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Operating leverage

The hidden leverage in real estate investment?

The capital structure of an investment typically gets a lot of attention, but the cost structure of the underlying property may be, in some cases, just as important and is growing ever more so. Operating leverage, based on the extent to which costs are fixed versus variable, is a determinant of the risk profile of an investment, and evidence shows it varies significantly across property sectors. Understanding the drivers of operating leverage can help with decision-making around risk management, investment, and financing.

Investors may be ignoring an important component of leverage and a meaningful contributor to risk. Typically, a lot of attention is paid to the capital structure of an investment (financial leverage) and the effects of debt are well known.

However, operating a property involves some fixed (i.e., independent of revenue) costs, and those fixed operating costs can add to the risk of an investment just as do the fixed costs of debt. A property's balance between fixed and variable costs determines its operating leverage. While often not given the same level of scrutiny as the capital structure, operating leverage can have just as big of an impact on risk.

Investors should be aware of operating leverage not only because it impacts their risk exposure, but also because it may be relevant for strategic investment and financing decisions. Not considering how operating leverage may vary across different types of investment means ignoring an important component of risk.

KEY TAKEAWAYS

THE FORGOTTEN LEVERAGE

Operating leverage is based on the cost structure of a property and can have just as big an impact on an investment's risk as its capital structure. While real estate investors give a lot of thought to leverage from capital structure, they often give little, if any, consideration to operating leverage.

GROWING IMPORTANCE

Understanding operating leverage and its effect is becoming more important for investors as the market evolves, due to the increased importance of alternative property sectors, increasing operational intensity of traditional property sectors, and increases in some types of fixed costs.

DIFFERENCES ACROSS SECTORS

Empirical evidence shows that operating leverage varies significantly across property sectors, sometimes in line with conventional wisdom, but sometimes not.

Two types of leverage

Debt in the capital structure increases risk. Because debt holders get paid first and interest payments are fixed, any change in net operating income (NOI) is amplified and has a bigger impact on the income accruing to equity holders.

Similarly, fixed operating costs also increase risk. Because fixed costs are incurred no matter the level of revenue, any change in revenue is amplified in terms of its impact on NOI.

A key idea is both forms of leverage — financial and operating — are elasticities. Operating leverage is the elasticity of NOI with respect to revenue and tells you how much NOI will change in relation to a change in total revenue. Similarly, financial leverage is the elasticity of owner income with respect to NOI and tells you how those changes in NOI are amplified and filter through to the owner's net income. See the simplified numerical examples on the next page for a demonstration of how the numbers work out to determine the 'degree of operating leverage' and 'degree of financial leverage'.

The two forms of leverage compound each other in determining the amount of risk to which equity investors are exposed. If a property that has high fixed operating costs by its nature is financed with a high LTV, the overall level of risk will be quite high, as both operating and financial leverage are high. Investors faced with a limited risk budget may prefer to finance those types of properties with a lower LTV. Properties with low fixed costs on an operating level may be more suitable for financing with higher levels of debt.

All properties will see changes to revenue over time, whether from market-wide cyclical factors or property-specific changes, and it is the combination of financial leverage and operating leverage that determines how those changes ultimately affect property owners and how much risk the properties carry. There is no single right answer as to how to balance operating and financial leverage, or even what an appropriate level of risk is, but the key point is that investors should give thought to both types of leverage as well as the interaction between them.

The increasing importance of operating leverage

Operating leverage, already a key component of risk for real estate investors, may be growing in importance over time. It is often thought that a key determinant of the operating leverage in a real estate sector is its operational intensity, the degree to which a property may operate as a form of ongoing business rather than as a passive real estate asset (although as we will see below, operational intensity and operating leverage do not always go hand in hand).

A property that is essentially a shell out of which you lease space on a triple net basis is likely to have very low fixed costs of operation. On the other hand, some property sectors require ongoing services to be provided to tenants and the staffing and infrastructure to provide those services need to be in place whether space is occupied or not, resulting in fixed costs. Hotels are a typical example of a sector with a high operational component; even vacant rooms require utilities to be paid, staff at the desk and in the kitchen, cleaners, and marketers.

Many alternative property sectors, which have increased in popularity with investors in recent years, are considered to be more hands-on as businesses than the traditional real estate sectors which can be more passive. As alternative sectors such as senior housing and self-storage continue to gain ground in the investment market, operating leverage will become of even greater importance to investors. For example, a research paper recently published in the PREA-sponsored special real estate issue of *The Journal of Portfolio Management* states that while "alternatives present compelling diversification benefits, successfully managing these generally more operationally intensive sectors may necessitate sector-specific expertise."[1]

Even for the traditional property sectors, operating leverage may become more important over time. A research report in 2024 from the University of Oxford argues that active asset management is becoming more important due to changing occupier preferences and increased negotiating power, advances in technology, and sustainability considerations.[2] These trends ultimately lead to a leasing model more focused on space-as-a-service and more active management of assets will be required to achieve investment goals. Real estate investments will become more operationally intensive over time as the space-as-a-service model becomes more widespread, perhaps leading to an increase in fixed costs for operators.

