AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Supply and Demand for Whole-Farm Crop Insurance: *What have we learned?*

Bruce A. Babcock

Center for Agricultural and Rural Development

Iowa State University

Presented at USDA Agricultural Outlook Forum,

March 1, 2007,

Topics Covered

- Supply
  - Tax forms vs. revenue to count
- Demand drivers
  - Subsidy structures
  - Insights(?) from prospect theory

Schedule F Insurance

1. Project farm income from past farm income
2. Farmer selects a coverage percent
3. Insurance makes up income shortfalls below guarantee

- ❖ CAIS, AGR and AGR-Lite
- ❖ IRS could pay losses

Problems with Schedule F

- Farmers can easily move income and expenses from one year to next without accrual accounting
  - Inflate losses in loss years
  - Increase future guarantees by inflating gains in gain years
- Schedule F costs are not costs that should be insured
  - Phantom tile lines, new pickup trucks, mileage expenses, etc. etc. etc.

Revenue to Count

- RA and new combined product (name???)
- Projected revenue =

  Acreage-weighted sum of per-acre expected revenue from each crop
- Whole-farm revenue guarantee =

  Coverage level X Projected Revenue
- Indemnity makes up for shortfalls in total revenue to count at harvest

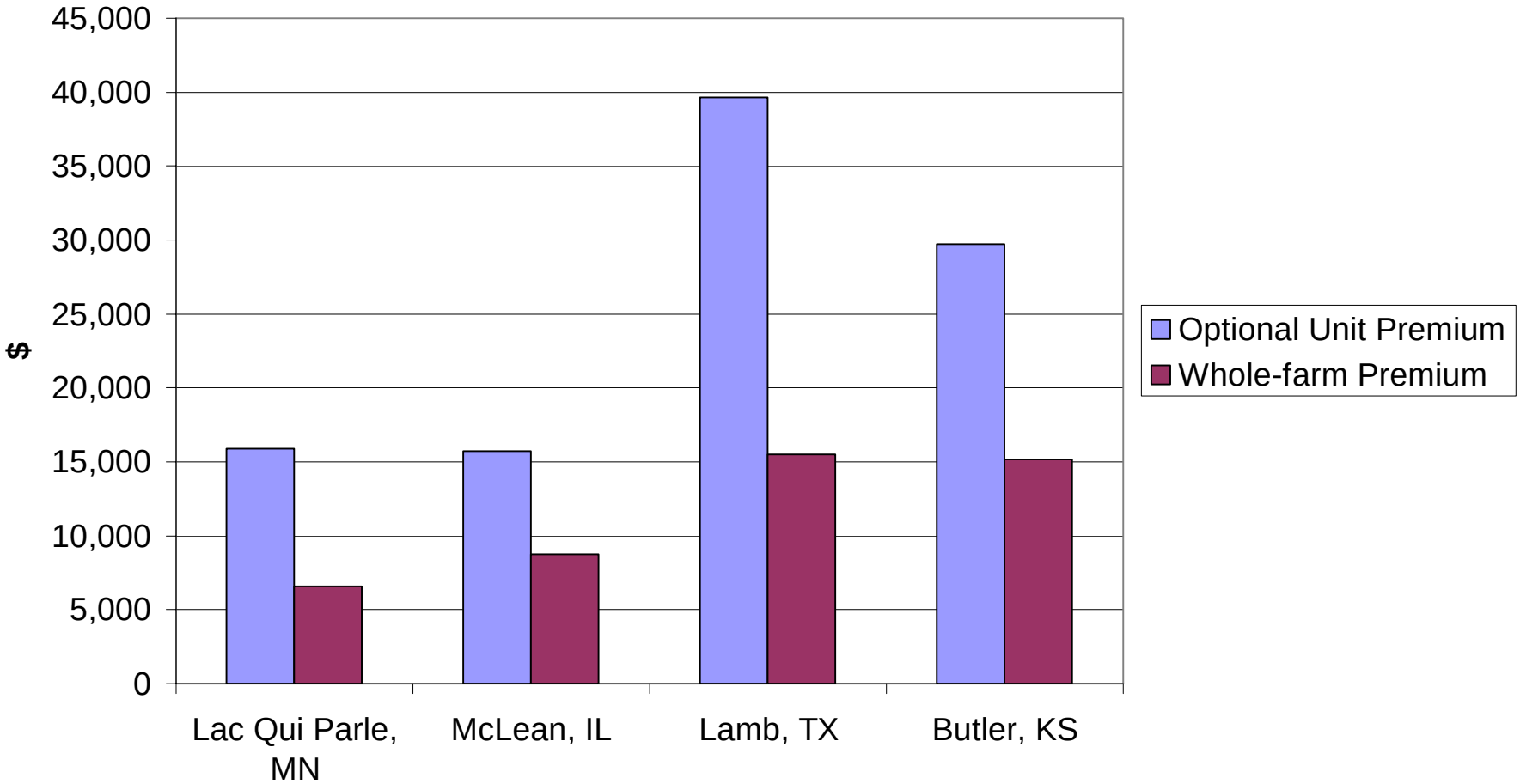
Example Farms: Acres

	Acres in Each Crop				
County, State	**Corn**	**Soybeans**	**Sorghum**	**Cotton**	**Spring Wheat**
Lac Qui Parle, MN	333.	333.3	0	0	333.3
McLean, IL	500	500	0	0	0
Lamb, TX	500	0	0	500	0
Butler, KS	500	0	500	0	0

