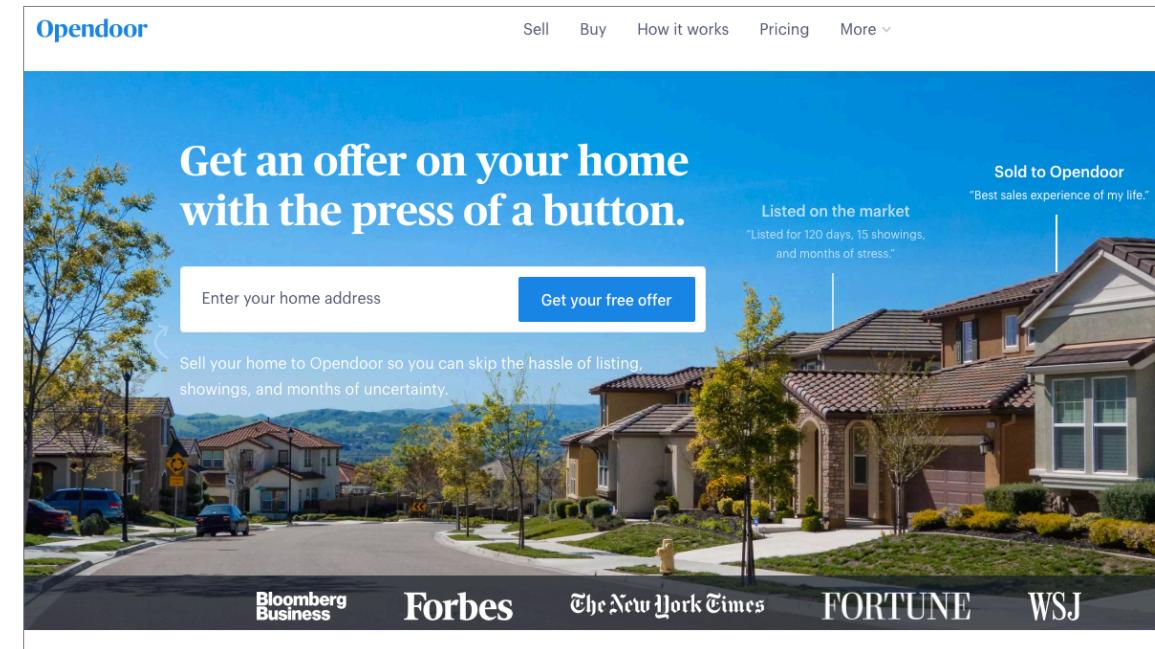
Snapshots of Residential Real Estate Tech Startups – Lending Home

- Robo-lending platform offering bridge loans to active participants
- Underwritten by accredited investors and institutions
- \$3.5B+ in loans funded
- \$166MM VC funding including Foundation Capital and Ribbit Capital
- Valuation: \$1 billion



Snapshots of Residential Real Estate Tech Startups – Open Door

- Uses data & algorithms to value and buy homes in 20 cities, with 7% charge to sellers
- Fixes up and resells homes
- Zillow recently entered this business
- \$1B funding including \$400MM from SoftBank
- Valuation: \$1 billion





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Trends in Residential Real Estate Tech

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Trends in Residential Real Estate Tech

- Significant changes in the residential real estate marketplace that are driving the current wave of disruptive startups
 - Demographic changes
 - Transaction preferences

Trends in Residential Real Estate Tech

- Trends encouraging disruption
 - Affordability
 - Millennials spend a greater share of their household income on rent than previous generations did at the same age
 - More Millennials live at home with their parents
 - The share of Americans who got married, had kids, got a job and lived on their own by age 34 fell from 45% in 1975 to 24% in 2016

Trends in Residential Real Estate Tech

- Trends encouraging disruption
 - Affordability
 - In several areas with the greatest concentrations of desirable, high paying jobs, home ownership is out of the question for middle class wage earners
 - San Francisco - the median sale price of a home is \$1.36MM
 - Divvy - markets rent-to-own homes, an alternative to mortgages for those with low credit scores
 - Bungalow - a combination property manager and roommate-finding service managing urban group homes

