

Who Leveraged the Farm?

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Introduction

- Farmland was susceptible to two boom-bust cycles in the last century
 - 1920s and 1930s
 - 1973 through 1986
- Drivers of Boom-Bust Cycles
 - Economic shock justifying higher prices
 - Outside of most investors experience
 - Increased use of leverage
 - A herding effect



Organization

- Lessons from the 1980s
- Comparing the 1970s with the Current Situation in Kansas
- Understanding the U.S. Situation
- Precursors to a Debt Crisis and Boom-Bust Cycle
- Conclusions



Top Ten Thoughts

- | | |
|--|--|
| #1 - Loan to Appraised Value Ratio | #6 - Debt to Asset is Higher in 2010 than 1979 |
| #2 - Loans Perform for Awhile | #7 - Déjà vu All Over Again? |
| #3 - Cost of Borrowing | #8 - What Safety Net? |
| #4 - Its in the Tails | #9 - How Fixed are Rates? |
| #5 - Default risk is low, but it was in 1979 | #10 - Revenue is Key |



#1 - Loan to Appraised Value Ratio

- Average loan to appraised value ratio for a national portfolio of defaulted loans from the last boom bust cycle was 60%
 - Two thirds were between 50% and 70%
- Average loan to appraised value for some lenders at 65%



#2 - Loans Perform for Awhile

Table 1. Comparison for Origination and Default Year for 457 Defaulted Equitable Agribusiness Loans

Origination Year	Default Year													Total
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1991	
1967	-	-	-	-	-	-	-	-	1	-	-	-	-	1
1972	-	-	-	-	-	-	1	-	-	-	-	-	-	1
1973	-	-	1	-	-	-	-	-	1	-	-	-	-	2
1974	-	1	-	-	-	-	-	-	2	1	-	-	-	4
1975	-	-	1	-	-	2	1	-	1	1	-	-	-	6
1976	-	-	-	1	1	3	5	6	4	-	-	-	-	20
1977	1	-	3	1	6	7	12	25	14	4	-	2	-	75
1978	-	-	2	2	5	10	11	27	27	5	1	-	-	90
1979	-	-	1	1	4	9	19	23	27	3	2	-	-	89
1980	-	-	1	-	10	9	13	28	22	8	1	-	-	92
1981	-	-	-	1	4	3	3	14	4	1	-	-	-	30
1982	-	-	-	-	-	-	-	2	1	-	-	-	-	3
1983	-	-	-	-	-	-	5	10	7	2	-	-	1	25
1984	-	-	-	-	-	-	1	4	6	2	-	1	-	14
1985	-	-	-	-	-	-	-	1	2	2	-	-	-	5
Total	1	1	9	6	30	43	71	140	119	29	4	3	1	457

Source: Featherstone and Boessen (page 255).



#2 – *Loans Perform for Awhile*

- Average for the last default was 5.6 years
- Historical not current underwriting standards are key
- Farmers will default on a parcel that is underwater



#3 – *Cost of Borrowing*

- Nominal Cost of Borrowing
 - Last bust average rate on defaulted loans was 11.04%
 - Average 6.13% for 2009 and 2010
- Inflation-adjusted Cost of Borrowing
 - Last bust average rate on defaulted loans was 2.41%
 - Average 4.71% for loans made in 2009 and 2010
- Nominal cost is lower, but the real cost is higher
- Amortized loans at lower interest rates payoff more principal early in the loan reducing the possibility of loans going underwater



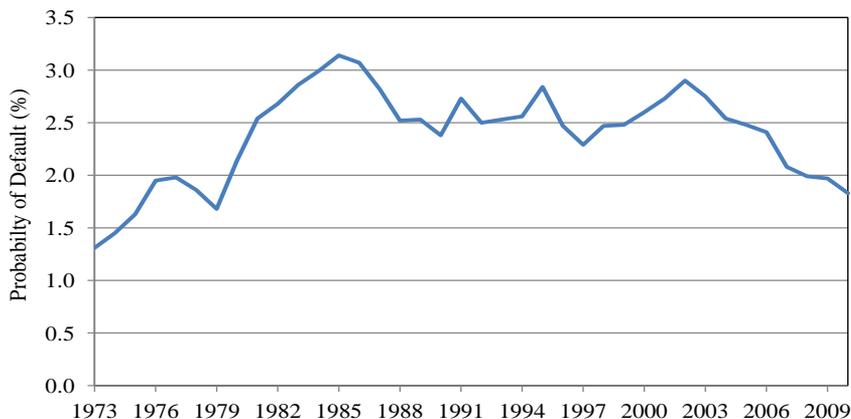
#4 - *Its in the Tails*

- During the last default, only 10.9% of loans originated during the critical period by a national lender defaulted
- Most buyers of farmland are other farmers
 - Between 73% and 82% of Iowa farmland are other farmers between 2008 and 2011
- The average will not drive a bust but the tails (margin)
- The tails (margin) will drive the average



