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February 22, 2013

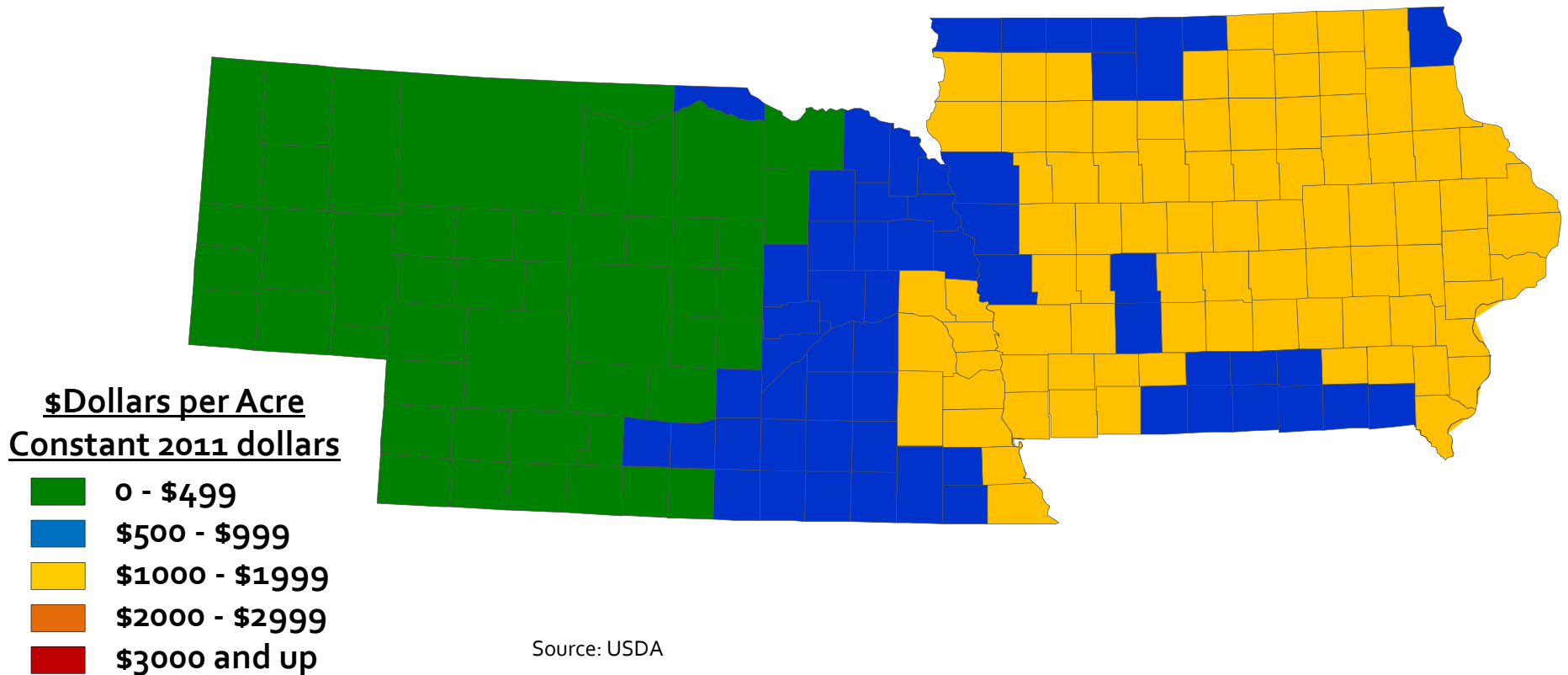
U.S. Farmland Values: Is This Cycle Different?



The views expressed are those of the author and do not necessarily reflect the opinions of the Federal Reserve Bank of Kansas City or the Federal Reserve System.

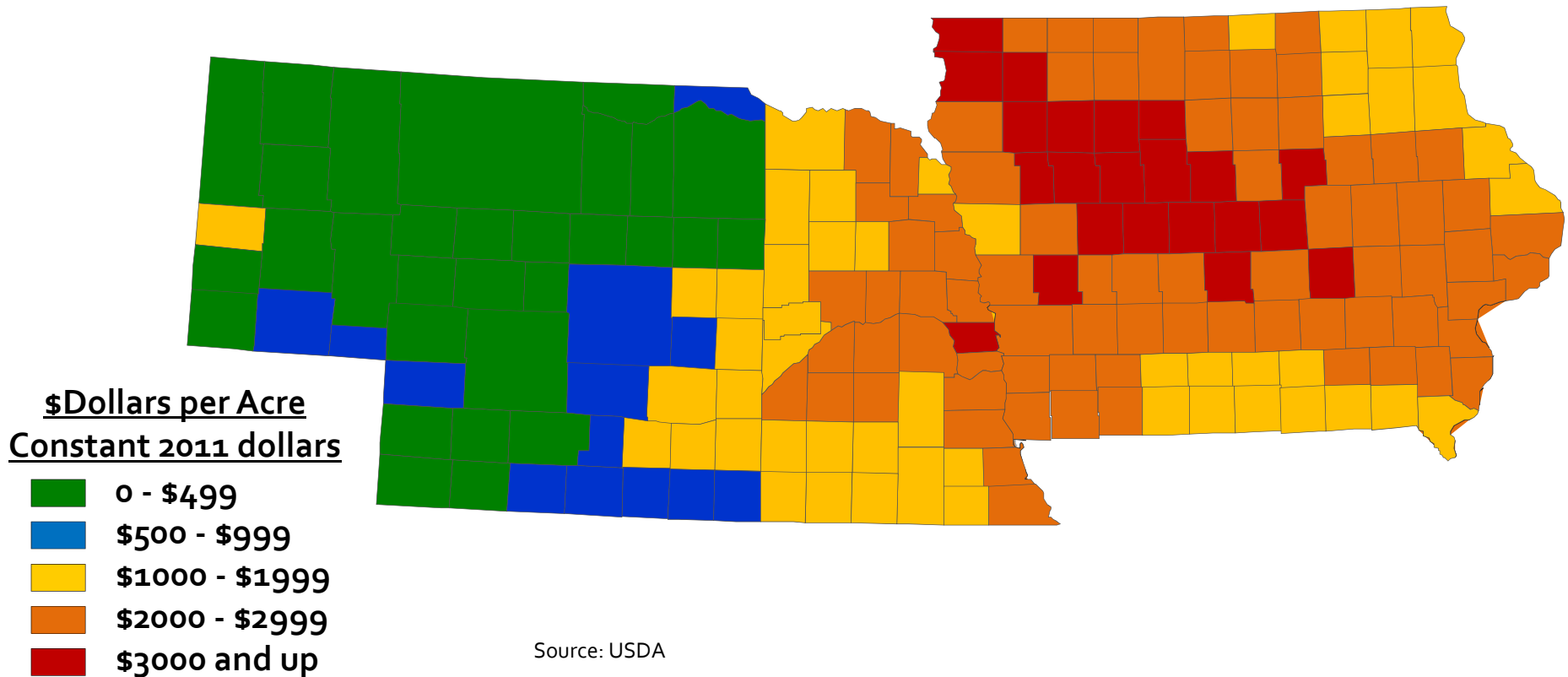
A wide range of farmland values in the western Corn Belt.

