

Beyond the Simplicity of DSC and LTV

November 2013

Introduction

The credit risk of a Commercial Real Estate (CRE) deal is associated with a highly complex and non-linear deal structure. Historically the approach to assessing the risk has therefore been to try and reduce the complexity to a linear weighting of key factors or ratios, e.g., into a scorecard. The weights assigned to each factor may be determined either through expert judgment, or if sufficient data is available, through a regression analysis. A scorecard has the advantage of being easy to explain and simple to understand. A very simple example of such a model would be to have a look-up table using Debt Service Coverage (DSC) and Loan-to-Value (LTV) to assess the risk of a CRE deal.

In this paper we will demonstrate that taking such a simplified approach does not capture the essential risk of a CRE deal over time. Two deals with the same DSC and LTV may have significantly different risk profiles when looked at in their entirety. In fact, for the example provided in this paper, the risk (and therefore the economic capital and price) can differ by more than a factor of ten. This has significant implications for institutions that are subject to regulatory capital that is mainly dependent upon only DSC and LTV¹.

Methodology

To conduct our analysis of the implication of using only DSC and LTV for risk assessment we utilize advanced cash-flow simulation as implemented in Risk Integrated's Specialized Finance System (SFS). In contrast to a scorecard which attempts to linearize the complexity and ignore the non-linearity of a CRE deal, advanced cash-flow simulation explicitly captures those aspects and models the critical interactions and dependencies within a deal by using all available information, e.g., lease structures, tenant quality, financial structure and risk-mitigants. Although such an approach requires additional inputs beyond just DSC and LTV ratios, the additional effort is rewarded by a much more detailed view of the risk.

¹ See the white-paper "Capital, Arbitrage and CRE Lending" available at www.RiskIntegrated.com.

The experiment conducted in this paper consists of taking a single deal and assessing the risk using advanced cash-flow simulation. We then change what appears to be 'minor'² aspects of the deal without changing its base-line DSC and LTV. These variations may be thought of as either structuring options, e.g., changes to the financing structure which are under the control of the origination team, or as variations that reflect alternative deals that could be considered instead of the existing one (although with the same DSR and LTV).

Results

To easily understand the change in risk we considered the following single retail property, single loan deal

Property

Location:	Stamford, CT
Sector:	Retail
Value:	\$88,725,000 - appraised on 6/1/2012
Tenants/Units :	5 units (all occupied), not rated therefore assumed to be B+ <ul style="list-style-type: none"> - Anchor (51% of total lease) lease expiry: 7/17/2023 - 2nd lease (25%) expiry: 9/30/2017 - 3rd lease (9%) expiry: 12/15/2026 - 4th lease (8%) expiry: 3/10/2018 - 5th lease (7%) expiry: 9/30/2030
Total Lease/ERV ³ :	\$14,382,145 / \$13,663,037 (~95% of current lease)
Total /Expenses:	\$7,879,500 (100% reimbursed)

Debt

Balance:	\$62,775,880 maturing 9/3/2028
Interest:	Fixed at 5.65% (all-in, spread 2.30%)
Principal:	Standard mortgage w/ amortization term of 25 years

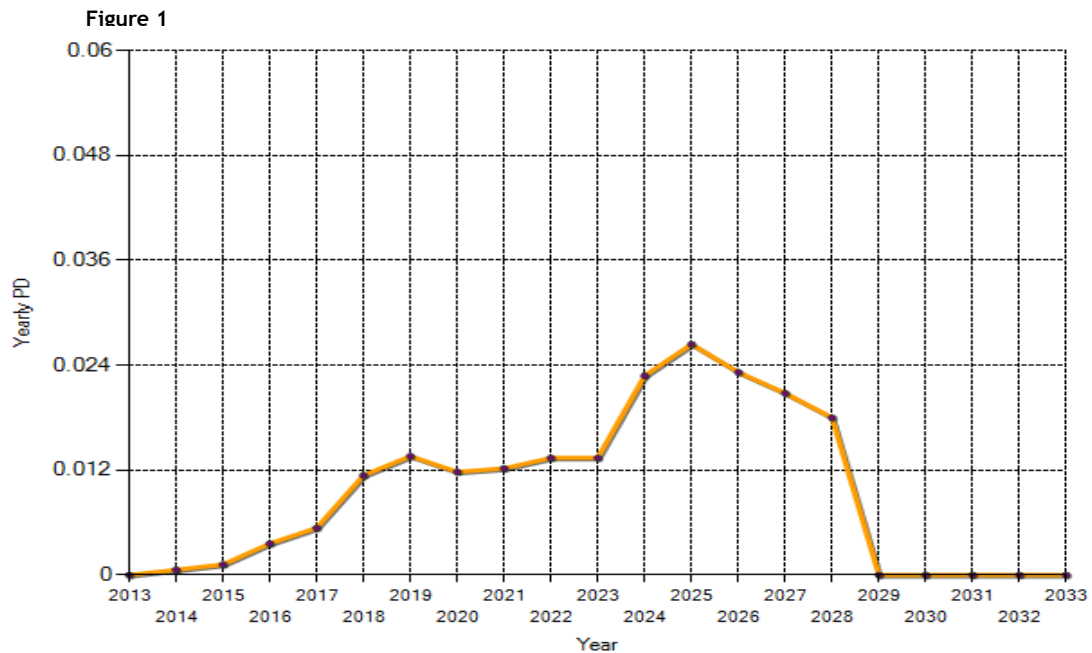
This deal has an initial DSC of 2.79 and an initial LTV of 76%.

