

Housing and Mortgage Monitor

Housing demand still outpacing supply

Housing market remains hot – stay constructive on non-agency RMBS sector

The Case-Shiller US house price index print this month came in up 16% year-over-year, the highest annual growth rate recorded over the past 40 years. Home price gains have been broad outside of the New York City and San Francisco urban metro markets, which have underperformed. Inventory remains constrained: fewer than 1 million single family homes are currently listed for sale vs. an average of 2.1 million over the 1995-2019 time period. The low inventory partly reflects a diminished number of new listings in 2021 vs. 2019, but is also driven by faster home sales, with homes on the market for just 21 days on average, vs. an average of 45 days during 2016-2019. Year-over-year home price growth rates are likely to move up even further in the coming months before eventually slowly moderating; we look for house price appreciation rates to still be elevated, at 7.6%, for full year 2022. We remain constructive on residential mortgage credit risk exposures levered to the housing market, including NPL seniors and select CRT B1s.

Apartment rents inflecting higher, positive for CRE CLOs

Apartment rents are up 7% year-over-year, led by double-digit gains in Southeast markets including Tampa, FL, Atlanta, GA, and Raleigh, NC. As with single family housing, New York and San Francisco apartment markets are lagging, but even in these cities rents appear to be finding a bottom. 95.6% of June 2021 rents were paid by the end of the month, down just modestly from 96.0% in June 2019. Apartment rents may be benefiting from the general moderation in single-family and multi-family housing construction over the past decade: total housing starts averaged just 1.1 million per year during 2011-2021 vs. 1.6 million during 1995-2005. We expect rent growth to moderate but remain solid going forward. Close to 50% of recent vintage CRE CLO transactions are backed by apartment properties; we would stay constructive on the sector.

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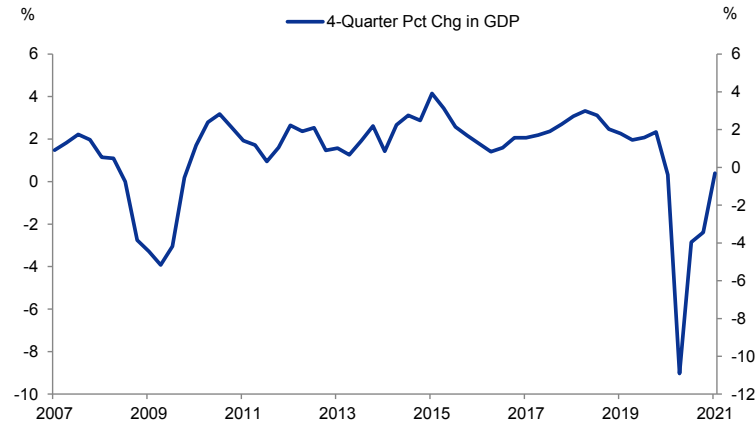
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Economic indicators continue to rebound

Exhibit 1: Year-over-year change in GDP

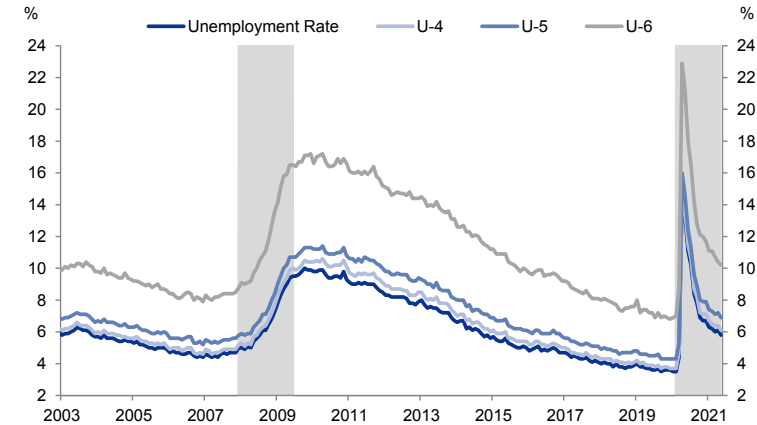
Economic growth is making a V-shaped recovery



Source: US Bureau of Economic Analysis (BEA), Goldman Sachs Global Investment Research

Exhibit 2: Measures of labor under-utilization

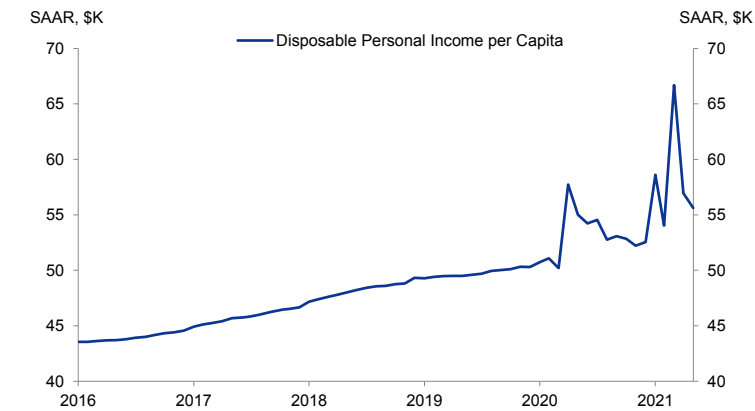
Unemployment and underemployment rates have moved down from their 2020 peaks



Source: BLS, Goldman Sachs Global Investment Research

Exhibit 3: Disposable Personal Income Per Capita

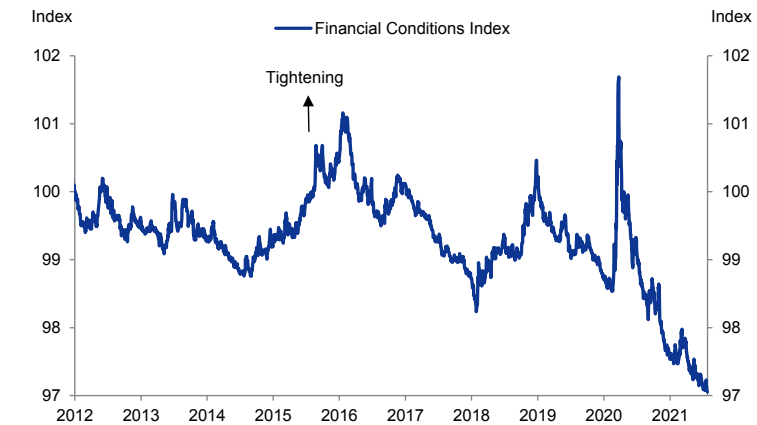
Personal income is up solidly vs. 2019 levels



Source: BEA, Goldman Sachs Global Investment Research

Exhibit 4: Goldman Sachs Financial Conditions Index

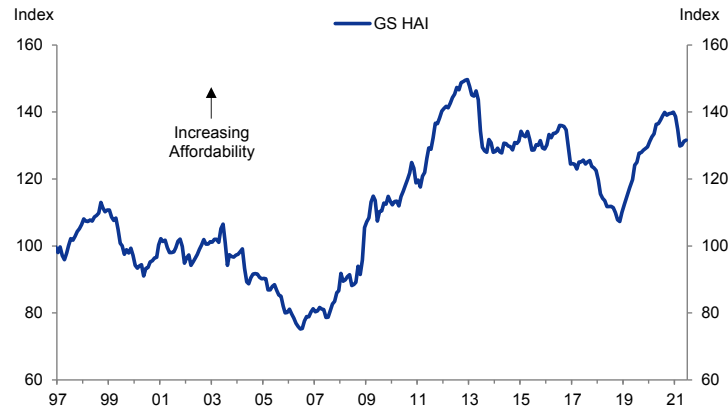
Financial conditions eased over the last month as the index reached its lowest level post-GFC



Source: Goldman Sachs Global Investment Research

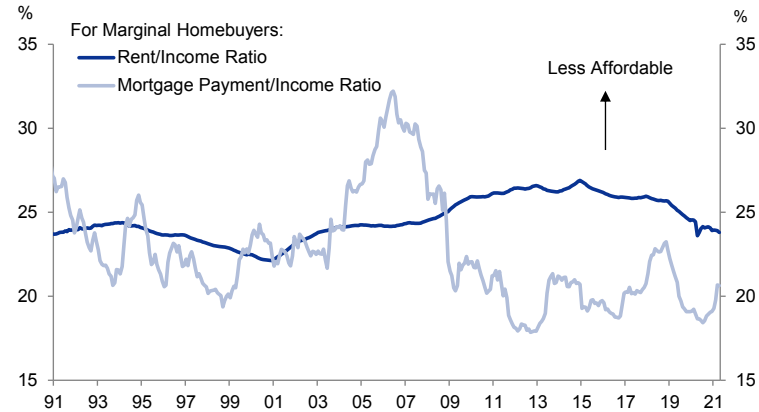
US housing still remains affordable due to low mortgage rates

Exhibit 5: GS Housing Affordability Index
US housing still remains relatively affordable



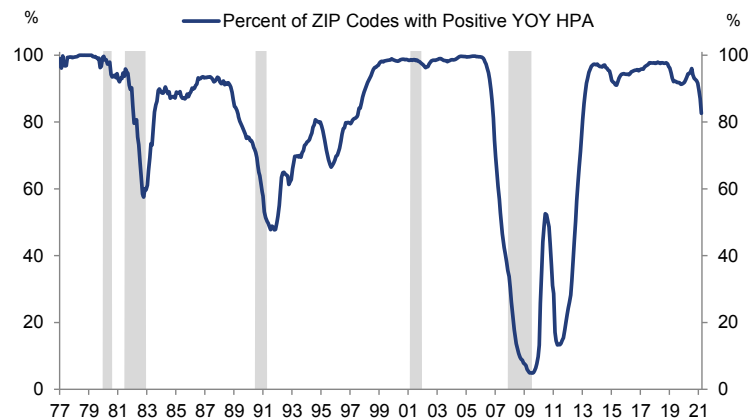
Source: Goldman Sachs Global Investment Research

Exhibit 6: Housing vs. Rental Affordability Indices
Mortgage payments remain relatively affordable by historical standards



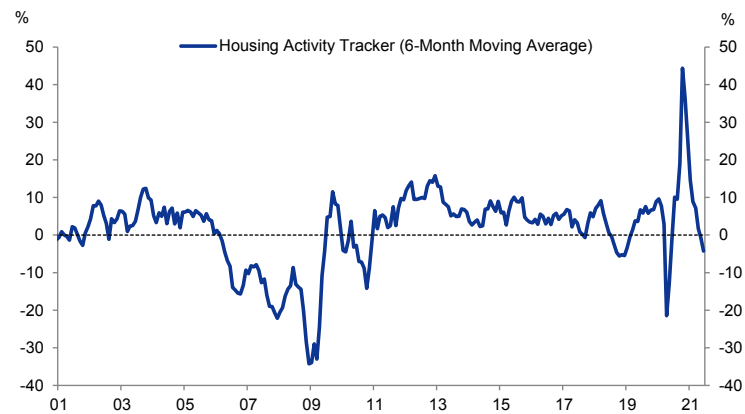
Source: Goldman Sachs Global Investment Research

Exhibit 7: Goldman Sachs ZIP Code House Price Diffusion Index
Over 80% of ZIP codes had positive house price growth over the past year



Source: Goldman Sachs Global Investment Research

Exhibit 8: Goldman Sachs Housing Activity Tracker
Housing sales growth has slowed in recent months

