

Potential Influence of Commodity Policy on Iowa Agriculture

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Background

- Can a change in commodity policy really change
 - types and quantities of crops and livestock grown in Iowa?
 - financial conditions on Iowa farms?
 - number of Iowa farms?
- If so, then what policies will lead to what we want Iowa to look like in the future?

Three “extreme” policies

- Liberalization
 - Unilaterally remove all U.S. commodity subsidies, import tariffs and quotas, export subsidies: keep crop insurance
 - Multilateral: Same as above but all other countries do the same.
- New Europe: Decoupled payments and increase protection for farmers to move “upscale” by increasing and protecting brands.
- Old Europe: Raise domestic crop and livestock prices. Adopt policies to remove resulting surpluses from the market.

Multilateral Liberalization

- Elimination of
 - Domestic subsidies in all countries
 - Import restrictions on sugar, beef, and dairy
 - Barriers faced by U.S. meat and grain exports
- Maintenance of
 - Subsidized U.S. crop insurance
 - CRP
 - Energy policy

Impacts of Multilateral Liberalization

- Export demand for U.S. beef and pork exports increase dramatically
- Iowa increases production of pork and beef
- Moderately more corn acres fewer soybean acres
- Drop in cash rents and Iowa land prices
- Moderate increase in grain prices and eventual improvement in grain basis
- Continued consolidation in farm size, but very small change from baseline
- Continued insurance-based safety net for U.S. producers
- More cattle in Iowa to take advantage of DDGs
- Extreme volatility in livestock markets due to increased export dependence, that is compensated by a move to livestock insurance programs

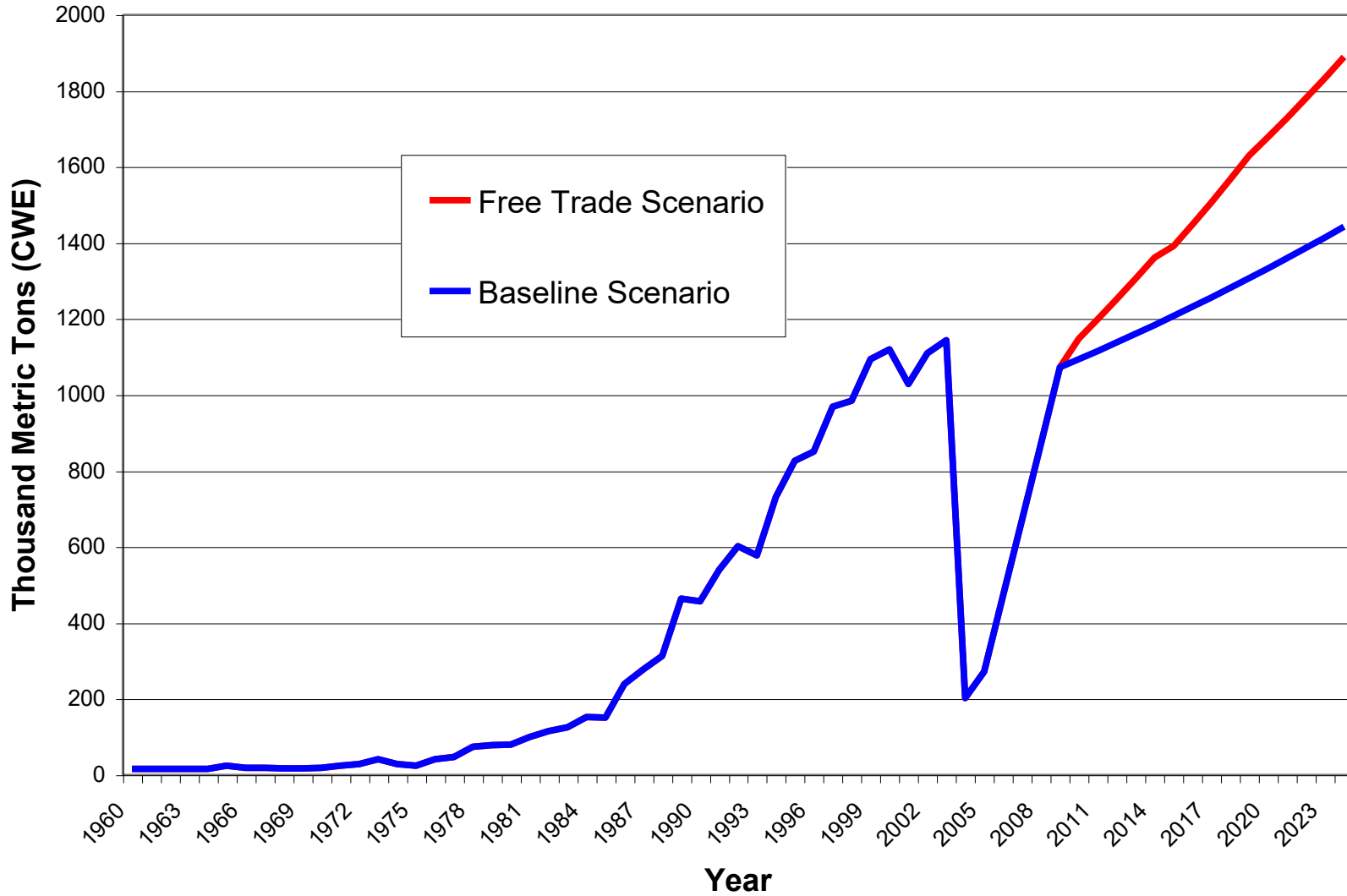
Meat Exports

- U.S. pork and beef exports have responded to previous trade liberalizations
- The baseline assumes no additional liberalization, therefore the rate of growth in exports is slower than under the recent historical period.
- It makes more economic sense to ship boneless beef and pork than it does to ship animal feed
- It only makes economic sense to ship feed when a distortion exists
- For example, within the EU and the US internal markets, bulk grains are seldom shipped because it is more efficient to ship meat than grains.

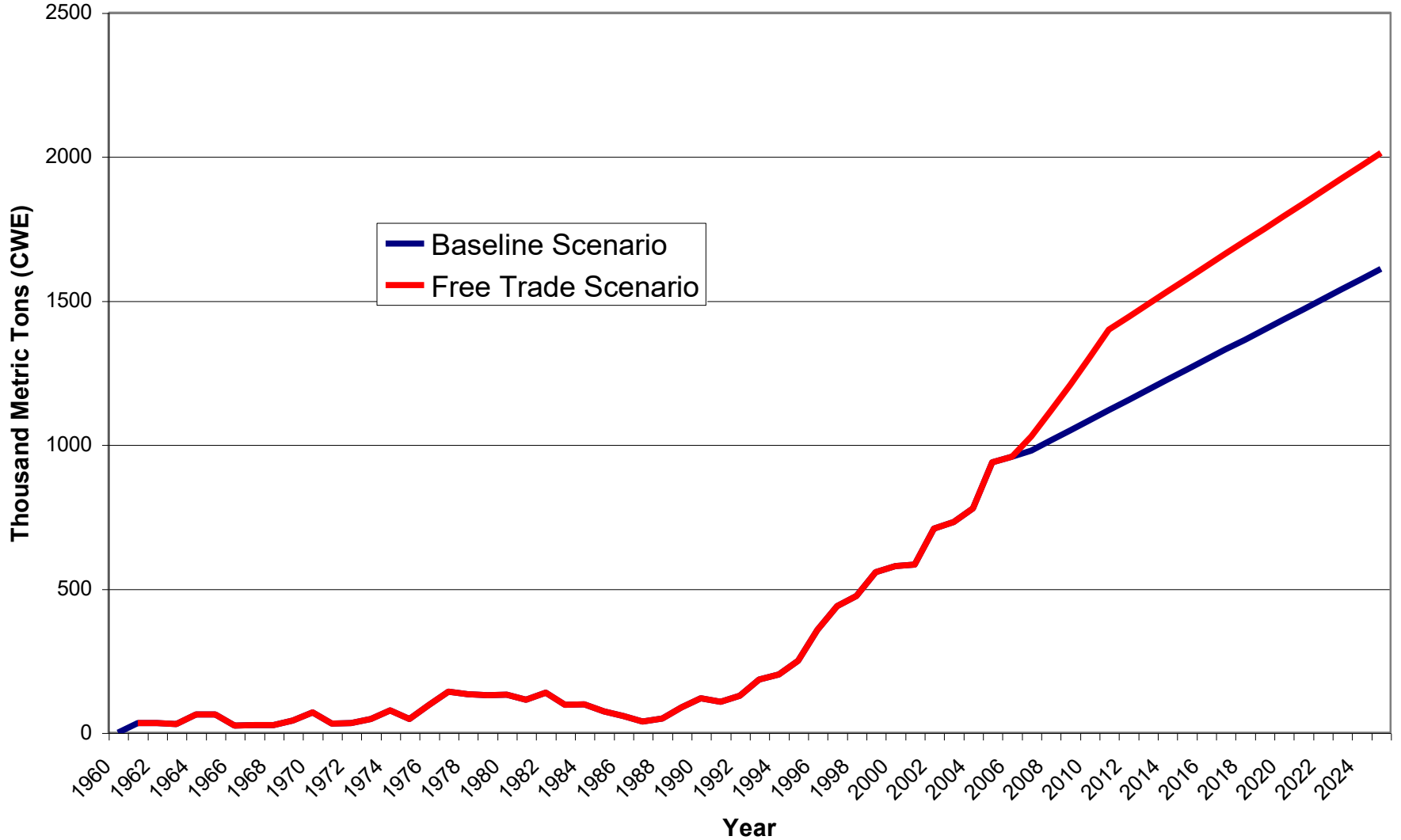
Meat Exports (cont.)

- After liberalization beef and pork exports respond quickly. Pork exports grow faster than beef exports because Asia consumes far more pork than beef
- At some point about 10-12 years from liberalization, the U.S. uses all its corn and soybean surplus internally when U.S yields are low.
- At this point the growth in meat exports begins to slow
- The removal of Canadian income guarantee programs cause the U.S. sow herd to grow and the Canadian herd to shrink
- In the absence of environmental and social constraints the upside maximum potential for meat exports is about 3.5 times current levels.
- This allows an average residual export level of one billion bushels of corn.
- In the scenario corn exports equal about two billion bushels