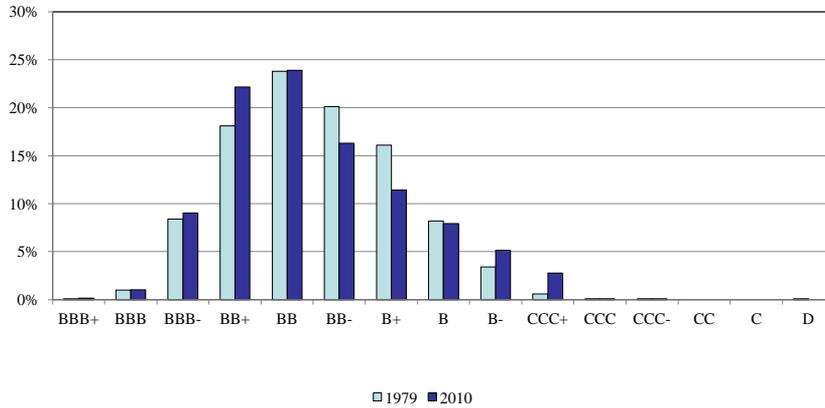
#5 - *Default risk is low, but it was in 1979*

Figure 1. Average Default Probability of Kansas Farm Management Association Farms, 1973 to 2010



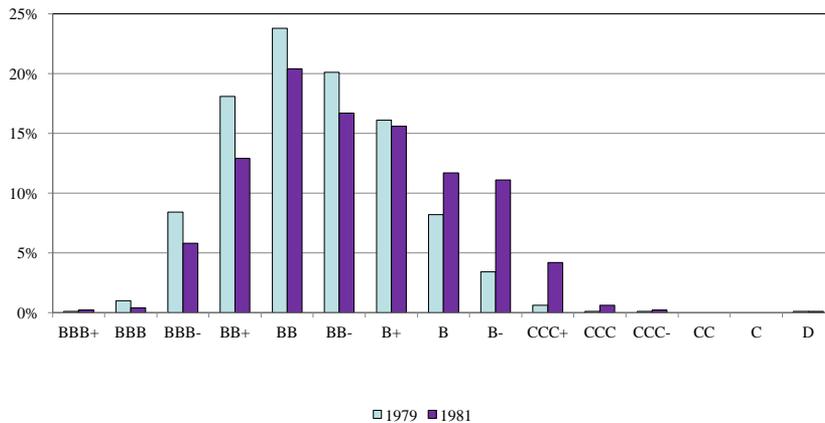
#5 - Default risk is low, but it was in 1979

Figure 2. Distribution of Pseudo S&P Credit Quality of Kansas Farm Management Association Farms, 1979 and 2010



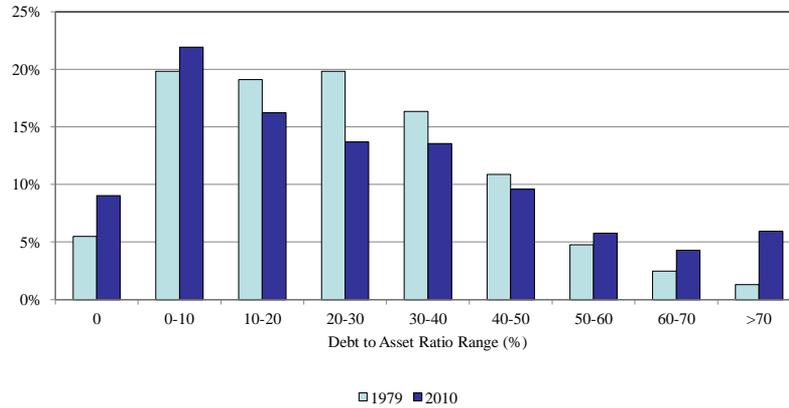
#5 - Default risk is low, but it was in 1979

Figure 3. Distribution of Pseudo S&P Credit Quality of Kansas Farm Management Association Farms, 1979 and 1981



#6 - Debt to Asset is Higher in 2010 than 1979

Figure 5. Distribution of Debt to Assets Ratio of Kansas Farm Management Association Farms, 1979 and 2010



#6 - Debt to Asset is Higher in 2010 than 1979

- Average debt to asset ratio for Kansas Farm Management Farms:
 - 1979 – 24.6%
 - 2010 – 26.8%
- Farms Greater than 40% debt to assets
 - 1979 – 19.4%
 - 2010 – 25.6%
- Farms Greater than 70% debt to assets
 - 1979 – 1.3%
 - 2010 – 5.9%

#7 - Déjà Vu All Over Again?

