Current Situation and Credit Quality of Farms

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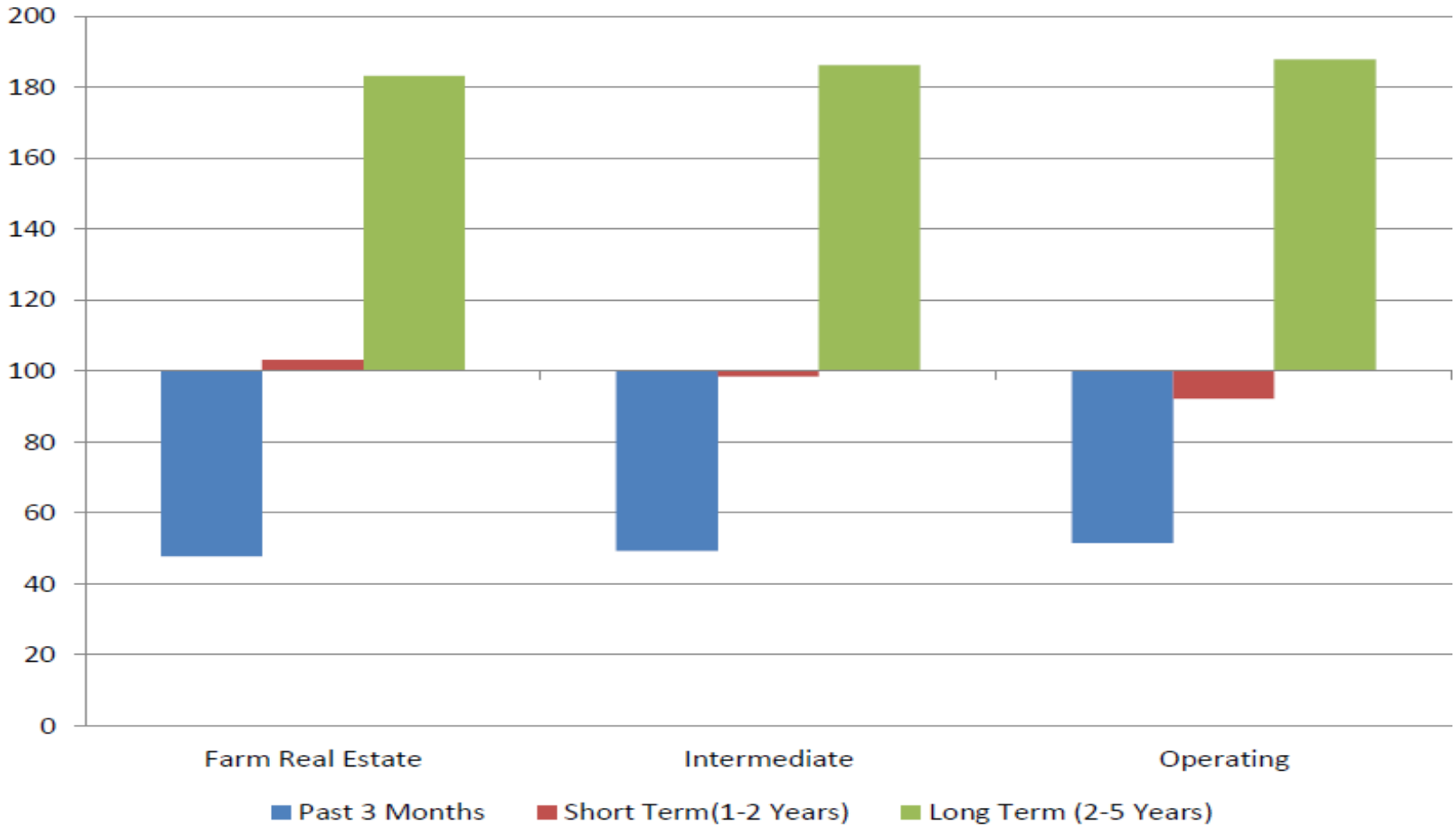
Introduction

- 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

K-State Ag Lender Survey



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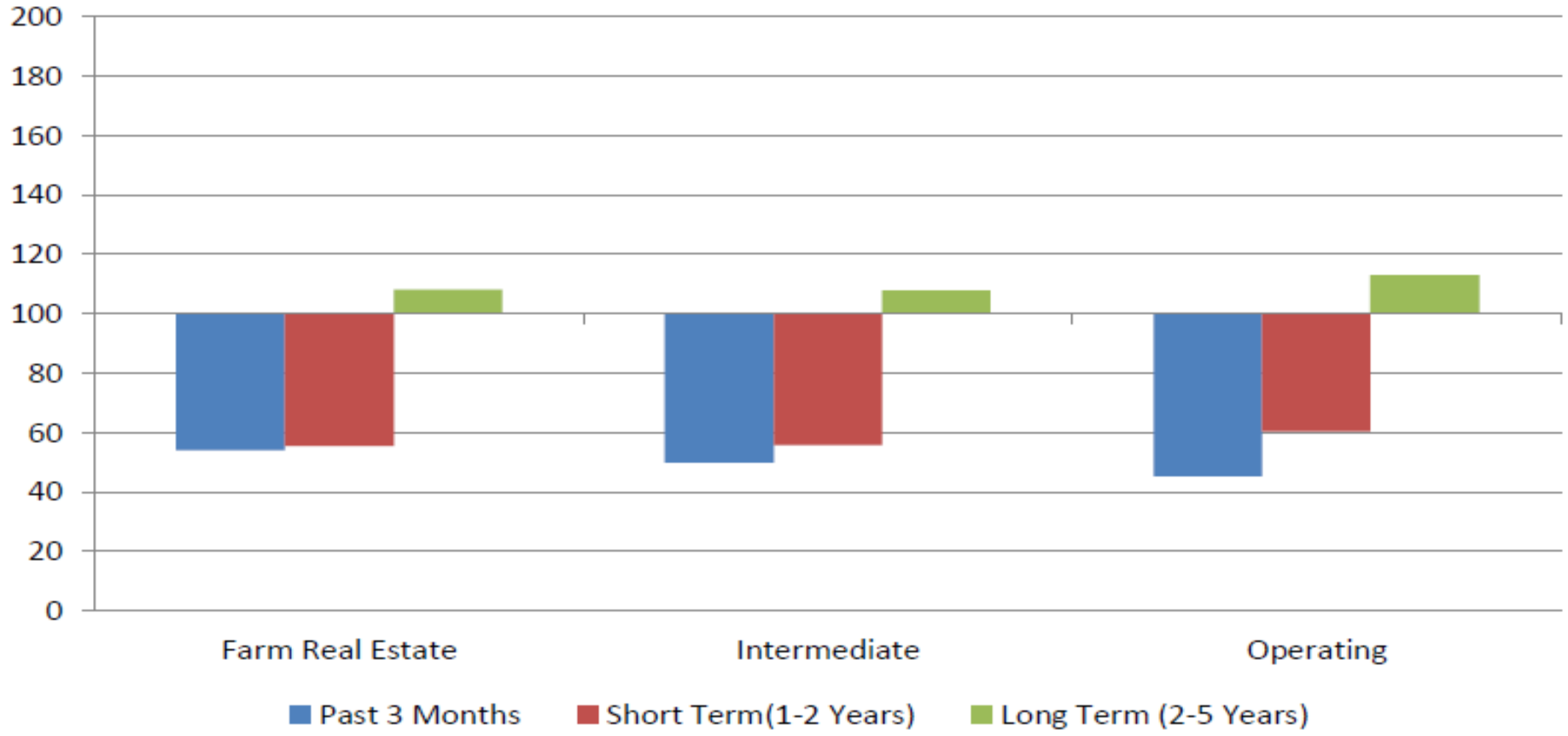
Increasing Lender Competition?