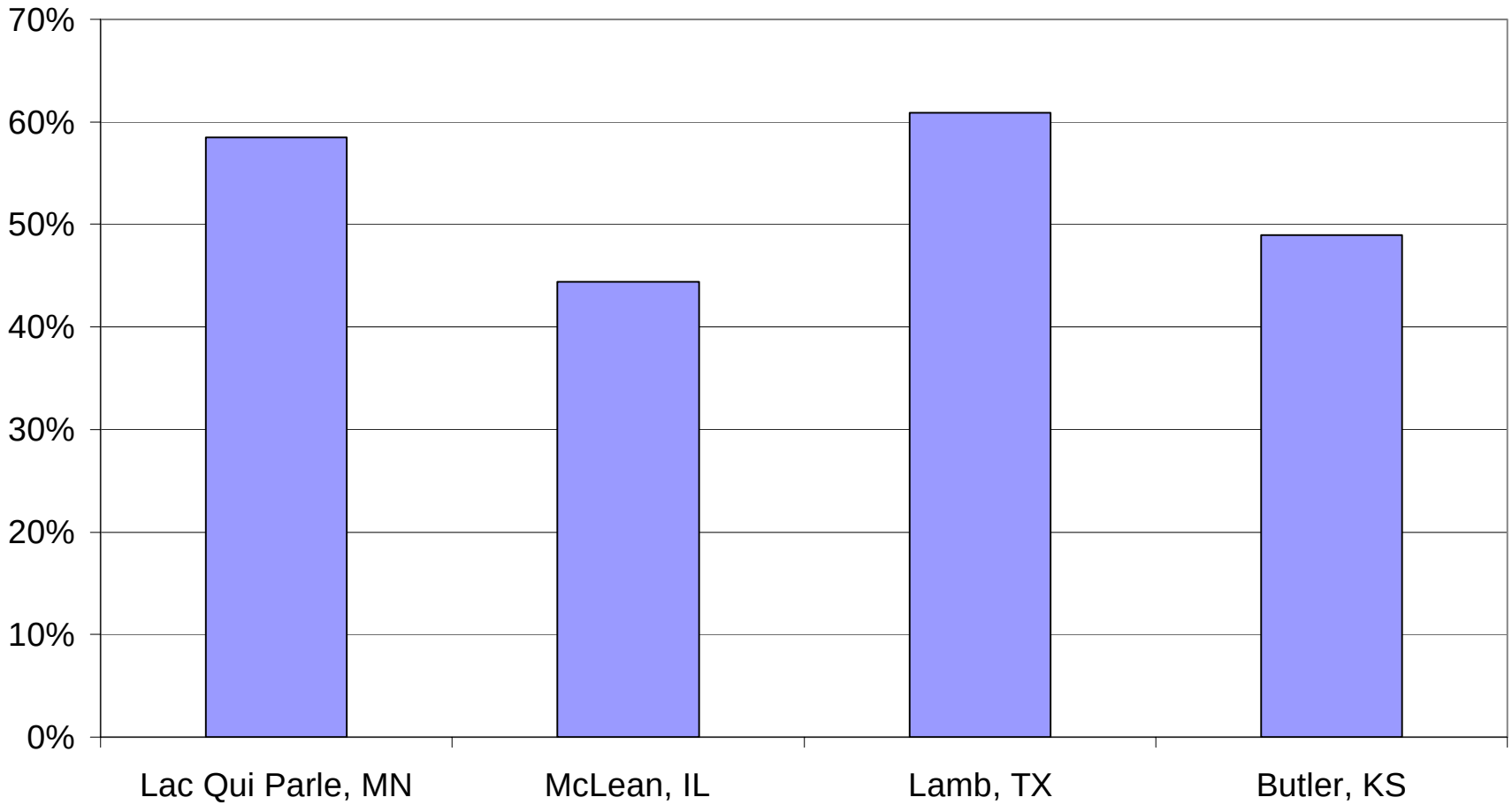
Example Farms: APH Yields

County, State	Corn (bu)	Soybeans (bu)	Sorghum (bu)	Cotton (lb)	Spring Wheat (bu)
Lac Qui Parle, MN	128	36	0	0	45
McLean, IL	153	47	0	0	0
Lamb, TX	156	0	0	637	0
Butler, KS	153	0	68	0	0

RA-HPO Premium Comparison at 75% Coverage (Using 2005 Prices)



RA-HPO Premium Reduction from Moving to Whole-Farm Unit



Why No Purchases?

- Value of risk reduction per dollar of total premium much higher for whole-farm insurance than optional unit insurance
  - Value of risk reduction measured by change in certainty equivalent returns

