

Measuring Risk in Private Real Estate: How Much Uncertainty Is There Right Now?



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Risk is a slippery concept. We all have an intuitive idea of what it means and can probably think of examples in which one investment seemed riskier than another or periods of time when risk seemed higher than normal. But how exactly is risk measured?

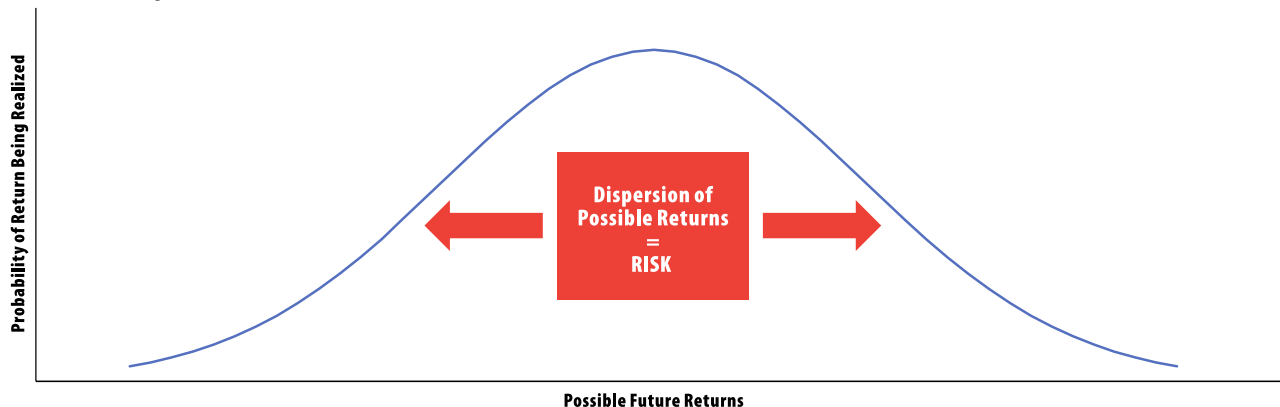
Conceptually, risk has to do with how widely dispersed the possible future returns to an investment are, as illustrated in Exhibit 1. This may seem familiar from an introductory finance course in college—you cannot know exactly what returns an investment will generate, but you can think of the different possibilities (on the horizontal axis of the exhibit) and the probability each one will actually occur (the vertical axis). The middle of the chart gives the most likely outcome (the “expected return”), but you know you are unlikely to end up getting exactly what you expect, which is the essence of risk.¹ How widely dispersed the possible outcomes are is a measure of the risk of the investment—a very narrow band of possible outcomes means the ultimate return might not be exactly what was expected going in, but it will probably be close; therefore, the investment is not very risky. On the other hand, if the possible results cover a wide range, with both big losses and big gains possible, then that investment is inherently more uncertain and therefore riskier.²

In the 1950s, Harry Markowitz was the first to formalize this concept and realize that the dispersion of possibilities could be measured by the standard deviation of the return distribution, which could then be used as a measure of investment risk. Conceptually, this makes sense, but the hard part comes with implementation because no one can actually see what the distribution of possible future returns actually is. Typically, a series of returns from the past is used to measure the standard deviation (i.e., the return volatility), and that is the measure of risk. This is fine if the future will always be similar to the past, which is not true. Some times are highly volatile and other times are low risk, meaning past returns are not always a good indicator of how risky something will be in the future. Over the 70 years since Markowitz’s work, researchers (mostly in the equity markets) have developed more and more complicated measures of risk in an attempt to get around this issue, with mixed results. To be honest, even in the heavily researched

1. For simplicity, Exhibit 1 uses a typical bell curve to represent the future possible outcomes to an investment, and the middle shows the highest probability outcomes. Using a bell curve isn’t necessary—it just makes thinking of the concepts more straightforward.

2. I am abstracting here from the concept of downside risk—i.e., it is only the possibilities worse than the expected or target returns that really constitute risk (no one is upset if returns are more than were anticipated). For a fuller discussion of downside risk measures and their application to real estate, see Jeffery D. Fisher and Joseph D’Alessandro, “Portfolio Upside and Downside Risk—Both Matter!” *The Journal of Portfolio Management*, PREA-sponsored Special Real Estate Issue, 2021.

