Goldman Sachs | Economics Research

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US Economics Analyst

The Price Is Still Too High for Office-to-Multifamily Conversion (Peng/Viswanathan)

- The wide adoption of hybrid work caused a structural decline in office demand. The office vacancy rate increased by 4pp over the last three years to 13.5%, the highest level since 2000. We expect the vacancy rate to rise even further in the next 10 years to 18%, as more firms reduce their demand for office space when their current leases expire. As a result, many existing buildings, especially those that are old and low-quality, may become economically nonviable as offices, raising the question of what can be done with the underutilized space.
- At the same time, the U.S. faces a shortage of residential housing. The imbalance between these two markets has led many investors and policymakers to wonder whether underutilized office space can be repurposed to meet the demand for residential housing. In this week's *Analyst*, we provide an overview of the office market and assess the feasibility of office-to-multifamily conversion and its economic implications.
- Using CoStar's detailed dataset on commercial properties, we estimate that around 4% of US office buildings—those located in suburban areas or central business districts, built 30 or more years ago, not renovated since 2000, and currently facing vacancy rates above 30%—might be no longer viable as offices. The average transaction price of these offices has declined by 11% since 2019. In the hardest-hit cities, as many as 14-16% of offices may no longer be viable by our definition, and their average transaction prices have already fallen by 15-35% since 2019.
- Only about 0.4% of office space was converted into multifamily units per year before the pandemic, and so far this has risen only to 0.5% in 2023, suggesting that there are still large financial and physical hurdles to conversion.
- Using a discounted cash flow model, we show that current acquisition costs for struggling offices are still too high for conversion to a multifamily building to be financially feasible once we account for the high additional costs of conversion and financing. For the top 5 metropolitan areas that are most affected by remote work, we estimate that office acquisition prices would need to fall almost 50% for conversion to be financially feasible. This suggests that most of these offices will likely remain underutilized in the near term.
- We estimate that the annual conversion rate from office to multifamily will remain low and only increase slowly to 0.7% in the next four years, delivering

Jan Hatzius
+1(212)902-0394 | jan.hatzius@gs.com
Goldman Sachs & Co. LLC

Alec Phillips
+1(202)637-3746 | alec.phillips@gs.com
Goldman Sachs & Co. LLC

David Mericle
+1(212)357-2619 |
david.mericle@gs.com
Goldman Sachs & Co. LLC

Spencer Hill, CFA
+1(212)357-7621 | spencer.hill@gs.com
Goldman Sachs & Co. LLC

Ronnie Walker
+1(917)343-4543 |
ronnie.walker@gs.com
Goldman Sachs & Co. LLC

Manuel Abecasis
+1(212)902-8357 |
manuel.abecasis@gs.com
Goldman Sachs & Co. LLC

Tim Krupa
+1(202)637-3771 | tim.krupa@gs.com
Goldman Sachs & Co. LLC

Elsie Peng
+1(212)357-3137 | elsie.peng@gs.com
Goldman Sachs & Co. LLC

Jessica Rindels
+1(972)368-1516 |
jessica.rindels@gs.com
Goldman Sachs & Co. LLC

Vinay Viswanathan
+1(212)934 0799 |
vinay.viswanathan@gs.com
Goldman Sachs & Co. LLC

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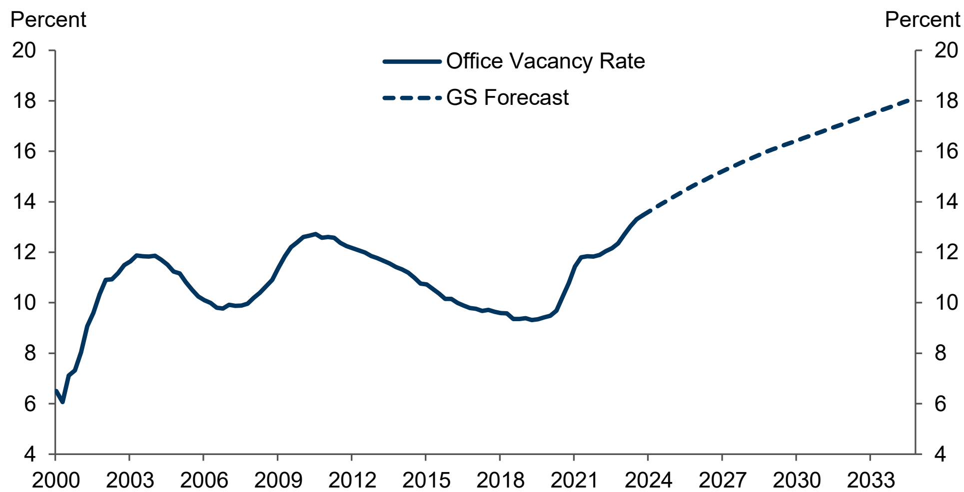
about 20 thousand additional multifamily units per year. Because the conversion process is slow and costly, available office space is likely to remain excessive and many buildings are likely to remain underutilized. As a result, we expect new office investment to remain sluggish in the next few years, resulting in a 0.2pp drag on fixed private investment growth, which will only be offset modestly by a 0.05pp boost from increasing multifamily construction.

The Price Is Still Too High for Office-to-Multifamily Conversion

The pandemic caused a long-lasting shift to remote work, with the share of US workers working from home at least part of the week rising from 4.7% in 2019 to 20-25% today. This shift has driven up the office vacancy rate by 4pp to 13.5%, the highest level since 2000 (solid line in Exhibit 1). We expect the vacancy rate to rise even further in the next 10 years to 18% (dashed line in Exhibit 1), as more firms reduce their demand for office space when their current leases expire.[1]

Exhibit 1: The Office Vacancy Rate Is at Its Highest Level Since 2000 and Is Likely to Rise Further if the Shift to Remote Work Persists