Nebraska and Iowa Farm Real Estate Values 1900



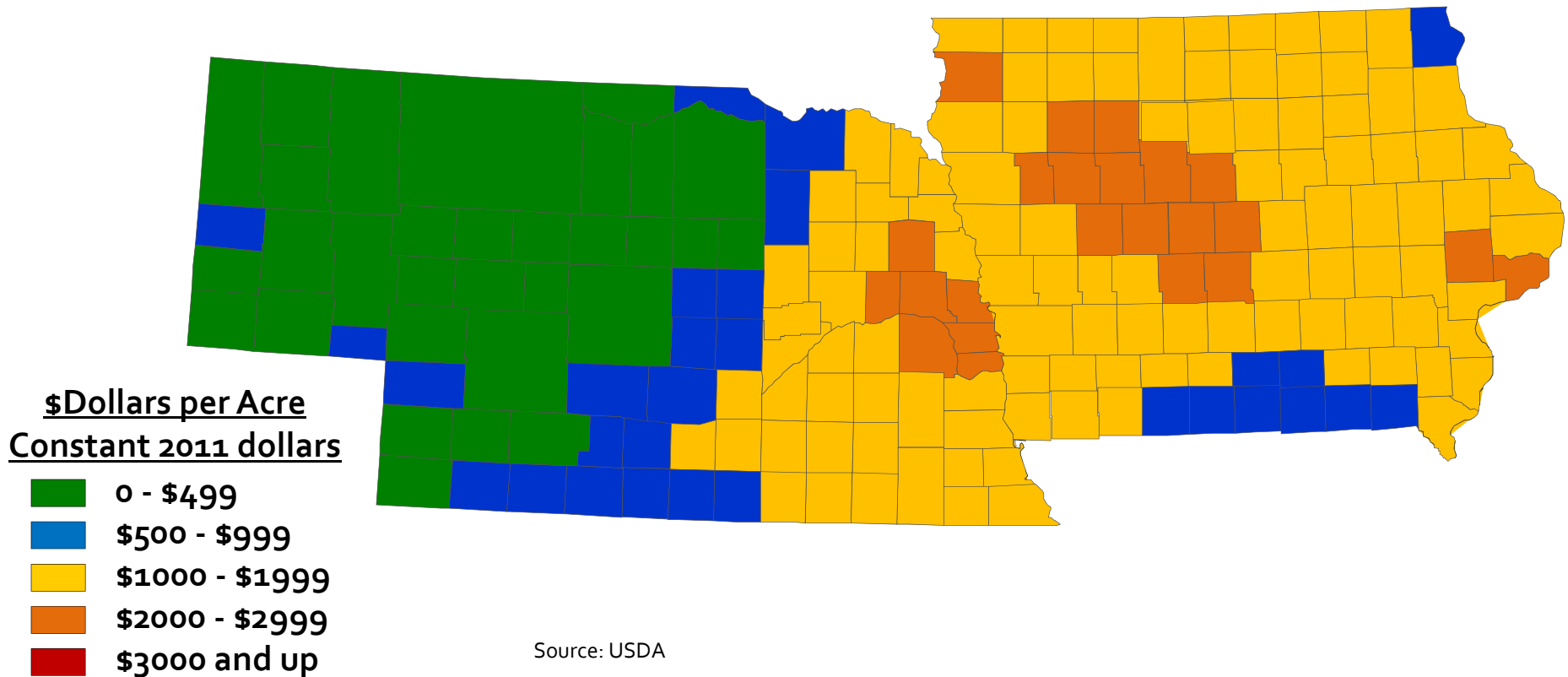
WWI and the "Golden Era for Agriculture" boost farmland values.

Nebraska and Iowa Farm Real Estate Values 1920



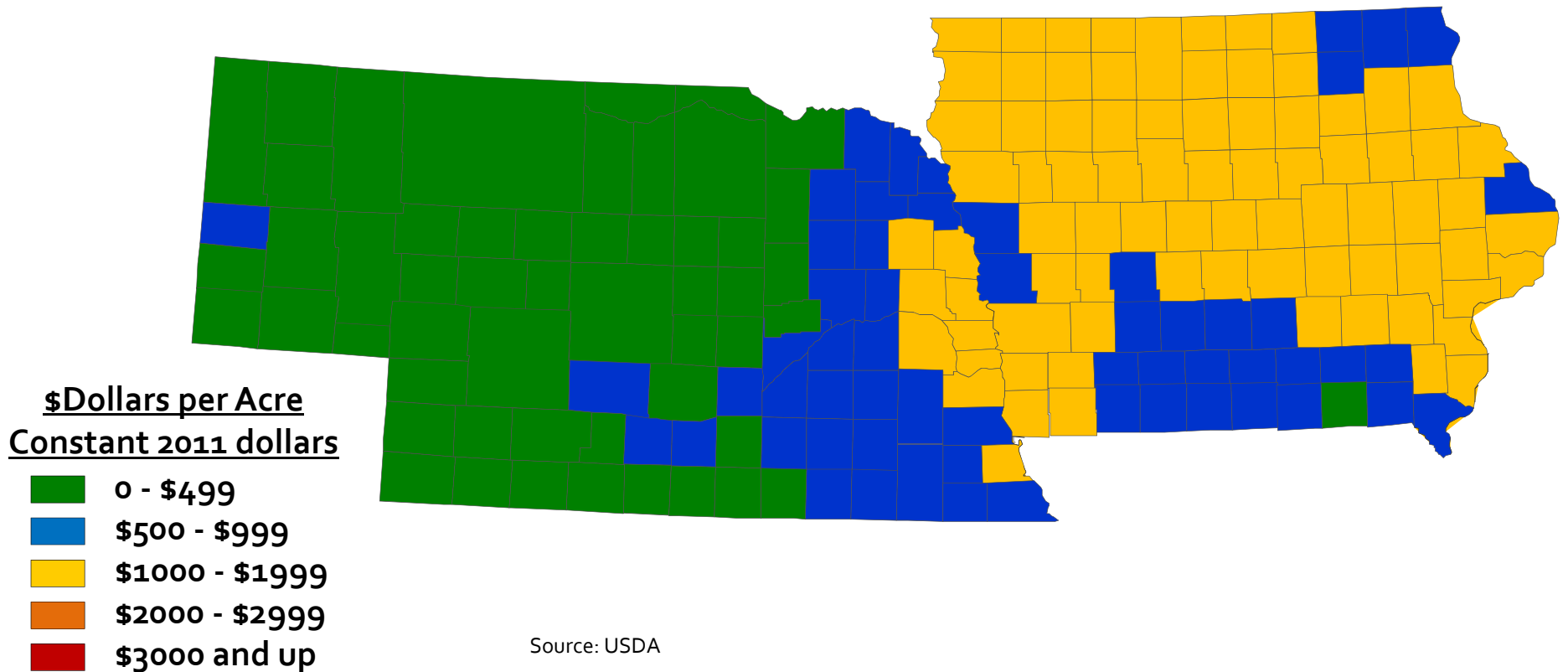
Farmland values decline during the "Roaring 20s"