U.S Beef Exports 1960:2004, and Predicted to 2024



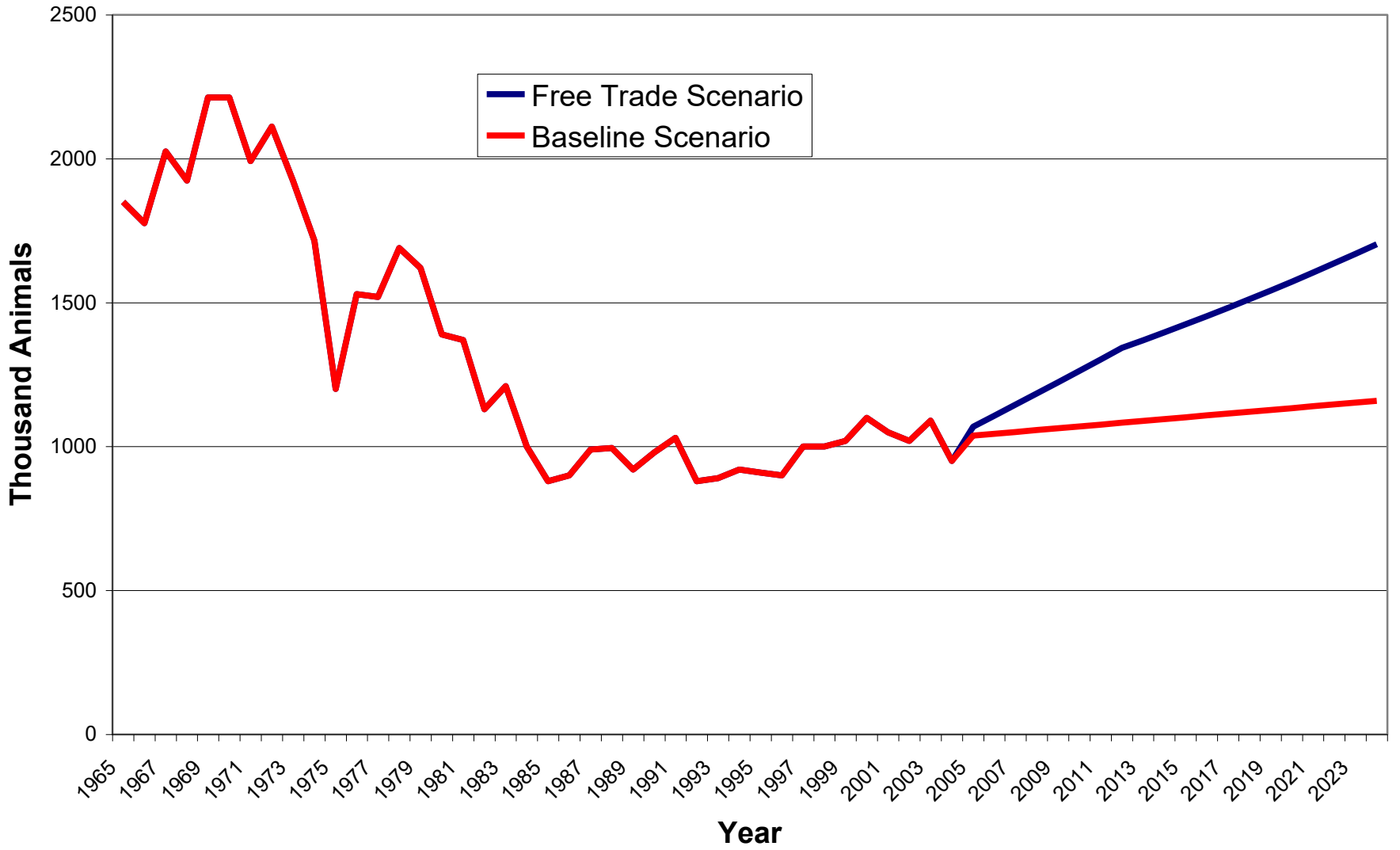
U.S. Pork Exports 1960:2004 and Projected to 2024



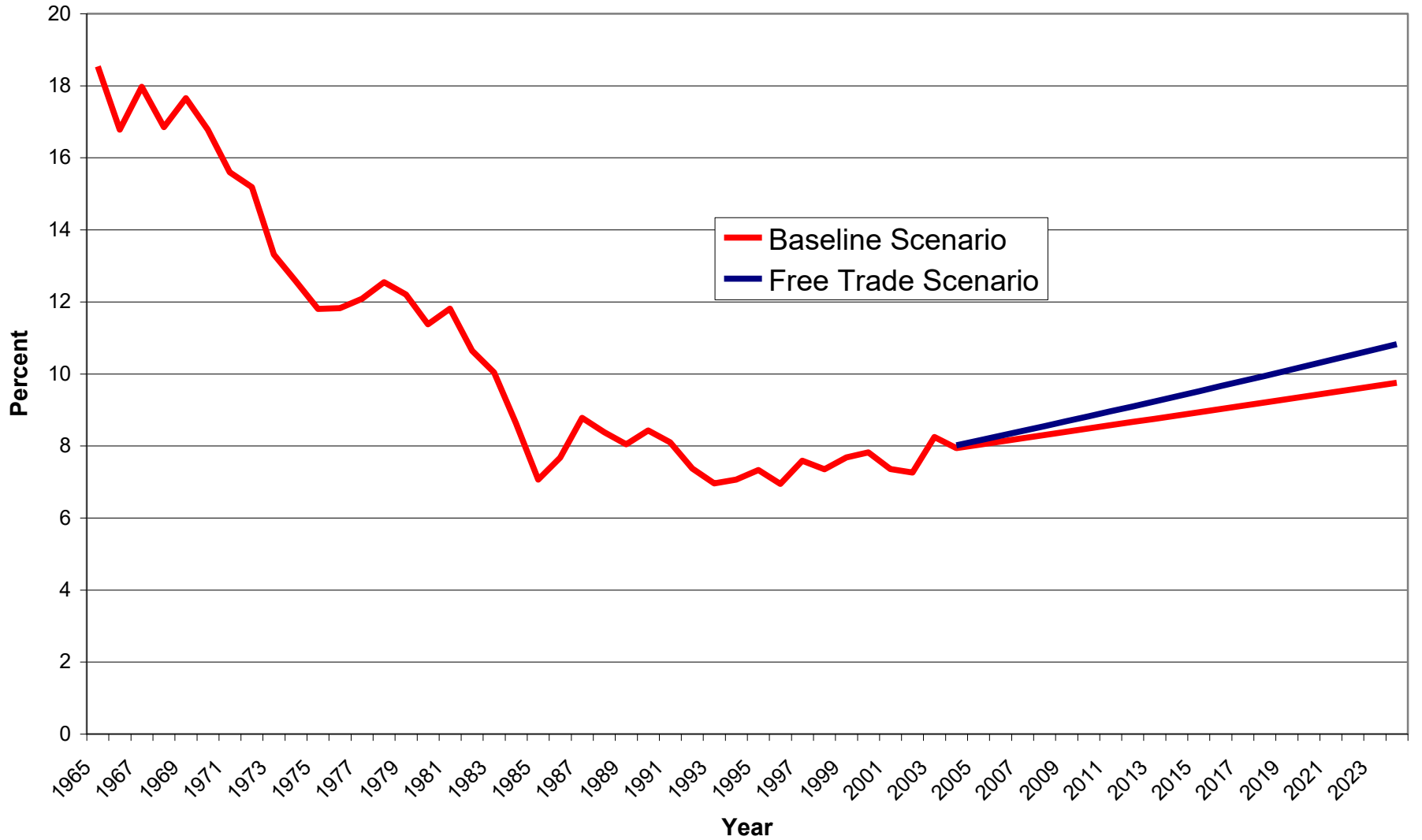
Iowa Share of U.S. Meat Production

- Iowa is the principal source of grain exported from the U.S, and as this grain begins to be fed domestically Iowa gets a disproportionate share of the additional production
- The availability of abundant DDG's causes an additional increase in beef feeding
- Iowa has borne the brunt of the expansion in the Canadian sow herd and it experiences a rebound in sow numbers when this program is removed

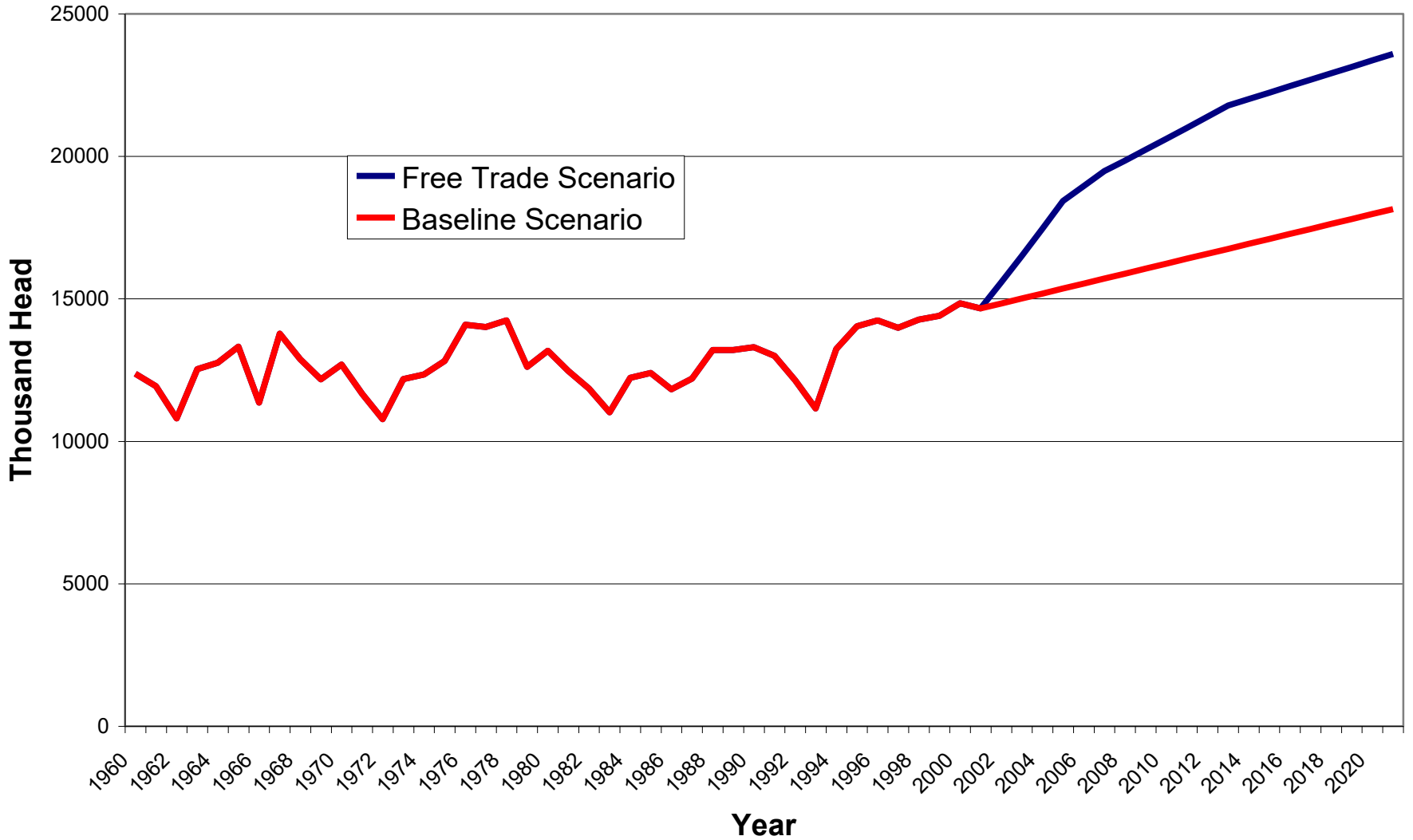
January 1 Cattle on Feed Iowa, 1965:2004 and Projected to 2024



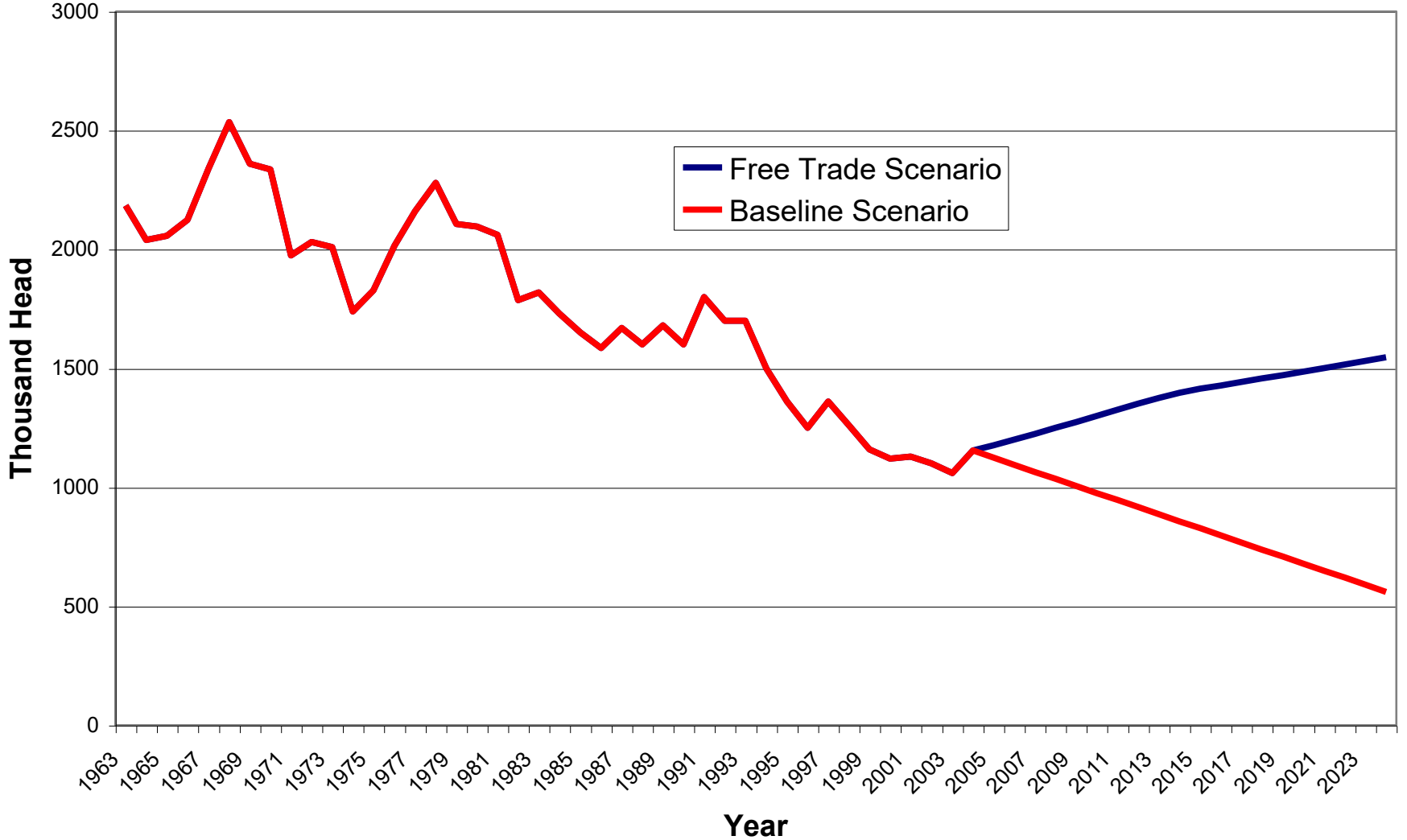
Iowa's Share of U.S. Cattle on Feed 1965:2003 and Projected to 2024