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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
- Crop Insurance Thoughts
- Conclusions

Top Ten Thoughts

#1 – Loan to Appraised Value Ratio

#2 – Loans Perform for Awhile

#3 – Cost of Borrowing

#4 – Its in the Tails

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

#6 – Debt to Asset is Lower in 2012 than 1979

#7 – Déjà Vu All Over Again?

#8 – What Safety Net?

#9 – How Fixed are Rates?

#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													
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1991	Total
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

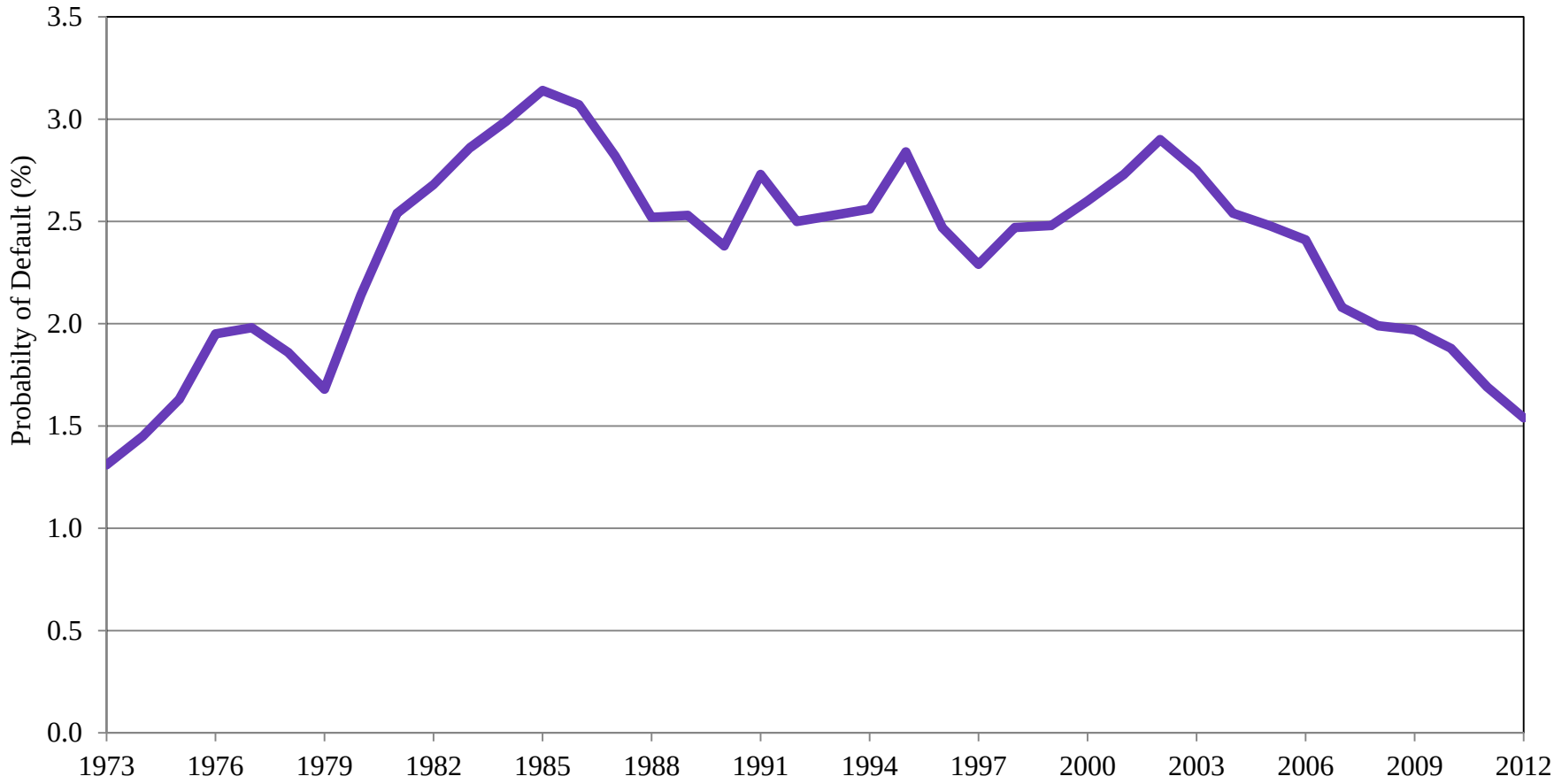
#3 – Cost of Borrowing

- Nominal Cost of Borrowing
  - Last bust average rate on defaulted loans was 11.04%
  - Average 5.44% for 2011 and 2012
- Inflation-adjusted Cost of Borrowing
  - Last bust average rate on defaulted loans was 2.41%
  - Average 3.59% for loans made in 2011 and 2012
- Nominal cost is lower, but the real cost is higher
- Amortized loans at lower interest rates pay more principal early in the loan reducing the possibility of loans going underwater **(10.2% more in 6 years for 15 year loan)**

