Farmland Bubbles and Risks to the Rural Economy

Federal Reserve Bank of Chicago Agriculture Conference: Farm Income's Impact on the Midwest

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Introduction

- **Goal: To access if the broader nonfarm rural economy is vulnerable to the possibility of a "popping" of a farmland price bubble and/or a farm-sector recession.**
  - These effects could be *direct* and *indirect* on the broader rural economy. I will discuss both.
  - I will draw comparisons between today and the Farm Crisis of the mid 1980s that had large spillovers.

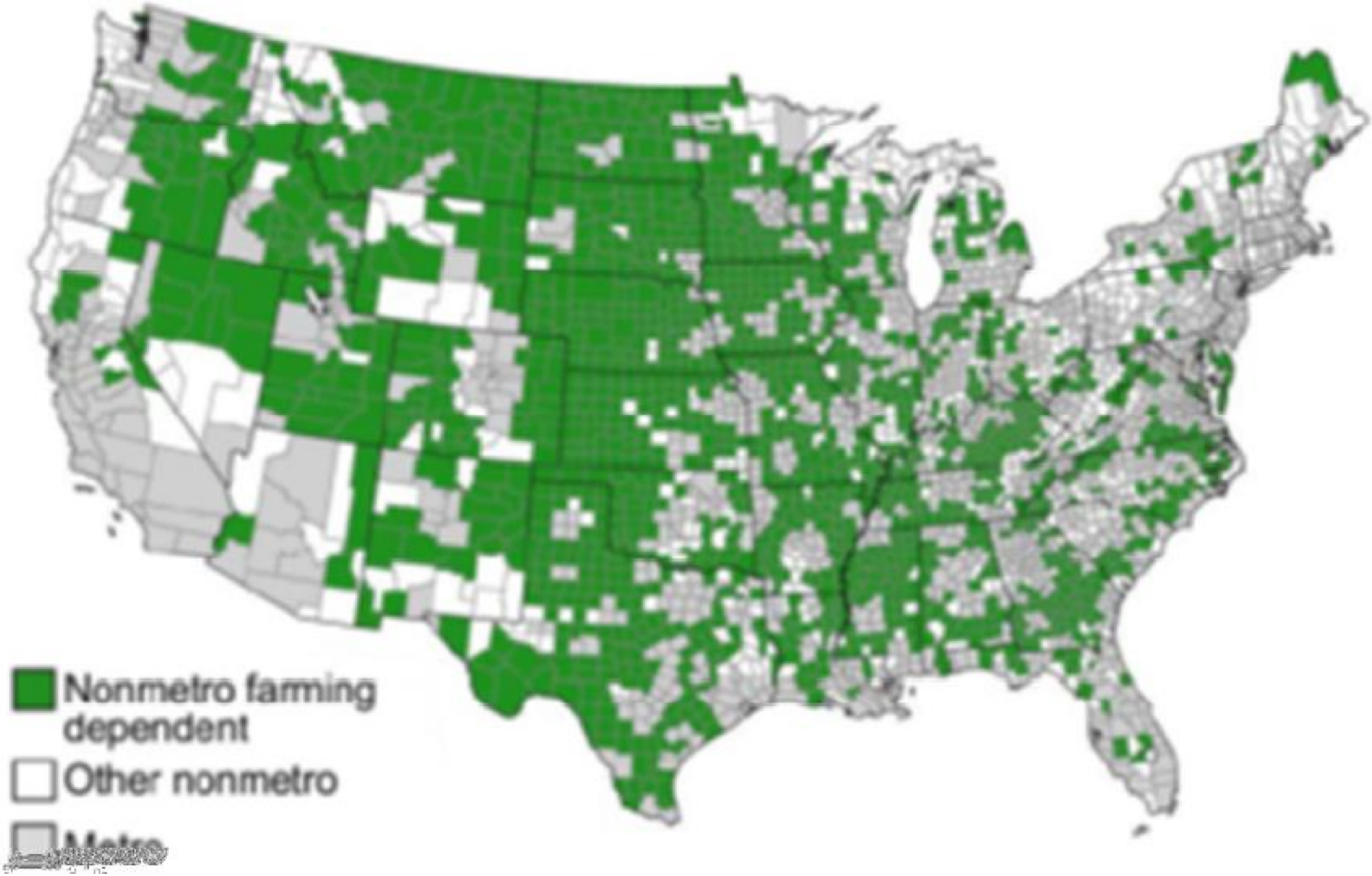
Introduction

- **Scenario** is that the farm economy is due for a recession/correction which will also pressure farmland values that have soared in the last decade.
  - Direct effects of spillovers from declining demand in the farm sector including its supply chain.
  - Indirect effects if decreases in farmland valuation affect banks' balance sheets and they curtail lending.
- Much of America was settled to service an agriculture economy value chain.
  - Cities arose to service this industry.
  - Transportation networks were set up to facilitate movement farm produce and food.