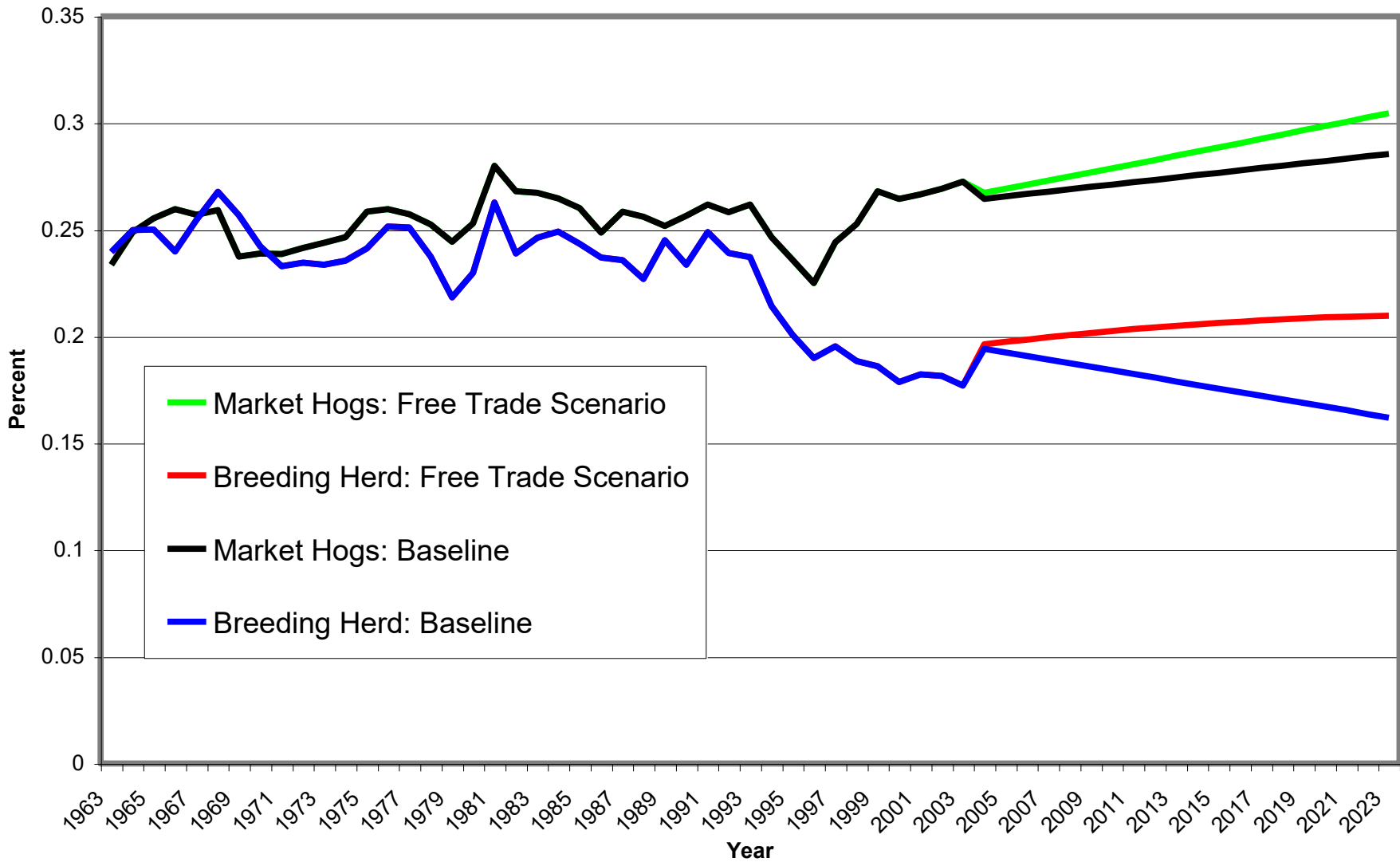
Dec 1 Market Hog Inventory in Iowa 1960:2003 and Projected to 2024



Swine Breeding Herd in Iowa 1963:2003, and Projected to 2024



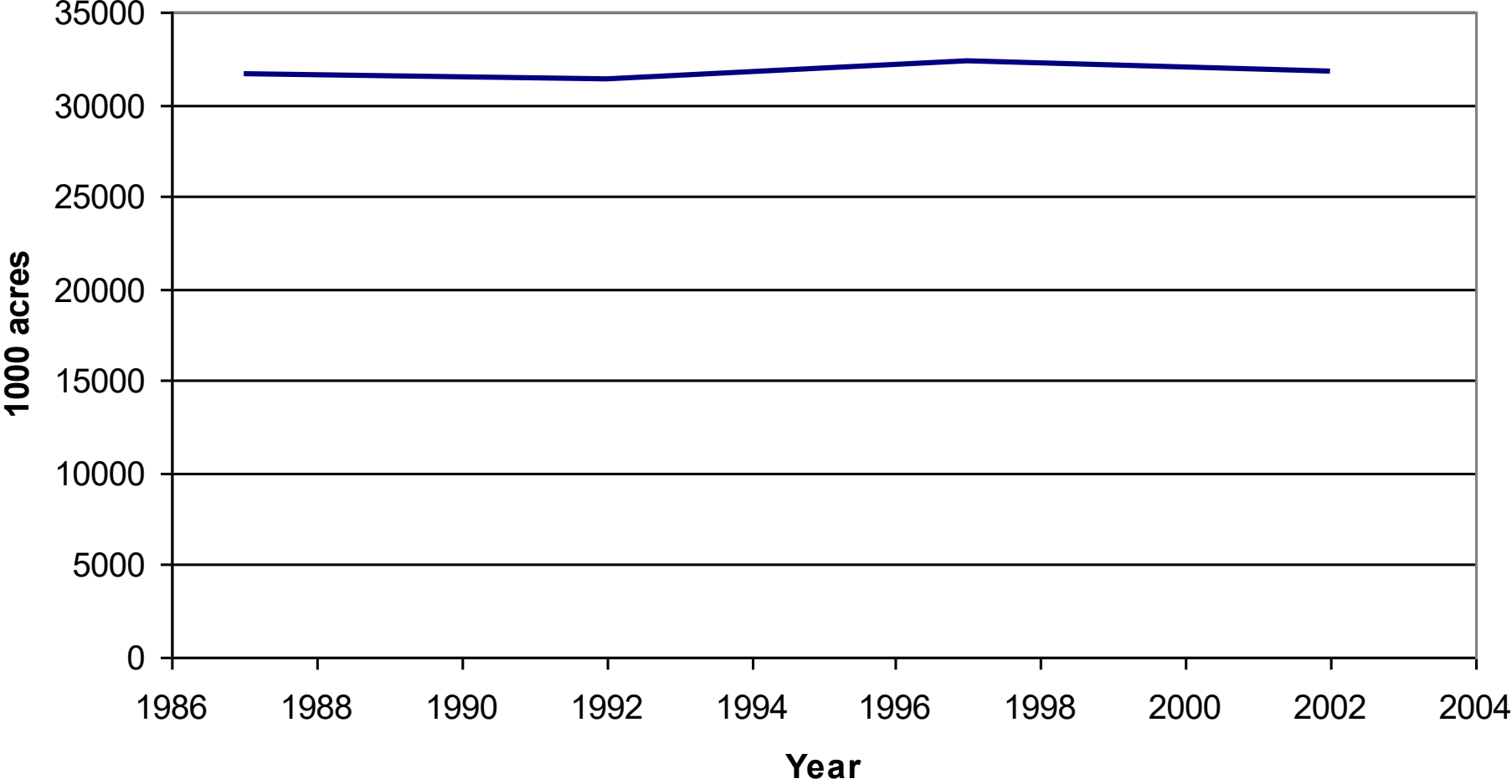
Iowa's Share of U.S. Market hog and Swine Breeding Herd 1963:2003, and Projected to 2024



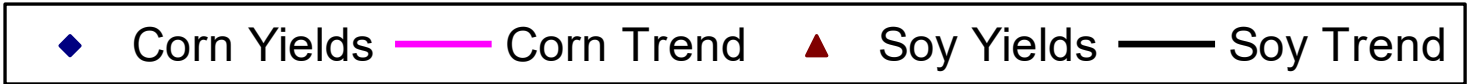
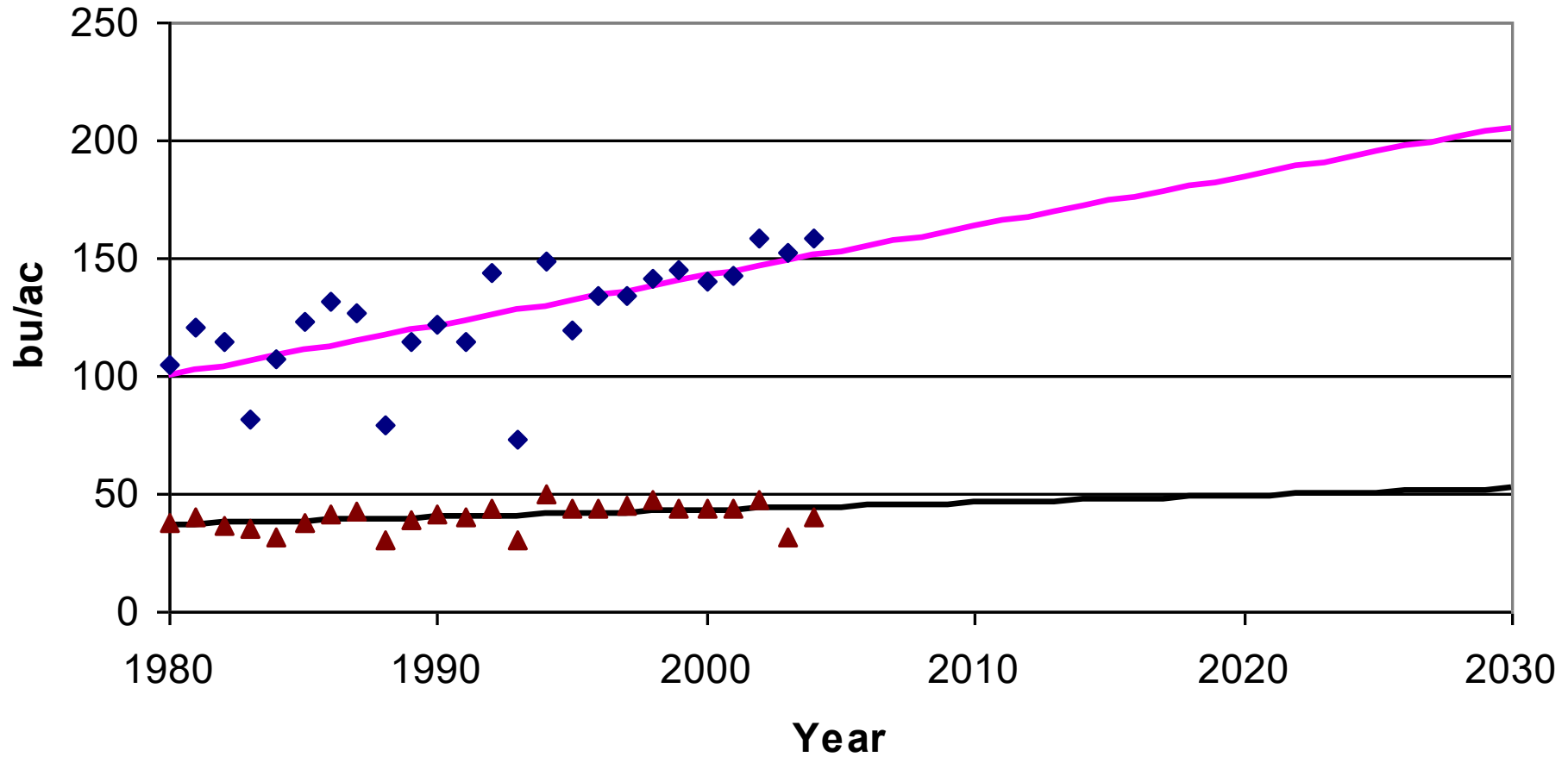
Corn and Soybeans Baseline

