Cornhusker Economics

Agricultural Economics Department

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Appraisal or Evaluation? The Impact of Cap Rates on Financing

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10-4-19 Market Report	Year Ago	4 Wks Ago	11-1-19
Livestock and Products, Weekly Average			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight.	115.00	★	★
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb.	172.62	162.44	157.89
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb.	160.01	155.53	154.94
Choice Boxed Beef, 600-750 lb. Carcass.	211.50	212.58	230.78
Western Corn Belt Base Hog Price Carcass, Negotiated	58.38	★	★
Pork Carcass Cutout, 185 lb. Carcass 51-52% Lean.	75.57	75.07	75.84
*Slaughter Lambs, wooled and shorn, 135-165 lb. National.	135.62	151.01	151.84
National Carcass Lamb Cutout FOB.	378.61	396.64	398.55
Crops, Daily Spot Prices			
Wheat, No. 1, H.W. Imperial, bu.	4.46	3.50	3.71
Corn, No. 2, Yellow **Columbus**, bu.	3.34	3.78	3.68
Soybeans, No. 1, Yellow **Columbus,** bu.	7.32	8.17	8.34
Grain Sorghum, No.2, Yellow Dorchester, cwt.	5.30	5.93	6.04
Oats, No. 2, Heavy Minneapolis, Mn, bu.	3.16	3.09	3.12
Feed			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton.	108.00	★	★
Alfalfa, Large Rounds, Good Platte Valley, ton.	105.00	107.50	107.50
Grass Hay, Large Rounds, Good Nebraska, ton.	87.50	102.50	95.00
Dried Distillers Grains, 10% Moisture Nebraska Average.	135.00	146.00	149.50
Wet Distillers Grains, 65-70% Moisture Nebraska Average.	48.50	48.50	51.50
* No Market			

Loan underwriting has long been a crucial function of financial institutions. The C's of credit (character, capacity, capital, conditions and collateral) are taught in many college-level finance and banking courses and the process is even mentioned in popular movies such as "It's a Wonderful Life." The process is also recognized as being costly in terms of time and money. Regulations are promulgated and enforced to assure the safety and soundness of lending institutions. Nevertheless, there are situations when the risk to safety and soundness are so small that less extensive underwriting procedures may be appropriate. Benefits to lenders and borrowers alike are that alternative procedures generally save time and money in the underwriting process, which in turn should make credit more available as well as more affordable.

One of the consequences of the financial crisis of the 1980's was the adoption of the Financial Institutions Reform, Recovery and Enforcement Act of 1989 better known as FIRREA. In turn was the creation of rules regarding the valuation of collateral involving federally related lending institutions, referred to as the Interagency Guidelines. The purpose of the Interagency Guidelines is to enhance the prospects, even assure, loan repayment. In general, a federally insured lending institution must obtain an appraisal from a state licensed or certified appraiser for lending transactions involving real estate.

Since 1994, real estate lending transactions having values above $250,000 generally required appraisals on collateral to support the lending decision. For transactions less than $250,000 a property evaluation is deemed sufficient. Since that time, as real estate values have increased, a larger and larger proportion of transaction values exceed the $250,000 threshold, requiring those transactions to have an appraisal as a condition of

advancing credit. The costs of appraisals relative to evaluations are higher both in terms of out-of-pocket costs as well as time. Evaluations may cost 25% of the cost of an appraisal, resulting in savings of several hundred dollars for each commercial lending transaction. Evaluations take less time to prepare and are expected to require less time to be reviewed by mortgage underwriters. The situation is similar for residential appraisals which may cost between $375 and $900, while means other than an appraisal for estimating value may cost less than $100 and require less time to obtain. Others have stated the cost of most commercial real estate appraisals to range between $3,000 and $10,000 and take 30 to 45 days to complete.

As stated above, transaction values have increased since the original adoption of the rules in 1994. This means a larger number of transactions now require appraisals and that may contribute to increased burden for regulated institutions in terms of time and cost. Exacerbating the time and cost burden is a shortage of available and qualified appraisers. The number of licensed appraisers has fallen every year since 2007 according to a study by The Appraisal Institute. Estimates indicate the number of licensed and certified appraisers decreased about 3% annually from 2006 through 2016 and this trend is expected to continue. A shortage of licensed or certified appraisers in rural areas was specifically noted in comments supporting an increase in the transaction value threshold that would reduce the number of transactions requiring an appraisal.