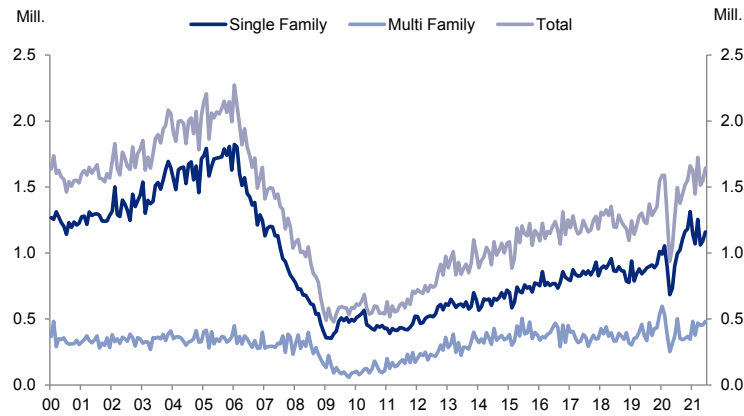


Source: Goldman Sachs Global Investment Research

Housing data have experienced V-shaped recoveries

Exhibit 9: Housing starts (SAAR)

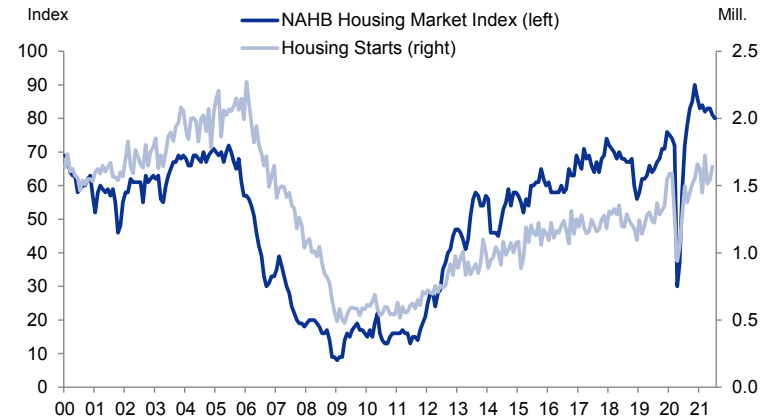
Single family housing starts are up year over year



Source: Census Bureau, Goldman Sachs Global Investment Research

Exhibit 10: NAHB housing market index and housing starts

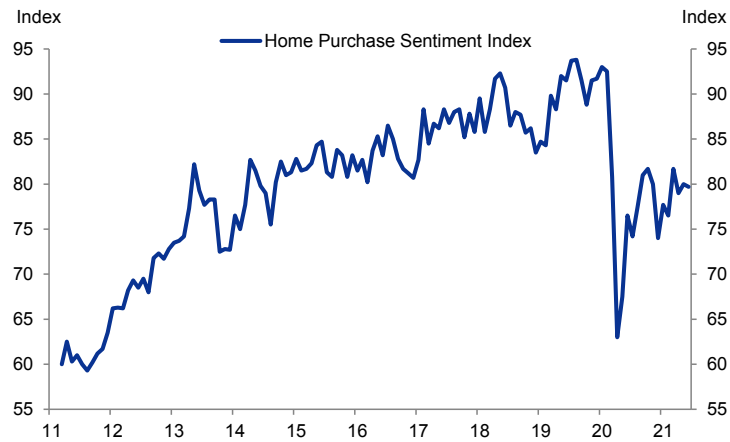
The homebuilder confidence index remains near all-time high levels



Source: NAHB, Census Bureau, Goldman Sachs Global Investment Research

Exhibit 11: Fannie Mae Home Purchase Sentiment Index

Homebuyer sentiment has rebounded



Source: Fannie Mae, Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 12: Pending and existing home sales

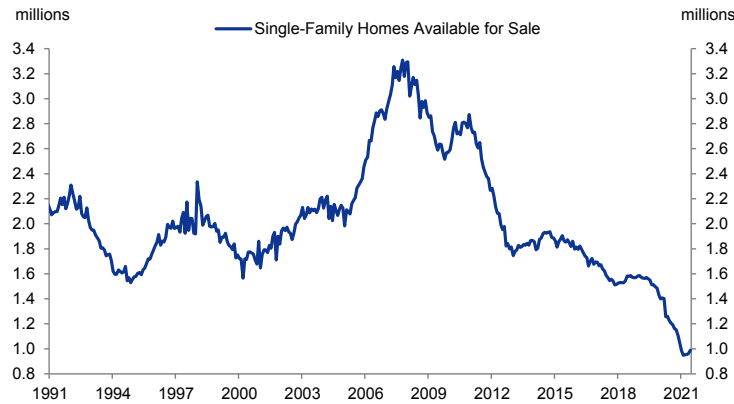
Constrained inventory is limiting growth in home sales



Source: NAR, Goldman Sachs Global Investment Research

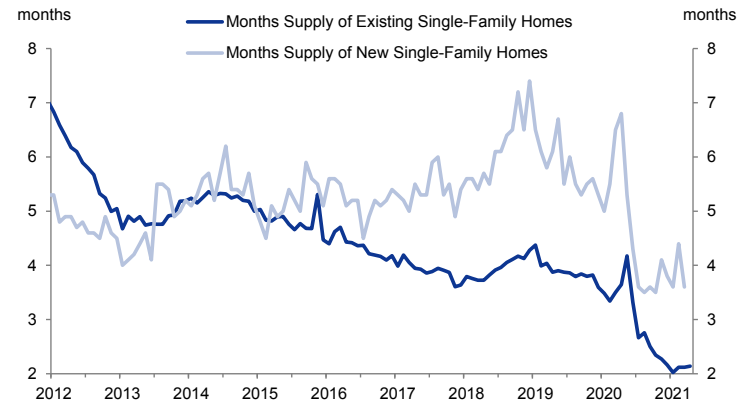
Housing supply remains constrained

Exhibit 13: Single-family homes available for sale (seasonally adjusted)
Supply of homes listed for sale remains at its lowest level in three decades



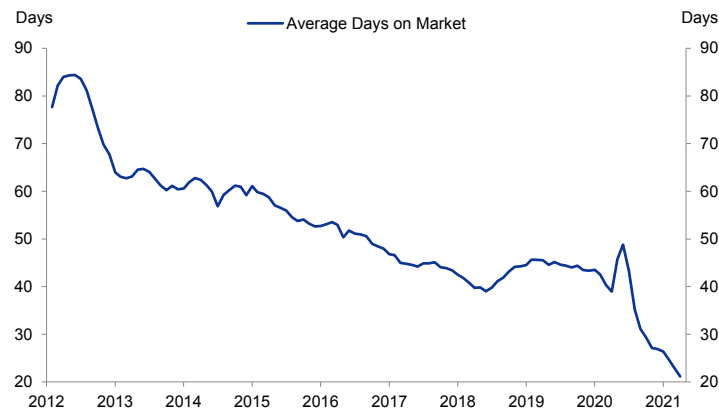
Source: National Association of Realtors (NAR), Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 14: Months supply of single-family homes
Supply of existing single-family homes available for sale has declined



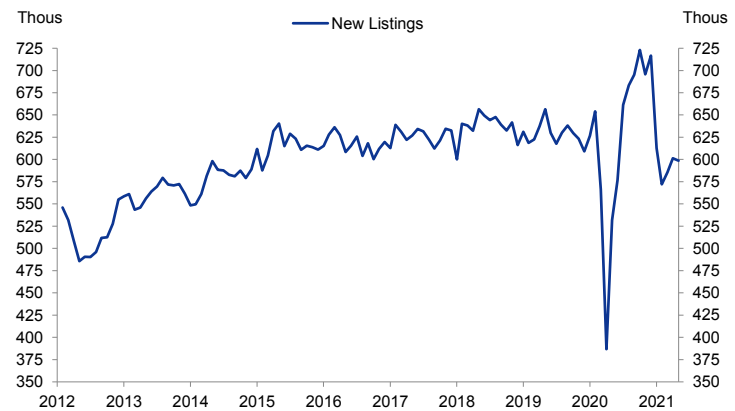
Source: National Association of Realtors (NAR), Census Bureau, Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 15: Average days on market for sold homes (seasonally adjusted)
Average days on market for sold homes has contracted



Source: Redfin, Goldman Sachs Global Investment Research

Exhibit 16: Number of new listings per month (seasonally adjusted)
The number of new listings per month is down vs. 2019

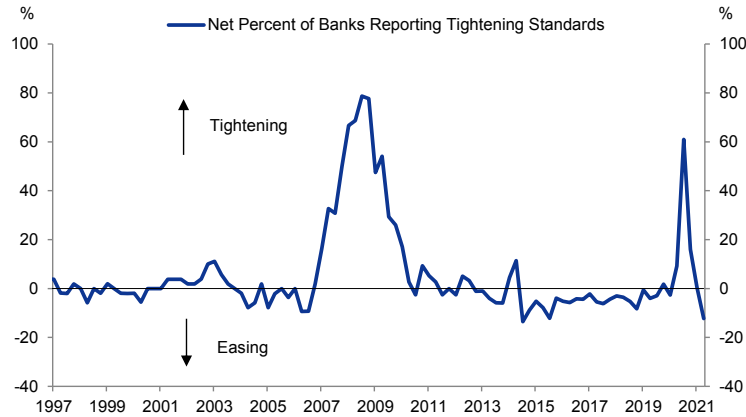


Source: Redfin, Goldman Sachs Global Investment Research

Mortgage lending standards remain conservative

Exhibit 17: FRB Senior Loan Officer Opinion Survey on mortgage lending

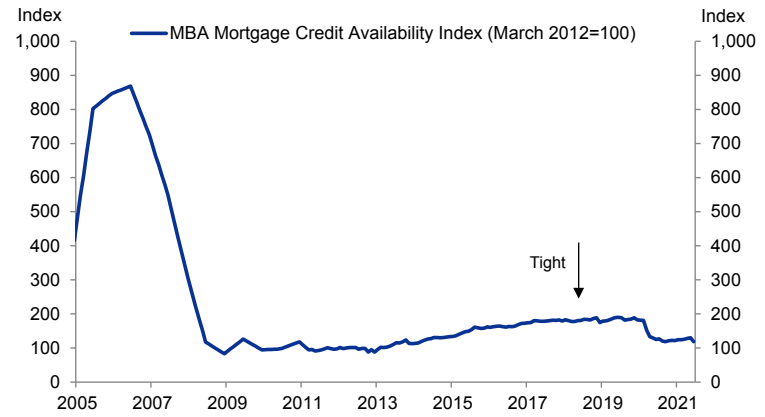
Banks tightened lending standards in the aftermath of the COVID-19 shock but have loosened standards in recent months



Source: FRB, Haver Analytics

Exhibit 18: MBA Credit Availability Index

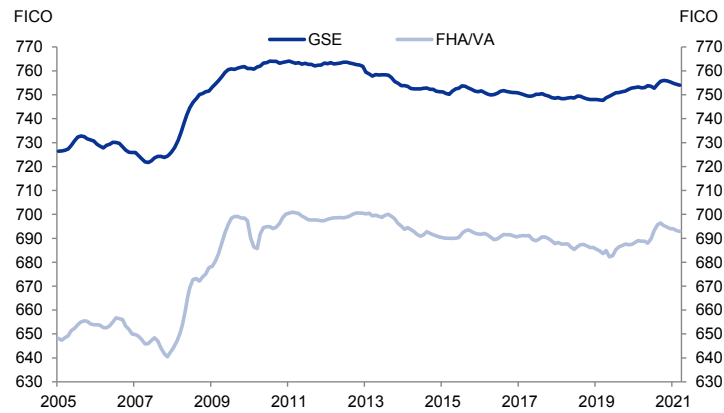
Mortgage credit standards remain tight vs. pre-2020 levels



