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Demystifying Debt Yields

by Jack Corgel, Ph.D.
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Demystifying Debt Yields

by Jack Corgel

EXECUTIVE SUMMARY

Commercial mortgage lenders have increasingly applied a debt yield ratio standard in determining loan size and feasibility. Consequently, an understanding of this new ratio is valuable for the commercial borrowers, including the hospitality industry. The debt yield is the net operating income divided by the loan amount, and a 10- to 12-percent debt yield is typical. An analysis of this metric finds that the debt yield is related to the more common standards of debt coverage ratio and mortgage constant, in that the debt coverage ratio is the ratio of the debt yield to the mortgage constant, which is essentially a risk-related number. Although the debt yield is a loan capitalization rate, it does not conceptually relate to the interest rate or to the property capitalization rate. Thus, although the debt yield metric may be unfamiliar to the hospitality industry, it is related to the more familiar debt coverage ratio.

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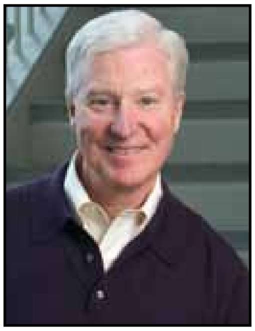

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This article benefited from comments by Jan deRoos and Wally Boudry.

Demystifying Debt Yields

by Jack Corgel

Like a thief in the night, debt yield ratios (DY) snuck into the offices of commercial mortgage lenders in the U.S. and took over loan sizing methodology. According to C-Loans.com,

> It is the money center banks and investment banks originating fixed-rate, conduit-style commercial loans that are using the new Debt Yield Ratio. Commercial banks, lending for their own portfolio, and most other commercial lenders have not yet adopted the Debt Yield Ratio."[1]

Notwithstanding that observation, discussions with a hotel lending executive at a money-center bank indicates that the use of DY has become pervasive in the commercial mortgage lending industry.[2] With loan sizing arguably the most important underwriting decision made by commercial mortgage lenders, the question pondered in this article involves the utility of a DY methodology for loan sizing relative to traditional methodologies based on loan-to-value (LTV) and debt coverage (DCR) ratios. I find the DY method has a simple, fundamental relationship to the DCR method. Although the DY ratio on its surface is not as detailed as the DCR method with respect to lending risks and does not appear to marginally enhance predictably of commercial mortgage loan delinquency and default, DY maintains fairly widespread practical appeal among commercial mortgage lenders as the likelihood of taking back properties in the current environment continues to be higher than normal.

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[1] C-Loans, www.c-loans.com/debt-yield.html, 2012.

[2] Note that this the mortgage market with which I am most familiar. Also see: Commercial Mortgage Alert, "Debt Yield Emerges as Lender Gauge," February 20, 2009.

Debt Yield Justification

Defined as net operating income (NOI) divided by loan amount, DY levels set at approximately 10 percent are purported to provide more suitable first mortgage loan amounts than other loan sizing methods in the current low interest, default-stigmatized market.[3] Lenders who fear that appraisals are potentially inaccurate during the current property value trough shy away from relying on LTV ratio for loan sizing, while the DCR approach is seen as too complicated and not conducive for loan sizing in the current low interest rate market. Hence, debt yield represents a "cleaner benchmark" toward "more conservative underwriting."[4] Part of the appeal of a 10-percent DY, for example, seems to be that lenders know they will realize a cash-on-cash return of 10 percent if forced to foreclose on day one of the loan term. Another appealing feature to lenders involves the reduction in transaction costs by negotiating just the debt yield ratio and avoiding the negotiation of interest rate, amortization period, and DCR. The merits of debt yield have become particularly attractive to hotel lenders as articulated by Ross and by Rushmore who note that debt yields in the range of 10 to 12 percent typically are required for hotels.[5]

