Moody's | Better decisions

Moody's Analytics | CRE

Miami Association of Realtors-Midyear Conference

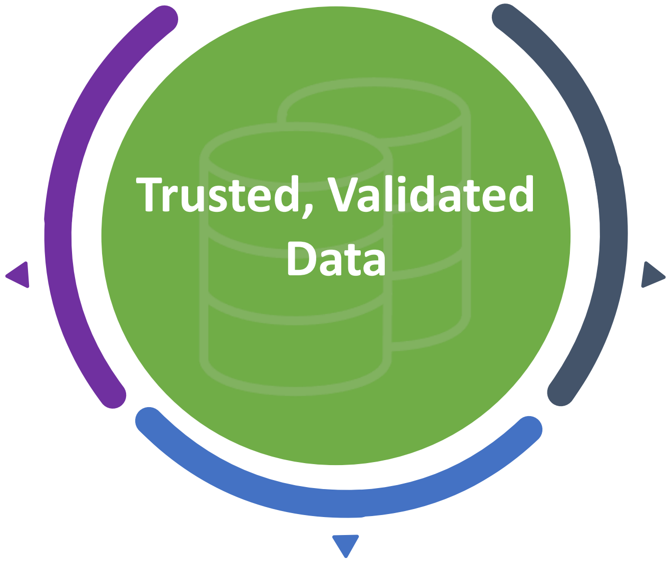
May 13 2022

What is Moody's Analytics CRE?

- A suite of solutions powered by trusted, validated data.

Lending Solutions

Integrate powerful property performance metrics, timely portfolio management, and custom market scenarios at every stage of the deal process.



Broker Solutions

Generate revenue, build relationships, and optimize resources by leveraging the industry's most valuable all-in-one property data and marketing platform.

Investment Solutions

Integrate data, analytics, and insights into your workflow to save time, increase consistency, and support better decisions at every stage of the investment cycle.

Expert-Level Insights

Predictive, Dynamic Analytics

Powerful, Flexible Workflow Tools

Modern API Integrations

Exclusive Advisory Services

Ingredients for Growth

- Our tools work together to provide the industry with leading solutions.

Moody's ANALYTICS | CRE

Rewriting the standard in CRE.

REIS®

- Individual Property Performance
- Rent, Sales, & New Construction Comps
- Market & Submarket Narratives
- Market Trends & Forecasts
- Custom Market Analysis
- Location Scoring
- Rent Prediction Model

Catylist

- National Exposure for Local Market Listings
- Enterprise-Level Data
- Research and Listing Support
- Tool for Commercial Brokers

MA CRE API

- Fully Researched Database
- Historical property performance data
- Validated and public sales transactions
- New construction projects
- Active Listing Information
- CMBS transaction data

CreditLens™

- Lending and origination system
- Facility & Property Analysis
- Customized Risk Rating Models
- Financial Spreading
- Business Rules
- Document Management
- Flexible dashboards and portfolio insights
- Credit Memo generation

QUIQproperty

- Automated Rent Rolls &
- Natural language processing algorithms

CMM™

- Risk Rating and scorecards
- PD and LGD models
- Scenario Analysis
- Stress Testing

Commercial Exchange

- Active For Sale and Lease Listings
- Fully Researched Database
- Integrated Marketing Tools
- Custom Reports & Brochures
- Lead Generation & Tracking
- Integration with Catylist

Moody's Analytics KYC

- Anti-Money Laundering Data
- Know Your Consumer (KYC) Data
- Sentiment analysis
- Due Diligence
- News

Moody's ESG

- Climate Risk Insights from 427
- Climate Data
- Risk Models & Scores
- Integrated credit & operational risk analytic tools
- On-demand risk analytics
- Climate & Environmental Risk Exposure Assessment