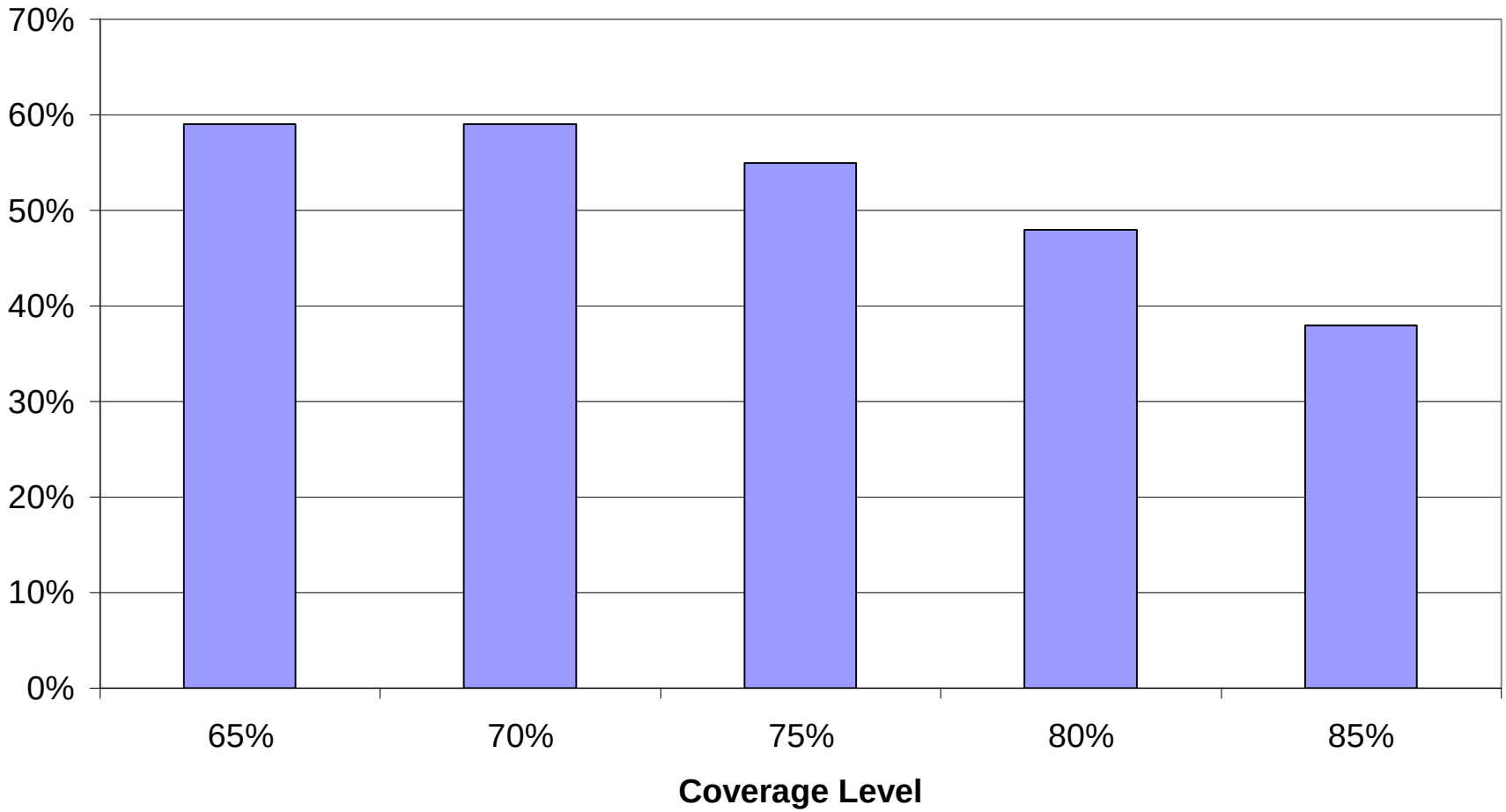
Two Explanations

- Subsidy structure drives producers to optional units
- Preferences of farmers not captured by standard models that explain how producers make decisions under risk.