Introduction

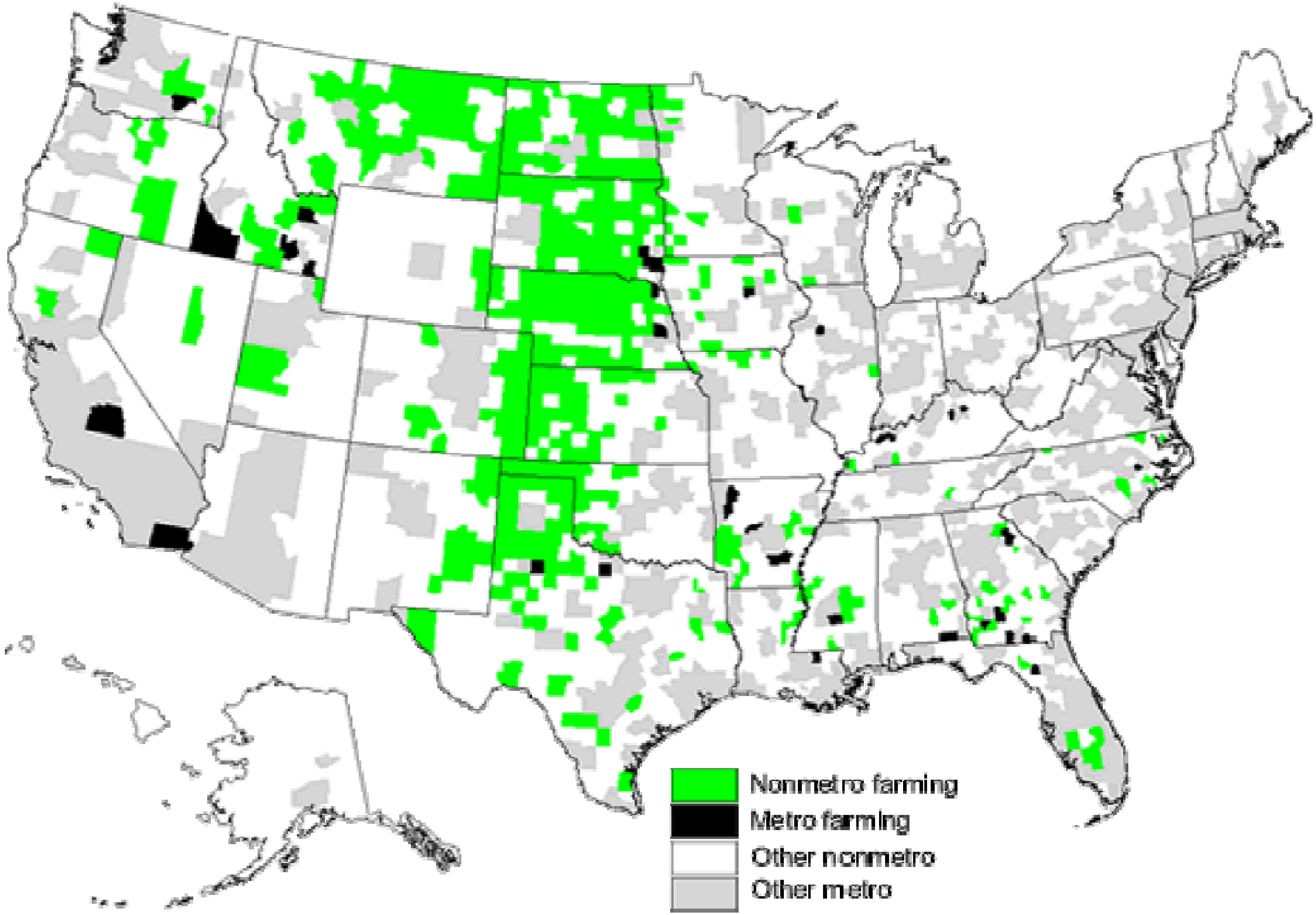
- Throughout the 20th Century, labor-saving technological change released now redundant labor from farming.
  - This technological change feeds the world.
  - Farming is a much smaller part of rural economies than a century ago.
- Better roads and autos allowed rural-urban commuting, forever altering how rural and urban areas interact.
- The result is that the swath of farm dependent locations greatly decreased in size.

Figure 1: Nonmetropolitan Farming-Dependent Counties 1950



Source: U.S. Dept. of Agriculture, Economic Research Service, *2007 Farm Bill Theme Papers, Rural Development July 2006.* See the notes to Figure 2 for the definition of Farm Dependent.

Figure 2: Farm Dependent Metropolitan and Nonmetropolitan: 1998-2000



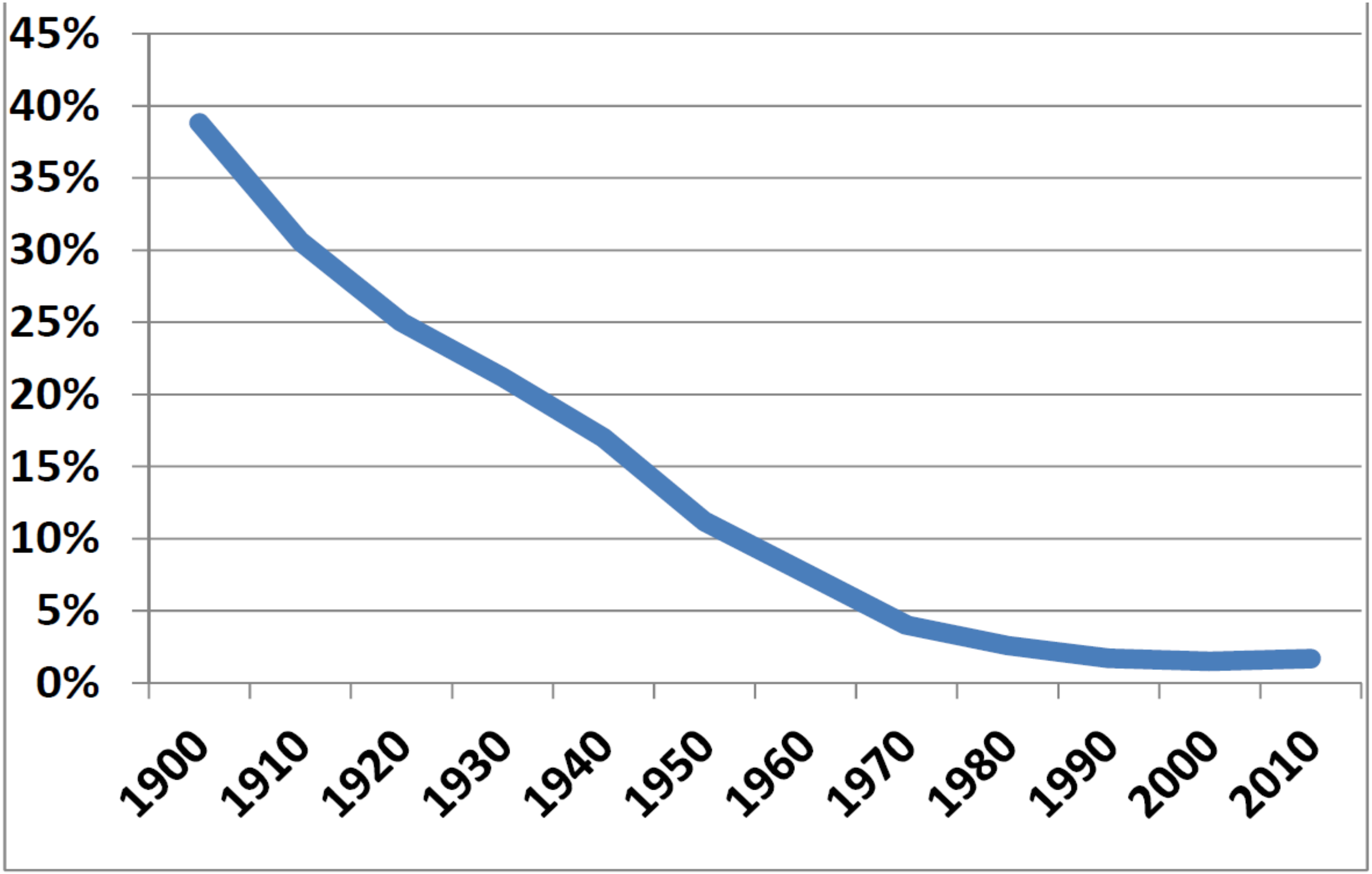
Farming-dependent counties–either an annual average of 15 percent or more total county earnings derived from farming during 1998-2000 or 15 percent or more of employed residents working in farm occupations in 2000.

Source: Economic Research Service, USDA.