Economy.com & Data Buffet™

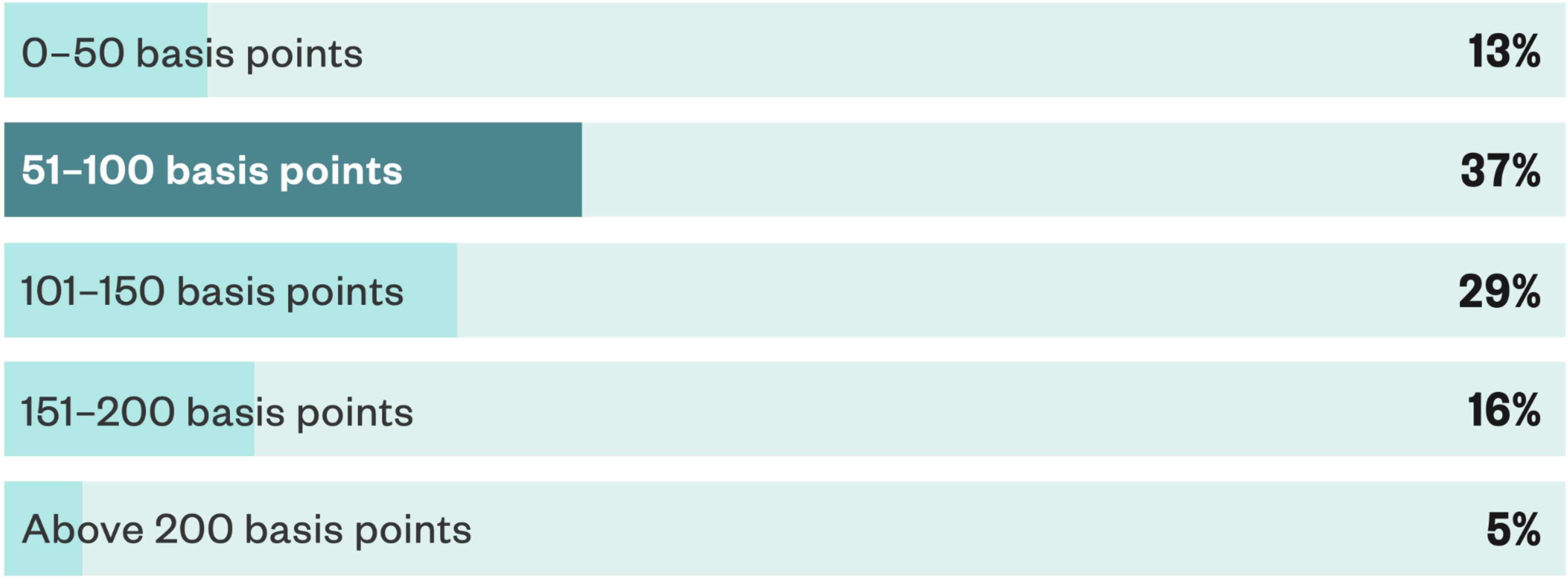
- Analysis of Key Economic & Financial Markets
- Global Economic Releases Analysis
- Macroeconomic Forecasts
- Custom data delivery & viewing options

DATA

ANALYTICS

WORKFLOW

How much of an increase in interest rates can the commercial real estate (CRE) industry absorb before there is a material adverse impact in 2022?



37 percent of respondents believe the CRE industry is looking over the edge and can only absorb 51-100 basis points before there are adverse consequences.

29 percent of respondents think the market is stronger and can absorb 101-150 basis points. This market confidence may be a reflection of historic low rates in 2021, sound fundamentals, and plentiful debt and capital.

What were CRE industry executives thinking at the start of the year?

Seyfarth

2022 Real Estate Market Sentiment Survey

In January 2022, Seyfarth surveyed real estate executives via email to gauge their top concerns for the coming year, which included owners, developers, investors, asset managers, brokers, lenders and consultants. 128 respondents took the survey.

In the 1970's, the US went through a period of "stagflation", driven by government deficit spending on the Vietnam War and the high impact of the first Arab Oil Embargo of 1973. This led to record inflation coinciding with a major economic recession. This troubling combination of a stagnant economy with higher, energy-cost driven, supply side inflation resulted in a major hit to CRE. **Institutional CRE investments took nearly a 20% nominal hit between 1972 and 1975, which was even higher when inflation adjusted.**

However, if oil prices drive down consumer and business demand, but oil supply and other supply issues keep general inflation above average, assets like CRE may not be able to serve as a pass-through vehicle for higher prices, and they may see substantial value declines (at least temporarily) if interest rates rise commensurately with inflation, like they did to some degree in the early 1970s.