Exhibit 1: Conceptual Illustration of Investment Risk



Source: PREA Research

equity market, after 70 years no one has a firm grasp on exactly how to measure risk. Measuring risk is even more problematic in the private real estate market.

Property values, especially appraised values, tend to react slowly to changing market conditions and often trend over time. There have been times, including the start of the current down cycle, when “everyone knew” values were going lower even though reported transactions and appraised values had not reflected that yet. In private real estate, relying on past prices or reported returns to measure current risk levels can be misleading, even beyond the fact that the past is not always a perfect representation of the future.

I suggest an alternative measure of risk for the private real estate market, which gets at the intuition of Exhibit 1 and is based on current market conditions and not on data from the past. This measure is not for specific individual assets but rather for the market overall or for a sector and is a relative, not absolute, measure of risk (i.e., it indicates if today is more or less risky than other time periods, but today’s number itself has little meaning). Nevertheless, it may be useful in framing investors’ thinking about the risk they face in the market. This measure of risk is based on the amount of disagreement among real estate forecasters.

Imagine that different forecasters, all experts in real estate, are asked for their forecasts of future returns to the asset class over a specific time period—say, the next year. In all likelihood, many of these forecasters will disagree with one another, some believing returns will be high, and others believing they will be low. The amount of disagreement can be used as a measure of risk. As an example, at the time of writing, the yield on one-year US Treasuries is 4.86%. These are considered a risk-free investment if they are held until maturity in one year. If forecasters are asked to predict the return on a one-year Treasury held for one year, they would all predict 4.86% because the answer is known. No disagreement indicates no risk. But the less certain the future return on an asset is, the more room for disagreement among the forecasters; hence, higher amounts of disagreement indicate higher risk. The dispersion of possible future returns, as shown in Exhibit 1, could be measured by how widely dispersed forecasts are of the future returns, which can be measured by the standard deviation across multiple different forecasts of future returns.

The [PREA Consensus Forecast Survey](#) has asked real estate forecasters for their predictions of returns to US real estate (specifically, to the NCREIF Property Index, or NPI) every quarter since 2Q2010. It asks for forecasts of returns in the current calendar year, the next year, and the year after that, as well as for the market overall and for each of the four main property types. Because multiple forecasters respond each quarter, the standard deviation across the different forecasts can be calculated as a measure of how much the forecasters disagree with one another. Because the forecasters are presumably incorporating their views on current market conditions into their forecasts, this measure of risk can be used to evaluate current levels of risk in the market and across property types and how risk has developed over time without relying on past returns and assuming that current conditions are similar to those of the past.

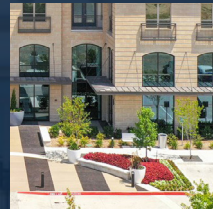
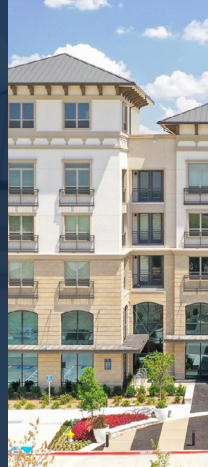
Comparing to Another Measure of Risk

Seeing how the results of this alternative measure of risk compares to another, more commonly accepted, measure of risk is informative. Knowing that the alternative risk measure has at least some relationship to more traditional approaches reassures its use as a risk measure.

As the measure of risk in private real estate in each quarter from 2Q2010 to 4Q2023, I take the forecasts of appreciation returns (to the NPI overall and to each sector—apartment, industrial, office, and retail) that were submitted to the survey and calculate the standard deviation across the forecasts. I use that as a measure of risk in the private real estate market.³ In each case, the forecasts are of returns to the real estate indices in the calendar year of the survey.⁴

3. I use forecasts of appreciation returns rather than total returns (including income) because most variations in real estate returns over time are because of changes in appreciation rates. Income returns tend to be relatively stable and hence not a great source of risk.

4. In each quarterly Consensus Forecast Survey, the survey asks for a forecast of the calendar year’s return. For example, in 2023, each of the four quarterly surveys asked for a forecast of 2023 returns (as well as 2024 and 2025), and I use these forecasts of appreciation returns in the analysis. Note that because the same calendar year is being asked about in four quarterly surveys, the forecasts submitted should become more accurate as time passes—e.g., in the fourth quarter survey, the forecasters already have observed three quarters of realized returns, and the only source of uncertainty is what the return will be in the fourth quarter. Hence, there should be some seasonality in the data because the dispersion across forecasts should become less over subsequent surveys within each year.