Source: MBA

Exhibit 19: Average FICO at origination for purchase mortgages

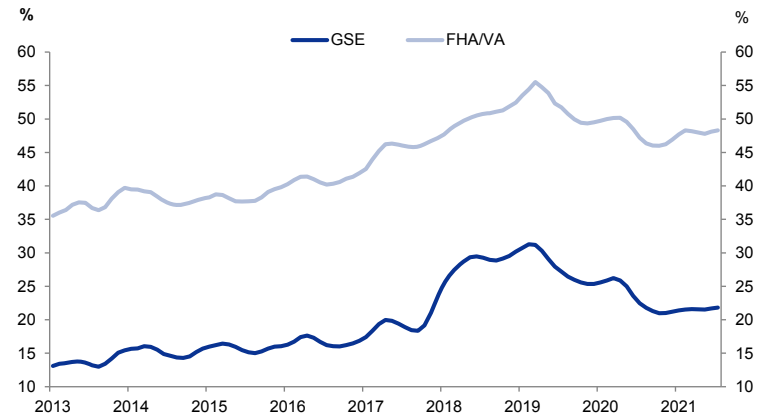
FICO scores at origination remain elevated relative to pre-GFC levels



Source: Black Knight, eMBS, Goldman Sachs Global Investment Research

Exhibit 20: Share of loans with DTI above 43% for purchase mortgages

Over 20% of GSE purchase mortgages have DTI above 43%

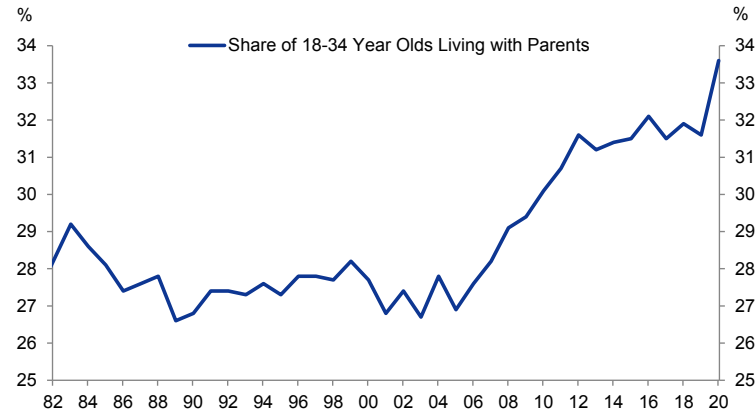


Source: eMBS, Goldman Sachs Global Investment Research

Homeownership rates have picked up over the past year

Exhibit 21: Share of 18-34 year old individuals living with parents

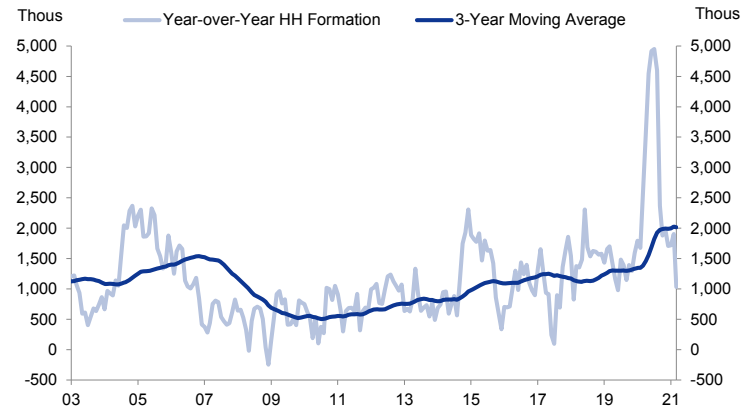
The share of young adults living with parents remains elevated



Source: Census Bureau, Goldman Sachs Global Investment Research

Exhibit 22: Household formation

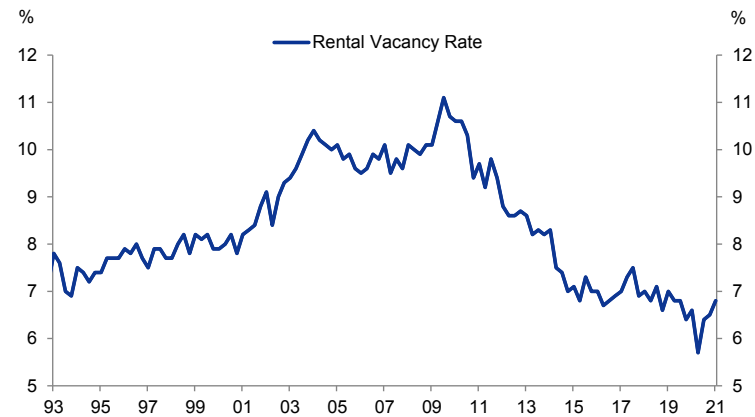
Household formation is trending higher



Source: Census Bureau, Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 23: Rental vacancy rate

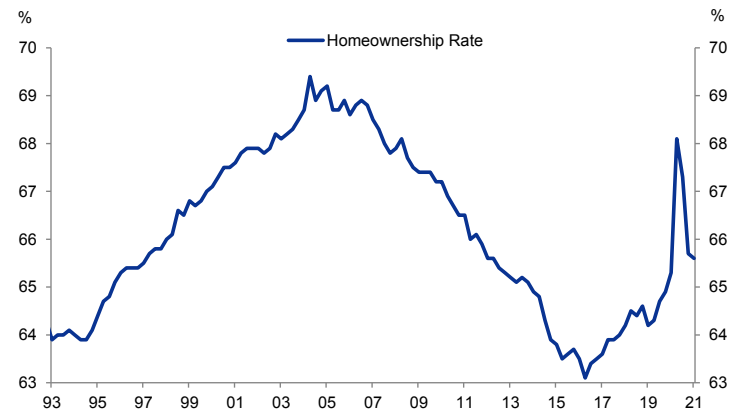
Rental vacancy rates increased over the past year



Source: Census Bureau

Exhibit 24: Homeownership rate

US homeownership rate has moved up over the past year

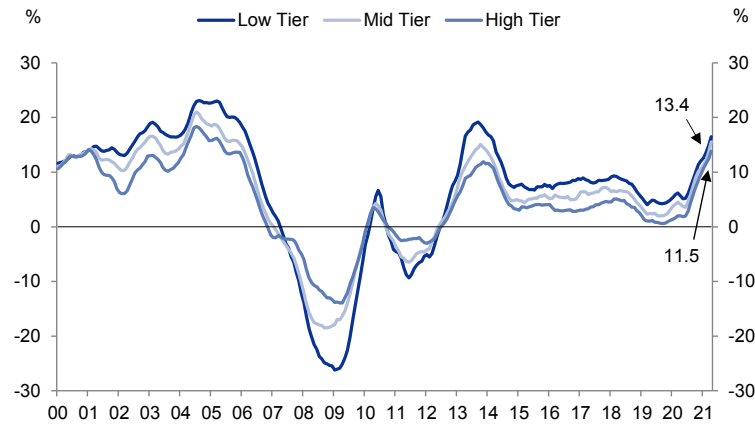


Source: Census Bureau

House price growth has accelerated in recent months

Exhibit 25: YoY HPA by price tier, S&P Case-Shiller 10-City Composite Index

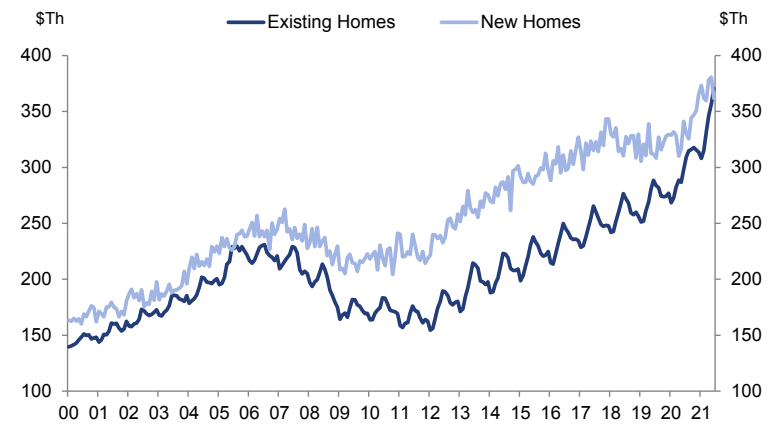
Lower price tier homes have outperformed the high tier in terms of house price appreciation



Source: S&P Case-Shiller, Goldman Sachs Global Investment Research

Exhibit 26: Median price of new and existing single-family home sales

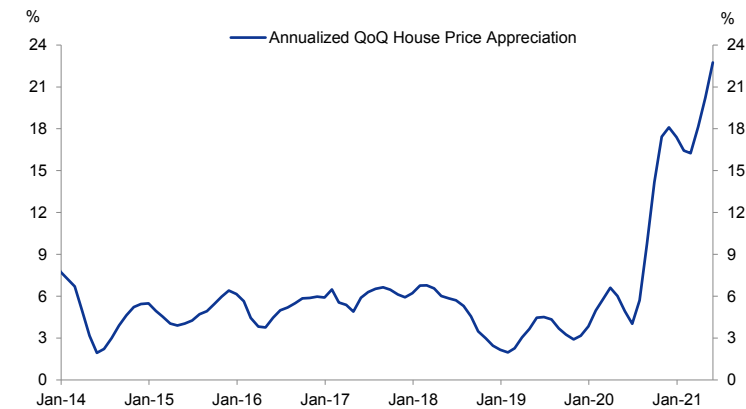
The gap between new and existing home sale prices has narrowed



Source: NAR, Census Bureau, Goldman Sachs Global Investment Research

Exhibit 27: Annualized quarter over quarter price growth, Case-Shiller US index

House price appreciation rates have accelerated in recent months



Source: S&P, Goldman Sachs Global Investment Research

Exhibit 28: Annualized HPA across different house price indices and horizons

US house prices have been growing at a 17% annualized pace over the past 6 months

Metric	End Date	Annualized HPA (% SA)		
		Past 3 Mon	Past 6 Mon	Past 12 Mon
Freddie Mac	May-21	19.6	17.9	17.3
Case-Shiller	May-21	21.7	19.0	16.6
FHFA	May-21	22.8	18.7	18.0
Zillow	Jun-21	23.0	19.4	15.0
NAR	Jun-21	41.8	33.1	24.9
Median	May-21	22.8	19.0	17.3

Source: CoreLogic, FHFA, Freddie Mac, S&P, Zillow, Goldman Sachs Global Investment Research

Most US metros are seeing strong house price growth

Exhibit 29: Metro level housing indicators

Phoenix, San Diego and Seattle have had >20% house price growth over the past year