Good evidence in support of evaluations rather than appraisals for farm and commercial property for which financing is sought can be obtained by exploiting a relatively simple relationship for property evaluation consistent with loan underwriting. Underwriting commercial real estate typically requires consideration of loan-to-value (LTV) and debt service coverage ratio (DSCR). While a given lender's *LTV* and *DSCR* depend on the type of real estate being financed as well as market conditions, typical values are *LTV*=70% and *DSCR*=1.2.

As its name implies, *LTV* is dollars of loan amount divided by dollars of value with the former set by the bank and the latter typically determined by a property appraisal. Debt service coverage ratio, on the other hand, is the ratio of property net operating income to debt service where the former is property specific and the latter is set by the bank. Given that the bank sets the loan amount in the numerator of *LTV* and the payment amount in the denominator of *DSCR*, the two are connected via a time value of money factor that depends on the rate of interest charged by the bank, the frequency of payments required to retire the loan, and the maturity of the loan.

Exploiting this fact and a little algebra results in an *equilibrium* capitalization rate (cap rate for short) denoted by ϕ* and equal to

$$\phi^* = \frac{LTV \times DSCR}{F},$$

where $F = F(i,m,N)$ is the time value of money factor for annual rate of interest *i,* frequency of payment *m*, and loan maturity N. A simple numerical example suggests that with i = 6%, m = 1 (annual payments), and N = 20 (years), F = 11.469921 and assuming LTV = 70% and DSCR = 1.2, ϕ* = 7.32%. It should be noted that while ϕ* is a cap rate, it is not a cap rate in a conventional sense. A cap rate is essentially a rate of return on assets and is used by an appraiser to capitalize (net operating) income to arrive at a value for an income-producing property. The income capitalization approach to value is one of three approaches used by appraisers to render an opinion of value with the other two being the sales comparison and cost approaches. The *equilibrium* cap rate, as in the equation above, is the only cap rate that results in a unique valuation that perfectly aligns both *LTV* and *DSCR* underwriting requirements.

To see this alignment, assume a property has a net operating income equal to $100,000 per year which results in a valuation equal to $1,365,467 found by capitalizing the net operating income of $100,000 at 7.32%. The lender's *LTV* requirement then suggests a maximum loan amount equal to 70% of value or $955,827 while the lender's *DSCR* requirement suggests a maximum payment of $83,333/year which, given the lender's terms (*i.e. i = 6%, m = 1, and N = 20*) , translates to a maximum loan amount that is also equal to $955,827. It is in this sense that the cap rate in question is an *equilibrium* cap rate in that it suggests a property valuation that aligns the maximum loan amount to a consistent dollar amount required by the two underwriting ratios.

Perhaps more importantly, any valuation in excess of $1,365,467 implies that the income on the property is constraining the maximum amount that can be loaned to still meet the lender's *DSCR*. As a result, a valuation of $1,365,467 or more for the property (given a $100,000 net operating income and the lender's terms) results in a maximum loan amount of $955,827. By contrast, a valuation below $1,365,467 for the property is constrained by the lender's *LTV* requirement and the maximum amount that can be loaned is 70% of the valuation provided by the appraiser. These results are depicted graphically below in Figure 1 for the simple example presented previously.