Nebraska and Iowa Farm Real Estate Values 1930



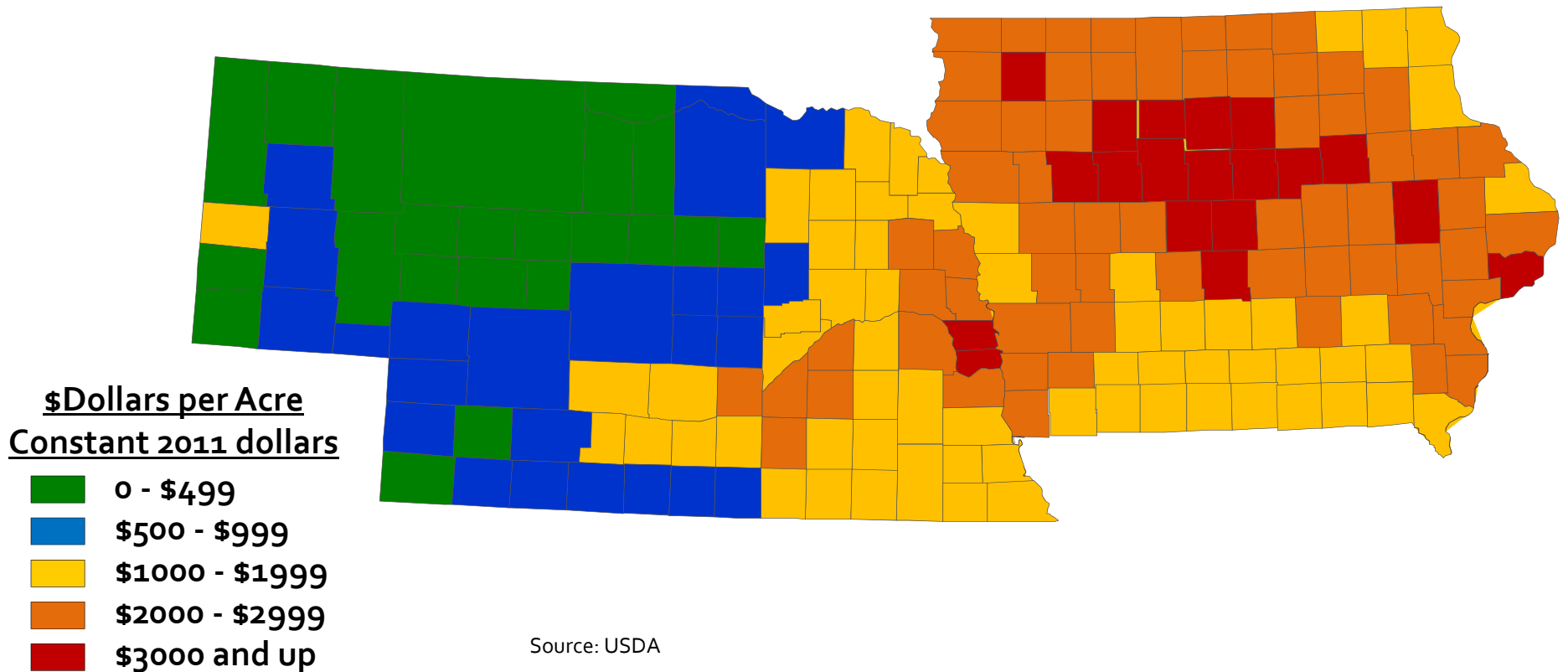
The Great Depression pushed down farmland values further.

Nebraska and Iowa Farm Real Estate Values 1940



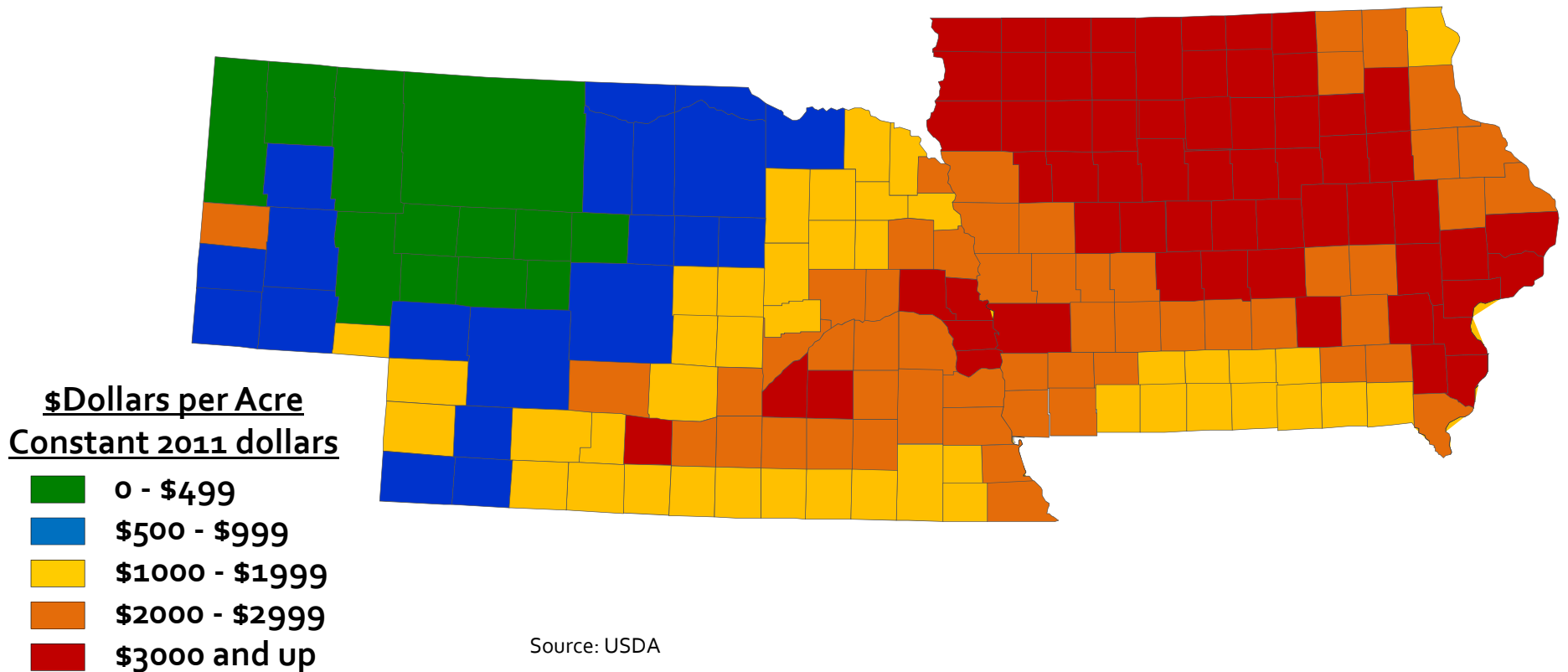
Enhanced productivity and rising exports lifts farmland values during the 1950s and 1960s.