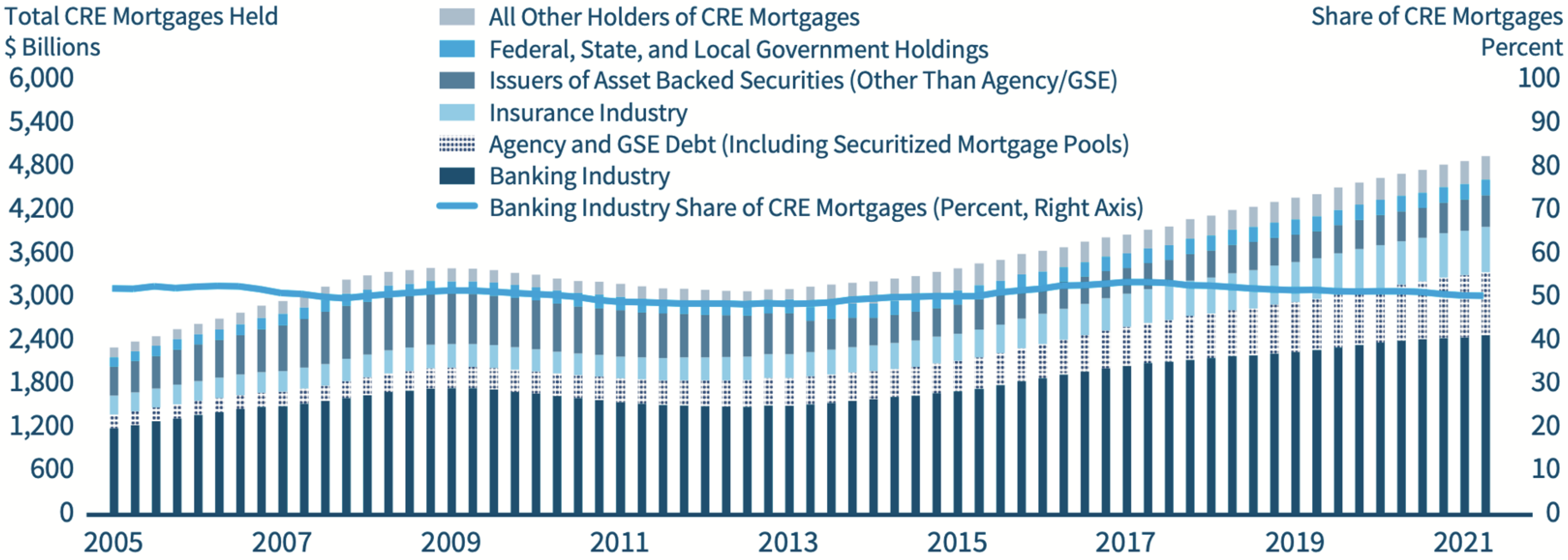
Cap rates can often be “sticky” relative to moves in interest rates, but persistently rising interest rates do eventually apply upward pressure on cap rates.

The long-term average spread of cap rates to UST for properties backing ACLI multifamily loans in the last 13 years was 318 basis points (bps).

“Normal” periods of 1993-2004 at 302 bps and 1965-1973 at 309 bps.