#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



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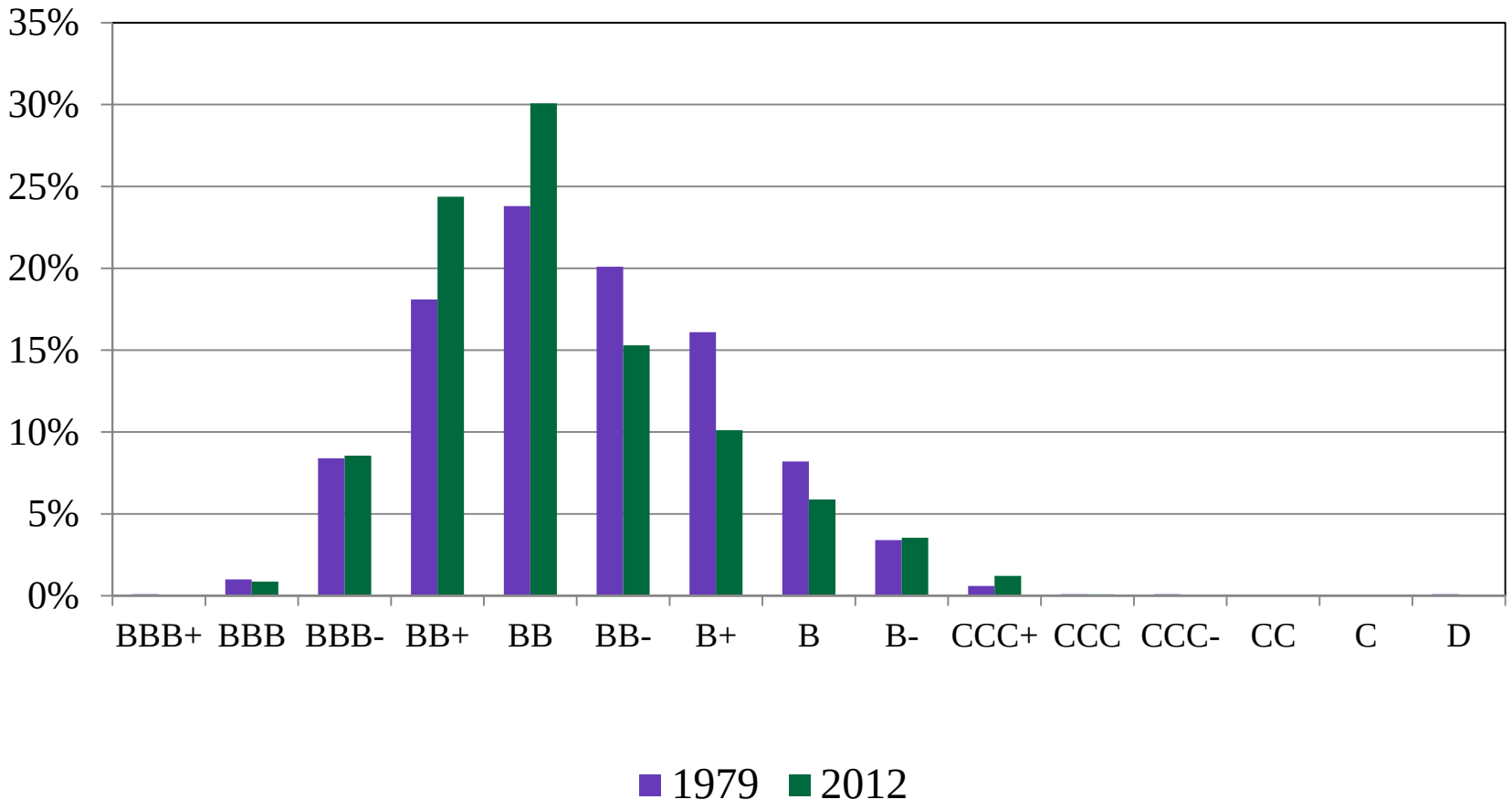
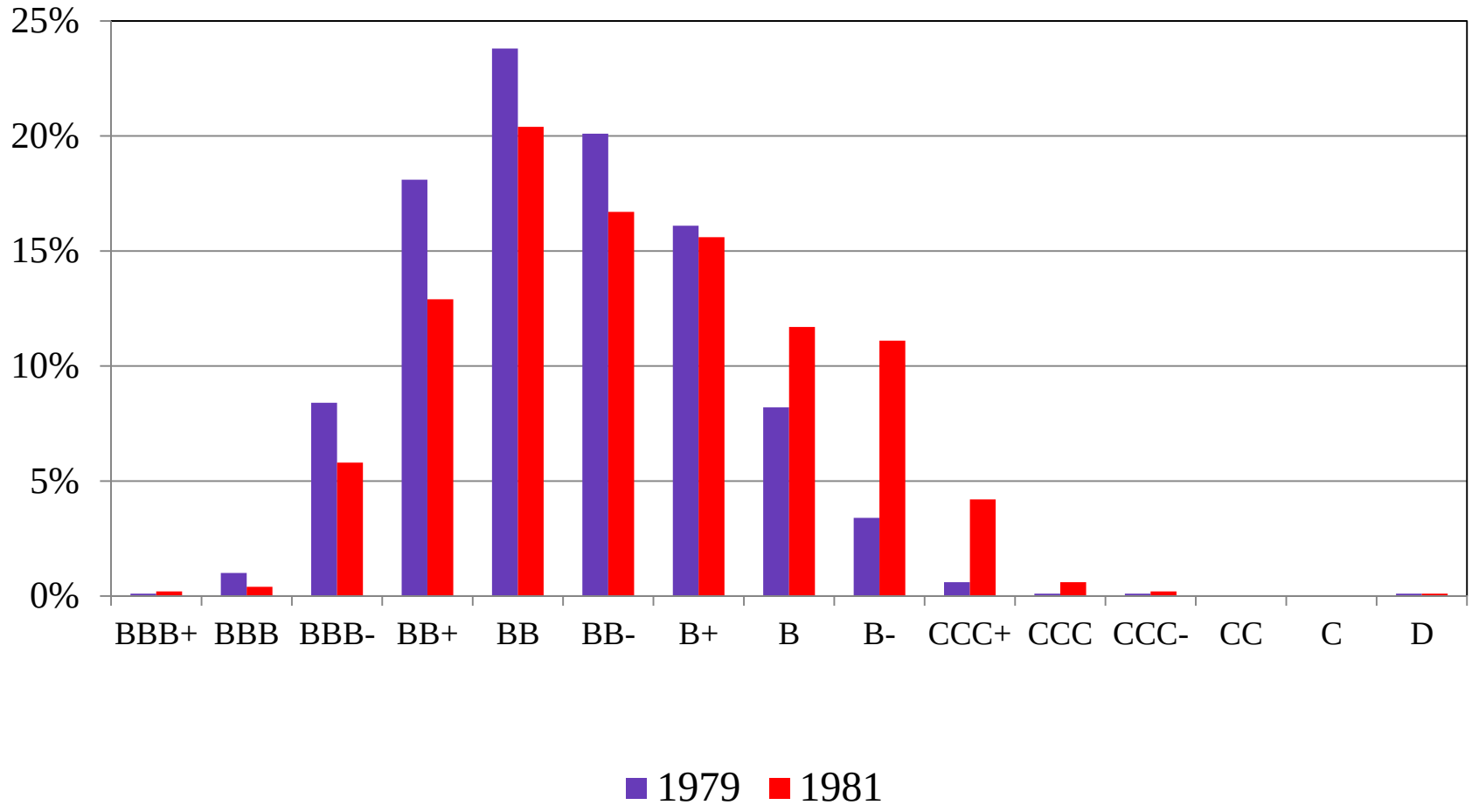
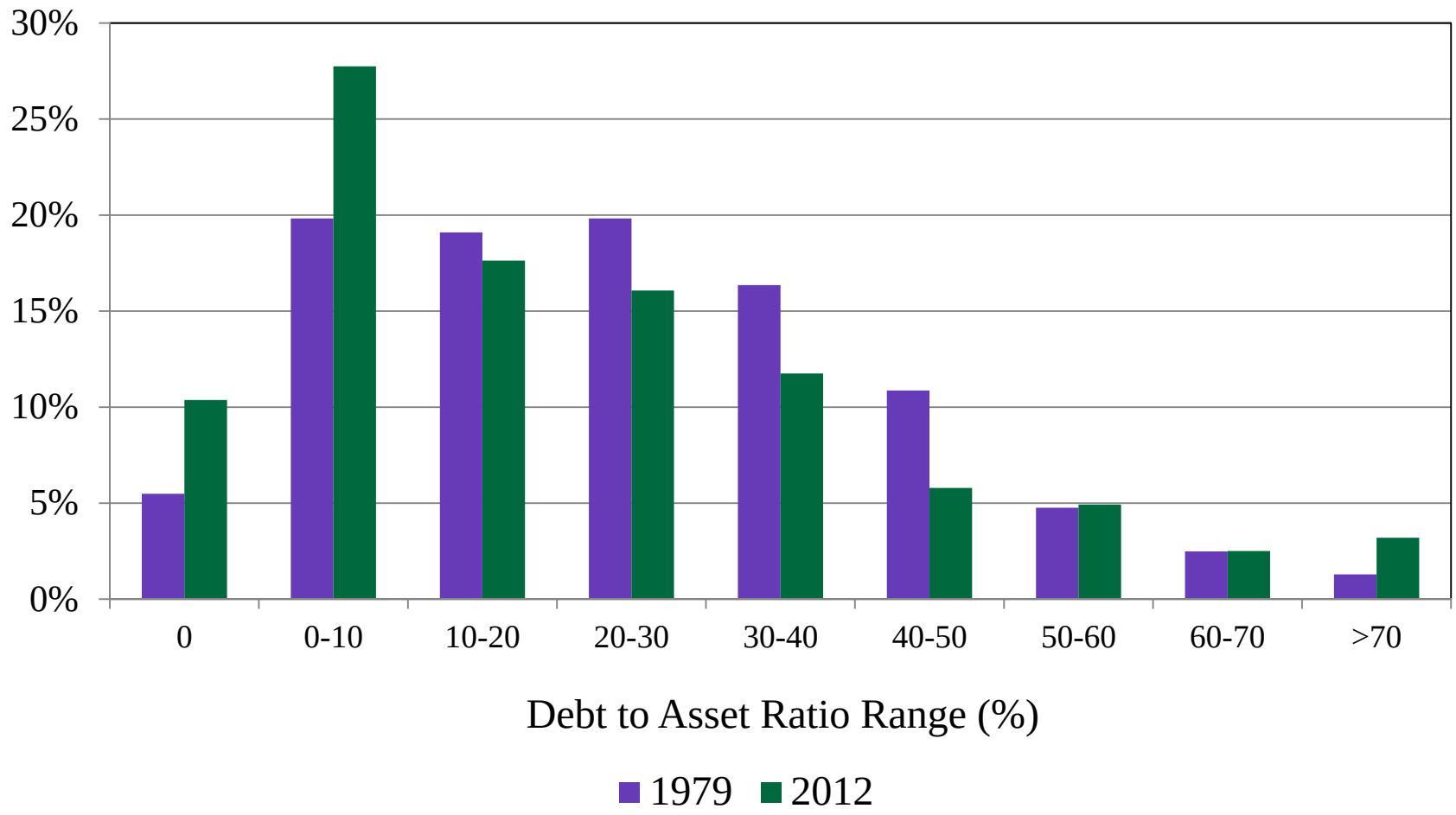