Nebraska and Iowa Farm Real Estate Values 1969



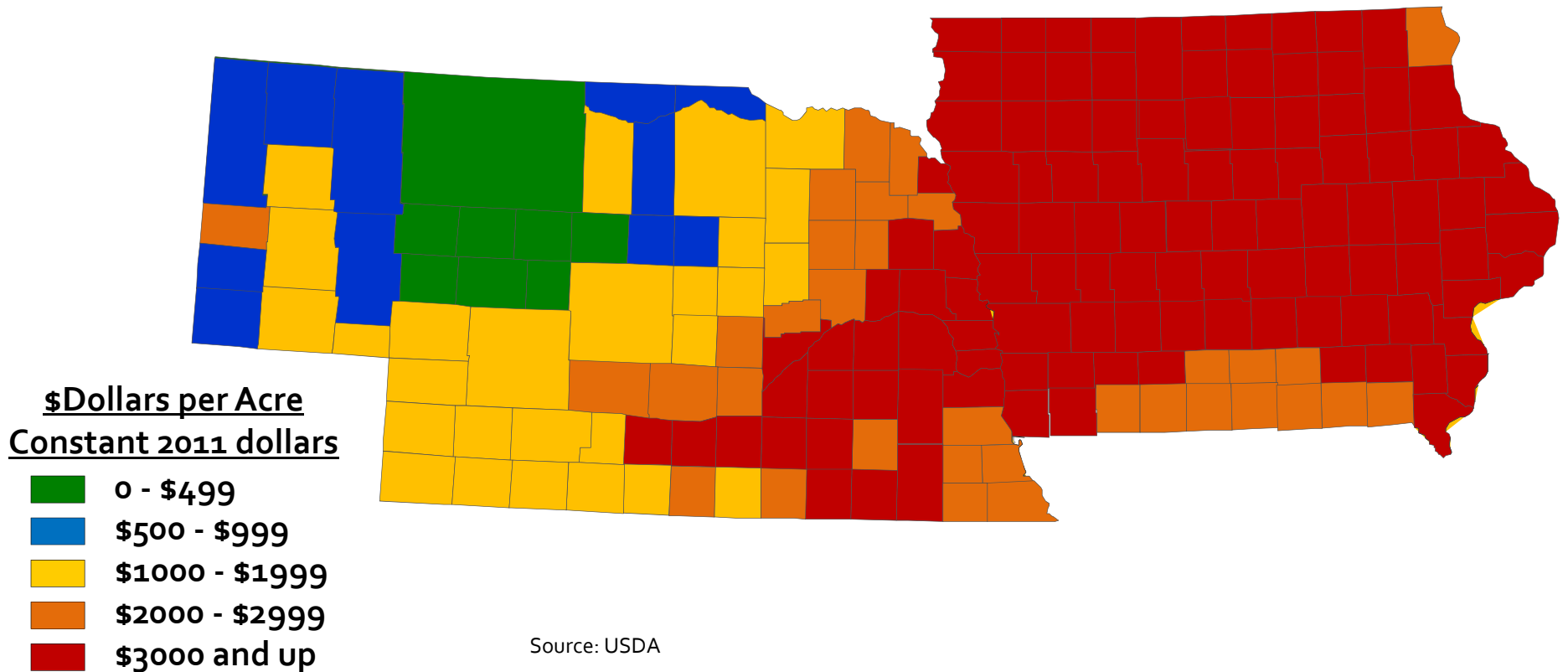
The Russian grain deal sparks the farm real estate boom.

Nebraska and Iowa Farm Real Estate Values 1974



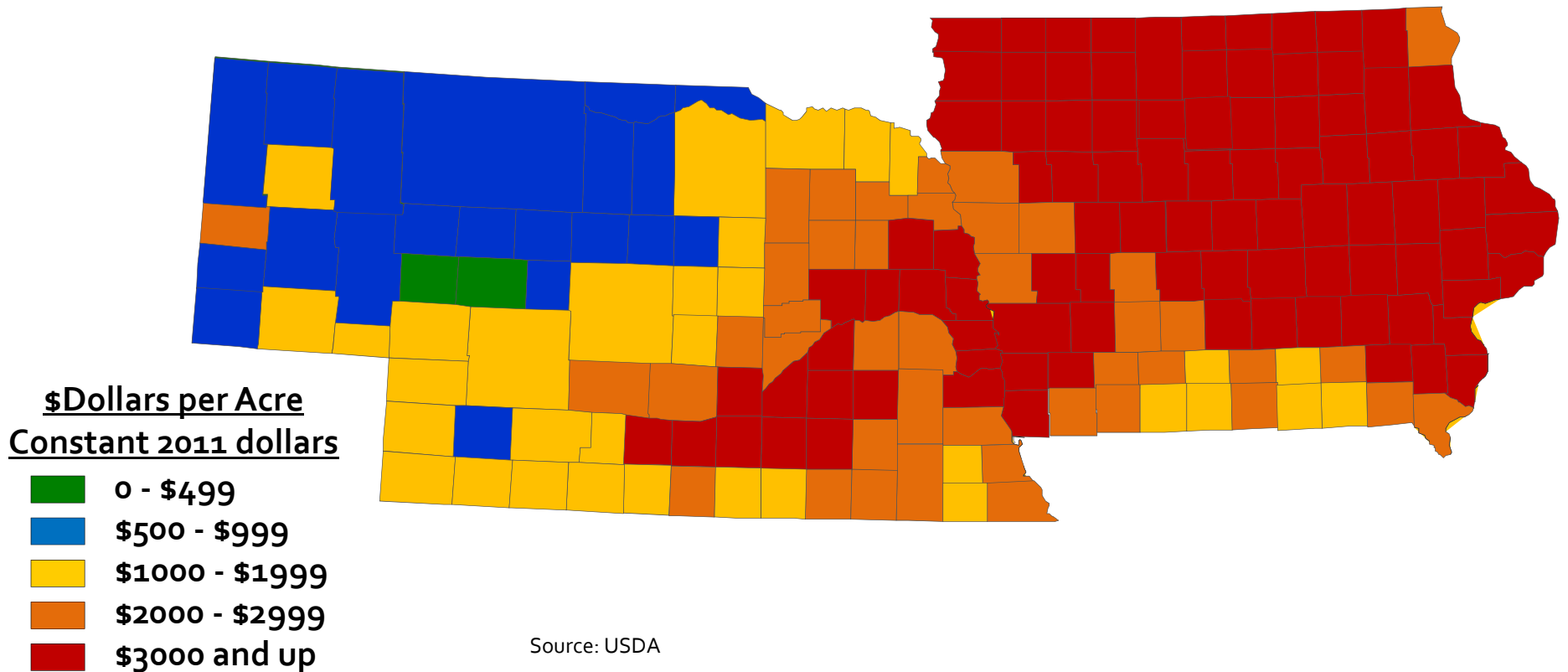
By the late 1970s, farmland values are "hot".