In the figure, the value curve shows an asymptotic decrease in value as cap rates increase and the 7.32% equilibrium cap rate is shown inducing the kink in the loan amount curve at the $1,365,467 valuation. Any cap rate higher than 7.32% would result in a valuation lower
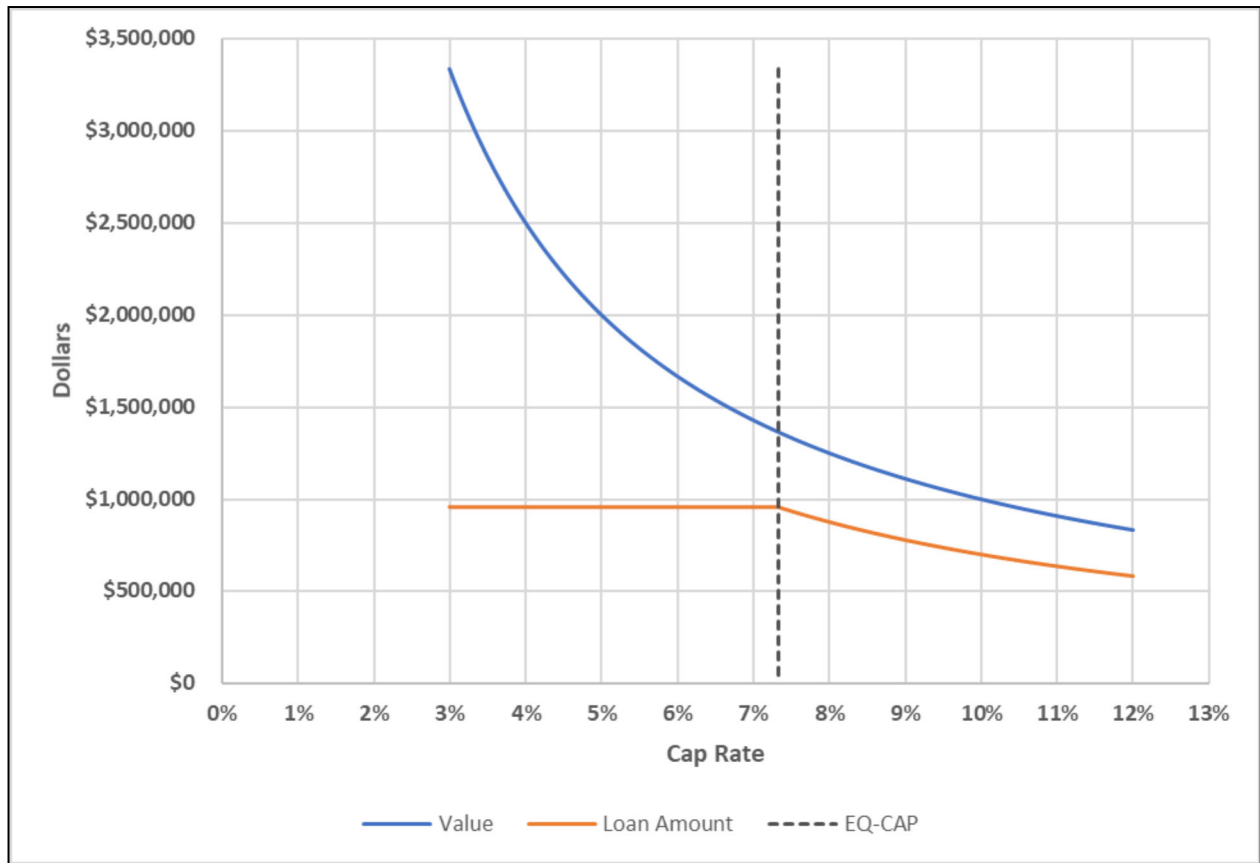
Figure 1. Relationship between cap rates, property values, and maximum loan

than $1,365,467 for a property with a $100,000 net operating income and the maximum loan amount would fall in proportion to the valuation. In this region, the *LTV* determines the maximum amount that can be loaned on the property. By contrast, any cap rate less than or equal to 7.32% induces a valuation greater than or equal to $1,365,467, yet always results in a maximum loan of $955,827. In this region, the lender's *DSCR* requirement and the property's net operating income conspire to limit the loan amount.

While these results are discussed in terms of cap rates, of more importance is the valuation that is consistent with this *equilibrium* cap rate, namely, $1,365,467. An appraiser who values property at or above $1,365,467effectively caps the amount the lender should loan at $955,827 given the lender's terms and underwriting. A valuation below $1,365,467 implies that the maximum the lender should loan is a fixed percentage of the valuation given by the lender's *LTV* ratio. A key feature of this result is the fact that it is unencumbered from the value of the collateral being financed depending only on the bank's underwriting requirements (*LTV* and DSCR), loan terms (*i,m,N*) and property net operating income.

Cap rates in the agricultural sector have been compressing for years for virtually all types of farmland. In fact, cap

rates for farmland in Nebraska are probably maximal at around 3% currently. At the time of writing, the Federal Reserve has just cut the fed funds rate and yields on 10-year Treasury securities have subsequently fallen to around 1.8%. With cap rates as low as 3%, most current lending situations would suggest that the maximum loan amount is constrained by the net operating income of the farmland as opposed to the value of the farmland. Put more simply, there is likely more than enough collateral value to support a level of lending consistent with the income-generating ability of farmland. In the table below, *equilibrium* cap rates resulting from various combinations of underwriting requirements and loan maturities are shown. In all cases, the payment frequency is annual to keep things simple. As shown, the equilibrium cap rates are all more than 5%, and in many cases, substantially so. In addition, the equilibrium cap rates increase as interest rates, *DSCR*, and *LTV* increase, but decrease as loan maturity (i.e. *N*) increases.