The Rural Economy and Farm Economy

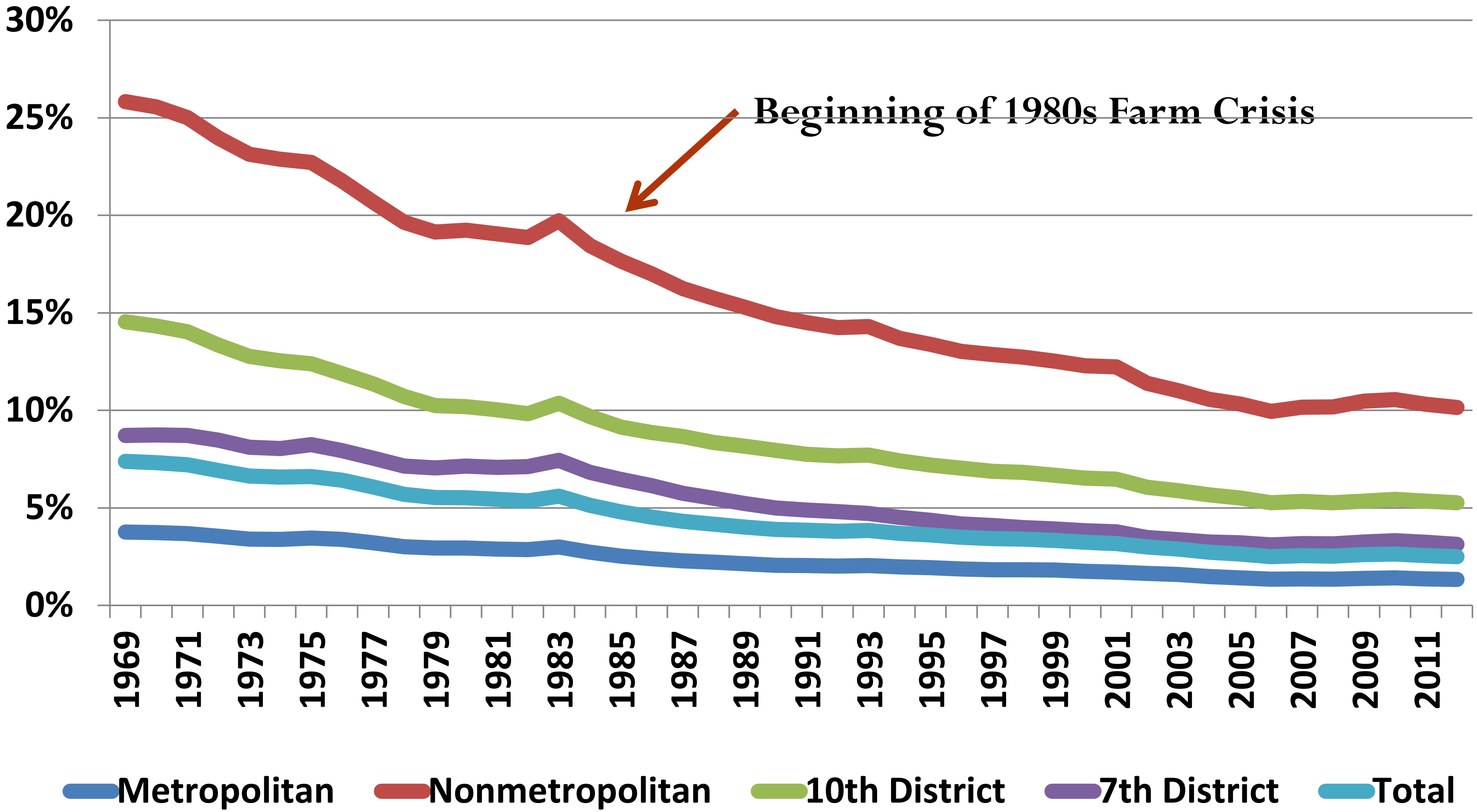
- Farm employment share is falling over time.
- Farm employment share was 1.4% in April 2014 (source, U.S. Census Bureau, CPS)
- Even in nonmetropolitan areas, the share is only 10% when casual farmers are counted (BEA).
- In the 7th District, the farm employment share is just above the national average, but relatively small.
- Farm employment share is about one-half of the level of the 1980s farm crisis.

Figure 3: Percentage of Farm Employment as a share of the Labor Force: 1900-2010



Source: Trends in U.S. Agriculture published by USDA-NASS
(http://www.nass.usda.gov/Publications/Trends_in_U.S._Agriculture/Farm_Population/index.asp);
U.S. Census Bureau, Census 2000; (for data in 2000), and the Bureau of Labor Statistics (for data in 2010).

Figure 4: Percentage of Total Jobs in Farming, BEA Definition: (1969 - 2012)