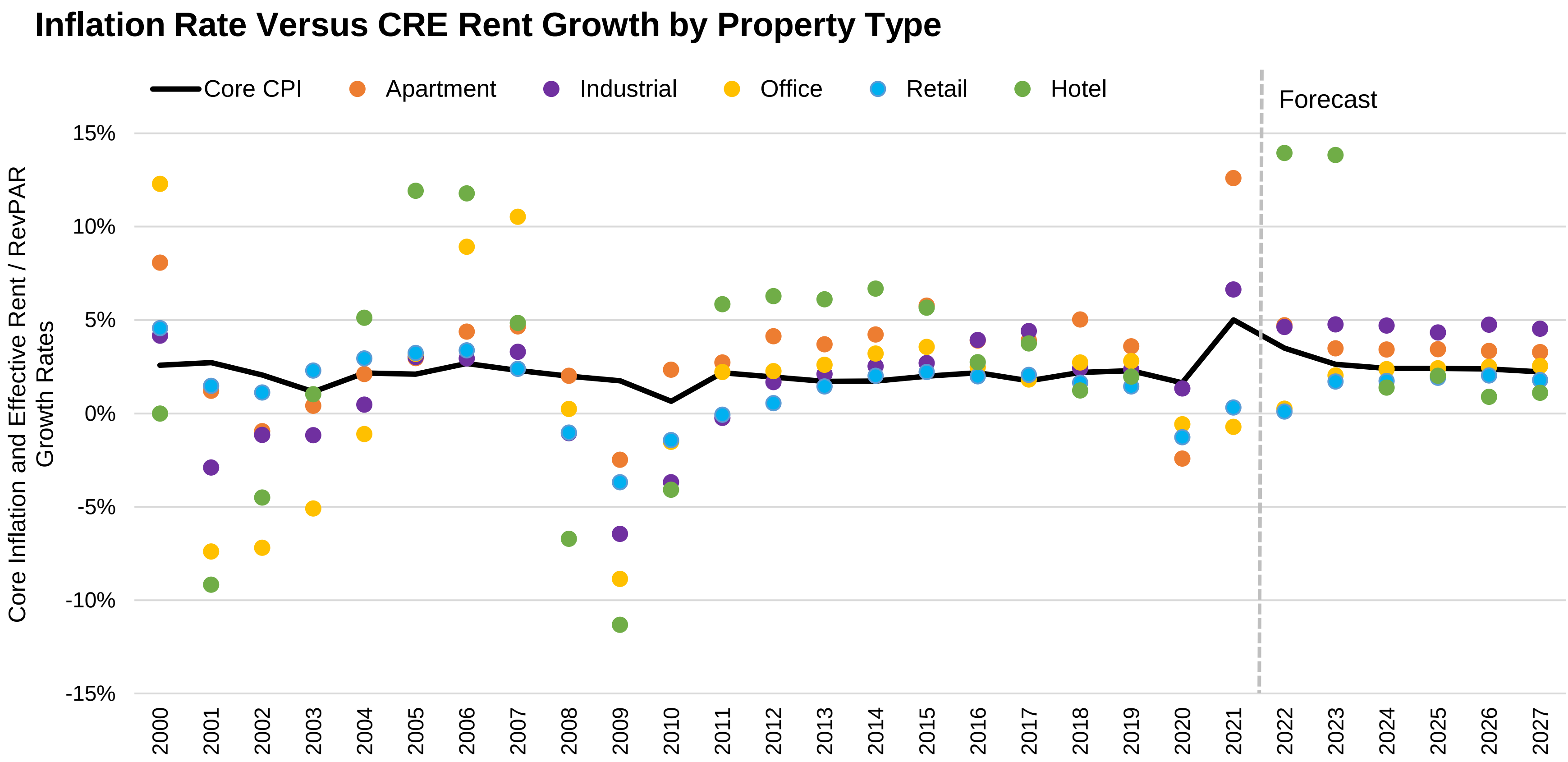
This indicates some moderate wiggle room for lower cap rate spreads.

Banks Hold More CRE Loans Than All Other Market Participants Combined and Their Market Share Has Held Steady for More Than a Decade



Source: Federal Reserve Board, Financial Accounts of the United States, Levels of Financial Assets and Liabilities, by Sector and by Financial

