



## **Arguments: The Craft of Credible Answers and Relevant Questions in Applied Economics**

**"El arte de ofrecer argumentos para el desarrollo de investigaciones que provoquen interés profesional"**

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## Introduction—Applied Economics Research

- We solve applied & sometimes basic economic problems relevant to our research community.
- We build and use models to make economic arguments.
- Models—economic, graphical, mathematical, statistical.
- Economic theory, data, statistical procedures, knowledge of institutions can be used to build the model.
- Evidence—derivations, data analysis, hypothesis testing.
- Economic theory is used to explain a phenomenon.
- Model's quality provides support for linking evidence to a claim that resolves the situation.
- But models are abstractions, and arguments to strengthen and make them credible are needed.

## Introduction

- Research is complicated
- Research—Professional Dialogue can help
- Arguments to answer contestable issues
- Experiences in ACE—the origins (appendix)
- Assist students develop research questions and informative answers
- Useful for agricultural and applied economists?

## Introduction

- How can agricultural economists provide more credible work?
- Consider figure 1

# Introduction

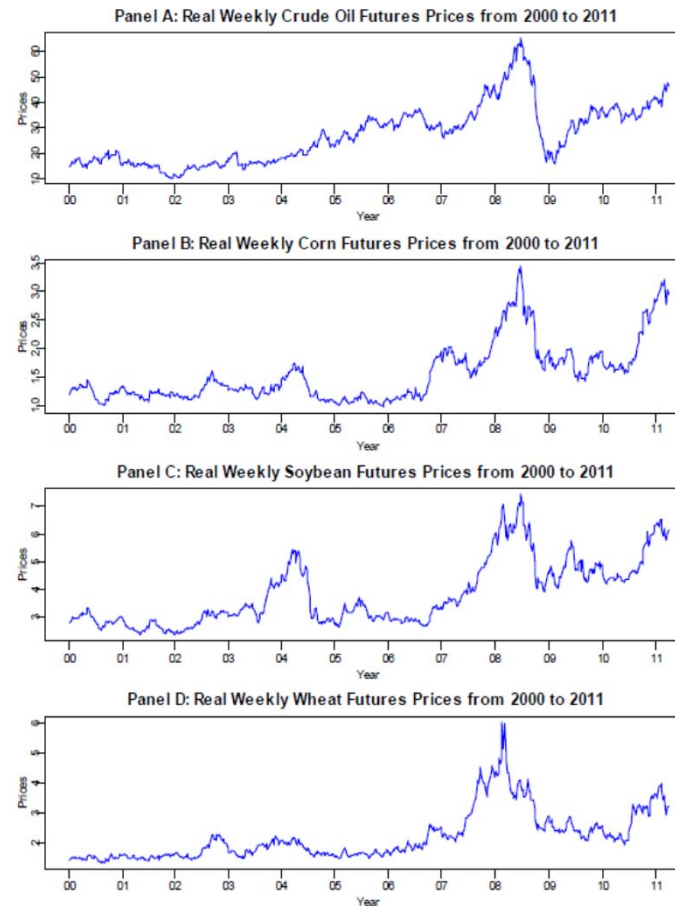


Figure 1. Real Weekly Crude Oil, Corn, Soybeans, and Wheat Futures Prices

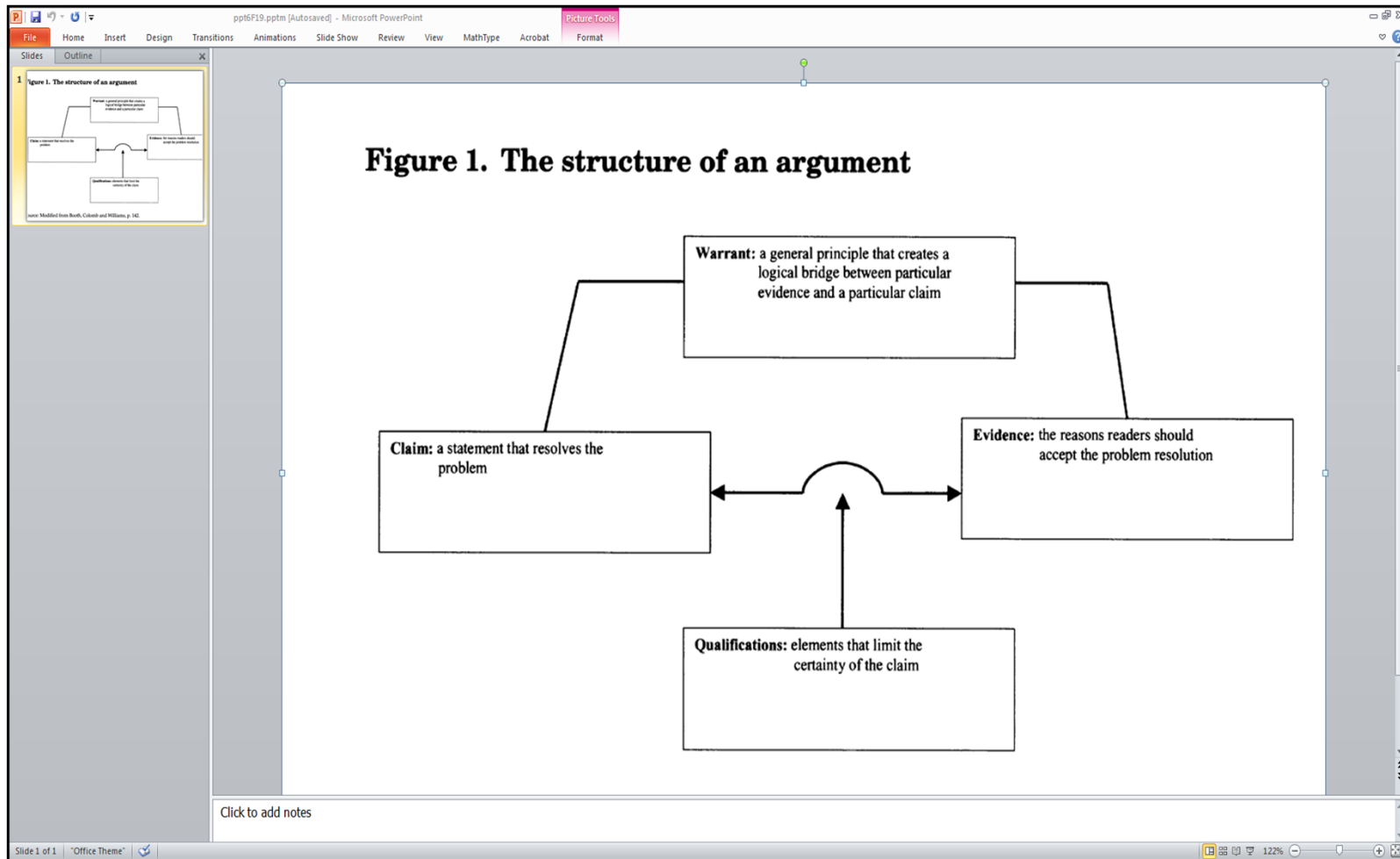
## Introduction

- Causes: Changes in D/S? Low stocks? Energy linkages? Speculation?
- Consequences: Food scarcities in LDCs. Risky markets. Government programs. Who will pay?
- Studies provide different answers as to the causes.
- Why is it difficult to identify the root causes? Complexity. Ignorance. Limits to analysis (models, theory, data).
- How can applied economists provide credible information and deeper understanding?
- Is there a structure to the craft of research that helps? Can it help identify relevant research gaps? Professional Dialogue

## Professional Dialogue

- What is the structure of arguments to explain and make their work compelling?
- For a well-defined problem, the heart of an argument is the explanation (claim) that clarifies the situation, which is supported by relevant (warranted) evidence and appropriate qualifications.
- Claims—substantive, contestable, explicit to gauge its usefulness in resolving the problem.
- Evidence—accurate, precise, representative, sufficient, reliable and accessible.
- Warrants are logical connections between evidence and claim.

# Professional Dialogue





## Professional Dialogue

- Qualifications—limit scope: “short & sweet” or test alternate models solutions.
- Toulmin, British philosopher & critical thinker—contestable issues.
- Arguments are “tools” which can be used to:
  - Explain the overall question and answer
  - Support research decisions in a recurring manner
  - Provide an *ex ante* planning instrument
  - Provide an integrative structure to the research as it requires the linking of theory, methods, data, and knowledge of the situation to answer the question.

## Professional Dialogue

- In this context, believable answers to a research question are provided by building models and making economic arguments that reasonable.
- Models should be internally (Was the research done correctly, reducing confounding errors?) and externally (Does the same thing occur in other situations?) valid, and other researchers should be able to replicate the analysis.
- Importantly, models and their arguments should be useful, providing relevant information to decision makers (your research audience).

## Research Problems

- Research problems are based on what is not known, but needs to be understood in your research community.
- Basic problems (BP)—presence of anomalies or inconsistencies that need to be explained.
- Applied problems (AP)—absence of information that decision makers need to make informed choices.
- Significance of a problem—opportunity cost of not knowing the answer to the problem:
  - BP—cost of limited understanding is our inability to examine even larger more profound questions.
  - AP—the costs in terms of time, money, security from not having the information to make more informed choices.

## Research Problems

- Regardless of whether BP or AP, the significance of the research will be determined by how successful it changes the thinking of a research community.
- Finding research gaps requires critical reading, thinking and writing about the issues. Looking for holes in the literature and anomalies can help.
- Direct interaction with other researchers, producers, market participants and firms in an industry can also help set your research agenda as you become aware of constraints faced and limited information available.
- Data availability and its analysis can play a critical role in determining research activities, influence questions asked and answered and even modify the original focus.

## Anatomy of Recent Research

*Speculative effect on market behavior (Controversy)*

- A. Direct data-driven (CFTC) analysis of speculative positions in futures markets and effect on prices**
1. Motivation – changing volatility, its potential economic consequences, and previous mixed effects.
  2. Warrant – internal and external validity of the statistical procedures and data used. (literature)
  3. Evidence – tabular/graphical data analysis, statistical findings and hypotheses tested.
  4. Claim – Index traders (speculators) had little measureable effect on price movements.
  5. Qualifications – predictability not causality, bubbles may have other causes.