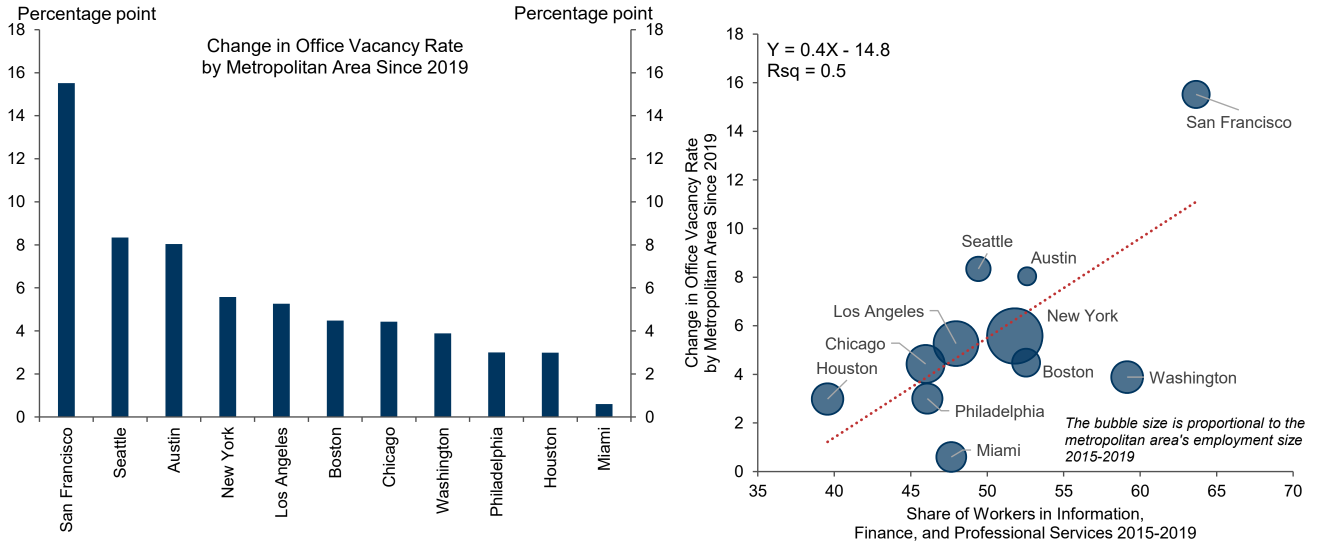


Source: CoStar, Goldman Sachs Global Investment Research

Metropolitan areas with high shares of workers in industries like information, finance, and professional services where work can be done remotely have experienced disproportionally large increases in office vacancy rates (Exhibit 2). Many of these office buildings, especially those that are old and low-quality, may become economically nonviable to operate. This raises the question of how underutilized space will be used.

[1] We forecast the remote-work-induced rise in the office vacancy rate using the share of office leases that will become expire in the coming years and an estimate of the probability that a tenant will renew. Please see details of our forecast in our previous publication on remote work.

Exhibit 2: The Office Vacancy Rate Has Risen the Most in Metropolitan Areas That Had Higher Shares of Workers Whose Work Can Be Done Remotely

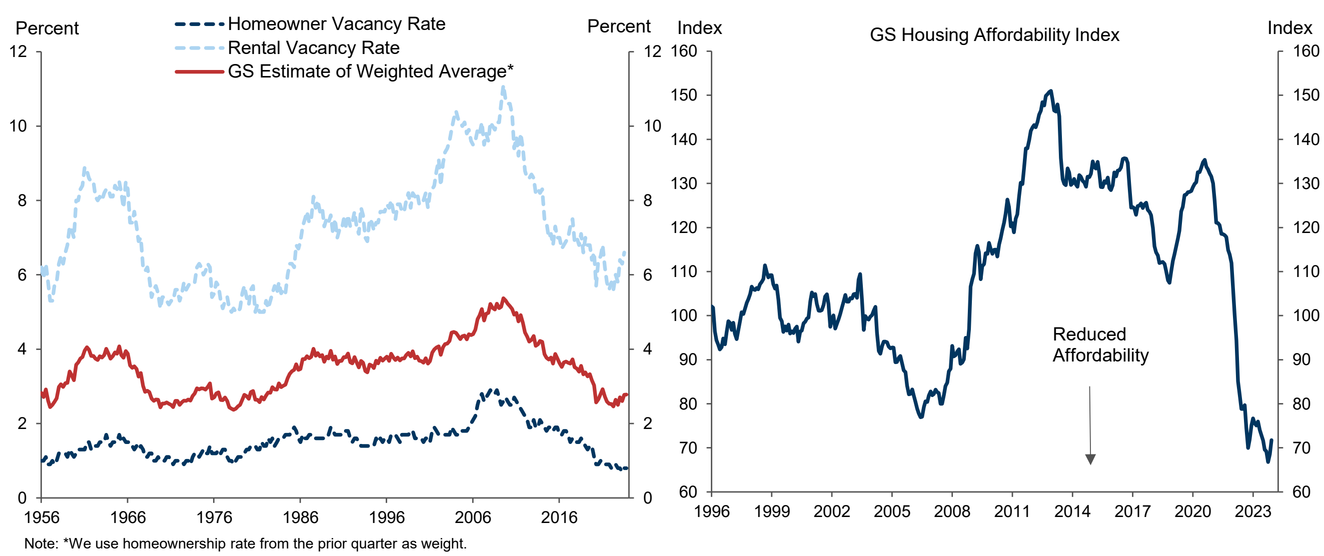


Source: CoStar, American Community Survey, Goldman Sachs Global Investment Research

The Imbalance Between the Office and Multifamily Markets

At the same time, the U.S. faces a shortage of residential housing. After declining for the last 15 years, the residential vacancy rate reached a historical trough in 2022 and only ticked up slightly in 2023 (red line on the left-side of Exhibit 3). The persistent supply shortage has pushed housing affordability to an all-time low (right side of Exhibit 3).