City	1/2000 to Current HPA (%)	Annualized HPA 1/2000-Current (%)	YoY HPA (%)	Serious Delinq. (%)	Unemployment Rate (%)	Vacancy Rate (%)	Median Price (\$Th)	Median Income (\$Th)	HOI	Average FICO
Phoenix	162	5	25.9	2.6	6.1	0.7	350	79	63	741
San Diego	241	6	24.7	2.7	6.9	0.9	665	95	22	757
Seattle	235	6	23.4	2.7	5.5	0.7	597	109	44	753
Dallas	133	4	18.5	4.2	5.6	0.7	304	86	64	731
San Francisco	226	6	18.2	2.1	6.0	1.0	1004	130	26	763
Tampa	173	5	18.0	4.1	5.1	0.9	260	73	70	729
Portland	192	5	17.5	2.6	6.0	0.6	453	97	54	754
Boston	171	5	17.4	3.2	5.8	0.7	514	115	56	746
Denver	172	5	17.4	2.3	6.5	1.0	465	105	64	753
Los Angeles	247	6	17.0	3.5	9.2	0.7	752	85	13	749
Charlotte	102	3	16.9	3.4	4.6	1.5	305	84	71	735
Miami	195	5	16.6	6.0	6.1	0.9	333	70	47	722
Las Vegas	132	4	15.5	5.5	8.9	0.7	335	72	64	735
New York	135	4	15.2	6.5	8.1	1.3	526	94	37	738
Detroit	51	2	15.1	4.6	4.4	0.5	194	79	82	719
Washington DC	177	5	14.8	4.5	5.4	0.6	409	122	76	742
Atlanta	82	3	14.3	4.9	6.3	0.7	280	86	76	727
Cleveland	50	2	13.6	4.6	4.8	0.0	147	79	87	725
Minneapolis	111	4	12.8	3.1	4.0	0.3	290	105	84	750
Chicago	63	2	11.1	5.0	7.7	1.2	268	88	69	736

Source: See Exhibit 30

Exhibit 30: Definitions of housing indicators

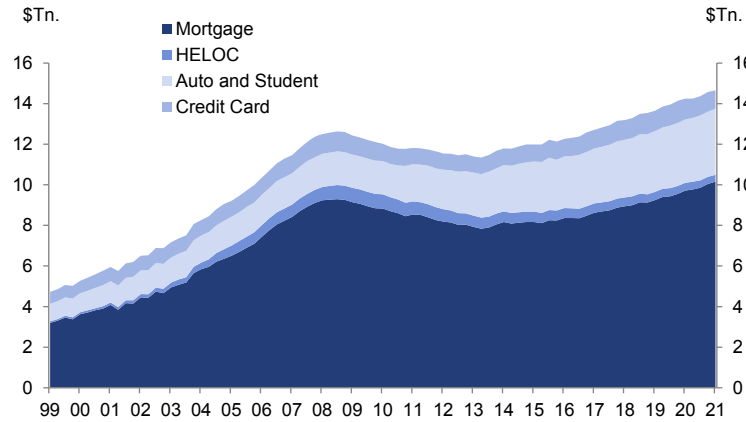
Metric	Definition	Source
1/2000-to-Current HPA	Cumulative house price growth from 1/2000 to current month	S&P
Annualized HPA (2000 to Current)	Annualized average house price growth from 1/2000 to current month	S&P
YoY HPA	Year-over-year house price growth	S&P
% Seriously Delinquent	Percentage of first-lien mortgages 60+ days delinquent or in foreclosure	Black Knight
Unemployment Rate	Seasonally adjusted unemployment rate	BLS
Vacancy Rate	Homeowner vacancy rate	US Census
Median Price	Median home price (\$Th)	NAHB
Median Income	Median family income (\$Th)	NAHB
HOI	Housing Opportunity Index: 100=affordable, 0=unaffordable	NAHB
Average FICO	Average FICO score at origination among outstanding first-lien mortgages	Black Knight

Source: Goldman Sachs Global Investment Research

Household balance sheet metrics remain strong

Exhibit 31: Household debt balance by type of debt

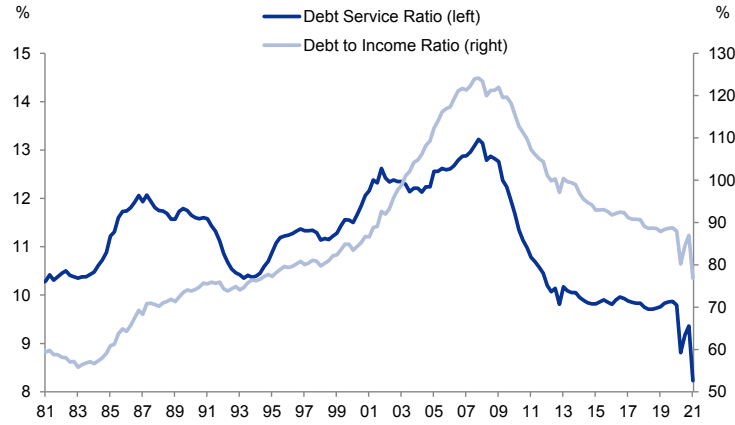
Household borrowing has shifted from credit card debt to auto and student loan debt



Source: FRB, FRBNY, Goldman Sachs Global Investment Research

Exhibit 32: Debt service ratio and debt-to-income ratio

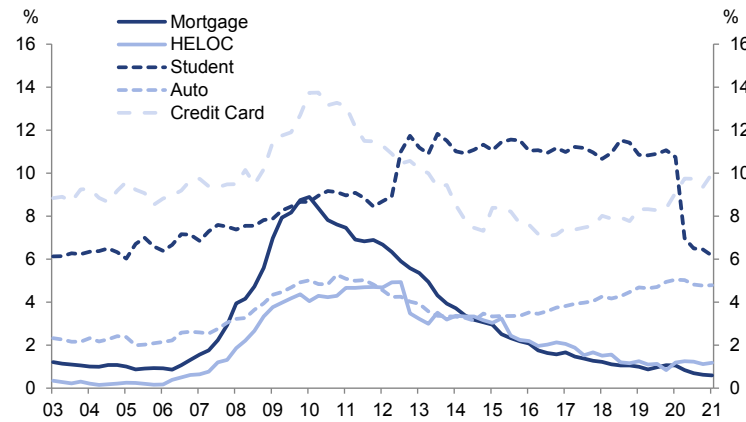
Household debt service ratios remain low due to historically low interest rates



Source: FRB, BEA, Goldman Sachs Global Investment Research

Exhibit 33: 90+-day delinquency rate by account type

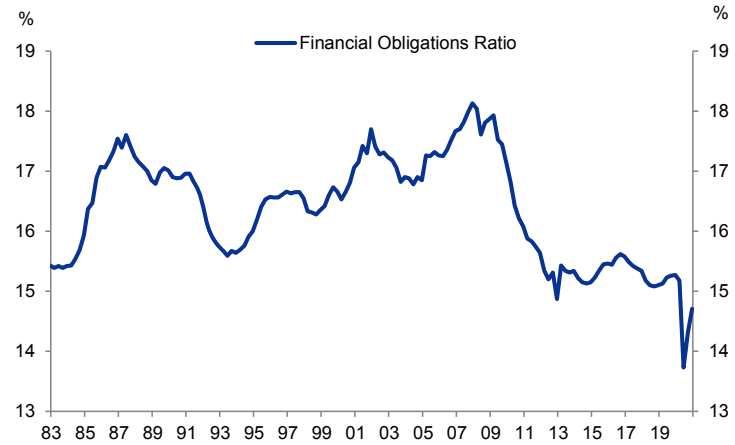
Student loan delinquency rates have moved down as loans have entered forbearance programs



Source: FRBNY, Goldman Sachs Global Investment Research

Exhibit 34: Ratio of financial obligation payments to disposable personal income

Financial obligations (including debt payments, lease payments, property taxes, and rents) relative to incomes are low by historical standards

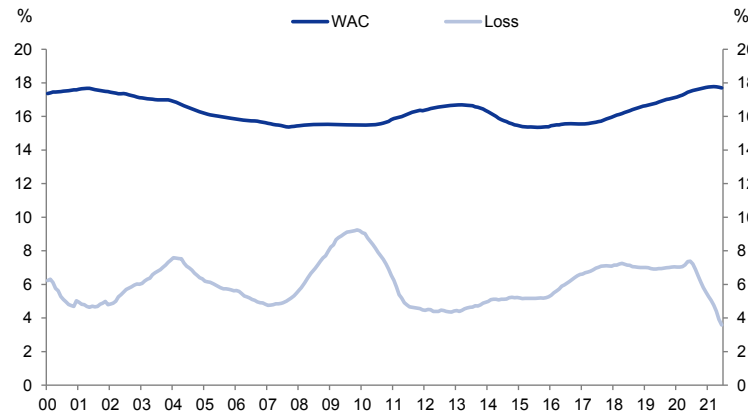


Source: Federal Reserve Board, Goldman Sachs Global Investment Research

Auto loan loss rates have declined over the past year

Exhibit 35: Subprime auto loan ABS annual loss rate vs. WAC

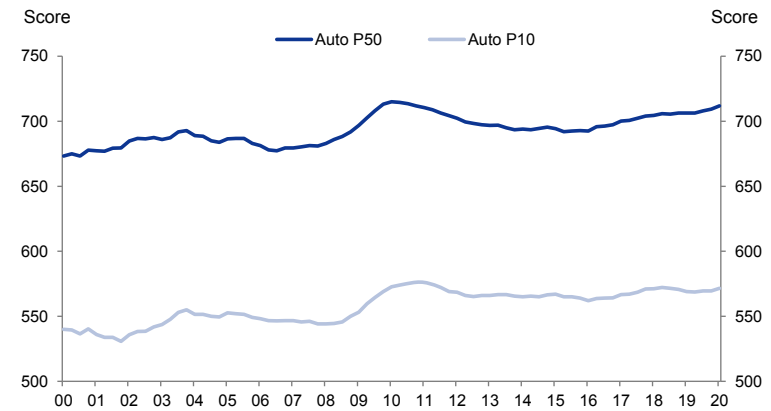
Subprime auto loan loss rates remain below pool gross WACs



Source: Intex, Goldman Sachs Global Investment Research

Exhibit 36: Auto loan 10th and 50th percentile credit scores by origination quarter

The median auto loan credit score has increased since 2016



Source: Federal Reserve Bank of New York, Goldman Sachs Global Investment Research

Exhibit 37: Personal bankruptcies per capita (seasonally adjusted)

Personal bankruptcy filing rates are down year over year

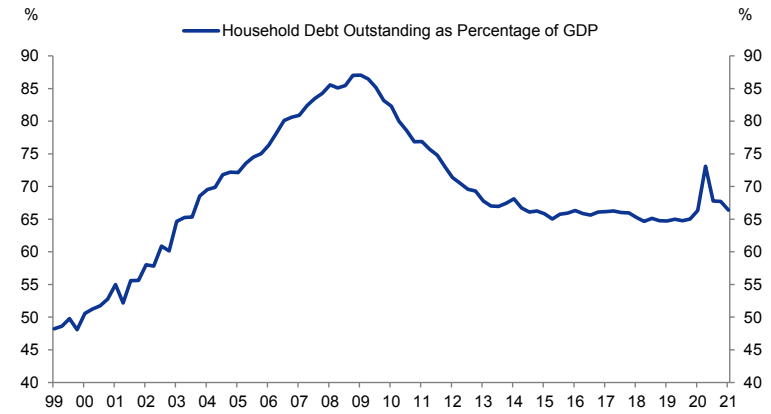


2005-2009 data are excluded due to distortions following enactment of the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005.