Finally, operating leverage is increasing in importance not only because of fundamental shifts in the market and the underlying business, but simply because certain fixed costs are going up. A key example of this is insurance.

EXAMPLE 1: DEGREE OF FINANCIAL LEVERAGE

A simplified example of the effect of debt on risk

Assumptions

Asset value = $100
NOI = $6 (i.e., cap rate = 6%)
LTV = 40%
Cost of debt = 5%

Result

Capital structure: Equity = $60
Debt = $40
Interest expense = $2 (= 5% x 40)
Income to equity = $4 (= $6 - $2)

But if NOI decreases by 1% to $5.94, then equity income decreases to $3.94, a 1.5% decrease.

The 'degree of financial leverage' is 1.5. Changes to NOI affect equity income 1.5 times as much because of debt in the capital structure.

Note: This is a very simplified example to illustrate a concept and ignores taxes and depreciation and other complexities.

EXAMPLE 2: DEGREE OF OPERATING LEVERAGE

A simplified example of the effect of fixed operating costs on risk

Assumptions

Revenues = $10
Fixed costs = $1
Variable costs = 30% of revenues

Result

Variable costs = $3 (= 30% x $10)
NOI = $6 (= $10 - $1 - $3)

But if revenues decrease by 1% to $9.90, then NOI decreases to $5.93, a 1.17% decrease.

The 'degree of financial leverage' is 1.17. Changes to revenues affect NOI 1.17 times as much because of fixed costs in the operating cost structure.

Note: This is a very simplified example to illustrate a concept and ignores many complexities.

From a relatively minor line item expense several years ago, the cost of insurance has risen dramatically and is now becoming a top-of-mind issue for many property investors. MacKinnon (2023), writing in a previous issue of the *PREA Quarterly*, provides a discussion of the increase in the cost of insurance for multifamily properties, including how it has varied by location and asset type.[3]

Comparing operating leverage across sectors

If operating leverage is important, and likely to become more important in the future, a crucial question for real estate investors is: How does operating leverage vary across different property sectors? Are there sectors that typically have higher operating leverage and others that have less? This is an important question for strategies around risk management, investment, and financing.

To examine this question, quarterly data from NCREIF on revenues and NOI per square foot by sector was used. As shown in the sidebar titled 'Two types of leverage', the degree of operating leverage relates to how changes in revenue feed into changes in NOI, so looking at how these factors relate over time allows one to estimate the operating leverage and compare it across different sectors.[4] The data goes up to 3Q2025 and starts in 2000 for the traditional property types, giving almost 25 years of data to estimate operating leverage. The alternative sectors, being newer to the institutional market, do not have as long a series of historical data. Data on revenues and NOI starts in 2Q2003 for self-storage, 4Q2003 for senior housing, and later for others: 1Q2008 for parking, 4Q2009 for student housing, 2Q2019 for data centers, 4Q2021 for single-family rental (SFR), and 4Q2022 for manufactured housing.

In interpreting the results, one should keep in mind that only limited data over a few years, and across a smaller total number of properties, is available for some of these alternative sectors; it is possible that estimates of operating leverage for some of these sectors might change as we get more data and move through the real estate cycle.

Before looking at the actual results, it may be helpful to put the numbers in a more intuitive framework. Real estate investors are accustomed to thinking in terms of debt and LTV and its effect on risk. How do you interpret a degree of operating leverage of, say, 1.2? Let's use the simplified example from the sidebar ($100 asset, NOI of $6, cost of debt is 5%): if the asset is funded at an LTV of 20%, then the degree of financial leverage is 1.2. That would have the same impact on risk over the cycle as a degree of operating leverage of 1.2; so, in a very loose sense, an operating leverage of 1.2 has a similar effect to

an LTV of 20%, on top of any actual debt used.

Similarly, a degree of operating leverage of 1.1 would be (again, loosely) similar to using an LTV of 10%, while an operating leverage of 2.7 would be analogous to an LTV of 75% in terms of its effect on risk. With that as a general, intuitive way to think of the numbers, we can look at the results.

The results are presented in 1. The chart shows the degree of operating leverage (i.e., the elasticity of NOI with respect to revenue as discussed in the sidebar titled 'Two types of leverage') for each real estate sector, both traditional and alternative. Hotels, unsurprisingly given the nature of the business, have the highest degree of operating leverage, more than twice the level of the next highest (parking). For the hotel sector, a 1% decline in revenues is associated with an average 2.87% decline in NOI. If one puts aside hotels as an outlier among the sectors, parking has operating leverage substantially higher than other sectors, reflecting the fact that very few operating costs of parking will be variable (at least in the short term) and unlikely to vary with usage.