Nebraska and Iowa Farm Real Estate Values 1978



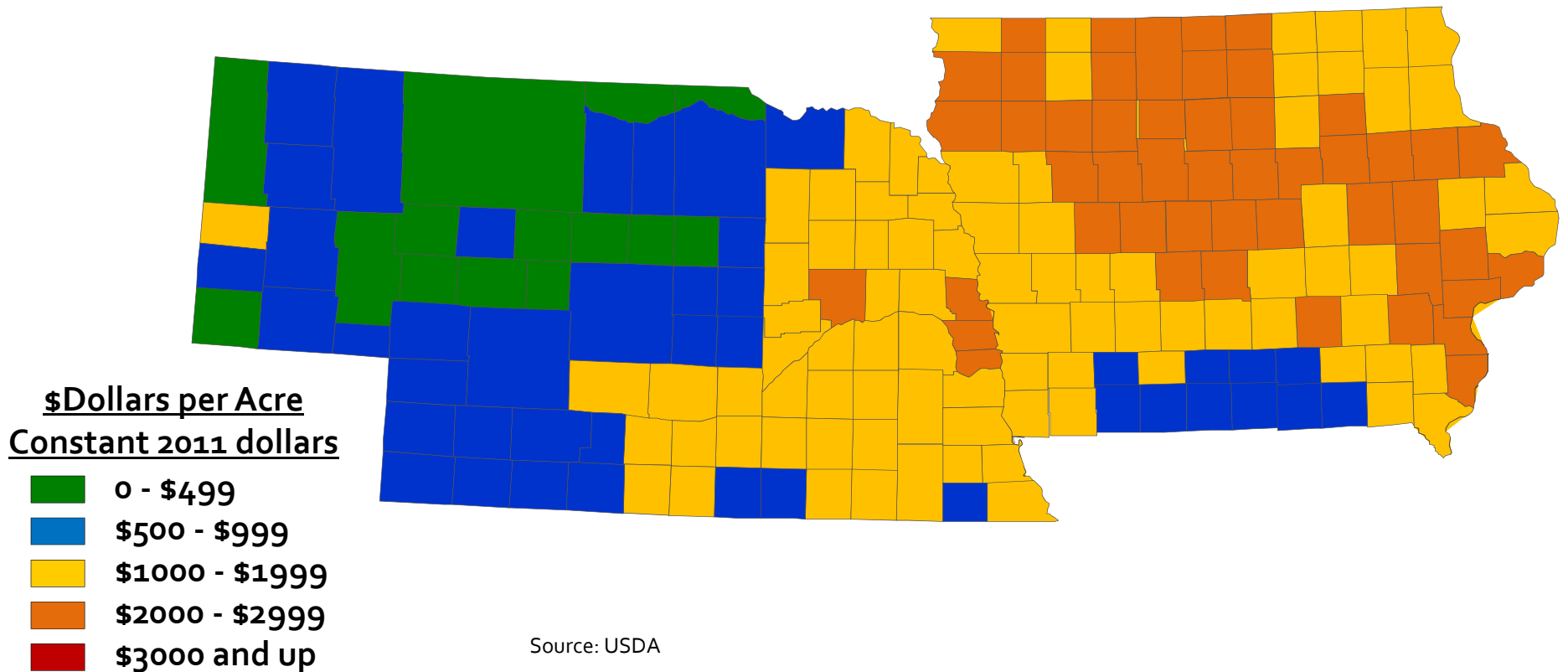
Higher interest rates and reduced exports begin to cool land values.

Nebraska and Iowa Farm Real Estate Values 1982



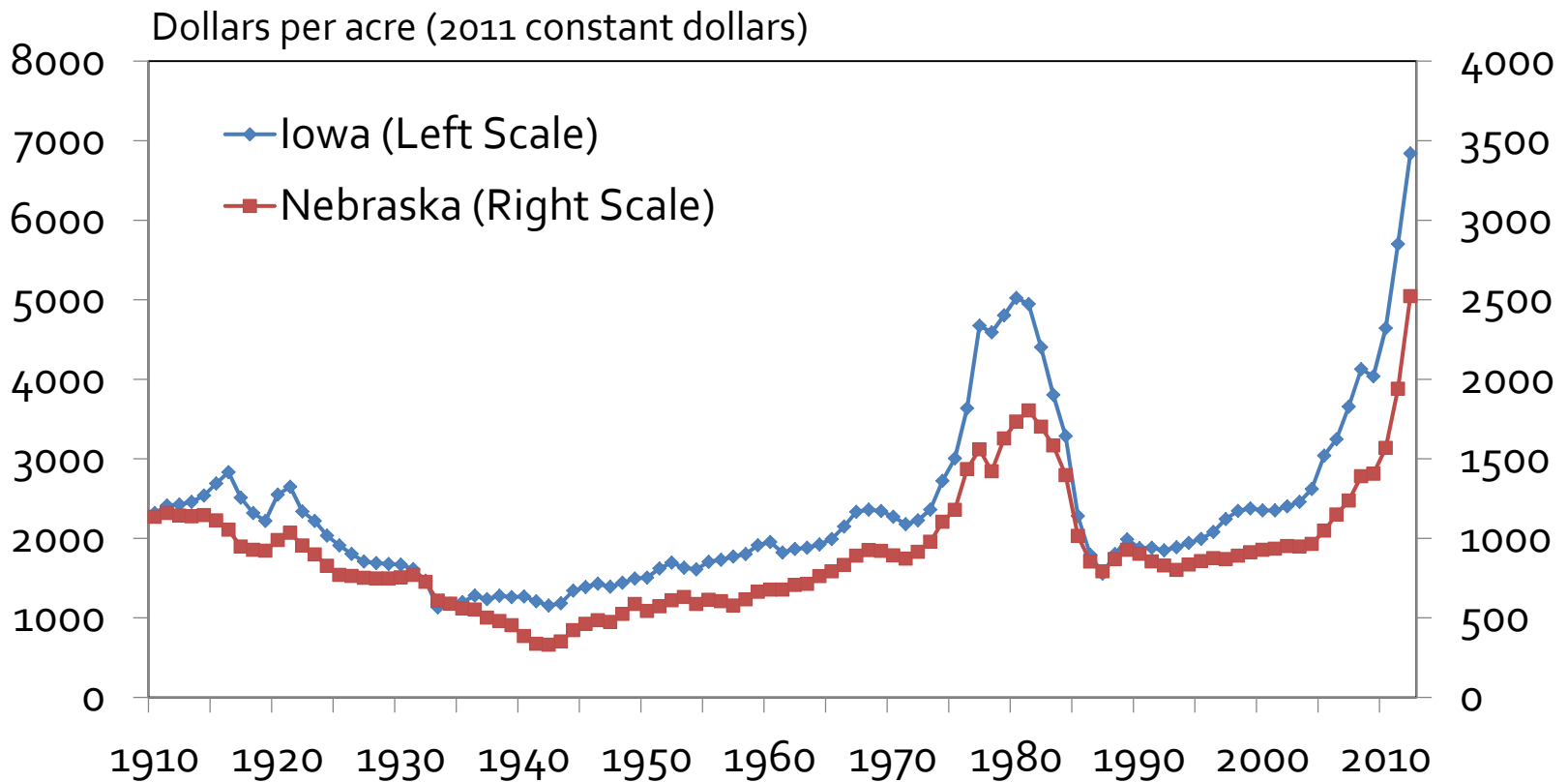
**At the end of the crisis land values are
back to 1969 levels.**