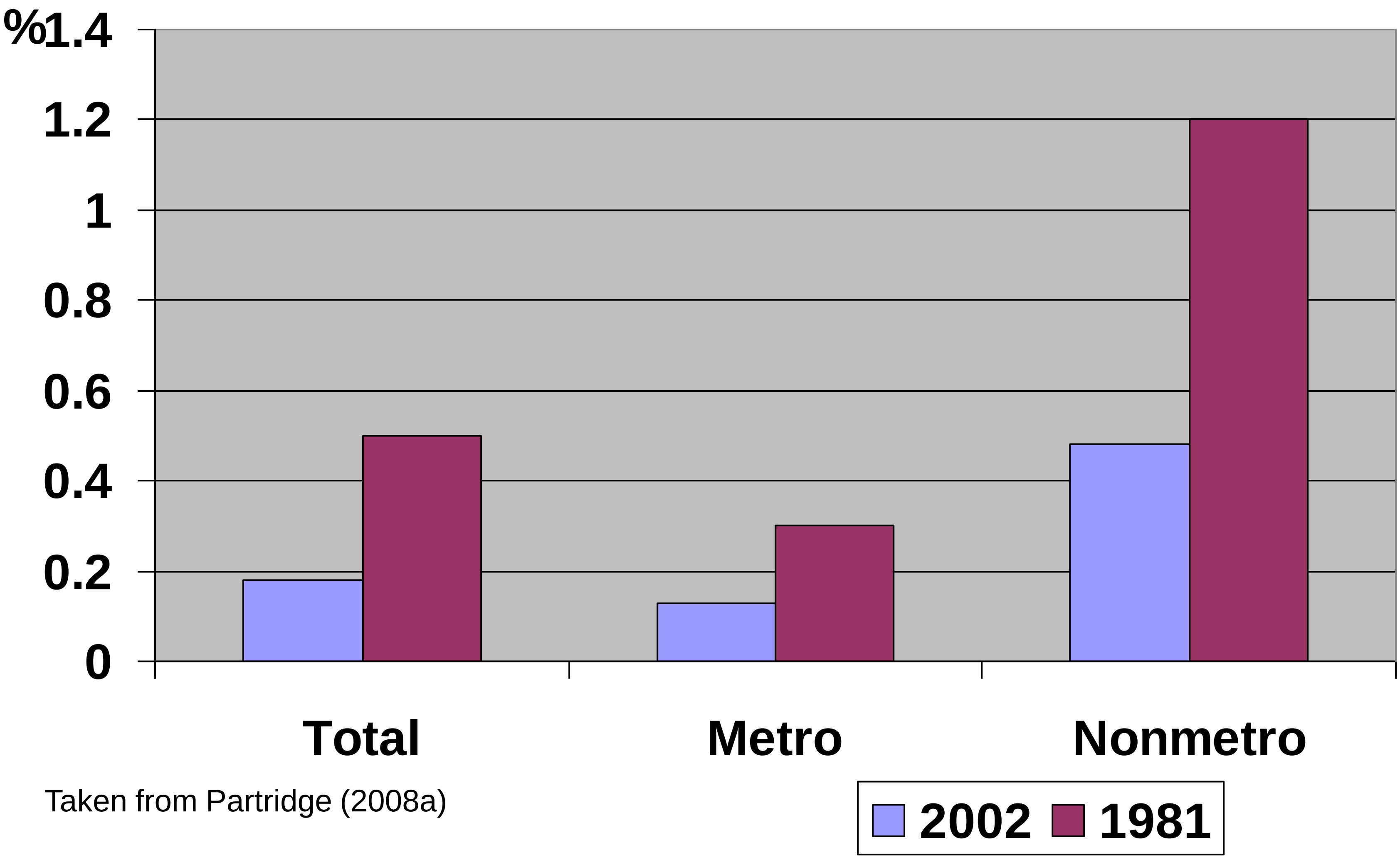


Source: Bureau of Economic Analysis and includes farm and nonfarm proprietor employment.
The 7th Federal Reserve Distrit includes fully or partially the following states: Illinois, Iowa, Wisconsin, Michigan, and Indiana.The 10th Federal Reserve District either fully or partially includes the following states: New Mexico; Oklahoma; Colorado; Wyoming; Nebraska; Kansas; and Missouri.

The Rural Economy and Farm Economy

- Even through the supply chain, the farm economy is much smaller today.

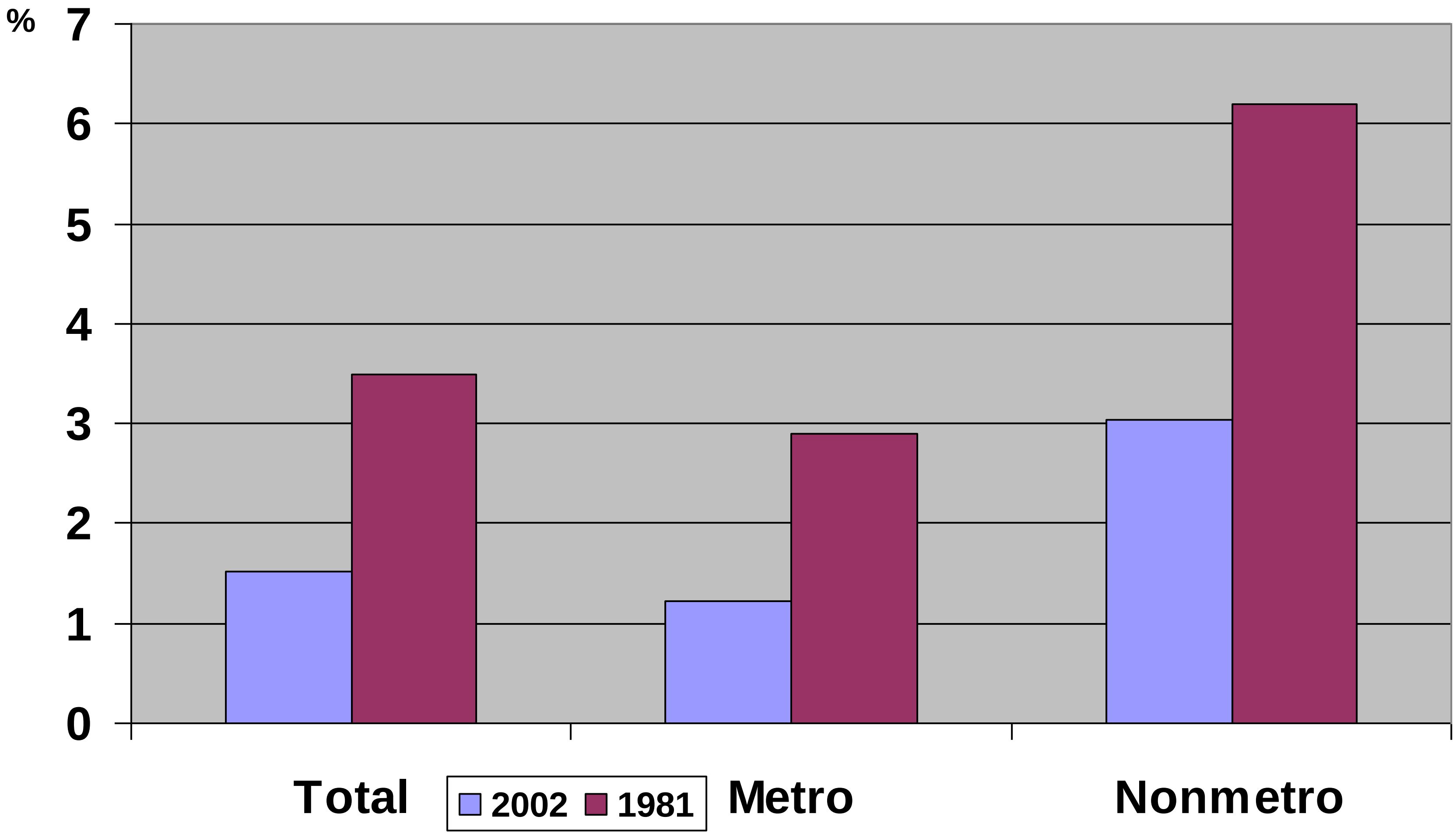
US Share of Agricultural Inputs Employment as a Percentage of Total Employment



Taken from Partridge (2008a)

Agricultural inputs comprises of agricultural chemicals, farm machinery and equipment, farm supply and machinery wholesale trade, and commodity contract brokers

US Agricultural Processing and Marketing Employment as a Percent of Total Employment



