

# Linking Theoretical and Empirical Accounting Research Part I

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# An example of interesting research

Frick, Gürtler, and Prinz (zfbf 2008)

- **Research question: Effort incentives in tournaments – Is it better to let homogenous or heterogeneous contestants compete?**
  - Prior research presumes that contestants with more homogenous capabilities exert more effort
- 1. **This paper develops an economic model to derive effort predictions in a tournament**
- 2. **The paper tests the predictions with a unique data set**

# An example of interesting research

## ■ **Model**

- Tournament with two players (or teams)
- Performance is stochastic and increases in ability and effort
- Each player decides on privately costly effort
- Player with higher actual performance wins

## ■ **Main result**

- Optimal efforts of both players is strictly decreasing in the absolute difference in capabilities

### ● **Intuition**

- (i) Player with lower capability realizes that winning is unlikely  
→ optimally reduces effort
- (ii) Player with higher capability infers this reaction and optimally reduces effort as a best response to the lower effort of the other player

# An example of interesting research

## ■ Empirical test: German soccer league

- Players are the 18 teams
- Proxy for effort: Number of yellow cards
  - Not red cards because based more on intolerable behavior
  - Note: Scores are bad proxies for effort because can be positively associated with effort (high offensive effort) or negatively (low defense effort)
- Proxy for heterogeneity: Difference in betting odds

## ■ Hypothesis: The lower the difference in betting odds the more yellow cards are shown to players

- Control variables: age (linear and squared) of referee, BMI of referee, goals, home game, number of viewers, local derby