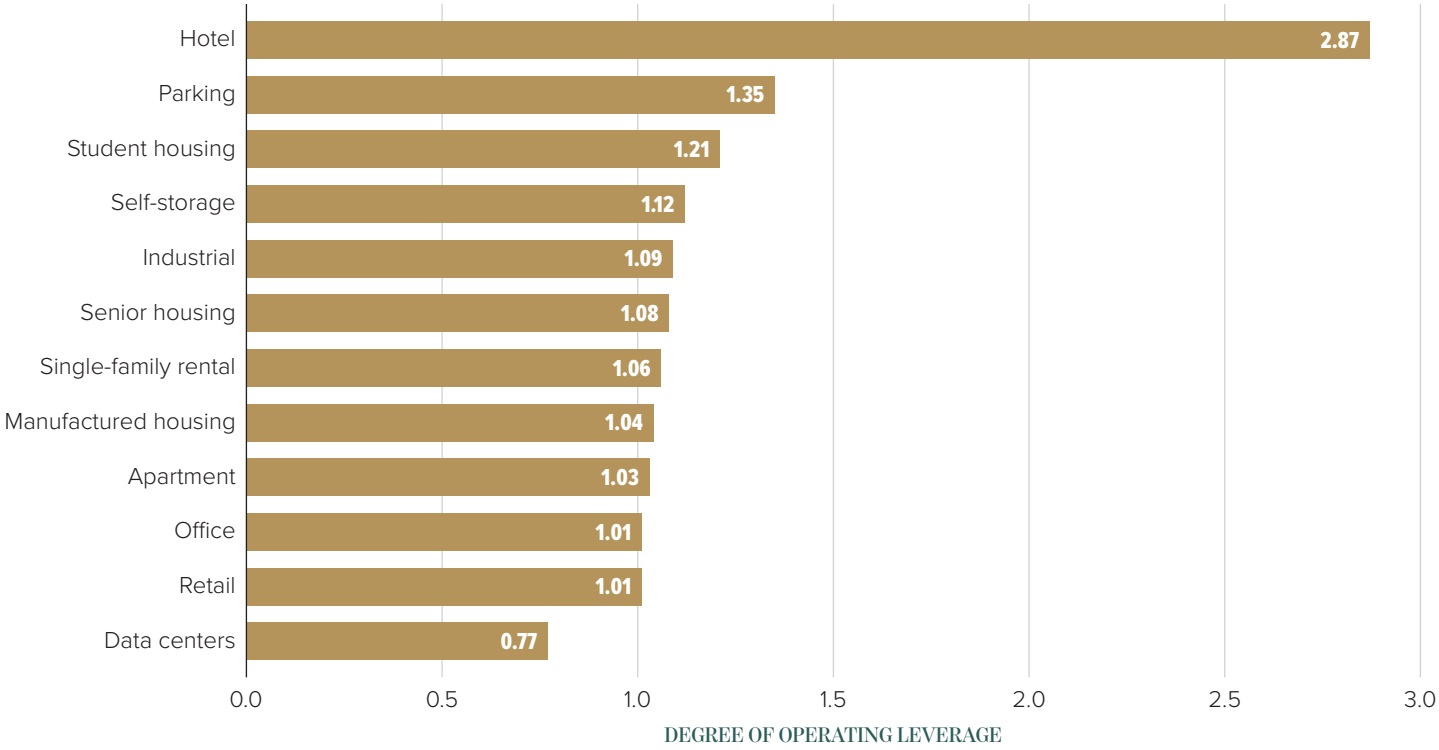
Student housing exhibits operating leverage substantially higher than traditional apartments (1.21 versus 1.03), likely reflecting the greater level of tenant services often required in student housing. NOI is more sensitive to changes in revenue in student housing than in traditional multifamily, although a fuller picture of overall risk would need to also compare how variable revenue is in the two sectors. Of course, this greater sensitivity is not necessarily a bad thing; if one expects revenue to increase due to strength in the underlying demand for space, student housing will benefit more than traditional apartments. As with the use of debt in the capital structure, leverage is a two-edged sword — it can be beneficial when times are good but exacerbate problems in a downturn.

The other alternative residential sectors — senior, SFR, and manufactured housing — also have degrees of operating leverage higher than traditional multifamily, although not to the same extent as student housing.

1

The degree of operating leverage does not always line up with conventional wisdom

Evidence shows that parking, a straightforward sector with low operating costs, has higher operating leverage than senior housing, a more complex asset with high operating costs.



Source: PREA Research based on data from NCREIF.

While the operating leverage in SFR is higher than in apartments, it is only very slightly so; despite the need to service units that are geographically dispersed (something that was a concern when SFR first came to the attention of institutional investors), there seems to be only a very modest difference in operational fixed costs compared to traditional multifamily.