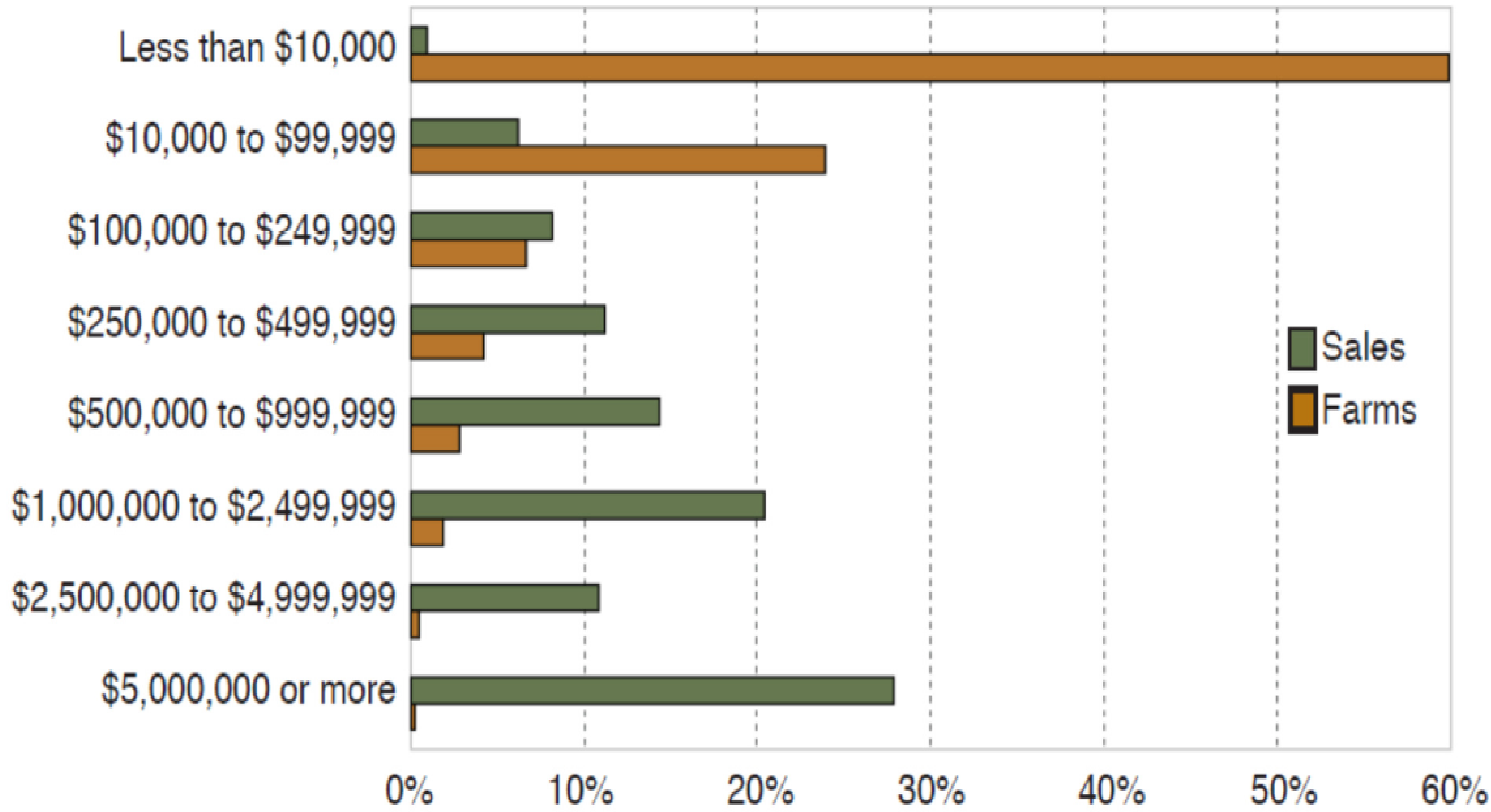
Agricultural processing and marketing comprises of meat products, dairy products, canned, frozen and preserved fruits and vegetables, grain mill products, bakery products, sugar and confectionery products, fats and oils products, beverages, miscellaneous food preperation and kindred products, tobacco products, apparel and textiles, leather products and footwear, packaging, farm-related raw materials and wholesale trade, and warehousing

Taken from Partridge (2008a)

The Rural Economy and Farm Economy

- There are just over 2 million farms in the U.S.—down from 7 million in the late 1920s.
- Of these, only about 200,000 even have sales above $250,000, or the level that a farm household would generate any notable net income.
- Overall, those below the $250,000 threshold represent 90% of the farms but only 20% of the sales. (see slide)
- Thus, the most consequential part of the farm economy is composed of 200,000 farms at most.

Figure 6: Number of Farms and Sales: 2007 Percent of Total*



*Source: Taken USDA, NASS, "*2007 Census of Agriculture*." Downloaded from: http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/Fact_Sheets/Farm_Numbers/farm_numbers.pdf. Downloaded May 27, 2014.

The Rural Economy and Farm Economy

- Today, farm households are highly reliant on the nonfarm economy for its livelihood rather than the reverse.
  - *Off-farm* income accounted for:
  - 82% of farm household income in 2013.
  - 59% of farm household income in 2012 was from *earnings* from off-farm employment (mostly through commuting) (USDA, 2014a).

The Rural Economy and Farm Economy

- **Summary**
  - Agriculture does not *directly* represent a large share of the American economy, but it plays a key role in parts of nonmetropolitan America, especially in sparsely populated areas of the Great Plains.
  - The 7th District is about as exposed than the rest of the nation.
  - Rural America is much less exposed than during the 1980s farm crisis.
    - In the early 1980s, the farm share of total jobs in nonmetropolitan America was about 20%, versus only 10% today.
  - Hence, even the most farm-intensive regions are considerably less exposed to farm fluctuations than a generation ago.

Source: NY Times, Pg A1, July 8, 2014


Times

National Edition

South: Sunshine and some clouds. Isolated afternoon or evening thunderstorm north. Highs in the 90s. Partly cloudy tonight. Shower southeast. Weather map, Page B16.

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From Stocks to Farmland, All's Booming, or Bubbling