I became curious about this loan-sizing innovation because details about the conceptual foundation for the 10- to 12-percent lender requirement are sketchy, and these levels exceed by several hundred basis points the prevailing market interest rates and mortgage constants for first mortgages. Because DY is essentially a capitalization rate for valuing the debt position, and hence the loan sizing application, it might possess a conceptual relationship to capital market rates. Using conventional approaches in macroeconomics (i.e., Fisher Effect[6]) and financial economics (i.e., cost of capital methods), I could not conceptually link DY to either an interest rate or property capitalization rate. So, I moved on to the next step, which involves relating DY to LTV and DCR.[7]

Equating DY and DCR Sizing Formulas

Debt yield is defined as the relationship between NOI and loan amount (LA),

$$DY = NOI / LA. \qquad (1)$$

Typically specified in practice as the trailing 12-month historical amount, NOI also can be expressed as forward 12-month and stabilized dollar amounts. Rearranging Equation (1) to its loan sizing form gives,

$$LA = NOI / DY. \qquad (2)$$

This form mirrors the direct capitalization model used for many types of valuations. Hence, the DY acts as the capitalization rate and the model generates an estimated value of the property debt position. The DY requirement presumably comes from lenders' investment committees. Interpretations of the spreads between either the overall property capitalization rate and DY or the mortgage rate and DY are not immediately clear for aiding decisions on assignments of DYs. As shown below, the relevant spread is between DY and the mortgage constant (MC).

Equation (3) presents the traditional loan sizing formula based on DCR:[8]

$$LA = (NOI / DCR) / MC. \qquad (3)$$

In this equation, the property NOI is effectively deflated from the division by a DCR >1. Taking this result and dividing by MC allows Equation (3) to also take the form of the direct capitalization model. Deflating NOI by the DCR >1 represents an adjustment for risk. The MC also includes a property-specific risk premium embedded in the interest-rate component of this capitalization rate and the risk management feature of amortization over a specific term. The MC requirement comes from a combination of property-specific lender requirements influenced by a competitive lending market and capital market forces that drive mortgage interest rates, while the DCR requirement either comes from loan committee decisions or the securitization process (i.e., rating agencies).

The two loan sizing formulas are similar. Both use direct income capitalization to estimate the value of the property debt position and both rely on lender inputs to reflect endemic lending risks. Therefore, they likely have a fundamental relationship. To find this relationship, I set the two equations equal to one another and solve for DY.

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[3] Alternatively, the income numerator may be net cash flow (after capital expenditures).

[4] See: Commercial Mortgage Alert, *loc.cit*.

[5] See: J. Ross, "The Real Loan Parameters," http://hotelnewsnow.com, December 28, 2011; and S. Rushmore, "Making Sense of Debt Yield Ratios," *Lodging Hospitality*, June 15, 2011.

[6] The Fisher effect states that the real interest rate equals the nominal interest rate minus the expected inflation rate. Therefore, real interest rates fall as inflation increases, unless nominal rates increase at the same rate as inflation. See: Irving Fisher, *The Theory of Interest* (Clifton, NJ: Augustus M. Kelley, 1930).

[7] Attempts to link DY to LTV did not create any insights since the result always depends on value.

[8] W.B. Brueggeman and J.D. Fisher, *Real Estate Finance and Investments*, 14th ed. (New York: McGraw-Hill Irwin, 2011), p. 373.

Assuming that the two models equate such that LA = LA, then

$$\mathrm{NOI} / \mathrm{DY} = (\mathrm{NOI} / \mathrm{DCR}) / \mathrm{MC}. \tag{4}$$

Multiplying both sides by DY and then by MC yields

$$\mathrm{NOI}\,(\mathrm{MC}) = \mathrm{NOI}\,(\mathrm{DY}) / \mathrm{DCR} \tag{5}$$

Finally, dividing each side by NOI, cancelling, and multiplying both sides by DCR gives the relationship between DY and DCR as

$$\mathrm{DCR}\,(\mathrm{MC}) = \mathrm{DY}. \tag{6}$$

In this form, the DY is a DCR-adjusted (i.e., inflated) MC. The DY simply aggregates the separate risk adjustment components of the DCR loan sizing formula by multiplication. The bundling of risk adjustments into a single yield has been offered as a relative advantage of using DY for loan sizing.[9]