Senior housing is often presented as an example of a property sector that is very operationally intensive, and sometimes considered even more so than hotels. It is perhaps surprising, then, that its estimated degree of operating leverage is higher than apartments but not by very much. In fact, at 1.08 it is at about the same level as industrial. However, this is not as unintuitive as it may appear. The major operating cost in senior housing is labor. The use of part-time labor, overtime, flexible scheduling, and agency staff allow labor costs to vary with occupancy to a certain degree rather than be fixed, thus creating lower operating leverage.

Understanding what drives operating leverage is crucial for understanding how it affects risk, and why sometimes the conventional wisdom about which sectors have more or less operating leverage is not always correct.

A good example is comparing senior housing (operationally complex, high operating costs, relatively low operating leverage) with parking (not complex, relatively low operational costs, high operating leverage). Intuition might say that, due to its operational intensity, senior housing would have higher operating leverage, but that is not what the evidence shows. It is important to understand that operating leverage, which affects risk, is not based on how complex a sector is or how high its total costs are, but on how costs are structured between fixed and variable. As noted, senior housing may have high total costs and be an operationally complex sector, but many of those costs (labor) can be variable. Parking may be a much simpler sector in which to operate, with relatively low total operating costs, but the costs that are there are largely fixed. In the end, the straightforward sector has higher operating leverage than the more complex one. Oftentimes looking at the data supports the conventional wisdom (e.g., hotels), but sometimes challenges it (e.g., senior housing and parking).

The sector with the lowest estimated operating leverage is data centers, which has the unusual situation of a degree of operating leverage of less than one. This may not be as counterintuitive as one might initially think.[5]

Data centers' degree of operating leverage of 0.77 implies that an increase (decrease) in revenues of 1% only results in NOI increasing (decreasing) 0.77%, i.e., the effect on NOI of changes in revenue is actually mitigated by the cost structure. This implies that margins decline with the level of revenue, i.e., costs increase more than revenue increases during an expansion.

The largest cost for data centers is electricity, which scales with use and is therefore a variable cost (and is often passed through to tenants). On the other hand, line items such as maintenance and monitoring to ensure reliability, spending on network equipment, and other items may actually increase at a greater rate than revenues as usage increases — a more intensively used data center may require more spending per dollar of revenue generated.

Not being an expert on data center costs, this is somewhat speculative, but the main point is that reasonable situations can result in operating leverage less than one. In this type of situation, upside potential becomes more limited as margins decline with increased usage, but downside risk is also mitigated as costs can decrease by more than revenues if usage declines. Hence, a degree of operating leverage less than one has a risk-reducing effect.

The key point

While real estate investors spend a great deal of time thinking about the effect of financial leverage (i.e., debt), the industry tends to give far less thought to operating leverage even though it may be, in some cases, just as important as the capital structure decision.

The level of operating leverage varies across different sectors and different types of real estate assets. Sometimes that variation is consistent with conventional wisdom, but sometimes it isn't. Investors wishing to truly understand the risk to which they are exposed need to dive down into the cost structure of an investment to get a better idea of how it might perform over a cycle.

[1] Fitzgerald, M., J.D. Fisher, and W. McIntosh. 2025. "Do Non-Traditional Property Sectors Reduce Risk in a Core Portfolio?" *Journal of Portfolio Management* 51(11, Special Real Estate Issue): 61–79. Available to PREA members at https://docs.prea.org/pub/7DF6D4CF-A945-B4EB-8728-1CBA1C702A2A.

[2] Baum, A. and V. Shegoyan. 2024. "The Real Estate Investment Manager of the Future." Working paper, University of Oxford.

[3] MacKinnon, G. 2023. "Increasing Insurance Costs for Multifamily Vary by Location, Asset Type, and Affordability." *PREA Quarterly* (Fall 2023). Available at: https://docs.prea.org/pub/E7333392-A368-373F-9B2D-475116DAFEB1.

[4] For the research nerds in the audience who would like to know precisely how the degree of operating leverage was estimated, it is actually quite simple. The natural log of NOI price per square foot (psf) and of revenue psf for each sector was calculated, and then a regression was estimated of logged NOI on logged revenue. Using logs of the data allows the slope coefficient in the regression to be interpreted as an elasticity, and hence equals the degree of operating leverage. Note that for hotels there were three quarters (2Q2020 through 4Q2020) where aggregate NOI was actually negative, coinciding with COVID-19, which means the natural log cannot be calculated. I simply set these NOIs' psf to be $0.01 to facilitate the calculation. However, simply omitting those data does not to a large degree change the end results for hotels.

[5] Admittedly, the estimate for data centers is based on a shorter history involving a smaller number of assets, so perhaps the low estimate of operating leverage is simply a matter of not having enough data to properly estimate it accurately.

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