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Exhibit 2: Correlations Between Risk Measures

		Public Market CRE Risk	
		Volatility of Daily REIT Index Returns in Same Quarter As the Survey	Volatility of Daily REIT Index Returns in Quarter Prior to the Survey
Private CRE Risk Measure, Standard Deviation Across Forecasts of Appreciation Returns	NCREIF Property Index	0.383	0.517
	Apartment Index	0.368	0.462
	Industrial Index	0.279	0.275
	Office Index	0.527	0.587
	Retail Index	0.468	0.616

Sources: PREA Research based on data from the PREA Consensus Forecast Survey, 2Q2010 to 4Q2023; Refinitiv Datastream

Notes: The exhibit presents the correlations between the proposed measure of risk in the private real estate market and return volatility from the REIT market, based on daily returns within each quarter. The overall REIT market is represented by the FTSE Nareit Equity REIT Index, and each sector is represented by the appropriate FTSE Nareit subindex. All correlations in the exhibit are statistically different from zero (at conventional levels).

As a comparison, I use the volatility of daily price returns each quarter from the publicly traded REIT market. Although REITs and private real estate should not be expected to have exactly the same risk, the two markets are certainly related, and it would be encouraging if the suggested measure of risk was correlated with the more commonly accepted measure based on REITs. Exhibit 2 presents the correlations between the new risk measure and the quarterly risk measure from the REIT market.

As can be seen, the proposed measure of risk in the private market is strongly correlated with the traditional measure of risk from the REIT market. The correlations tend to be much stronger when REIT volatility is measured in the period prior to when the consensus forecast survey is conducted, indicating that, as with values, the public market may lead the private market in reflecting risk.

Obviously, the correlations are not perfect in Exhibit 2. But the strength of the relationship indicates that the level of disagreement among private market forecasters is related to risk in the real estate market (as measured by a more traditional metric). Hence, it may have value as a measure of risk that is based specifically on the private real estate market and ongoing forward perceptions rather than historical data.

How Risky Is the Current Market?

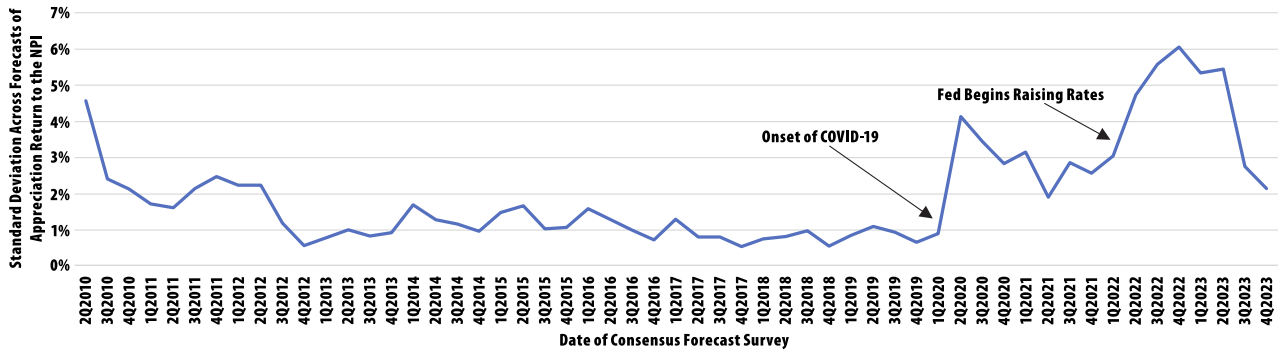
Exhibit 3 shows how the measure of risk, the standard deviation across different forecasters' forecasts of appreciation return to the NPI, has developed over time from 2Q2010 to the end of 2023. It is important to realize that the chart gives no indication of whether the market is expected to be "good" or "bad" in terms of returns or the direction of property values but is simply measuring the risk (i.e., the

uncertainty) in the market at each point in time. Also of note is that, as mentioned in footnote 4, there is seasonality in the data, with the risk measure typically decreasing throughout each year, with the lowest in the fourth quarter as more and more of the returns for that calendar year become known.