#5 – Default risk is low, but it was in 1979 and it can change quickly



#6 – Debt to Asset is Lower in 2012 than 1979



#6 – Debt to Asset is Lower in 2012 than 1979

- Average debt to asset ratio for Kansas Farm Management Farms:
  - 1979 – 24.6%
  - 2012 – 21.5%
- Farms Greater than 40% debt to assets
  - 1979 – 19.4%
  - 2012 – 16.4%
- Farms Greater than 70% debt to assets
  - 1979 – 1.3%
  - 2012 – 3.2%

#6 – Debt to Asset is Lower in 2012 than 1979

Debt to Asset Ratio by Sales Class for USDA ARMS Farms for Kansas and KFMA Farms

	All	<100 K	100 K - 250 K	250 K - 500 K	500 K - 1,000 K	>1,000 K
			USDA ARMS Farms for Kansas			
2003	16.0	12.4	14.4	10.6	25.0	22.1
2004	18.0	9.8	17.9	32.1	9.7	24.4
2005	15.2	9.1	12.2	15.5	19.6	29.8
2006	15.4	6.3	15.6	15.8	18.4	31.5
2007	13.2	8.3	11.8	12.7	17.2	21.3
2008	11.2	4.2	10.8	10.9	15.5	13.6
2009	15.2	7.1	10.4	12.6	20.2	26.8
2010	12.4	7.4	9.7	11.9	13.5	19.0
2011	13.5	4.8	22.5	11.8	12.0	16.2
			Kansas Farm Management Farms			
2003	36.5	27.1	36.6	40.5	44.4	43.2
2004	35.2	25.0	35.8	38.7	39.8	44.4
2005	33.3	21.6	33.0	38.2	37.3	40.6
2006	29.1	20.8	25.3	32.4	31.7	35.5
2007	30.0	22.9	25.6	33.3	32.3	35.6
2008	29.6	22.7	25.6	32.5	31.1	33.1
2009	28.7	22.7	26.1	30.9	29.3	31.9
2010	27.4	20.3	24.4	30.2	27.3	30.2
2011	25.5	15.1	22.1	26.6	28.3	28.2
2012	21.5	16.0	16.2	23.4	22.3	24.7

#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?

	2012	65.3% Interest Increase	15.7% Farm Production Decrease	Both	Both w/o Government Payments
Value of Farm Production	609,704	609,704	514,063	514,063	514,063
Government Payments	21,110	21,110	21,110	21,110	0
Livestock Income	138,063	138,063	138,063	138,063	138,063
Crop Income	450,531	450,531	354,890	354,890	354,890
Expenses w/o Interest	440,453	440,453	440,453	440,453	440,453
Interest	18,717	30,939	18,717	30,939	30,939
Total Expenses	459,170	471,392	459,170	471,392	471,392
Net Farm Income	150,534	138,312	54,892	42,670	21,560
Capital Debt Repayment Capacity	128.63%	116.57%	34.25%	22.19%	1.36%

#8 – What Safety Net?

- Crop revenue would need to fall by 21.2% to decrease the value of farm production by 15.7%
- Using prices from 2011 received on farm:
  - Corn price would need to fall from $6.20 to $3.74
  - Wheat price would need to fall from $6.95 to $5.61
  - Soybean price would need to fall from $11.55 to $6.64

#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 AMP prices
  - May not become law
  - Even if they are:
    - Corn AMP price for 2014 is $3.08
    - Wheat AMP price for 2014 is $3.69
    - Soybean AMP price for 2014 is $6.44
  - All are below the 21.4% fall in revenue

#9 – How Fixed are Rates?

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 fixed rate have been 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