# An example of interesting research

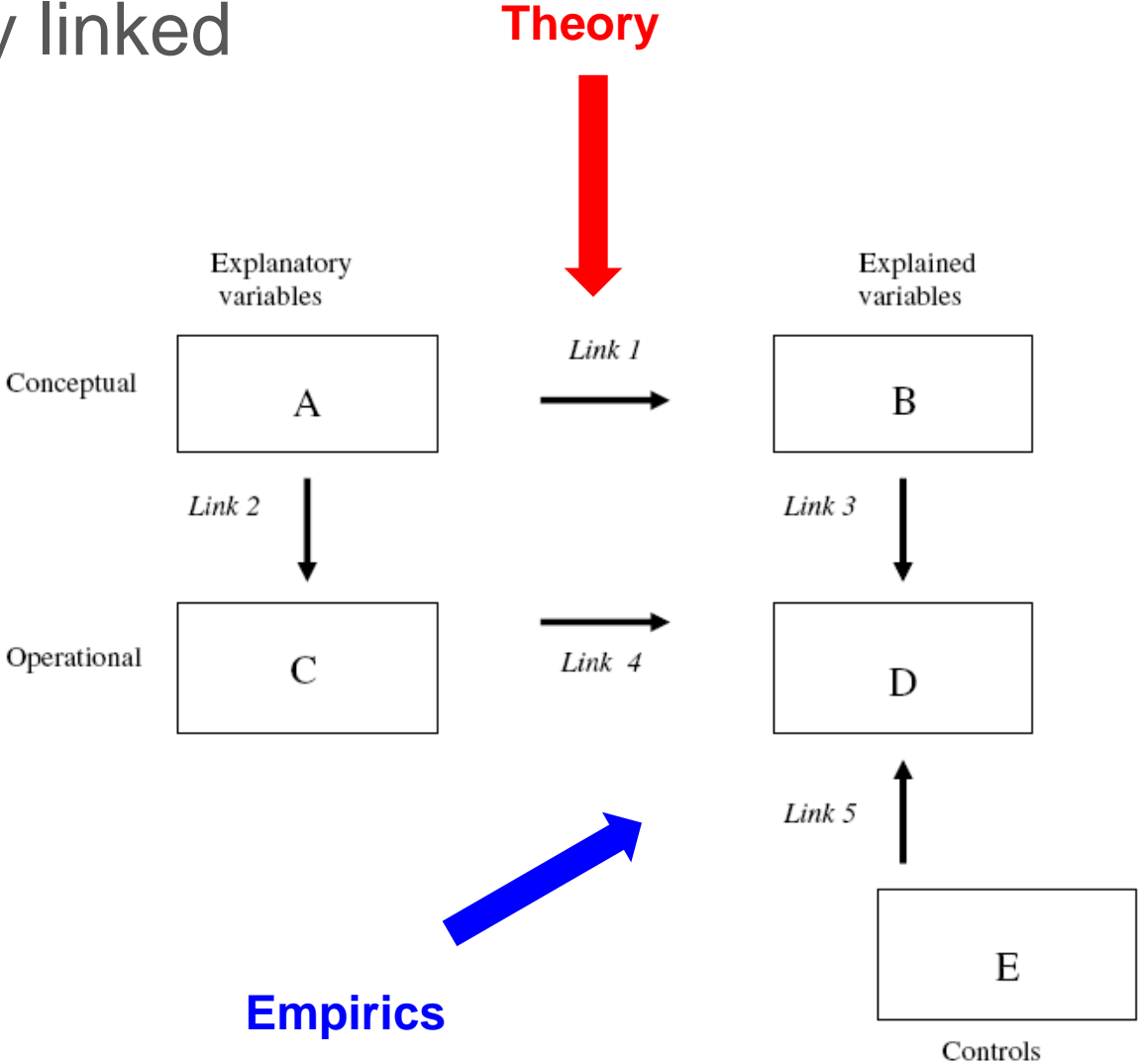
Dependent variable: Yellow cards

## Negative binomial model

	Coeff.	t-value
Constant	1,8366	1,09
<b>Heterogeneity</b>	<b>-6126 ***</b>	<b>-4,46</b>
Age of referee	0,0194	0,22
Age squared of referee	-0,0003	-0,3
BMI referee	0,008	0,48
Goals of home team	0,0128	0,48
Goals of guest team	-0,003	-0,19
Viewers	-0,0032	-0,06
Viewers squared	0	0,83
Derby	-0,0025	-0,02
Goal difference at break	-0,0137	-0,52
McFadden_R <sup>2</sup>	0,032	
Wald c <sup>2</sup>	22,18 ***	
n	756	

Source: Frick, Gürtler, and Prinz (zfbf 2008)

# Theory and empirics are inherently linked



Source: Libby, Bloomfeld, and Nelson (AOS 2002)

# What makes a paper exciting?

- **Contribution!**
- **Consider the following**
  - Paper states intuitively plausible hypothesis
  - Tests this hypothesis and finds that the results are consistent with the hypothesis
- **Question: What did we learn?**
- **What could we learn?**
  - Are there alternative explanations?
  - Are there competing hypotheses?
  - Can we identify situations in which intuitive hypotheses do not work?
  - What about economic significance?
- **This requires more emphasis on theory**

# Benefits of linking theory and empirics

- **Intellectual stimulation**
- **Greater completeness of research: theory *and* test**
- **Credibility of both theory and empirics**
  - More persuasive contribution
  - Less criticism that theory builds on unrealistic assumptions
  - Assurance that hypotheses are not ad hoc, but derived from coherent and consistent theory
  - Less criticism that ex post hypotheses are created to match the data or data fishing
- **Triangulation**
- **Theory and empirics are complementary**
  - Deduction: Theory → empirical tests
  - Induction: Empirical regularity → development of theory



# Why few papers include theoretical *and* empirical research?

## ■ **Hard to build expertise in multiple methodologies**

- Lack of education, high investment cost
- But one can team up with coauthors accordingly

## ■ **Evaluation process in top journals**

- Mainstream research in accounting is single method – unlike other fields
- Papers become too long
- Have hard time with review process: requires reviewers that are experts in more methodologies
- Attention of some reviewers shift to validity of proxies (link of theory and data)

## ■ **But hard to defend as valid arguments**

**→ Accounting research is likely to evolve**

# Methodologies

## ■ Theoretical research

- **Sources:** Economics, finance, organization, sociology, psychology, ...
- **Strengths:** Consistency, rigor, internal validity
- **Weaknesses:** Narrow scope, strong assumptions, hidden assumptions/beliefs
- **Performance measure:** New insights, counter-intuitive results

