THE OHIO STATE UNIVERSITY

Farmland Bubbles and Risks to the Rural Economy

Federal Reserve Bank of Kansas City Agriculture Symposium: Structural Transitions in Global Agriculture

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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.

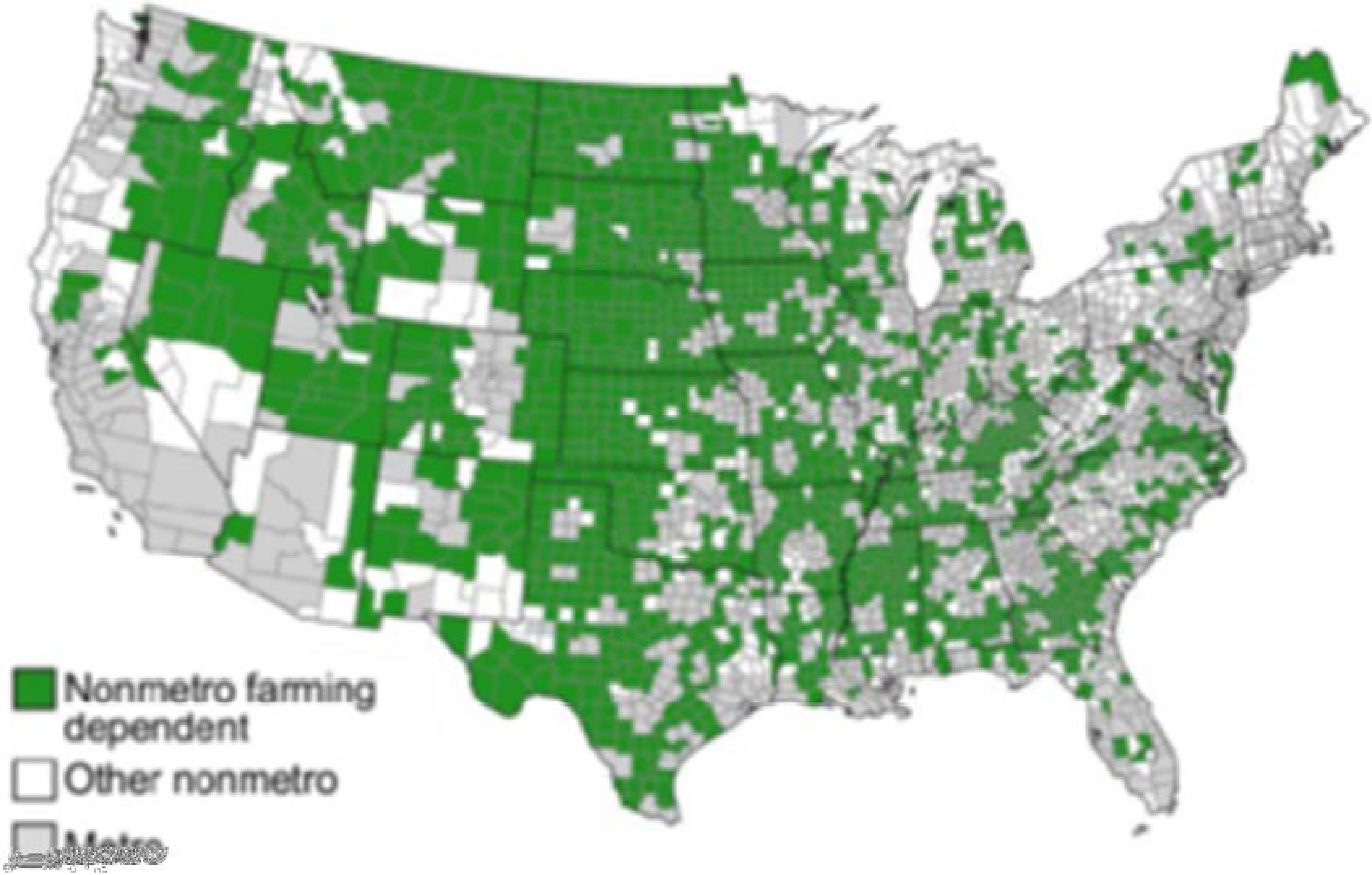
Introduction

- **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

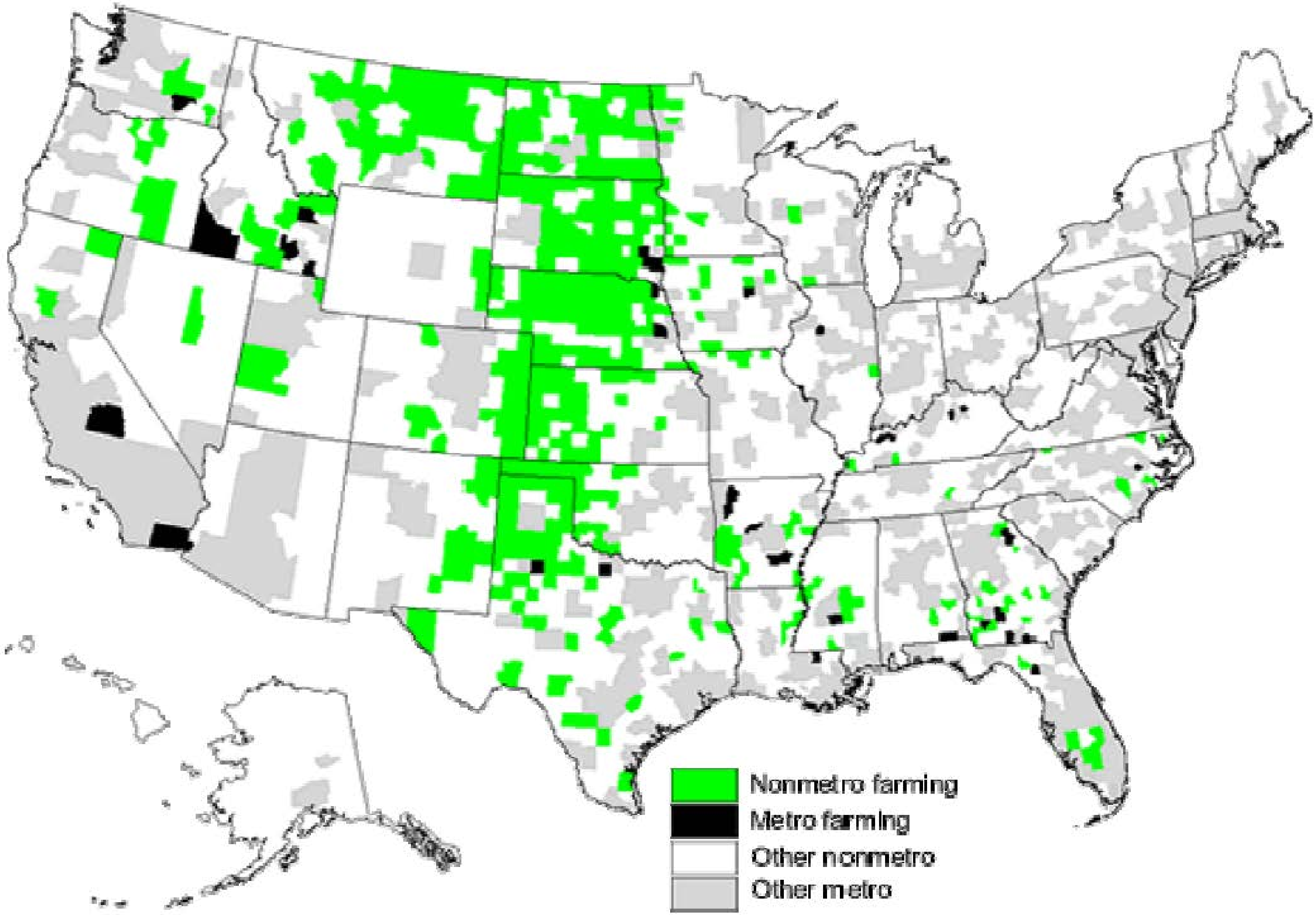
- Throughout the 20th Century, labor-saving technological change released now redundant labor from farming.