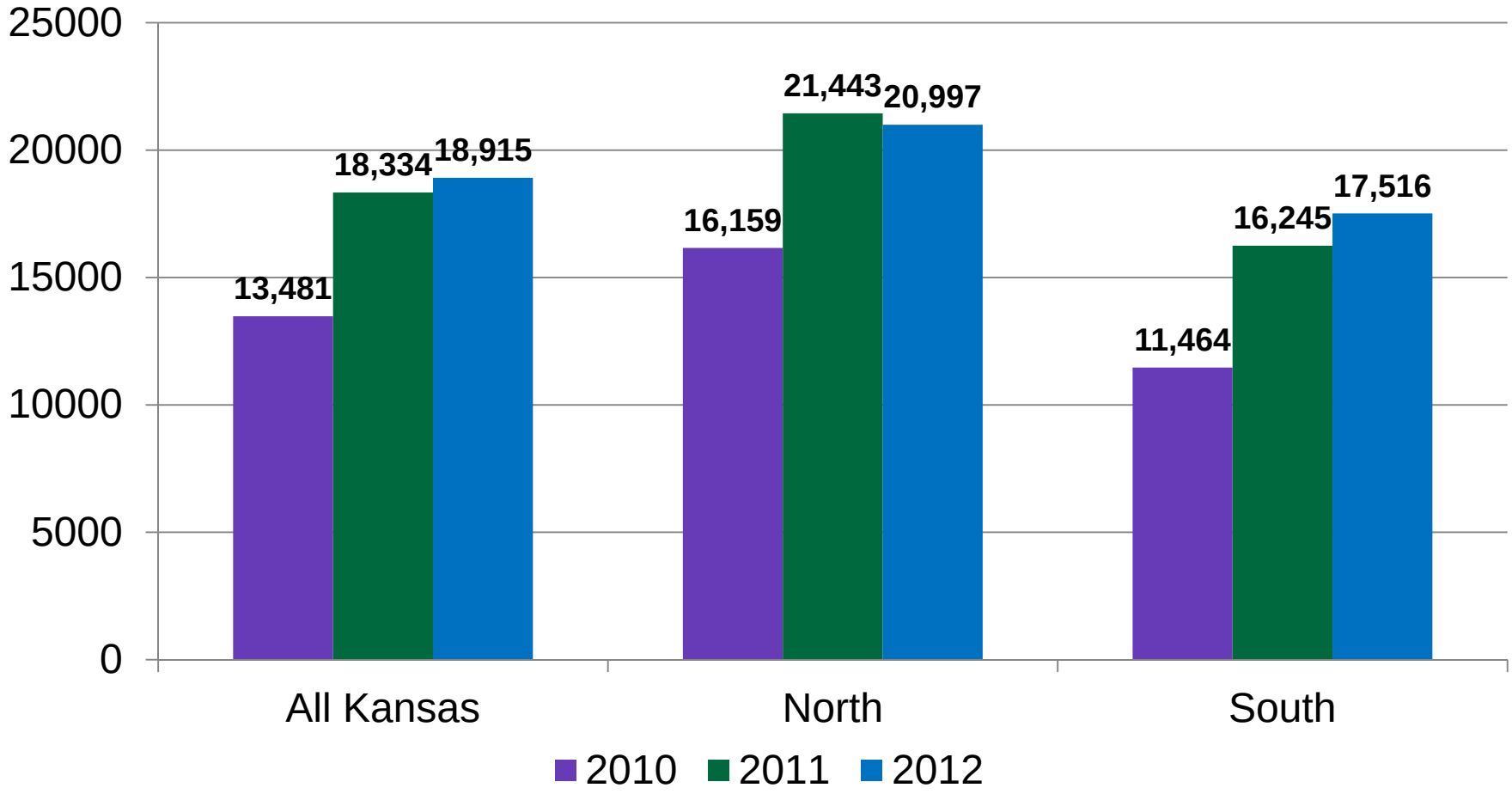
Importance of Crop Insurance

- Examined 1157 farms that were in the Kansas Farm Management Association in 2011 and 2012
  - 465 in the North (one year drought)
  - 692 in the South (two years drought)
- Calculated the Probability of Default for Farms for 2011 and 2012 and other Financial Condition Measures
- Calculated a modified Probability of Default and modified Net Farm Income without Crop Insurance for 2012

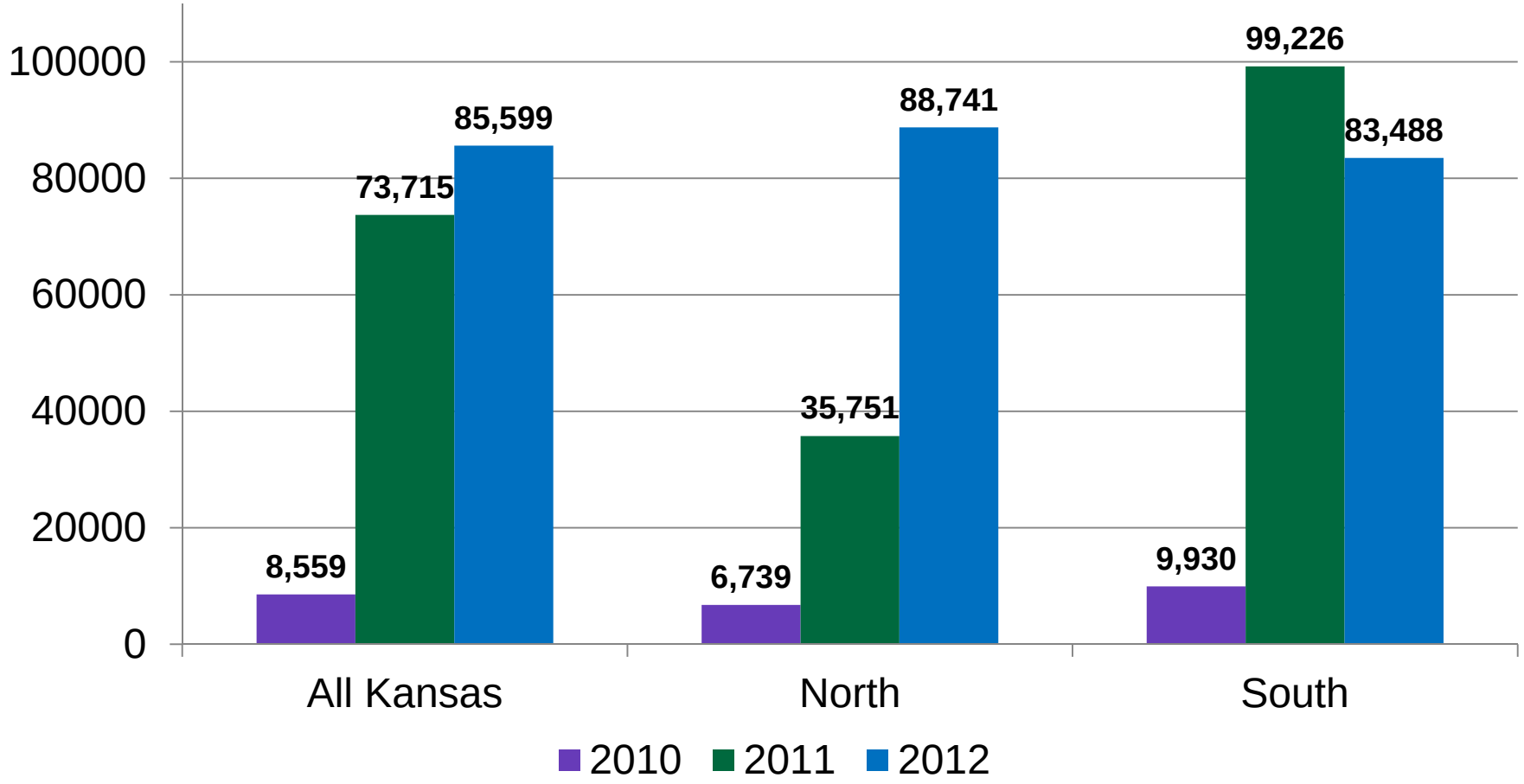
Importance of Crop Insurance

- 85% of KFMA farmers purchase crop insurance in 2011
  - 90.7%in the North (one year drought)
  - 80.3% in the South (two years drought)
- 88% of KFMA farmers purchase crop insurance in 2012
  - 90.5%in the North (one year drought)
  - 85.6% in the South (two years drought)