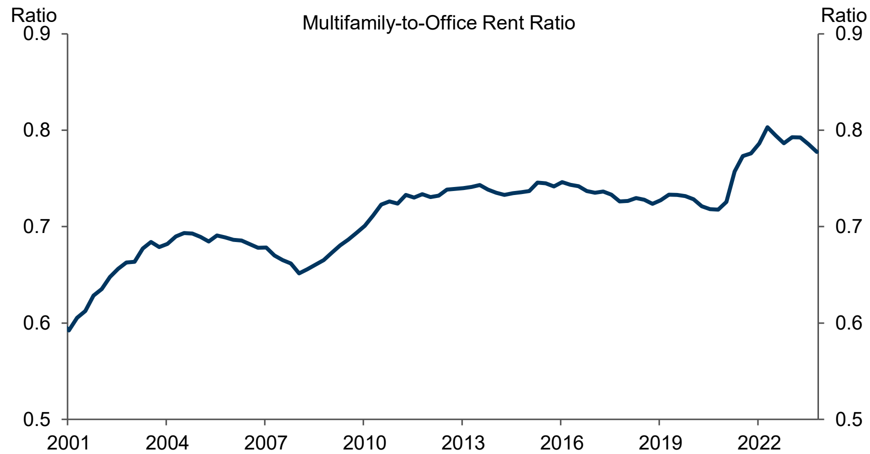
Exhibit 3: While the Office Market Has a Surplus of Supply, the Residential Market Faces a Supply Shortage



Source: Census Bureau, Goldman Sachs Global Investment Research

The imbalance between these two markets has driven up the multifamily-to-office rent ratio, a measure that approximates the return for residential investment relative to office investment, to nearly its all-time high since 2000 (Exhibit 4). We expect that this ratio will increase even more in the next few years if the office vacancy rate continues to increase and residential housing supply remains low.

Exhibit 4: This Imbalance Has Driven Up the Return for Residential Housing Relative to Offices, as Measured by the Multifamily-to-Office Rent Ratio, Over the Last Few Years



Source: CoStar, Goldman Sachs Global Investment Research

Converting underutilized office space to residential units seems like a natural solution to the structural imbalance. But is it economically feasible? In this week's *Analyst*, we assess the feasibility of office-to-multifamily conversion and its economic implications.

How Many Office Buildings Are No Longer Viable?

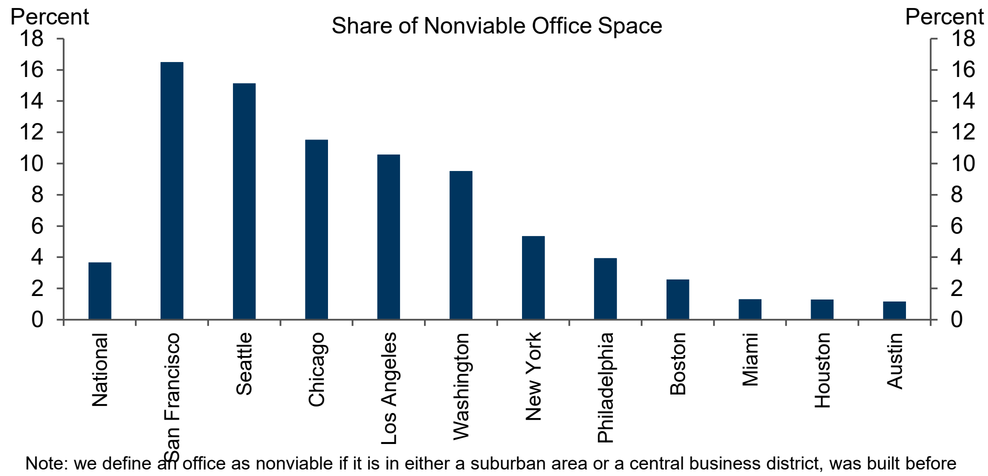
We start by identifying buildings that might no longer be viable to operate as offices and estimating their current acquisition prices. While there is no perfect measure of which office buildings are likely to face insufficient demand, industry reports[2] suggest that an office building is most likely to experience major renovation or conversion at age 30+ and that a building with an occupancy rate lower than 70% is also more likely to be operating at a loss. Therefore, we define an office as nonviable if it is in either a suburban area or a central business district (CBD), was built before 1990, has not had a renovation since 2000, and has a vacancy rate higher than 30%.

Using CoStar data on detailed office listings, we find that around 4% of US office inventory satisfies these criteria (Exhibit 5).[3] We also find that metropolitan areas that have more old buildings and are more affected by the widespread adoption of hybrid work tend to have higher shares of offices on the verge of becoming economically nonviable. We expect that the number of nonviable offices will likely increase in the next few years as the office vacancy rate continues to rise.

2 See these reports for the age reference (here and here) and the occupancy reference (here and here).

3 We check the sensitivity of our nonviable office sample by adding these selection criteria one by one. The Appendix Exhibit shows the result. We find that the sample size tends to shrink more after increasing the minimum vacancy rate restriction from 20% to 30% and also after adding the renovation year restriction.

Exhibit 5: Around 4% of Offices in the US Meet Our Definition of No Longer Being Viable as Offices—They Are in a Suburban Area or a CBD, Were Built Before 1990, Have Not Been Renovated Since 2000, and Have Vacancy Rates Above 30%

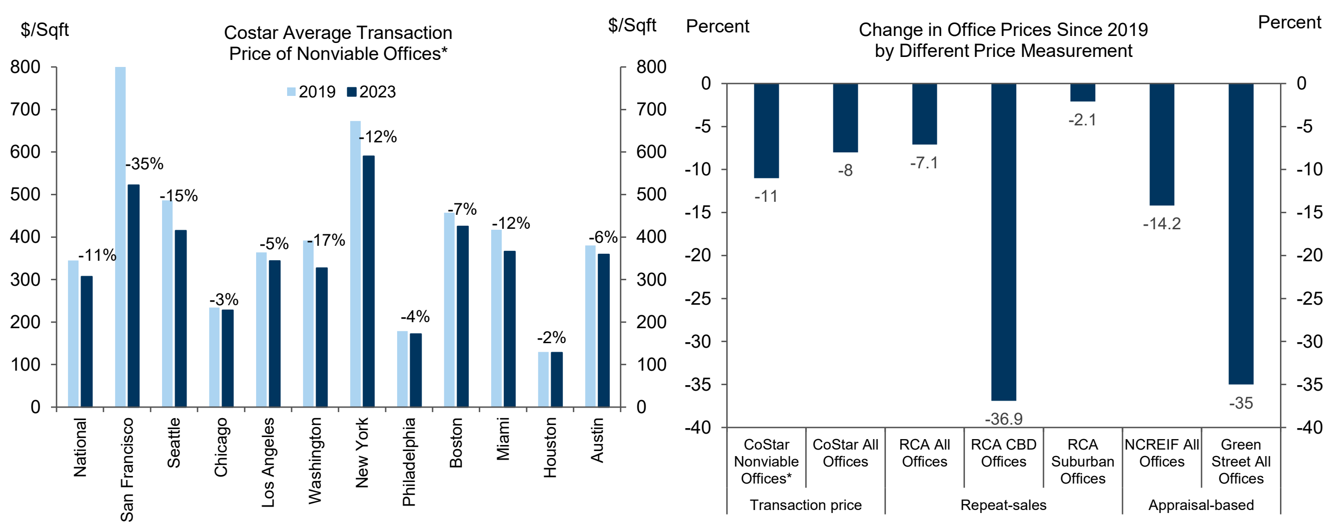


Note: we define an office as nonviable if it is in either a suburban area or a central business district, was built before 1990, has not had a renovation since 2000, and has a vacancy rate higher than 30%.