- Corn supplies will increase by 1/3 over the next 25 years with no change in acreage. Soybean supplies will increase by 18%.
- Growth in per-acre yields fills all demand for corn from expanded ethanol production, expanded meat exports, and expanded meat production. Exports remain flat.
- Increased use of corn for ethanol will increase supply of DDGs with a corresponding reduction in demand for U.S. soybean meal.
- Brazil continues to displace U.S. in world soybean markets.
- Per-bushel costs of growing corn relative to soybeans will allow some farmers to move away from a corn-soybean rotation.
- Farm programs keep soybean acreage and corn acreage stable in the baseline.

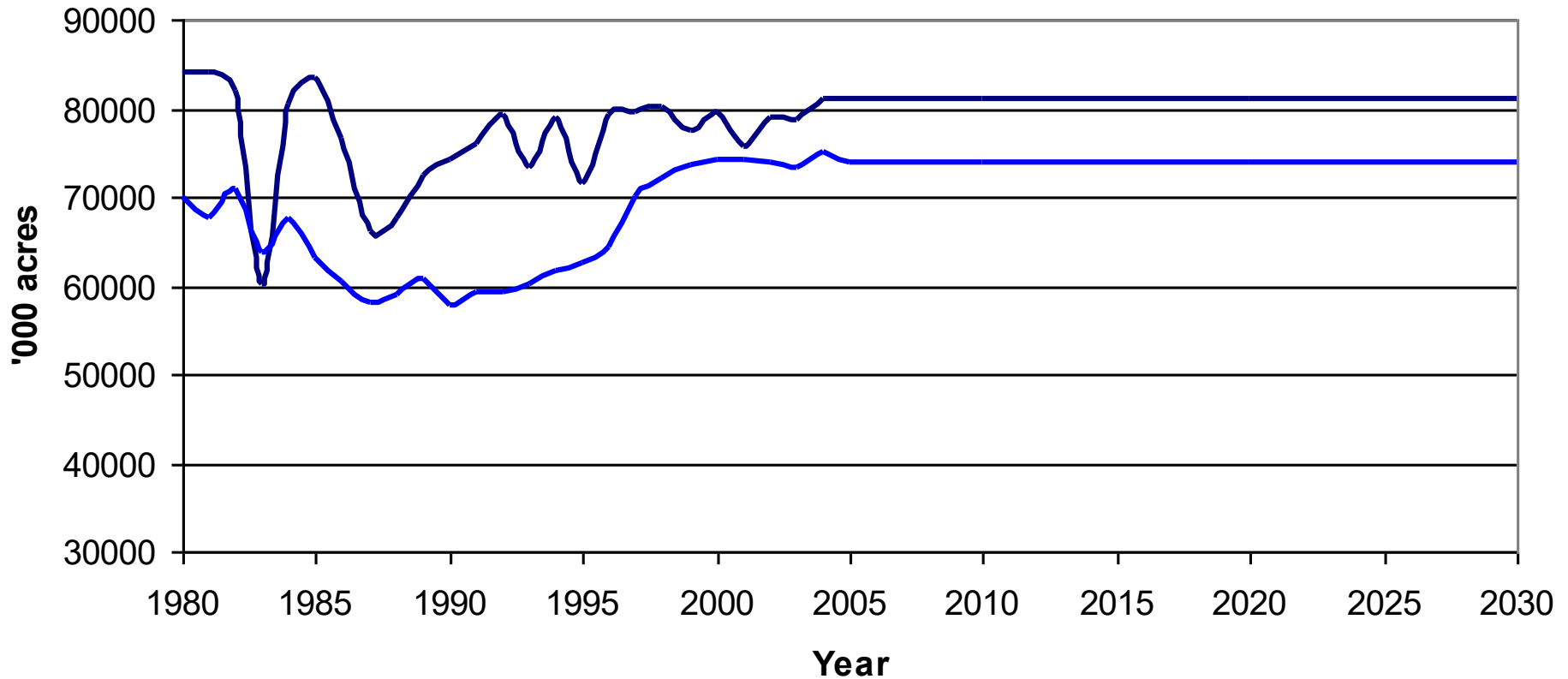
Land in Farms in Iowa: 1987 to 2002 Using Census of Ag Data



Corn and Soybean Yields Per Planted Acre in Iowa: Actual and Trend



U.S. Corn and Soybean Planted Acres: History and Baseline Projection

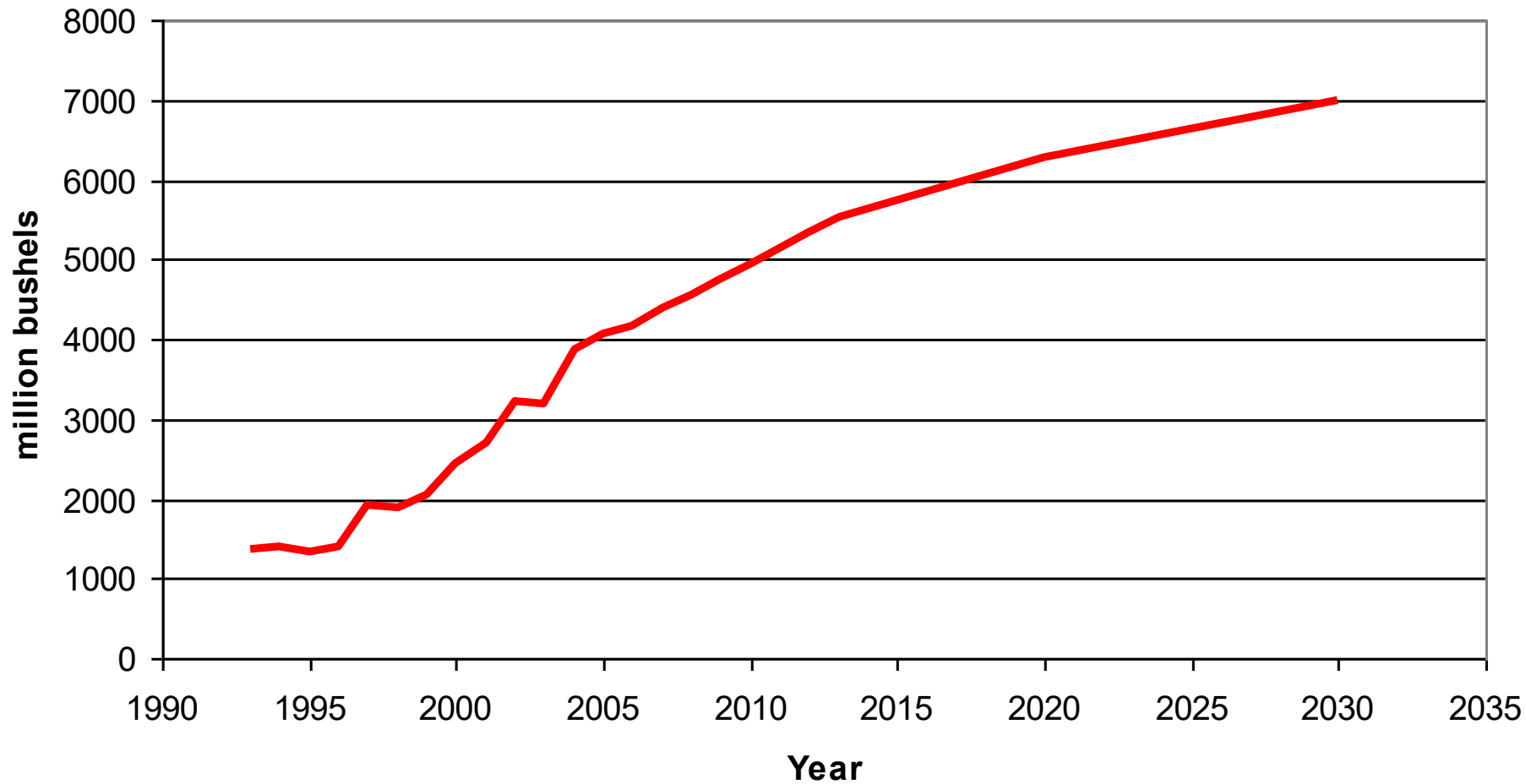


— US corn acres - baseline — US soy acres - baseline

South America

- South America will continue its expansion in soybean production.
- Acreage will not be a limiting factor for next 20 years.
- Yields will continue to grow but a bit more slowly.
- Costs will also grow as disease and insect pressure increases.
- Infrastructure, capital costs, and perhaps government stability will be the limiting factors in production.
- Brazil will continue to be infested with FMD.

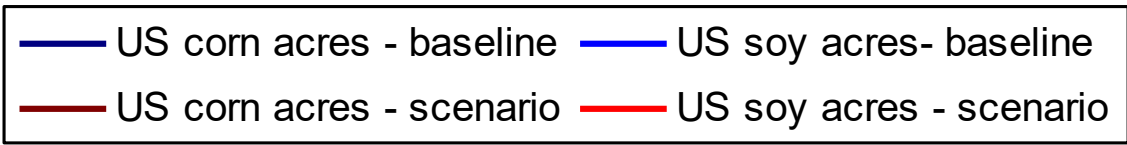
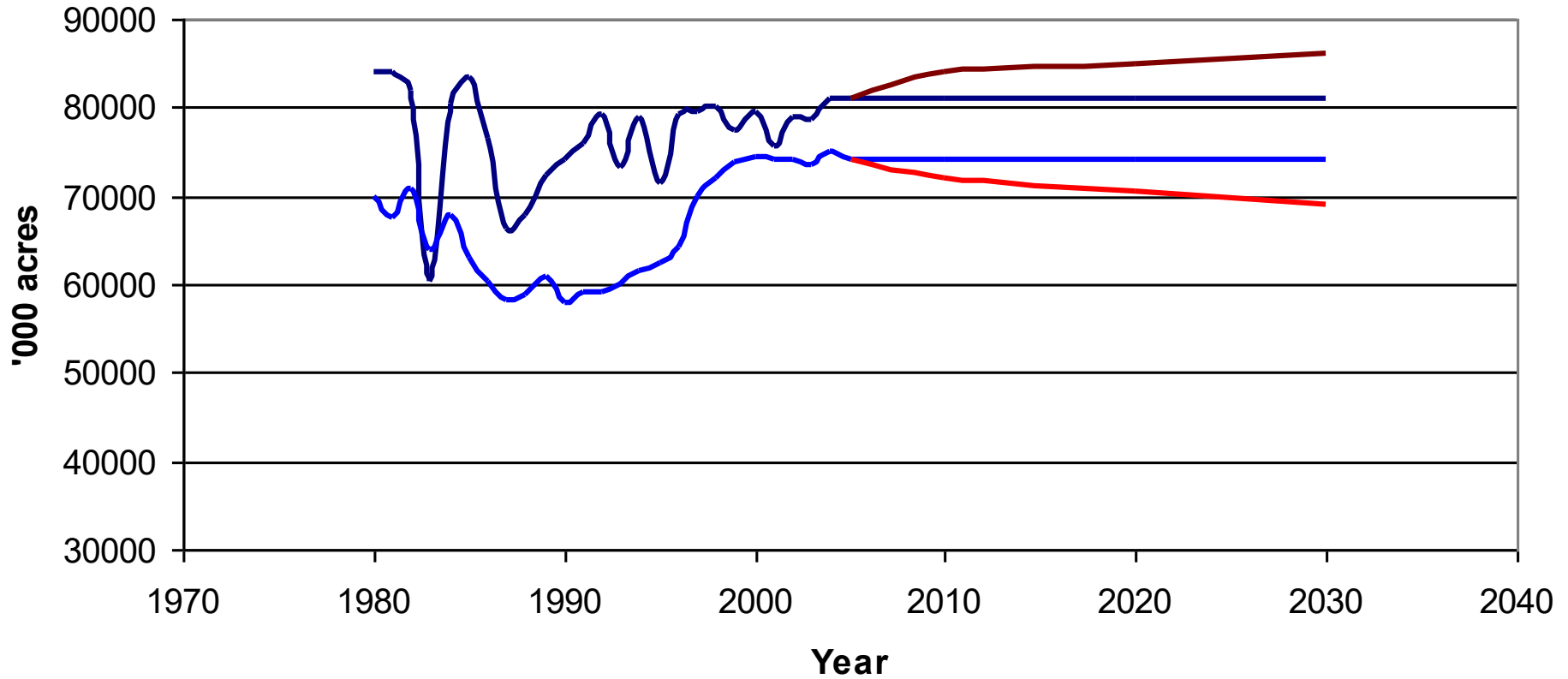
South American Soybean Production Baseline