Prices for Nearly All Assets Around World Are High, Bringing Economic Risks

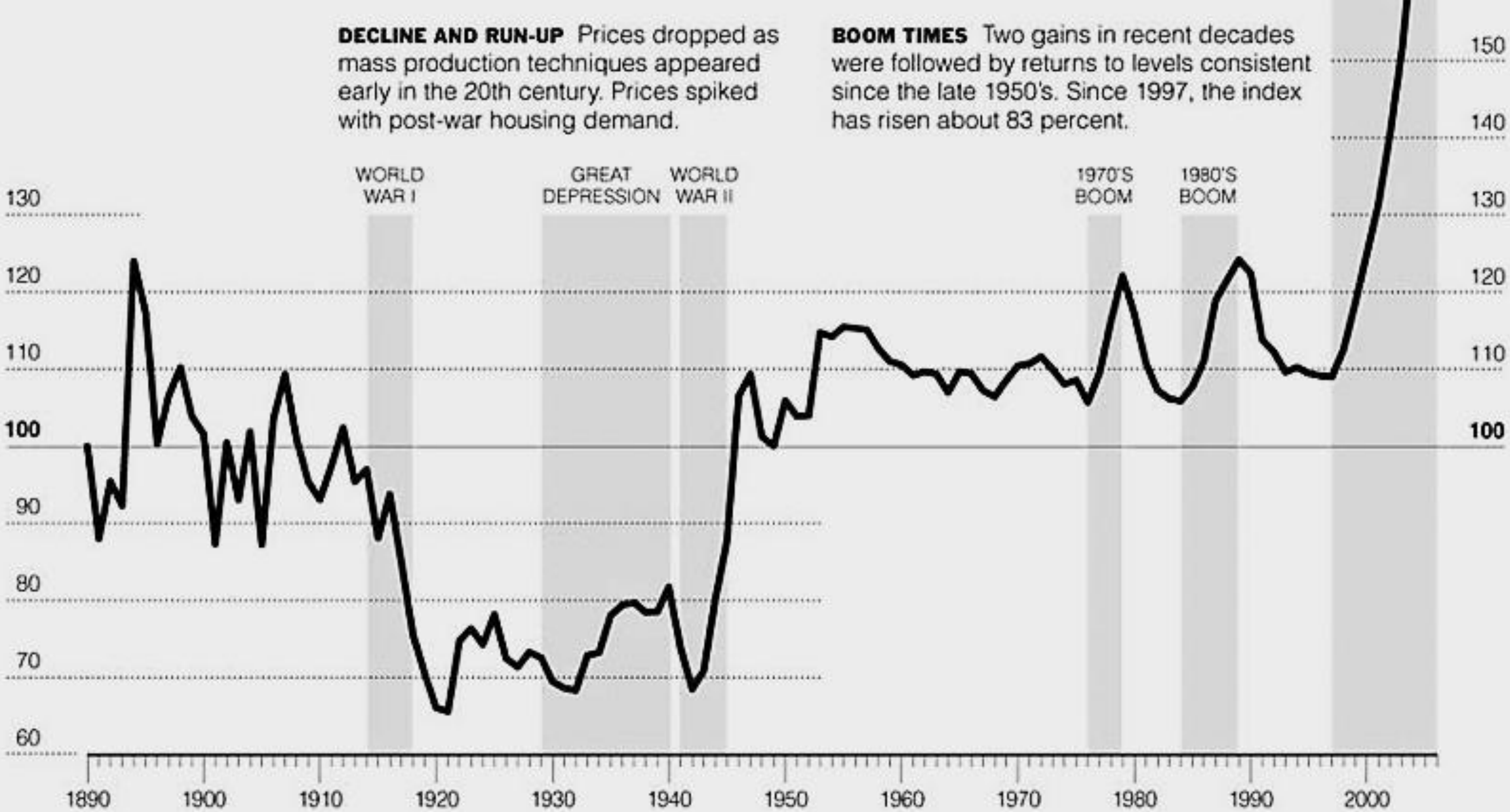
By NEIL IRWIN

From the New York Times.

A History of Home Values

The Yale economist Robert J. Shiller created an index of American housing prices going back to 1890. It is based on sale prices of standard existing houses, not new construction, to track the value of housing as an investment over time. It presents housing values in consistent terms over 116 years, factoring out the effects of inflation.

The 1890 benchmark is 100 on the chart. If a standard house sold in 1890 for $100,000 (inflation- adjusted to today's dollars), an equivalent standard house would have sold for $66,000 in 1920 (66 on the index scale) and $199,000 in 2006 (199 on the index scale, or 99 percent higher than 1890).



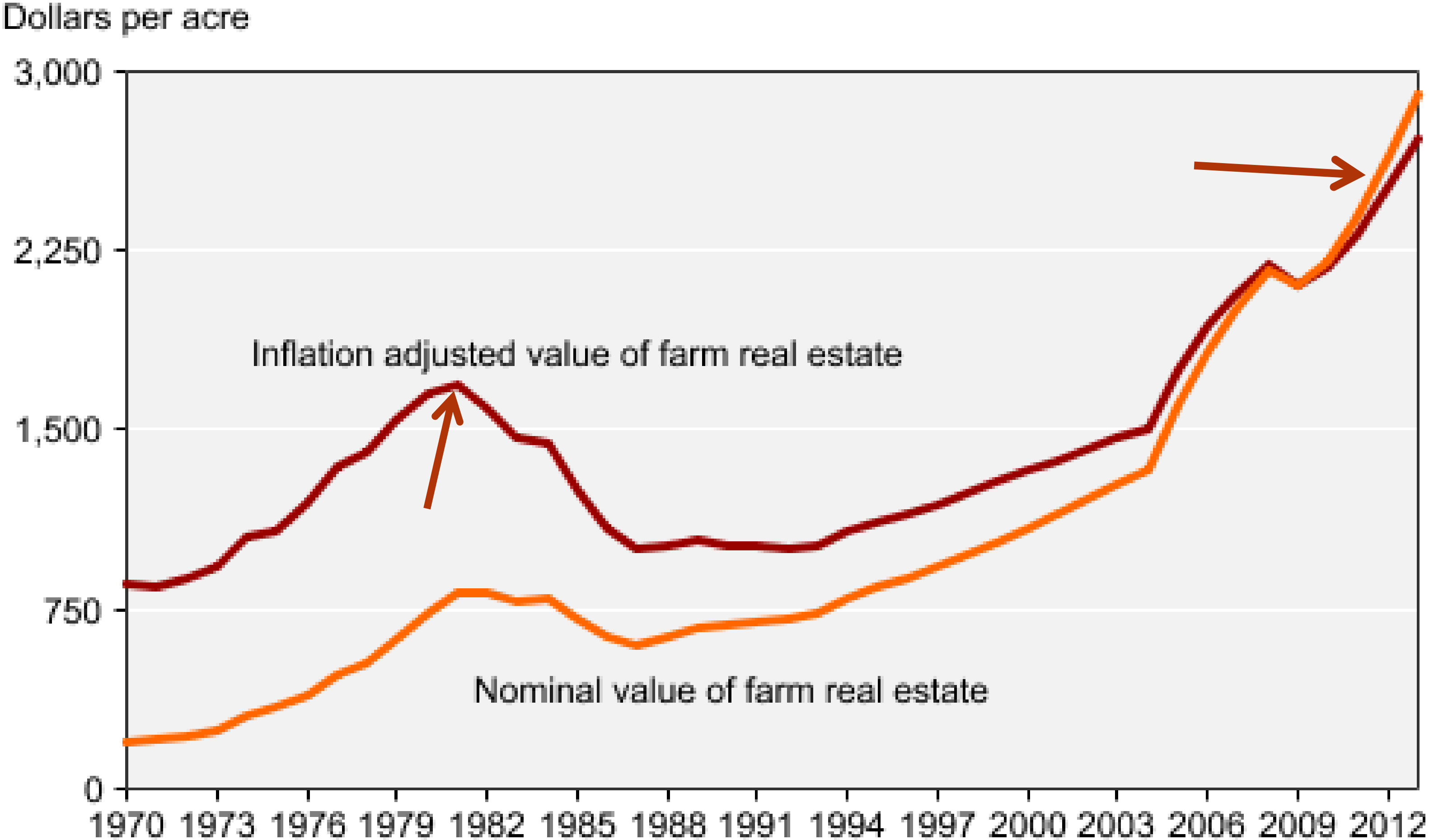
Source: "Irrational Exuberance", 2nd Edition, 2006, by Robert J. Shiller

Bill Marsh/The New York Times

Farmland "bubble" and *indirect* threats to the broader rural economy.