Source: CoStar, Goldman Sachs Global Investment Research

At the national level, the average price of these nonviable offices has fallen 11% to $307/sqft since 2019 (left side of Exhibit 6). In the hardest-hit cities, as many as 14-16% of offices may no longer be viable by our definition, and their average transaction prices have already declined by 15-35%. However, because of lack of liquidity in this market, we think these recent transaction prices have not yet started to reflect the current values of many existing offices. Alternative valuation methods, like those that are based on repeat-sales and appraisal values, suggest that actual office values may be lower than the average transaction price (right side of Exhibit 6).

Exhibit 6: The Average Transaction Price of These Nonviable Offices Has Declined Since 2019 But Not by Much Due to Lack of Liquidity; Alternative Valuation Methods Suggest That Actual Office Values May be Lower



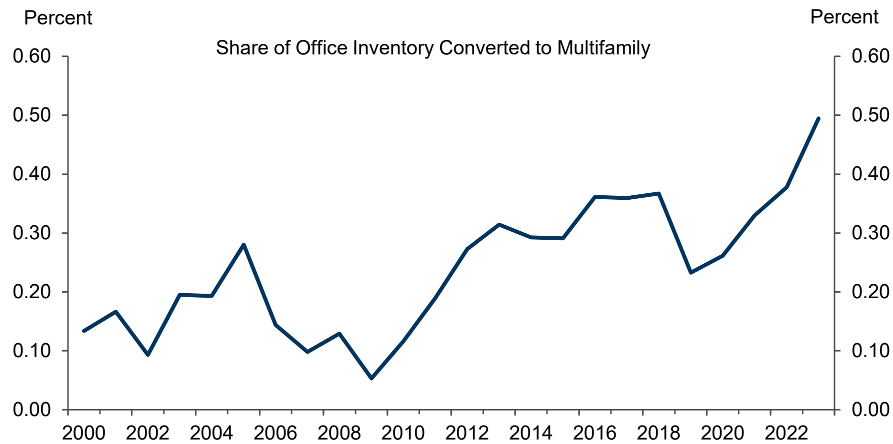
Note: *We define an office as nonviable if it is in either a suburban area or a central business district, was built before 1990, has not had a renovation since 2000, and has a vacancy rate higher than 30%. The number label on the left side of this Exhibit shows the percentage change in transaction prices since 2019.

Source: CoStar, Real Capital Analytics, National Council of Real Estate Investment, Green Street, Goldman Sachs Global Investment Research

Assessing the Financial Feasibility of Conversion to Multifamily Housing

The office-to-multifamily conversion rate is quite low, suggesting that there may be substantial financial and physical hurdles to conversion. Only about 0.4% of office space was converted to multifamily per year before the pandemic, and the rate increased to 0.5% in 2023 (Exhibit 7). If the conversion continues at the current pace, it will take another 8 years to convert the 4% of offices that are currently nonviable by our definition.

Exhibit 7: The Actual Office-to-Multifamily Conversion Rate Is Quite Low, Suggesting That There Are Substantial Financial and Physical Hurdles to Conversion



Source: CBRE, Goldman Sachs Global Investment Research

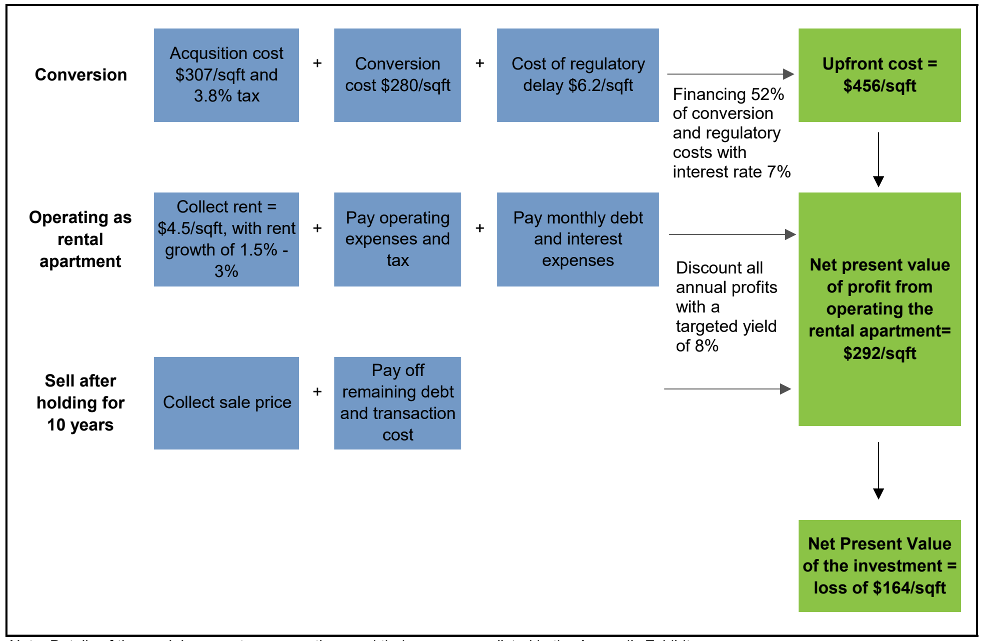
Using a stylized discounted cash flow model, we show that current acquisition costs are still too high for conversion to be financially feasible given the high costs of conversion and financing and the current level of multifamily rent (Exhibit 8). We start by considering an office with an acquisition price of $307/sqft, the average transaction price of nonviable offices that we have identified in Exhibit 6. Industry reports and a recent economic study (see here, here, and here) suggest a wide range of conversion costs from $100/sqft to $500/sqft, depending on the location and the materials used. Our baseline assumes a slightly above-median conversion cost of $280/sqft because we think that conversion is more likely to occur in metro areas that are hard-hit by remote work, which are high-price markets. We also assume that the conversion will target a high-end multifamily rental market, with an average monthly rent of $4.5/sqft.[4]

Under these parameter assumptions, our model suggests that converting a nonviable office that is priced at the average current level will result in a $164 loss per sqft. This means that current office prices would need to fall by that much, to around $154 per sqft or by 50%, for the cost to be fully covered by the stream of discounted future revenues.[5]

4 According to CoStar commercial listing data, the average rent of multifamily buildings that are in CBD or suburban area and were built after 2018 is currently $3/sqft. We assume the converted multifamily building will target a market segment for higher-income households. Using the Consumer Expenditure Survey, we estimate that households in the top income quintile typically spend 1.2-2 times more on housing than households in the median quintile, so we adjust the rent in our model to $4.5/sqft to reflect this.