Inflation & Rent Growth



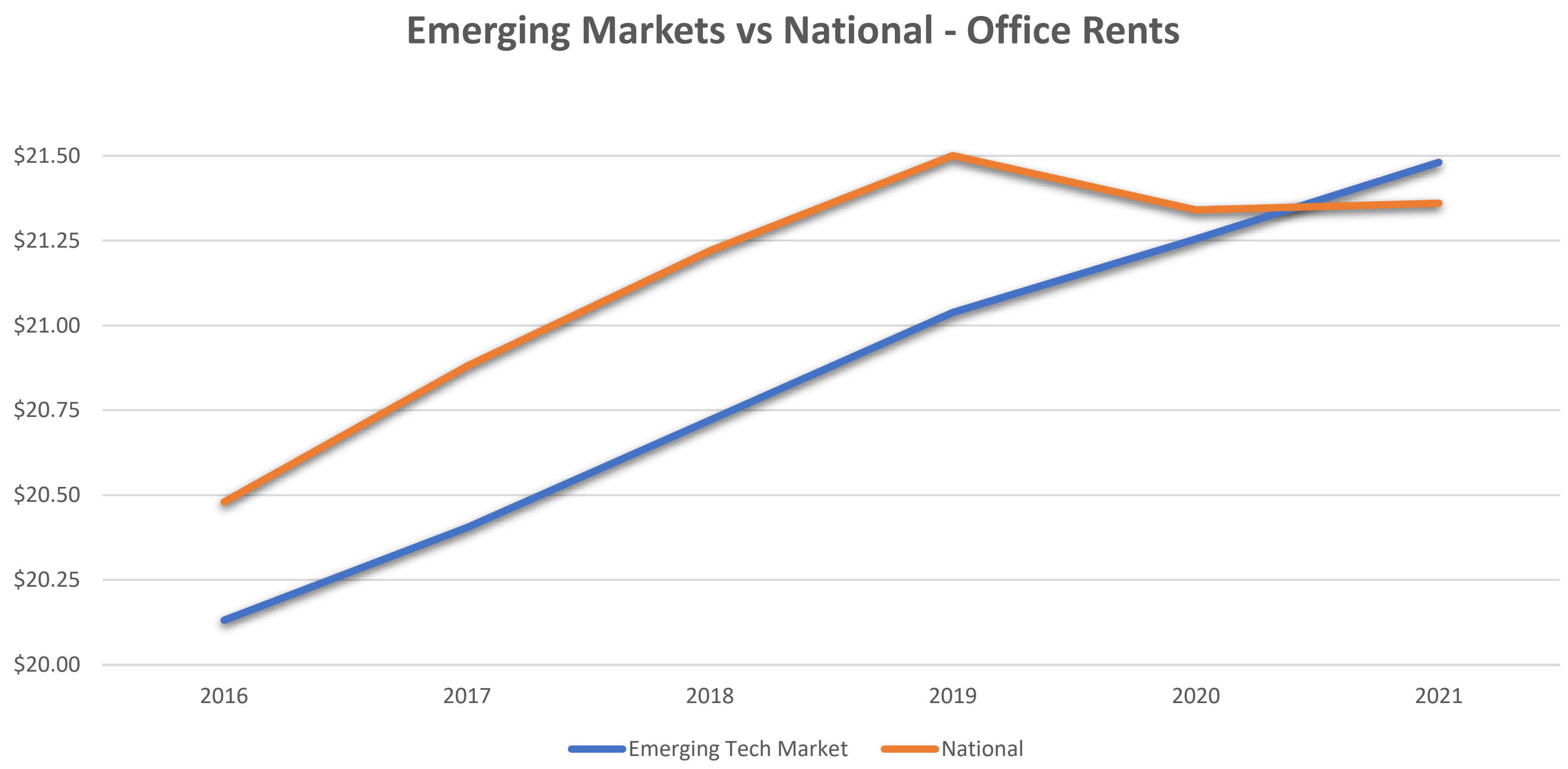
Notes: Core inflation is all consumption items less food and energy.
Sources: U.S. Board of Governors of the Federal Reserve System, Moody's Analytics/CRE, Moody's Analytics/Economy.com

Source: Moody's Analytics CRE

Emerging Tech Markets

Metros
Ventura
Buffalo
Greensboro
Miami
Greenville
Knoxville
New Orleans
Norfolk
San Bernardino
Nashville
Lexington
Wichita

Source: Moody's Analytics CRE



PropTech

Real Estate Tech360

Built by CREtech | Led by Kastle

Fintech

Notarize, obie, Jetty, POLLY, Lendflow, DocuSign, claimant, bowery, Acorn, TrustLayer, LeaseLock, SNAPPT, GREAT JONES, doma, JONES, snapdocs, SPRUCE, PeerStreet