Source: Admin. Office of the US Courts, Census Bureau, Goldman Sachs Global Investment Research

Exhibit 38: Household debt outstanding as a percentage of annual nominal US GDP

Household debt outstanding as a share of US GDP is down over the past decade

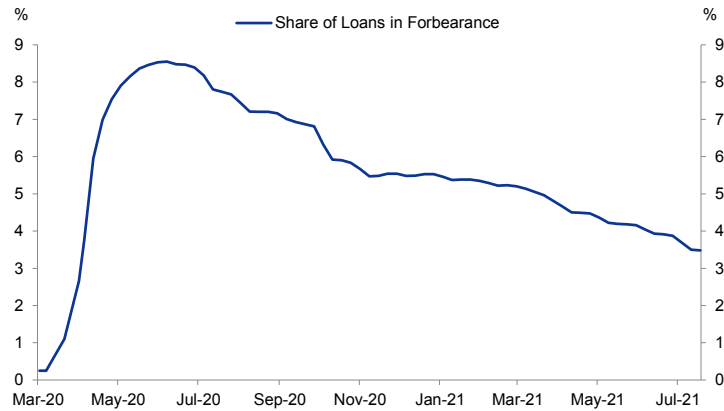


Source: BEA, Federal Reserve, Goldman Sachs Global Investment Research

The share of US mortgage borrowers in forbearance plans has declined

Exhibit 39: Share of US mortgage borrowers in a forbearance plan

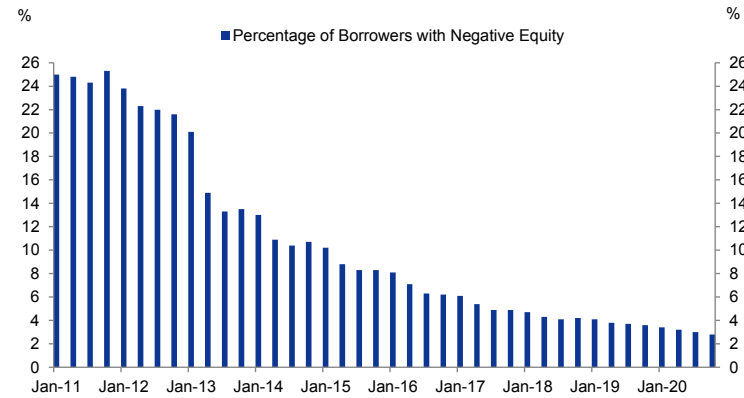
The share of US mortgage borrowers in a forbearance plan has declined to below 50% of peak levels



Source: MBA, Goldman Sachs Global Investment Research

Exhibit 40: Percentage of mortgages with negative equity

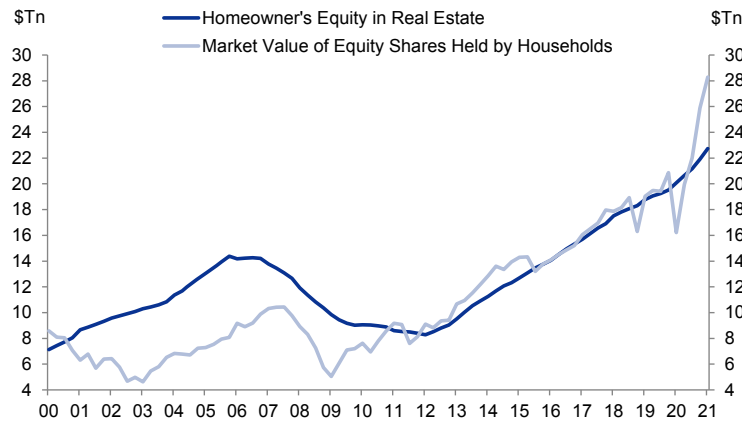
3% of mortgaged properties have negative equity, down from 25% in 2011



Source: CoreLogic, Goldman Sachs Global Investment Research

Exhibit 41: Housing and stock market equity held by households

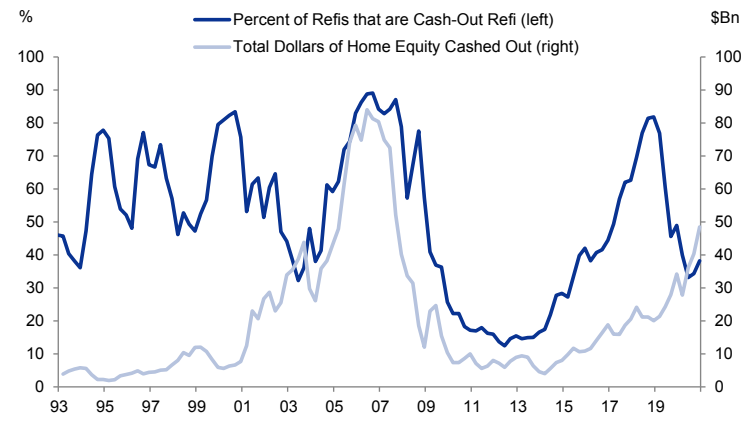
Household wealth has increased over the past year



Source: FRB, Goldman Sachs Global Investment Research

Exhibit 42: Cash-out refinance share and cash-out dollar volume by origination quarter

Over 30% of refinance originations are cash-out transactions

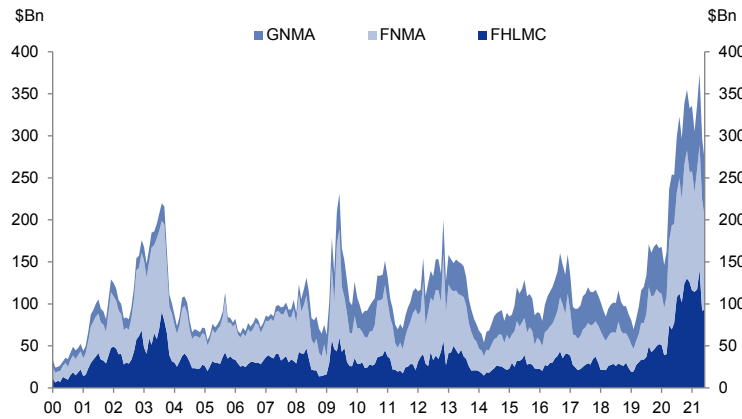


Source: Freddie Mac, Goldman Sachs Global Investment Research

Agency MBS issuance volumes remain elevated

Exhibit 43: Agency MBS gross monthly issuance

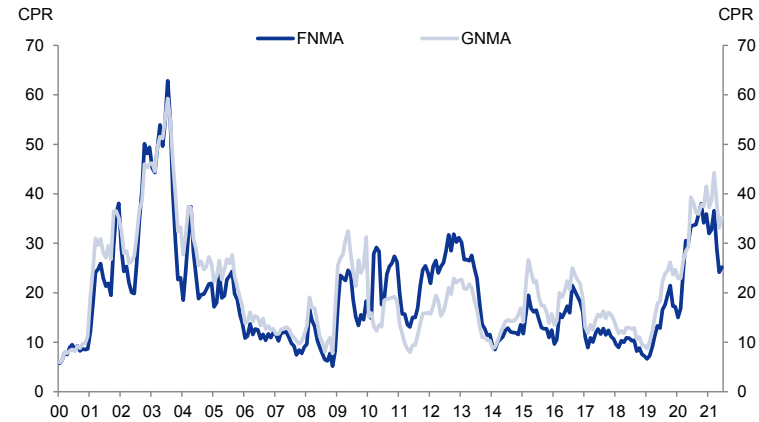
Agency MBS issuance volumes remain at historic highs



Source: eMBS, Goldman Sachs Global Investment Research

Exhibit 44: Agency MBS prepayments

Prepays moved up in June on lower rates and higher day count



Source: eMBS, Goldman Sachs Global Investment Research

Exhibit 45: Agency MBS prepayments by product

Prepayment rates increased in June across products

Product	Bal (\$B)	WAC	WALA	CLTV	ALS	% Wells	% Chase	% BoA	Jun CPR	May CPR	% Chg
FN30	2,442	3.7	37	58	236	12	4	2	25	24	4%
GN30-II	1,470	3.4	34	74	224	7	1	0	35	33	6%
FN15	456	2.9	35	44	175	10	5	1	20	19	7%
FN20	156	3.4	38	49	193	10	8	2	22	21	3%

Source: eMBS, Goldman Sachs Global Investment Research

Conventional MBS prepays increased in June

Exhibit 46: FNM 30-year MBS prepayments by coupon and vintage

Prepayments picked up across the coupon stack in June

Product	Coupon	Vintage	Bal (\$B)	WAC	WALA	CLTV	FICO	ALS (\$K)	Jun CPR	May CPR	% Chg
FNM30	1.5	2021	42	2.5	4	65	773	363	4	3	23%
FNM30	1.5	2020	45	2.5	7	63	773	351	6	5	20%
FNM30	2.0	2021	299	2.8	3	68	762	307	4	3	35%
FNM30	2.0	2020	355	2.9	8	65	766	304	11	9	29%
FNM30	2.5	2021	134	3.2	2	72	747	253	5	3	57%
FNM30	2.5	2020	312	3.4	11	65	754	271	23	19	21%
FNM30	2.5	2019	21	3.5	20	61	766	309	35	32	12%
FNM30	3.0	2021	18	3.6	3	72	724	223	5	4	32%
FNM30	3.0	2020	103	3.8	13	65	742	222	33	31	8%
FNM30	3.0	2019	81	3.9	20	64	753	246	40	37	8%
FNM30	3.0	2016	89	3.6	58	50	760	215	35	33	4%
FNM30	3.0	2015	21	3.8	73	44	767	212	36	36	1%
FNM30	3.5	2020	19	4.2	14	65	727	180	37	35	5%
FNM30	3.5	2019	50	4.4	23	65	739	210	47	44	8%
FNM30	3.5	2018	19	4.1	39	57	754	222	44	43	1%
FNM30	3.5	2017	59	4.0	46	55	753	203	42	40	5%
FNM30	3.5	2016	40	4.1	59	50	738	166	37	35	4%
FNM30	3.5	2015	54	4.1	71	47	750	179	39	38	3%
FNM30	4.0	2019	28	4.8	24	65	727	183	47	45	6%
FNM30	4.0	2018	52	4.6	36	60	742	205	48	48	1%
FNM30	4.0	2017	45	4.5	47	56	729	171	42	40	4%
FNM30	4.0	2016	14	4.5	60	51	715	140	36	34	5%
FNM30	4.0	2015	17	4.6	71	48	717	136	35	34	3%
FNM30	4.5	2018	33	5.1	35	62	718	163	45	43	5%
FNM30	4.5	2017	12	5.0	47	56	705	146	39	38	3%