Crop Insurance Expenditures 2010 through 2012



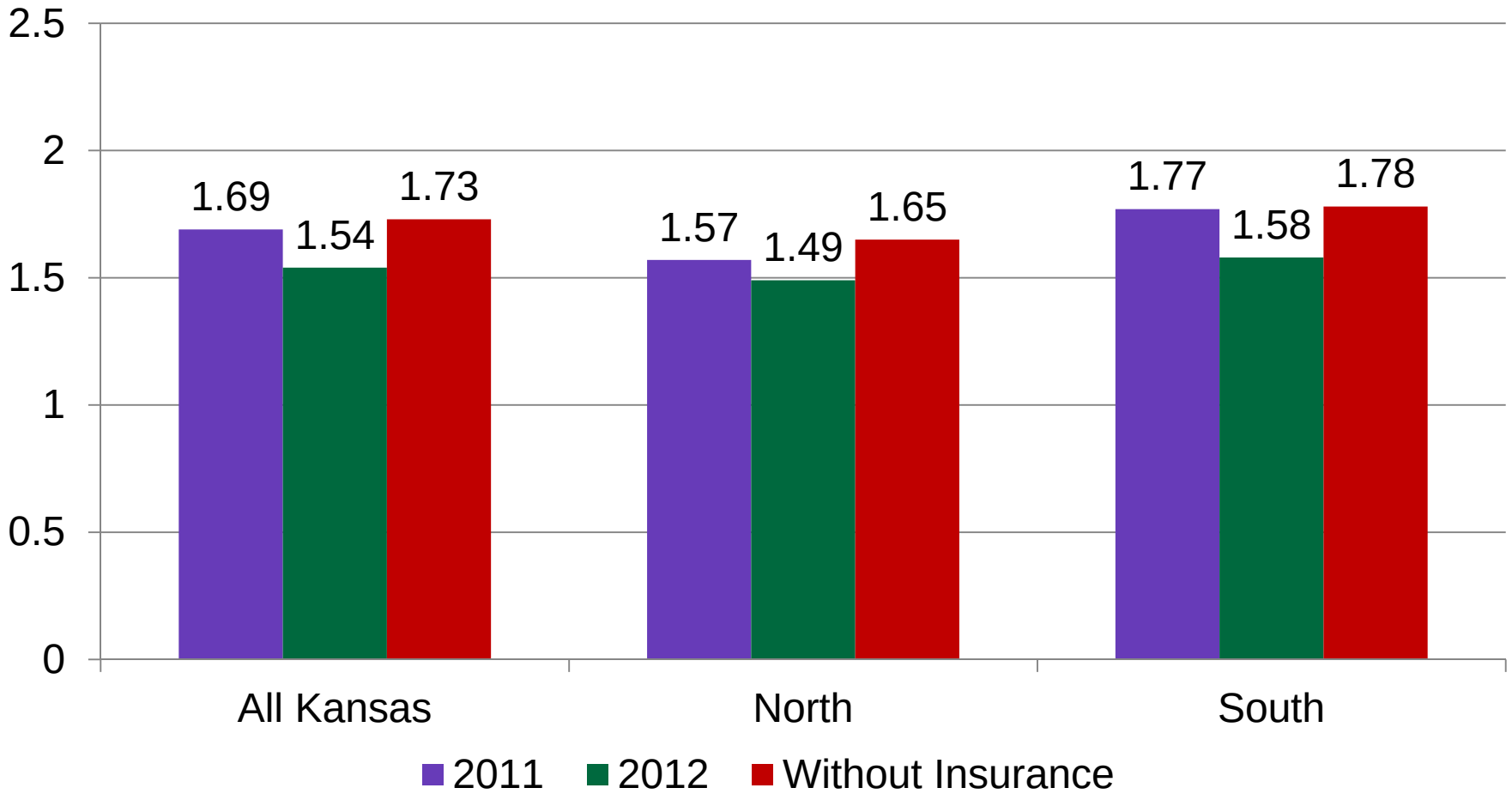
Crop Insurance Revenue 2010 through 2012



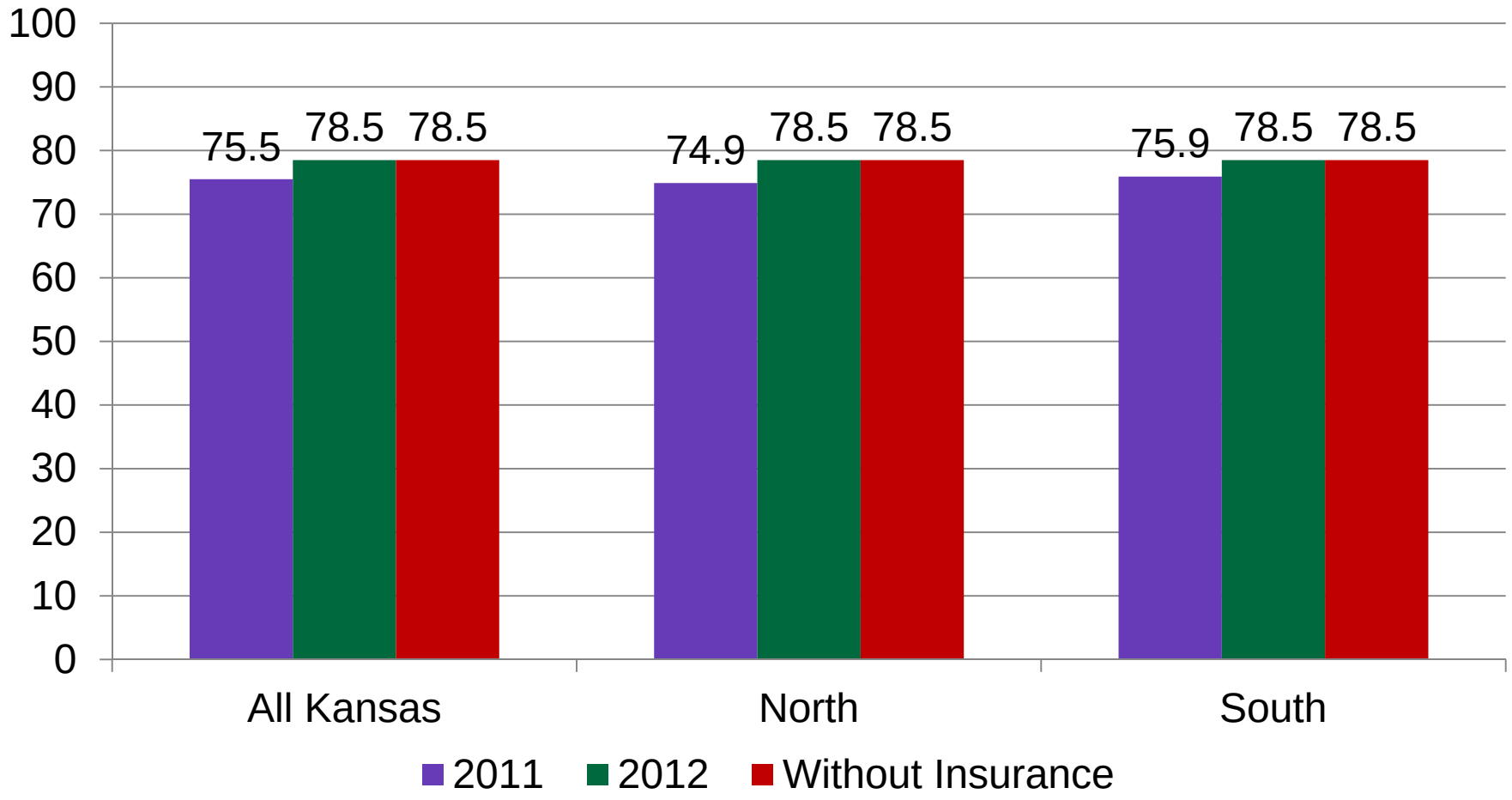
Average Loss Ratio for 2010 through 2012

	2010	2011	2012
All Kansas Farms	0.63	4.02	4.53
Northern Farms	0.42	1.67	4.23
Southern Farms	0.87	6.11	4.77