Analyzing the deal using the SFS we obtain an annual probability of default (PD) graph as shown in Figure 1 (the full credit report generated by the SFS - with multiple risk metrics - is shown in the Appendix). Furthermore, the annual probability of default profile can be

² Normally these 'minor' aspects of a deal are not recorded in default data sets and are therefore lost in the 'randomness' of defaults.

³ ERV: Expected Rental Value, i.e. the expected market rent for a unit if a new lease were to be signed

expressed as a bond-equivalent PD to make it comparable with other assets, e.g. C&I loans. In this case, averaged over its life this deal has a probability of default corresponding to a BBB bond (1-year PD = 0.39%).

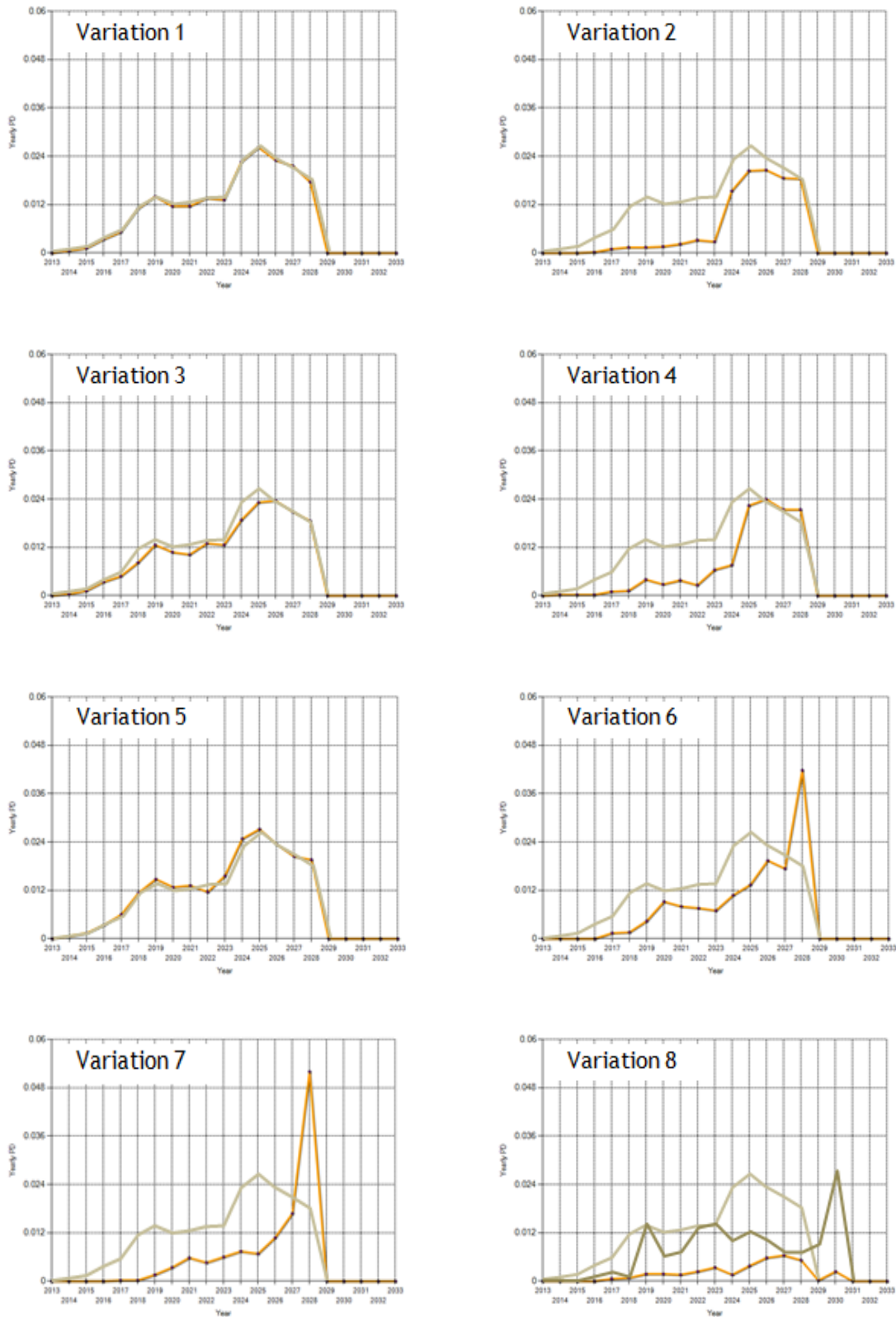


Having assessed the base-case we then proceed to making the following changes to the deal (all variations maintain a DSC of 2.79 and LTV of 76%):