If the cap rate used by an appraiser is below the value reported in the table for given underwriting and loan terms, the maximum lending amount is constrained by the lender's *DSCR* via the income-producing ability of the property. As an example, farmland capable of generating $250/acre annually and a 6% note with annual

payments for 20 years assuming a 65% *LTV* and 1.2 *DSCR* suggests that if the cap rate is below 6.80%, shown boxed in the table, the maximum loan amount per acre is $2,390. If the cap rate was truly 6.80%, the per-acre-value of the farmland would be $3,676. However, if the cap rate is around 3% as it is currently, the per acre value would be $8,333. Regardless, the maximum loan amount in either case is $2,390 per acre based solely on the property net operating income and the lender's DSCR requirement.

As these calculations demonstrate, we are currently faced with a situation where farmland typically has enough value to support significantly more debt than prudent underwriting would suggest Cap rates have been compressing for some time in the agricultural sector and over the foreseeable future, these low cap rates make an excellent case for evaluations rather than full-blown appraisals for lending purposes. If cap rates remain low, collateral values could remain high enough so that the maximum amount to lend for farmland will be determined primarily by the income-generating ability of the collateral for specific lending and underwriting terms. Of course, it bears mentioning that the net operating income for farmland also affects farmland value and has also been trending down, albeit not quite as precipitously as cap rates.

Table 1. Equilibrium cap rates for various combinations of loan underwriting, loan maturity, and annual interest rates.

			Annual Rate of Interest (i)								
DSCR	*LTV*	*N*	4.0%	4.5%	5.0%	5.5%	6.0%	6.5%	7.0%	7.5%	8.0%
1.1	0.65	10	8.82%	9.04%	9.26%	9.49%	9.71%	9.95%	10.18%	10.42%	10.66%
1.2	0.65	10	9.62%	9.86%	10.10%	10.35%	10.60%	10.85%	11.11%	11.36%	11.62%
1.1	0.75	10	10.17%	10.43%	10.68%	10.95%	11.21%	11.48%	11.75%	12.02%	12.29%
1.2	0.75	10	11.10%	11.37%	11.66%	11.94%	12.23%	12.52%	12.81%	13.11%	13.41%
1.1	0.85	10	11.53%	11.82%	12.11%	12.40%	12.70%	13.01%	13.31%	13.62%	13.93%
1.2	0.85	10	12.58%	12.89%	13.21%	13.53%	13.86%	14.19%	14.52%	14.86%	15.20%
1.1	0.65	15	6.43%	6.66%	6.89%	7.12%	7.36%	7.60%	7.85%	8.10%	8.35%
1.2	0.65	15	7.02%	7.26%	7.51%	7.77%	8.03%	8.30%	8.56%	8.84%	9.11%
1.1	0.75	15	7.42%	7.68%	7.95%	8.22%	8.49%	8.77%	9.06%	9.35%	9.64%
1.2	0.75	15	8.09%	8.38%	8.67%	8.97%	9.27%	9.57%	9.88%	10.20%	10.51%
1.1	0.85	15	8.41%	8.71%	9.01%	9.31%	9.63%	9.94%	10.27%	10.59%	10.92%
1.2	0.85	15	9.17%	9.50%	9.83%	10.16%	10.50%	10.85%	11.20%	11.56%	11.92%
1.1	0.65	20	5.26%	5.50%	5.74%	5.98%	6.23%	6.49%	6.75%	7.01%	7.28%
1.2	0.65	20	5.74%	6.00%	6.26%	6.53%	6.80%	7.08%	7.36%	7.65%	7.94%
1.1	0.75	20	6.07%	6.34%	6.62%	6.90%	7.19%	7.49%	7.79%	8.09%	8.40%
1.2	0.75	20	6.62%	6.92%	7.22%	7.53%	7.85%	8.17%	8.50%	8.83%	9.17%
1.1	0.85	20	6.88%	7.19%	7.50%	7.82%	8.15%	8.49%	8.83%	9.17%	9.52%
1.2	0.85	20	7.51%	7.84%	8.18%	8.54%	8.89%	9.26%	9.63%	10.01%	10.39%

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