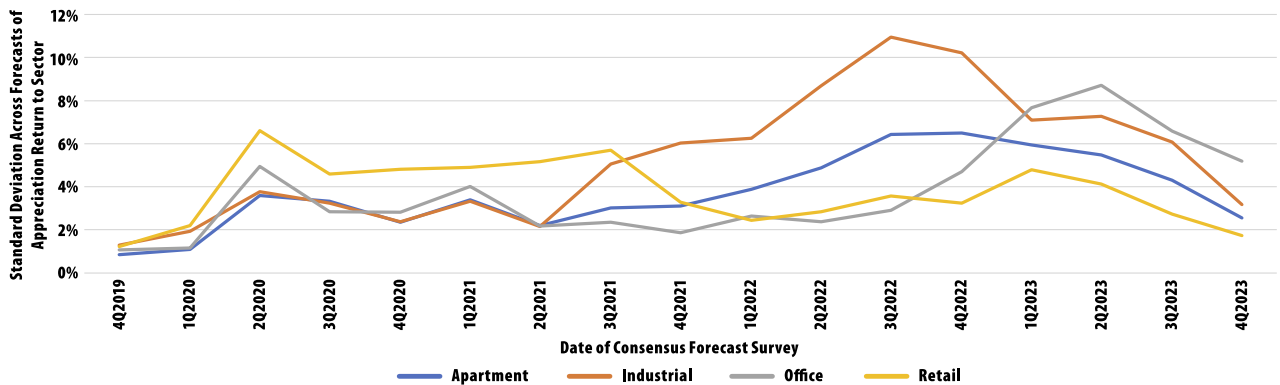
In the years prior to the COVID-19 pandemic, risk in the market was relatively low and quite stable, according to this measure. The spike in risk at the onset of the pandemic is quite apparent in Exhibit 2, although the uncertainty did begin to dissipate fairly quickly, albeit never returning to its pre-pandemic level. Once the Federal Reserve began its cycle of raising interest rates, however, risk in the market rose to its highest level recorded on the chart. The good news for current investors is that risk in the private real estate market has subsequently decreased substantially as the market has come to grips with the implications of higher interest rates (and the possibility that the cycle of rate increases will reverse at some point). As of the end of 2023, risk remained elevated compared to pre-pandemic times but was substantially lower than at the end of 2022.

Exhibit 4 shows the risk measure separately for each of the four major property types. The time period in Exhibit 4 is constrained to 4Q2019 to 4Q2023 simply to enhance the clarity of the chart. Although all four property types had similar risk levels at the end of 2019, they diverged with the start of the pandemic. All four show spikes in risk coinciding with the pandemic, as well as with the start of interest rate increases, although the size of the spikes (and timing with respect to interest rates) varies.

As of the most recent data at the end of 2023, office is, unsurprisingly, the riskiest sector, although perceived risk in office has declined since mid-2023. Retail is the least risky,

Exhibit 3: Risk in the US Commercial Real Estate Market Over Time

Source: PREA Consensus Forecast Survey

Exhibit 4: Risk by Property Type, 2019 to 2023

Source: PREA Consensus Forecast Survey

which is an interesting contrast to the period following the onset of the pandemic, when retail was judged the highest-risk property sector. Again, it is important to note that “least risky” does not necessarily mean “best performing”; the measure of risk illustrated in the exhibit does not indicate forecasts of overall investment prospects but rather how much uncertainty there is about those prospects.

Although industrial has been shown, most recently, to be slightly riskier than the apartment sector but substantially less so than office, the spike in risk for industrial during 2022 is obvious in the exhibit—at that time, industrial was by far the riskiest sector from among the four. Recall at the time that industrial was coming off a period of stellar returns for investors, with some forecasters expecting these very high returns to continue and others expecting a reversal (especially once interest rates began rising). At that time, going-forward prospects for industrial were particularly uncertain, with

both very high and very low returns possible, leading the risk measure to spike greatly for industrial during 2022.

Overall, this proposed measure of risk for the private real estate market, the standard deviation across different forecasts of returns to the market, does not provide any answers to investors in terms of investment strategy. It does, however, provide another method to view the amorphous concept known as risk so that investment strategy decisions can be made with a clearer view of the market background investors are facing. ■

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