  - This technological change feeds the world.
  - Farming is a much smaller part of rural economies than a century ago.
- Better roads and autos allowed rural-urban commuting, forever altering 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



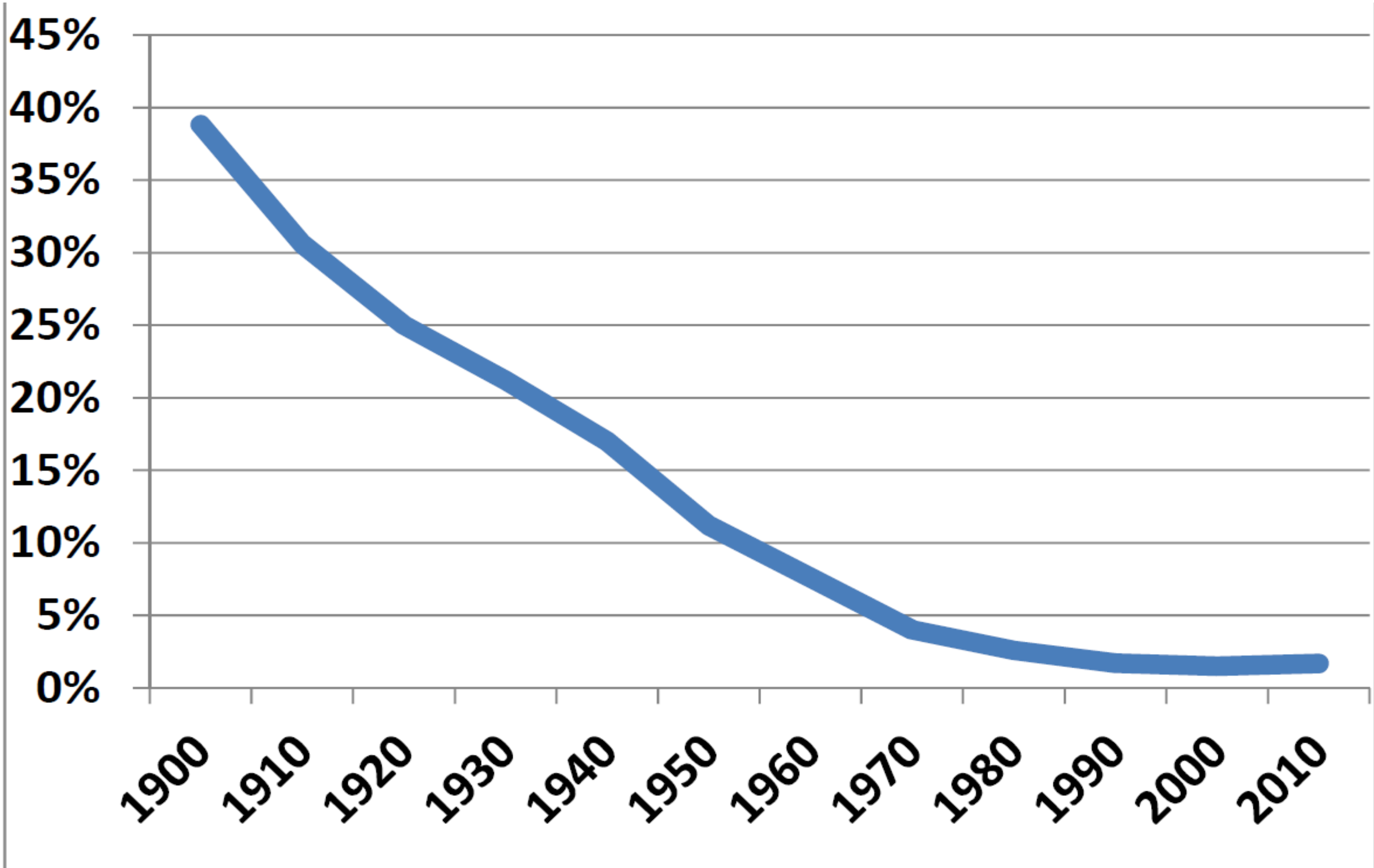
Farming-dependent counties–either an annual average of 15 percent or more total county earnings derived from farming during 1998-2000 or 15 percent or more of employed residents working in farm occupations in 2000.