Trends in Residential Real Estate Tech

- Trends encouraging disruption
 - A search for community
 - Millennials are the first to experience the workforce wholly within the prism of smartphones and 24/7 connectivity
 - The focus on digital community comes at the expense of traditional community activity
 - Real estate tech trends, and the startups which exploit them, attempt to facilitate community involvement

“ Longer work hours make community harder to build organically, so many millennials place value on employers and landlords who facilitate it for them.”

- PATRICIA NAKSCHE AND JOHN LIN, TRINITY VENTURES

Trends in Residential Real Estate Tech

- Trends encouraging disruption
 - Flexibility
 - The “Gig Economy,” largely enabled by tech, has highlighted the increased salience of flexibility for workers and consumers alike
 - Furniture rentals
 - Feather, Fernish and CasaOne with online shopping and offline delivery
 - Knock buys a new home for a customer, for cash, before the customer lists their old home
 - Helps with renovations and financing
 - Pricing is 6% commission, but split evenly between the buyer and seller of the original home



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Commercial Real Estate Sector

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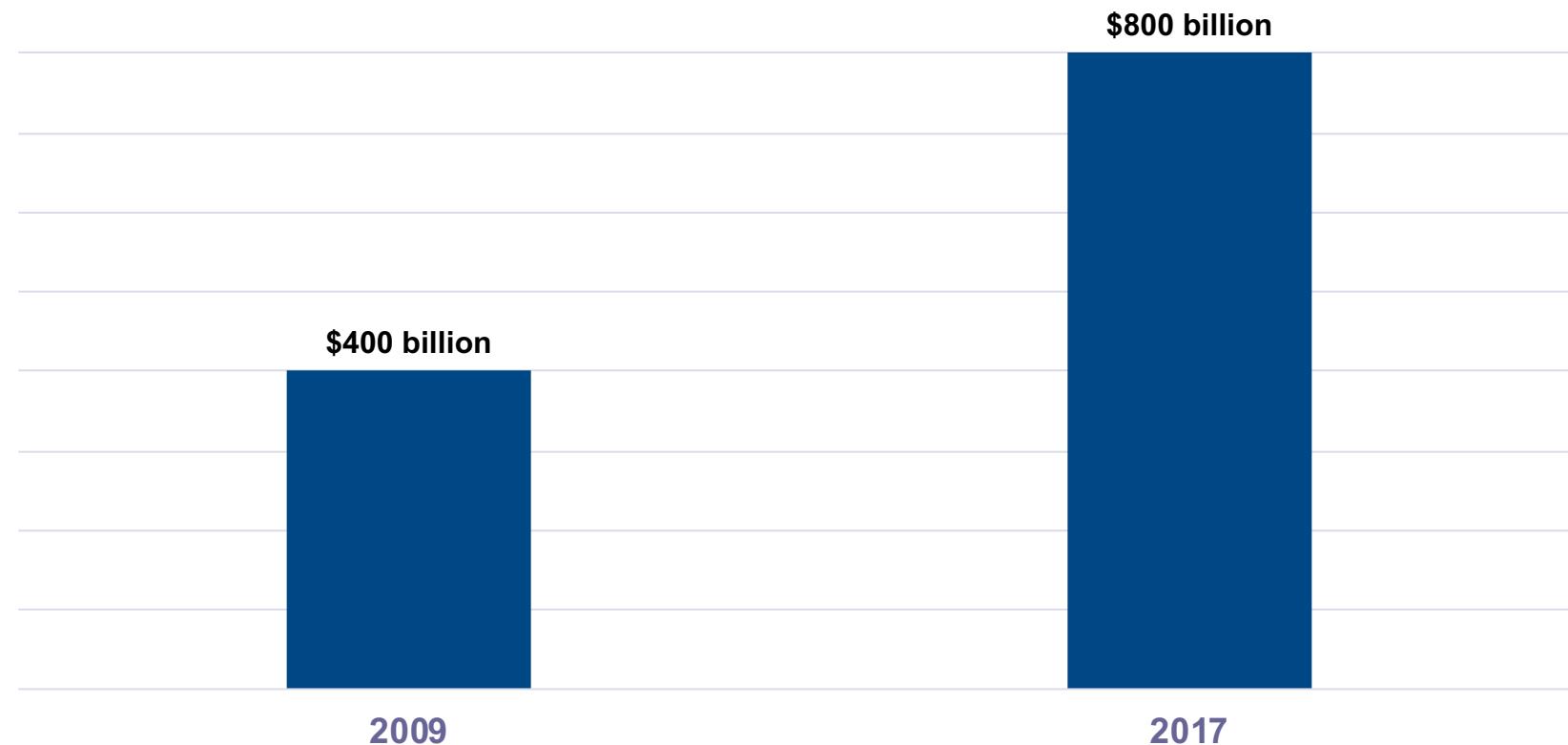
Real Estate Tech: Commercial Sector