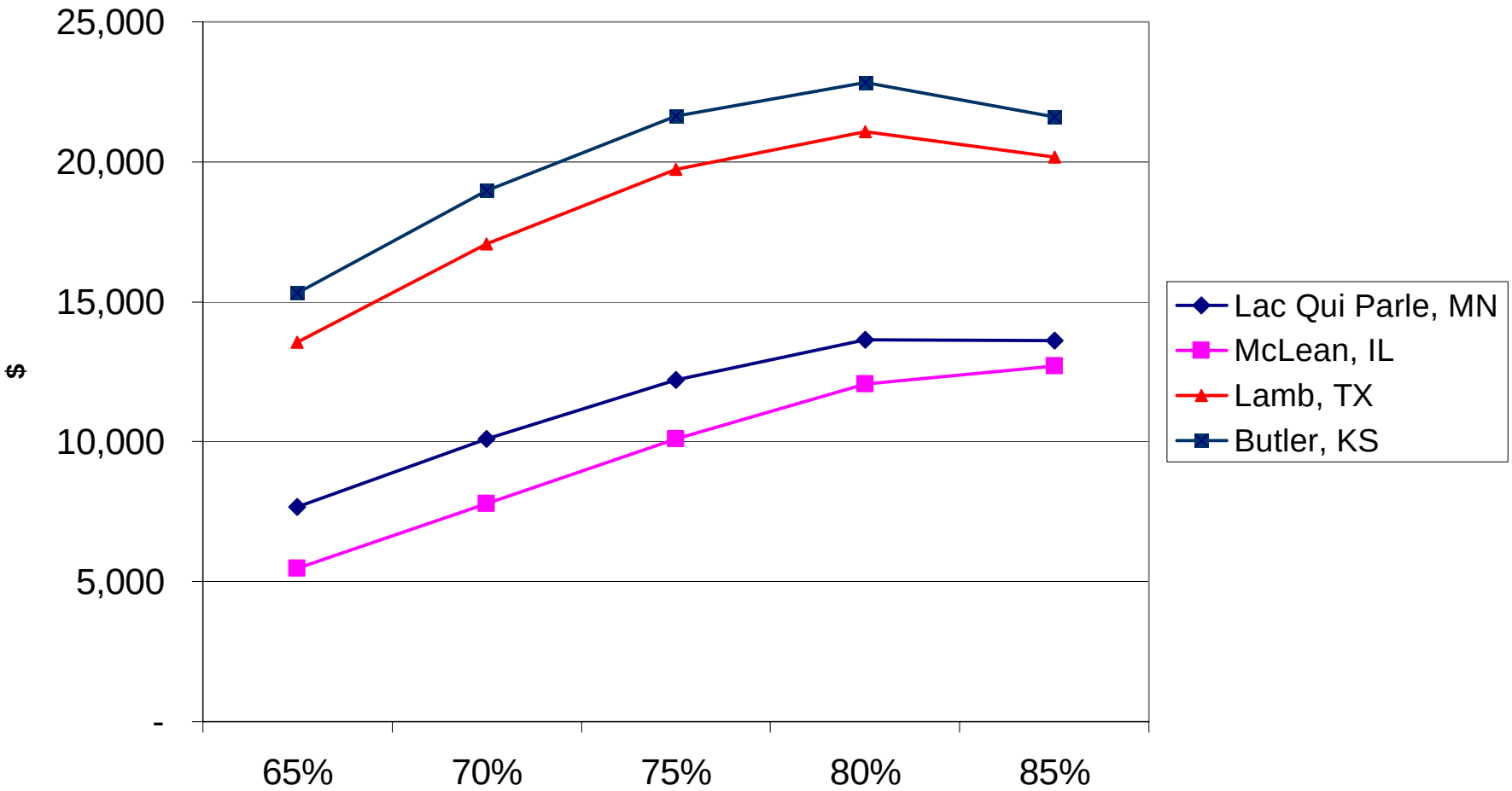
Subsidy Structure

- Premium subsidy ($/acre) equals profit gain from buying crop insurance if rates are actuarially fair
- Premium subsidies are proportionate to total premiums