Source: Economic Research Service, USDA.

The Rural Economy and Farm Economy

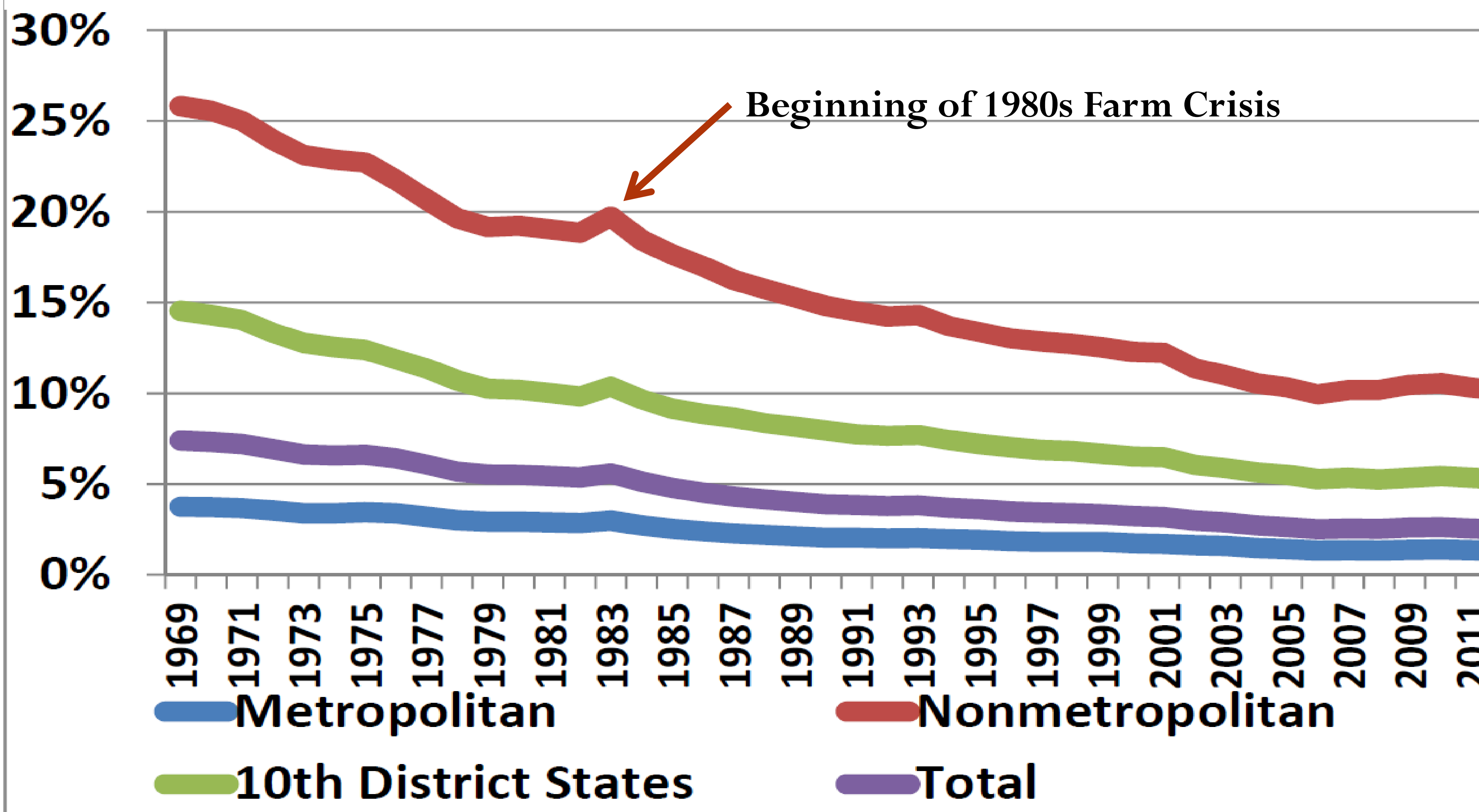
- Farm employment share is falling over time.
- Farm employment share was 1.4% in April 2014 (source, U.S. Census Bureau, CPS)
- Even in nonmetropolitan areas, the share is only 10% when casual farmers are counted (BEA).
- In the 10th District, the farm employment share is about double the national average, 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)