- CRE Tech sector saw \$9.6 billion in investment last year
 - 23% drop from 2017's investment level
 - Due to the decline of SoftBank's \$2 billion investment in WeWork, compared to a \$4B commitment in 2017*
- CRE Tech goes beyond apps and algorithms
 - Includes other RE-related tools such as appliances in the Internet of Things
 - Nest Tag key fobs to control home functions, smart thermostat, home automation
 - Photovoltaic glass to save on energy while generating it
 - The doubling of institutional capital in CRE has enabled innovative business models

* Nicholas Rizzi, Commercial Observer, Mar. 4, 2019.

Real Estate Tech: Commercial Sector

Institutional Capital Committed to Commercial RE (\$ billions, source: Prequin)





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Data

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Commercial Real Estate Tech: The Data Nexus

- More than residential real estate, the commercial sector is data-driven
- Property management is often complex, deal sourcing and due diligence requires mountains of data, and transaction details are crucial to have but difficult to obtain reliably
- Some CRE Tech startups are industry-optimized versions of online applications familiar from other industries
 - Workframe – Tenant relations portals and transaction data aggregators
 - WeSmartPark – Airbnb for empty garage parking spaces
 - Bowery – Automating the CRE appraisal process
 - Partnered with mega-broker Cushman & Wakefield



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Commercial Real Estate Tech Examples

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Snapshots of More CRE Tech Startups – Cadre

- Online platform for buying and selling commercial and multifamily real estate
- Sourcing deals for accredited investors and institutions with lower fees and shorter lockups than private equity
- \$133MM VC funding including Thrive Capital & Andreesen Horowitz



Snapshots of More CRE Tech Startups – Fundrise

- \$56MM funding from Renren, Guggenheim Partners and others
- Crowdsourcing platform for diversified real estate portfolios
- Not restricted to accredited investors; minimum investment \$500
- Manages \$2.5B worth of real estate
- Valuation: \$800MM



Snapshots of More CRE Tech Startups – Cherre

- “AI-powered” data aggregation firm that collects & analyzes data from thousands of public, private and internal sources
- Funding: Latest seed round \$9MM
 - 15 investors including VCs and hedge funds
- Valuation: ???





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Conclusion

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Conclusion

- The economic implications are vast because of the sheer size of the global and U.S. markets
- Venture capitalists are a key part
- Startups, innovation, and entrepreneurial activities are critical
- However, there are industry heavyweight companies such as CBRE taking the investment lead
- Basic tech innovation such as the Internet of Things/Smart houses are driving the pace of innovation and disruption

Conclusion

- Real estate tech was a tiny sector until recently
- Main financial goals of real estate tech include efficiencies, profitability, boosting margins from increased operational efficiencies, often through disintermediating humans



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