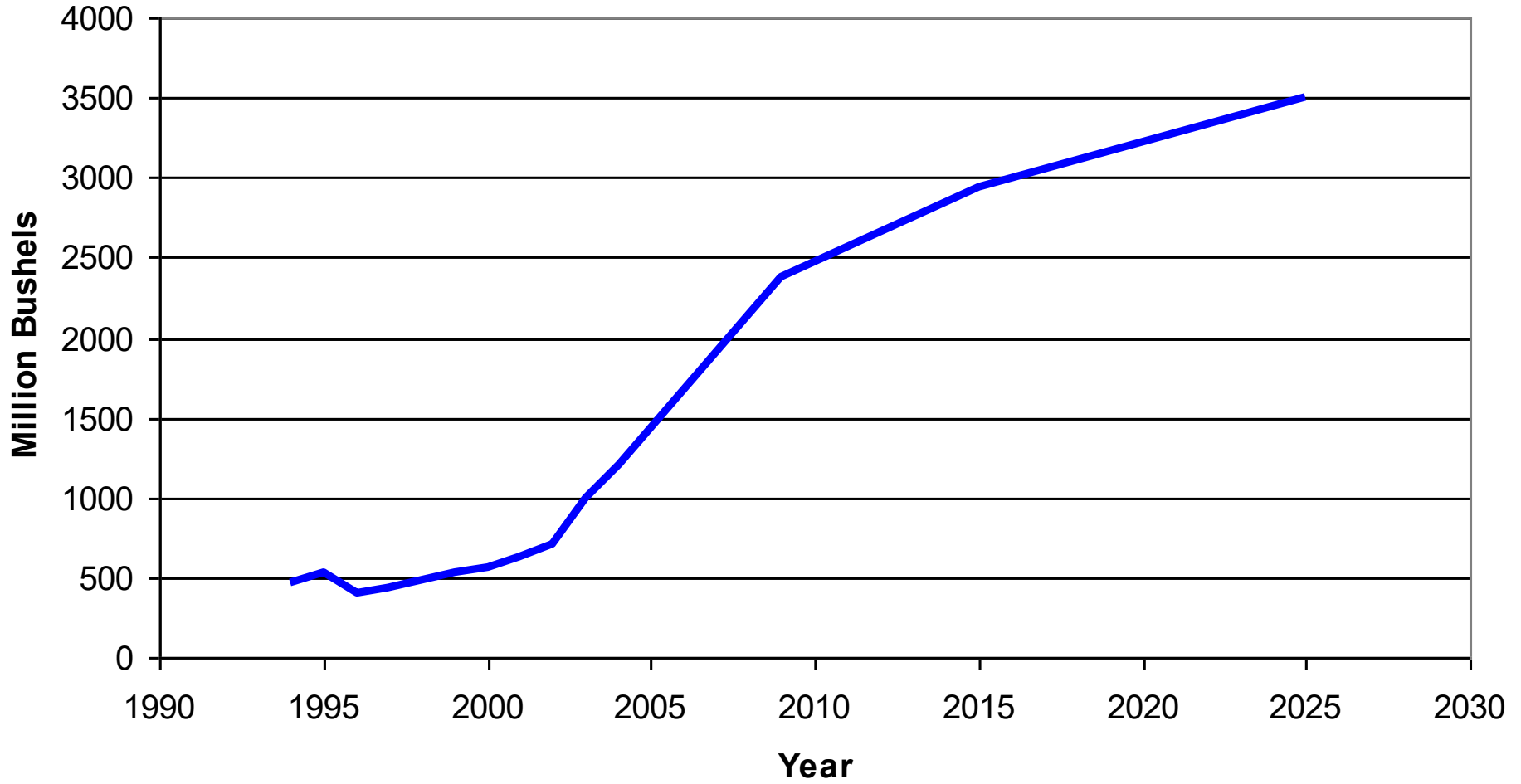
Liberalization's Impact on Crops

- Total planted acres will stay fixed at 23 million.
- Expanded meat exports will increase the demand for corn relative to soybeans.
- Elimination of U.S. farm programs will cause farmers to switch to corn nationally..
- More acres holds down the basis improvement and price increase that we would otherwise see for Iowa corn production due to expanded utilization in Iowa.
- Drop in U.S. soybean production will increase South American production allowing it to become the dominant player in soybean and soymeal production.
- The expansion in soybean supply in South America will increase payoff from domestic utilization of soymeal in a domestic livestock industry with a concentration on poultry in South America.