Source: eMBS, Goldman Sachs Global Investment Research

Ginnie Mae premiums have high buyout rates

Exhibit 47: GNM II 30-year MBS prepayments by coupon and vintage

Total prepayments on high coupon Ginnie Mae cohorts reached 60 CPR in June

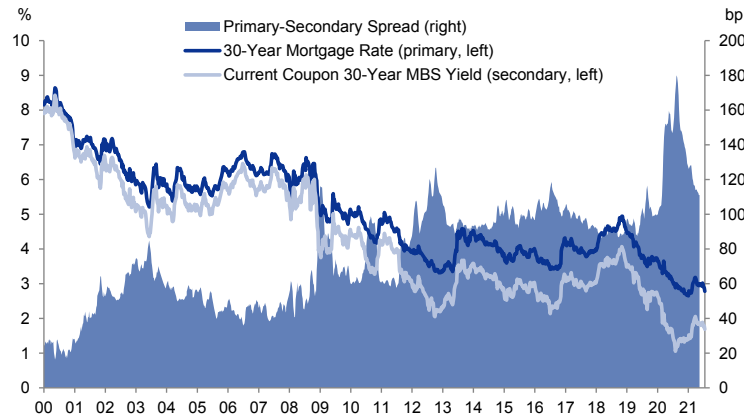
Product	Coupon	Vintage	Bal (\$B)	WAC	WALA	CLTV	FICO	ALS (\$K)	CDR	VCPR	Jun CPR	May CPR	% Chg
GNM II	2.0	2021	184	2.4	3	86	726	292	0	5	5	3	42%
GNM II	2.0	2020	109	2.4	8	80	737	303	0	13	13	9	41%
GNM II	2.5	2021	93	2.9	3	90	686	265	1	5	6	4	47%
GNM II	2.5	2020	209	2.9	10	82	710	274	2	33	35	33	3%
GNM II	3.0	2021	13	3.4	3	92	664	252	0	5	5	4	28%
GNM II	3.0	2020	107	3.5	14	81	685	239	10	42	48	45	6%
GNM II	3.0	2019	53	3.5	20	78	703	239	14	43	51	45	14%
GNM II	3.0	2017	26	3.5	49	66	708	184	6	38	42	39	8%
GNM II	3.0	2016	65	3.4	58	63	704	181	7	37	42	39	7%
GNM II	3.0	2015	20	3.5	72	58	713	168	4	37	39	38	3%
GNM II	3.5	2020	19	3.9	15	81	646	201	13	31	40	40	1%
GNM II	3.5	2019	49	4.0	23	78	673	224	23	47	60	52	16%
GNM II	3.5	2018	19	4.0	40	71	691	179	15	42	51	47	10%
GNM II	3.5	2017	61	3.9	47	68	693	187	11	41	48	45	8%
GNM II	3.5	2016	41	3.9	60	62	674	164	12	36	44	39	12%
GNM II	3.5	2015	42	3.9	71	59	689	156	8	36	41	38	8%
GNM II	4.0	2019	31	4.5	26	77	655	201	26	45	60	53	12%
GNM II	4.0	2018	31	4.5	36	74	688	188	22	49	60	52	17%
GNM II	4.0	2017	22	4.4	48	68	660	183	19	39	51	46	11%
GNM II	4.0	2015	10	4.4	70	59	662	145	11	33	41	38	8%
GNM II	4.5	2019	11	5.0	29	76	637	188	32	40	60	61	-1%

Source: eMBS, Goldman Sachs Global Investment Research

Primary mortgage rates remain at historically low levels

Exhibit 48: Primary and secondary mortgage rates

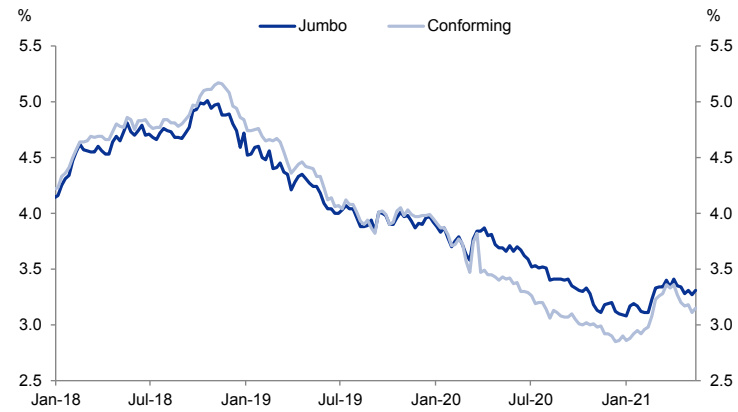
Primary-secondary spreads have tightened in recent months



Source: Freddie Mac, Goldman Sachs Global Investment Research

Exhibit 49: Jumbo vs. conforming mortgage rates

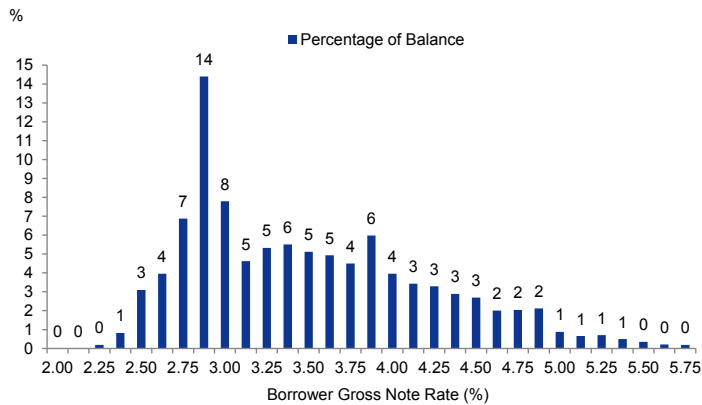
The jumbo vs. conforming mortgage rate spread has narrowed



Source: MBA, Goldman Sachs Global Investment Research

Exhibit 50: Distribution of outstanding 30-year conventional mortgage borrower interest rates

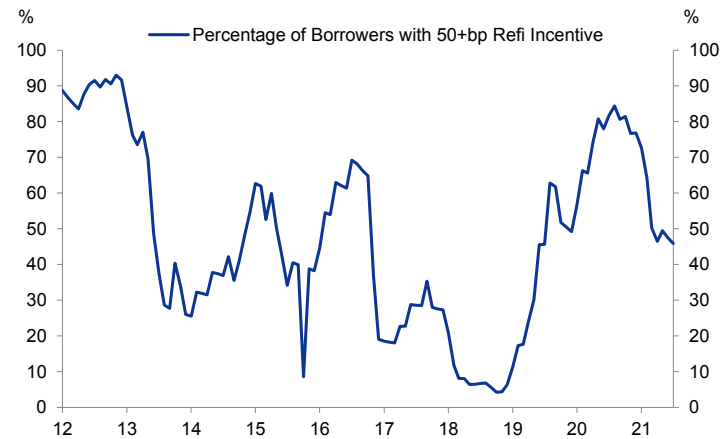
A large share of outstanding mortgage borrowers are still in-the-money for refinancing



Source: eMBS, Goldman Sachs Global Investment Research

Exhibit 51: Percentage of outstanding 30-year conventional mortgage in-the-money for refinancing

50% of outstanding 30-year conventional mortgages have at least a 50bp incentive to refinance



Source: eMBS, Goldman Sachs Global Investment Research

Interest rates moved down over the past month

Exhibit 52: US Treasury yields

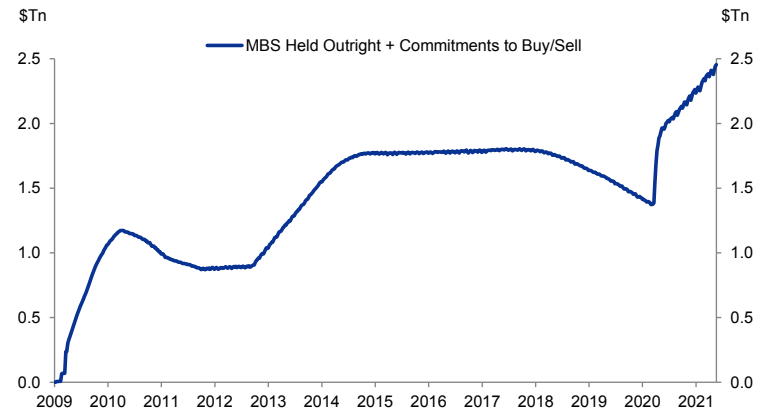
The 10-year Treasury rate selloff has slowed



Source: Goldman Sachs Global Investment Research

Exhibit 53: Federal Reserve holdings plus commitments to buy agency MBS

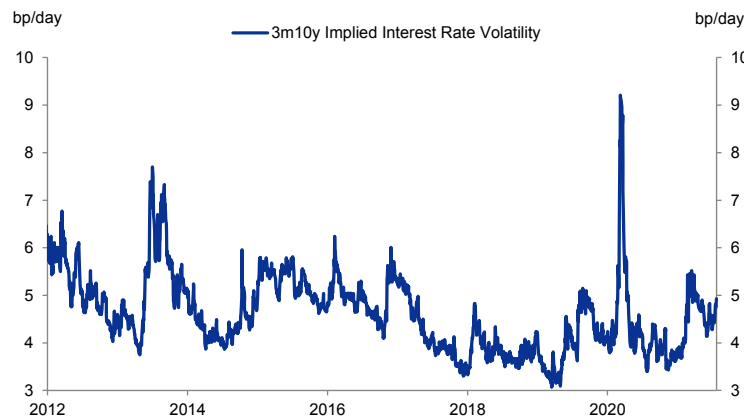
The Federal Reserve holds over \$2.4Tn of agency MBS



Source: Federal Reserve, Goldman Sachs Global Investment Research

Exhibit 54: Implied interest rate volatility

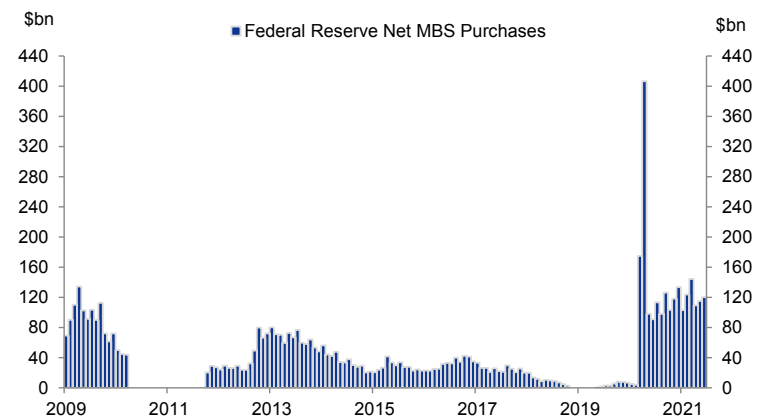
Interest rate volatility has increased in recent weeks



Source: Goldman Sachs Global Investment Research

Exhibit 55: Federal Reserve gross monthly MBS purchase volumes

The Federal Reserve purchased over \$100bn of MBS in June

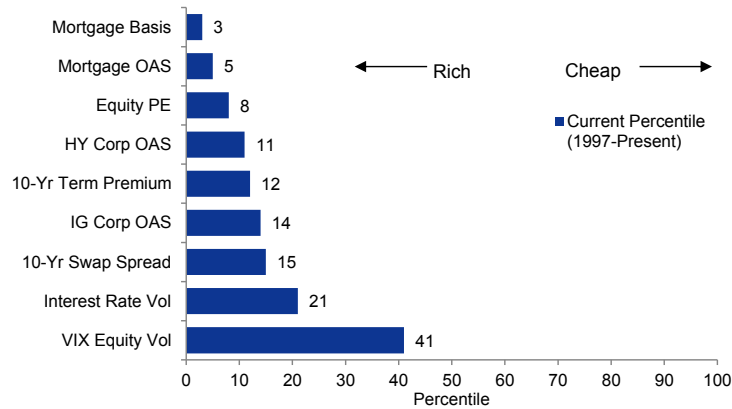


Source: Federal Reserve, Goldman Sachs Global Investment Research

Mortgage spreads remain tight

Exhibit 56: Current valuation percentiles vs. 1997–present distribution (0th percentile=rich, 100th percentile=cheap)