5 We estimate that the internal rate of return is around 3% at the current acquisition price of $307/sqft. This

Exhibit 8: For a Nonviable Office, Current Acquisition and Conversion Costs Substantially Exceed Discounted Returns



Note: Details of the model parameter assumptions and their sources are listed in the Appendix Exhibit.

Source: Goldman Sachs Global Investment Research

The total cost of building a new multifamily building on an empty lot of land may be lower than the total cost of buying an underutilized office and converting it to multifamily units, because prices of empty land lots in some locations are likely still well below current market prices of underutilized offices, although the average construction of $350 per sqft is slightly higher than the average conversion cost.[6] However, empty land lots that are available for new development are scarce in central business districts where demand for residential housing is high. As the office vacancy rate continues to rise, especially in dense and accessible urban areas, office conversion will likely still be a viable option for creating new housing supplies.

Indeed, some office buildings may face more physical challenges than others, which will lead to higher conversion costs or make conversion impossible. One key challenge often highlighted by developers is the deep floor plate common to many large office buildings. Safety codes of residential buildings require bedrooms to have certain sizes of windows, but it is impossible to restructure some office buildings with deep floor plates in a way that provides all units with proper windows. A second type of challenge is transforming an office's existing plumbing, ventilation, and electric system for each residential unit. In some older buildings, these systems may have become outdated and impossible to

means that investors need to be much more patient about future returns in order to break even with today's high costs of acquisition, conversion, and financing.

[6] Construction costs vary by different types of apartments. A report by the Brookings Institute finds that the average cost of construction ranges from $200 to $400+ per sqft depending on building heights and materials. Prices of empty land lots vary substantially across locations. Data from the American Enterprise Institute suggest that the average land value was around $30/sqft at the national level in 2022. The average land value is $84/sqft in New York metro area, $225/sqft in San Francisco metro area, and $41/sqft in Miami metro area. Land prices in central business locations can be 5 to 20 times higher than these metro-level average values.

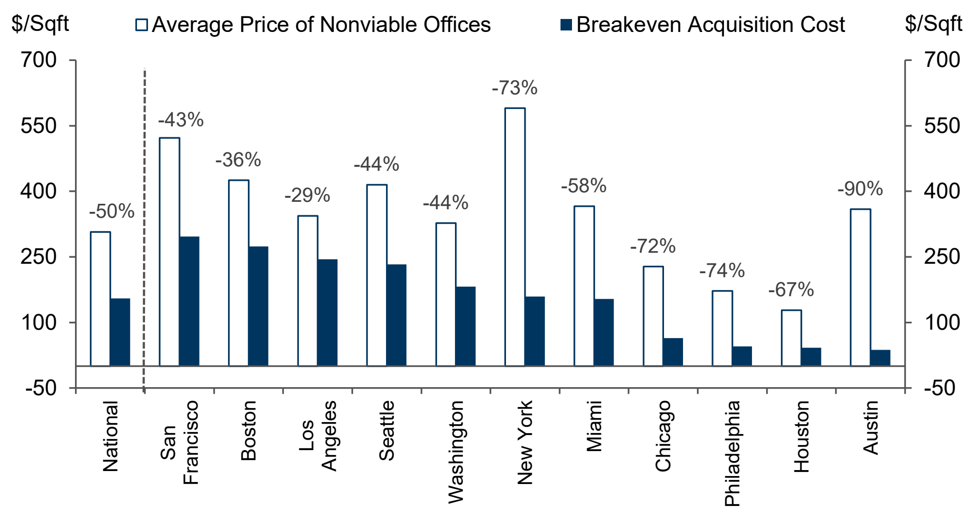
redesign for modern residential units. Third, commercial buildings in some cities are currently subject to strict zoning codes that do not allow them to be used for residential purposes.

While it is impossible to provide an exact assessment for every conversion scenario given how heterogeneous these buildings are, our framework identifies key factors that are likely to shape the profitability of conversion and provides a conservative estimate of the breakeven price that can be used to gauge the likelihood of successful conversion.

The Feasibility of Conversion Across Markets

While we find that office-to-multifamily conversion is likely to be uneconomical for developers at current acquisition prices in most cases, the conversion math is closer to being attractive in some geographic markets than in others. By applying our discounted cash flow model to urban zones in 11 major metropolitan areas, we identify San Francisco, Boston, Los Angeles, and Seattle as the markets where recent transaction prices of nonviable offices are closest to breakeven acquisition costs (Exhibit 9). Even there, however, we estimate that nonviable office prices would still have to fall by over 30% for conversion to make sense.