U.S. Corn and Soybean Planted Acres

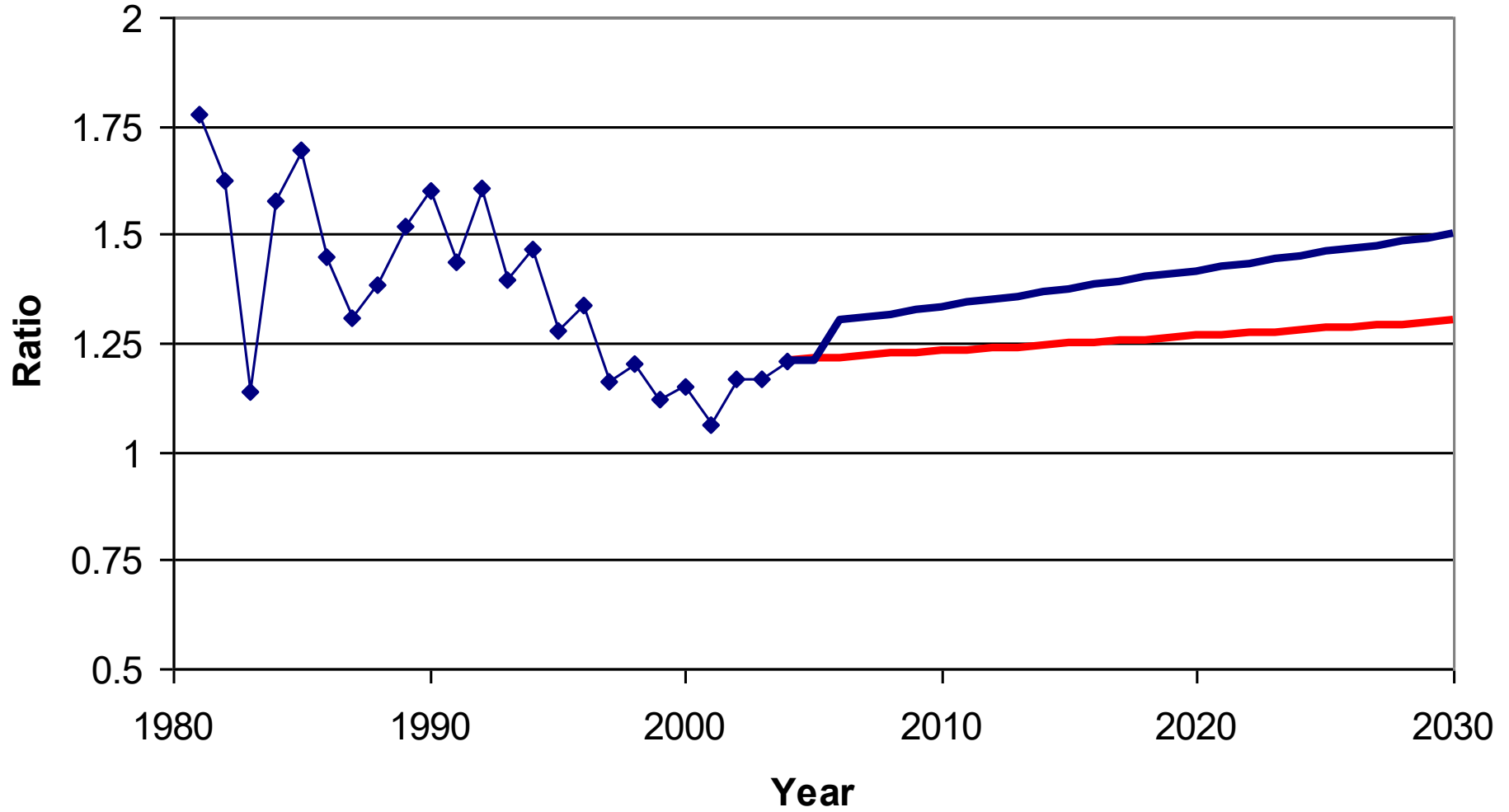


Corn Used in Ethanol Production



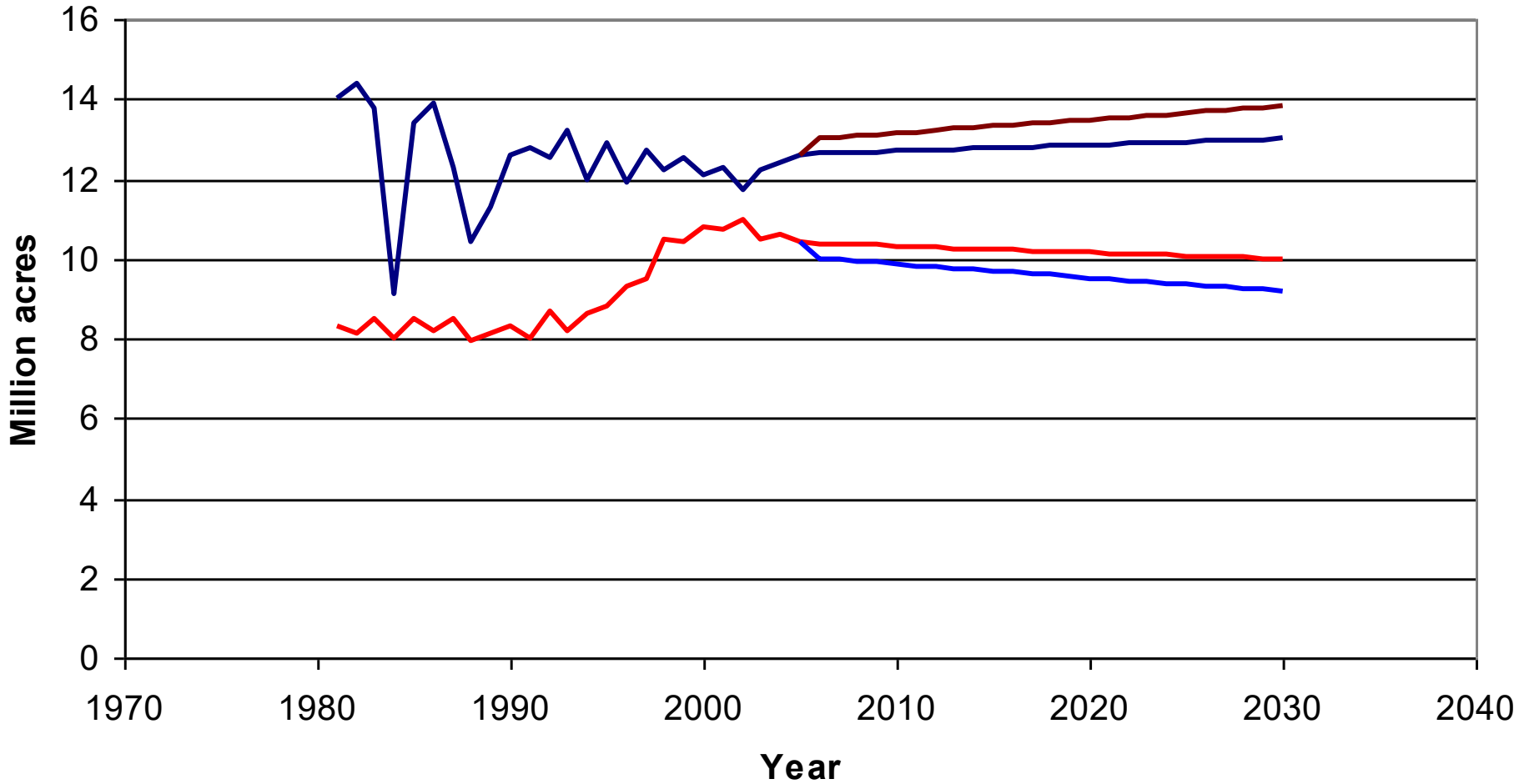
- 3.5 bu of corn in ethanol production produces 29.7 million tons of DDGs
- The U.S. produced 37.6 million tons of soybean meal from the 2003 crop.
- An acre of corn grown for ethanol produces the same tonnage of DDGs as the meal produced on an acre of soybeans
- New technologies will develop to feed DDGs to hogs and poultry
- Soybeans will be grown primarily for oil

Ratio of Corn to Soybean Acres in Iowa



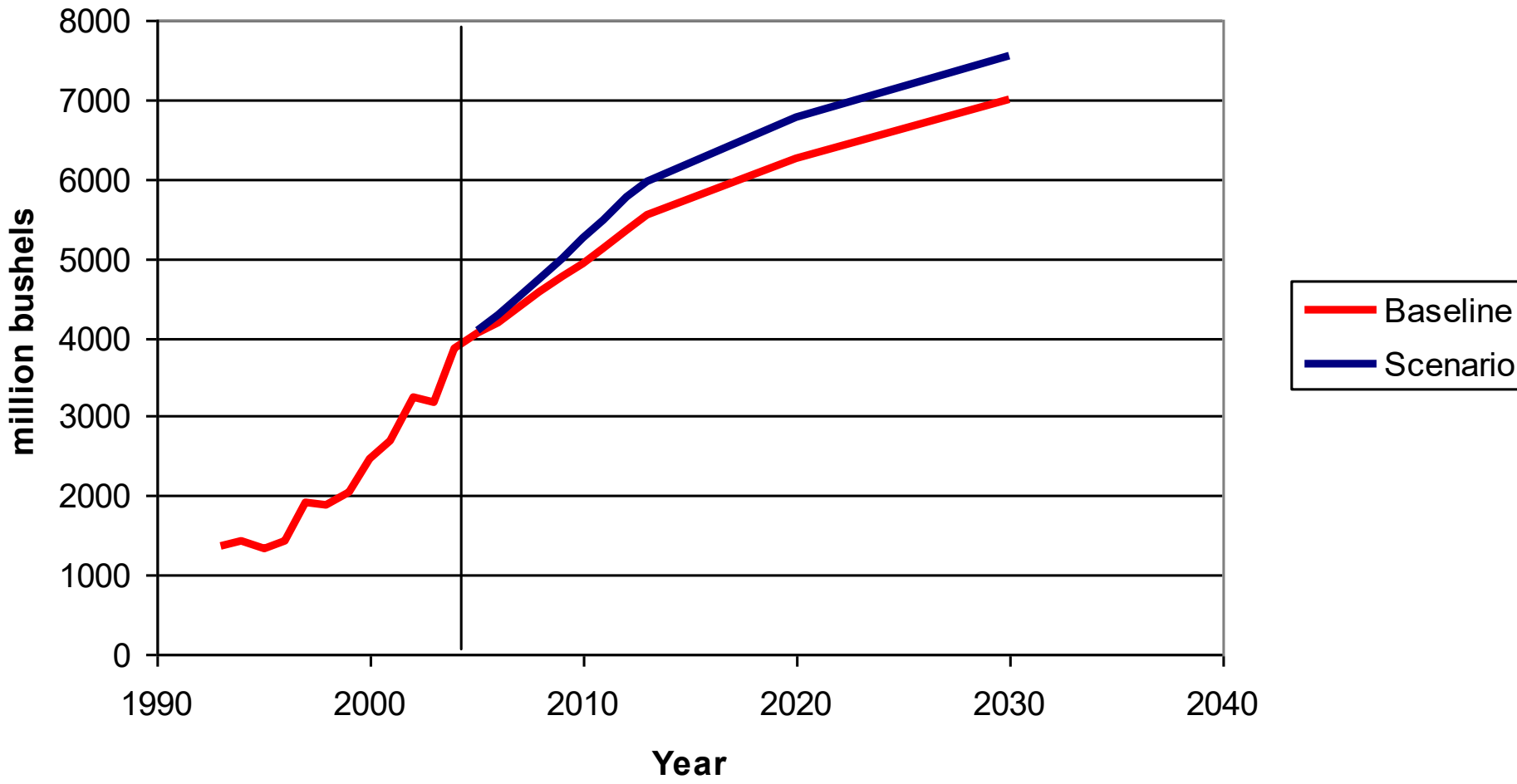
—◆— History — Baseline — Free-Trade Scenario

Iowa Corn and Soybean Acres

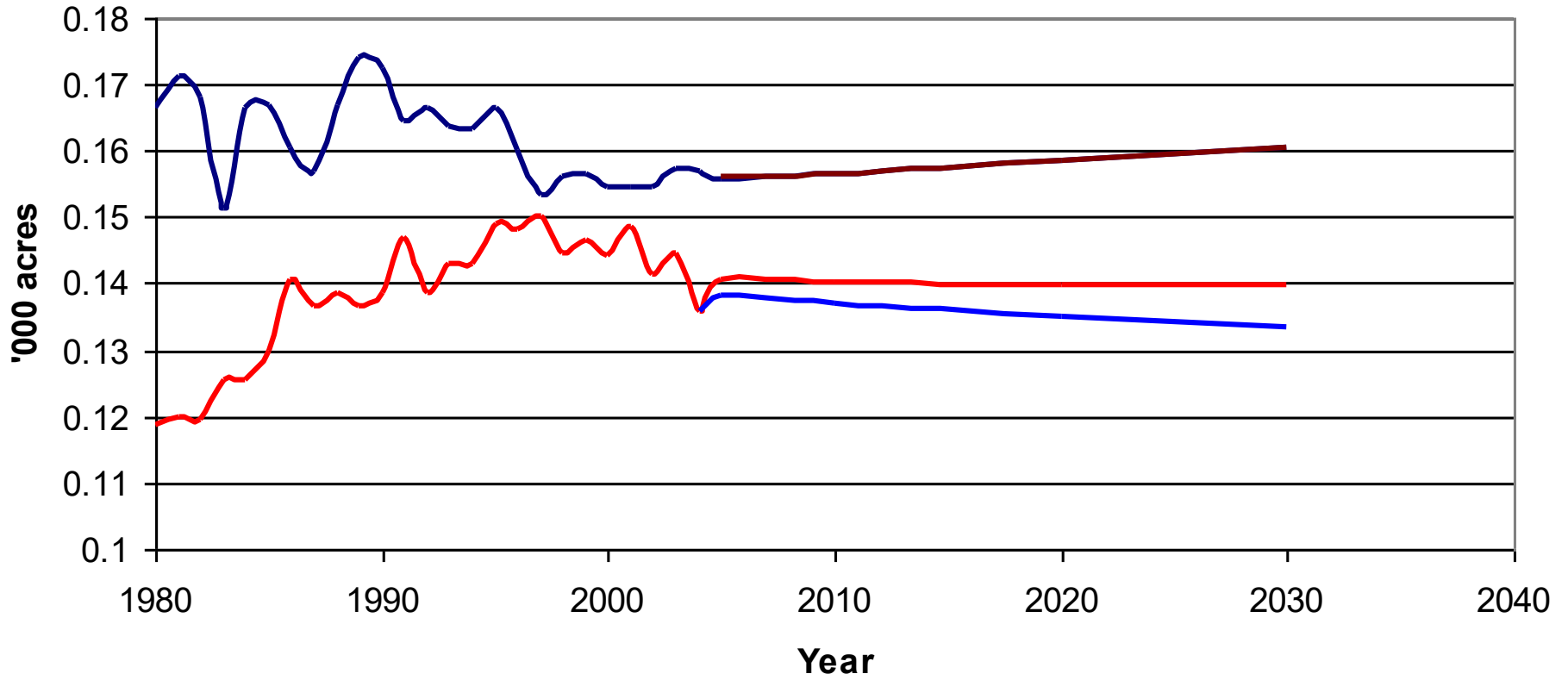


— Corn baseline — Soybeans baseline — Corn scenario — Soybeans scenario

South American Soybean Production under Free-Trade



Iowa's Share of U.S. Corn and Soybean Planted Acres



— IA corn share - baseline — IA soy share - baseline
— IA corn share - scenario — IA soy share - scenario