## Anatomy of Recent Research

- B. Bubble or explosive price occurrences in agricultural futures markets, 1970-2013**
1. Motivation – desire to put recent market behavior in temporal perspective.
  2. Warrant – new and improved method used. Internal and external validity from a “higher authorities” - re-known econometrician and reviewer.
  3. Evidence – statistical findings which were analyzed in various dimensions.
  4. Claim – while explosive periods exist, they do not last long, and their structure not changed.
  5. Qualifications – limited discussion of the sources of bubbles, negative bubbles?

## Anatomy of Recent Research

### C. Price explosiveness: Speculation and market fundamentals

1. Motivation – in current period what explains explosive periods. [builds on previous studies and controversy in the literature.]
2. Warrant – bubble procedures established. Procedure to link the explosive periods to fundamental (e.g., exports, inventories, strength of dollar, economic growth) and speculative (market positions in various forms) factors. Relative magnitudes of the coefficients.
3. Evidence – tabular and graphical presentations. Identification of explosive periods and statistical MLM results.
4. Claim – recent explosive price periods relatively short, probability of occurrence most influenced by fundamentals.
5. Qualifications – some speculative activity affects explosiveness, but it's small and does not appear in all speculative measures.

## Anatomy of Recent Research

- **Failure of futures and cash prices to converge** (Anomaly)
  1. Motivation – For 5 years, futures finished up to 35% > cash prices in the U.S. grain markets. Biggest challenge facing hedging and price discovery in 50 years. Policy makers, regulators, exchanges, industry leaders and participants, and academics searched for a solution.
  2. Warrant – dynamic rational expectations model of commodity storage to explain non-convergence which was modified to explain the situation.
  3. Evidence – derived from model and its extensions. Statistical analysis verified the robustness. Markets converged after taking our recommendation.
  4. Claim – non-convergence resulted from an exchange failure to adjust contract storage rates, making grain held as a contract cheaper than storage.
  5. Qualifications – Theoretical model allows competing explanations. Statistical analysis failed to support other explanations (e.g., speculators, credit differentials favoring speculative financial firms, or irrational bubbles).



## Final Thoughts

- Professional dialogue –fosters communicating ideas, thinking critically and interactively about research problems, and planning of research activities.
- Depending on the audience, one also sees the need to explain why specific research decisions about procedures and theory are made.
- Scott Swinton, AAEA president-elect in 2017 gave an address titled “Why Should I Believe Your Applied Economics.” Applied economists’ responsibility is to make research more understandable and credible, and to train our students to be better “sources of the message.”
- Our experience suggests professional dialogue is an effective tool. When used in a seminar where writing, critical verbal, and written dialogue requires students to express their ideas more clearly, it can help achieve these objectives. It can also help “veteran” researchers sharpen their research skills and enjoy “work” even more.

## Related References

- Aulerich, N. M., S. H. Irwin, and P. Garcia (2014). Bubbles, Food Prices, and Speculation: Evidence from the CFTC's Daily Large Trader Data Files. In: *Economics of Food Price Volatility*, J. P. Chavas, D. L. Hummels, and B. Wright editors, Chicago IL: University of Chicago Press. pp. 211-253. Also in the National Bureau of Economic Research *NBER Working Paper Series*, No. w19065, 5/29/13, pp. 1-61.
- Booth, W.C., G.G. Colomb, J.M. Williams, J. Bizup, and W.T. Fitzgerald. *The Craft of Research*. Chicago University Press. 4<sup>th</sup> Edition, 2016.
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- Etienne, X., S.H. Irwin and P. Garcia (2015). Price Explosiveness, Speculation, and Grain Futures Prices. *American Journal of Agricultural Economics* 97, 1: 65-87.
- Garcia, P., S.H. Irwin and A. Smith (2015). Futures Market Failure? *American Journal of Agricultural Economics* 97, 1: 40-64. Winner of Quality of Research Discovery Award, AAEA, 2016
- Toulmin, S. There are various on-line sites that discuss the "The Toulmin Method for Argumentation."

## Introduction - Additional

- Change which influences our economic behavior and wellbeing is a common occurrence. Applied/agricultural economists investigate what drives economic behavior, how agents (broadly defined) respond to change, and what are the consequences.
- In the past 10-15 years, multiple factors have influenced agricultural markets leading to heightened volatility, and many applied economists have turned our attention to understanding its causes and consequences.

## Introduction - Origins

- Graduate teaching and research.
- Long delays in finishing degree requirements.
- Faculty decides students possessed limited ability to define research problems and lacked instruction in using theory, methods and data to construct and answer research questions.
- Seminar aides students become better researchers (problem solvers), emphasizing critical reading, writing and professional dialogue. [Craft of Research, BCW]
- Shortened time to completion, quality of theses improved, students repeat the class.