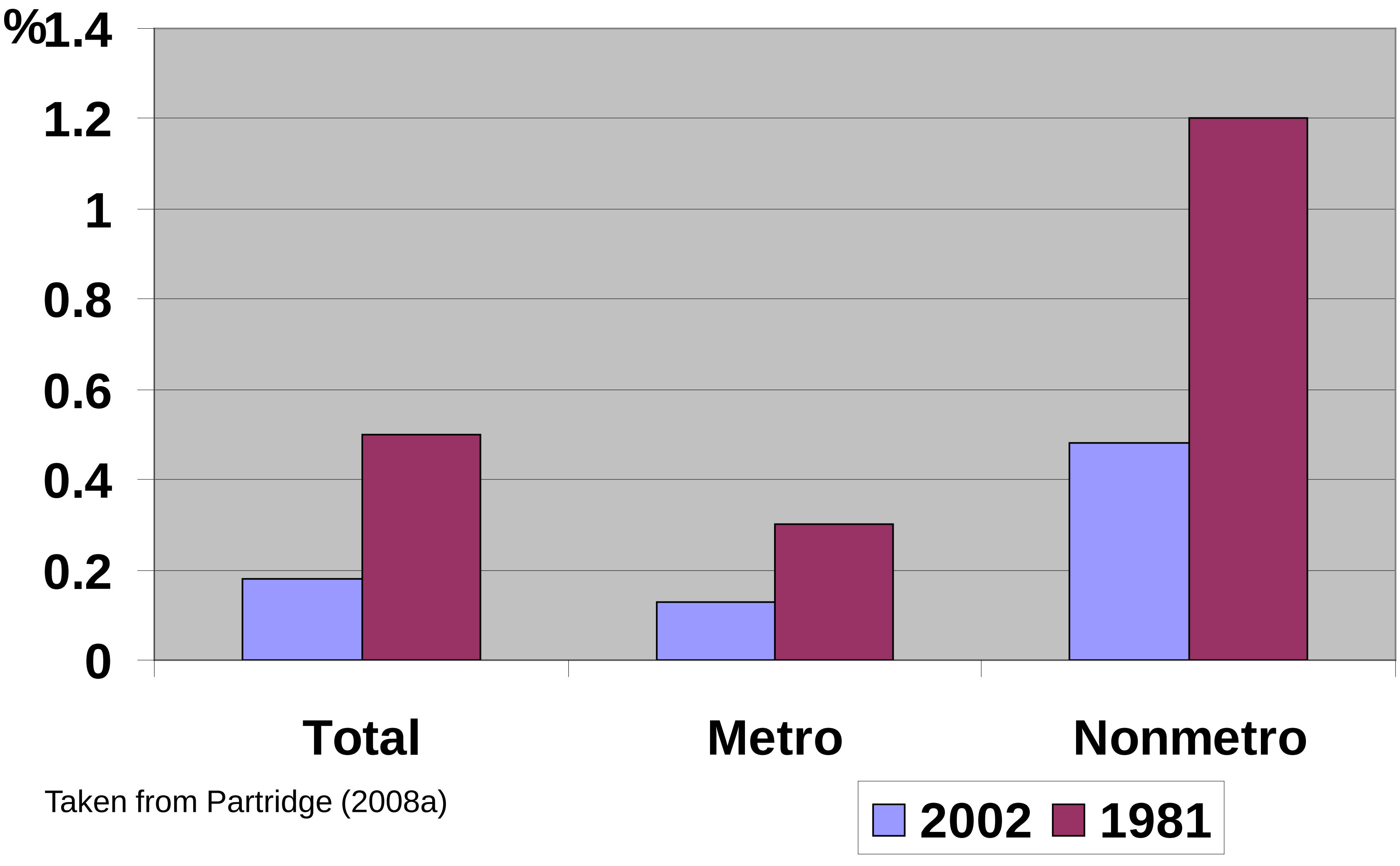


Source: Bureau of Economic Analysis and includes farm and nonfarm proprietor employment. BEA data include a
jobs including casual employment and all of the jobs for multiple jobholders.
The 10th Federal Reserve District either fully or partially includes the following states: New Mexico; Oklahoma;
Colorado; Wyoming; Nebraska; Kansas; and Missouri.