- Farmland values have greatly increased in the last decade.
  - E.g., Iowa farm values were up 168% between 2004-2013 after inflation and inflation-adjusted prices are well above the levels of the 1980s farm crisis (Andrews, 2013). (next slide)
- A concern would be that a softness in farm commodity prices would trigger decreases in land values.
  - Once land values start falling, some farmers could have their loans called in and are forced to sell. Forced selling could start a vicious cycle of falling land prices.
  - Banks that hold a large share of their holdings in agriculture land could be "pinched" and they would cutback lending—curtailing the nonfarm economy.
  - This process would be akin to how a relatively small residential home sector set off a financial crisis during the housing crash, helping precipitate the Great Recession.

Average U.S. farm real estate value, nominal and real (inflation adjusted), 1970-2013



Note: The GDP chain-type price index is used to convert NASS current-dollar statistics to 2009=100 equivalents (Bureau of Economic Analysis, Dept. of Commerce). Farm real estate includes land and buildings.
Source: USDA, Economic Research Service and National Agricultural Statistic Service.

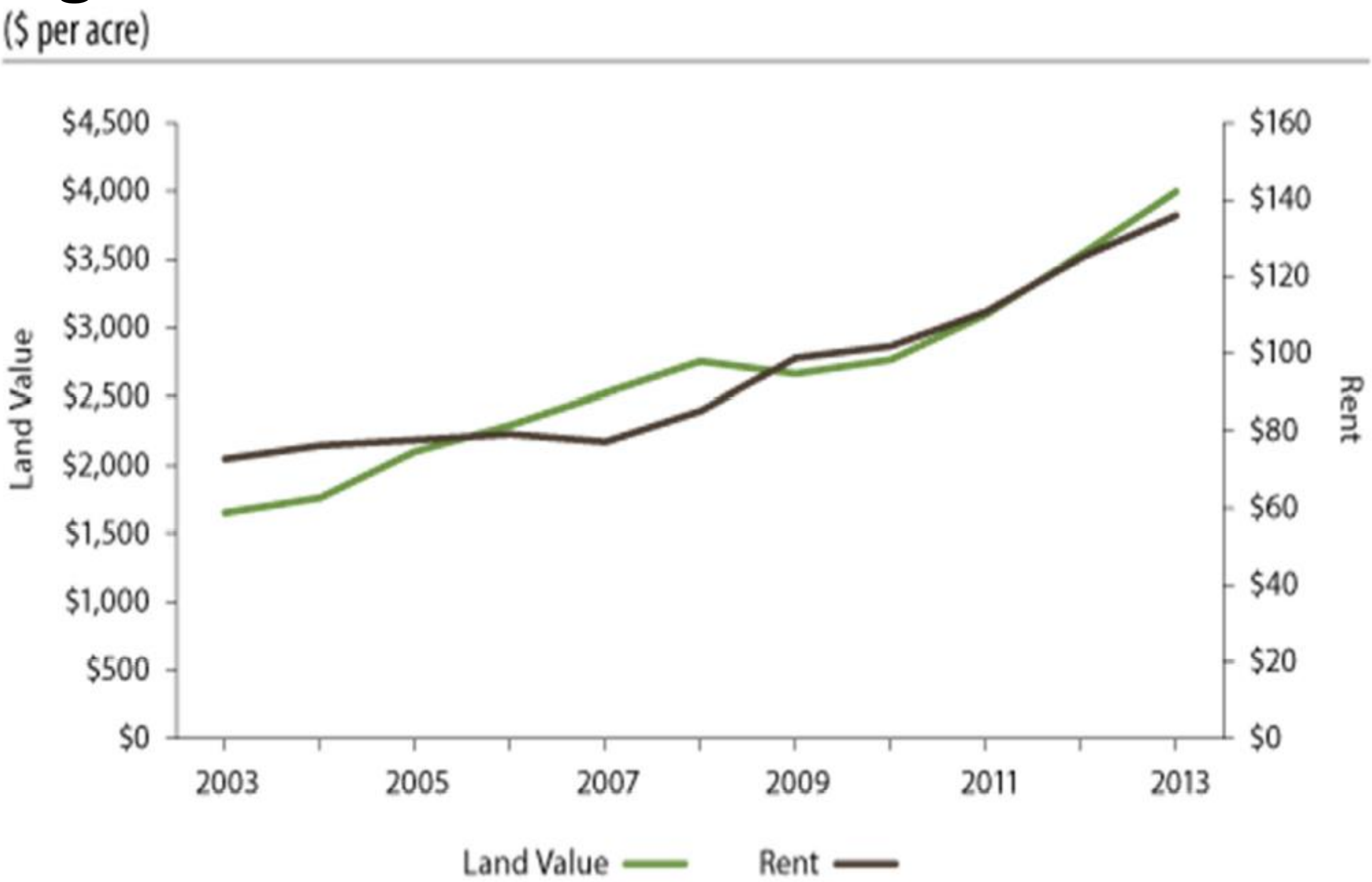
Taken from USDA at: http://www.ers.usda.gov/topics/farm-economy/land-use,-land-value-tenure/background.aspx#.U6Mg-CiKK-U

Farmland "bubble" and indirect threats to the broader rural economy.

- What are the threats of a farmland "crash" spilling over into the broader economy?

1. Is the farmland sector large enough to cause significant problems in the financial sector?
   - Ans: No, Federal Reserve Board data says farmland valuation is about 1/8th of housing assets.
2. Is the current run-up in farmland prices driven by market fundamentals?
   - Yes, nominal corn prices, for example, are still almost double those of a decade ago.
   - Long-term interest rates for borrowing and calculating valuations have fallen from a decade ago.
   - Rents have risen in tandem with land prices.
3. Are farm household balance sheets in good shape?
   - Yes.

Figure 7: U.S. Farmland Values: 2003-2014



*Source: taken from USDA, National Agriculture Statistics Service, Available at: http://www.nass.usda.gov/Publications/Highlights/2013_LandValues_CashRents/index.asp, downloaded May 27, 2014.

Farmland "bubble" and indirect threats to the broader rural economy

- **Are farm household balance sheets in good shape?**
  - *If farmland values start falling, will pressured farms be forced to sell into a declining market, further exacerbating a price decline?*
- Farm balance sheets are quite strong. Recent debt-to-asset ratios in the range of 11%, which is well below the 20% level that is viewed as a danger threshold (USDA, 2014b; Henderson and Kaufman, 2013; Sherrick and Kuethe, 2013).
  - During the 1980s farm crisis, debt/asset ratios peaked at over 22% in 1985. Debt/asset ratio was typically above 15% in the last third of the 20^{th} Century.
- There does not seem to be farm-debt overhang that helped precipitate previous agricultural deleveraging cycles.