Investment Management

mri, Dynamo, REALPAGE, CS CROWDSTREET, INVESTOR DEAL ROOM, FUNDRISE, Altus Group, REALTYMOGUL, CADRE, GROUNDBREAKER, appfolio, Lev, DEALPATH, Juniper Square, AGORA, SyndicationPro

Construction

kespry, ORACLE, goformz, AVITRU, billd., DODGE, Assignar, EquipmentShare, AVVIR, DOXEL, Join, DOCUMENT CRUNCH, Command Alkon, F_OS, BUILDERTREND, ENERGY VAULT, e-Builder, Mosaic, handle, ofBusiness, PROCORE, workrise, MIGHTY BUILDINGS, sensat, LOCUSVIEW, StructShare, iAuditor, Archibus, OPENSPACE, VERSATILE, aurigo, NEXII, DroneDeploy, GORDIAN, Shepherd, HUBBLE, EstimateOne, Prescient, Viewpoint, AUTODESK

Building Operations

ACCESS CONTROL / VIDEO SURVEILLANCE

Honeywell, Farpointe Data, DMP, RED HAWK, AXIS, brivo, Genetec, SwiftConnect, LENEL S2, ZKTeco, LATCH, Feenics, KASTLE, GALLAGHER, ASSA ABLOY, openpath, AMAG, BluBOX, dormakaba, GALAXY, Technologies, IDENTIV, princeton IDENTITY, ALLEGION, genea, VERKADA, HID, ButterflyMX, ICT, SALTO, KEYSCAN, kisi, Nexkey, SWIFTLANE, KERI SYSTEMS, STid, inner range, SmartRent, WaveLynx, OPEN OPTIONS

PARKING MANAGEMENT

parksol, metropolis, parkhub, ZEPHIRE, arrive, SPOT HERO, Genetec, KASTLE, UbiPark, GATEWORKS, smarking, PARQEX, parkalot, T2 SYSTEMS, PARKOFFICE, BESTPARKING, FLASH, spaceti, INTEGRAPARK

VISITOR MANAGEMENT

BUILDING, brivo, aether, VERKADA, EntryLogic, Envoy, iLobby, KASTLE, LATCH, The Receptionist, sharry, irisys, ButterflyMX

IOT/SMART BUILDING SOLUTIONS

Building Engines, iApartments, envio, senseware, 75F, buildingsIOT, cohesion, DISRUPTIVE TECHNOLOGIES, BUILTSPACE, VERGESENSE, dwelo, BLUE PRINT POWER, COBLI, iLobby, INFOGRID, safehub, inteliGlas, BRAINBOX AI, join, MAPPED, SimpliSafe, PassiveLogic, Plume, wint, TANGO, XANDAR KARDIAN, SAPIENT, IOTAS, PointCentral, SWITCH

Property / Portfolio Management

Hemlane, entrata, Lobby CRE, cohesion, REALPAGE, mri, Lessen, PROPERTY MATRIX, YARDI, MYND, saltbox, taskeasy, Buildium, Darwin, SUPER, STRATAFOLIO

Energy Management

Comfy, measurabl, aurora, enertiv, Honeywell, CORTEX, TURNTIDE, BRAINBOX AI, xeal, microshare, LOGICAL BUILDINGS, DATAKWIP, view, CARBON LIGHTHOUSE, prescriptive data, ORRO, 75F, CLARITY AI, WiredScore, voltus, aquicore, BLOC POWER, vutility, wattbuy

Marketplace

CRM / MARKETING

MeetElise, VTS, REALPAGE, YARDI, LIGHTBOX, knock, Anyone Home, VIEW LABS, propertybase, apto, Addressable, RealNex, Ascendix, PERQ, rethink, Matterport

LISTING SERVICES

biproxi, rethink, funnel, CoStar Group, RCM LIGHTBOX, Lev, Catylist, CREXI, SQUAREFOOT, VTS, BREVITAS, TENANTBASE, theBrokerList, CoreLogic

Data & Analytics

COMPSTAK, CoreLogic, REALPAGE, Trepp, LIGHTBOX, cherre, NAVIGATOR, BLACK KNIGHT, Locatee, Placer.ai, SWITCH, MSCI, REAL, reonomy, GEOPHY, unacast., CoStar Group, AXIOMETRICS, YARDI