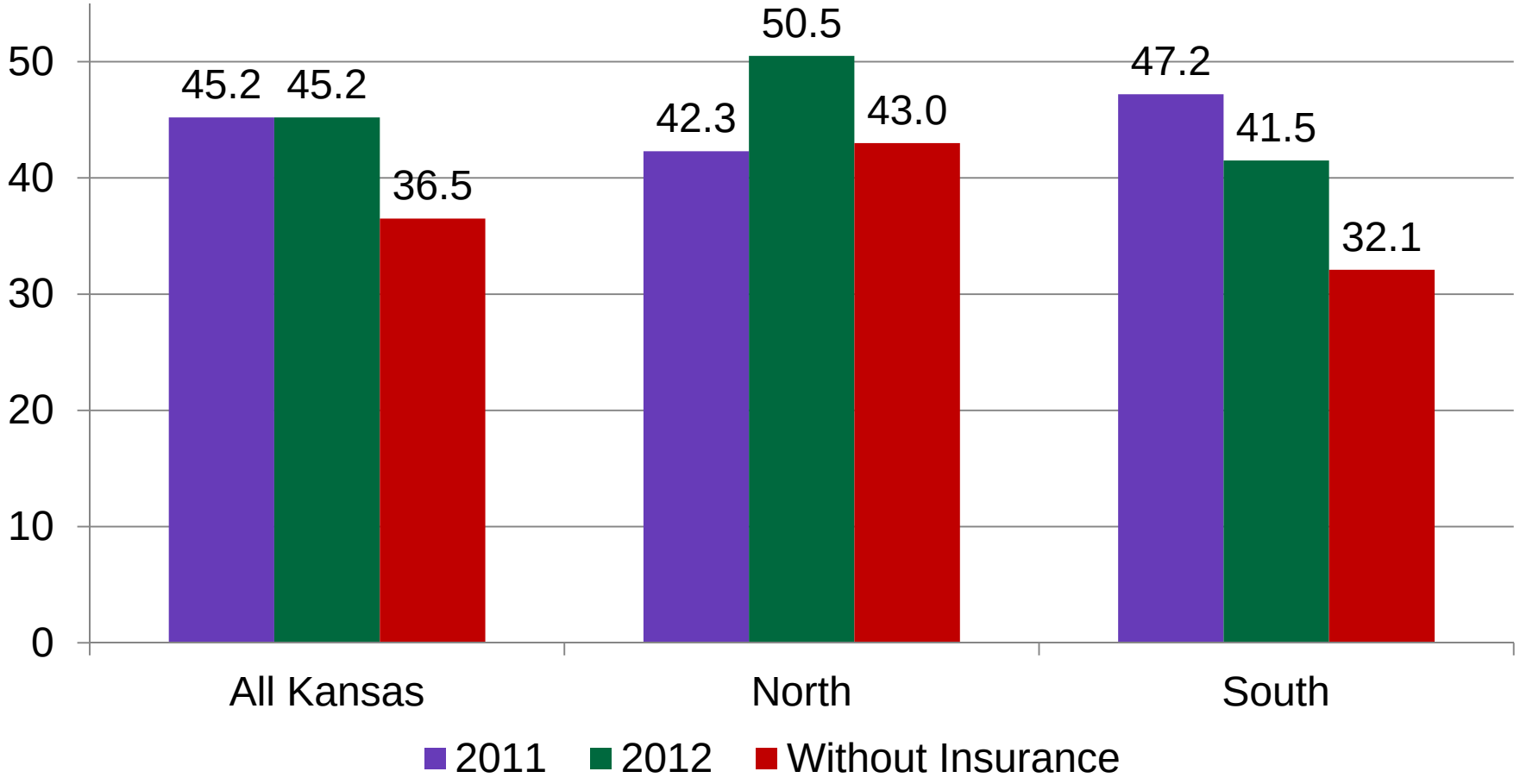
Probability of Default for 2011 and 2012



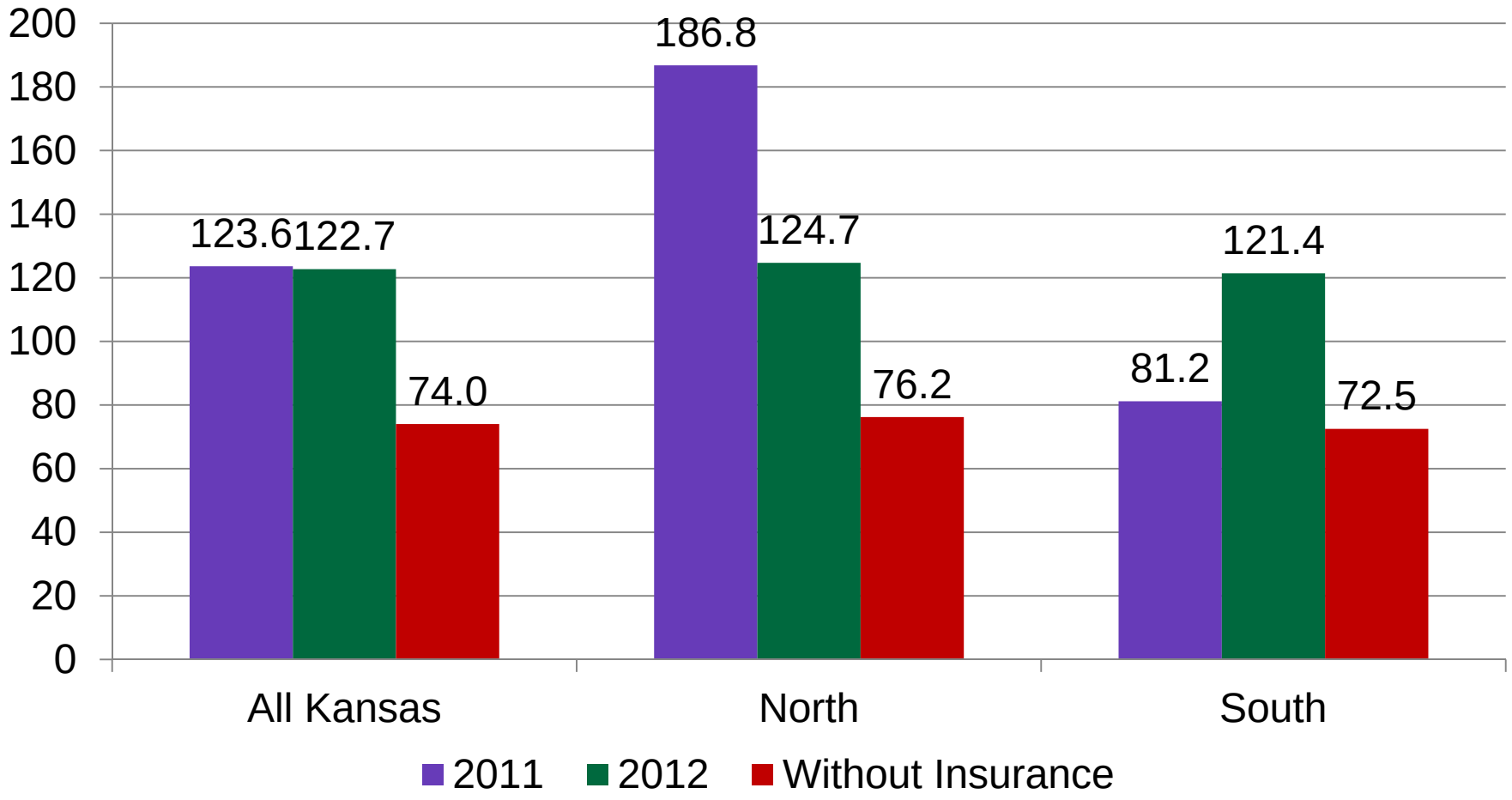
Equity to Assets Ratio for 2011 and 2012 (%)