Nebraska and Iowa Farm Real Estate Values 1987



Farmland values surge again.

Iowa and Nebraska Farm Real Estate Values



Calculations based on USDA data



The Drivers of Past Farm Booms/Busts

- Demand Shocks: Persistent demand shocks lead to high land values and capital investment
- Supply Shocks: Persistent supply shocks that lead to production expansions reduce prices
- Interest Rate Shocks:
 - Lower interest rates associated with higher incomes
 - Lower interest rates yield lower capitalization rates



Net present value models highlight the importance of expectations.

Net Present Values tell us that Land Values should equal expected capitalized revenues



Capitalized Value Formula

$$\frac{30\% \text{ of Expected Price} * \text{Yield}}{\text{Expected Capitalization Rate}}$$

According to USDA, land costs are projected to account for a quarter of total corn production costs and a third of soybean production costs in 2012 and 2013

Corn Price (dollars per bushel)

Capitalization Rate (percent)

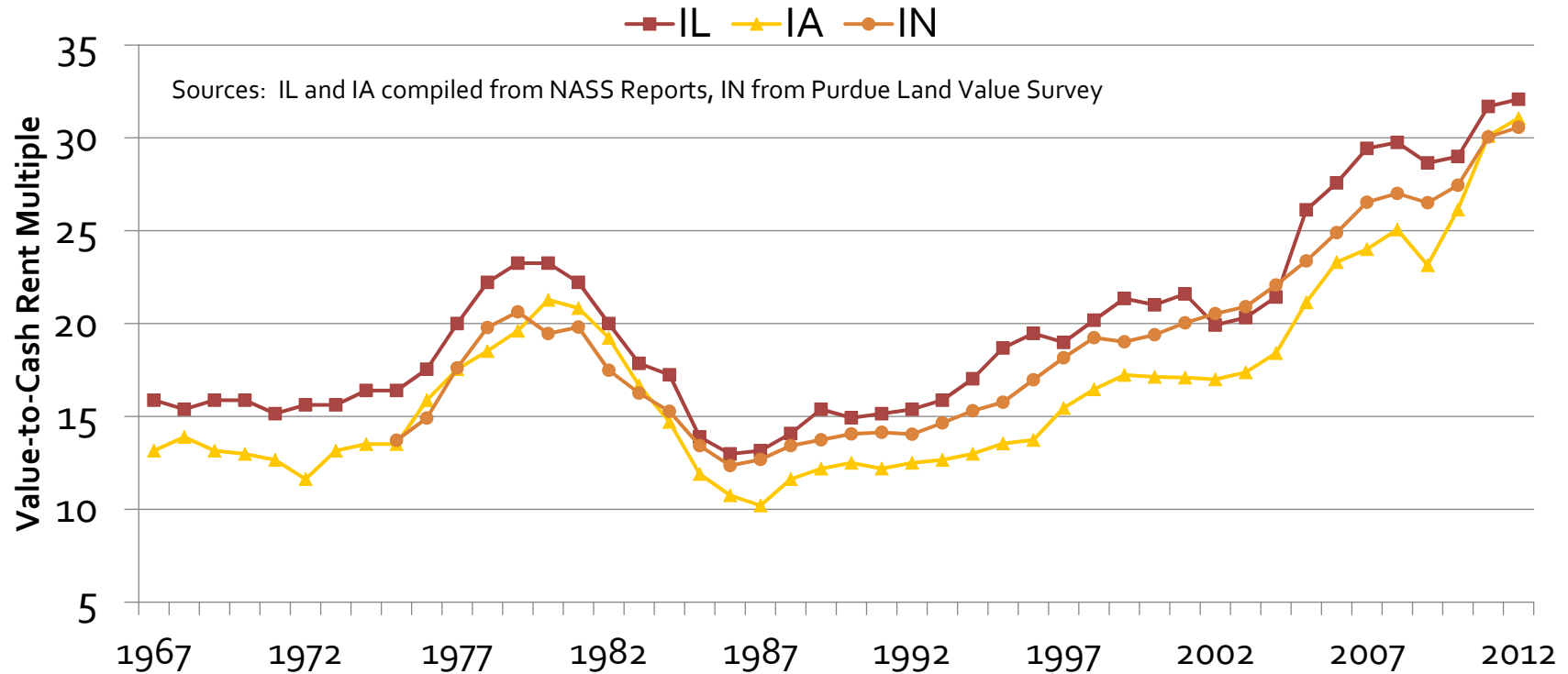
	\$3.00	\$4.00	\$5.00	\$6.00	\$7.00	\$8.00
3%	4,800	6,400	8,000	9,600	11,200	12,800
4%	3,600	4,800	6,000	7,200	8,400	9,600
5%	2,880	3,840	4,800	5,760	6,720	7,680
6%	2,400	3,200	4,000	4,800	5,600	6,400
7%	2,057	2,743	3,429	4,114	4,800	5,486
8%	1,800	2,400	3,000	3,600	4,200	4,800