- Variation 1: Include a sweep; triggered @ DSC = 1.5
- Variation 2: Known tenant rating; all tenants rated BBB
- Variation 3: Market Rent (ERV) at 110% of current lease
- Variation 4: Two large tenants instead of one anchor tenant
- Variation 5: Change of location and sector; sector = Office, location = NJ
- Variation 6: Include sinking fund equal to 6 mos. debt service
- Variation 7: Include sinking fund equal to 12 mos. debt service
- Variation 8: Cross-collateralize with another deal of similar DSC & LTV

The results of these variations are shown in the annual PD graphs in Figure 2 and a summary of risk results are presented in Figure 3.

Figure 2: Annual Probability of Default profiles compared with the base case (the grey profile represents the base case)



Interestingly, the most dramatic change in risk was obtained by taking two relatively simple BBB deals with similar risk statistics and cross-collateralizing them so that the net income was better diversified.

Figure 3

Deal	Grade (PD)	PD	LGD%	EL%
Base Case	BBB	0.39%	11.8%	0.058%
Variation 1: Sweep @ DSC = 1.5	BBB	0.39%	10.4%	0.052%
Variation 3: Tenant Rating = BBB	A-	0.14%	3.4%	0.009%
Variation 3: Market Rent = 100% Lease Rent	BBB	0.34%	5.1%	0.028%
Variation 4: Split Anchor Tenant	A-	0.17%	5.8%	0.015%
Variation 5: Location & Sector to Office, NJ	BBB-	0.41%	15.3%	0.075%
Variation 6: 6 mos. Debt Service Sinking Fund	BBB+	0.21%	9.9%	0.027%
Variation 7: 12 mos. Debt Service Sinking Fund	A-	0.14%	7.0%	0.014%
Variation 8: Cross-collateralization	AA	0.02%	4.3%	0.001%

Conclusion

It is clear from the above analysis that the details of individual CRE deals can make a big difference in risk, despite deals having the same DSC and LTV. Using a simplified (linearized) approach to estimating the risk - such as using only DSC and LTV - can seriously over- or underestimate the inherent risk in a deal. By using a risk methodology that provides a comprehensive and in-depth understanding of the risk lenders are better able to structure, price and choose the deals they want to bring into the portfolio.

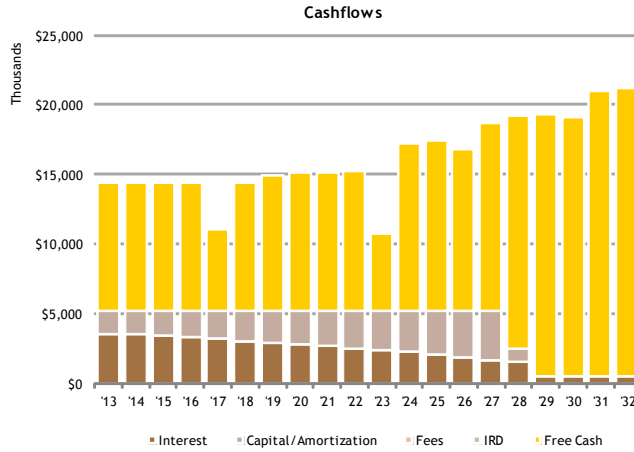
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Tower Street Mall