Conclusion

- Overall, I see little threat of a new “farm crisis” greatly affecting the broader rural nonfarm economy.
  - The farm sector and its supply chain are considerably smaller than during the 1980s. So, direct effects will be limited except in sparsely settled farm-dependent regions in the Great Plains.

Conclusion

- Farmland price crash that could trigger large scale banking problems appears quite remote.
  - Farmland assets are a small share of total assets and about 1/8th the size of the residential housing sector.
  - Market fundamentals of high land rents, high commodity prices, and lower long-term interest rates support current land prices.
  - Farm balance sheets are healthy, reducing the chance of farmers forced to sell into a declining market.
  - Of course, market corrections and mild overshooting are normal course of events.
- Overall, a good thing of the evolutions I have described is that rural economies are much more diverse and thus more resilient than a generation ago.

Thank You!

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Farmland "bubble" and indirect threats to the broader rural economy

- **Is the farmland sector large enough to cause significant problems?**
  - Data from USDA suggests that farmland real estate was valued at $2.4 trillion in 2013.
  - Data from the Federal Reserve Board suggests that the residential housing assets were worth $19.4 trillion in 2013.
- The point is that in itself, it is unlikely a farmland crash would have broad spillovers because it is too small.
- Yet, for rural localities with banks that hold a disproportionate share of ag land paper, they may feel pressure to curtail lending, but it should be geographically spotty.

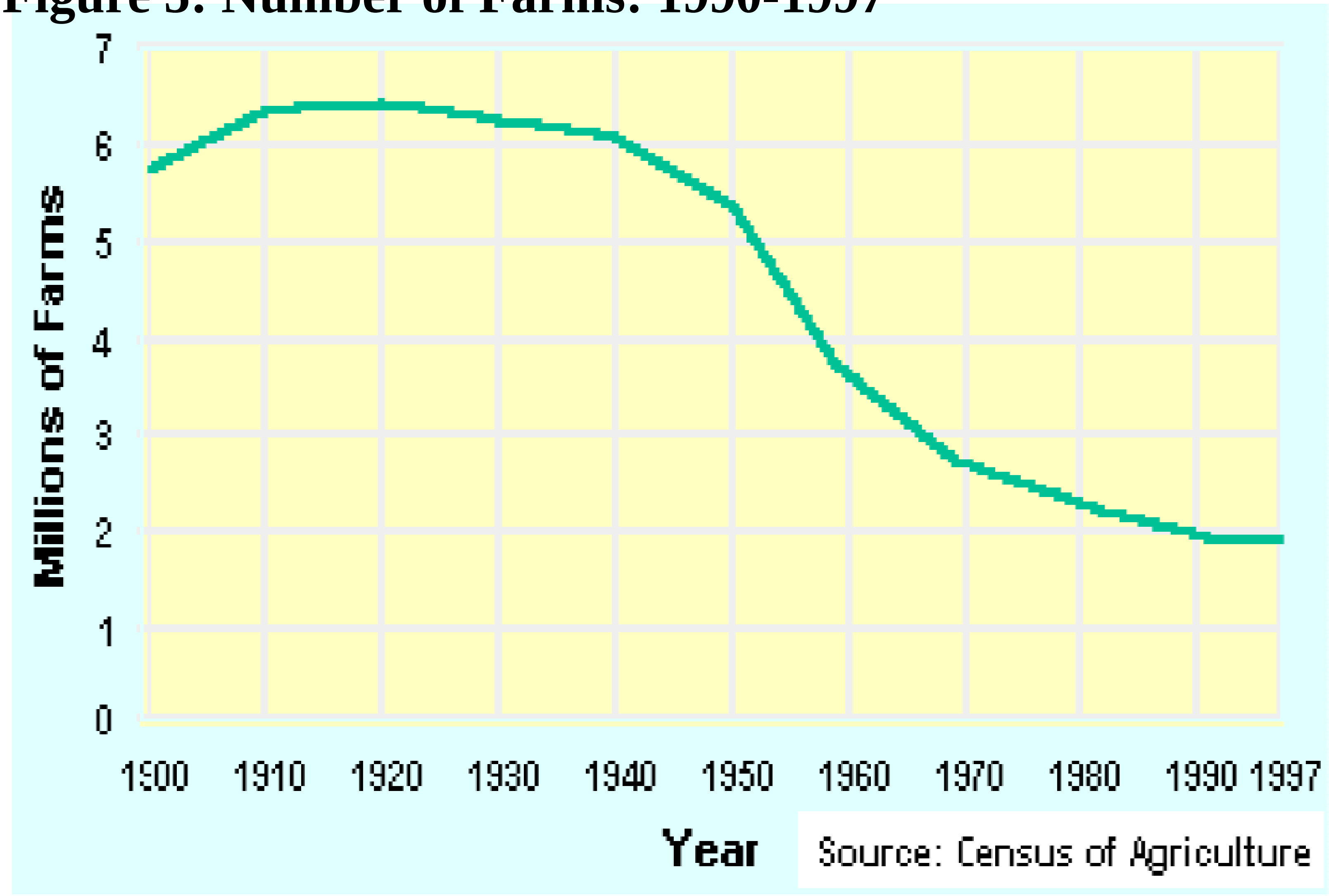
Farmland "bubble" and indirect threats to the broader rural economy

- **Is the current run-up in farmland prices driven by market fundamentals?**
- Farmland is worth the present discounted value of either the commodities the farmer will sell or the present discounted value of the how much they can rent it for.
  - Farmland is more valuable as rents or commodity prices rise or as long-term interest rates fall.
- Commodity prices have soared, supporting land prices. For example, the annual average price of corn increased by 340% in nominal terms between 2005 and 2012, though it fell back about 4% in 2013 (University of Illinois, 2014).
- So far in 2014, corn prices are running in the mid $4 range, or another 25% or so below the average 2013 levels.
- Yet, prices are higher, supporting high land prices.

Farmland "bubble" and indirect threats to the broader rural economy

- Land rents have also risen almost in tandem with land prices, further supporting high land prices. See graph
- Longer-term trends appear to support high values.
  - For example, Illinois farmland-rent-to-farmland-value ratio has consistently fallen since the early 1970s (Sherrick and Kuethe, 2013).
  - In the most recent years, Sherrick and Kuethe (2013) report that the capitalized value of Illinois farmland rents has risen faster than land prices.

Figure 5: Number of Farms: 1990-1997*



*Source: USDA, Economic Research Service, "Trends in U.S. Agriculture." Available at: http://www.nass.usda.gov/Publications/Trends_in_U.S._Agriculture/Farm_Numbers/index.asp, downloaded May 27, 2014.