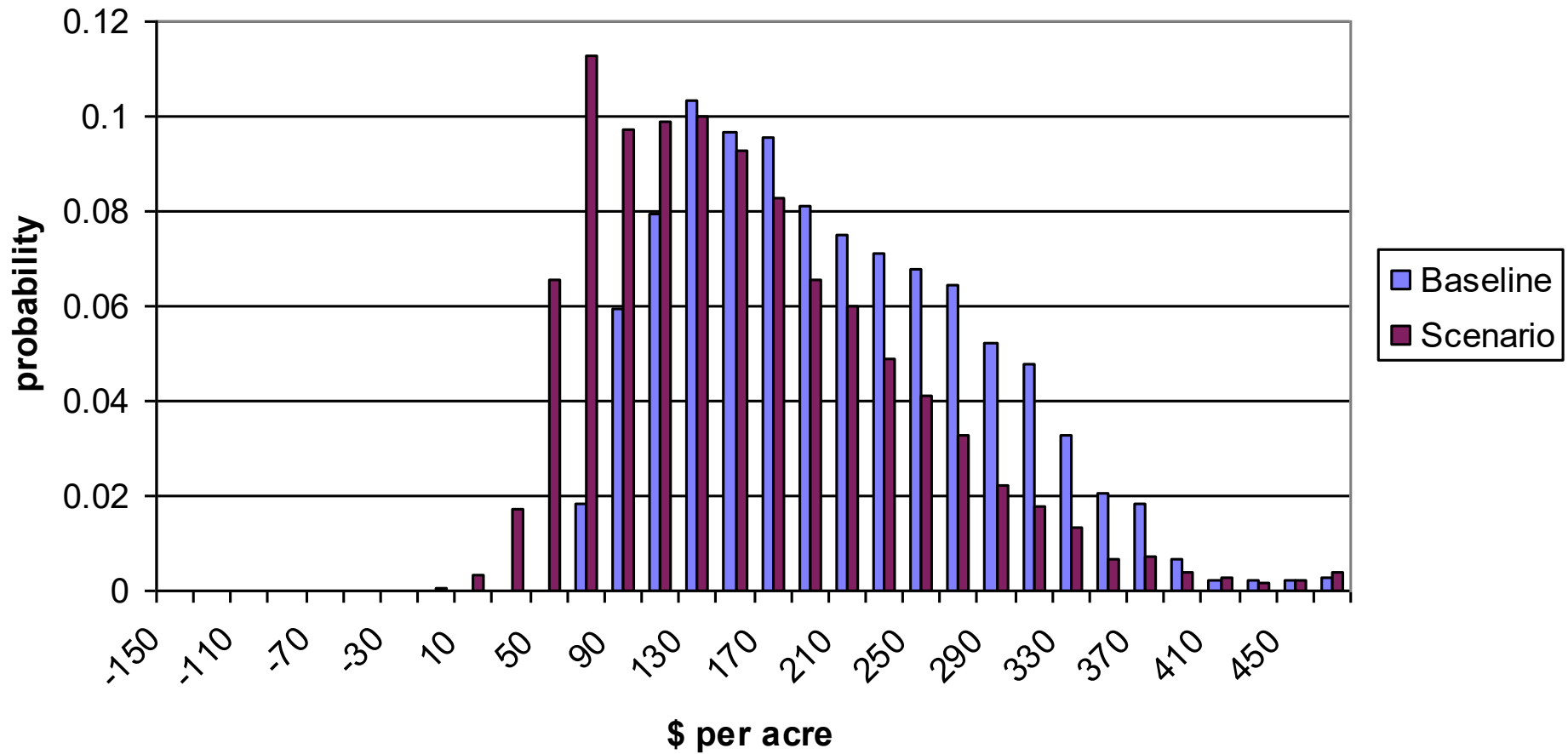
Acreage effects

- Iowa baseline corn acres will increase by a small amount to reflect the relatively greater local demand growth for corn compared to soybeans.
- Under free trade this trend will be accelerated as Iowa and U.S. farmers respond to relatively lower production costs and higher demand for corn. Corn acreage increases by 5 million acres by 2030 while U.S. soybean acreage declines by 5 million acres .
- Iowa's share of U.S. corn acreage will increase to 16% while its share of soybean acreage will drop to 13%. This change reflects Iowa's comparative advantage in producing corn, strong local demand for corn from a growing livestock sector feed and ethanol plants, and some weakness in demand for soybean meal because of increased supply of DDGs and relatively weak overseas demands for U.S. soybeans.

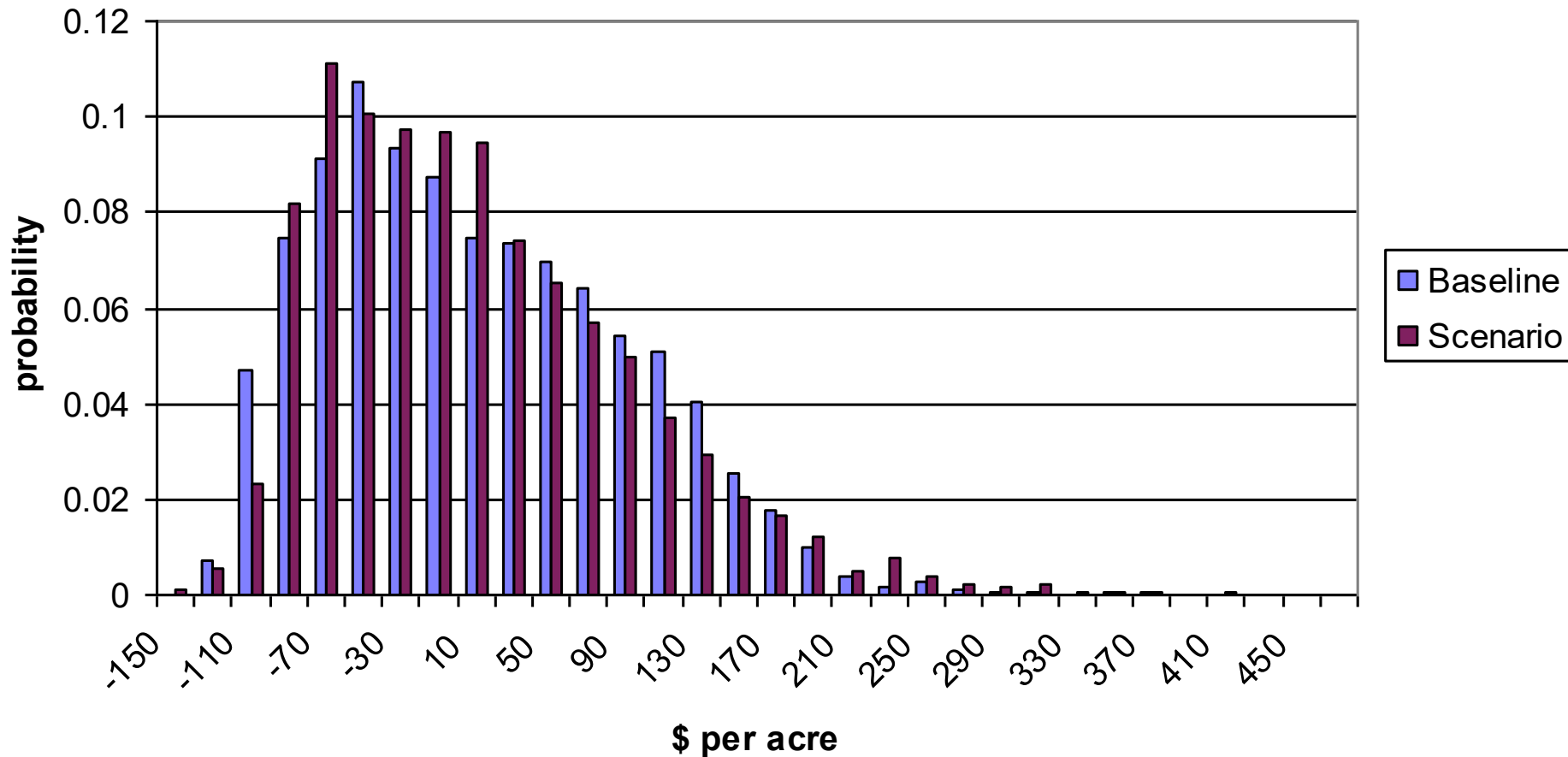
Impact of free trade on farm income for a corn farmer

- Liberalization removes approximately \$70 per acre in payments; subsidized crop insurance program remains.
- Impacts on farm finances are shown by comparing distributions of total cash revenue less variable cash costs of production for a corn farmer who a) cash rents and b) who farms their own land.
- Expected yield is 150 bu/ac. Expected price on the CBOT is \$2.40 for the baseline and \$2.45 under liberalization. Expected basis is \$0.25 in the baseline and trends down to \$0.15 in the scenario. The standard deviation of basis risk is \$0.15. The farmer buys 75% RA with the harvest price option. Variable costs are set at assumed equal to \$200 per acre.
- Land rent is \$193 per acre under the baseline and \$145 under the free-trade scenario.

Distribution of Total Revenue Less Variable Costs from Corn for a Farmer Who Owns their Land



Distribution of Total Revenue Less Variable Costs from Corn for a Land Renter



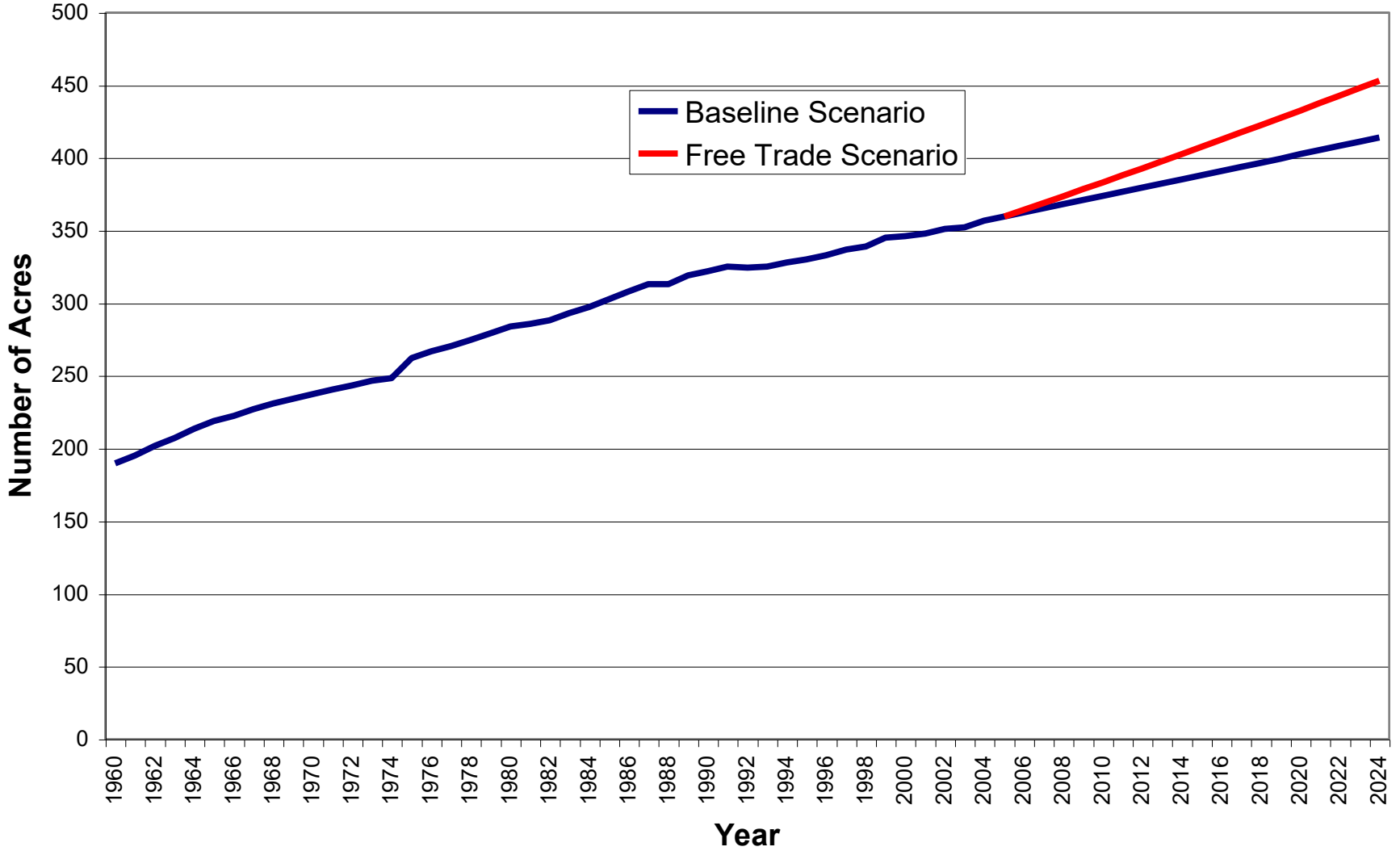
Impact of Liberalization on Crop Income

- The land owner is unambiguously worse off from the end of farm programs. The probability of low revenue is higher and the probability of high revenue is lower. Expected returns decline by approximately \$48 per acre from \$193 per acre to \$145 per acre. This results in approximately a 25% decline in land values.
- The land renter is perhaps better off under the scenario. The decline in government payments is offset by a decline in land rent.