Assumption corn yields 16 bushels per acre



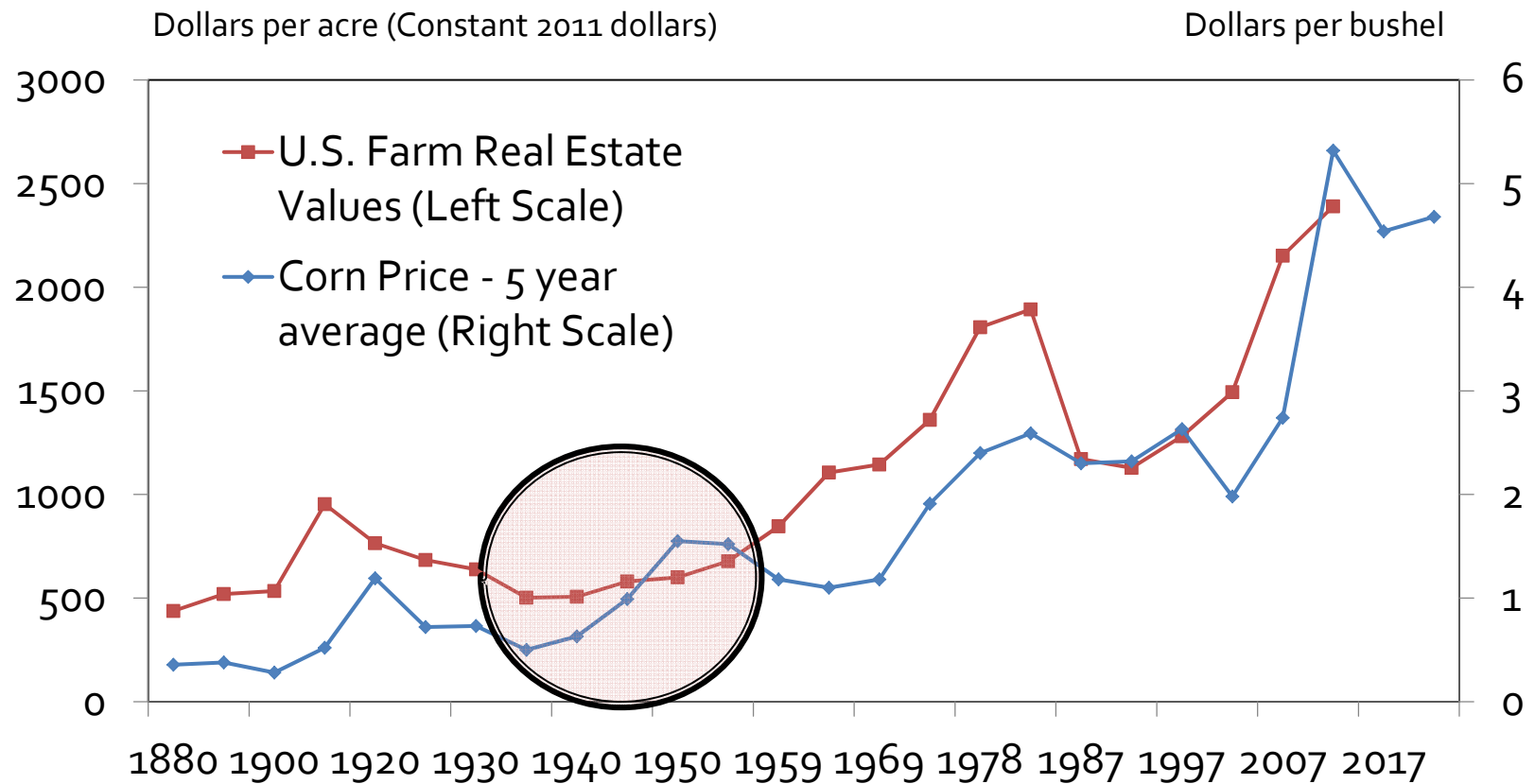
Is farmland over-valued?

Value-to-Cash Rent Multiple for IA, IL, IN Cropland, 1967-2011



What made the 1940s different?

U.S. Corn Prices and Farm Real Estate Values

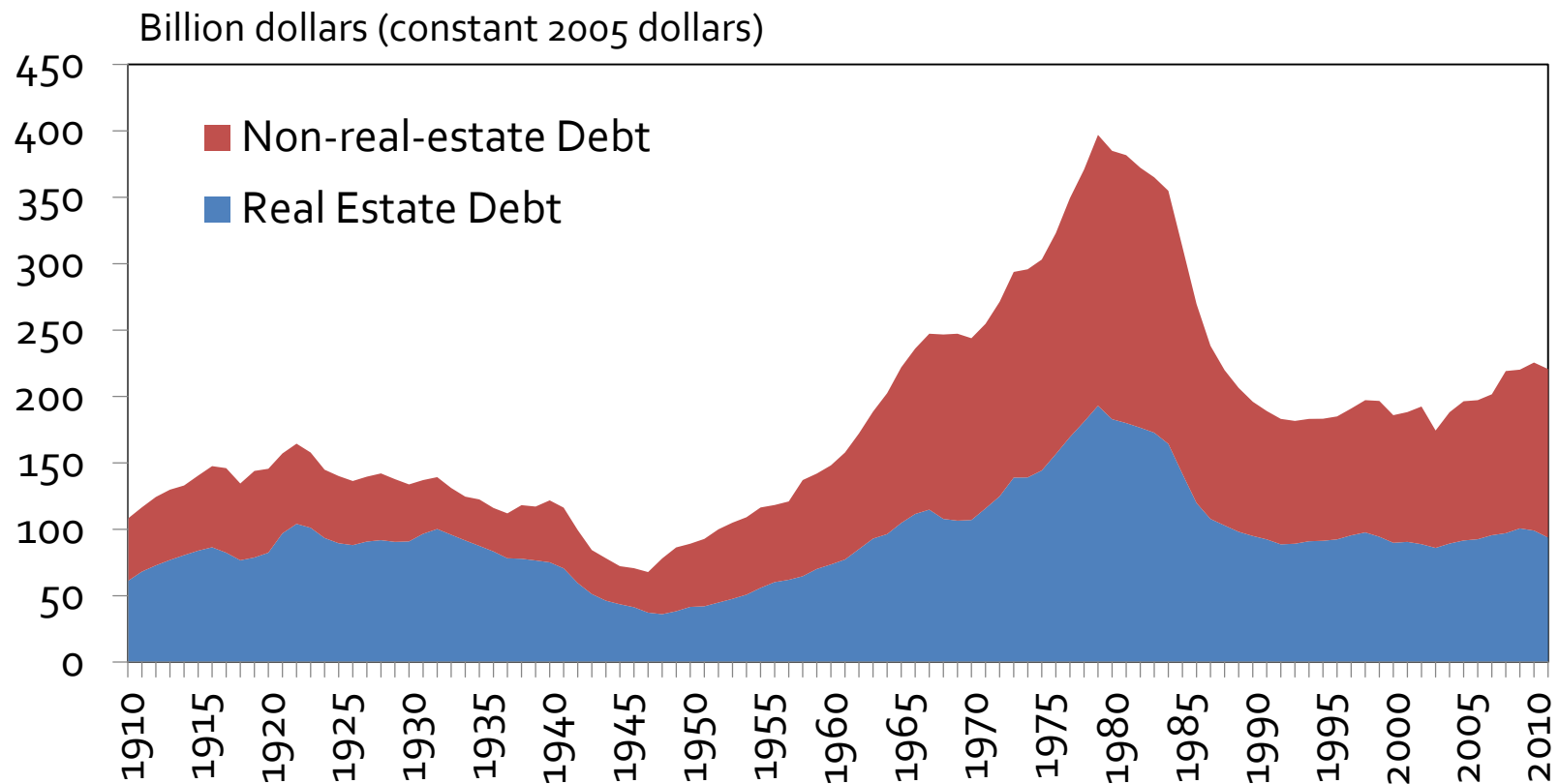


Source: USDA



Farmers deleveraged during the 1940s.