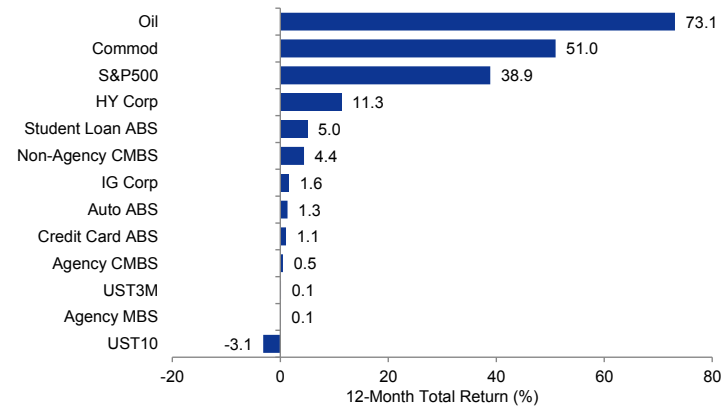
Mortgage spreads are on the tight end of their long run historical range



Source: Haver Analytics, Yield Book, Goldman Sachs Global Investment Research

Exhibit 57: 12-month lagging total return

Agency MBS has returned +0.1% over the past 12 months vs. +1.6% for IG corporate bonds



Source: Bloomberg, Haver Analytics, Goldman Sachs Global Investment Research

Exhibit 58: Mortgage basis (current coupon mortgage rate – 5/10-Year Treasury rate)

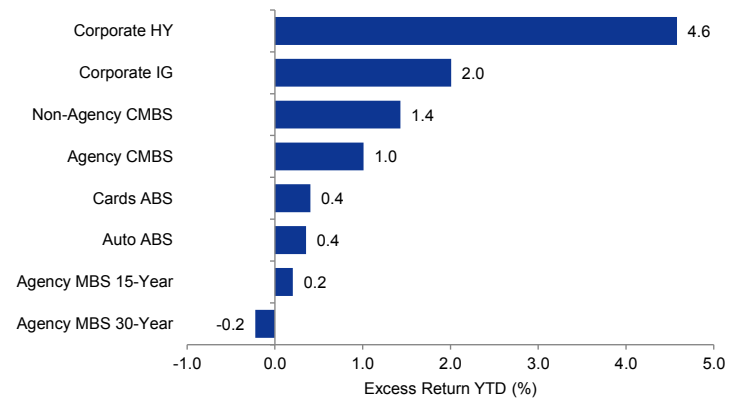
Current coupon mortgage basis remains tight



Source: Goldman Sachs Global Investment Research

Exhibit 59: Excess returns year-to-date

30-year agency MBS have delivered negative excess returns year-to-date



Source: Bloomberg, Goldman Sachs Global Investment Research

CMBS delinquency rates remain elevated

Exhibit 60: Conduit CMBS performance by vintage

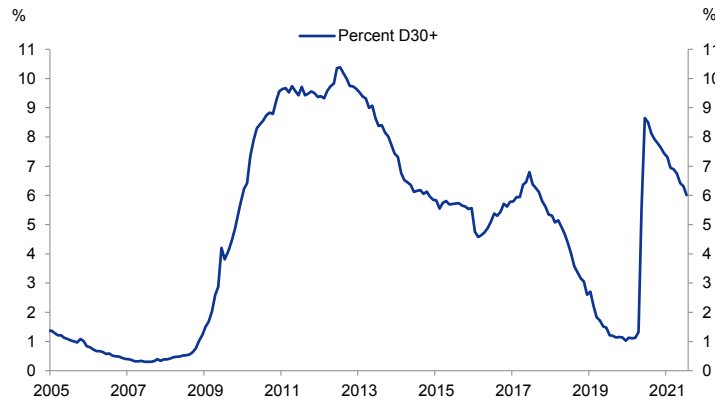
2020-2021 vintage conduit CMBS loans have lower delinquency rates than earlier vintages

Vintage	Balance (\$Bn)	Apartment %	Lodging %	Retail %	Office %	CA %	NY %	TX %	FL %	IO %	DQ/FCL/REO %
2012	22	5	10	44	24	14	14	9	5	39	11
2013	38	9	11	37	22	14	13	8	6	51	13
2014	44	13	14	30	23	14	11	8	8	67	13
2015	53	14	16	27	24	15	12	10	6	70	12
2016	43	8	15	29	27	14	13	7	5	69	10
2017	47	7	15	22	32	18	18	7	4	77	7
2018	41	11	14	25	27	16	11	6	8	78	7
2019	51	16	11	19	30	19	16	8	5	81	6
2020	30	16	9	12	35	18	24	6	3	88	4
2021	14	19	4	11	34	18	19	4	9	83	0

Source: Trepp, Goldman Sachs Global Investment Research

Exhibit 61: Conduit CMBS 30+ day delinquency rate, pools with WALA <= 144 months

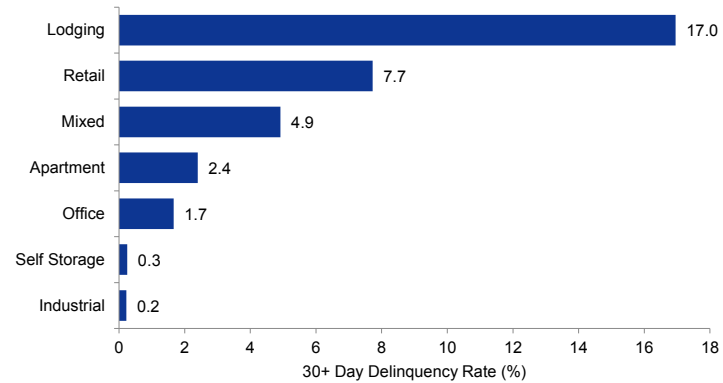
CMBS delinquency rates declined slightly in July but remain elevated



Source: Trepp, Goldman Sachs Global Investment Research

Exhibit 62: Conduit CMBS 2.0/3.0 delinquency rate by property type, most recent remittance period

Hotel and retail properties have elevated delinquency rates

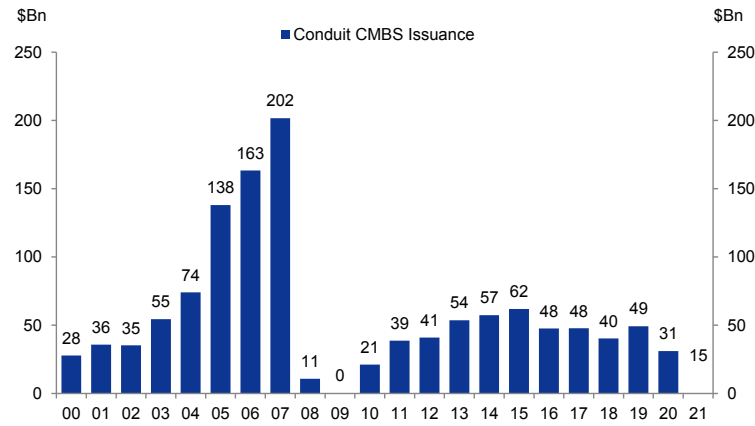


Source: Trepp, Goldman Sachs Global Investment Research

CMBS issuance volumes remain modest

Exhibit 63: Conduit CMBS annual issuance

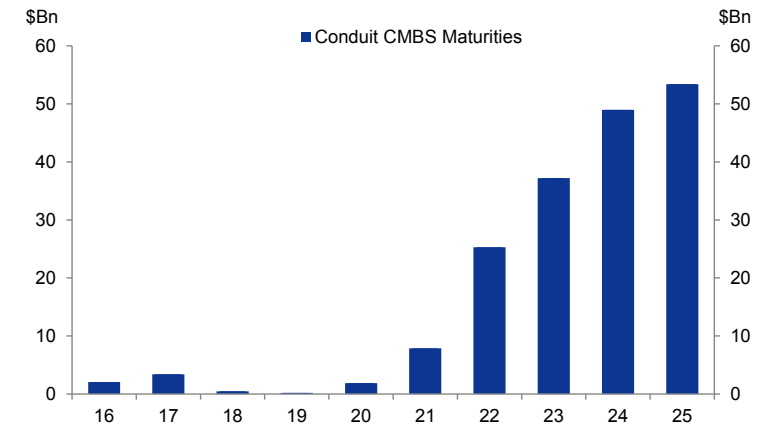
2021 vintage conduit CMBS issuance remains limited thus far



Source: Trepp, Goldman Sachs Global Investment Research

Exhibit 64: Remaining CMBS loan maturities by maturity date

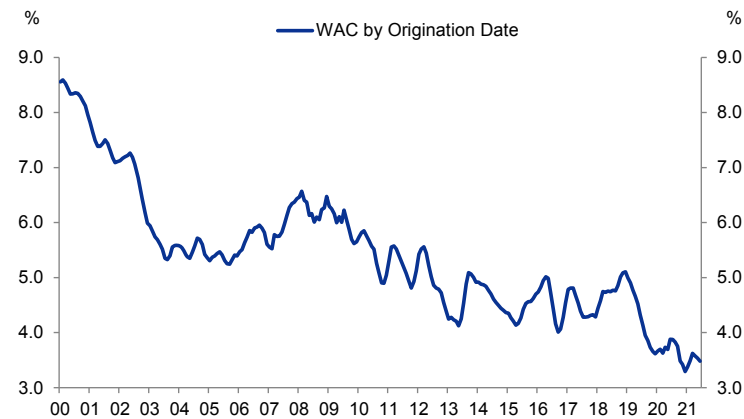
Few CMBS loans are scheduled to mature in 2021



Source: Trepp, Goldman Sachs Global Investment Research

Exhibit 65: Conduit CMBS weighted average coupon by origination date

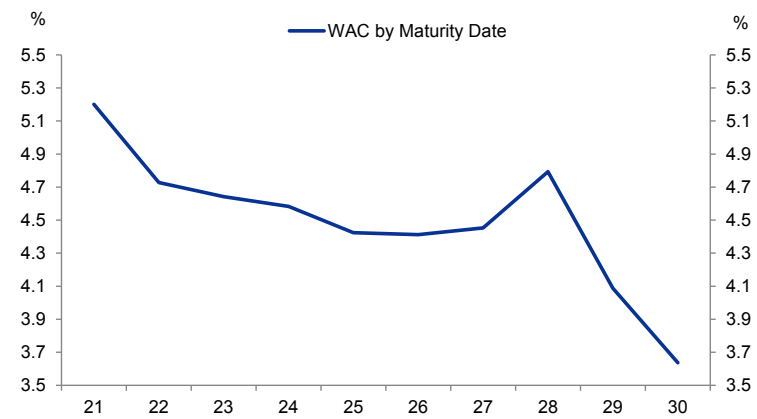
Recent CMBS loan originations have an average note rate of 3.6%