Equation (6) may be rearranged as

$$\mathrm{DCR} = \mathrm{DY} / \mathrm{MC}, \tag{7}$$

so that it portrays the DCR as the ratio of DY to MC. When lenders hold mortgages they get a cash flow return of debt service (DS) based on the loan amount (LA),

$$\mathrm{MC} = \mathrm{DS} / \mathrm{LA} \tag{8}$$

When lenders take back properties they get a cash flow return of NOI based on LA,[10]

$$\mathrm{DY} = \mathrm{NOI} / \mathrm{LA} \tag{9}$$

It is confirmed in Equations (8) and (9) that these returns are related by the required DCR. For spread watchers the difference between DY and MC may be a useful time series metric. As always, lower DCRs, for example, indicate looser lending requirements via higher loan amounts. The same can be said for a narrowing of the spread.

Checking Assumptions

Perhaps the assumption driving Equation (4) is incorrect or there is something special in the DY approach related to the current market conditions that can only be revealed from a numerical experiment. To test this notion, I assembled the following data from a recent survey of hotel lenders:[11]

$\mathrm{DCR} = 1.35$

First Mortgage Interest Rate = 6.58%

Amortization Period = 23.56 yrs.

$\mathrm{MC} = 8.37\%$

The MC is obtained by adding a sinking fund factor of 1.79 percent computed on a monthly amortization schedule and converted to an annual number. Running these recent survey data through Equation (6) yields the following DY:

$$1.35\,(8.37\%) = 11.30\%$$

The DY of 11.30 percent computed with loan parameters at current market levels falls within the range identified by hotel finance experts Ross and Rushmore.[12] The current DY and MC spread is

$$2.93\% = 11.30\% - 8.37\%$$

Delinquency and Default Prediction using DY

An extensive literature exists on the determinants of commercial mortgage delinquency and default, as reviewed by Seslen and Wheaton.[13] Because DY is a recent innovation, it does not appear in this review and Seslen and Wheaton do not introduce DY for modeling CMBS delinquency and default; instead they rely on traditional loan parameters—LTV and DCR.[14] An attempt by Koll Bond Ratings to test the predictive power of DY for detecting commercial mortgage loan problems resulted in the coefficient on DY not being statistically significant for explaining CMBS default rates because of the colinearity of DY with DCR and MC indicated above.[15]

Conclusion

The traditional DCR loan sizing formula explicitly recognizes low and high interest rates and amortization periods through the MC. The MC also explicitly accounts for default risk premiums. Finally, the DCR model can be tailored to the specific risk of a property type and individual property loan through the DCR requirement. The DY ratio aggregates these components in a debt capitalization rate. If refinancing and origination negotiations go more smoothly with a single underwriting parameter in play and lenders feel more comfortable thinking in terms of their yield for refinancing and if properties are taken back, so be it! Notwithstanding, the equivalency between DY to DCR and MC is quite transparent. ■

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[9] Commercial Mortgage Alert, *loc. cit.*

[10] In the more likely event of refinancing, the measure provides a look at potential return.

[11] PKF Hospitality Research, *Hospitality Investment Survey*, 2012.

[12] Ross, *loc.cit.*; and Rushmore, *op.cit.*

[13] T. Seslen and W.C. Wheaton, "Contemporaneous Loan Stress and Termination Risk in the CMBS Pool: How 'Ruthless' is Default?," *Real Estate Economics*, Vol. 38, No. 2 (2010), pp. 225-255.

[14] Also see: J.A. Wilcox, "Commercial Real Estate: Underwriting, Mortgages, and Prices," Fisher Center for Urban Economics and Real Estate, University of California Berkeley, 2012.

[15] Koll Bond Ratings, "U.S. CMBS Multi-Borrower Rating Methodology, U.S. Structured Finance," *CMBS Methodology*, February 23, 2012.

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