Exhibit 9: Our Model Estimates Suggest That the Average Prices of Nonviable Offices Are Still Well Above the Breakeven Acquisition Costs Required for Conversion to Be Economical

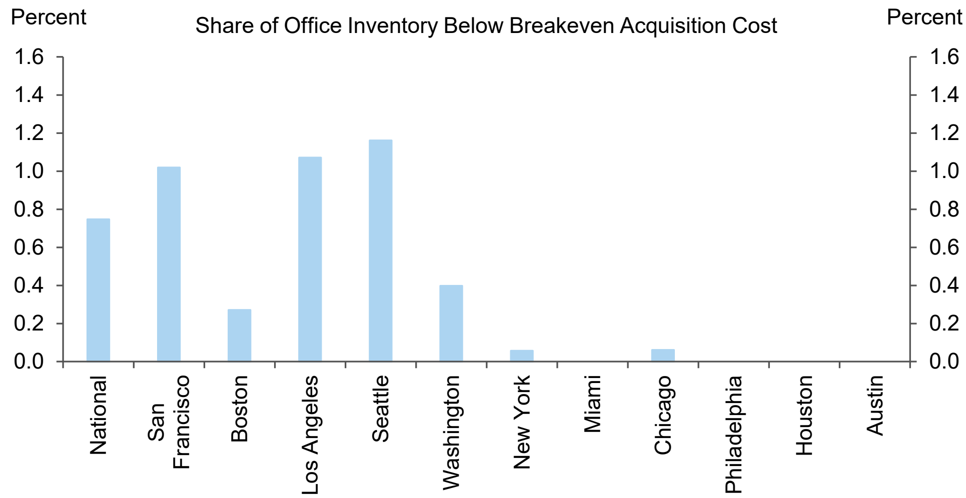


Note: The number label shows how much the average price needs to fall for conversion to be financially feasible.

Source: CoStar, Goldman Sachs Global Investment Research

Our analysis implies that only 0.8% of US office inventory is currently priced at a level that makes conversion to multifamily housing financially feasible. This number is slightly higher for San Francisco (1%), Los Angeles (1%), and Seattle (1.2%), but it is close to negligible in other metropolitan areas (Exhibit 10).

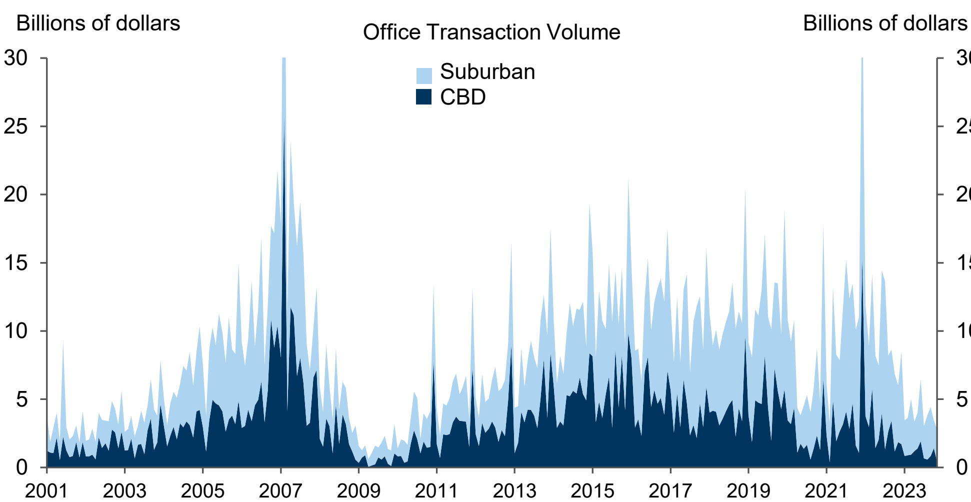
Exhibit 10: At Current Prices, Only a Small Fraction of Existing Office Space Could Be Profitably Converted to Multifamily Housing



Source: CoStar, Goldman Sachs Global Investment Research

This begs the question: why have office prices not fallen further? Our prior research suggests two main explanations. First, due to elevated commercial mortgage rates and high uncertainty around property valuations, office transaction volume has declined sharply (Exhibit 11). In turn, the price discovery has been suppressed, leading to listed prices that may not reflect current conditions. Second, operating and reevaluating office properties require institutional knowledge and resources. Because of these institutional barriers, many lenders have shown a willingness to extend or modify office mortgages that might otherwise default, delaying the need for forced property sales.

Exhibit 11: Office Transaction Volume Declined Sharply Over the Last Two Years, Which Likely Suppressed Price Discovery



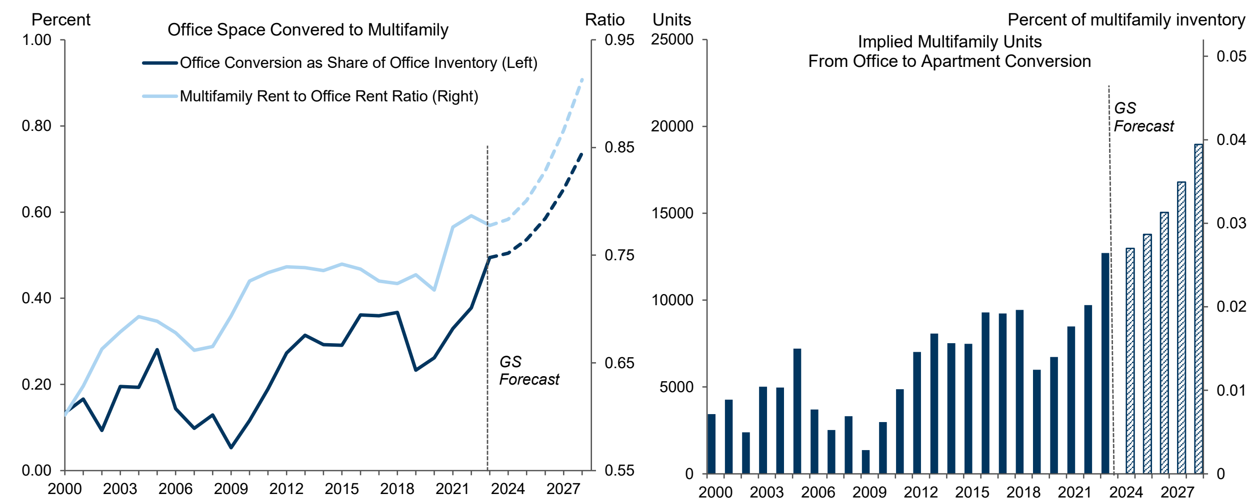
Source: CoStar, Goldman Sachs Global Investment Research

Until transaction prices and conversion breakeven prices converge, we expect that the long duration of office leases will allow many office buildings to continue operating, even as profit margins narrow. If lenders decide to foreclose on properties rather than repeatedly restructuring loans, then this holding pattern could break.

Implications for GDP

We expect the ratio of multifamily housing rents relative to office rents to increase in the next few years, as the office vacancy rate continues to rise and the residential housing supply remains low. We estimate that the annual conversion rate from office to multifamily will remain low and only increase by 0.1pp to 0.6% in 2026, and by another 0.1pp to 0.7% in 2028 (left side of Exhibit 12). The conversion will create just 20 thousand units for the multifamily market per year, a small amount compared to the 468 thousand multifamily units that were built in 2023 (right side of Exhibit 12).