Integrated Workplace Management Systems

Robin, officernd, officespace, corrigo, TANGO, Archibus, MANHATTAN, ANGUS SYSTEMS, office + SpaceIQ, eden, mri, office, saltmine, fm:systems, Envoy, PLANON, TRIRIGA, BuildingEngines, cove

Tenant Experience

Latchel, HAPPYCO, host, cove, eden, Clutter, lane, Alfred, SPACEFLOW, EQUIEM, officernd, amenify, teem, venn, cohesion, HqO, hydra studios, livly, RISE BUILDINGS, AVO, Cobu

Flex Space & Software

wework, DAVINCI, workthere, INDUSTRIOUS, convene, essensys, Envoy, officernd, cove, Flexspace, Flexe, Serendipity Labs, IMPACT HUB, LIQUIDSPACE, IWG

Another logical way to Categorize: Life Cycle of a Building

Market Analysis

Finance and Raise Capital

Land Assembly and Entitlement

Design, Build

Valuation for permanent financing

Lease

Operate and maintain

Harvest, sell

Data & Trends	Finance Debt and Equity	Brokers, Consultants & Development	Design, Contract	Value, Finance	Lease	Building Management Systems (BMS)	Brokerage
CoStar	CommLoan	Auction.com	Adobe	Altus	Yardi	Cohesion	BiProxi
CoreLogic	Peerstreet	BoomTown!	Autodesk	Black Knight	ARGUS	Appfolio	RealNex
VTS	REALInsight	RealNex	Inteliglas	GreenStreet	SpaceBase	RealPage	Loopnet, TenX
RealPage	RealtyMogul	Loopnet	~~Katerra~~	REIS	FunnelLeasing	SMS Assist	Reonomy
Reonomy	Rooftstock	VTS	Autocad	REONOMY	MRI Prolease	Tridium (Connectivity)	VTS
RCA	Fundrise	BiProxi	Cadpro	CREDiQ	Tenantbase	VTS	CREXI
GreenStreet	Cadre	Zonda	Revit	RealMassive	RealNex	Yardi	Knock

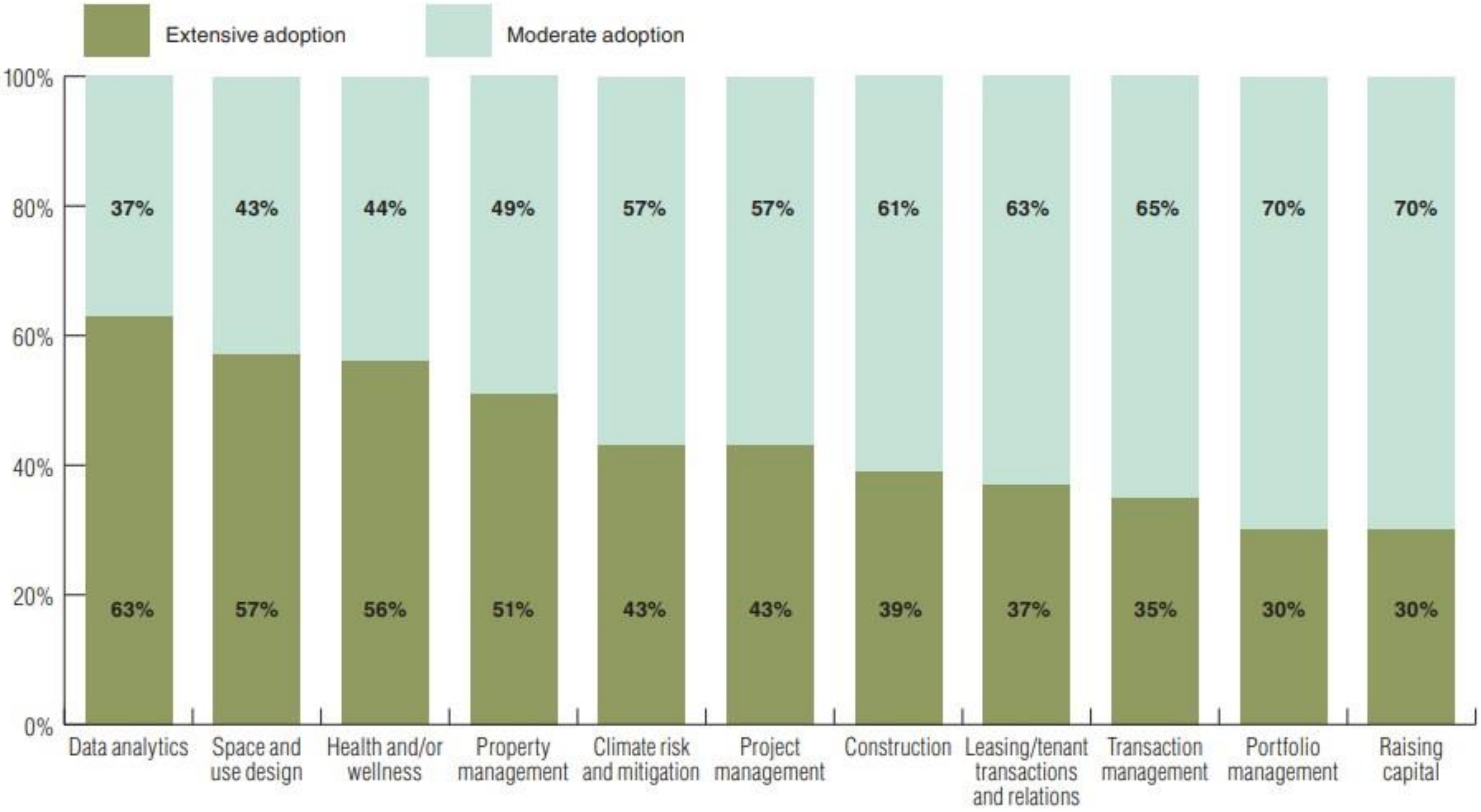
There are over 3,000 PropTechs in the US and over 8,000 in the Global Market