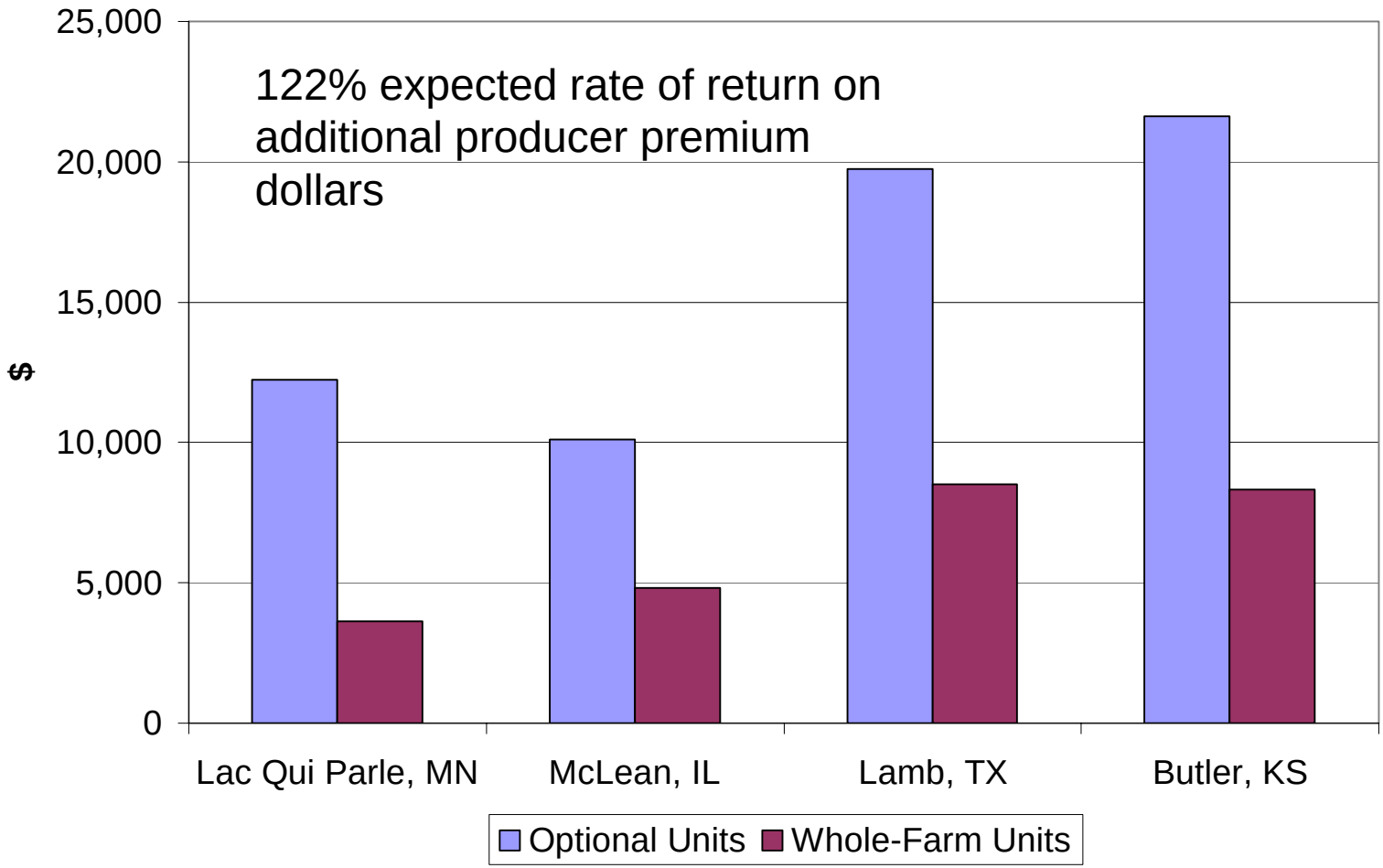
Premium Subsidy Percent



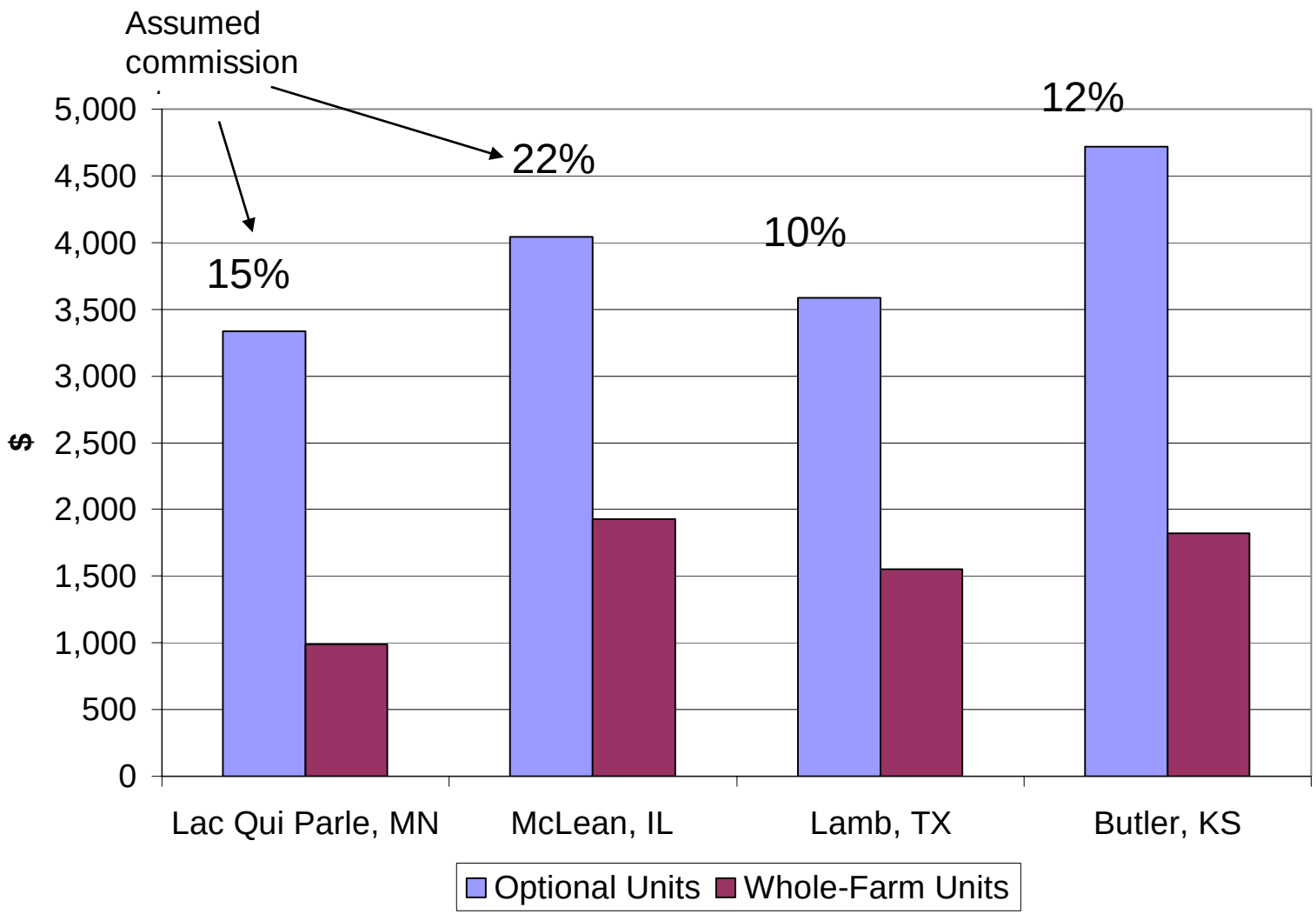
Annual Expected Profit from Crop Insurance with Optional Units



Expected Farmer Profit at 75% Coverage for Optional Units vs. Whole-Farm Units



Representative Agent Commisions



Preliminary Summary

- Agents have hot incentive to push optional units due to commission structure
- Farmers have strong incentive to buy optional units (122% rate of return)

- No surprise that farmers prefer optional units compared to enterprise and whole-farm units

Voucher a Solution?

- If subsidy structure were neutral with respect to unit structure would farmers push agents to sell them whole-farm insurance?

- More fundamentally, if Senator Lugar's old voucher plan were adopted, would farmers buy crop insurance?