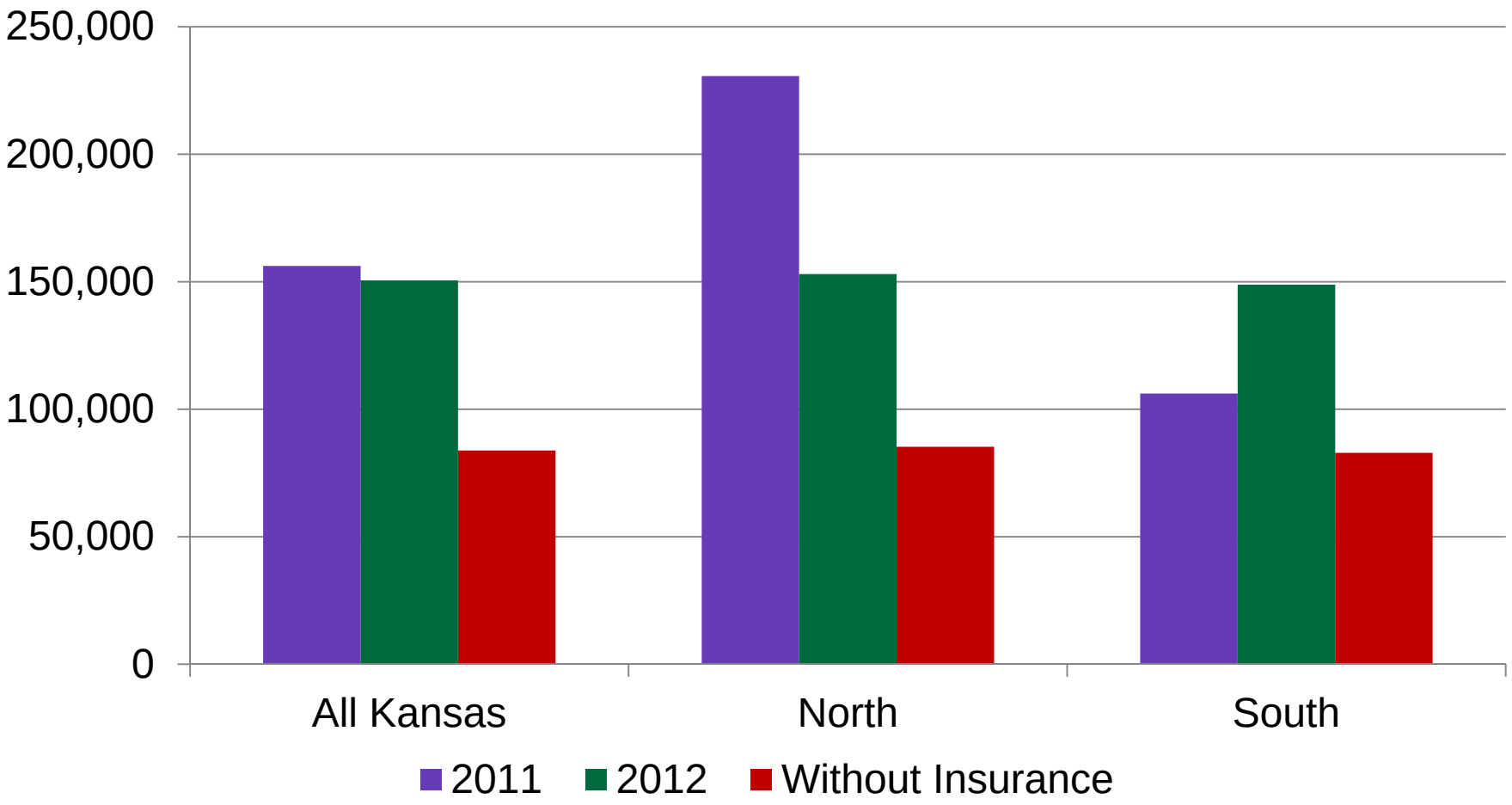
Working Capital Ratio for 2011 and 2012 (%)



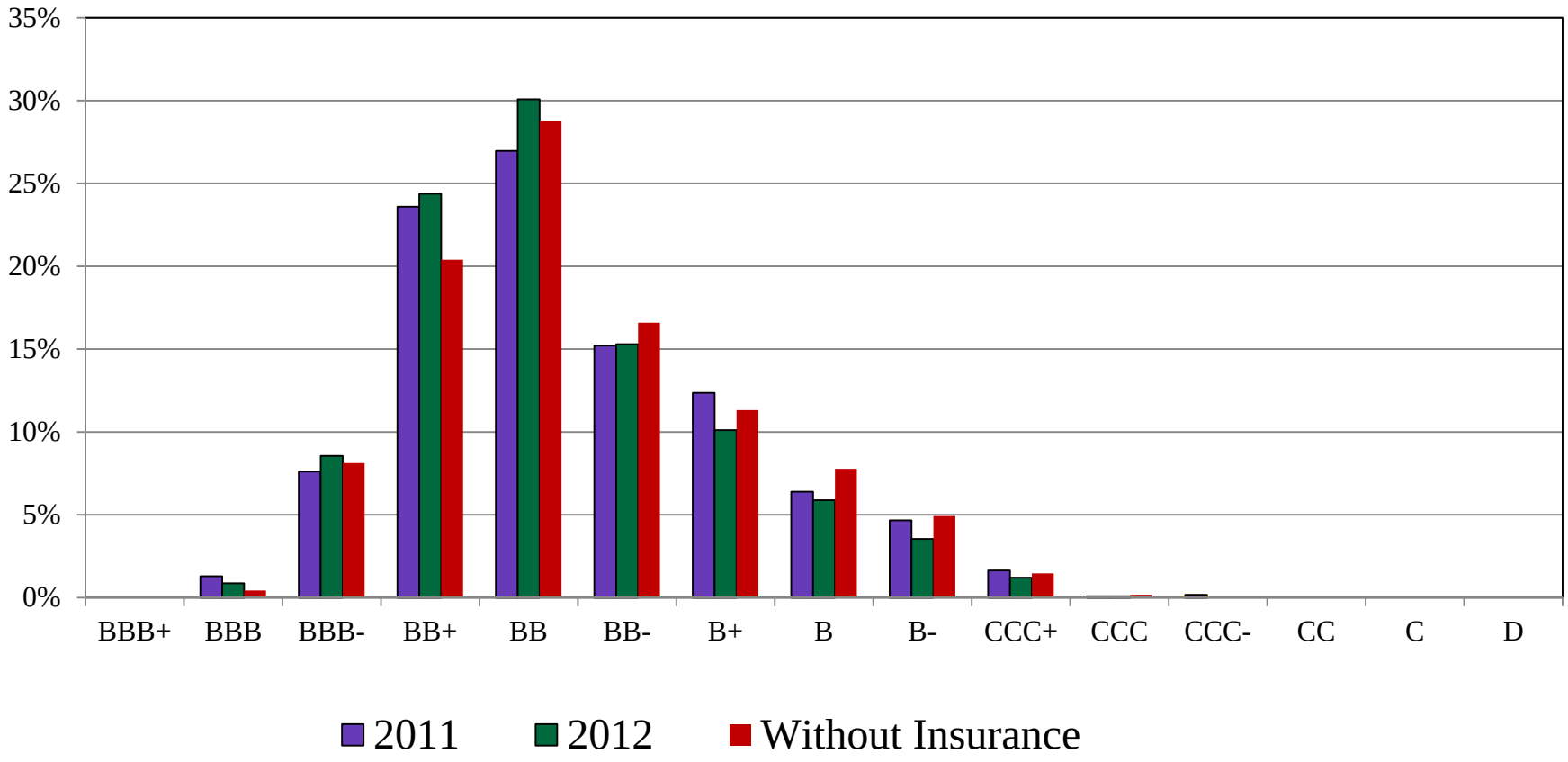
Capital Debt Repayment Capacity for 2011 and 2012 (%)



Net Farm Income for 2011 and 2012



Distribution of All Kansas Farms 2011 and 2012



Take Away

- Crop Insurance prevented the financial condition of farms from deteriorating overall
- Equity to assets ratio increased from 2011 to 2012 due to increasing land values
- The working capital ratio would have decreased without crop insurance
- The Capital Debt Repayment Capacity would have decreased dramatically without crop insurance

Conclusions

- Financial situation of the farm sector is currently in excellent shape partially due to crop insurance
  - 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?

Questions?