

Gaps in the Farm Risk Management Literature

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Background

- Comments are based on a literature review that Keith Coble and I conducted for OECD during the Fall of 2008.
<http://www.oecd.org/dataoecd/27/28/42749727.pdf>
- Reviewed only English language literature.
- “Gaps” does not mean that there is no literature on the topic – only that there is not as much literature as we would have expected.

General Overview

- Empirical literature tends to focus on output price risk and/or yield risk for a single commodity.
- Gaps
 - Input price risk (though the experience of 2008 seems to have stimulated some work on this).
 - Farm household portfolio context (multi-commodity, off-farm income, etc.).
 - Wealth risk (not just annual net income).

Yield Risk

- Empirical literature tends to fit limited data to assumed parametric distributions.
- Gaps
 - Data limitations make it difficult to estimate farm-level yield distributions. Aggregation bias in aggregate data.
 - No agreement on parametric distributions.
 - Few cross-sectional comparisons of yield risk, even for the same crop and at the same level of aggregation.

Output Price Risk

- Empirical literature is well developed for most commodities.
 - Commodity prices tend to be highly spatially correlated.
 - Aggregate price data are more useful for understanding producer risk exposure than are aggregate yield data.
 - Commodity prices are widely assumed to be distributed log-normally.

Output Price Risk

- Gaps
 - Comparisons across commodities and/or across space are rare because price variability is measured over different temporal intervals (e.g., annually, monthly).
 - Comparisons over time are difficult due to changes in trade and policy regimes.

Input Price Risk

- Literature on corn and soybean output price risk corresponds to input price risk for many livestock commodities.
- Gaps
 - Long-run magnitudes of input price risk for crop production.
 - Comparisons of crop input price risk across space, time, and different inputs.

Farm Portfolio Risk

- Literature contains some case studies on risk reduction from commodity diversification and off-farm income sources.
- Gaps
 - Contrary to analytical results, large subsidies are required to induce farmers to purchase yield insurance.
 - Contrary to analytical results, most farmers do not forward price.
 - We know very little about: 1) price-price correlations across commodities; 2) yield-yield correlations across commodities and how this varies by region; 3) price-yield correlations and how this varies by region (some work in the optimal hedge literature); 4) correlations between farm and off-farm sources of income; and 5) correlations between capital gains from farm and non-farm investments.

Government Policy and Farm Risk

- Literature contains many studies of how farm programs, forward pricing, and crop (or revenue) insurance affect annual revenue risk for a single commodity.
- Gaps
 - Impacts of changes in macroeconomic policy (inflation, interest rates, exchange rates) on variability of farm household wealth.
 - Impacts of changes in non-agricultural policies (e.g., energy, environmental, and foreign policy) on variability of farm household wealth.

Other Gaps in Farm Risk Literature

- Comparisons of farm net revenue risk to that of firms in other industries.
- Impacts of biotechnology on yield risk.
- Impacts of climate change on yield risk.

Conclusions

- Our theoretical understanding of farm household risk exposure (and risk management decision-making) far outstrips our access to appropriate data to test that understanding.
- So what?
 - Public policy is being made without an adequate understanding of farm household risk exposure and risk management strategies.

Addressing the Gaps

- Need a national effort to start collecting panel data on a large number of farm households.
- ARMs data are at the household level but are not a longitudinal panel.
- Farm business analysis data are generally focused on income taxes. They contain some (but not all) of the relevant variables.
- Need something like the University of Michigan Panel Study of Income Dynamics.
 - Longitudinal data since 1968.
 - Nearly 9,000 families.