Real U.S. Farm Debt



Source: USDA and Agricultural Finance Databook



Farm debt appears to be concentrated.

- KS Farm Management Farms:

Average Debt-to-Asset Ratio

- 1979 – 24.6%
- 2010 – 26.8%

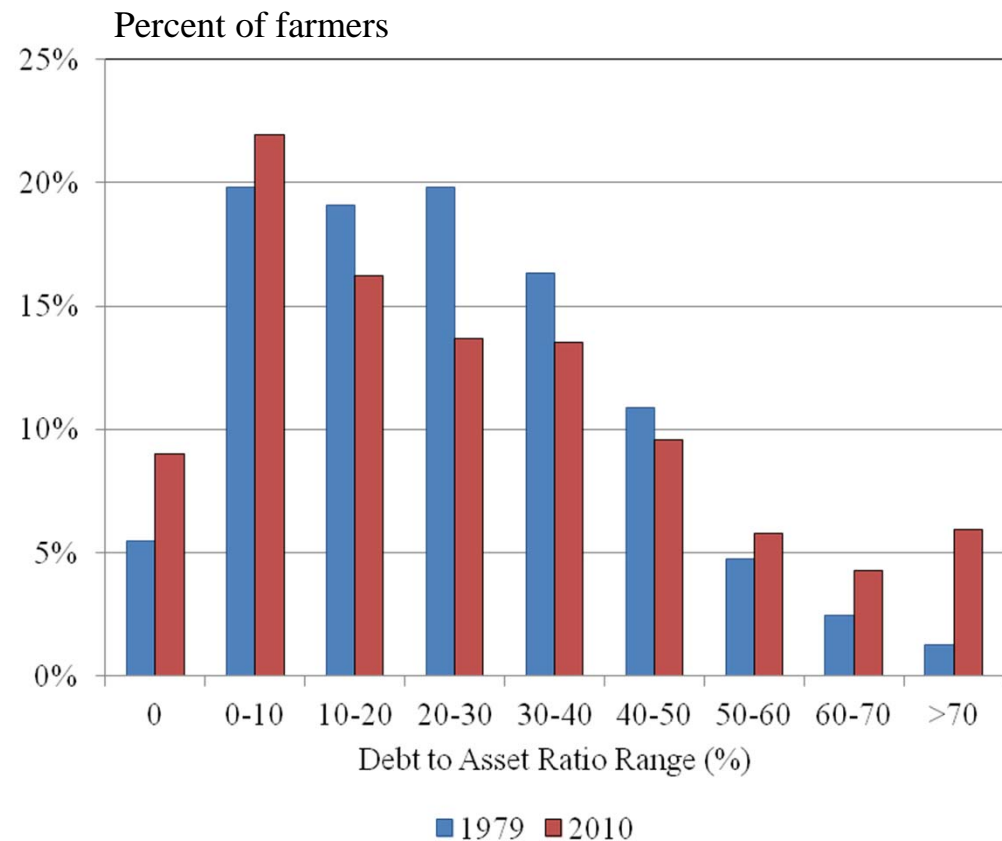
Debt-to-Asset Ratio >40%

- 1979 – 19.4%
- 2010 – 25.6%

Debt-to-Asset Ratio >70%

- 1979 – 1.3%
- 2010 – 5.9%

Kansas Farmer Debt Levels



Source: Featherstone (2012)



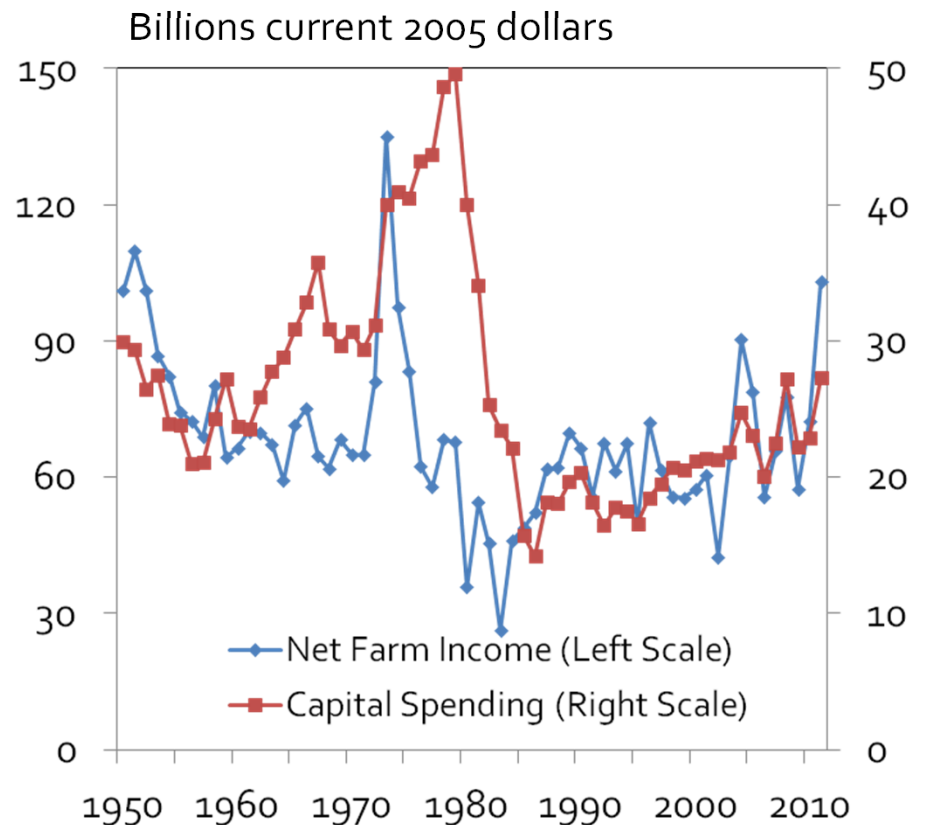
How will debt levels evolve?



The Wealth Effect in U.S. Agriculture

- With high wealth and low interest rates, farm capital investments remain strong.
- Farm leverage increases as farmers use debt not income to finance investments.

U.S. Farm Income and Capital Spending



Source: USDA



Conclusions

- Booming incomes and low interest rates fuel record high farmland values.
- Farm sector debt remains low, but it is concentrated.
- The wealth effect is fairly strong in U.S. agriculture.
- Will farmers resist the temptation of low interest rates and high land values and not leverage the farm?



**For More Information
on
The Midwestern Economy and Rural America**

www.kansascityfed.org/omaha