The Rural Economy and Farm Economy

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

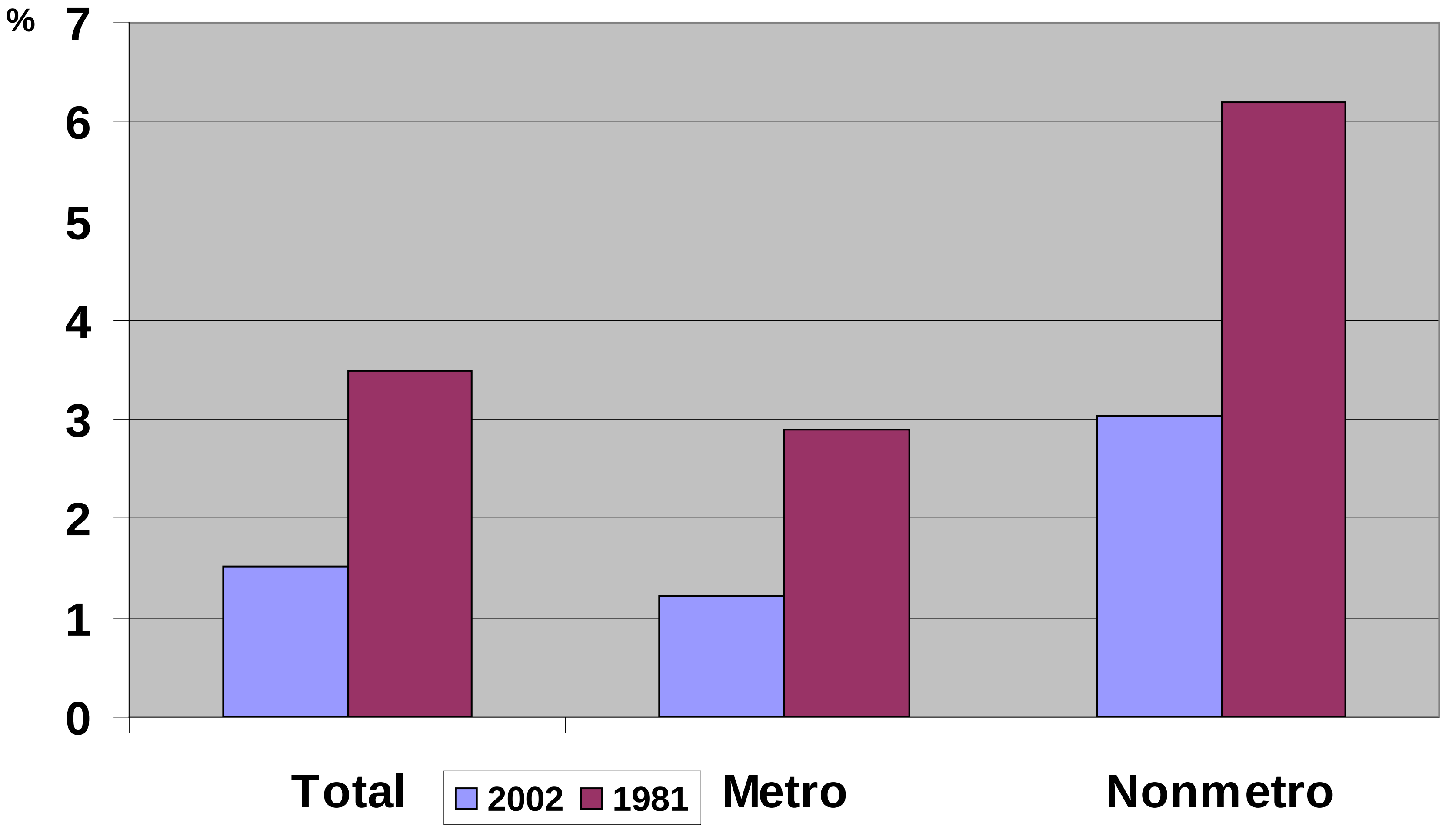
US Share of Agricultural Inputs Employment as a Percentage of Total Employment