Source: Trepp, Goldman Sachs Global Investment Research

Exhibit 66: Conduit CMBS weighted average coupon by maturity date

Loans maturing in 2021 have an average note rate of 5.2%

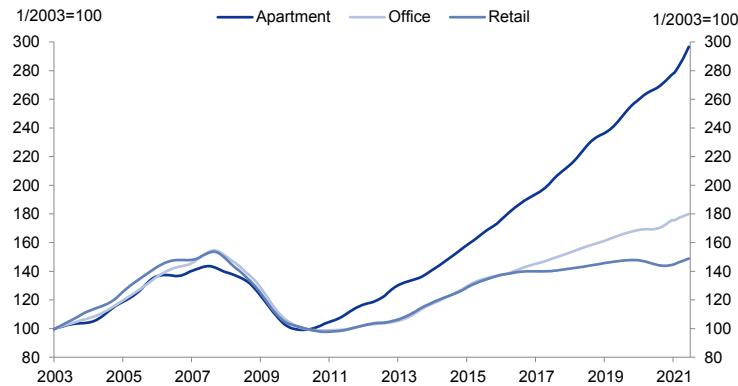


Source: Trepp, Goldman Sachs Global Investment Research

Commercial property price growth has been strongest outside major urban markets

Exhibit 67: Commercial property price indices by property type

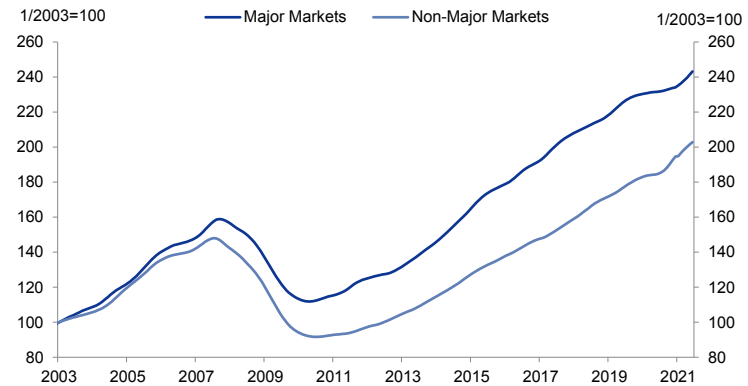
Apartment property prices are up year over year



Source: RCA, Goldman Sachs Global Investment Research

Exhibit 68: Commercial property price indices by major/non-major market

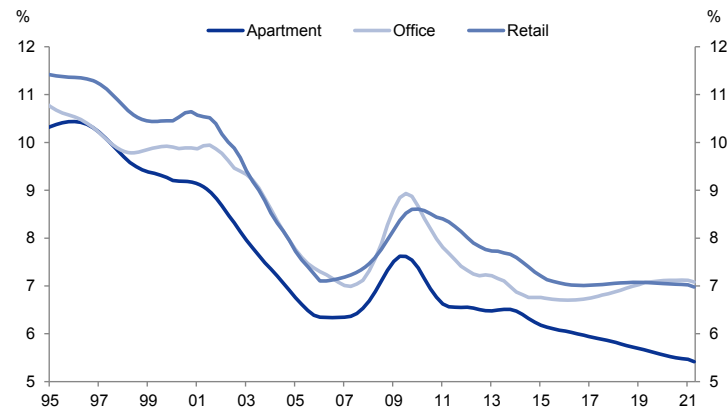
Commercial property price growth over the past year has been strongest outside of large gateway real estate markets



Source: RCA, Goldman Sachs Global Investment Research

Exhibit 69: US commercial property cap rates

Commercial real estate cap rates are at historically tight levels



Source: CoStar, Goldman Sachs Global Investment Research

Exhibit 70: Apartment asking rent index

US apartment rent growth is showing signs of recovery



Source: CoStar, Goldman Sachs Global Investment Research

AAA CMBS spreads have reverted to pre-COVID levels

Exhibit 71: AAA conduit CMBS spreads

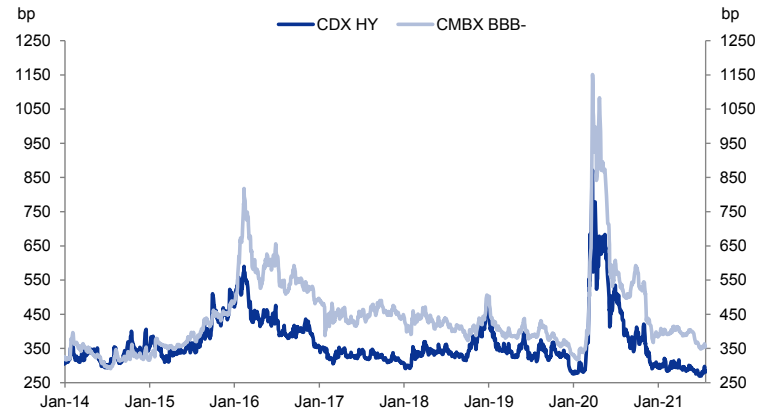
AAA CMBS spreads have tightened to below pre-COVID levels



Source: Bloomberg, Goldman Sachs Global Investment Research

Exhibit 72: On-the-run CMBX BBB- vs. CDX HY spreads

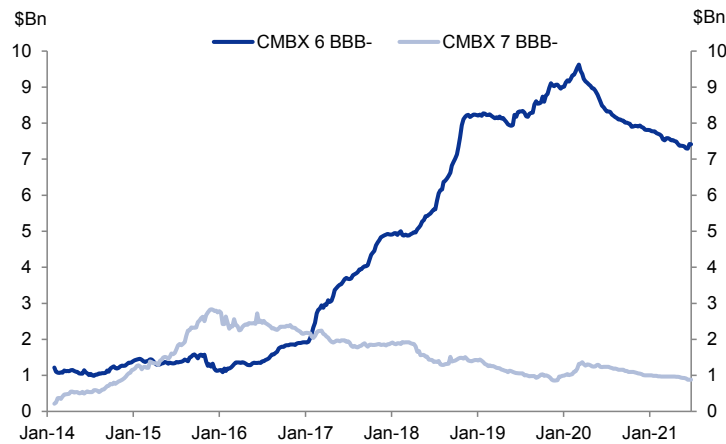
CMBX BBB- spreads remain wide vs. CDX HY spreads



Source: Markit, Goldman Sachs Global Investment Research

Exhibit 73: Notional net open interest, CMBX 6 vs. CMBX 7 BBB-

Open interest in the CMBX 6 BBB- contract remains elevated



Source: DTCC, Goldman Sachs Global Investment Research

Exhibit 74: CMBX notional net open interest by series and tranche

CMBX notional open interest is highest in the BBB- and the AAA contracts

Tranche	Notional Net Open Interest (\$Bn)								
	CMBX Series								
	6	7	8	9	10	11	12	13	14
AAA	1.4	0.6	2.4	1.5	5.1	3.5	3.9	2.0	0.1
AS	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.0
AA	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.0
A	1.4	0.1	0.4	0.3	0.3	0.1	0.0	0.1	0.0
BBB-	7.4	0.9	1.1	1.3	1.9	1.0	0.7	0.4	0.2
BB	2.0	0.1	0.3	0.3	0.4	0.2	0.1	0.2	0.0

Source: DTCC, Goldman Sachs Global Investment Research

Housing and Mortgage Data Dashboard

Exhibit 75: Housing and mortgage data dashboard

Current month/quarter, previous month/quarter, and year ago

Monthly Indicators				
	most recent mon	current mon (mom, %)	previous mon (mom, %)	current mon (yoy, %)
House Price Indices				
Case-Shiller 20-city composite (SA)	Apr-21	1.6	1.6	14.9
FHFA Purchase-Only HPI (SA)	Apr-21	1.8	1.6	15.7
Zillow Home Value Index (SA)	Jun-21	2.0	1.8	15.0
Housing Activity				
	most recent mon	current mon	previous mon	year ago
Housing Starts - All (SAAR, in Thou.)	Jun-21	1,643	1,546	1,273
Housing Starts - 1-unit structures (SAAR, in Thou.)	Jun-21	1,160	1,091	903
Housing Starts - Multi-unit structures (SAAR, in Thou.)	Jun-21	483	455	370
Housing Permits - All (SAAR, in Thou.)	Jun-21	1,594	1,683	1,296
Housing Permits - 1-unit structures (SAAR, in Thou.)	Jun-21	1,066	1,134	850
Housing Permits - Multi-unit structures (SAAR, in Thou.)	Jun-21	528	549	446
Existing Home Sales - All (SAAR, in Thou.)	Jun-21	5,860	5,780	4,770
Existing Home Sales - Single-Family Homes (SAAR, in Thou.)	Jun-21	5,140	5,070	4,310
New Homes Sales - Single-Family Homes (SAAR, in Thou.)	Jun-21	676	724	839
Other				
NAR Median Sales Price of Existing Homes (NSA)	Jun-21	\$363,300	\$350,400	\$294,400
NAR Housing Affordability Index	May-21	151.7	155.8	180.0
Months Supply of Total Existing Homes (months)	Jun-21	2.6	2.5	3.9
Months Supply of New Homes (months)	Jun-21	6.3	5.5	4.3
Quarterly Indicators				
Vacancy and Homeownership Rate				
	most recent qtr	current qtr	previous qtr	year ago
Homeowner Vacancy Rate (%)	2021Q1	0.9	1.0	1.1
Rental Vacancy Rate (%)	2021Q1	6.8	6.5	6.6
Homeownership Rate (SA, %)	2021Q1	65.6	65.7	65.3
MBA Mortgage Delinquency Rate				
	most recent qtr	current qtr	previous qtr	year ago
30 Day Delinquent (SA, %)	2021Q1	1.5	1.8	2.7
60 Day Delinquent (SA, %)	2021Q1	0.7	0.8	0.8
90+ Day Delinquent (SA, %)	2021Q1	4.3	4.2	0.9
In Foreclosure (SA, %)	2021Q1	0.5	0.6	0.7
Other				
	most recent qtr	current qtr	previous qtr	year ago
Apartment Market Tightness Index (Above 50 = Tighter)	2021Q3	96	81	19
SLOOS Net Percent Reporting Tightening Mortgage Standards	2021Q2	-12.3	0.3	9.2
FRBNY Mortgage Balance (both closed-end and revolving, in \$Trill.)	2021Q1	10.5	10.4	10.1

Source: Haver Analytics, Goldman Sachs Global Investment Research

Mortgage Strategy Housing Forecasts

Exhibit 76: GS housing and mortgage forecasts

	2021				Annual Data			
	Q1	Q2	Q3	Q4	2019	2020	2021	2022
Housing Measures								
Housing Starts (SAAR, Thousands)	1,602	1,605	1,662	1,645	1,292	1,397	1,629	1,676
Single Family	1,156	1,144	1,201	1,274	889	1,004	1,194	1,228
Multi Family	446	461	461	372	403	393	435	448
Case-Shiller National House Prices (YoY %Chg)	11.7	17.9	18.1	9.4	3.4	9.9	9.4	7.6
Interest Rates								
10-Year Treasury (%)	1.5	1.8	1.9	1.9	1.9	0.9	1.9	2.1
PMMS 30-Year Fixed-Rate Mortgage (%)	3.0	3.2	3.3	3.3	3.7	2.7	3.3	3.4
Mortgage Originations								
Total 1-4 Family (\$Billions)	1,223	905	772	723	2,254	3,828	3,623	2,814
Purchase Originations	367	471	479	440	1,225	1,433	1,757	1,851
Refinance Originations	856	434	293	283	1,029	2,395	1,866	963
Refinance Share (%)	70	48	38	39	46	63	52	34

Note 1: Annual data for housing starts are annual averages. Annual data for Case-Shiller national house prices are year-end numbers. Annual data for mortgage originations are the sum of quarterly originations.

Note 2: The Case-Shiller National House Price index is a weighted average of metro-level HPIs for 381 metro cities where the weights are dollar values of housing stock reported in the American Community Survey.

Note 3: Interest rates refer to period end values.

Note 4: Sources for historical data are Census Bureau, NAR, Moody's Analytics, Federal Reserve, Freddie Mac, and MBA.

Source: Goldman Sachs Global Investment Research

Disclosure Appendix

Reg AC

We, Marty Young, Lotfi Karoui, Donnie Millar and Marcelo Manzo, hereby certify that all of the views expressed in this report accurately reflect our personal views, which have not been influenced by considerations of the firm's business or client relationships.

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