## ■ Empirical research

- **Methods:** Archival, experimental, field, case, survey, ...
- **Strengths:** “Reality”, descriptive and external validity
- **Weaknesses:** Many possible influences at work, causality
- **Performance measure:** Descriptive evidence, significance of relation, discrimination among different theories

# Some challenges

## ■ Theory

- Rests on priors about central economic forces of phenomenon
- Latent assumptions
- Results hard to generalize
- Does not say anything about competing theories

## ■ Empirics

- Data availability
  - Availability and selection of proxies in archival research
  - Subjects for experiments and experimental design
  - Access and confidentiality in case or field research
- Unobservable conditions, omitted variables, endogeneity

# Example: Testing agency theory

## **Pay for performance sensitivity**

Demski and Sappington (MAR 1999)

### ■ **Unobservability of effects**

- Multiple outputs, but not all are unobservable – empirical association between observable output and pay sensitivity blurred
- Multi-period consequences

### ■ **Out-of-equilibrium strategies**

- Agent induced to work hard – pay sensitivity depends on alternative actions that are not taken under optimal contract
- Threat points – other incentive mechanisms that are never played out (eg high sanctions deter particular behavior)
- Multiple equilibria – which ones are played in reality?

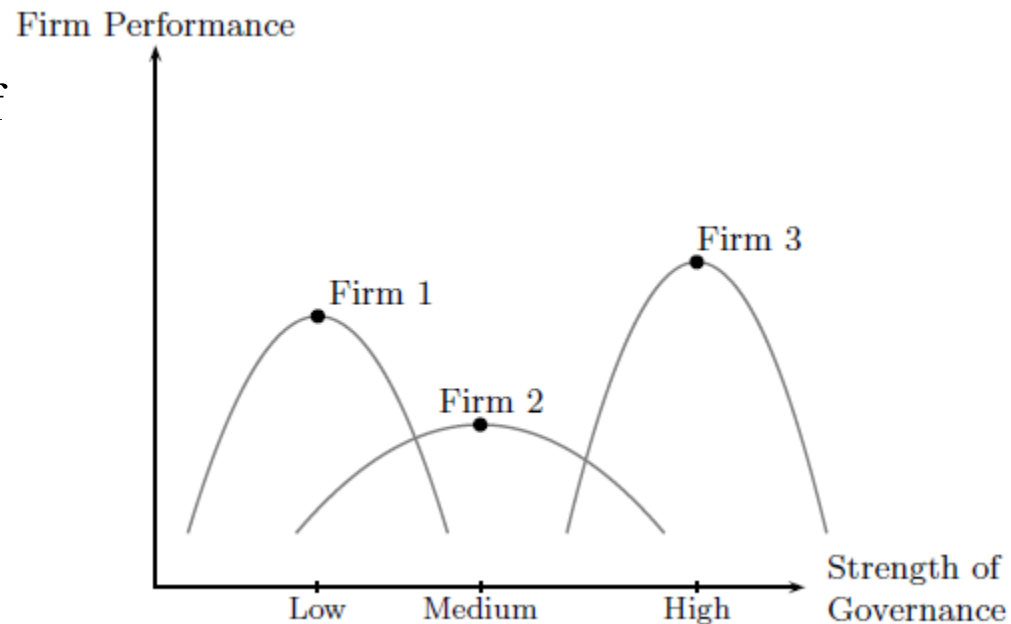
# Example: Endogeneity

- **Does better corporate governance improve firm performance? Many empirical studies**

- Few take into account the endogeneity of corporate governance
- Ex ante no expectation of positive correlation between governance and performance

- **Theory can explain positive correlation**

- More profitable firms require more governance – causality reverses!
- Provides guidance for new tests



Source: Hermalin (Handbook 2013)

# Summary: Linking theory with empirics

- **Theory and empirics are complementary**
- **Theoretical research**
  - Provides basis for predictions and to derive hypotheses – and competing hypotheses
  - Necessary to get a hold on causality
  - Helps to determine controls in empirical studies
- **Empirical research**
  - Gives insights whether theory “works”
  - Help to estimate economic significance of effect
  - Can distinguish between alternative explanations
  - Provides descriptive evidence to stimulate theory

**Ultimately, developing a theory and empirically testing it leads to more interesting and innovative research**