- Repayment capacity was key
 - Fell from 152.8% to 16.3% from 1979 to 1981
- Two key factors
 - Increase in interest payments by 65.3%
 - Decline in value of farm production by 15.7%
- Land Values could no longer be supported
- Would those decreases cause the situation again?



#7 - Déjà Vu All Over Again?

Table 4. Sensitivity of 2010 Average KFMA Farms to 1979 to 1981 Decreases in Revenue and Increases in Interest Payments.

	2010	65.3% Interest Increase	15.7% Crop Revenue Decrease	Both	Both w/o Government Payments
Value of Farm Production	534,070	534,070	450,293	450,293	426,583
Government Payments	23,710	23,710	23,710	23,710	0
Livestock Income	119,375	119,375	119,375	119,375	119,375
Crop Income	390,985	390,985	307,208	307,208	307,208
Expenses w/o Interest	356,932	356,932	356,932	356,932	356,932
Interest	20,356	33,649	20,356	33,649	33,649
Total Expenses	377,289	390,582	377,289	390,582	390,582
Net Farm Income	156,782	143,489	73,004	59,712	36,001
Capital Debt Repayment Capacity	154.20%	139.60%	62.20%	47.60%	21.57%



#8 - What Safety Net?

- Crop revenue would need to fall by 21.4% to decrease the value of farm production by 15.7%
- Using prices from 2010 received on farm:
 - Corn price would need to fall from \$4.44 to \$3.49
 - Wheat price would need to fall from \$5.04 to \$3.96
 - Soybean price would need to fall from \$11.45 to \$9.00



#8 - What Safety Net?

- Crop Revenue Insurance?
 - Prices are set from August 15 to September 14th for wheat in Kansas based on the July futures contract
 - Prices are set in February for corn based on the December futures contract
 - Prices and thus revenue are only protected within the season, not across seasons



#8 - What Safety Net?

- Farm Program Payments?
 - Not sure what the program will be?
 - Senate Bill eliminates target prices
 - May not become law
 - Even if they are:
 - Corn target price is \$2.63
 - Wheat target price is \$4.17
 - Soybean target price is \$6.00
 - All but wheat are below 21.4% fall in prices
 - Loan rates are all below the 21.4%



#9 - How Fixed are Rates?

Table 3. Fixed Rate Farm Credit System Debt Securities Outstanding, December 2006 through May 2012

	Fixed Rate Non- Callable Bonds	Fixed Rate Callable Bonds	Total Outstanding	Percent Fixed
----- \$ billion -----				
12/31/2006	32.4	37.7	134.1	52.3%
12/31/2007	36.6	42.8	154.1	51.5%
12/31/2008	43.0	43.8	176.3	49.2%
12/31/2009	41.7	39.9	176.1	46.3%
12/31/2010	40.9	45.8	187.5	46.2%
12/31/2011	44.0	46.4	183.5	49.3%
5/31/2012	46.0	50.3	187.6	51.3%

Source: Federal Farm Credit Funding Corporation



#9 - How Fixed are Rates?

- Amount of Farm Credit Bonds that are fixed has been about 50% for the last 6 years
- The amount of real estate loans at fix about 83% for Farm Credit Services of America
- For banks, about 71% of non-real estate loans have floating rates.
- Estimates indicate that 48.6% of Kansas Farm Management Association Debt is at a fixed rate
- Thus, only about 50% of the debt would be affected by an interest rate change



#10 - Revenue is Key

- In the last two land busts, one was more caused by interest rate increases, the other was caused by a drop in revenue
- Based on an estimated model for Kansas and Illinois land values, the elasticity for a change in cash rents was 1.31 and 1.15, respectively
- The elasticity for a change in real interest rates was -0.04 and -0.06 for Kansas and Illinois, respectively
- It appears that a bust would more likely be caused by a drop in revenue than an increase in interest rates



#10 – *Revenue is Key*

- However, land values are based on expectations not historical rates
- Because historical interest rates are fixed at low levels, cash flow will not be affected by changes in rates immediately
- Land values are not be immune from changes in the capitalization rate for market participants as they look at alternative investments
- Both interest rate increases and revenue decreases would exert negative pressure on land values
- Increases in interest rates often negatively affect agricultural revenue



Conclusions

- Financial situation of the farm sector is currently in excellent shape
 - However, it is not much different than it was in 1979, two years before the previous bust
- Will leverage drive another bubble?
 - Probably not
- Can leverage exacerbate another bubble?
 - Very likely
- Will agricultural land values fall?