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



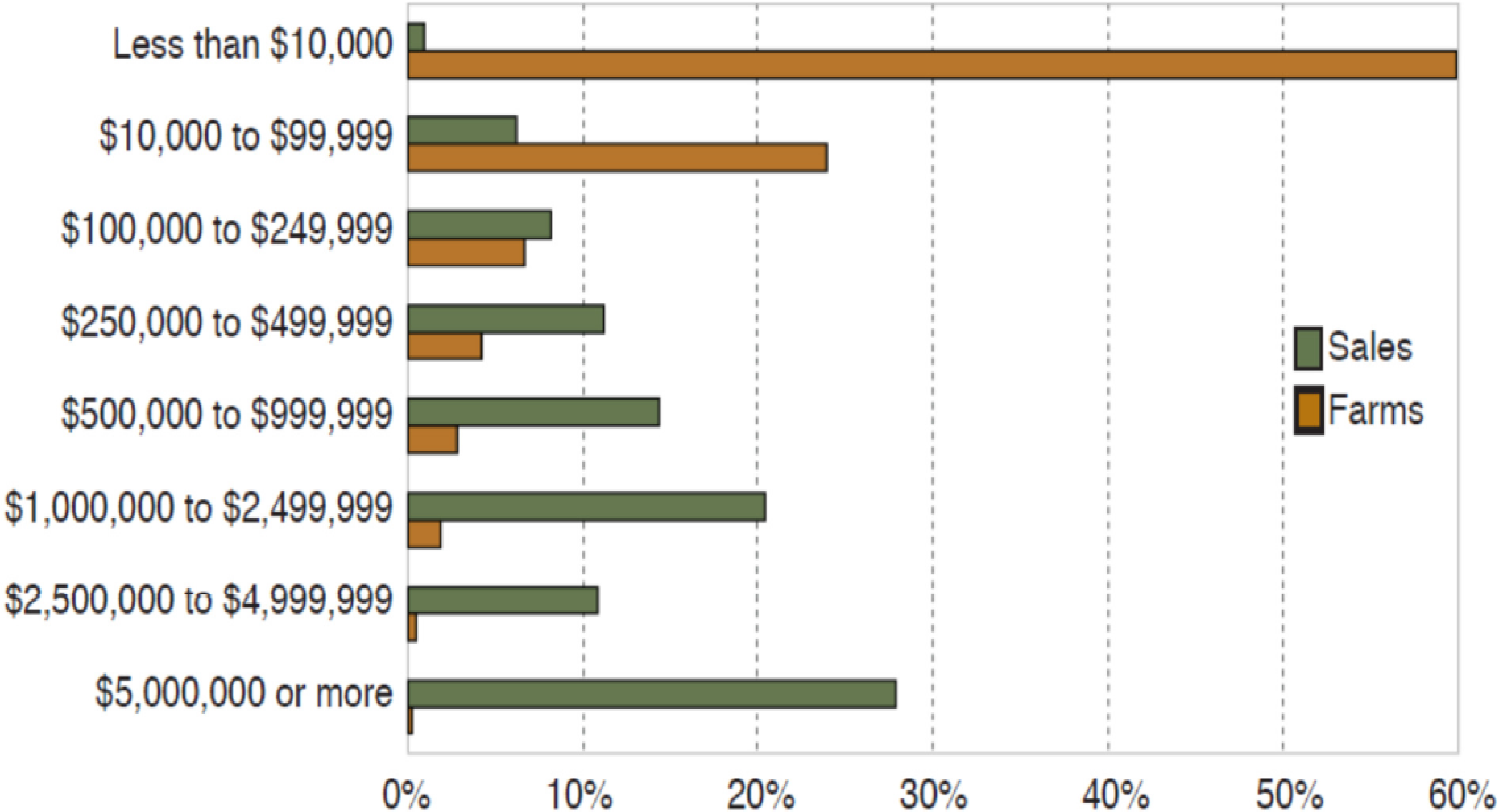
Agricultural processing and marketing comprises of meat products, dairy products, canned, frozen and preserved fruits and vegetables, grain mill products, bakery products, sugar and confectionery products, fats and oils products, beverages, miscellaneous food preperation and kindred products, tobacco 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 farmers 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

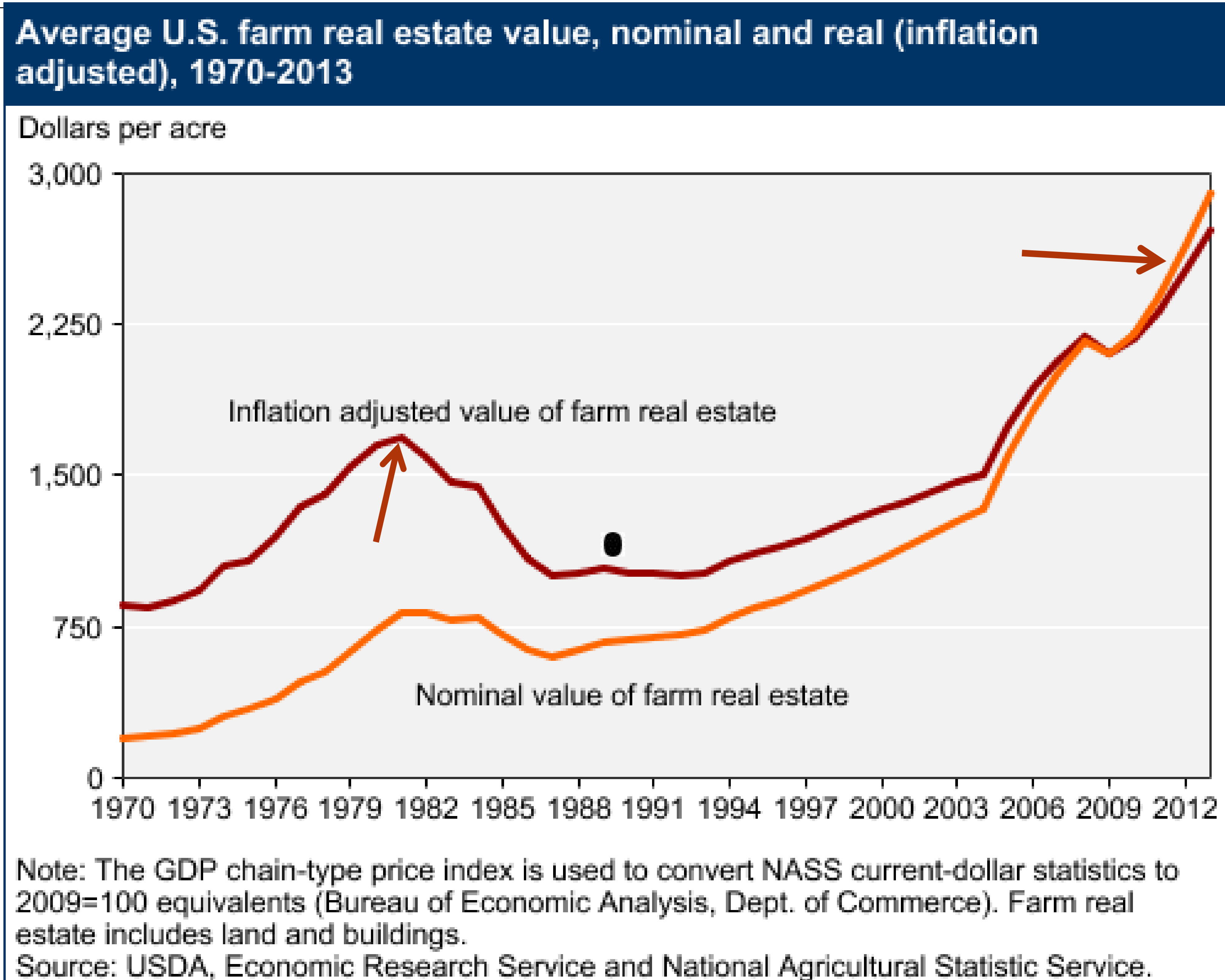
- Today, farm economy is highly reliant on the nonfarm economy for its livelihood rather than the reverse.
  - *Off-farm* income accounted for:
  - 82% of farm household income in 2013.
  - 59% of farm household income in 2012 was from *earnings* from off-farm employment (mostly through commuting) (USDA, 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 10th District is considerably more exposed than the rest of the nation.
  - Rural America and the 10th District are 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.
    - For the 10th District, the overall (metro and nonmetro) farm employment share declined from about 10% to about 5% today.
  - Hence, even the most farm-intensive regions are considerably less exposed to farm fluctuations than a generation ago.