Prospect Theory vs. Neoclassical Theory

- Expected utility theory:
  - Preferences defined over final outcomes
  - Predicts people will insure the performance of a portfolio rather than individual prospects within the portfolio

➢ Literature predicts producers prefer whole-farm insurance vs. optional (unsubsidized)

Loss Aversion

- Prospect theory (Kaneman and Tversky)
  - Preferences over risk depends critically on reference point and framing of the choices
  - Do farmers perceive a loss if one crop does well but the other does not?
  - Yes? Then the farmer will value the loss more than the gain and prefer optional units

Crucial Role of Framing

- Agents have an incentive to sell optional units
- Do they frame the choice of unit structure that emphasizes the fact that a “loss” can occur yet no compensation will take place?
- Or do they frame the choice in terms of final outcomes and ability for farmer to pay back production loans?

Preference or Subsidies?

- Difficult to determine if preference for optional units is driven by
  - Subsidy structure (percent of premium)
  - Loss aversion among farmers
  - Agent commission structure which drives framing of choices

Role of Vouchers

- Adoption of unit structure-neutral voucher system would eliminate one variable driving unit choice
  - Why should Federal government be in the business of driving choice, particularly in budget-tight times?
- Introducing increased competition between agents would perhaps help neutralize framing issue.
  - Why should an agent be paid more if a farmer chooses optional units?