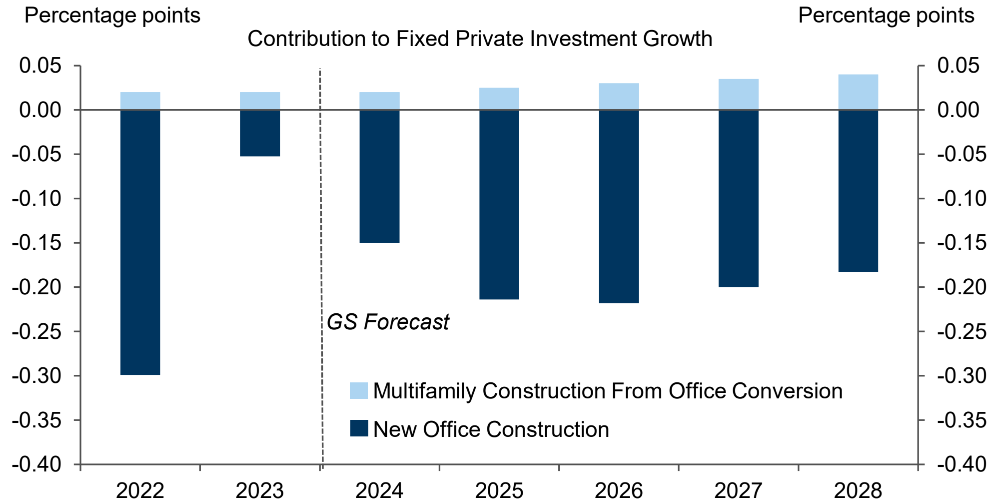
Exhibit 12: We Expect the Rise in the Office Vacancy Rate to Continue to Depress Office Rents Relative to Multifamily Rents, Leading to More Conversion From Office to Multifamily Apartments in the Next Few Years



Source: CoStar, CBRE, Goldman Sachs Global Investment Research

Because the conversion process is slow and costly, available office space is likely to remain excessive and many buildings are likely to remain underutilized. As a result, we expect that new office investment is likely to continue to decline in the next few years, resulting in a small multi-year drag on fixed private investment growth, which will only be offset modestly by increases in residential construction spending for conversion (Exhibit 13).

Exhibit 13: We Expect Office Investment to Continue to Decline in the Next Few Years, Resulting in a Small Multi-Year Drag on Fixed Private Investment Growth, Which Will Be Offset Modestly by Increases in Residential Investment From Office-to-Multifamily Conversion



Source: Goldman Sachs Global Investment Research

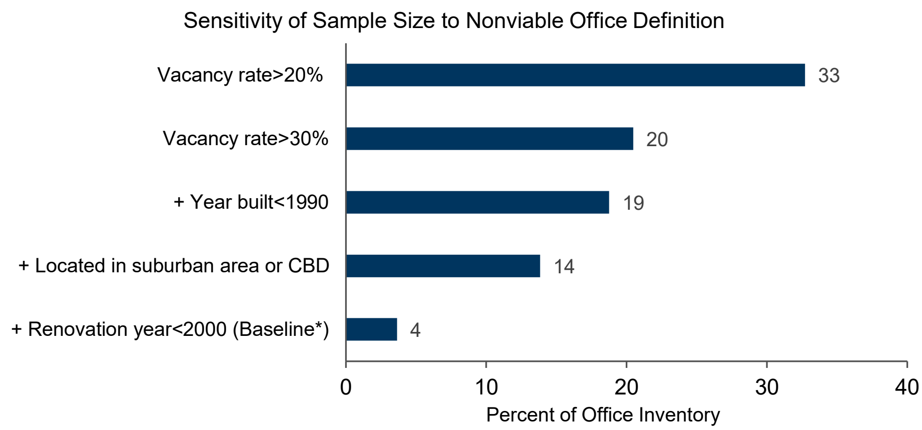
While the office-to-multifamily conversion rate is likely to remain low in the near term, we see opportunities for underutilized offices to be converted to other uses, such as life science labs, data centers, and medical facilities, which may require less modification and may be more cost-effective. We also see upside risks to the conversion rate from the rollout of several policy initiatives. For example, the White House recently announced a $6 billion subsidy for office-to-residential conversion, and several cities like New York and San Francisco have proposed zoning changes to facilitate the conversion.

Elsie Peng

Vinay Viswanathan

Appendix

The Share of Offices That Are No Longer Viable as Offices Shrinks as the Selection Criteria Become More Restrictive



Note: *Our baseline defines an office as nonviable if it is in either a suburban area or a central business district, was built before 1990, has not had a renovation since 2000, and has a vacancy rate higher than 30%.

Source: CoStar, Goldman Sachs Global Investment Research

Parameter Assumptions and Data Sources for the Discounted Cash Flow Model of Conversion

Parameters	Value on National Level	Source	Variation
Acqusition cost	$307/sqft	CoStar data	National, Metro-Level
Conversion cost	$280/sqft	Gupta et. al. (2023); Urban Land Institute Report (2023)	National, Metro-Level
Office tax rate	3.8%	Lincoln Institute of Land Policy (2023)	National, Metro-Level
Time to convert	2 years	Land assessment panel data	National
Regulatory cost	$6.2/sqft	Gyourko and Krimmel (2021)	National, Metro-Level
Multifamily rent in 2023	$4.5/sqft	CoStar data	National, Metro-Level
Rent growth	1.5% - 2% for 2024 - 2025 and 2.5% - 3% for 2026 onward	GS estimate	National, Metro-Level
Operating expense	30% of the gross rent	Gupta et. al. (2023)	National
Effective rent space from conversion	80% of the original office space	Gupta et. al. (2023)	National
Capitalization rate when sold	6%	CoStar data	National, Metro-Level
Multifamily tax rate of market value	2%	Lincoln Institute of Land Policy (2023)	National, Metro-Level
Targeted yield	8%	GS estimate	National
Loan-to-Value ratio	52%	Trepp data on loan origination	National, Metro-Level
Interest rate, 10-year ballon, 30-year amortization	7%	Trepp data on loan origination	National