This doesn’t include ClimateTech!

Who is most at risk of losing jobs?

Category	Who will they disrupt?
Facility & Building Mngt	**Modest** disruption with more automation, **fewer on site staff required**.
Tenant Experience	**Modest** disruption as this **raises the bar on services not otherwise provided**.
Space Availability	**Modest** disruption: Some brokers feed off of smaller space reconfigurations.
Data Aggregators	Research standards are upped, more competition **could lower prices** from vendors like CoStar.
Appraisal	**Significant disruption:** Residential appraisers are becoming obsolete and commercial will eventually follow as we automate better C-AVMs.
Predictive Analysis	Ups the standards for better management and better investment decisions.
Productivity and Sales Tools	Broker efficiencies could lead to **fewer brokers over time**: Automated communication and report generation pulling in analytics and providing contact management.
Online Transaction Management	**Blockchain and automation creates major disruptions for** title companies and in-person closing services.
Visualization Tools	No significant displacement: Physical models are already obsolete.

Exhibit 1-14 **Level of Adoption of Proptech by Companies Recently Adopting New Technology, by Business Area**



Source: *Proptech: Changing the Way Real Estate Is Done*, Urban Land Institute, 2021.

Note: "Recently" refers to about the past three years; "new technology" refers to technology that is new to the respondent company. "Extensive adoption" includes "To a great/very great extent"; "Moderate adoption" includes "To some/moderate extent."

Takeaways

1) Automated buildings that are more efficient, safer, healthier and touchless are the future.

2) Machine learning and sensors, and cameras facilitate the trend.

3) Drones, cell phone tracking, foot traffic, visual images, VR, facial recognition and expert systems can improve actionable decisions on such processes as marketing, occupant productivity, security, realistic trade areas, or internal energy optimization.

4) There are too many firms out there trying to help the digitization and automation of CRE. At a minimum they must be secure and work with existing platforms. Filters should include CRE experience, significant capital raised, and limited out sourcing of critical systems. But there will be some winners.

5) ESG and sustainability are new reporting priorities and requirements and some of these go hand in hand with wellness and occupant productivity (Space as a service)

6) Disruptions will occur, residential appraisers are becoming dinosaurs, leasing brokers and accountants will all become more efficient, thereby we will need fewer of them over time. Will your job follow?