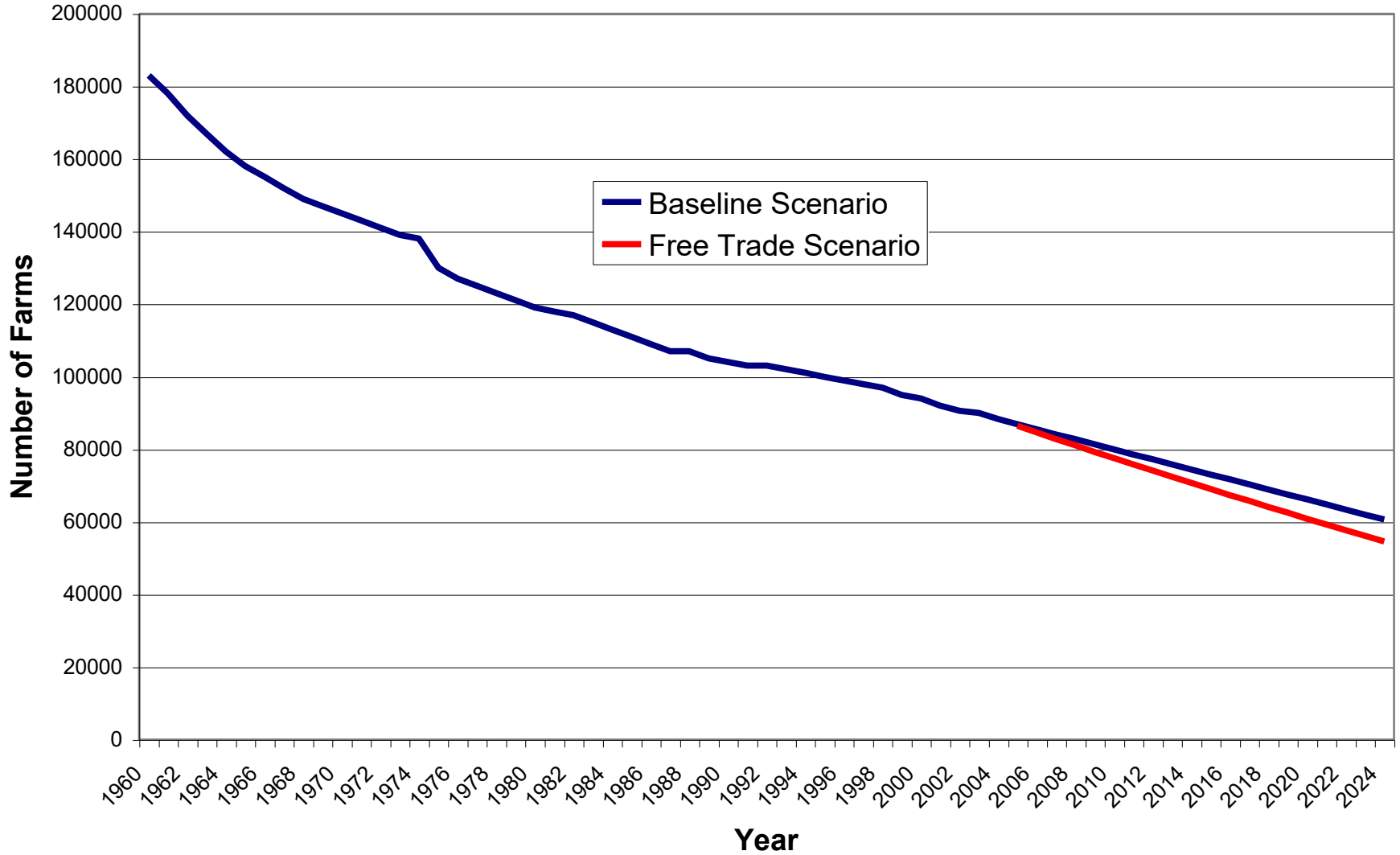
Impact on Farm Size

- No convincing evidence that farm programs have led to larger farm size
 - Ability and desire to work more land have increased.
 - Technological changes have facilitated specialization in crops or livestock.
- With lower cash rents and lower land values the pace of farm size expansion picks up slightly

Average Farm Size in Iowa 1960:2004 and Projected to 2024



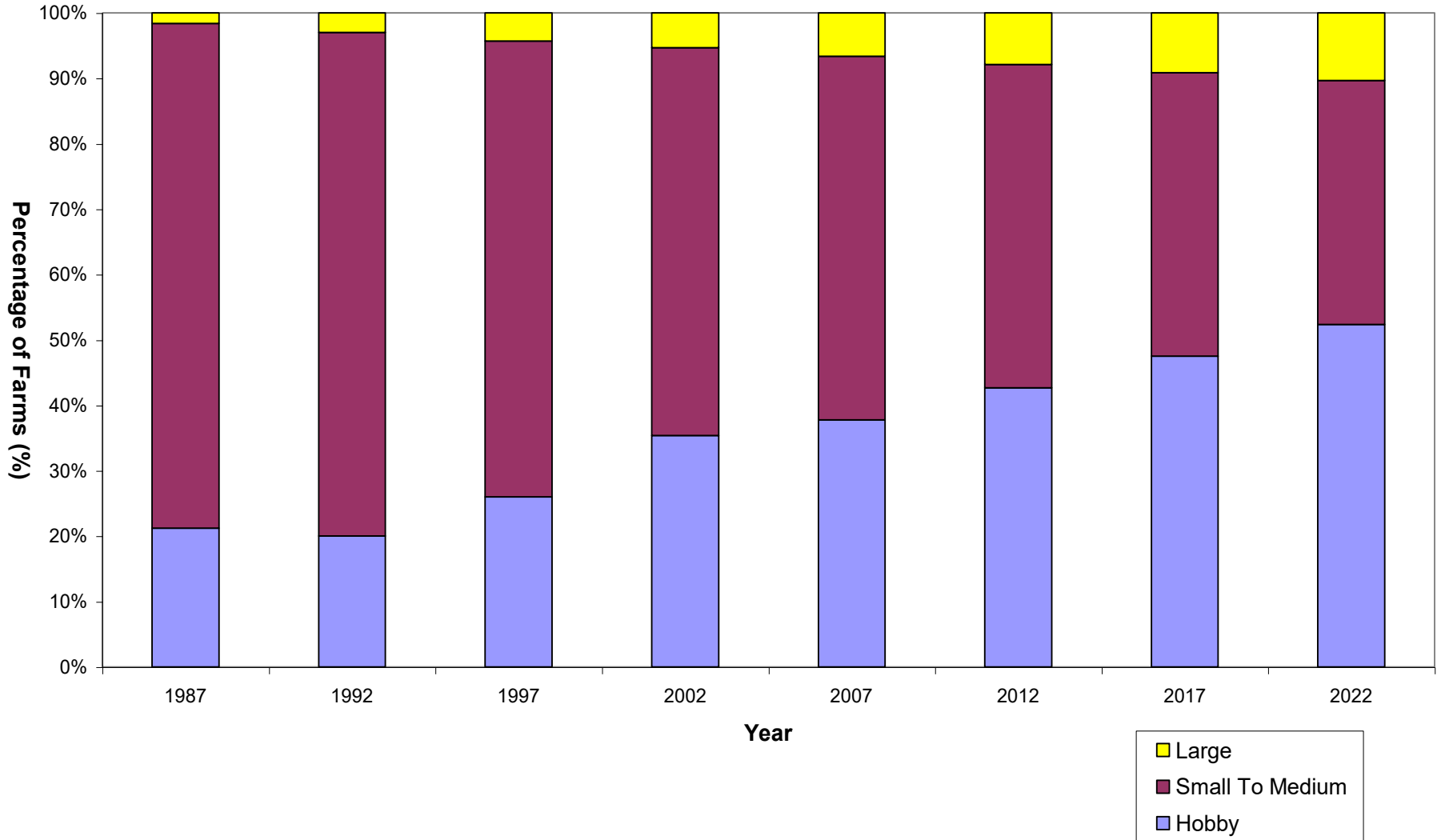
Number of Farms In Iowa 1960:2004 and Projected to 2024



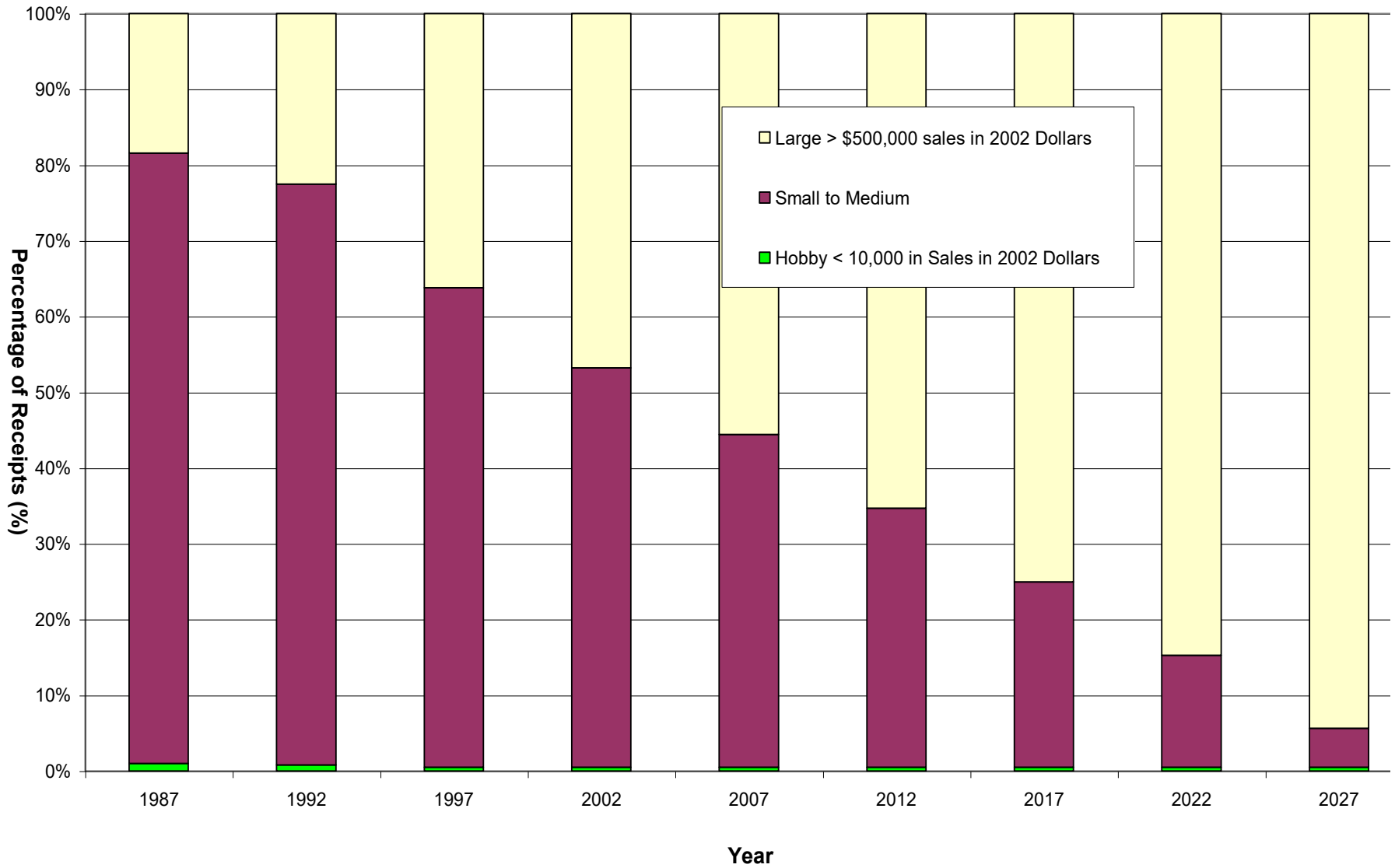
Demographics

- The expansion in the numbers of very large farms and very small farms continues to crowd out medium sized farms
- A very large share of total production comes from very large farms
- These two trends are not impacted by this particular scenario

Percentage of Iowa Farms by Value of Sales 1987 to 2002, and Projected to 2022



Percent of Iowa Agricultural Receipts by Value of Sales 1987-2002 and Projected to 2022



New and Old Europe Scenarios

- New Europe would mean that U.S. follows Europe lead on
 - Facilitating development of farmer-owned brands
 - Payments for environmental stewardship
 - Movement to decoupled payments
- Old Europe would mean
 - Legislated higher grain and meat prices
 - Supply restrictions
 - Violation of WTO agreement
 - Drop in ethanol production
 - Exports controlled by government policy

Old Europe Impacts

- Taxpayers and consumer costs rise as production expands (i.e. current U.S. sugar program)
 - Likely path same as the transition Europe took from Old Europe to New Europe
- Production levels as well as farm prices and profitability are determined by policy and not by markets, this makes it impossible to make justifiable projections

New Europe Impacts

- U.S. grain prices rise as U.S. production falls.
- Meat and grain exports are lower than in the multilateral liberalization scenario because crop prices are higher.
- Land owners may win or lose depending on the level of decoupled payments
- More producers remain in production as branded products succeed
- The share of total receipts from medium sized farms falls at a much slower pace
- Iowa brands emerge and are successful to the extent that meat quality (and or the perception of meat quality) can be improved by meat producers