Source: Goldman Sachs Global Investment Research

The US Economic and Financial Outlook

THE US ECONOMIC AND FINANCIAL OUTLOOK
(% change on previous period, annualized, except where noted)

	2022	2023 (f)	2024 (f)	2025 (f)	2026 (f)	2027 (f)	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2024 Q2	2024 Q3	2024 Q4
OUTPUT AND SPENDING														
Real GDP	1.9	2.5	2.9	2.1	2.0	2.0	2.2	2.1	4.9	3.3	2.4	2.6	2.3	2.0
Real GDP (annual=Q4/Q4, quarterly=yoy)	0.7	3.1	2.3	2.1	1.9	2.0	1.7	2.4	2.9	3.1	3.2	3.3	2.7	2.3
Consumer Expenditures	2.5	2.2	2.4	2.1	2.0	2.0	3.8	0.8	3.1	2.8	2.6	2.0	2.2	2.2
Residential Fixed Investment	-9.0	-10.7	4.2	2.8	3.0	2.4	-5.3	-2.2	6.7	1.0	7.6	4.5	3.5	2.0
Business Fixed Investment	5.2	4.4	2.6	3.3	3.8	3.6	5.7	7.4	1.5	1.9	2.7	2.5	2.0	2.7
Structures	-2.1	12.7	3.5	-1.1	2.9	3.0	30.3	16.1	11.2	3.2	5.8	1.0	-5.0	-6.0
Equipment	5.2	-0.1	1.9	5.5	3.8	3.2	-4.1	7.7	-4.4	1.0	0.7	3.0	5.0	7.0
Intellectual Property Products	9.1	4.3	2.7	3.9	4.3	4.5	3.8	2.7	1.8	2.1	2.8	3.0	3.5	4.0
Federal Government	-2.8	4.2	1.5	0.0	0.0	0.0	5.2	1.1	7.1	2.5	0.6	0.0	0.0	0.0
State & Local Government	0.2	3.8	2.9	1.1	1.0	1.0	4.6	4.7	5.0	3.7	2.1	3.0	1.0	1.0
Net Exports ($bn, '17)	-1,051	-926	-898	-929	-942	-931	-935	-928	-931	-908	-894	-896	-897	-904
Inventory Investment ($bn, '17)	128	51	65	78	60	60	27	15	78	83	40	62	78	78
Industrial Production, Mfg.	2.7	-0.6	1.1	3.4	3.3	3.3	-0.3	0.4	-0.5	-2.0	1.2	3.0	3.4	3.5
HOUSING MARKET														
Housing Starts (units, thous)	1,551	1,422	1,469	1,540	1,584	1,590	1,385	1,450	1,371	1,483	1,425	1,457	1,483	1,511
New Home Sales (units, thous)	637	668	787	840	848	885	638	691	693	652	746	777	807	818
Existing Home Sales (units, thous)	5,087	4,101	4,177	4,631	4,706	4,907	4,317	4,187	4,020	3,880	3,932	4,132	4,257	4,386
Case-Shiller Home Prices (%yoy)*	7.5	5.6	5.5	4.4	4.9	4.9	2.3	-0.2	2.5	5.6	7.6	7.4	6.4	5.5
INFLATION (% ch, yr/yr)														
Consumer Price Index (CPI)**	6.4	3.3	2.9	2.5	2.2	2.2	5.7	4.0	3.6	3.2	3.2	3.2	3.0	2.9
Core CPI **	5.7	3.9	3.2	2.4	2.3	2.3	5.5	5.2	4.4	4.0	3.7	3.4	3.4	3.2
Core PCE** †	4.9	2.9	2.3	2.0	2.0	2.0	4.8	4.6	3.8	3.2	2.7	2.3	2.3	2.3
LABOR MARKET														
Unemployment Rate (%)^	3.5	3.7	3.6	3.6	3.6	3.6	3.5	3.6	3.8	3.7	3.6	3.6	3.6	3.6
U6 Underemployment Rate (%)^	6.5	7.1	6.9	6.9	6.9	6.9	6.7	6.9	7.0	7.1	6.9	6.9	6.9	6.9
Payrolls (thous, monthly rate)	377	255	134	75	75	75	305	274	213	227	211	125	100	100
Employment-Population Ratio (%)^	60.1	60.1	60.1	59.9	59.8	59.6	60.4	60.3	60.4	60.1	60.3	60.3	60.2	60.1
Labor Force Participation Rate (%)^	62.3	62.5	62.4	62.2	62.0	61.8	62.6	62.6	62.8	62.5	62.6	62.5	62.5	62.4
Average Hourly Earnings (%yoy)	5.4	4.5	3.8	3.3	3.3	3.3	4.6	4.6	4.5	4.3	4.1	3.9	3.6	3.5
GOVERNMENT FINANCE														
Federal Budget (FY, $bn)	-1,375	-1,700	-1,700	-1,900	-1,900	-2,050	--	--	--	--	--	--	--	--
FINANCIAL INDICATORS														
FF Target Range (Bottom-Top, %)^	4.25-4.5	5.25-5.5	4.25-4.5	3.25-3.5	3.25-3.5	3.25-3.5	4.75-5	5-5.25	5.25-5.5	5.25-5.5	5.25-5.5	5-5.25	4.5-4.75	4.25-4.5
10-Year Treasury Note^	3.88	3.88	4.00	4.00	4.00	4.00	3.48	3.81	4.59	3.88	3.85	3.75	3.85	4.00
Euro (€/$)^	1.07	1.11	1.11	1.15	1.15	1.15	1.09	1.09	1.06	1.11	1.08	1.09	1.10	1.11
Yen ($/¥)^	132	141	141	130	125	120	133	144	149	141	149	144	142	141

* 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. Annual numbers are Q4/Q4.
** Annual inflation numbers are December year-on-year values. Quarterly values are Q4/Q4.
† PCE = Personal consumption expenditures. ^ Denotes end of period.
Note: Published figures in bold.
Source: Goldman Sachs Global Investment Research.

Source: Goldman Sachs Global Investment Research

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We, Jan Hatzius, Alec Phillips, David Mericle, Spencer Hill, CFA, Ronnie Walker, Manuel Abecasis, Tim Krupa, Elsie Peng, Jessica Rindels and Vinay Viswanathan, 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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