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.



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?
- I will assess this question the following three ways:

1. Is the farmland sector large enough to cause significant problems in the financial sector?
2. Is the current run-up in farmland prices driven by market fundamentals?
3. Are farm household balance sheets in good shape?

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.

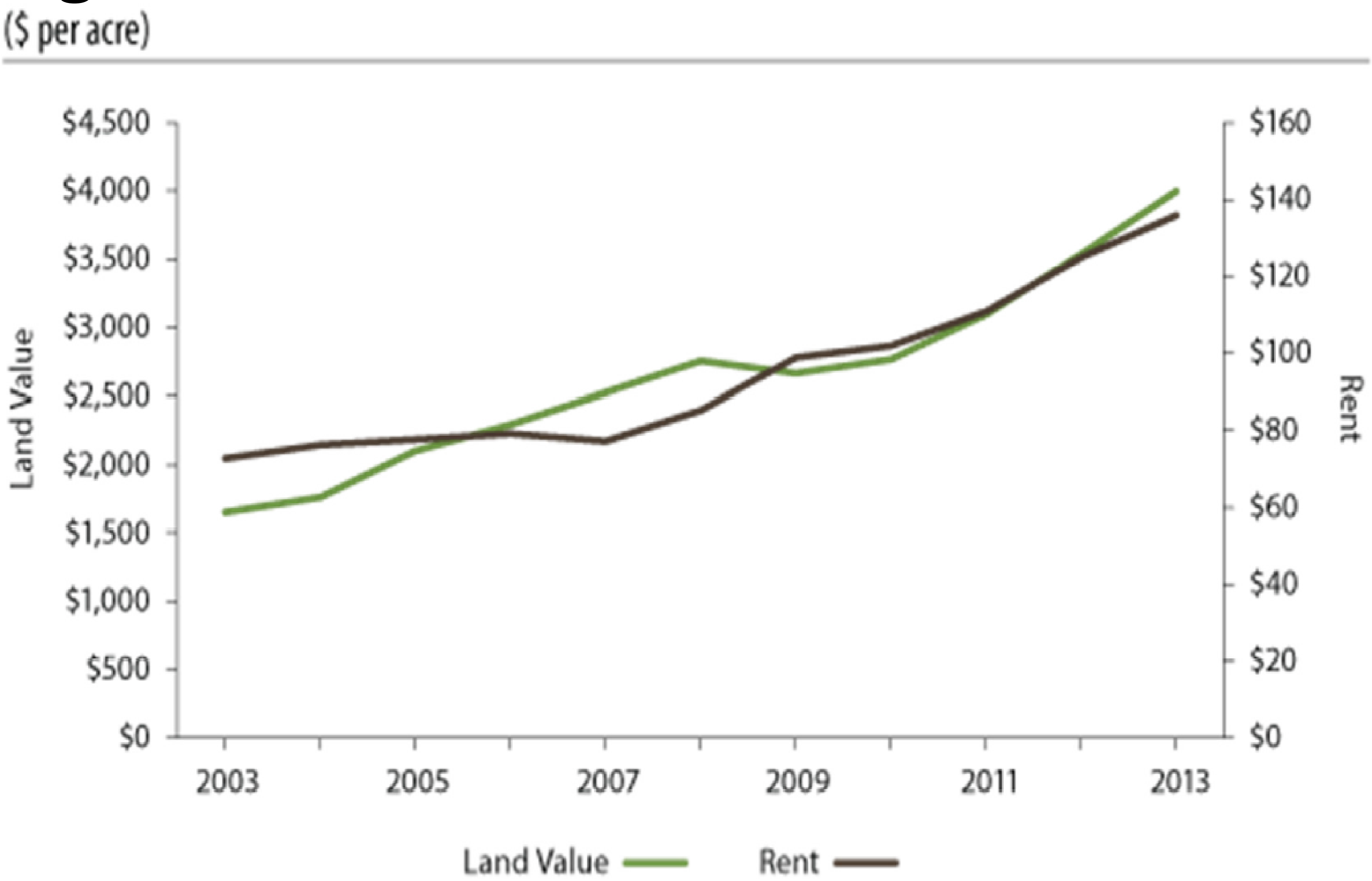
Farmland "bubble" and indirect threats to the broader rural economy