Cashflow Projection



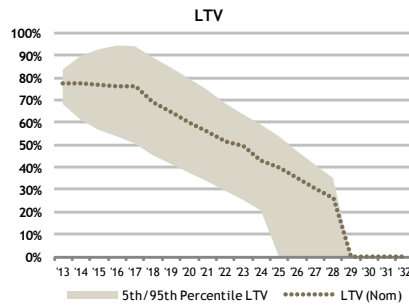
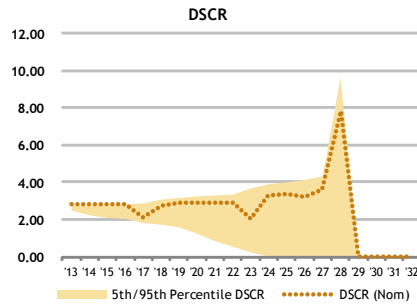
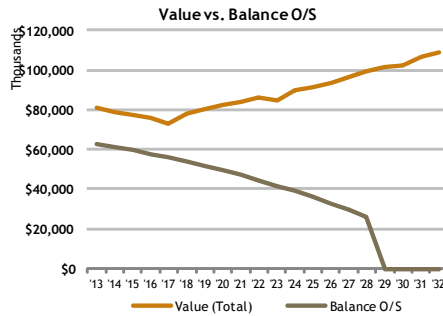
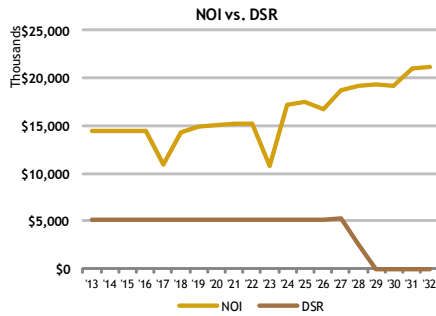
Cashflows (\$'000)	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	'23	'24
Lease Income	14,382	14,382	14,382	14,382	12,263	14,500	14,919	15,075	15,154	15,197	12,422	17,220
Expenses	7,880	7,880	7,880	7,880	7,880	7,880	7,880	7,880	7,880	7,880	7,880	7,880
Reimbursements	7,880	7,880	7,880	7,880	6,605	7,742	7,880	7,880	7,880	7,880	6,216	7,880
Other Income	-	-	-	-	-	-	-	-	-	-	-	-
Net Income	14,382	14,382	14,382	14,382	10,989	14,362	14,919	15,075	15,154	15,197	10,758	17,220
IR Derivatives	-	-	-	-	-	-	-	-	-	-	-	-
Interest	3,547	3,456	3,360	3,258	3,150	3,036	2,916	2,788	2,653	2,511	2,360	2,200
Capital/Amortization	1,611	1,704	1,802	1,906	2,017	2,133	2,256	2,386	2,524	2,669	2,824	2,986
Fees	-	-	-	-	-	-	-	-	-	-	-	-
Debt Service Required	5,158	5,160	5,162	5,164	5,166	5,169	5,171	5,174	5,177	5,180	5,183	5,187
Free Cash	9,224	9,222	9,220	9,218	5,822	9,193	9,748	9,901	9,977	10,017	5,575	12,033
ISCR	4.05	4.16	4.28	4.41	3.49	4.73	5.12	5.41	5.71	6.05	4.56	7.83
DSCR	2.79	2.79	2.79	2.78	2.13	2.78	2.88	2.91	2.93	2.93	2.08	3.32
Balances (\$'000)	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	'23	'24
Property Value	80,670	79,128	77,588	75,791	73,310	77,725	80,370	82,528	84,186	86,507	84,774	90,021
Other Collateral Value	-	-	-	-	-	-	-	-	-	-	-	-
Total Collateral Value	80,670	79,128	77,588	75,791	73,310	77,725	80,370	82,528	84,186	86,507	84,774	90,021
Balance Outstanding	62,776	61,165	59,461	57,658	55,752	53,735	51,602	49,346	46,960	44,436	41,767	38,943
LTV	78%	77%	77%	76%	76%	69%	64%	60%	56%	51%	49%	43%

Notes/Comments

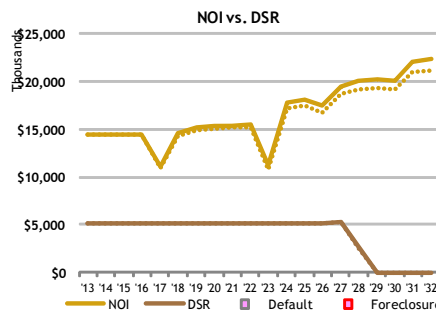
Tower Street Mall



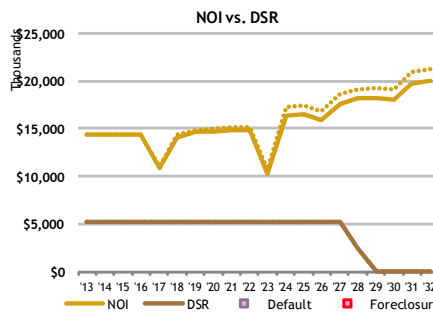
Base Case



Stress 1 (Single Stress)



Stress 2 (Single Stress)



Grade

PD / Grade	0.39% / BBB	NPV EL / EL%	\$275,976 / 0.04%
LGD	11.8%	NPV Income	\$14,80,684
Downturn LGD	15.9%	Capital (IRB)	1.6%

	Annual	Cumulative	'13	'14	'15	'16	'17	'18	'19	'20	'21	'22	'23	'24
PD		19.78%	0.00%	0.06%	0.12%	0.36%	0.54%	1.14%	1.36%	1.8%	1.22%	1.34%	1.34%	2.28%
EL (\$'000)		320.2	-	2	6	19	33	71	82	39	18	16	16	5