- **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 alues.
  - 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 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

- Lower long-term interest rates are also supporting more borrowing and in increasing the capitalized value of profits.
  - According to Federal Reserve Board, the average federal 30 year bond rate was 4.91% in 2006. It fell during the Great Recession and tepid recovery, before modestly rising to 3.45% in 2013 (which is about the range seen in the first half of 2014).
  - While the outlook for long-term interest rates is cloudy with the closing of the Fed's quantitative easing, stability of long-term rates in the last several months suggests that they are near their long-term level.
- Thus, lower long-term rates further support high prices.

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

- **Market fundamentals appear to largely support the recent run-up in farmland values.**
- **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?*
- Yet, 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.
- Hence, 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—though disproportionately in the 10th District.

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 1/10th 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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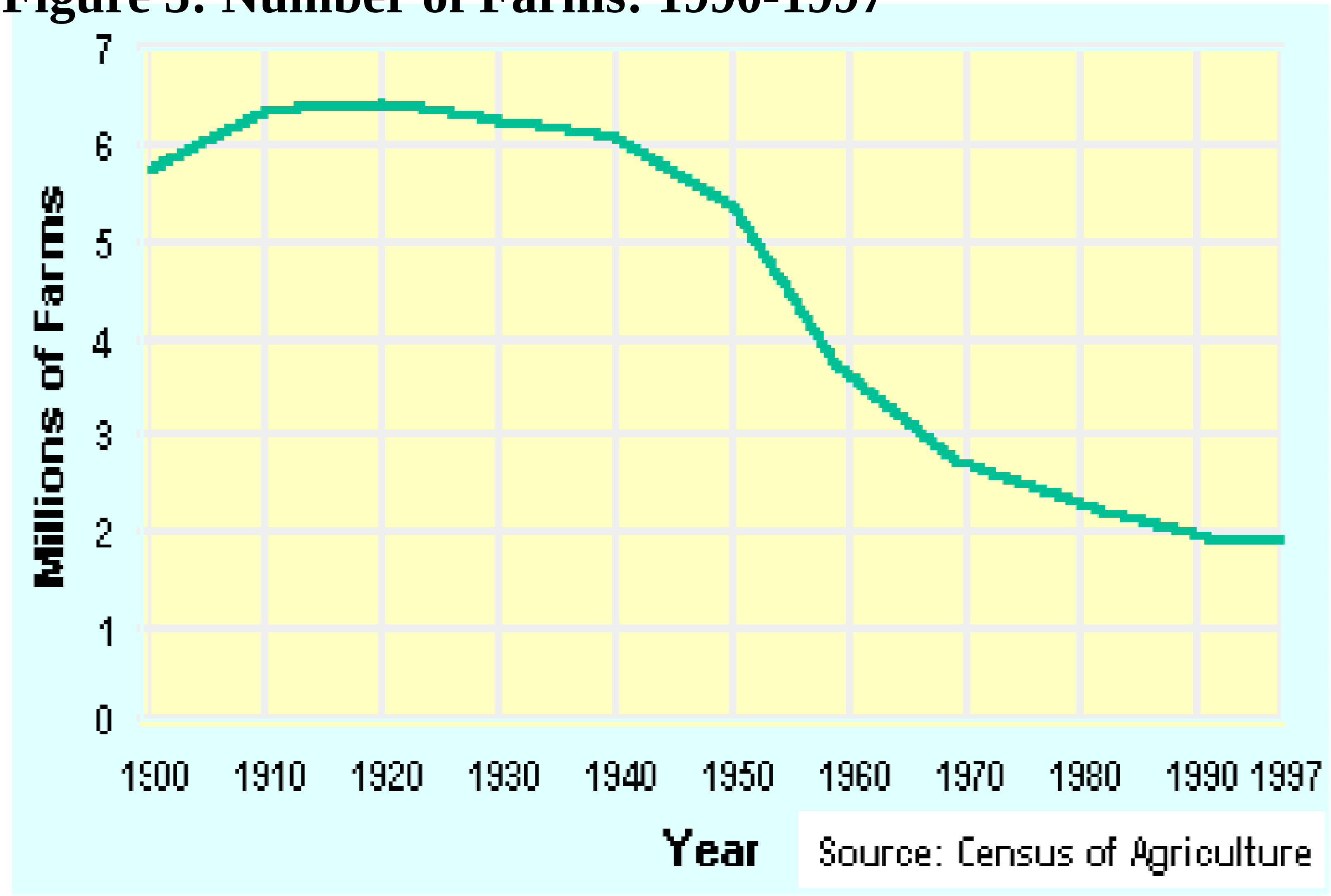
Figure 5: Number of Farms: 1990-1997*



*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.